



Scale: 5" / 100'
Measured Depth Log

Well Name	Timbro State LD16-65HN(HORZ)		
Location	SE NE SEC. 16, T9N, R58W		
State	COLORADO	County	WELD
Country	USA	Rig Number	H&P 326
API Number	05-123-37489	AFE #	139488
Region	DJ BASIN	Field	WILDCAT
Spud Date	12/8/2013	Drilling Completed	12/14/2013
Surface Coordinates	1,882' FNL, 290' FEL Lat 40.75342 N, Long 103.86079 W		
Bottom Hole Coordinates	2,640' FNL, 660' FWL Lat 40.75134 N, Long 103.87634 W		
Ground Elevation	4,759'	K.B. Elevation	4,789'
Logged Interval	1,300'	To	9,702'
Formation	NIOBRARA B CHALK		
Type of Drilling Fluid	LSND		

Company Noble Energy Inc
Address 1625 Broadway
Denver, CO 802

Name EVAN HOWELL
Company Noble Energy Inc
Address 1625 Broadway
Denver, CO 802

RY
MIC

- UNKNOWN
- ANHYDRITE
- BENTONITE
- BRECCIA
- CHALK
- CEMENT
- CHERT
- CLAY CHOKE SAND
- CLAYSTONE

Operator

IC
Suite 2200
202

Geologist

IC
Suite 2200
202

Other

AN SULLIVAN
CHAEEL ROOKS

Rock Types

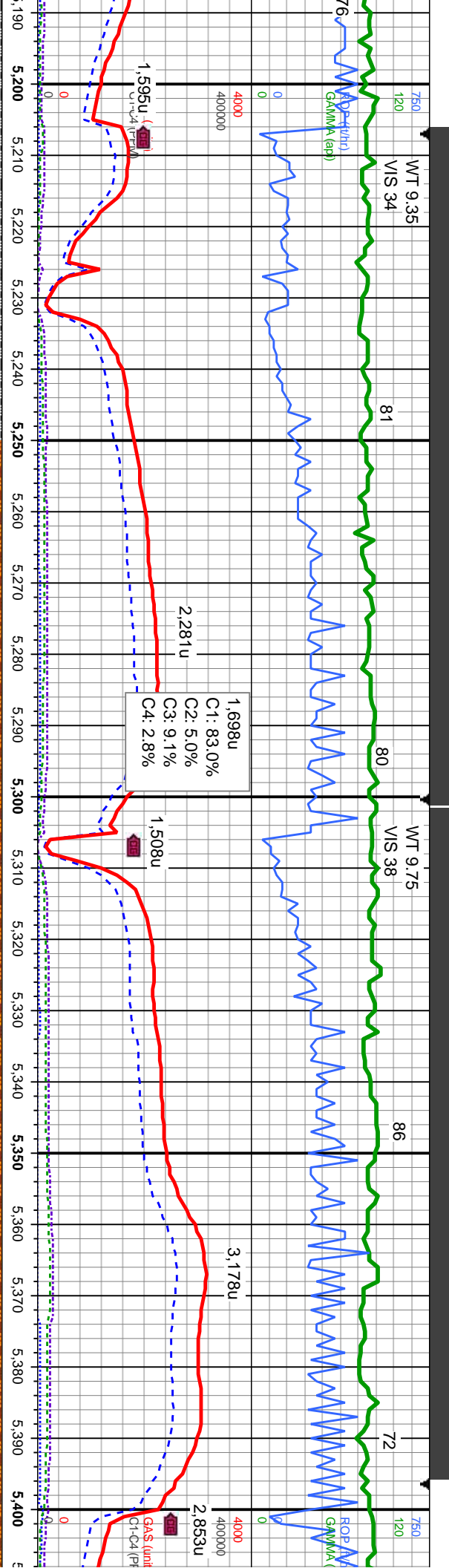
CONGLOMERATE	MARLSTONE	SHALY SANDSTONE
DOLomite	METAMORPHIC	SHALY SILTSTONE
DOLomite	NO SAMPLE	SILTY SHALE
DOLomite Limestone	SALT	SILTSTONE
GRANITE	SANDSTONE	TILL
GYPsum	SALT-PEPPER SAN	TUFF
IGNEOUS	SHALE	WELDED TUFF
SIDERITE or LIMONITE	SHALE COLORED	
LIMESTONE	SHALE GRAY	

Accessories

Fossils	GASTROPOD	ARGILLITE GRAIN	HEAVY MINERAL
INOCERAMUS	B BENTONITE	K KAOLIN	ANHYDRITE STRINGER
ALGAE	O OOLITE	BITUMENOUS SUBSTANCE	BENTONITE STRINGER
AMPHIPORA	O OSTRACOD	BRECCIA FRAGMENTS	COAL STRINGER
BELEMNITE	P PELECYPOD	C CALCAREOUS	DOLOMITE STRINGER
BIOCLASTIC	P PELLET	CARBONACEOUS FLAKES	GYPSUM STRINGER
BRACHIOPOD	P PISOLITE	C CHERT	LIMESTONE STRINGER
BRYOZOA	P PLANT REMAINS	C CHERT	MARLSTONE (CALC) STRG
CEPHALOPOD	S PLANT SPORES	T THIN BEDS	MARLSTONE (DOL) STRG
C CORAL	S SCAPHOPOD	D DOLOMITIC	SANDSTONE STRINGER
C CRINOID	S STROMATOPOROID	F FELDSPAR	SHALE STRINGER
E ECHINOID	F FERRUGINOUS PELLET	F FERRUGINOUS	S SILTY
F FISH	Minerals	T TUFFACEOUS	
FORAMINIFERA	A ANHYDRITIC	G GLAUCONITE	
F FOSSIL	A ARGILLACEOUS	G GYPSIFEROUS	Stringer

