



Scale: 5" / 100'
Measured Depth Log

Well Name 05123391820000Burkhardt 37N-3HZ

Location NWN/NE SEC 3, T1N, R66W

State COLORADO County WELD

Country USA Rig Number XTREME 6

API Number 05-123-39182-000C AFE # 2087421

Region DJ BASIN Field WATTENBERG

Spud Date 9/17/2014 Drilling Completed 9/21/2014

Surface Coordinates 420 FNL 1890 FEL
Lat/Long 40.0861619/-104.7600547

Ground Elevation 5062' K.B. Elevation 5092'

Logged Interval 6850' To 11850' Total Depth 11850'

Formation NIOBRARA C CHALK

Type of Drilling Fluid LSND

Operator

Company Anadarko

Address GRANITE TOWER
1099 18TH ST. #1800
DENVER, CO 80202
(JG)

Geologist

Name MICHALE CHISAM

Company ANADARKO

Address GRANITE TOWER
1099 18TH ST. #1800
DENVER, CO 80202
(JG)

Other

WELLSITE GEOLOGISTS JASON BEACH, TED STOCK

Zone Color Coding

Oil
Note
Error

Condensate
Core
Water


























































Gas
Pressure
Seal

Rock Types

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

Accessories

Fossils

Fossils		Stringer	
 GASTROPOD	 ARGILLITE GRAIN	 HEAVY MINERAL	
 INOCERAMUS	 B BENTONITE	 K KAOLIN	
 OOLITE	 BITUMENOUS SUBSTANCE	 M MARCASITE	 ANHYDRITE STRINGER
 AMPHIPORA	 BRECCIA FRAGMENTS	 T MARLSTONE	 BENTONITE STRINGER
 BELEMNITE	 CALCAREOUS	 U MICACEOUS	 COAL STRINGER
 BIOCLASTIC	 CARBONACEOUS FLAKES	 X MINERAL CRYSTALS	 DOLOMITE STRINGER
 BRACHIOPOD	 A CHDCK	 N NODULES	 GYPSUM STRINGER
 BRYOZOA	 A CHLT	 P PHOSPHATE PELLETS	 LIMESTONE STRINGER
 CEPHALOPOD	 C COAL - THIN BEDS	 P PYRITE	 MARLSTONE (CALC) STRG
 CORAL	 Z DOLOMITIC	 B SALT CAST	 MARLSTONE (DOL) STRG
 CRINOID	 + FELDSPAR	 S SANDY	 SANDSTONE STRINGER
 ECHINOID	 ● FERRUGINOUS PELLET	 S SIDERITE	 SHALE STRINGER
 FISH	 Z FERRUGINOUS	 S SILICEOUS	 SILTSTONE STRINGER
 FORAMINIFERA	 Z ANHYDRITIC	 S GLAUCONITE	
 F FOSSIL	 - ARGILLACEOUS	 Z GYPSIFEROUS	 TUFFACEOUS

Oil Show

P PINPOINT

Engineering

Engineering

DEAD

EVEN

QUESTIONABLE

BIT

SPOTTED STAINING

CONNECTION (UP)

Porosity

[illegible]

