



Scale: 5" / 100'
Measured Depth Log

Well Name Elliott 32N-18HZ

Location SENE SEC 18, T3N, R67W

State Colorado

Country USA

API Number 05-123-38784

Region DJ Basin

Spud Date 3/24/2014

Surface Coordinates 2041' FNL & 457' FEL

Bottom Hole Coordinates 2252' FSL & 50' FWL

County Weld

Rig Number Ensign 138

Field Wattenberg

Drilling Completed 3/30/2014

Ground Elevation 4,822'

K.B. Elevation 4,835'

Logged Interval 6415' To 11797'

Total Depth 11797'

Formation Niobrara B

Type of Drilling Fluid H2O, LSND

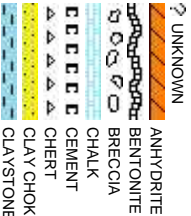
Company Anadarko

Address Granite Tower
1099 18th St, S
Denver, CO 802

Name Zach Uber, Gab

Company Columbine Logg

Address 2385 S. Lipan S
Denver, CO 802



Operator

Unit #1800
202

Geologist

riel Rubio

ing, Inc.

223

Rock Types

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

Accessories

Fossils	GASTROPOD	ARGILLITE GRAIN	HEAVY MINERAL	Stringer
INOCERAMUS	B BENTONITE	K KAOLIN	ANHYDRITE STRINGER	BENTONITE STRINGER
ALGAE	O OOLITE	M MARCASTITE	COAL STRINGER	DOLOMITE STRINGER
AMPHIPORA	O OSTRACOD	M MICACEOUS	GYPSUM STRINGER	LIMESTONE STRINGER
BELEMNITE	P PELECYPOD	C CARBONACEOUS FLAKES	P PYRITE	MARLSTONE (CALC) STRG
BIOCLASTIC	P PELLET	C CHITDK	S SALT CAST	SANDSTONE (DOL) STRG
BRACHIOPOD	P PISOLUTE	C COAL - THIN BEDS	S SANDY	SHALE STRINGER
B BRYOZOA	P PLANT REMAINS	D DOLOMITIC	S SIDERITE	SILTSTONE STRINGER
C CEPHALOPOD	S SCAPHOPOD	F FELDSPAR		
C CORAL	S STROMATOPOROID	F FERRUGINOUS PELLET		
C CRINOID				
E ECHINOID				
Minerals	F FISH	F FERRUGINOUS	S SILICEOUS	
F FORAMINIFERA	A ANHYDRITIC	G GLAUCONITE	S SILTY	
F FOSSIL	A ARGILLACEOUS	G GYPSIFEROUS	T TUFACEOUS	

Other Symbols

Oil Show	P PINPOINT	W WIRELINE TESTED - LEFT	E EARTHY
V VUGGY	F FAULT	W WIRELINE TESTED - RT	F FINELY XLN
Engineering	D DEAD	F FORMATION TOP	G GRAINSTONE
E EVEN	G GAS SHOW	D DRILL STEM TEST	L LITHOGRAPHIC
Q QUESTIONABLE	O OIL SHOW	M MINDEPTH MN DEPTH	M MICRO XLN
B BIT			
S SPOTTED STAINING	C CONNECTION (UP)	R ROUNDING	M MUDSTONE
Porosity	C CONNECTION (DOWN)	A ANGULAR	P PACKSTONE
C CONNECTION GAS	N NORMAL FAULT	R ROUNDED	W WACKESTONE
E EARTHY	C CONNECTION GAS (LEFT)	S SUBANG	
F FENESTRAL	T TRIP GAS	S SUBRAND	
F FRACTURE	T TRIP GAS (LEFT)	C CASING	
I INTERCRYSTALLINE	D DOWN TIME GAS	T TEXTURES	P POOR
I INTERCRYSTALLINE	D DOWN TIME GAS (LEFT)	S SIDEWALL CORE (LEFT)	M MODERATE
M MOLDIC	C CORE - LOST	S SIDEWALL CORE (RIGHT)	W WELL
O ORGANIC	C CORE - RECOVERED	S SLIDE	
	S SURVEY	C CRYPTOXLN	

Slide/Rotate

ROP
ROP

ROP SCALE:
0-400 FT/HR

ROP (ft/hr)

GAMMA
GRAX5

GAMMA SCALE:
0-200 API

GRAX5 (API)

Total Gas & Chromatograph

GAS

C1

C2

C3

C4

GAS SCALE:
0-5000 UNITS

GAS (units)
C1-C4 (PPM)

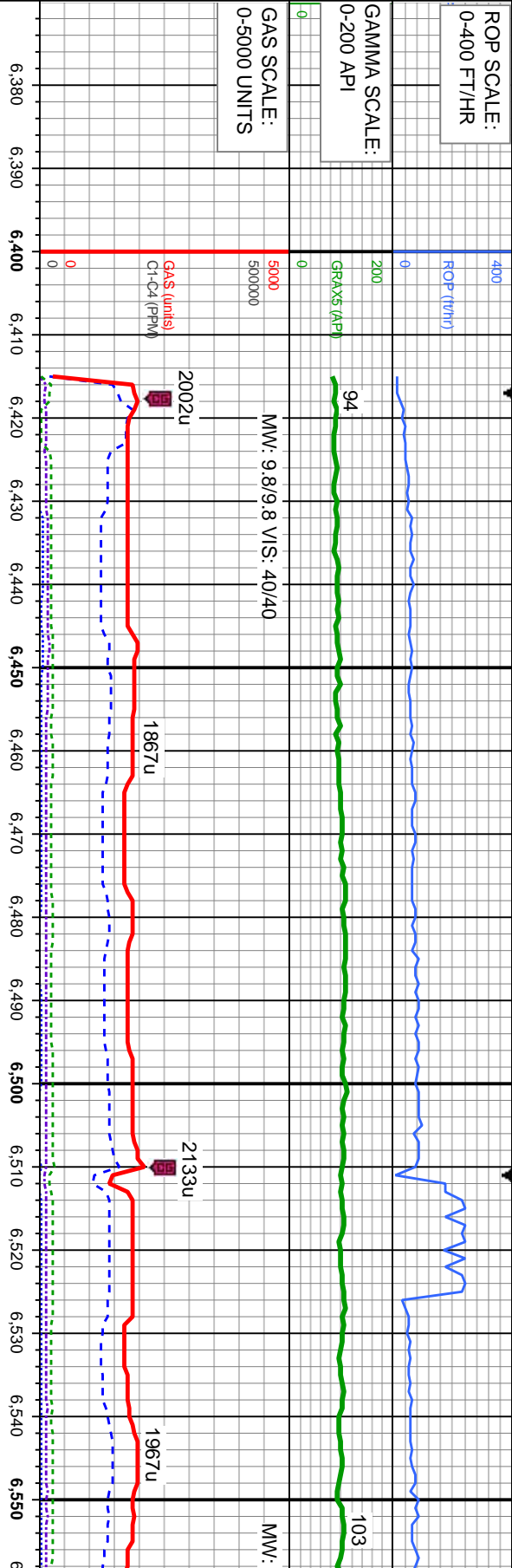
Depth Labels

% Lith

Well Bore
TVD

Oil Show

Images



KOP: 6415' MD
100' SAMPLE INTERVALS

6,380 6,390 6,400 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

Bit Data:

Type: Smith/ SDI 611

Size: 8.75"

Jets: 3x15/3x14

TVD (ft)

MD: 6,446 '
TVD: 6,395.13 '
Inclination: 4.9 °
Azimuth: 271.1 °
VS: -412.57 '

MD: 6,541 '
TVD: 6,488.43 '
Inclination: 15.9 °
Azimuth: 279.5 °
VS: -395.55 '