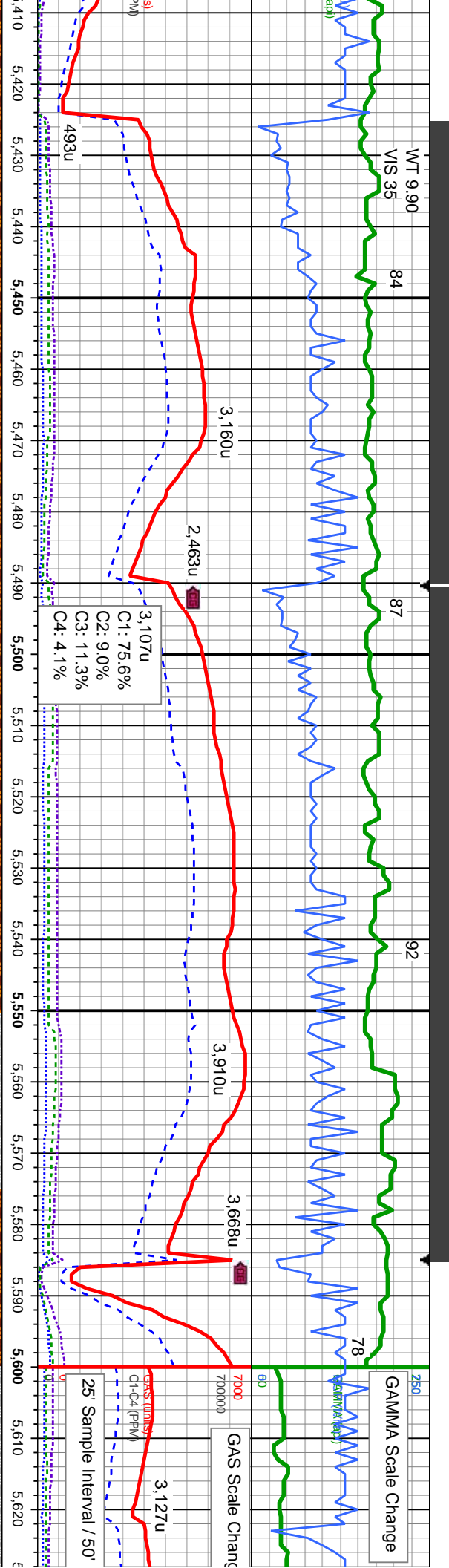
Other Symbols

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



fm, brit, y sh, tr	SHY SLTST: lt - med gy, mod frm - frm, brit, vf gr, sb ang - sb pily, arg cnt; tr silty sh, tr shy ss, v sl calc ip	SHY SLTST: lt - med gy, pred frm, brit, vf gr, sb ang - sb pily, arg cnt; tr dissn pyr, tr silty sh, tr shy ss, v sl calc ip	SHY SLTST: lt - med gy, pred frm, brit, vf gr, sb ang - sb pily, arg cnt; tr dissn pyr, tr shy ss, v sl calc ip, tr dul yel gn mnrl flr	SHY SLTST: lt - med gy, pred frm, brit, vf gr, sb ang - sb pily, arg cnt; tr shy ss, v sl calc ip, tr dul yel gn mnrl flr	SHY S sb ang ip
6400	6400	6400	6400	6400	6400
TVD (ft)					TVD (ft)





MD: 5,433'
TVD: 5,362.08'
Inclination: 33.6 °
Azimuth: 225.7°
VS: 293.77'

SLTST: lt - med gy, pred frm, brit, vf gr,
sb ang - sb pily, arg cnt; tr shy ss, v sl calc
ip, tr dui yel gn mnrl flr

SHY SLTST: lt - med gy, pred frm, brit, vf gr,
sb ang - sb pily, arg cnt; tr shy ss, v sl calc
ip, tr dui yel gn mnrl flr

SHY SLTST: lt - med gy, pred frm, brit, vf gr,
sb ang - sb pily, arg cnt; tr shy ss, v sl calc
ip, tr dui yel gn mnrl flr

SHY SLTST: lt - med gy, mod frm, brit, vf gr,
sb ang - sb pily, arg cnt; sl calc ip; SLTY
SH: med - dk gy, frm, brit, vf gr, sb ang - sb
pily, tr pily, arg cnt

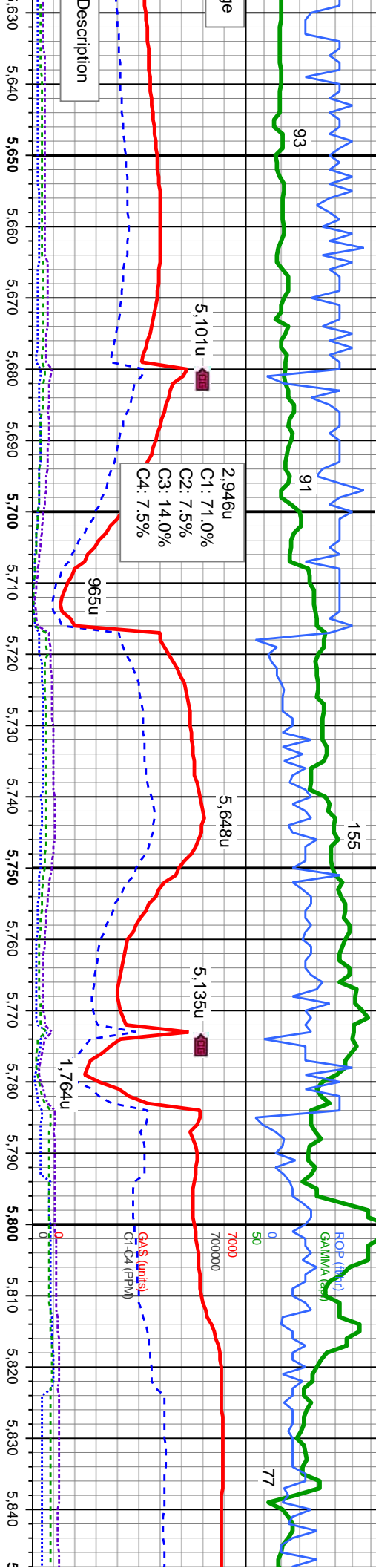
SHY SLTST: lt - med gy, r
sb ang - sb pily, arg cnt; s
SLTY SH: med - dk gy, frr
- sb pily, tr pily, arg cnt

MD: 5,528'
TVD: 5,436.15'
Inclination: 44.3 °
Azimuth: 245.7°
VS: 348.41'

MD: 5,622'
TVD: 5,499.09'
Inclination: 51.7°
Azimuth: 255.7°
VS: 417.38'



WT 10.35
VIS 39



2,946u
C1: 71.0%
C2: 7.5%
C3: 14.0%
C4: 7.5%

GA\$ (units)
C1-C4 (PPM)

SLTY SH: med - dk gy, frm, brit, vf gr, sb ang
- sb ply, tr ply, arg cmt; grd to SHY SLTST: lt
- med gy, mod frm, brit, vf gr, sb ang - sb
ply, arg cmt; sl calc ip, tr yel gn mnrl flr

SLTY SH: med - dk gy, frm, brit, vf gr, sb ang
- sb ply, tr ply, arg cmt; grd to SHY SLTST: lt
- med gy, mod frm, brit, vf gr, sb ang - sb
ply, arg cmt; sl calc ip, tr yel gn mnrl flr, tr
dissn pyr on bent

SLTY SH: med - dk gy, frm, brit, vf gr, sb ang
- sb ply, tr ply, arg cmt, tr dissn pyr on bent
CHK: lt gy - off wh crm, sme mot gy brn, sft -
mod frm, fri - brit, sb ply - sb biky, sb wxy -
sb rthy tex, v calc, MRLST: medgy brn, biky
sb ply, sb fis, mod frm, rthy tex, com yel gn
mnrl flr

mod frm, brit, vf gr,
sl calc ip; grd to
n, brit, vf gr, sb ang
SHY SLTST: lt - med gy, mod frm, brit, vf gr,
sb ang - sb ply, arg cmt; sl calc ip; grd to
SLTY SH: med - dk gy, frm, brit, vf gr, sb ang
- sb ply, tr ply, arg cmt