Other Symbols

 DST INTERVAL  WIRELINe TESTED - LEFT **E** EARTHY

 FAULT  WIRELINe TESTED - RT **FX** FINELYXLN

 FORMATION TOP  DRILL STEM TEST **GS** GRANSTONE

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


 OIL SHOW  **MINDEPTH** MN DEPTH **MX** MICROXLN


 **MINDEPTH** MN DEPTH UP **MS** MUDSTONE

Rounding

 **MINDEPTH** MN DEPTH (DOWN) **A** ANGULAR **PS** PACKSTONE

 NORMAL FAULT **R** ROUNDED **WS** WACKESTONE

 OVERTURNED STRATA **B** SUBANG

 REVERSE FAULT **P** SUBRND


Sorting

 CASING **M** MODERATE

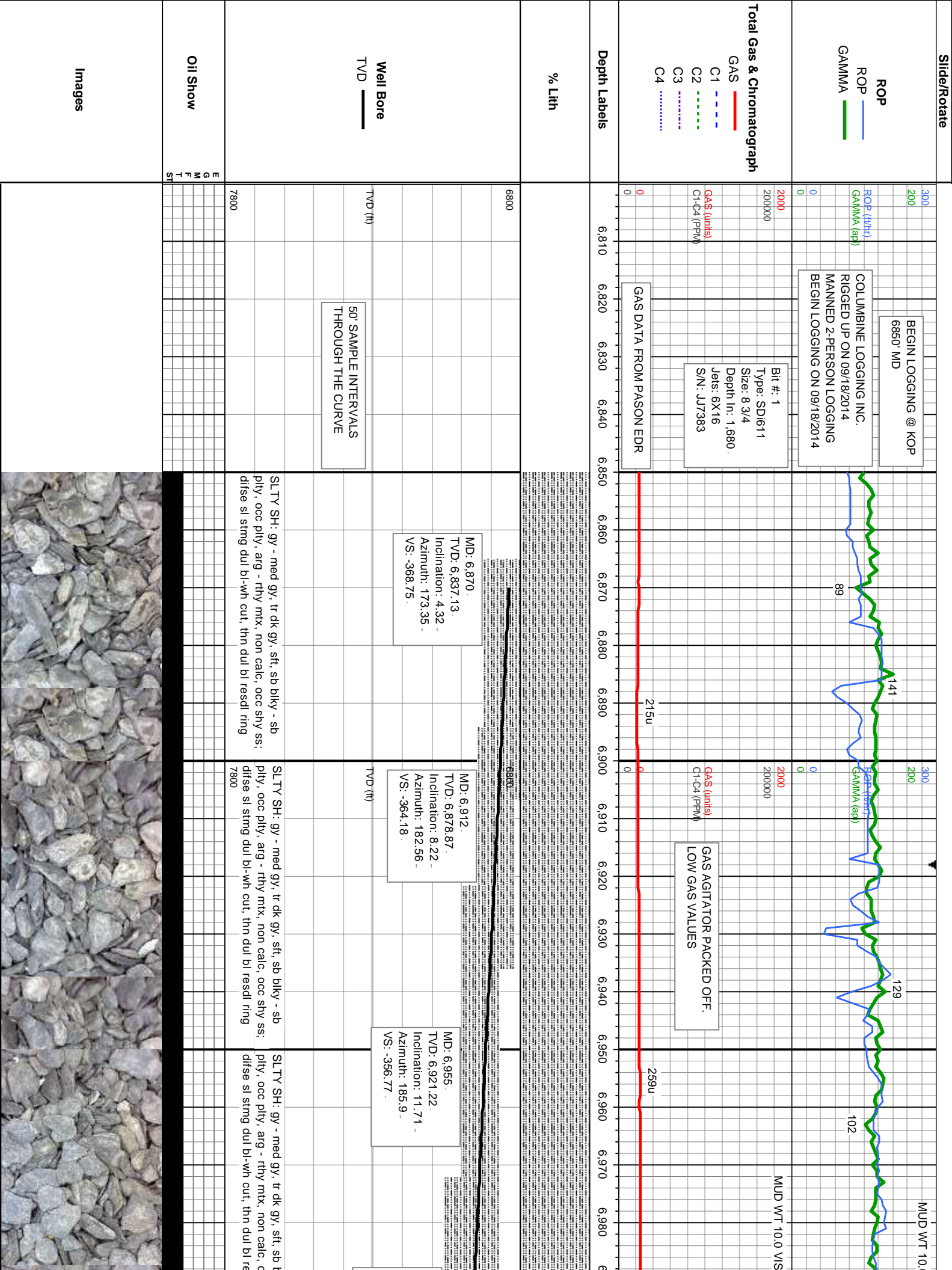
Textures

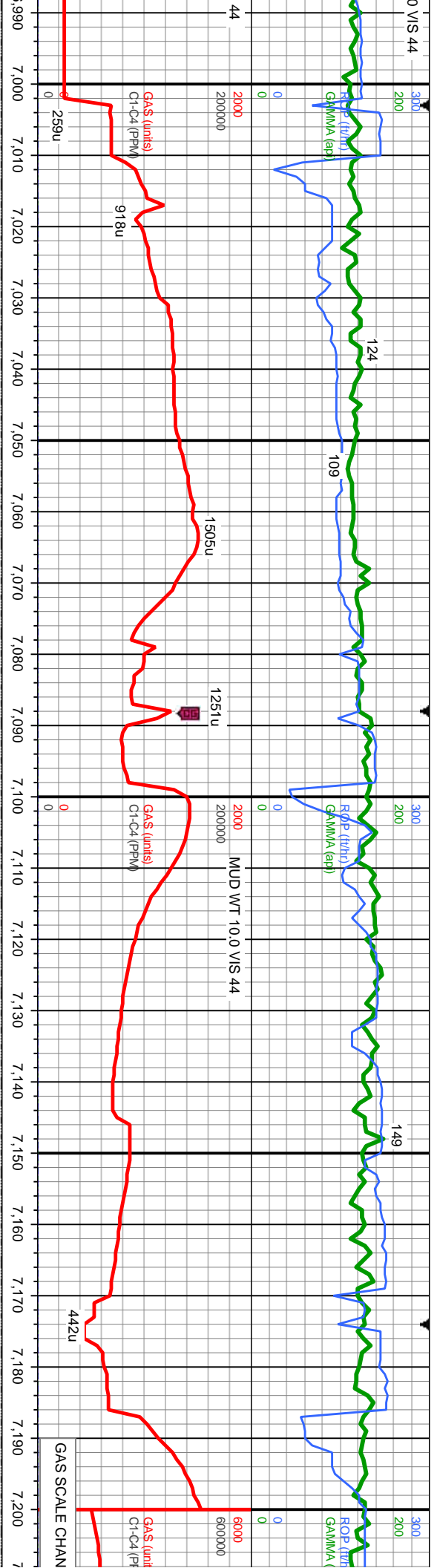
 SIDEWALL CORE (LEFT) **P** POOR

 SIDEWALL CORE (RIGHT) **BS** BOUNDSTONE **W** WELL

 SLIDE **C** CHALKY

 **SD** SURVEY **CX** CRYPTOXLN





MD: 6.997.
TVD: 6.961.9.
Inclination: 16.87 -
Azimuth: 188.21 -
VS: -346.49

MD: 7.040.
TVD: 7.002.51.
Inclination: 21.43 -
Azimuth: 186.34 -
VS: -332.5.

MD: 7.082.
TVD: 7.041.05
Inclination: 25.38 -
Azimuth: 184.55 -
VS: -315.9

MD: 7.125.
TVD: 7.079.3.
Inclination: 28.98 -
Azimuth: 182.25 -
VS: -296.3.

MD: 7.168.
TVD: 7.115.97.
Inclination: 33.89 -
Azimuth: 182.06 -
VS: -273.89.

SLTY SH: gy - med gy, tr dk gy, sft, sb bly - sb
ply, occ ply, arg - rthy mix, non calc, occ shy ss,
dise sl string dul bl-wh cut, thn dul bl resd ring

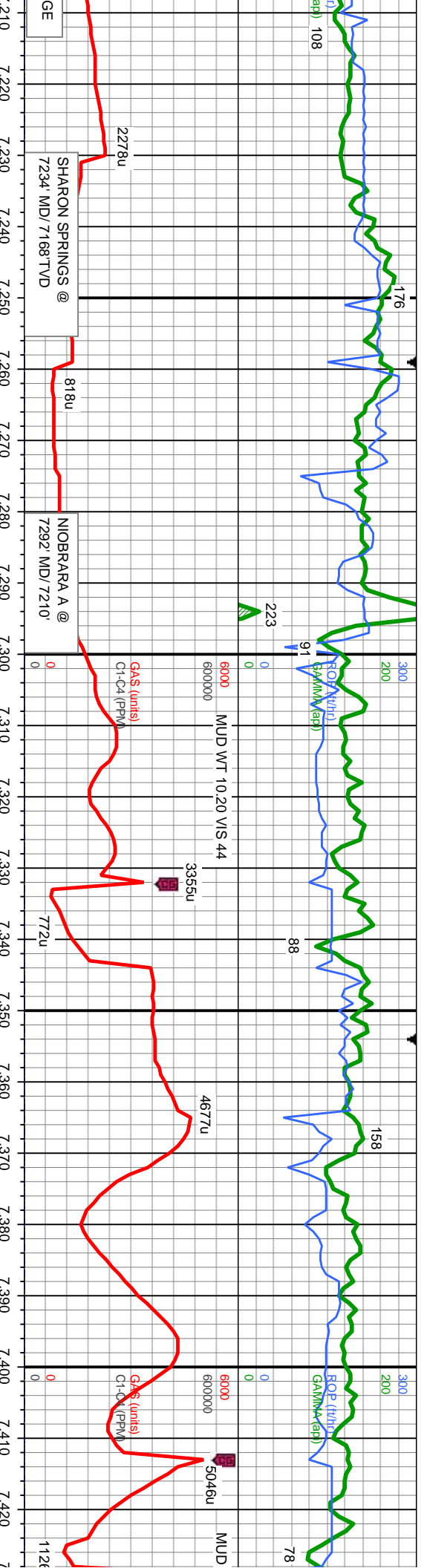
SLTY SH: gy - med gy, tr dk gy, sft, sb bly - sb
ply, occ ply, arg - rthy mix, non calc, occ shy ss,
dise sl string dul bl-wh cut, thn dul bl resd ring

SLTY SH: gy - med gy, tr dk gy, sft, sb bly - sb
ply, occ ply, arg - rthy mix, non calc, occ bent;
dise sl string dul bl-wh cut, thn dul bl resd ring

SLTY SH: gy - med gy, tr dk gy, sft, sb bly - sb
ply, occ ply, arg - rthy mix, non calc, occ bent;
dise sl string dul bl-wh cut, thn dul bl resd ring

SLTY SH: gy - med gy, tr dk gy, sft, sb bly - sb
ply, occ ply, arg - rthy mix, non calc, occ bent;
dise sl string dul bl-wh cut, thn dul bl resd ring