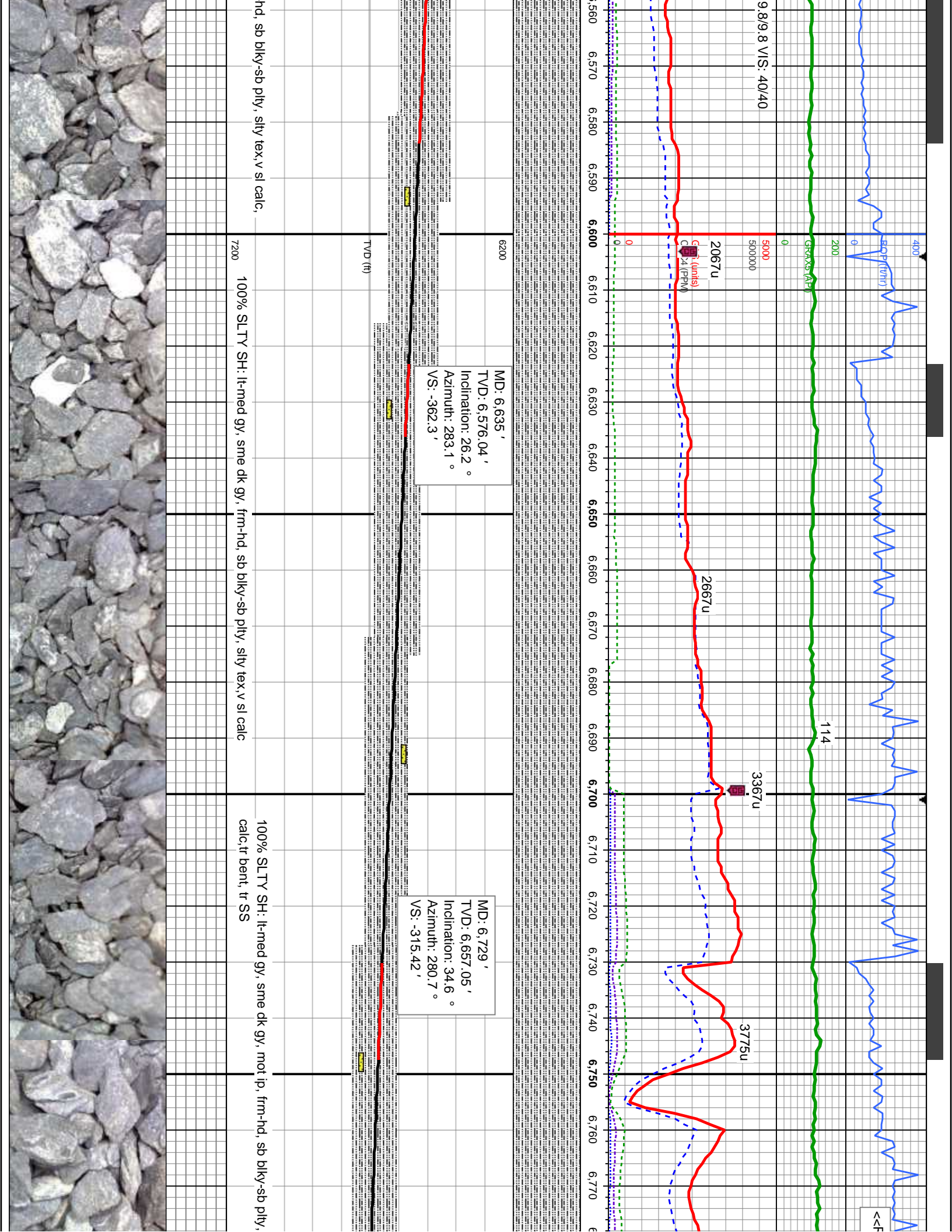
COLUMBINE LOGGING RIGGED UP ON
03/25/2014 USING MANNED TWO-PERSON
LOGGING WITH BLOOHOUND GAS
CHROMATOGRAPH UNIT #331HZ BEGAN ON
03/26/2014 @ 06:00 HRS MST

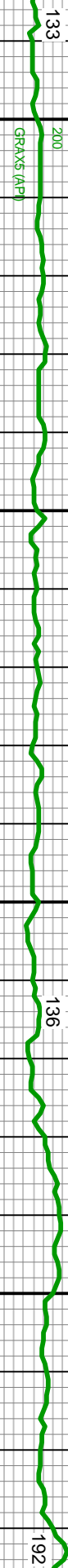
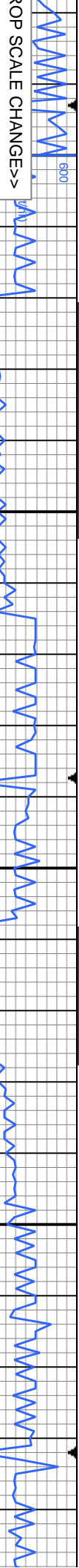
100% SLTY SH: lt-med gy, sme dk gy, mot ip, frm-hd, sb blk-sb
pty, stly tex, v sl calc, tr SS

100% SLTY SH: lt-med gy, sme dk gy, mot ip, frm-
tr SS

83
66
50
33
16







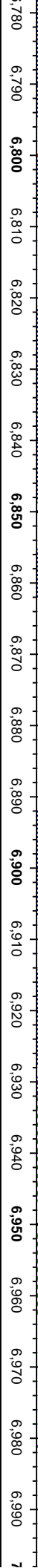
MW: 9.8/9.8 VIS: 39/40

MW: 10/9.9 VIS: 39/39



<<GAS SCALE CHANGE>>

REPLACED GAS LINE



6200

MD: 6,824 '
TVD: 6,732.56 '
Inclination: 40.1 °
Azimuth: 275.1 °
VS: -258.12 '

MD: 6,918 '
TVD: 6,800.25 '
Inclination: 47.7 °
Azimuth: 272 °
VS: -193.01 '

Sharon Springs Top:
MD: 6933'
TVD: 6811'

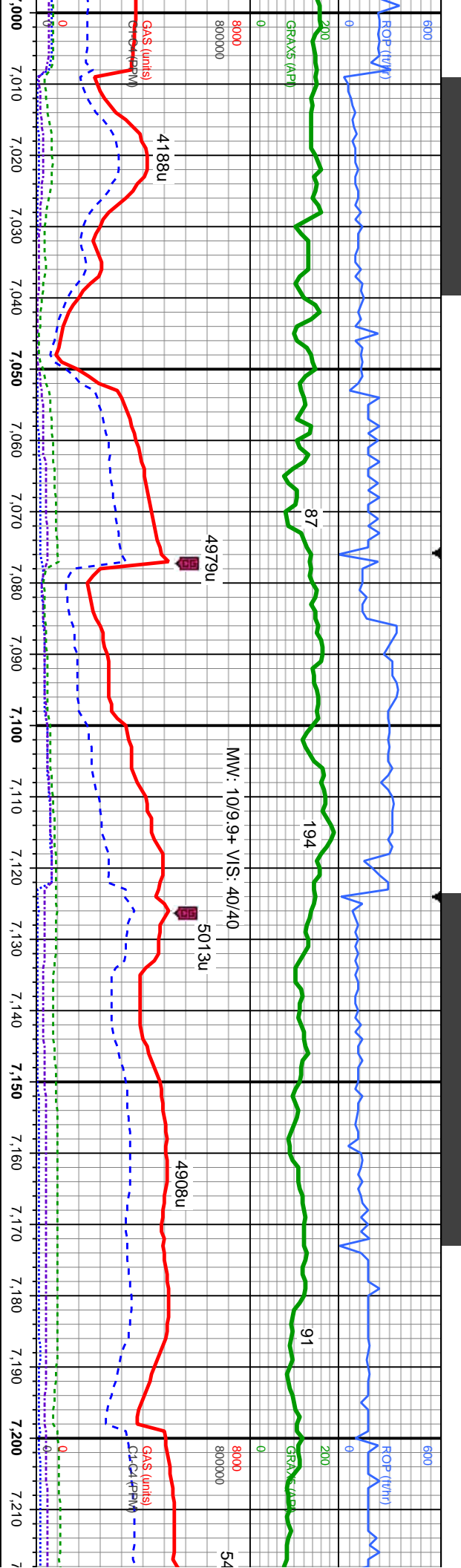
<<TVD SCA

stly tex, non-v sl

100% SLTY SH: lt-med gy, sme dk gy, mot ip, frm-hd, sb blkly-sb plty, stly tex, non-v sl
calc, mod bent, tr SS: OIL SHOW: dim lt yel cut, dim yel-gn thn blotchy ring, no str

100% SLTY SH: lt-med gy, sme dk gy, mot ip, frm-hd, prod hd, britfri, sb blkly-sb plty,
stly tex, non-v sl calc, abnt bent; OIL SHOW: dim lt gn slow cut, dim yel-gn thn ring, no
str, no od





LE CHANGE>>

Niobrara Top:
MD: 7028'
TVD: 6870'

Niobrara B Chalk Top :
MD: 7181'
TVD: 6931'

MD: 7,108 '
TVD: 6,907.21 '
Inclination: 67.3 °
Azimuth: 267.8 °
VS: -37.31 '

MD: 7,202 '
TVD: 6,936.15 '
Inclination: 76.8 °
Azimuth: 267.9 °
VS: 51.74 '

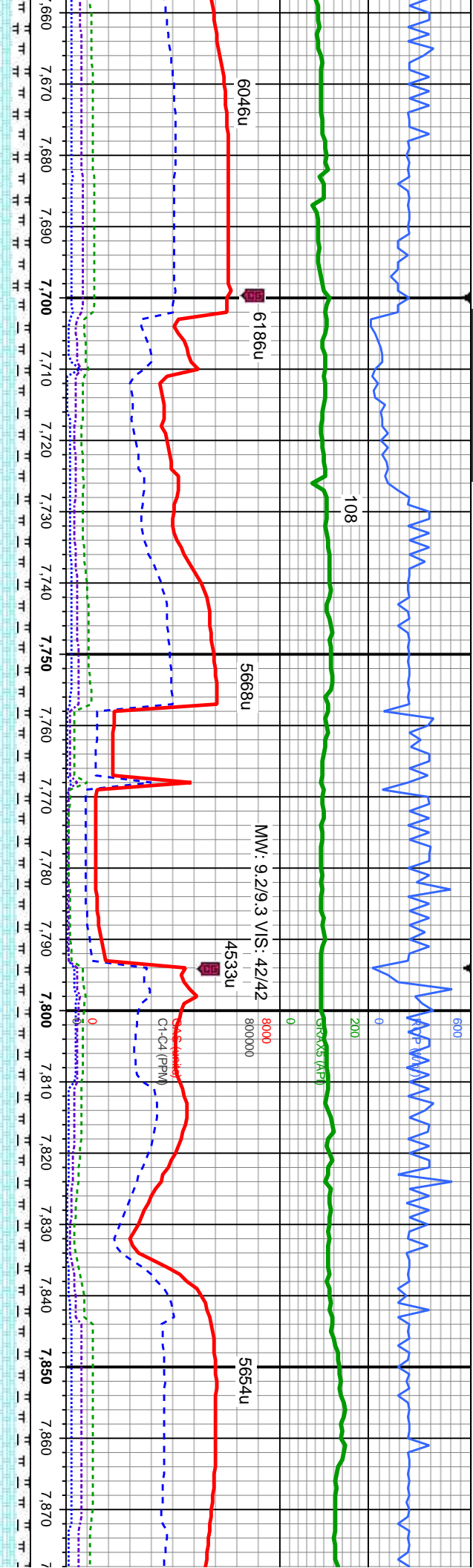
MD: 7,013 '
TVD: 6,860.47 '
Inclination: 53.6 °
Azimuth: 270.3 °
VS: -119.61 '