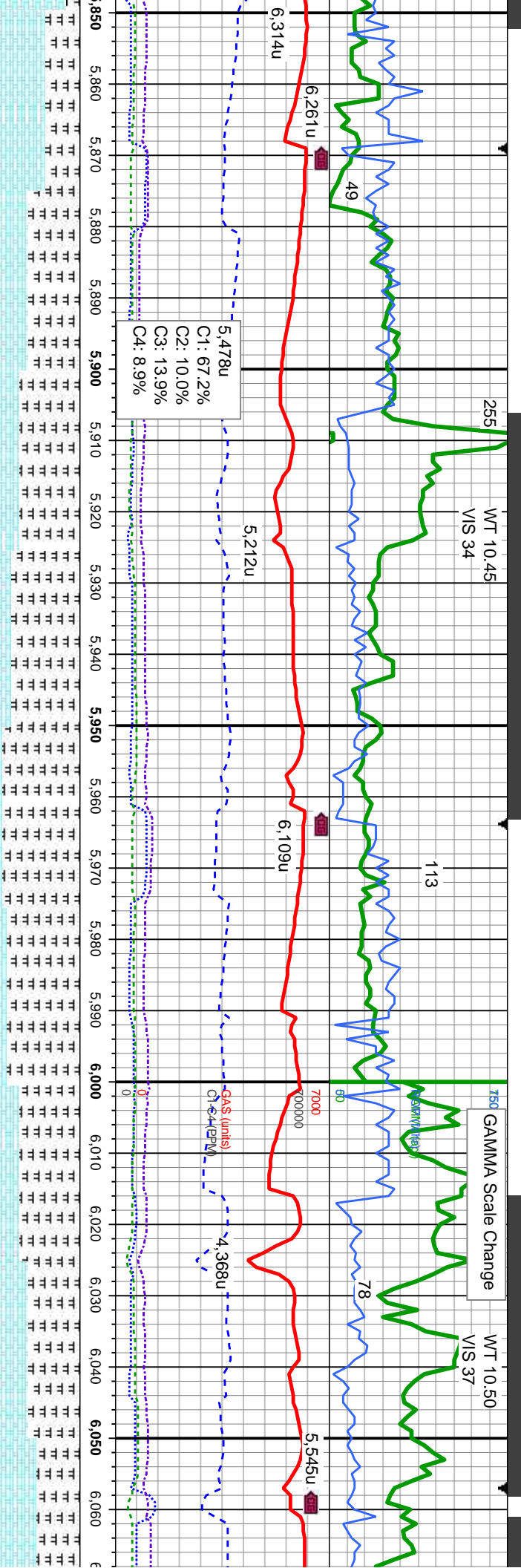
MD: 5,717'
TVD: 5,558.03'
Inclination: 51.6°
Azimuth: 256.8°
VS: 491.79'

Logger Top Sharon Springs
@ 5,794' MD / 5,602' TVD

MD: 5,811'
TVD: 5,612.35'
Inclination: 58°
Azimuth: 270°
VS: 568.03'

Logger Top Niobrara
@ 5,810' MD / 5,611' TVD

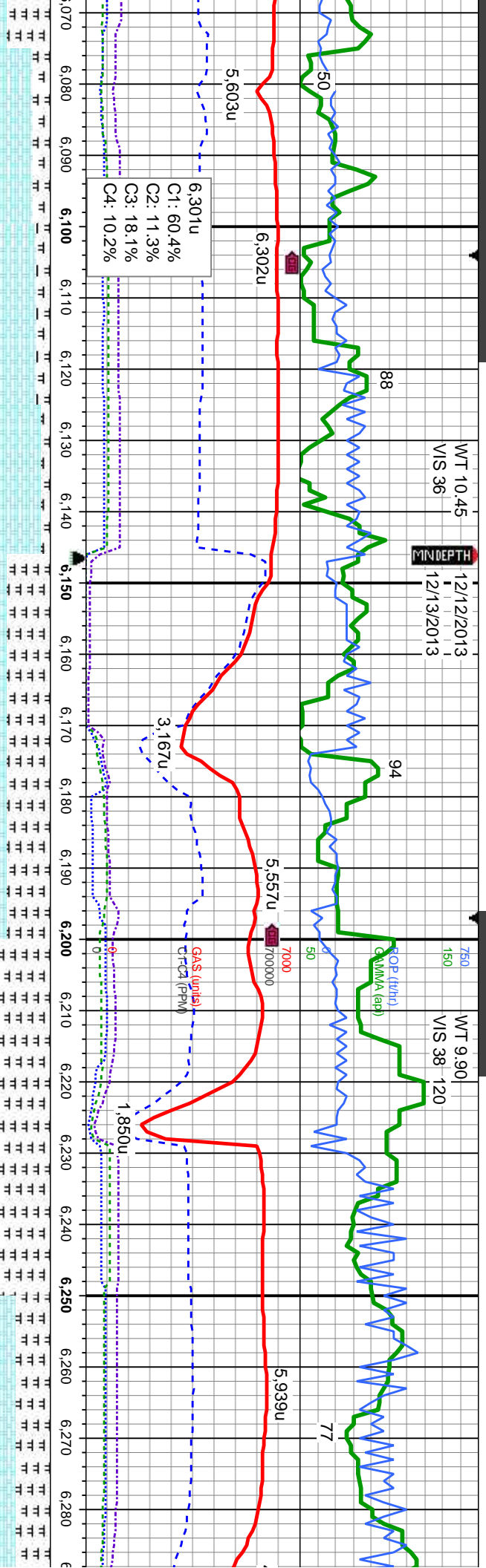




MRLST: medgy brn, blkly - sb ply, sb fis, mod frm, rthy tex; CHK: lt gy - off wh crm, sme mot gy brn, sft - mod frm, fri - brit, sb ply - sb blkly, sb wxy - sb rthy tex, v calc, occ yel gn mnrl flr, tr dissim pyr on bent	MRLST: gy brn - dk gy blk, blkly - sb ply, sb fis, mod frm, rthy tex; CHK: med gy, mot gy brn, sft - mod frm, fri - brit, sb ply - sb blkly, sb wxy - sb rthy tex, v calc, tr yel gn mnrl flr, tr nod pyr	MRLST: gy brn - dk gy blk, blkly - sb ply, sb fis, mod frm, rthy tex; CHK: med gy, mot gy brn, sft - mod frm, fri - brit, sb ply - sb blkly, sb wxy - sb rthy tex, v calc, tr yel gn mnrl flr	MRLST: gy brn - dk gy blk, blkly - sb ply, sb fis, mod frm, rthy tex; CHK: med gy, mot gy brn, sft - mod frm, fri - brit, sb ply - sb blkly, sb wxy - sb rthy tex, v calc, tr yel gn mnrl flr	MRLST: gy brn - dk gy blk, blkly - sb ply, sb fis, mod frm, rthy tex; CHK: med gy, mot gy off wh, mot gy b ply - sb blkly, sb gn mnrl flr
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- dk gy blk, blkly - sb plty, sb
v tex: CHK: lt - med gy, occ
rn, sft - mod frm, fri - brit, sb
wxy - sb rthy tex, v calc, tr y

CHK: lt - med gy, ofr wh crm, mot gy brn, sft
mod frm, fri - brit, sb ply - sb blk, sb wxy -
sb rthy tex, v calc: MRLST: gy brn - dk gy blk
blk - sb ply, sb fis, mod frm, rthy tex, tr yel
gn mnrl flwr, fos frags

CHK: med gy - gy brn, mot gy brn, mod frm
brt, sb ply - sb biky, sb wxy - sb rhy tex, v
calc: MRLST: dk gy brn - dk gy blk, biky - sb
ply, sb fis, frm, rhy tex, cal incl, sme fos
frag, occ dul gn - org mml flor

MR.LST: dk gy brn - dk gy blk, blkly - sb pily,
sb fls, frm, rthy tex, cal lnd; CHK: med gy -
gy brn, mot gy brn, mod frm, brit, sb pily - s
blkly, sb wxy - sb rthy tex, v calc; sme fos
frag, occ dul gn - ong mml flr