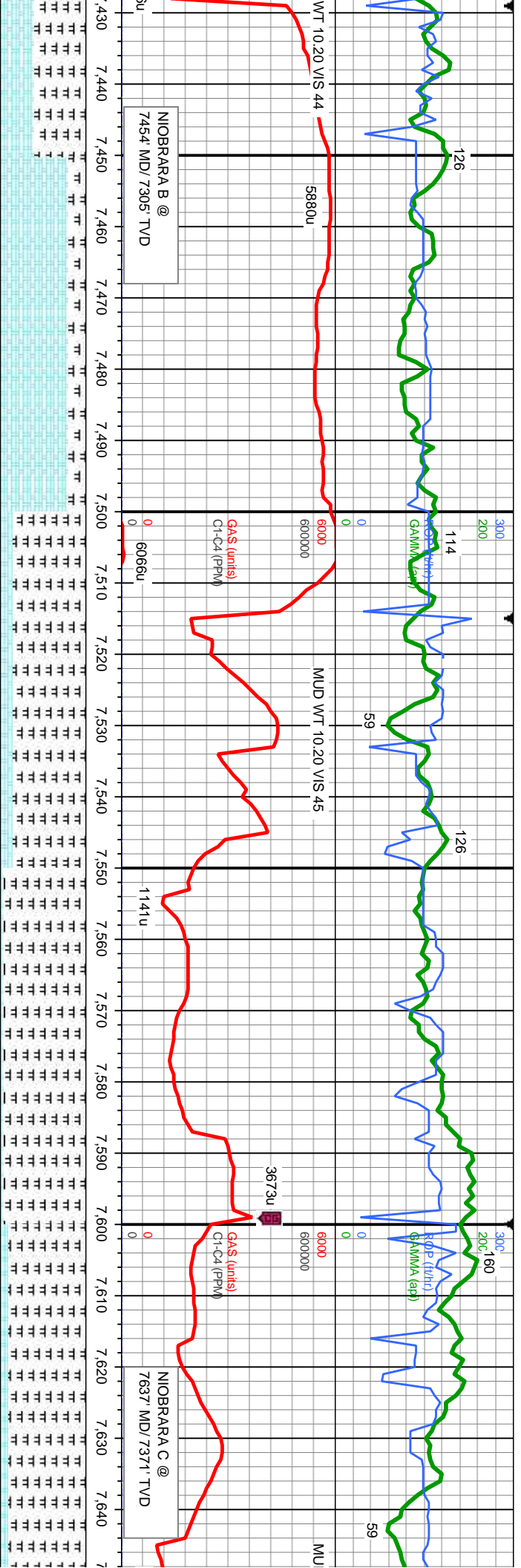
MD: 7,210. TVD: 7,149.96. Inclination: 38.04 - Azimuth: 180.12 - VS: -294.24	MD: 7,253. TVD: 7,182.54. Inclination: 43.4 - Azimuth: 181.58 - VS: -221.2	MD: 7,295. TVD: 7,211.99. Inclination: 47.52 - Azimuth: 182.43 - VS: -191.3	MD: 7,338. TVD: 7,239.75. Inclination: 52.06 - Azimuth: 183.06 - VS: -158.51	MD: 7,381. TVD: 7,265.43. Inclination: 54.57 - Azimuth: 181.95 - VS: -124.06	MD: 7,423. TVD: 7,288.84. Inclination: 57. Azimuth: 179.8 VS: -89.2
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MRSLST: med - dk gy, tr blk, sb blkly - sb plty, mod frm, rthy - sl mot tex, calc, SLTY SH: gy - med gy, tr dk gy, sft, sb blkly - sb plty, occ plty, arg - rthy mtx, non calc, CHK: It gy - gy, sl tan, mod sft - mod frm, blkly-sb blkly, rthy tex - mot, sb wxy tex, v calc, difse tr sting wi dul-mod bl-wh cut, thk bri bl ring

MRSLST: med - dk gy, tr blk, sb blkly - sb plty, mod frm, rthy - sl mot tex, calc, CHK: It gy - gy, sl tan, mod sft - mod frm, blkly-sb blkly, rthy tex - mot, sb wxy tex, v calc, difse tr sting wi du-mod bl-wh cut, thk bri bl ring

MRSLST: med - dk gy, tr blk, sb blkly - sb plty, mod frm, rthy - sl mot tex, calc, CHK: It gy - gy, sl tan, mod sft - mod frm, blkly-sb blkly, rthy tex - mot, sb wxy tex, v calc, difse tr sting wi mod bl-wh cut, thk k





NIOBRARA B @
7454 MD/ 7305 TVD

NIOBRARA C @
7637 MD/ 7371 TVD

MD: 7.466.
TVD: 7.310.65
Inclination: 61.38 -
Azimuth: 178.47 -
VS: -52.15

MD: 7.508.
TVD: 7.329.26
Inclination: 66 -
Azimuth: 178.02 -
VS: -14.53

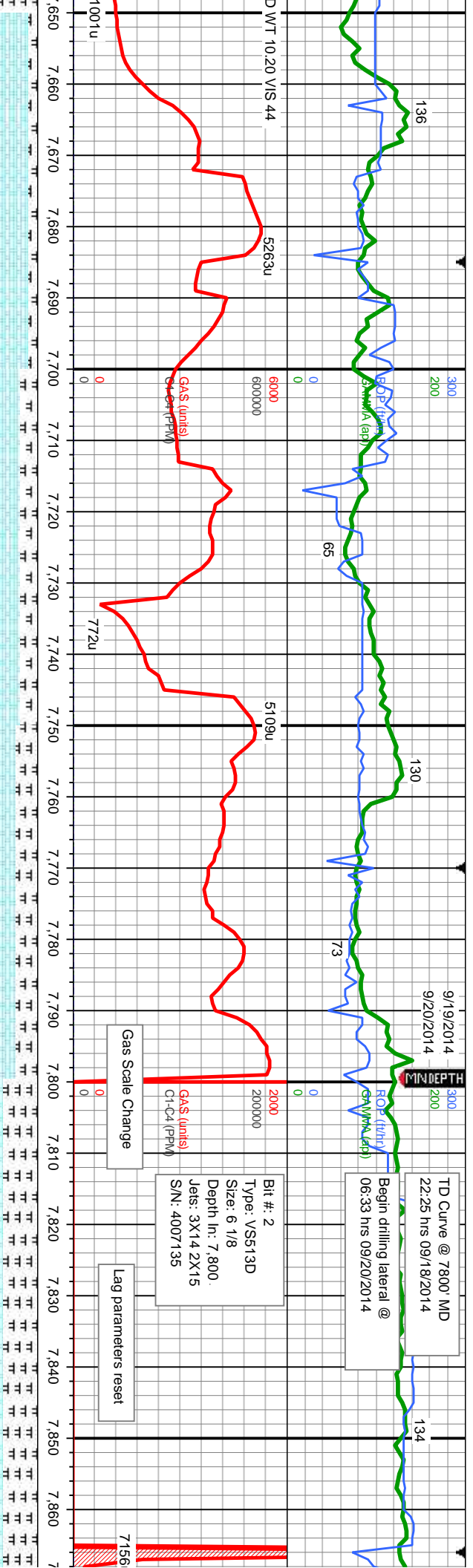
MD: 7.551.
TVD: 7.345.93
Inclination: 68.36 -
Azimuth: 177.71 -
VS: 25.08

MD: 7.593.
TVD: 7.359.9
Inclination: 72.79 -
Azimuth: 177.04 -
VS: 64.64

MD: 7.636.
TVD: 7.371.18
Inclination: 76.78 -
Azimuth: 176.91 -
VS: 106.06

sb blkly - sb plty, ic, CHK: lt gy - blkly-sb blkly, calc; difse tr	CHK: lt gy - gy, mod sft - mod frm, blkly-sb blkly, rthy tex - mot, sb wxy tex, v calc, MRSLT: med - dk gy, tr blk, sb blkly - sb plty, mod frm, rthy - sl mot tex, calc; difse tr sting wi mod bl-wh cut, thk bri bl ring	MRSLT: med - dk gy, tr blk, sb blkly - sb plty, mod frm, rthy - sl mot tex, calc, scat calc incl, CHK: lt gy - gy, sl tan, mod sft - mod frm, blkly-sb blkly, rthy tex - mot, sb wxy tex, v calc; difse tr sting wi mod bl-wh cut, thk bri bl ring	MRSLT: med - dk gy, tr blk, sb blkly - sb plty, mod frm, rthy - sl mot tex, calc, scat calc incl, CHK: lt gy - gy, sl tan, mod sft - mod frm, blkly-sb blkly, rthy tex - mot, sb wxy tex, v calc; difse mod sting wi mod bl-wh cut, thk bri bl ring
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MD: 7,678.
TVD: 7,378.62.
Inclination: 82.81 -
Azimuth: 177.37 -
VS: 147.33