60% SLTY SH: lt-med gy, sme dk gy, mot ip, frm-hd, sb blk-y-sb pty, slty tex, non-v sl calc, abnt bent; 40% CHK: lt-med gy, tr wh, sb blk-y-sb pty, frm-occ brt, rthy tex, abnt bent, mt; calc; OIL SHOW: mod bri gn cut, mod bri gn ring, solid gn-yel resdl str, no od

60% CHK: lt-med gy, tr wh, sb blk-y-sb pty, frm-occ brt, rthy tex; 40% SLTY SH: lt-med gy, sme dk gy, mot ip, frm-hd, sb blk-y-sb pty, slty tex, non-v sl calc, abnt bent, mt; calc; OIL SHOW: mod bri gn cut, mod bri gn ring, solid gn-yel resdl str, no od

75% CHK: lt-med gy, sme dk gy, mot ip, frm-hd, sb blk-y-sb pty, slty tex, non-v sl calc, abnt bent, mt; calc; OIL SHOW: mod bri gn cut, mod bri gn ring, solid gn-yel resdl str, no od



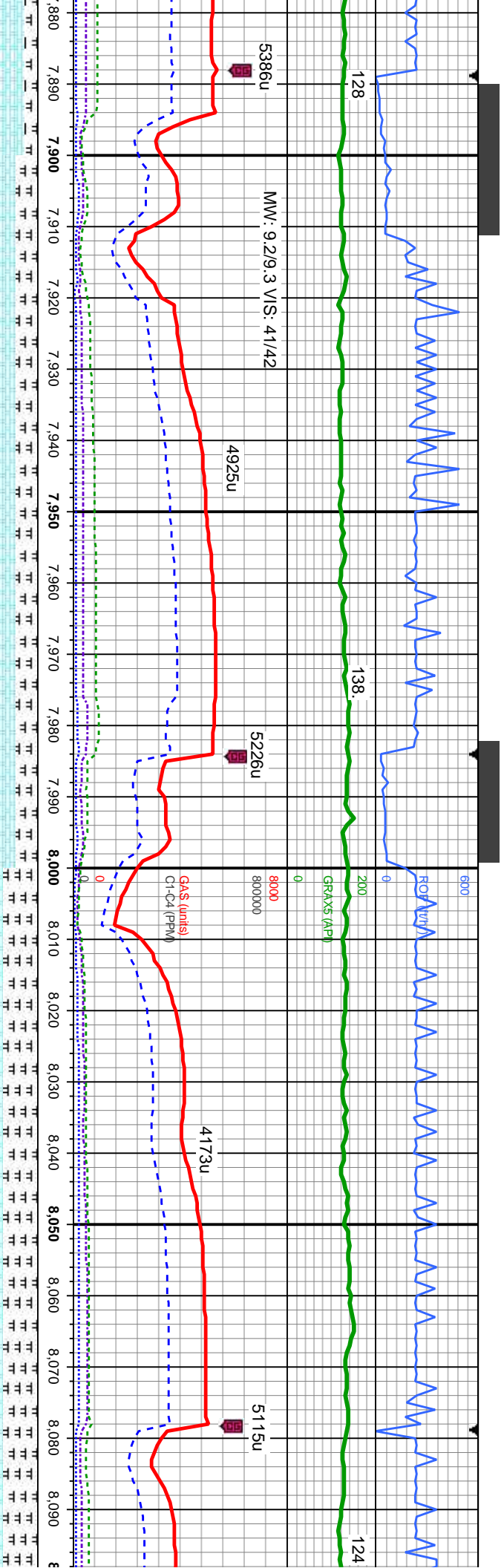


MD: 7,729 '
TVD: 6,947.95 '
Inclination: 90.1 °
Azimuth: 270.8 °
VS: 578.74 '

MD: 7,824 '
TVD: 6,947.46 '
Inclination: 90.5 °
Azimuth: 270.6 °
VS: 673.7 '

n-occ brit, rthy tex, v calc: 20%	85% CHK: ltgy- wh- crm occ m gy - brn, sbbkly-bkly, fri - brit, mot wxy occ rthy, occ	85% CHK: ltgy- wh- crm occ m gy - brn, sbbkly-bkly, fri - brit, mot wxy occ rthy, occ
rthy tex, sb ply - sb blkly, arg-sltly,	banding 15% MRLST: m gy- gy brn, sb ply- sb blkly, mod firm- sft, sme mo- lam,	15% MRLST: m-ck gy- blk, blkly-sb blkly, mod firm- sft, sme mo,
l, string milky cut, bri bl solid ring, sl	sl arg- rthy: OIL SHOW: bri bl-wh string milky cut, sme yel min flor, mod bl resdl	inoc fos: OIL SHOW: mod bri gn-yel cut, mod bri gn ring, solid gr
	ring, no od	no od



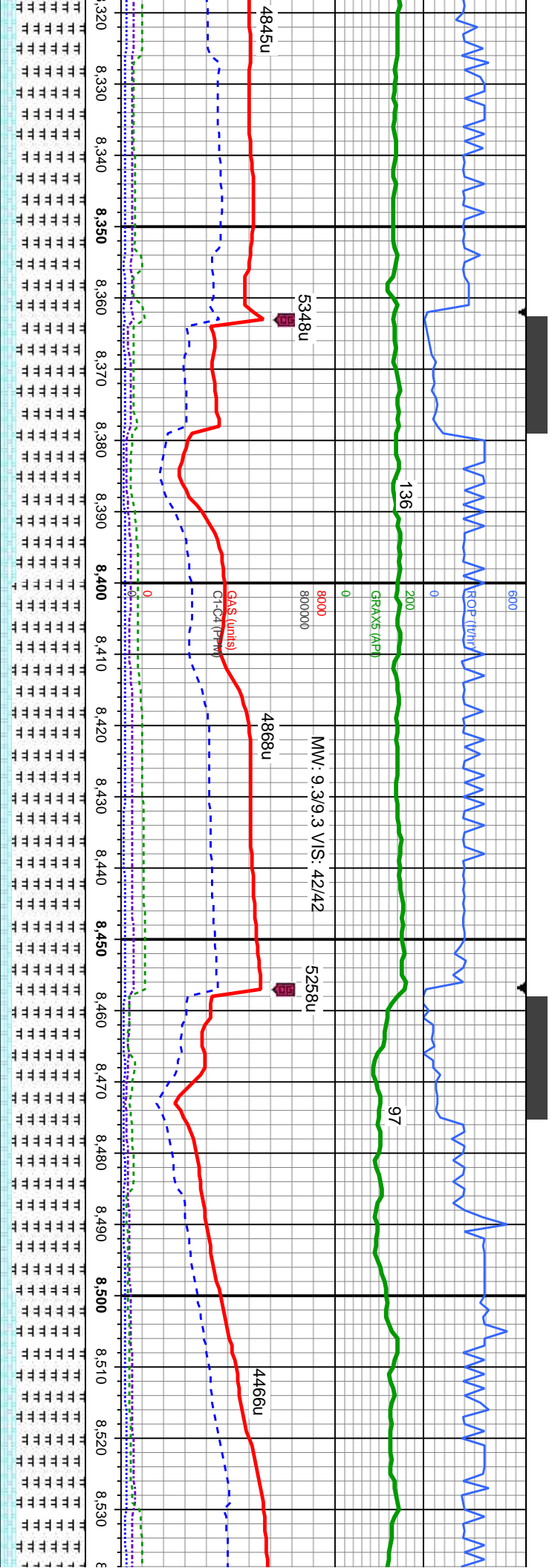


MD: 7.919 '
TVD: 6,947.13 '
Inclination: 89.9 °
Azimuth: 271.4 °
VS: 768.68 '

75% CHK: ltgy- gy- brn tr wh, sb blk- blk, fri- bri, mot wxy occ rthy, occ banding
xl cal 25% MRLST: m- dk gy- blk, blk- sb blk- mod firm-sft, sme mot, arg- rthy,
tr inoc fos: OIL SHOW: bri bl-wh stmg milky cut, sme yel min flr, mod lt bl resd
ring, no od

60% CHK: lt gy- crm occ mgy- brn, sb blk, fri- bri, mot, wxy occ rthy, occ bnd; occ
inoc fos, 40% MRLST: m- dk gy- blk, blk- sb blk- mod firm-sft, sme mot, arg- rthy;
tr inoc fos frags, yel flr tr bent. OIL SHOW: bri bl-wh stmg milky cut, sme yel min
flr, mod lt bl resd ring, no od