CHK: oft wth cmm - lt gy - gy brn, m
brit, sb pily - sb blkly, -sb wxy - sb rtt
calc; MRUST: dk gy brn - dk gy blk,
pily, sb fis, frm, rthy tex, cal incl, sm
frag, abnt dul gn mmrl flor

MD: 6,089'
TVD: 5,716.62'
Inclination: 79.4
Azimuth: 265°
VS: 818.81'

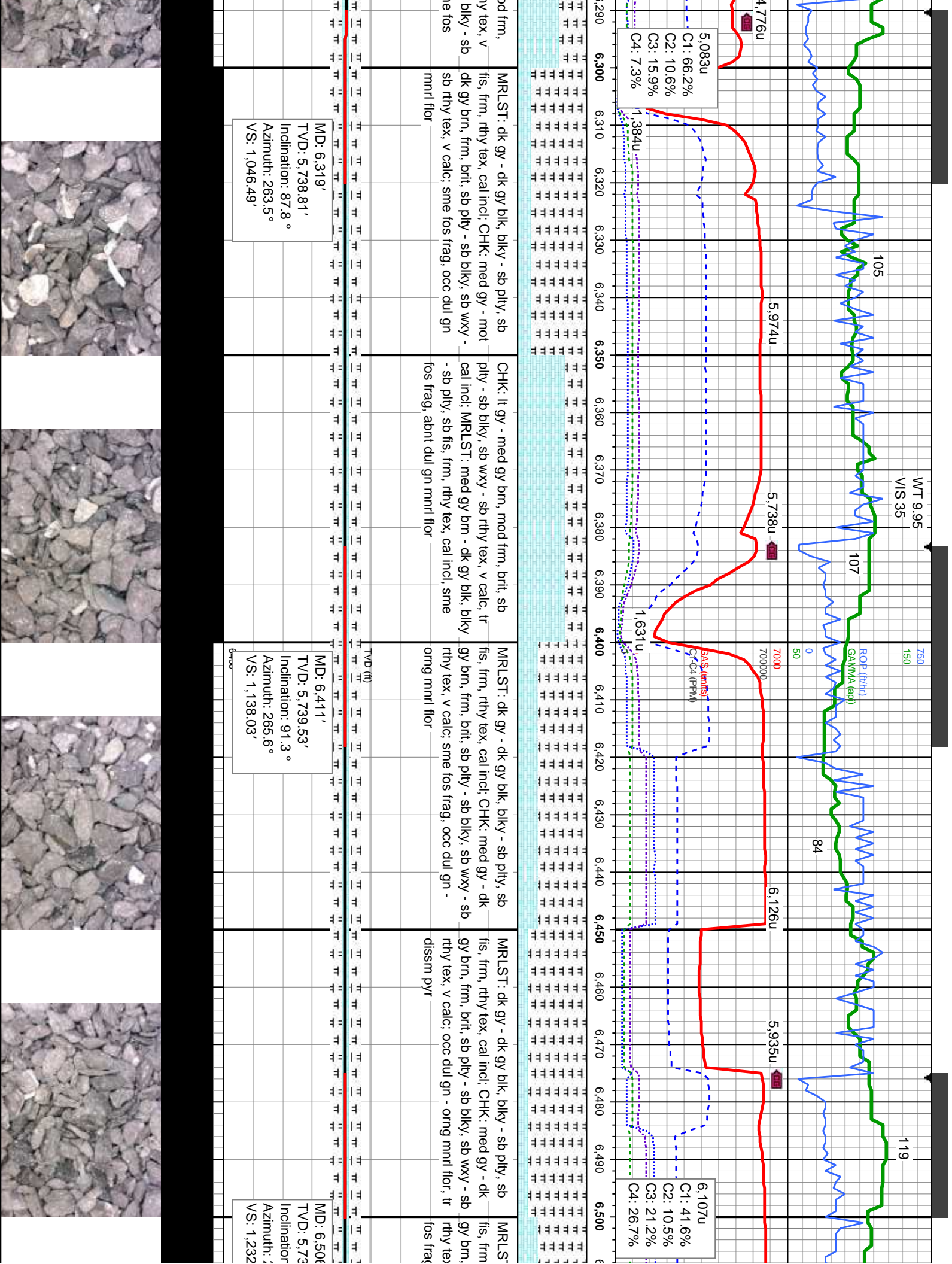
TD Curve - 6146' MD
Intermediate Casing
@ 23:15 hrs 12/12/2013

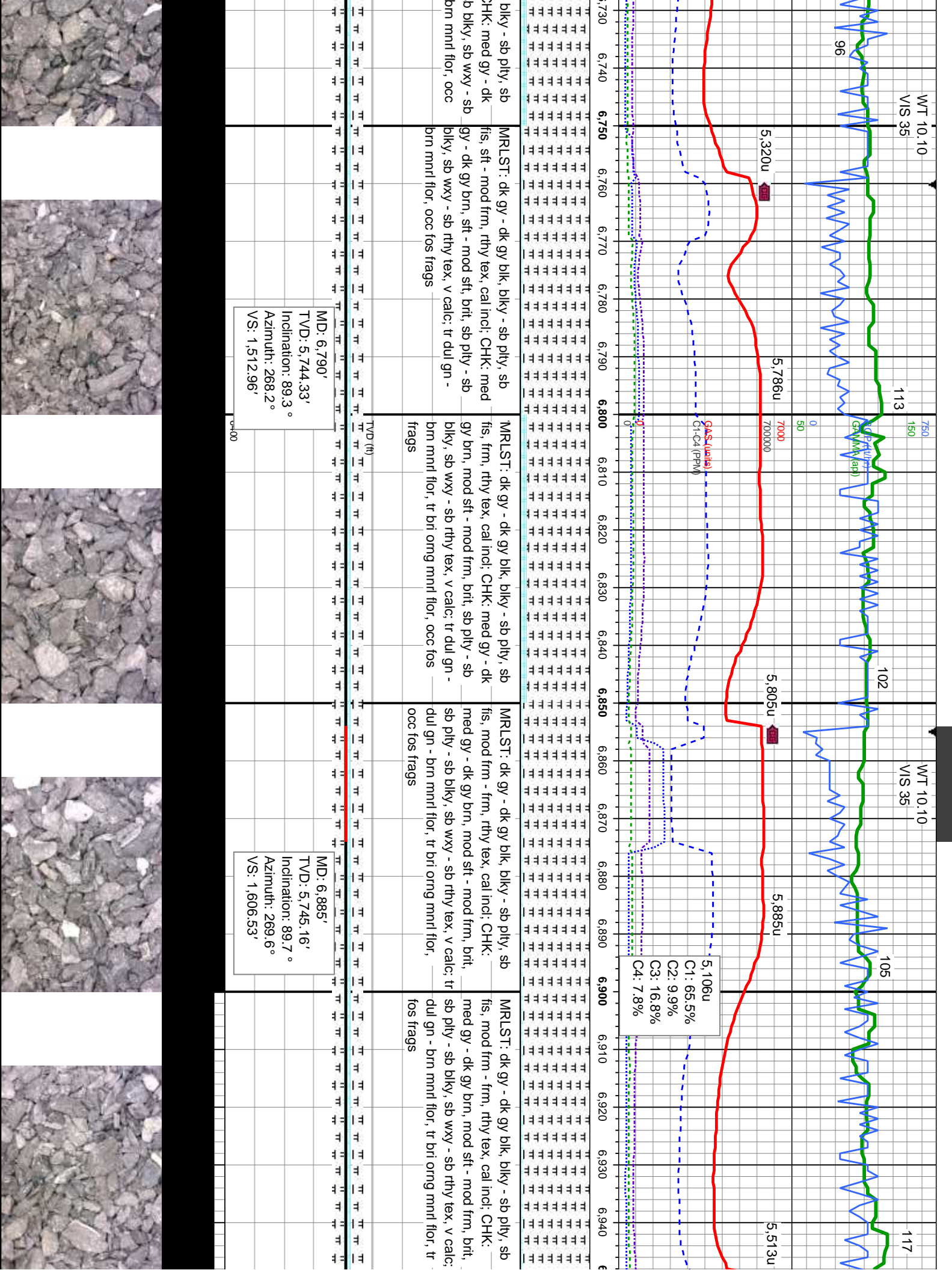
Bit Data
 Bit #: 3
 Type: PDC
 Size: 6.12
 Depth In: 6,146
 Jets: 5x11
 S/N: 12361768