MD: 7,721.
TVD: 7,383.
Inclination: 85.49 -
Azimuth: 177.42 -
VS: 190.06

MD: 7,751.
TVD: 7,384.71.
Inclination: 87.96 -
Azimuth: 177.99 -
VS: 219.99

MD: 7,800.
TVD: 7,385.83.
Inclination: 89.44 -
Azimuth: 179.31 -
VS: 268.96

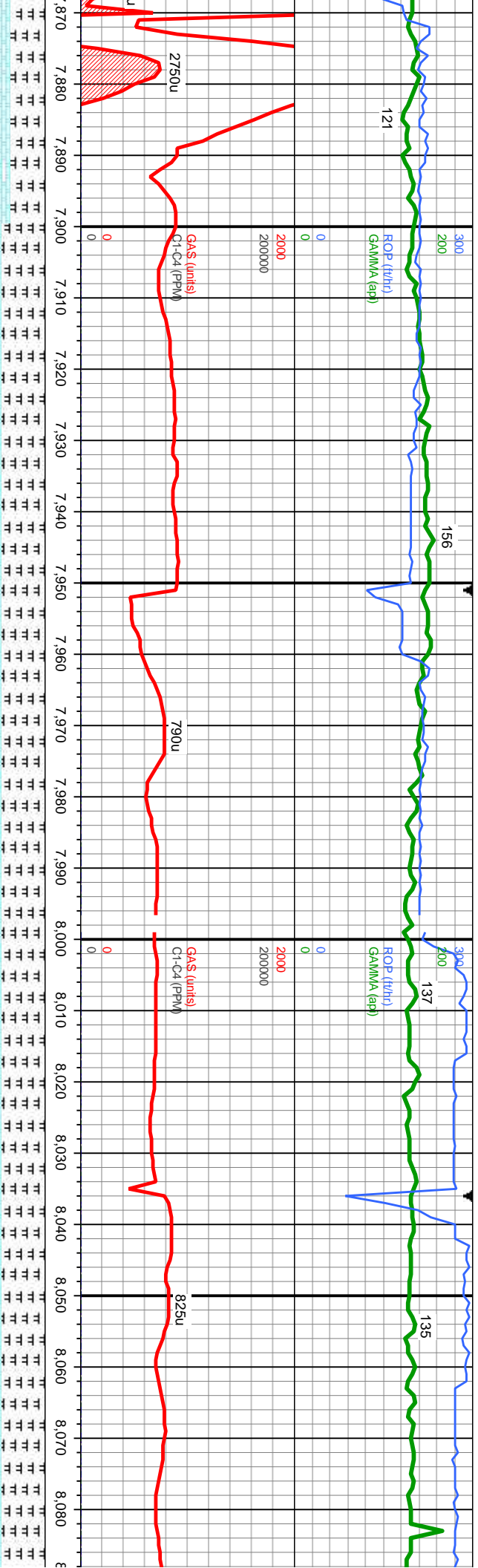
CHK: lt gy - gy, sl tan, mod sft - mod frm, blk-y-sb
blk-y, rthy tex - mot, sb wxy tex, v calc, MRLST:
med - dk gy, tr blk, sb blk-y - sb ply, mod frm,
rthy - sl mot tex, calc: difse mod sting wi mod
bl-wh cut, thk v bri bl ring

CHK: lt gy - gy, sl tan, mod sft - mod frm, blk-y-sb
blk-y, rthy tex - mot, sb wxy tex, v calc, MRLST:
med - dk gy, tr blk, sb blk-y - sb ply, mod frm,
rthy - sl mot tex, calc: difse mod sting wi mod
bl-wh cut, thk v bri bl ring

CHK: lt gy - gy, sl tan, mod sft - mod frm, blk-y-sb
blk-y, rthy tex - mot, sb wxy tex, v calc, MRLST:
med - dk gy, tr blk, sb blk-y - sb ply, mod frm,
rthy - sl mot tex, calc: tr pyr, difse mod sting wi
mod bl-wh cut, thk v bri bl ring

CHK: lt gy - gy, sl tan, mod sft - mod frm, blk-y-sb blk-y, rthy tex - mot, s
MRLST: med - dk gy, tr blk, sb blk-y - sb ply, mod frm, rthy - sl mot tex
difse mod sting wi mod bl-wh cut, thk v bri bl ring