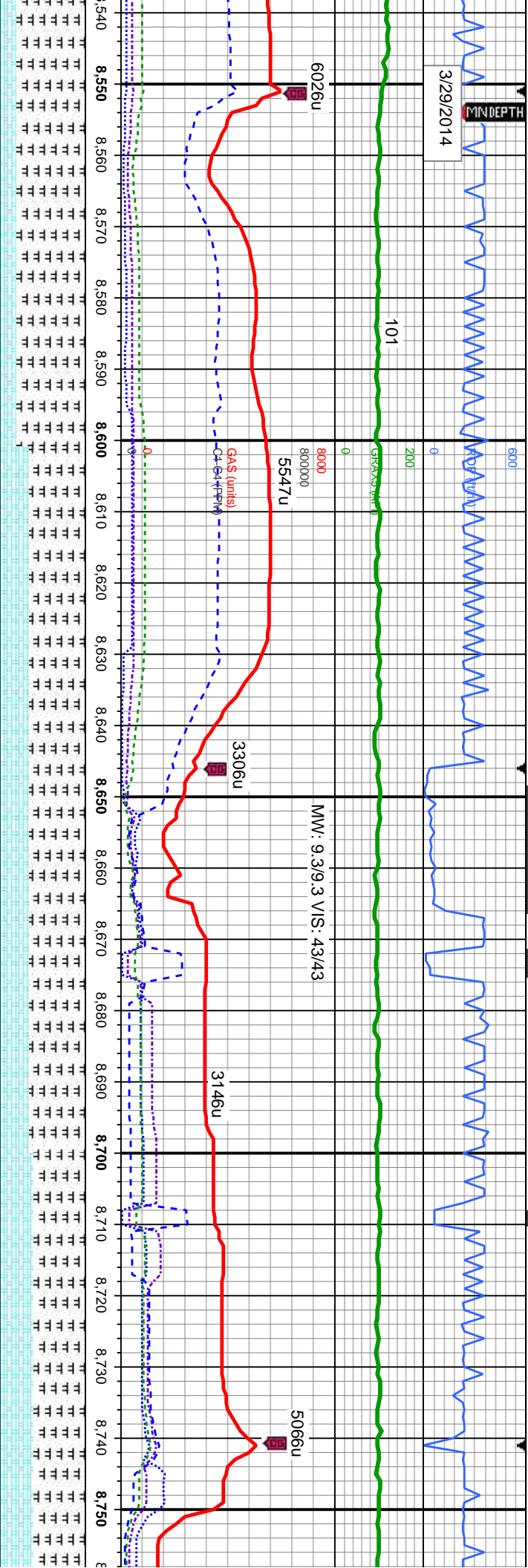
ST : m gy - gy- brn, sb pty- sb blk, mod firm- sft, sm mot-lam, sl	85% MRLST: med gy - gy- brn, sb pty- sb blk, mod firm- sft, sm mot-lam, mod arg- rthy 15% CHK: lt gy- crm occ mgy- brn, sb blk, fri- brit, mot, wxy occ	80% MRLST: med- dk gy- blk, incl 20% CHK: lt gy- wh- crm bent: OIL SHOW: bri lt bl-wh
20% CHK: lt gy- crm occ mgy- brn, sb blk, fri- brit, mot, wxy occ	occ rthy, occ bnd, tr inoc fos, no flor: OIL SHOW: bri bl-wh stmg milky cut, sme yel min flor, mod lt bl resd ring, no od	no od
mod, occ inoc fos, no flor: OIL SHOW: bri bl-wh stmg milky cut, sme yel min flor, mod lt bl resd ring, no od		
7500		
6500		
TVd (ft)		

MD: 8,486 '
TVd: 6,948.44 '
Inclination: 89.3 °
Azimuth: 273.2 °
VS: 1,335.64 '



MINDEPTH

3/29/2014



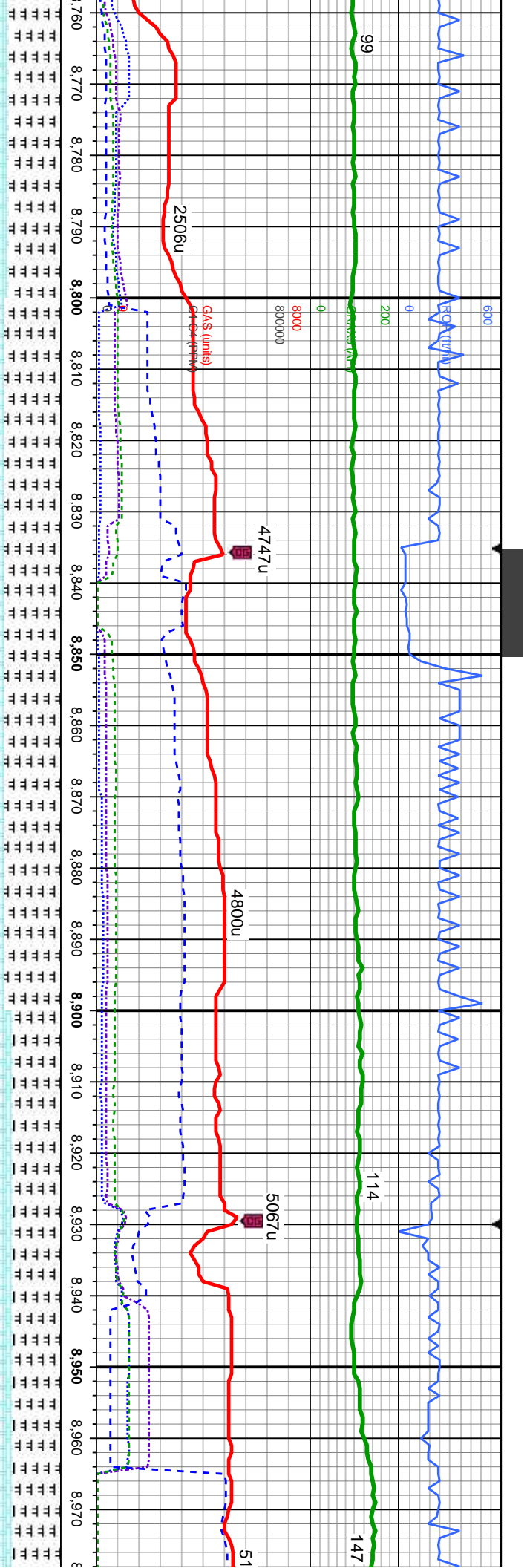
TVD (ft)

sb blkly, mod frm-sft, sne mot, arg- rthy, tr cal
occ med gy, fri- brit, mod wxy occ rthy, tr fos incl, rr
stng mlky cut, tr yel min flor, mod lt bl resdl ring,

65% MRLST: m gy - gy- brn, sb ply- sb blkly, mod frm- sft, sm mot-lam, sl arg- rthy
35% CHK: lt gy- crm occ mgy- brn, sb blkly, fri- brit, mot, wxy occ rthy, occ bnd, occ
inoc fos, no flor, rr pyr; OIL SHOW: bri lt bl-wh mlky stng cut, bri wh thk ring, solid bri
bl resdl stn, no od

60% MRLST: m gy - gy- crm, sb ply- sb blkly, m
rthy; 40% CHK: lt gy- crm occ mgy- brn, sb blkly,
abt inoc fos, no flor, tr pyr; OIL SHOW: bri lt bl
mod lt bl resdl ring, no od



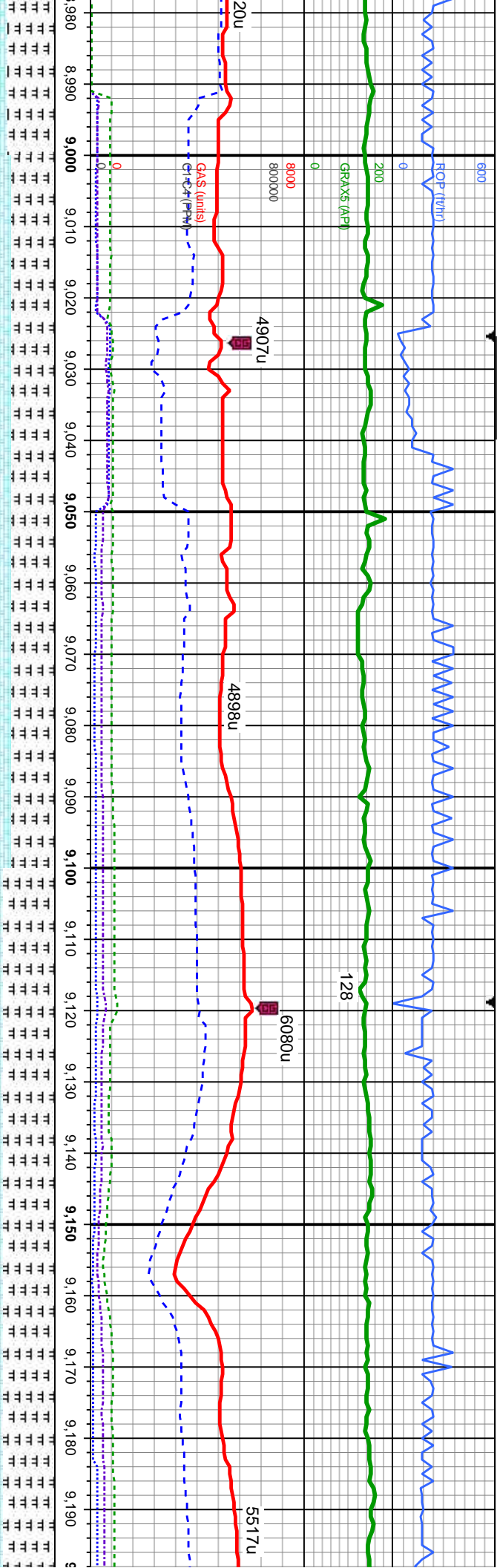


MD: 8,865'
TVD: 6,951.59'
Inclination: 90 °
Azimuth: 272.9 °
VS: 1,714.61'