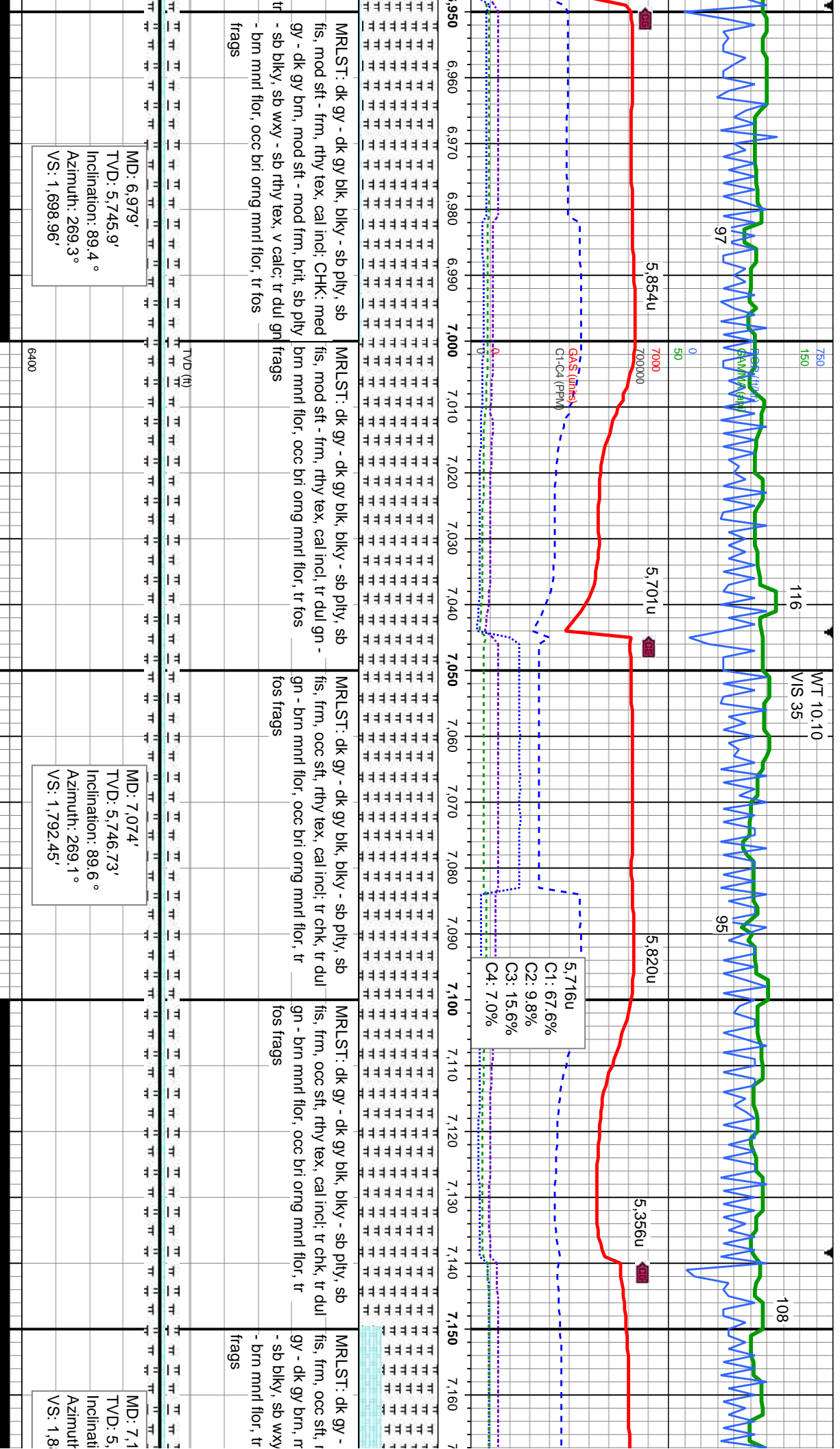
MD: 6,164'
TVD: 5,728.02'
Inclination: 83.1
Azimuth: 265°
VS: 892.52'

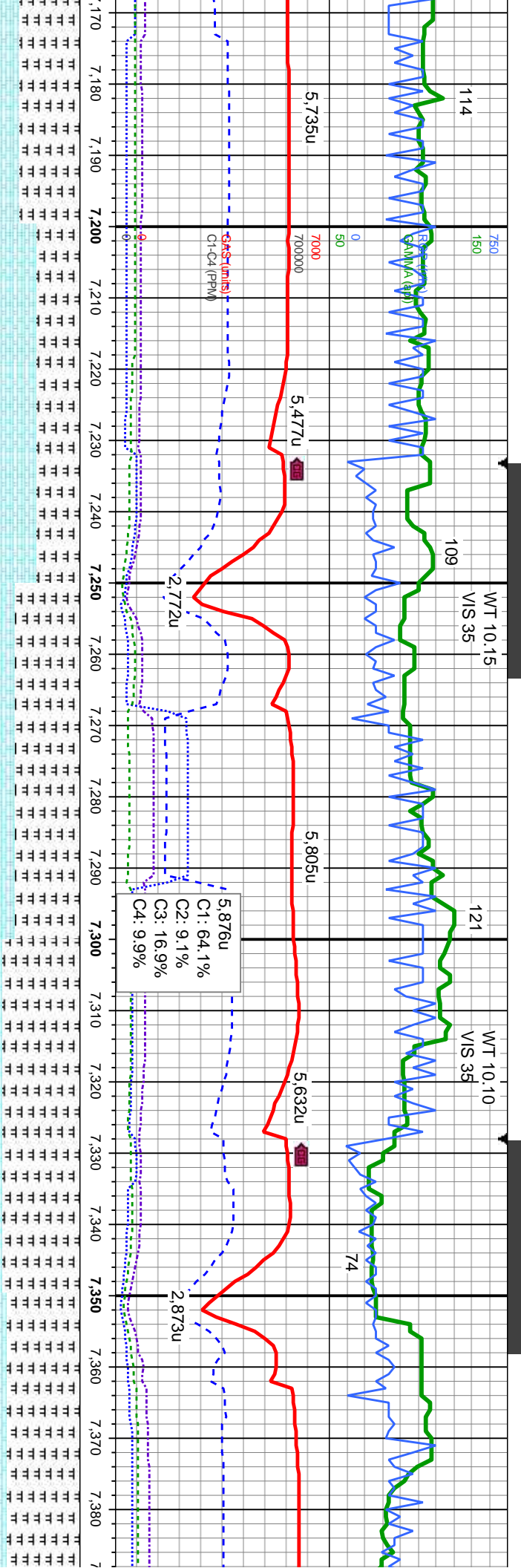
MD: 6,226'
TVD: 5,733.86'
Inclination: 86.1
Azimuth: 264°
VS: 953.95'