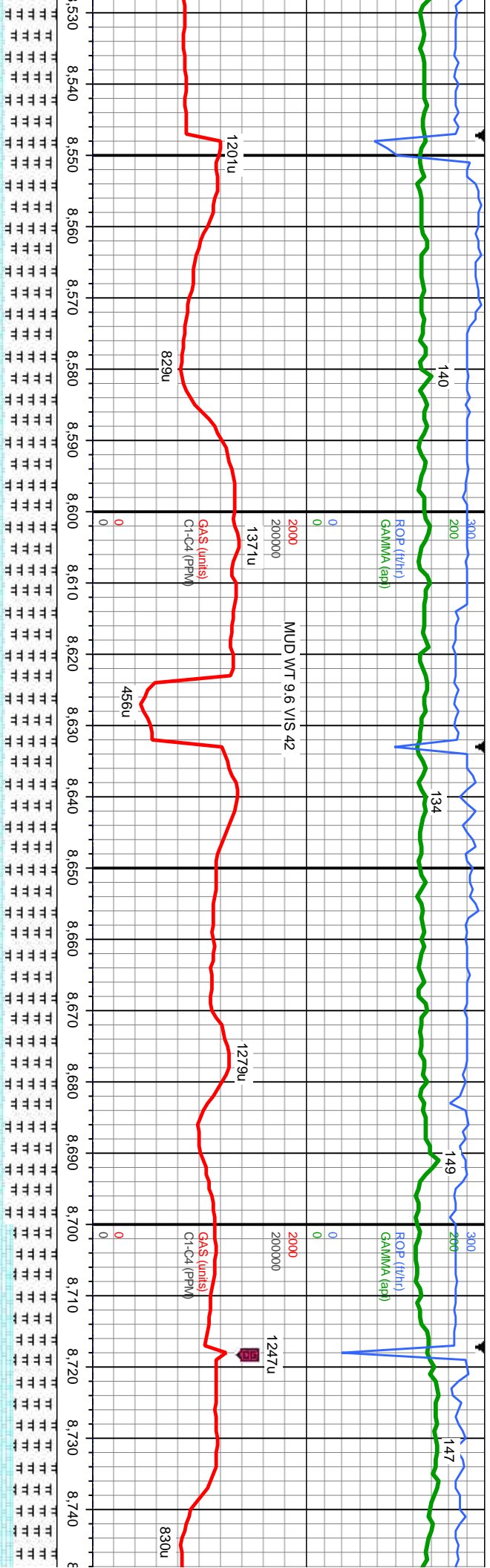


MD: 7.901
TVD: 7,386.29
Inclination: 90.03
Azimuth: 179.95
VS: 369.96

MD: 7.986
TVD: 7,386.8
Inclination: 89.28
Azimuth: 179.71
VS: 454.95

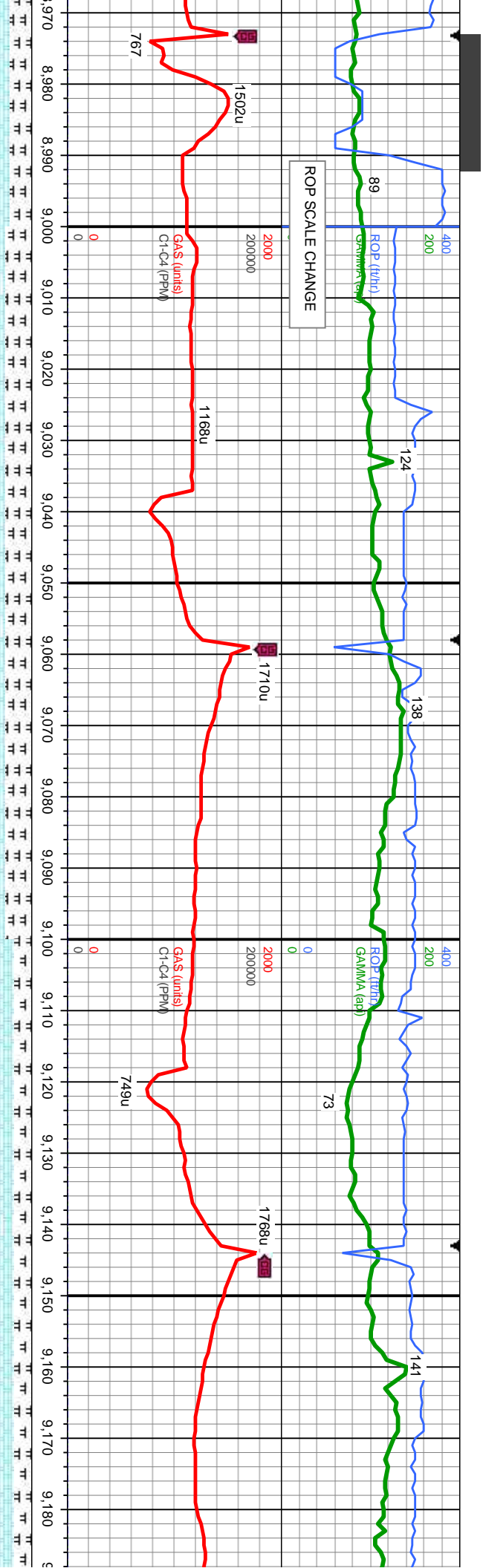
b wxy tex, v calc, tr cal incl; calc, tr cal incl, tr inoc frags;	CHK: lt gy - gy, sl tan, mod sft - mod frm, bly-sb bly, rthy tex - mot, sb wxy tex, v calc, tr cal incl; MRLST: med - dk gy, tr blk, sb bly - sb ply, mod frm, rthy - sl mot tex, calc, tr cal incl, tr inoc frags; difse mod sting wi mod bl-wh cut, thk bri bl ring
7800	7800





6800		6800	
TVD (ft)		TVD (ft)	
sb blkly - sb plty, mod frm, rthy - sl mot tex, calc, CHK: lt gy - gy, sl		CHK: lt gy - gy, sl tan, mod sft - mod frm, blkly-sb blkly, rthy tex - mot, sb wxy tex, v calc, tr cal incl, tr cal incl; difse mod	
mod blkly - rthy tex - mot, sb wxy tex, v calc, tr cal incl, tr cal incl; n cut, thk bri bl ring		MRSLST: med - dk gy, tr blk, sb blkly - sb plty, mod frm, rthy - sl mot tex, calc, CHK: lt gy - gy, sl tan, mod sft - mod frm, blkly-sb blkly, rthy tex - mot, sb wxy tex, v calc, tr cal incl, tr cal incl; difse mod	
7800		7800	





MD: 9,008
TVD: 7,391.76
Inclination: 90.15
Azimuth: 179.71
VS: 1,476.68

TVD (ft)

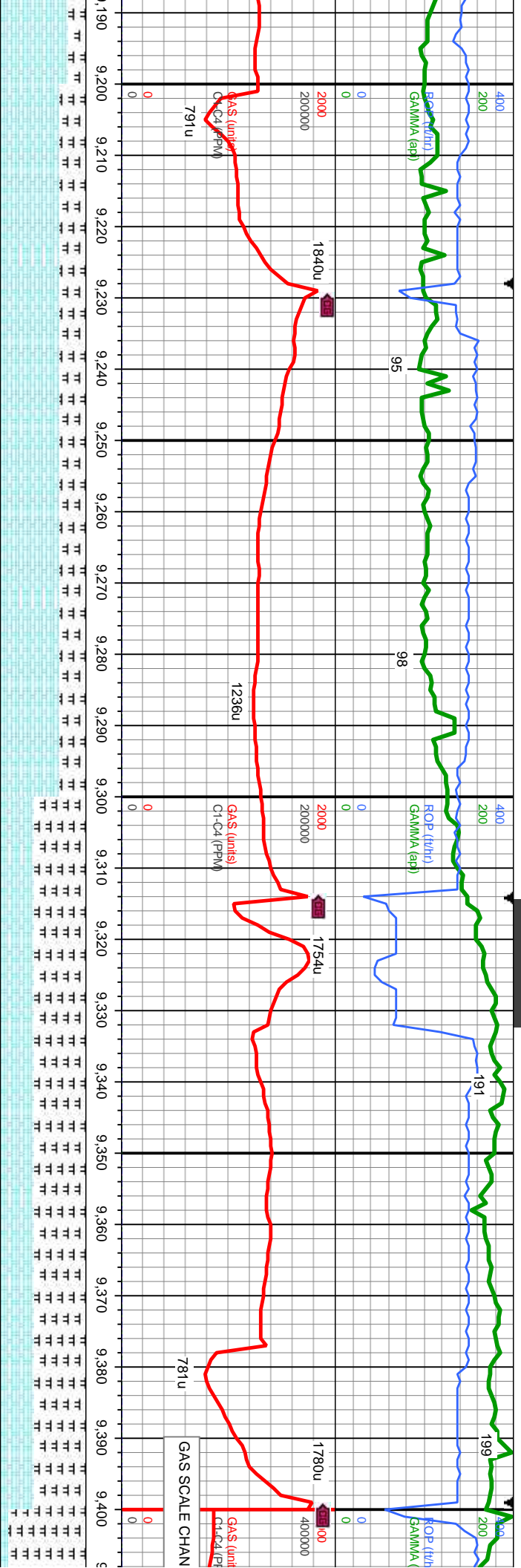
MD: 9,178
TVD: 7,390.76
Inclination: 90.52
Azimuth: 180.01
VS: 1,646.67

b wxy tex, v calc, tr cal incl:
calc, tr cal incl, tr inoc frags:

CHK: lt gy - gy, sl tan, mod sft - mod frm, biky-sb biky, rthy tex - mot, sb wxy tex, v calc, tr cal incl:
MRJST: med - dk gy, tr blk, sb biky - sb ply, mod frm, rthy - sl mot tex, calc, tr cal incl, tr inoc frags:
dise mod sting wi mod bl-wh cut, thk bri bl ring

CHK: lt gy - gy, sl tan, mod sft - mod frm, biky-sb biky, rthy tex - mot, sb wxy tex, v calc, tr cal incl:
MRJST: med - dk gy, tr blk, sb biky - sb ply, mod frm, rthy - sl mot tex, calc, tr cal incl, tr inoc frags:
dise sting wi mod bl-wh cut, thn bri bl-wh resd sting