TVD (ft)

od firm- sft, sm mot-lam, sl arg- rthy- bri, mot, wxy occ rthy, occ bnd, wh stmg mlky cut, tr yel min flor,	65% MRLST: m gy - gy- crm, sb pty- sb blk, mod firm- sft, sm mot-lam, sl arg- rthy: 35% CHK: lt gy-crm occ mgy- brn, sb blk, fri- bri, mot, wxy occ rthy, tr inoc fos, calc: OIL SHOW: bri lt bl-wh stmg mlky cut, tr yel min flor, mod lt bl resd ring, no od	55% MRLST: m gy - gy- crm, sb pty- sb blk, mod firm- sft, sm mot-la 45% CHK: lt gy-crm occ mgy- brn, sb blk, fri- bri, mot, wxy occ rthy, SHOW: bri lt bl-wh stmg mlky cut, mod lt bl resd ring, no od; OIL SH cut, mod bri gn ring, solid gn-yel resd stn, no od
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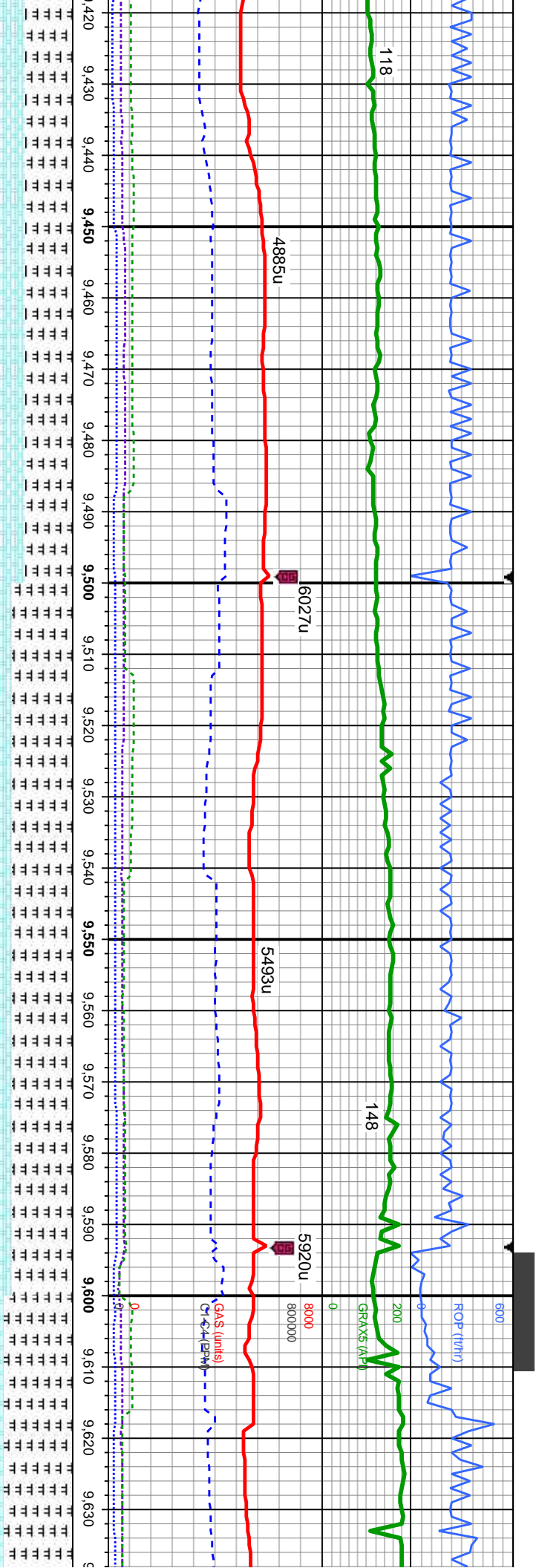
MD: 9,055 '
TVD: 6,951.92 '
Inclination: 89.8 °
Azimuth: 272.9 °
VS: 1,904.6 '

m, sl arg- rthy;
tr pyr, calc: OIL
DW: mod bri gn

50% MRLST: m gy - gy- crm, sb ply- sb blk, mod firm- stf, sm mol-lam, sl arg- rthy;
50% CHK: lt gy-crm occ mgy- brn, sb blk, fri- brit, mot, wxy occ rthy, tr inoc fos, calc;
OIL SHOW: bri lt bl-wh mlky stmg cut, bri wh thk ring, solid bri bl resdl stn, no od

60% MRLST: m gy - dk gy, sb ply- sb blk, mod firm- stf, sm mol-lam, sl arg- rthy;
40% CHK: lt gy-crm occ mgy- brn, sb blk, fri- brit, mot, rthy, calc; OIL SHOW: mod bri
gn cut, mod bri gn ring, solid gn-yel resdl stn, no od



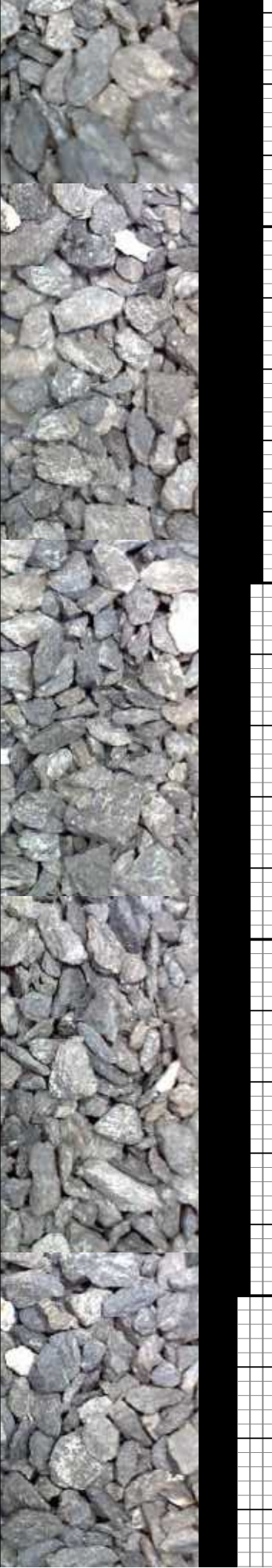


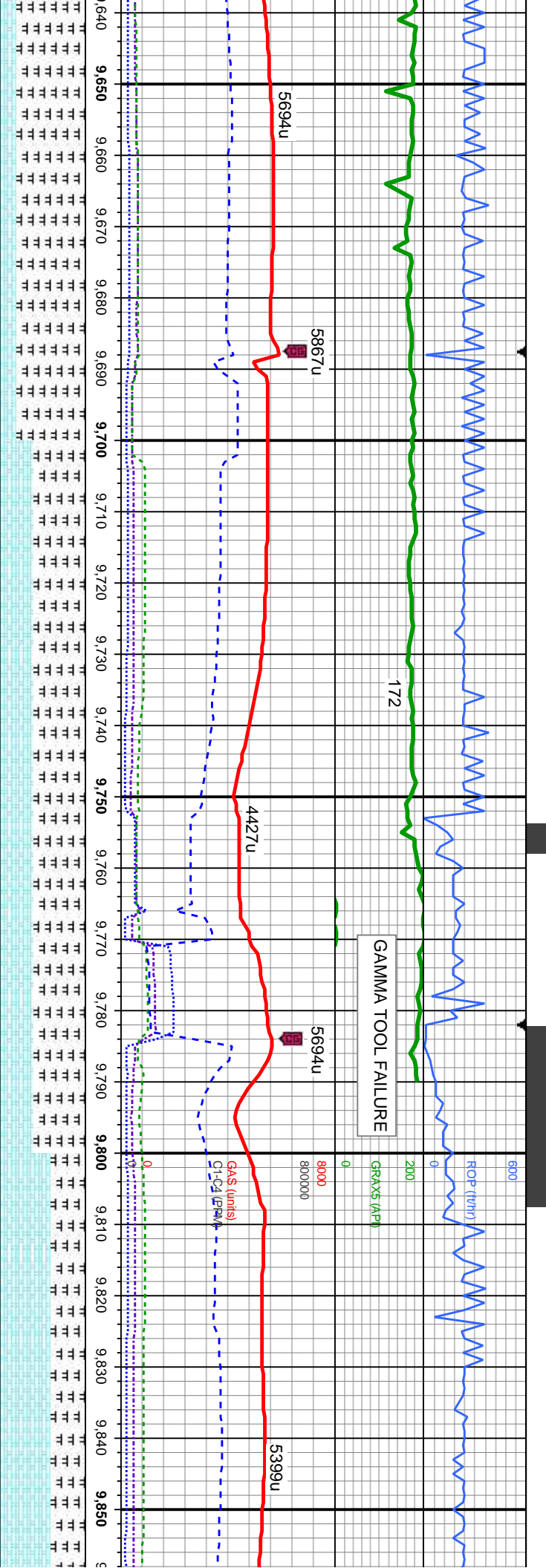
MD: 9,433'
TVD: 6,953.9'
Inclination: 90.2 °
Azimuth: 273.5 °
VS: 2,282.55'

ST: dk-med gy, mod frm, brit-tri ip, gt tex, sb ply - sb blk, arg-slt, calc;
med gy-dk gy, sb blk-sb ply, frm-occ brit, rthy tex, abnt bent, mt; calc;
V: bri lt bl-wh mlky stmg cut, bri wh thk ring, solid bri bl resd stn, no od

70% MRLST: m gy - dk gy, sb ply- sb blk, mod firm- st, sm mot-lam, sl arg- rthy, 30%
CHK: lt gy-crm occ mgy- brn, sb blk, fri- brit, mot, rthy, calc; OIL SHOW: bri bl-wh stmg
mlky cut, sme yel min flr, mod lt bl resd ring, no od

80% MRLST: m gy - dk gy, tr l
CHK: lt gy-crm occ gy- brn, sl
mod bri gn ring, solid gn-yel r