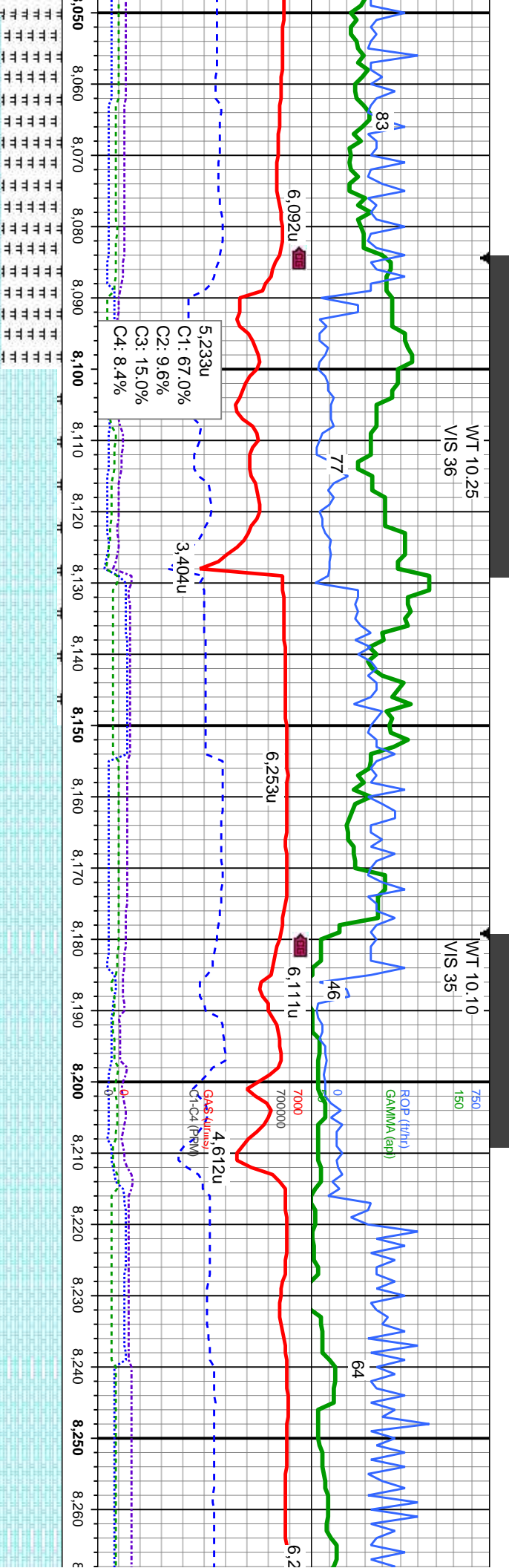






dk gy blk, blkly - sb pily, sb fis, frm, rthy tex, cal inci; CHK: med gy - dk gy brn, mod sft - mod frm, brit, sb pily - sb blkly, sb wxy - sb rthy tex, v calc; tr dul gn - brn mnrl flr, tr fos	MRLST: dk gy - dk gy blk, blkly - sb pily, sb fis, frm, rthy tex, cal inci; CHK: med gy - dk gy brn, mod sft - mod frm, brit, sb pily - sb blkly, sb wxy - sb rthy tex, v calc; tr dul gn - brn mnrl flr, tr bri orng mnrl flr, tr fos frags, tr nod pyr	MRLST: dk gy - dk gy blk, blkly - sb pily, sb fis, frm, rthy tex, cal inci; CHK: med gy - dk gy brn, mod frm, brit, sb pily - sb blkly, sb wxy - sb rthy tex, v calc; tr dul gn - brn mnrl flr, tr bri orng mnrl flr, tr fos frags, tr cal	MRLST: dk gy - dk gy blk, blkly - sb pily, sb fis, frm, rthy tex, cal inci; CHK: med gy - dk gy brn, mod frm, brit, sb pily - sb blkly, sb wxy - sb rthy tex, v calc; tr dul gn - brn mnrl flr, tr fos frags, tr cal	MRLST: dk gy - dk gy blk, blkly - sb pily, sb fis, frm, rthy tex, cal inci; CHK: med gy brn, mod frm, brit, sb pily - sb blkly wxy - sb rthy tex, v calc; tr dul gn - l flr, tr fos frags, tr cal
747.72' on: 89.2° i: 268° 86.12'	69'	MD: 7,264' TVD: 5,748.63' Inclination: 89.7° Azimuth: 268.7° VS: 1,979.84'	MD: 7,359' TVD: 5,747.8' Inclination: 91.3° Azimuth: 270.1° VS: 2,073.26'	





MRLST: dk gy - dk gy blk, blkly - sb pily, sb
fis, v frm, rthy tex, cal incl; CHK: off wh crm -
med gy brn, frm, brit, sb pily - sb blkly, sb
wxy - sb rthy tex, v calc; occ fos frags, occ
cal, com dul gn - brn mnrl flr

CHK: pred. off wh crm - lt gy brn, frm, brit, sb
pily - sb blkly, sb wxy, v calc; tr mlst, tr fos
frags, abnt dul gn mnrl flr

CHK: pred. off wh crm - lt gy brn, frm, brit, sb
pily - sb blkly, sb wxy, v calc; sl tr mlst, tr fos
frags, abnt dul gn mnrl flr

CHK: pred. off wh crm - lt gy brn, frm, brit, sb
pily - sb blkly, sb wxy, v calc; sl tr fos
frags, abnt dul gn mnrl flr

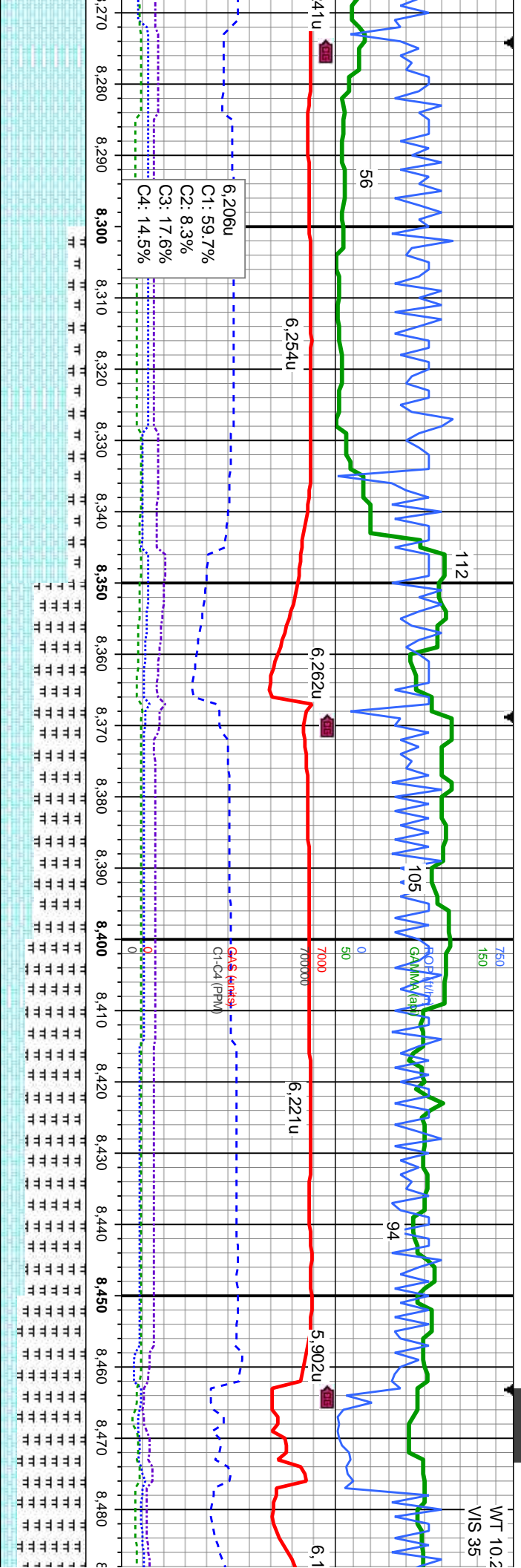
CHK: pred. off wh crm - lt gy brn, frm, brit, sb
pily - sb blkly, sb wxy, v calc; sl tr fos
frags, abnt dul gn mnrl flr