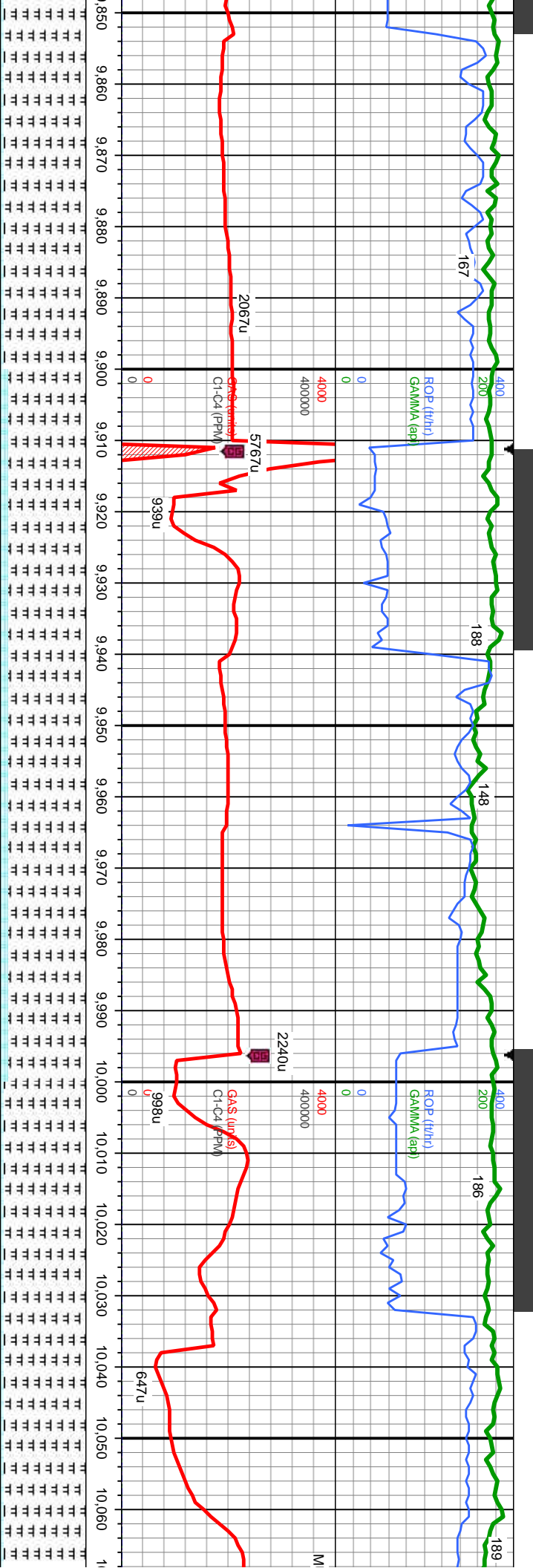




MD: 9.349
TVD: 7.389.49
Inclination: 90.33
Azimuth: 178.96
VS: 1.817.66

al incl:
oc frags:
CHK: lt gy - gy, sl tan, mod sft - mod frm, blk-y-sb blk-y, rthy tex - mot, sb wxy tex, v calc, tr cal incl, tr cal incl;
MRLST: med - dk gy, tr blk, sb blk-y - sb ply, mod frm, rthy - sl mot tex, calc, tr cal incl, tr inoc frags;
dise sting wi mod bl-wh cut, thn bri bl-wh resd sting





MD: 9.861
TVD: 7,388.93
Inclination: 90.37
Azimuth: 175.39
VS: 2,328.93

TVD (ft)

TVD (ft)

MD: 10.031
TVD: 7,388.48
Inclination: 89.93
Azimuth: 178.81
VS: 2,498.69

ud frm, rthy - sl mot tex, calc, tr cal incl, scat fos
ky-sb blk, rthy tex - mot, sb wxy tex, v calc;
ssd ring

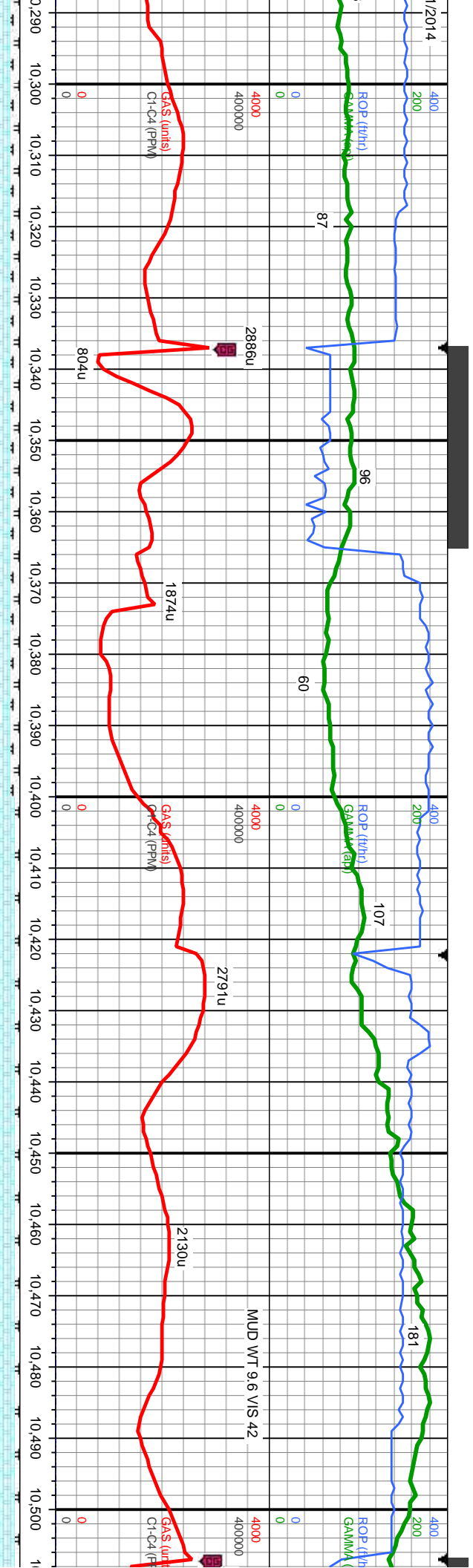
MRSLT: med - dk gy, tr blk, sb blk, sb ply, mod frm, rthy - sl mot tex, calc, tr cal incl, scat fos
frag: CHK: lt gy - gy, sl tan, mod sft - mod frm, blk-sb blk, rthy tex - mot, sb wxy tex, v calc;
dfse sting, wi strgs ip, bl-wh cut, thn brl bl-wh resd ring