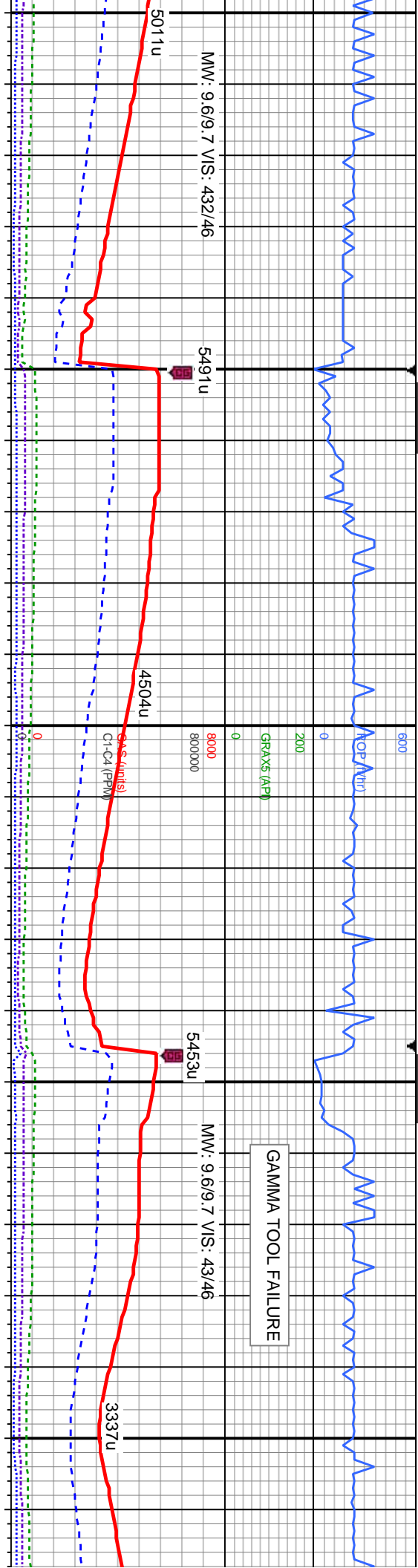




MD: 9,717 '
TVD: 6,951.67 '
Inclination: 90.7 °
Azimuth: 273.6 °
VS: 2,566.47 '

t gy, sb pily - sb blk, mod frm - sft, mot, sl arg - rthy; 20% o blk, fri - brit, mot, rthy, calc; OIL SHOW: mod bri gn cut, escl stn, no od		60% MRLST: dk-med gy, mod frm, brit-fri ip, gt tex, sb pily - sb blk, arg-sily, calc 40% CHK: lt-med gy, sb blk-sb pily, frm-occ brit, rthy tex, mtx,calc; OIL SHOW: bri bl sting mlky cut, solid lt bl resdl ring, no od		60% CHK: lgy- wh- crm occ m gy - brn, sbblk- MRLST: m-dk gy- blk, blk-sb blk, mod frm - sft OIL SHOW: bri lt bl-wh mlky sting cut, bri wh thk	
				7500	





MD: 10,380 '
TVD: 6,948.7 '
Inclination: 89.5 °
Azimuth: 273.3 °
VS: 3,229.21 '

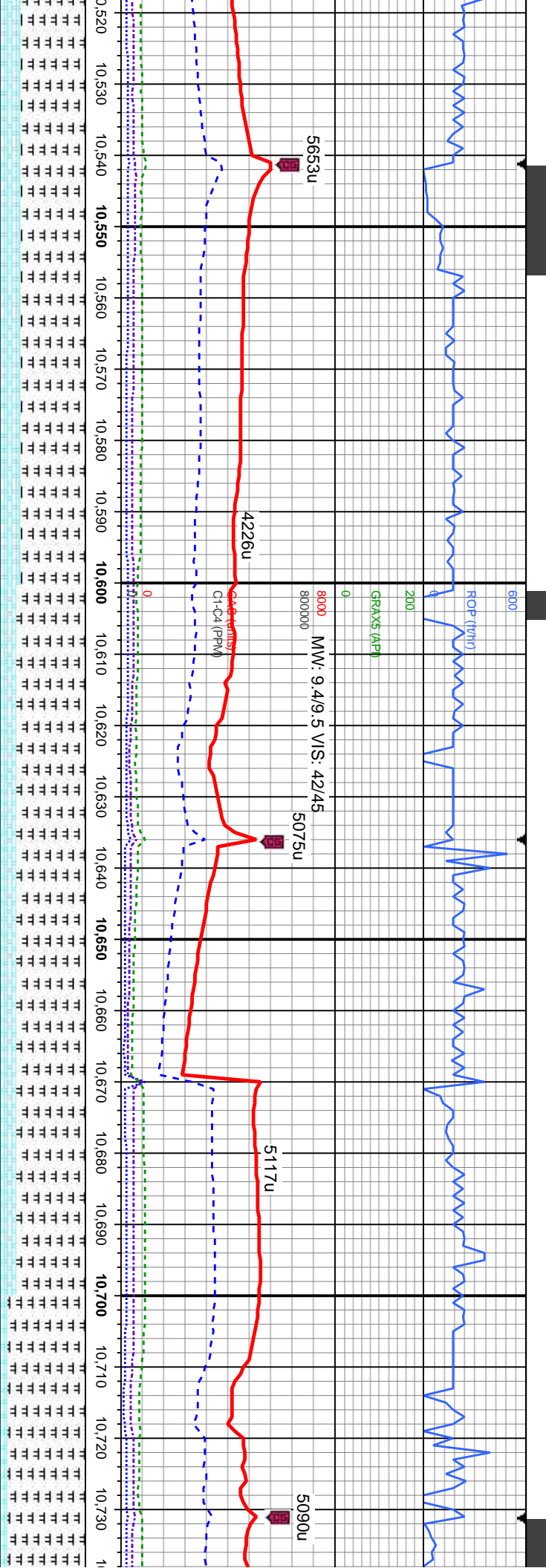
MD: 10,474 '
TVD: 6,949.36 '
Inclination: 89.7 °
Azimuth: 271.9 °
VS: 3,323.2 '

70% MRLST: med- dk gy-blk, blk- sb blk, mod frm-sft, sme mot, arg- rthy, tr cal incl
30% CHK: lt gy- wh- crm occ med gy, fri- brit, mod wxy occ rthy; abnt bent; OIL SHOW:
dim lt gn slow cut, dim yel- gn thn ring, no stn, no od

70% MRLST: med- dk gy-blk, blk- sb blk, mod frm-sft, sme mot, arg- rthy, tr cal incl
30% CHK: lt gy- wh- crm occ med gy, fri- brit, mod wxy occ rthy; abnt bent, rr pyr; OIL
SHOW: mod bri gn cut, mod bri gn ring, solid gn- yel resdl stn, no od

75% MRLST: r
25% CHK: mgy
mod bri gn cut





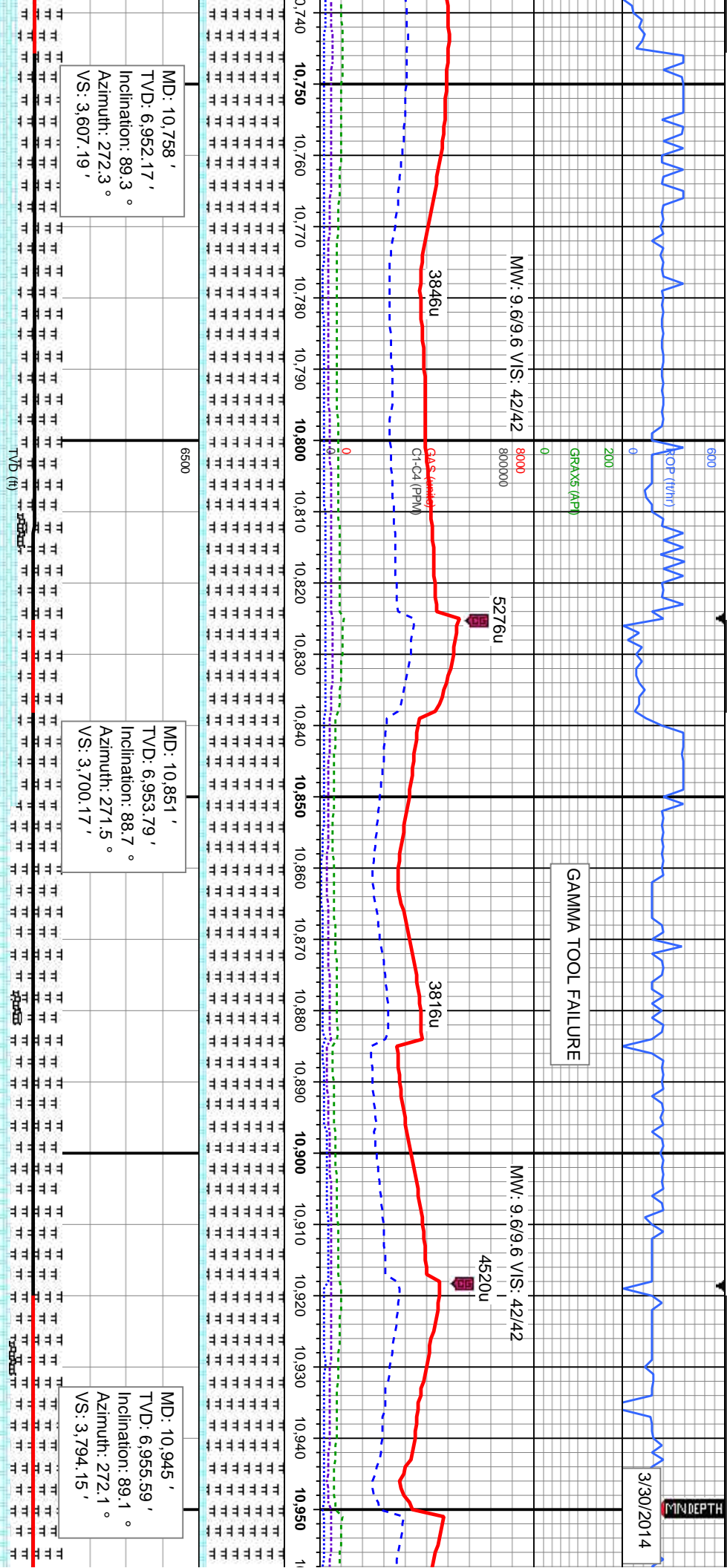
MD: 10,568 '
TVD: 6,950.18 '
Inclination: 89.3 °
Azimuth: 272.6 °
VS: 3,417.2 '