MD: 8,115'
TVD: 5,754.06'
Inclination: 93.3°
Azimuth: 271.5°
VS: 2,816.13'

MD: 8,210'
TVD: 5,750.41'
Inclination: 91.1°
Azimuth: 273.3°
VS: 2,908.45'



WT 10.2
VIS 35



CHK: off wh crm - med gy brn, frm, brit, sb
ply - sb blk, sb wxy - smwt sb rthy tex, v
calc; MRLST: dk gy brn - dk gy blk, blk - sb
ply, sb fis, v frm, rthy tex; occ fos frags, com
dul gn mnrl flr

MRLST: dk gy brn - dk gy blk, blk - sb ply,
sb fis, v frm, rthy tex; CHK: pred med gy brn,
sme crm, frm, brit, sb ply - sb blk, sb wxy -
sb rthy tex, v calc; tr fos frags, occ dul gn
mnrl flr

MRLST: dk gy brn - dk gy blk, blk - sb ply,
sb fis, v frm, rthy tex; CHK: pred med gy brn,
sme crm, frm, brit, sb ply - sb blk, sb wxy -
sb rthy tex, v calc; tr fos frags, occ dul gn
mnrl flr

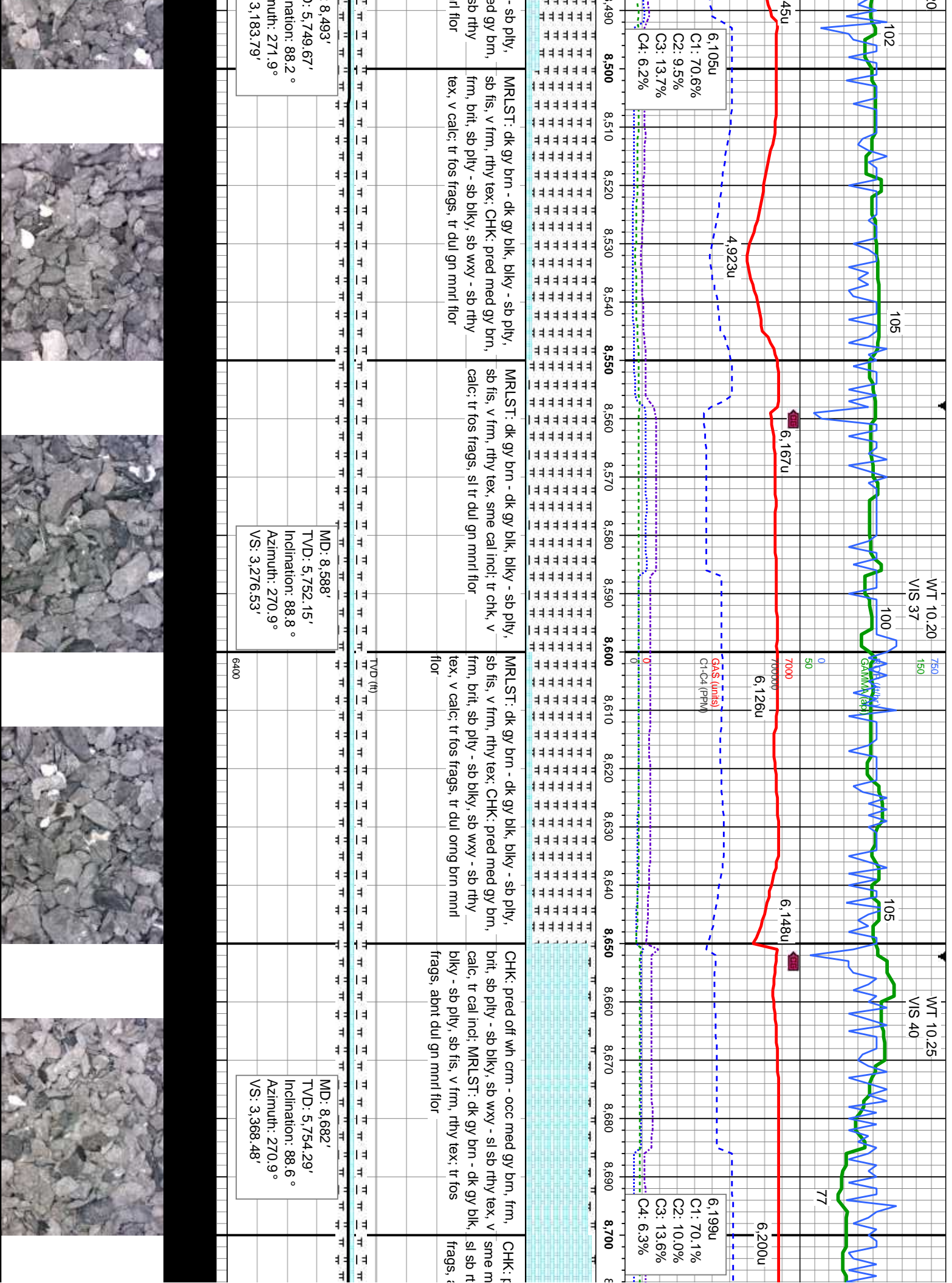
MRLST: dk gy brn - dk gy blk, blk
frm, brit, sb ply - sb blk, sb wxy -
tex, v calc; tr fos frags, tr dul gn mn