7800

7800

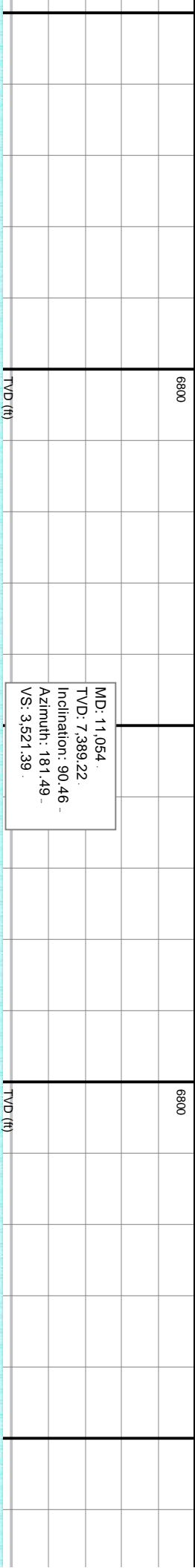
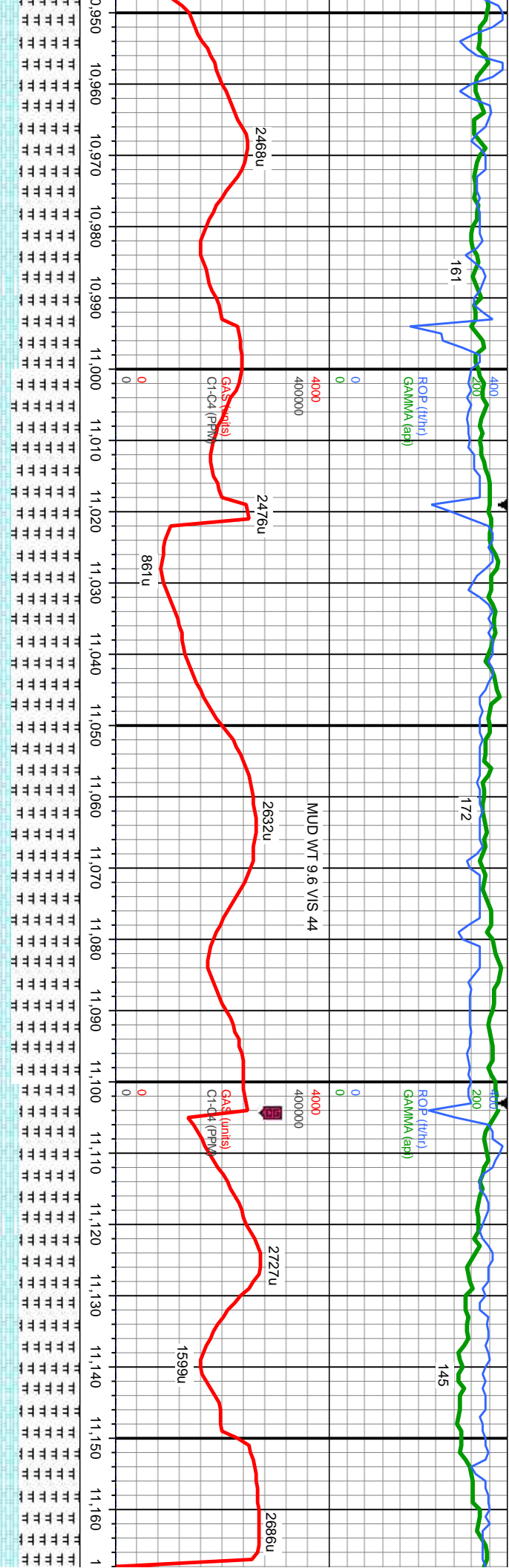
7800





6800	TVD (ft)	6800	TVD (ft)	6800	TVD (ft)
MRLST: CHK: lt gy - gy, sl tan, mod sft - mod frm, blk-y-sb blk-y, rthy tex - mot, sb wxy tex, v calc; MRLST: med - dk gy, tr blk, sb blk-y - sb ply, mod frm, rthy - sl mot tex, calc, tr cal incl, occ fos frag; difse hvy string wi mod-g bl-wh cut, thk bri bl ring					
7800		7800		7800	

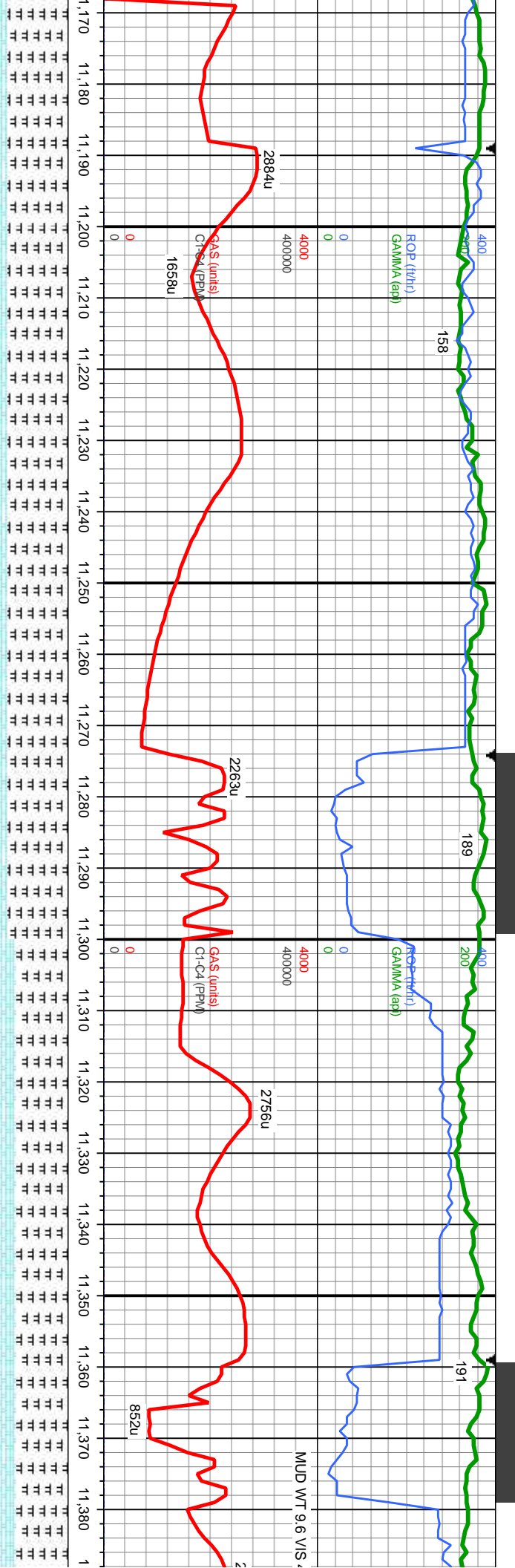




MD: 11,054.
TVD: 7,389.22.
Inclination: 90.46.
Azimuth: 181.49.
VS: 3,521.39.

frm, rthy - sl mot tex, calc, tr cal incl, CHK: it gy - x - mot, sb wxy tex, v calc, occ fos frag: difse hvy	MRSLST: med - dk gy, tr blk, sb blk, mod frm, rthy - sl mot tex, calc, tr cal incl, CHK: it gy - gy, sl tan, mod sft - mod frm, blk-sb blk, rthy tex - mot, sb wxy tex, v calc, occ fos frag: difse hvy stmg wi mod-g bl-wh cut, thk bri bl ring	7800
		7800

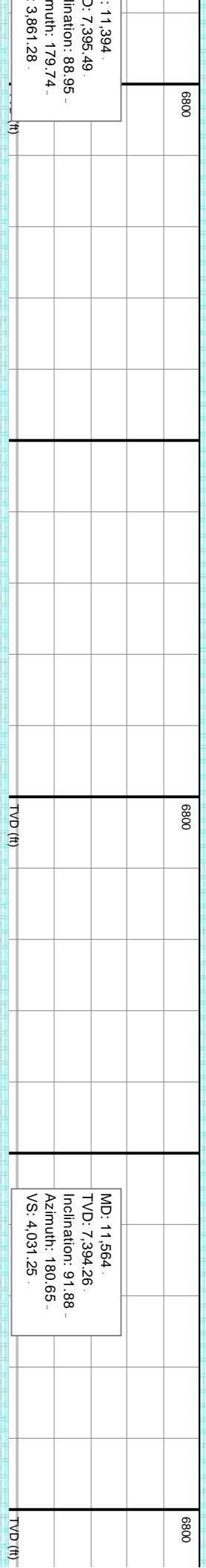
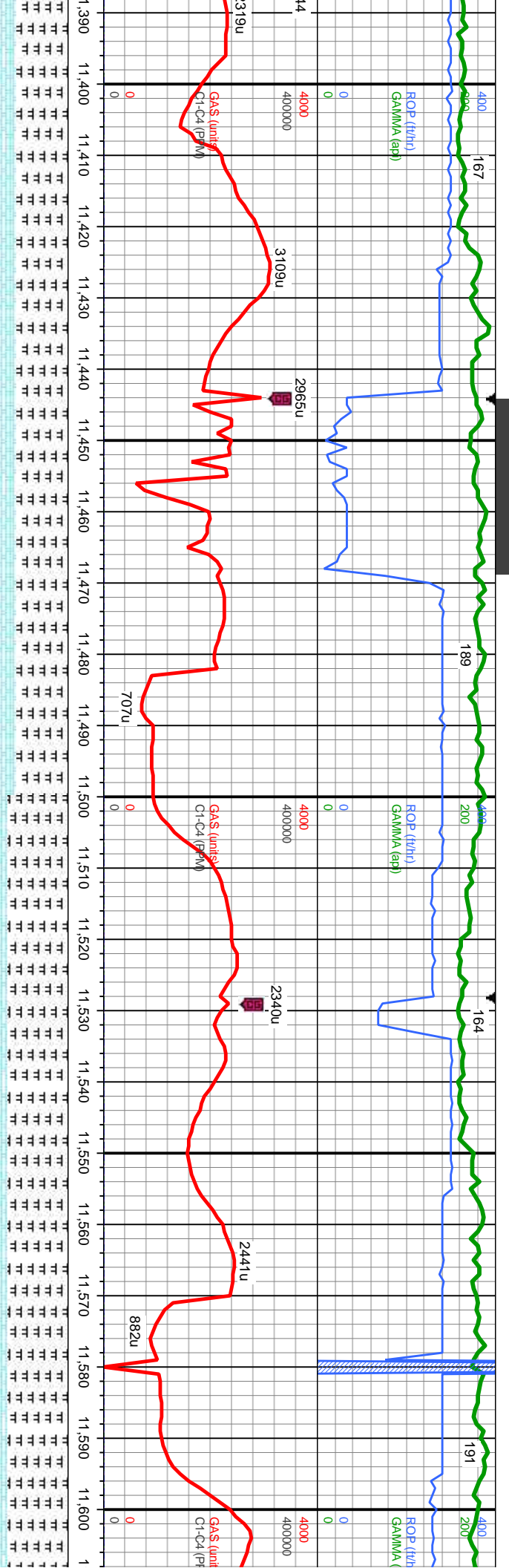