MD: 10,664 '
TVD: 6,951.18 '
Inclination: 89.5 °
Azimuth: 272.7 °
VS: 3,513.19 '

80% MRLST: dk-med gy, mod frm, britfri ip, gt tex, sb pily - sb blk, arg-sily, calc
20% CHK: lt-med gy, sb blk- sb pily, frm-occ brit, rthy tex, mt;calc, abnt bent ; OIL
SHOW: mod bri bl-gn cut, mod bri gn ring, solid gn-yei resd sln, no od

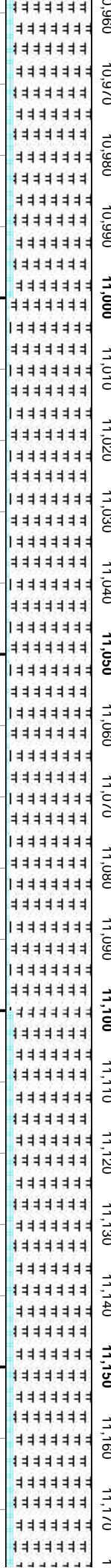
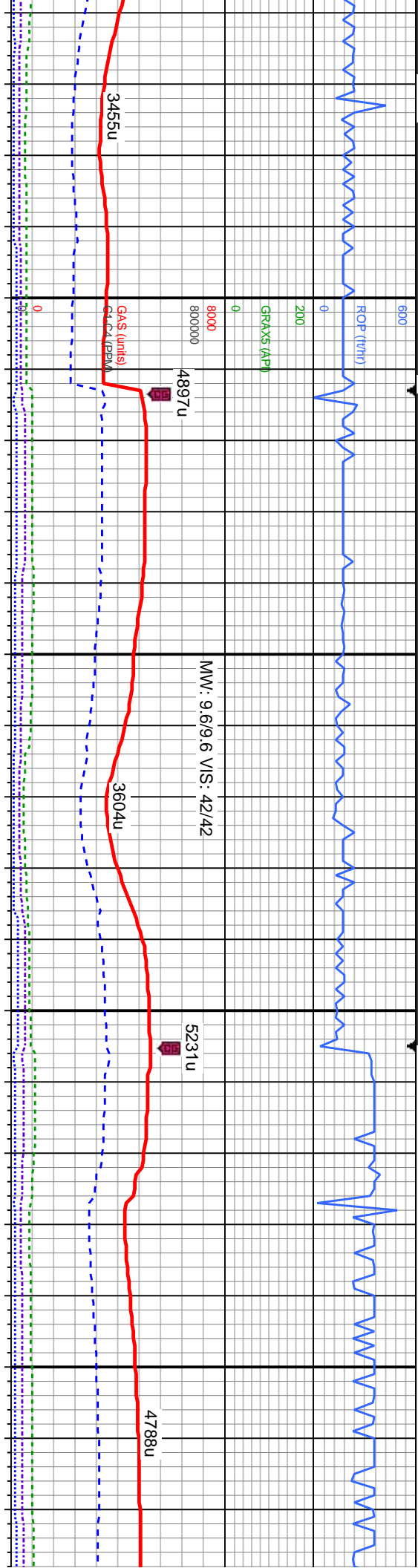
90% MRLST: med- dk gy-blk, bl
10% CHK: lt gy- brn occ med g
dim lt gn slow cut, dim gn thn r





90% MRLST: med- dk gy-blk, blk- sb blk, mod frm-sft, sme mot, arg- rthy, tr cal incl	90% MRLST: med- dk gy-blk, blk- sb blk, mod frm-sft, sme mot, arg- rthy, tr cal incl
10% CHK: lt gy- brn occ med gy, fr- brit, mod wxy occ rthy; mod bent; OIL SHOW: dim	10% CHK: lt gy- brn occ med gy, fr- brit, mod wxy occ rthy; mod bent; OIL SHOW: dim
lt gn slow cut, dim yel-gn thin ring, no stn, no od; OIL SHOW: dim lt gn slow cut, dim	lt gn slow cut, dim yel-gn thin ring, no stn, no od; OIL SHOW: dim lt gn slow cut, dim
7500 yel-gn thin ring, no stn, no od	7500 yel-gn thin ring, no stn, no od





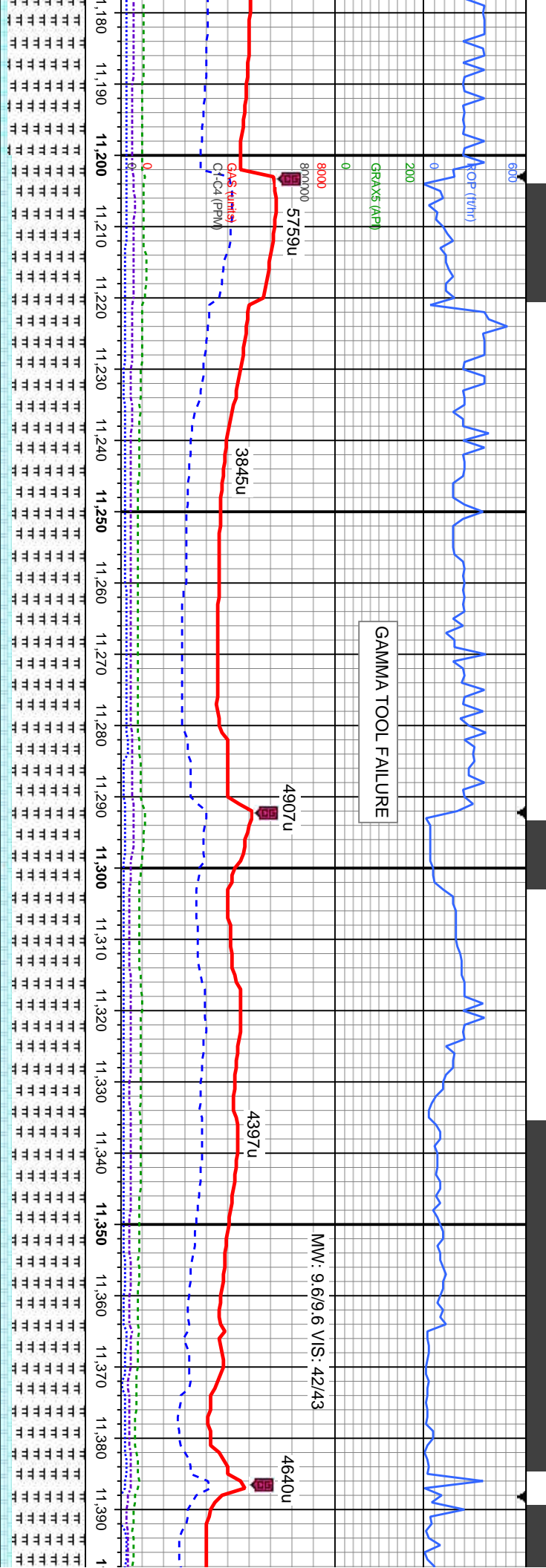
MD: 11,040 '
TVD: 6,956.75 '
Inclination: 89.5 °
Azimuth: 271.8 °
VS: 3,889.14 '

MD: 11,134 '
TVD: 6,956.75 '
Inclination: 90.5 °
Azimuth: 271.9 °
VS: 3,983.13 '

95% MRLST: med- dk gy-blk, blk- sb blk, mod frm-sft, sme mot, arg- rthy, tr cal incl 5%
CHK: It gy- crm, fr- brit, mod wxy occ rthy; mod bent, rr pyr; OIL SHOW: mod bri bl-gn
cut, mod bri gn ring, solid gn-yel resdl str, no od

90% MRLST: dk-med gy- blk, mod frm, brit-fri ip, gt tex, sb pty - sb blk
10% CHK: med gy-dk gy, sb blk-sb pty, frm-occ brit, rthy tex, abnt bent
SHOW: mod bri bl-gn cut, mod bri gn ring, solid gn-yel resdl str, no od