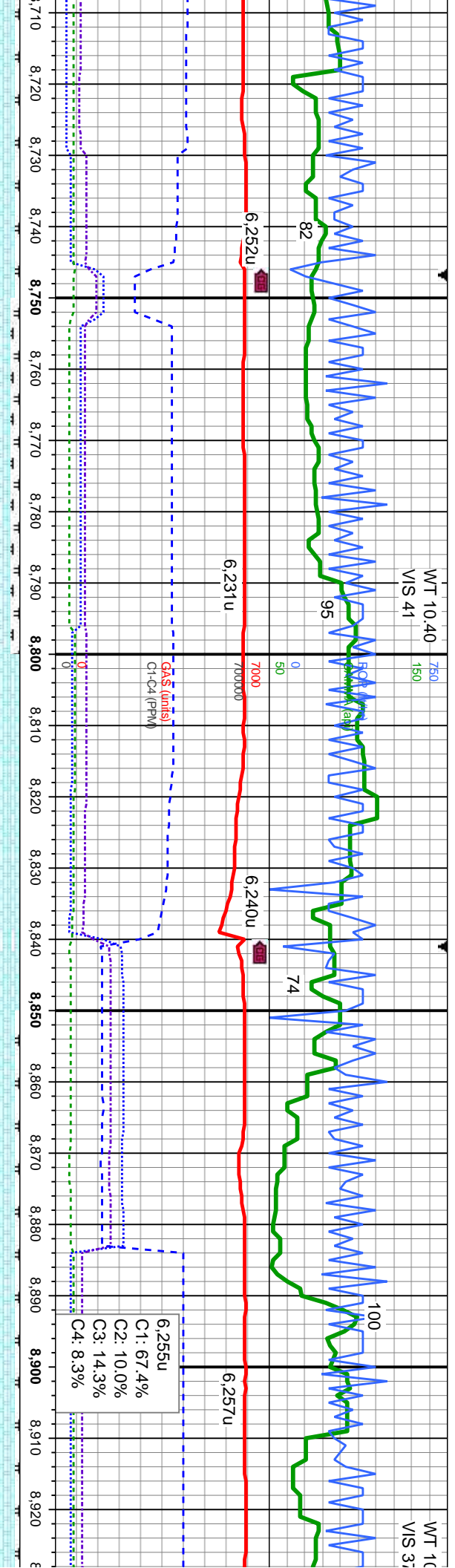
MD: 8,304'
TVD: 5,749.02'
Inclination: 90.6°
Azimuth: 272.6°
VS: 2,999.66'

MD: 8,399'
TVD: 5,748.35'
Inclination: 90.2°
Azimuth: 271.7°
VS: 3,092.15'

MD:
TVD:
Incl:
Azim:
VS:







pred off wh crm - coc med gy brn,
ot, frm, brit, sb ply - sb blk, sb wxy -
hy tex, v calc, tr cal incl; tr mlst, tr fos
abt dul gn mnrl flr

CHK: pred off wh crm - med gy brn, frm, brit,
sb ply - sb blk, sb wxy - sl sb rthy tex, v
calc, tr cal incl; MRLST: dk gy brn - dk gy blk,
blk - sb ply, sb fis, v frm, rthy tex; tr fos
frags, com dul gn mnrl flr

CHK: off wh crm, tr med gy brn, frm, brit, sb
ply - sb blk, sb wxy, v calc, tr cal incl; sl tr
mlst, abt dul gn mnrl flr

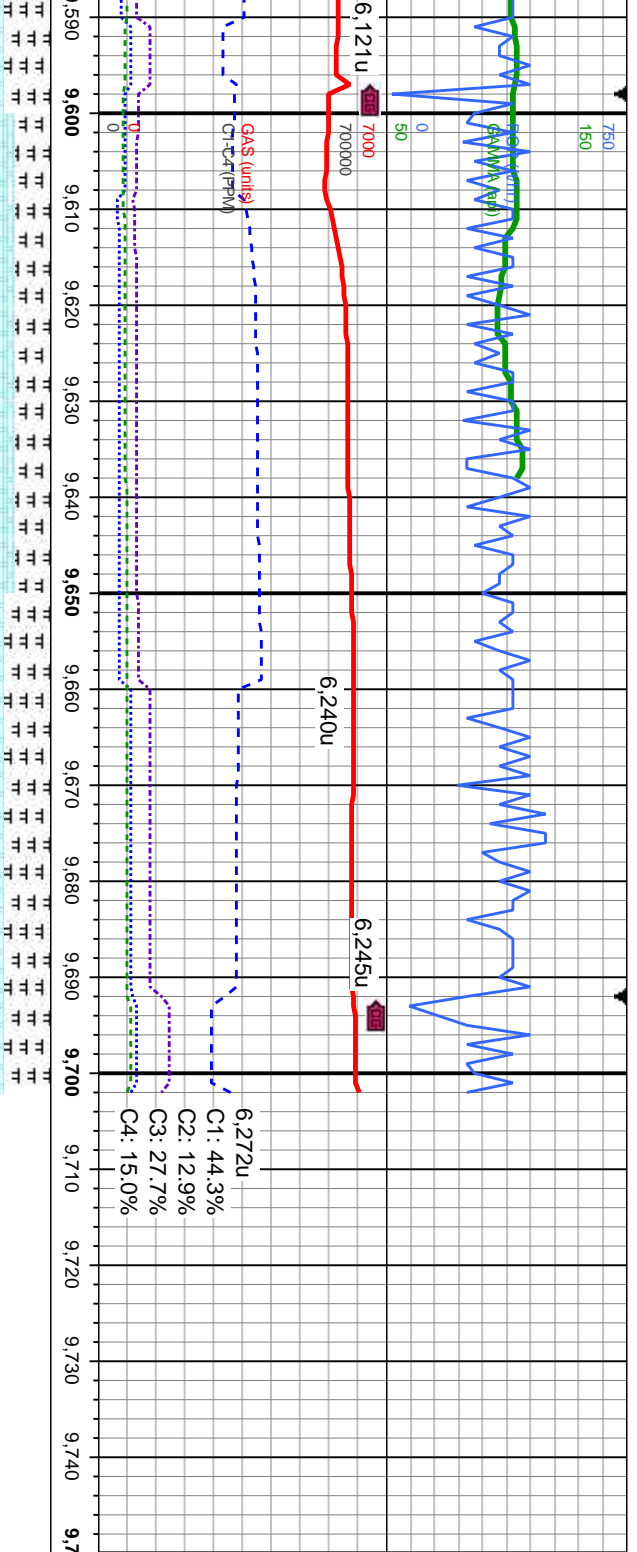
CHK: off wh crm, tr med gy brn, frm, brit, sb
ply - sb blk, sb wxy, v calc, tr cal incl; sl tr
mlst, abt dul gn mnrl flr

CHK: off wh crm, tr med
ply - sb blk, sb wxy - sb
incl; sl tr mlst, abt dul gn

MD: 8,776'
TVD: 5,756.75'
Inclination: 88.4°
Azimuth: 270.7°
VS: 3,460.45'

MD: 8,871'
TVD: 5,760.23'
Inclination: 87.4°
Azimuth: 270°
VS: 3,553.52'





sb blk, : dk gy brn , rthy tex:	CHK: med gy brn, frm, bnt, sb pty - sb blk, sb wxy - sb rthy tex, v calc, occ cal incl; MRLST: dk gy brn - dk gy blk, blk - sb pty, sb fis, frm, occ sft, rthy tex; occ dul gn mnrl flr	CHK: med gy brn, frm, bnt, sb pty - sb blk, sb wxy - sb rthy tex, v calc, occ cal incl; MRLST: dk gy brn - dk gy blk, blk - sb pty, sb fis, frm, occ sft, rthy tex; occ dul gn mnrl flr
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TVD (ft)	MD: 9,628' TVD: 5,766.33' Inclination: 89.0° Azimuth: 266.5° VS: 4,300.75'	MD: 9,638' TVD: 5,766.54' Inclination: 88.6° Azimuth: 266.1° VS: 4,310.67'
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NOBLE ENERGY INC
TIMBRO STATE LD16-65HN
TD @ 9,702' MD
12/14/2013 @ 19:37 hrs

Thank you for choosing
Columbine Logging Inc.