6800	MD: 11,224. TVD: 7,391.24. Inclination: 88.18 - Azimuth: 180.51 - VS: 3,691.33.	6800
TVD (ft)		
TVD (ft)		
MD TVI Inc Azi VS		

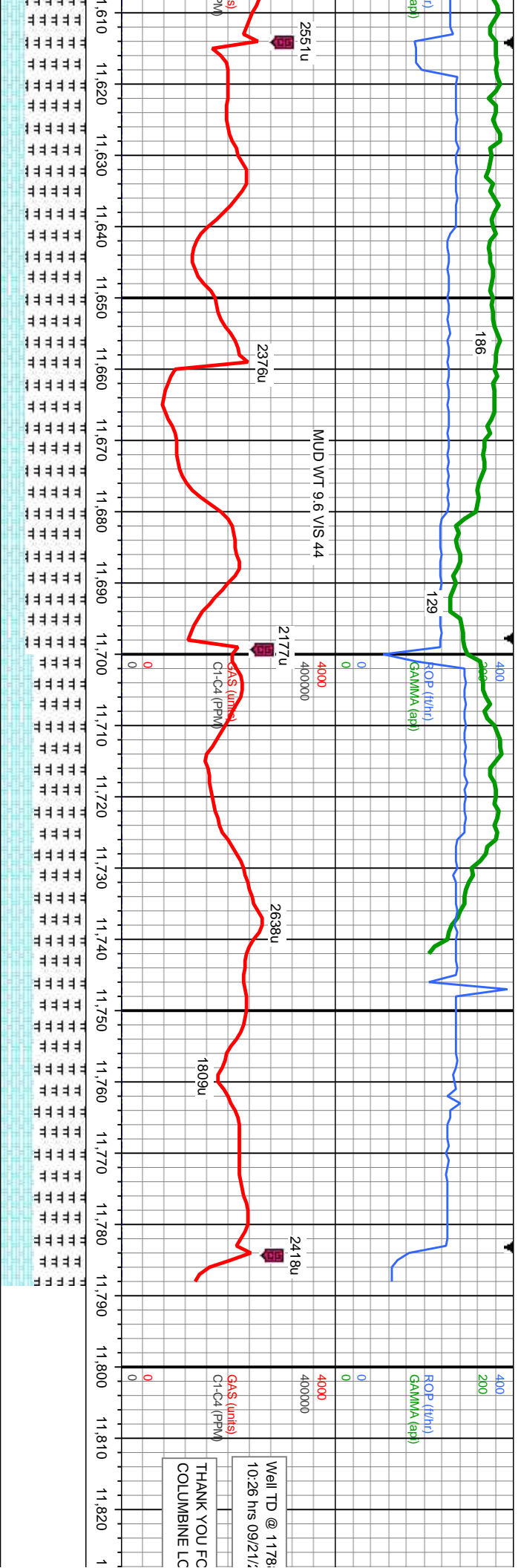
calc, tr cal incl, CHK: it ex, v calc, occ fos frag:	MRSLT: med - dk gy, tr blk, sb blkv - sb ply, mod frm, rthy - sl mot tex, calc, tr cal incl, CHK: it gy - gy, sl tan, mod sft - mod frm, blkv-sb blkv, rthy tex - mot, sb wxy tex, v calc, occ fos frag: dise hvy sting wi mod-g bl-wh cut, thk bri bl ring 7800	MRSLT: med - dk gy, tr blk, sb blkv - sb ply, mod frm, rthy - sl mot tex, calc, tr cal incl, CHK: it gy - gy, sl tan, mod sft - mod frm, blkv-sb blkv, rthy tex - mot, sb wxy tex, v calc, occ fos fra dise hvy sting wi mod-g bl-wh cut, thk bri bl ring 7800
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MD: 11,564. TVD: 7,394.26 Inclination: 91.88 Azimuth: 180.65 VS: 4,031.25	MD: 11,394. TVD: 7,395.49 Inclination: 88.95 Azimuth: 179.74 VS: 3,861.28
ROP (ft/h) GAMMA (app) GAS (units) Ct-C4 (ppm)	ROP (ft/h) GAMMA (app) GAS (units) Ct-C4 (ppm)
3199u 2965u 707u 2340u 2441u 882u	3199u 2965u 707u 2340u 2441u 882u
400 4000 400000	400 4000 400000
11,390 11,400 11,410 11,420 11,430 11,440 11,450 11,460 11,470 11,480 11,490 11,500 11,510 11,520 11,530 11,540 11,550 11,560 11,570 11,580 11,590 11,600	11,390 11,400 11,410 11,420 11,430 11,440 11,450 11,460 11,470 11,480 11,490 11,500 11,510 11,520 11,530 11,540 11,550 11,560 11,570 11,580 11,590 11,600





MD: 11,738. TVD: 7,389.07. Inclination: 91.54 - Azimuth: 180.21 - VS: 4,205.16.		MD: 11,788. TVD: 7,387.73. Inclination: 91.54 - Azimuth: 180.21 - VS: 4,255.15.	
TVD (ft)		TVD (ft)	

: med - dk gy, tr blk, sb blk, sb blk, mod frm, rthy - sl mot tex, calc, tr cal incl, CHK: it gy - gy, sl tan, mod sft - mod frm, blk-sb blk, rthy tex - mot, sb wxy tex, v calc, occ fos frag; vy stmg wi mod-g bl-wh cut, thk bri bl ring		MRLST: med - dk gy, tr blk, sb blk, sb blk, mod frm, rthy - sl mot tex, calc, tr cal incl, CHK: it gy - gy, sl tan, mod sft - mod frm, blk-sb blk, rthy tex - mot, sb wxy tex, v calc, occ fos frag; dise hvy stmg wi mod-g bl-wh cut, thk bri bl ring	



Well TD @ 1178.
10:26 hrs 09/21/11
THANK YOU FC
COLUMBINE LC