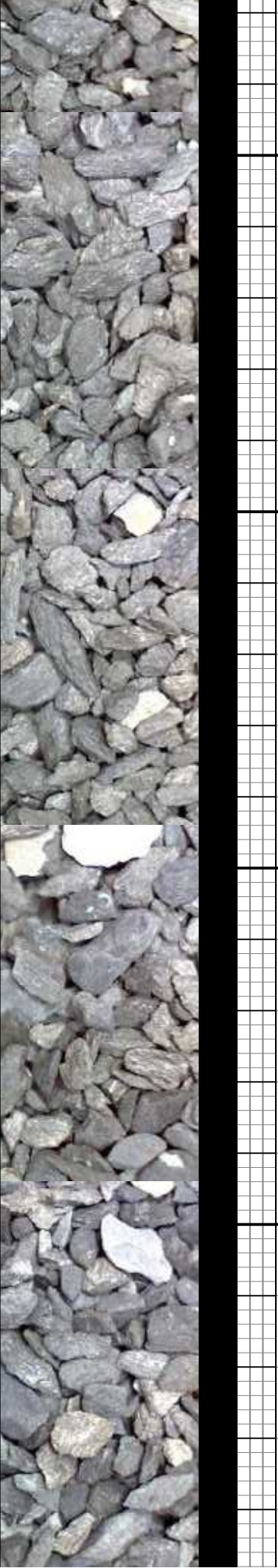


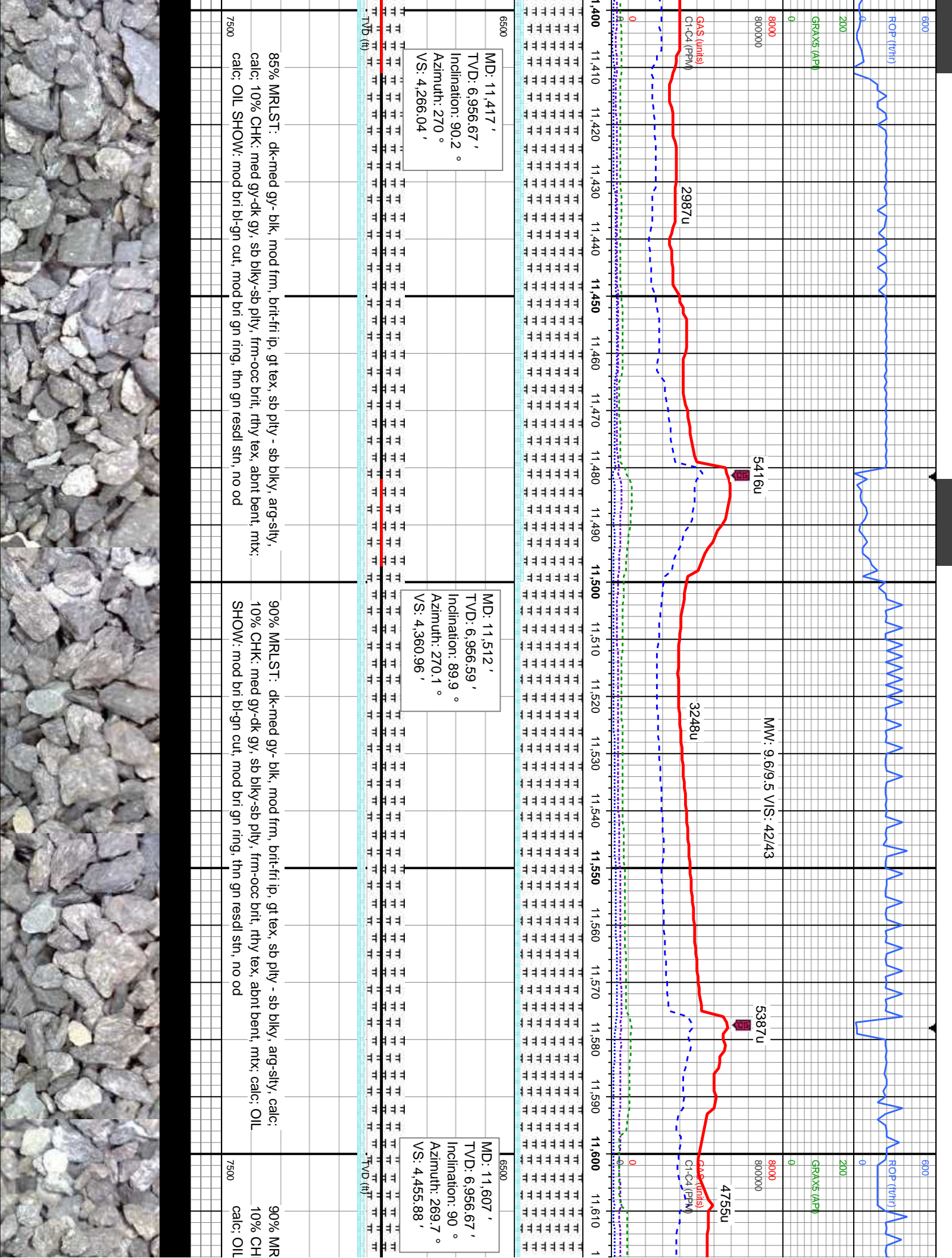
MD: 11,228 '
TVD: 6,956.18 '
Inclination: 90.2 °
Azimuth: 271.2 °
VS: 4,077.12 '

MD: 11,323 '
TVD: 6,956.43 '
Inclination: 89.5 °
Azimuth: 270.7 °
VS: 4,172.09 '

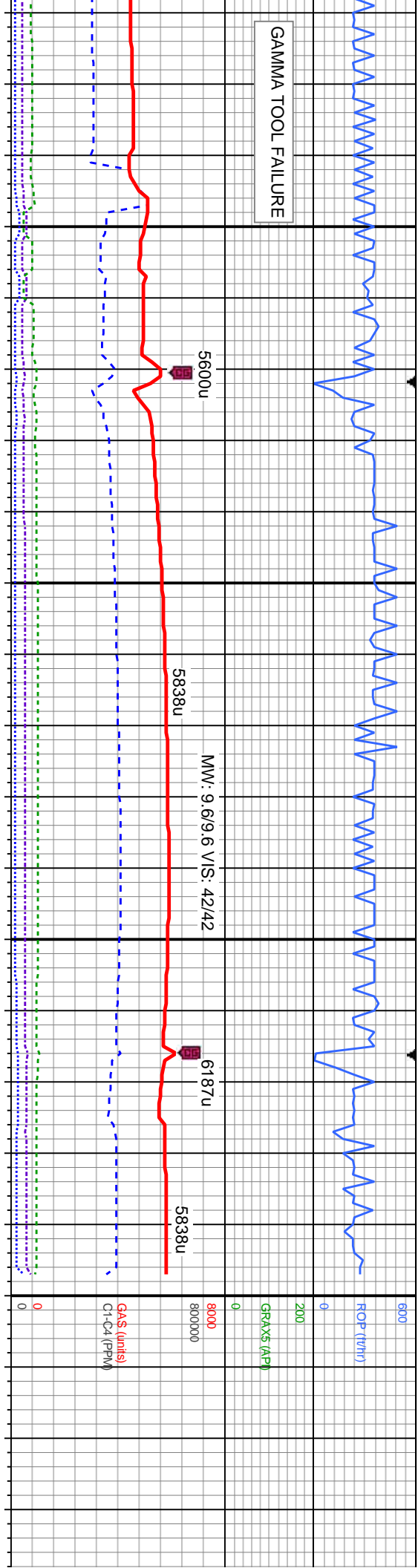
85% MRLST: dk-med gy- blk, mod frm, britfri ip, gt tex, sb pty - sb blk, arg-sily, calc;
10% CHK: med gy-dk gy, sb blk-sb pty, frm-occ brit, rthy tex, abnt bent, mtx; calc; OIL
SHOW: bri bl-gn cut, mod bri gn ring, solid gn-yel resdl stn, no od

85% MRLST: dk-med gy- blk, mod frm, britfri ip, gt tex, sb pty - sb blk, arg-sily, calc;
10% CHK: med gy-dk gy, sb blk-sb pty, frm-occ brit, rthy tex, abnt bent, mtx; calc; OIL
SHOW: bri bl-gn cut, mod bri gn ring, solid gn-yel resdl stn, no od





GAMMA TOOL FAILURE



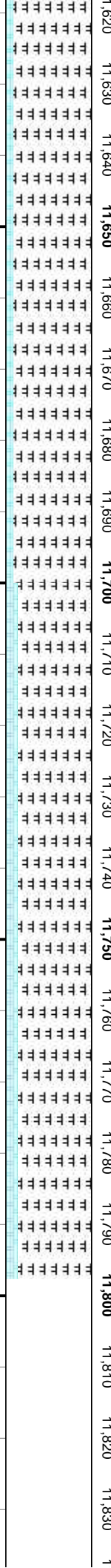
5600u

5838u

6187u

5838u

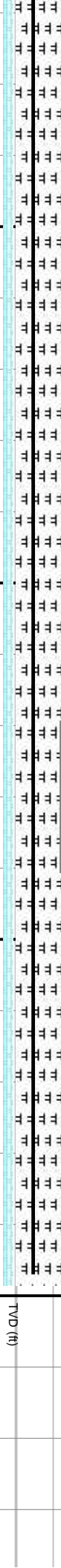
MW: 9.6/9.6 VIS: 42/42



MD: 11,731 '
TVD: 6,956.46 '
Inclination: 90.2 °
Azimuth: 269.8 °
VS: 4,579.75 '

MD: 11,797 '
TVD: 6,955.1 '
Inclination: 90.2 °
Azimuth: 269.8 °

TD @ 11797' MD
@ 08:25 HRS MST
on 3/30/14



TVD (ft)

Thank you for using
Columbine Logging, Inc.

LST: dk-med gy- blk, mod frm, brit-fri, gt tex, sb ply - sb blk, arg-sly, calc;
K: med gy-dk gy, sb blk, sb ply, pred frm, occ brit, rthy tex, mod bent, mtx;
SHOW: mod bri bl-gn cut, mod bri gn ring, thn gn resd stn, no od

85% MRLST: med gy-dk gy, tr blk, stf-mod frm, brit-fri, gt tex, sb ply-sb blk, arg-sly,
calc; 10% CHK: med gy-dk gy, sb blk, sb ply, mod frm-occ brit, rthy tex, mod bent,
mtx; calc; OIL SHOW: bri bl string milky cut, solid lt bl resd ring, no od

7500



