

COLUMBINE LOGGING

Scale: 5" / 100'
Measured Depth Log

Well Name MPIot Standalone Template

Location NENW SEC 6 T4N R62W

State CO

County WELD

Country USA

Rig Number CADE 26

API Number 05-123-39862-00

AFE # 14234

Region DJ BASIN

Field WATTENBERG

Spud Date 9/18/2014

Drilling Completed 9/25/2014

Surface Coordinates 868' FNL x 1675' FWL (LAT: 40.34670,-104.37140)

Bottom Hole Coordinates 470' FSL x 1081' FWL (LAT: 40.33556,-104.37297)PROJECTED

Ground Elevation 4538'

K.B. Elevation 4555'

Logged Interval 5950' To 11115'

Total Depth 11115'

Formation NIOBRARA, B-CHALK

Type of Drilling Fluid LSND, H2O

Operator

Company Bonanza Creek Energy Inc.

Address 410 17th Street, Suite 1500 Denver, CO 80202

Geologist

Name Paul McKay

Company Bonanza Creek

Address 410 17TH STREET, SUITE 1500 DENVER, CO

Other

Kevin Geraghty Columbine Logging

Mark Norris Columbine Logging

Zone Color Coding

Oil
Note
Error

Condensate
Core
Water

Rock Types

UNKNOWN	COAL	CONGLOMERATE	CHALK
ANHYDRITE	MARLSTONE	BRECCIA	SILTY SHALE
GYPSUM	CLAYSTONE	TILL	NO SAMPLE
SALT	SHALE	BENTONITE	SHALY SANDSTONE
SIDERITE or LIMONITE	SHALE GRAY	TUFF	SHALY SILTSTONE
LIMESTONE	SHALE COLORED	IGNEOUS	
DOLomite	SILTSTONE	METAMORPHIC	
CHErT	SANDSTONE	CEMENT	

Accessories

Fossils		Stringer	
F FOSSIL	— ARGILLACEOUS	↘ GLAUCONITE	
🐚 GASTROPOD	/ ARGILLITE GRAIN	🌀 GYPSIFEROUS	
🪨 ALGAE	B BENTONITE	⬇️ HEAVY MINERAL	🔶 ANHYDRITE STRINGER
🐚 AMPHIPORA	↘ BITUMENOUS SUBSTANCE	K KAOLIN	🔴 BENTONITE STRINGER
🐚 BELEMNITE	🌀 BRECCIA FRAGMENTS	🪨 MARLSTONE	— COAL STRINGER
🐚 BIOCLASTIC	⬇️ CALCAREOUS	🪨 MINERAL CRYSTALS	🟡 DOLOMITE STRINGER
🐚 BRACHIOPOD	➡️ PELLET	🟩 NODULES	🟢 GYPSUM STRINGER
🐚 BRYOZOA	🌀 PLANT REMAINS	🟩 PHOSPHATE PELLETS	🟢 LIMESTONE STRINGER
🐚 CEPHALOPOD	💰 PLANT SPORES	🔺 CHITL	🔴 MARLSTONE (CALO) STRG
🐚 CORAL	🌀 SCAPHOPOD	— COAL - THIN BEDS	🔴 MARLSTONE (DOL) STRG
🐚 CRINOID	III STROMATOPOROID	🔺 DOLOMITIC	🟡 SANDSTONE STRINGER
🐚 ECHINOID		+	— SHALE STRINGER
🐚 FISH		● FERRUGINOUS PELLET	🟡 SILTSTONE STRINGER
🐚 FORAMINIFERA	↘ ANHYDRITIC	↘ FERRUGINOUS	
		↘ TUFFACEOUS	

Oil Show

Oil Show

☐ ORGANIC

☒ PINPOINT

☐ DEAD










☒ VUGGY

Engineering

QUESTIONABLE

SPOTTED STAINING BIT

Porosity

Symbol	Label
	CASING
	CONNECTION (L)
	CONNECTION (R)
	FENESTAL
	FRACTURE
	INTERCRYSTALLINE
	INTERPOOLITIC
	MOLDIC
	FAULT
	CONNECTION (L)
	CONNECTION (R)
	FENESTAL
	FRACTURE
	INTERCRYSTALLINE
	INTERPOOLITIC
	MOLDIC
	FAULT

Other Symbols

 FORMATION TOP  CONNECTION GAS  CRYPTOXLN

 GAS SHOW  CONNECTION DOWN  EARTHY

 MN DEPTH  CASING  FINELYXLN

 NORMAL FAULT  FORMATION TOP  GRAINSTONE

 OIL SHOW  LITHOGRAPHIC

 OVERTURNED STRATA  MICROXLN


Rounding

 REVERSE FAULT  ANGULAR  MUDSTONE

 SIDEWALL CORE (LEFT)  ROUNDED  PACKSTONE

 SIDEWALL CORE (RIGHT)  SUBANG  WACKESTONE

 SLIDE  SUBRND

 SURVEY

Textures

 TRIP GAS  MODERATE

 WIRELINE TESTED - LEFT  BOUNDSTONE  POOR

 WIRELINE TESTED - RT  CHALKY  WELL

ROP
ROP —
GAMMA —

Bit Data
Bit #: 2
Type: HEO4JMRSV
Size: 8.75
S/N: 1395263

Total Gas & Chromatograph

GAS —
C1 —
C2 —
C3 —
C4 —
CO2 —
H2S —

Depth Labels

% Lith

COLUMBINE LOGGING RIGGED UP ON
9/21/2014 MANNED 2-PERSON LOGGING
WITH BLOODHOUND GAS
CHROMATOGRAPH UNIT #0696 BEGAN
ON 9/22/2014, 01:05 MST at 5950' MD

MD: 5,996'
TVD: 5,801.06'
Inclination: 10.37 °
Azimuth: 183.14 °
VS: -765.53'

MD: 6,044'
TVD: 5,847.8'
Inclination: 15.71 °
Azimuth: 182.14 °
VS: -754.73'

MD: 6
TVD: :
Inclination:
Azimu
VS: -7

Well Bore
TVD —

TVD (ft)

TVD (ft)

100% SLTY SH: lt-med gy, some dk gy,
mod sft - sl firm, sb blk-y-sb pily, occ pily,
rthy, mtx; arg-sily, sl calc, tr shly ss

100% SLTY SH: lt-med gy, some dk gy, mod sft - sl
firm, sb blk-y-sb pily, occ pily, rthy, mtx; arg-sily, sl calc,
tr shly ss

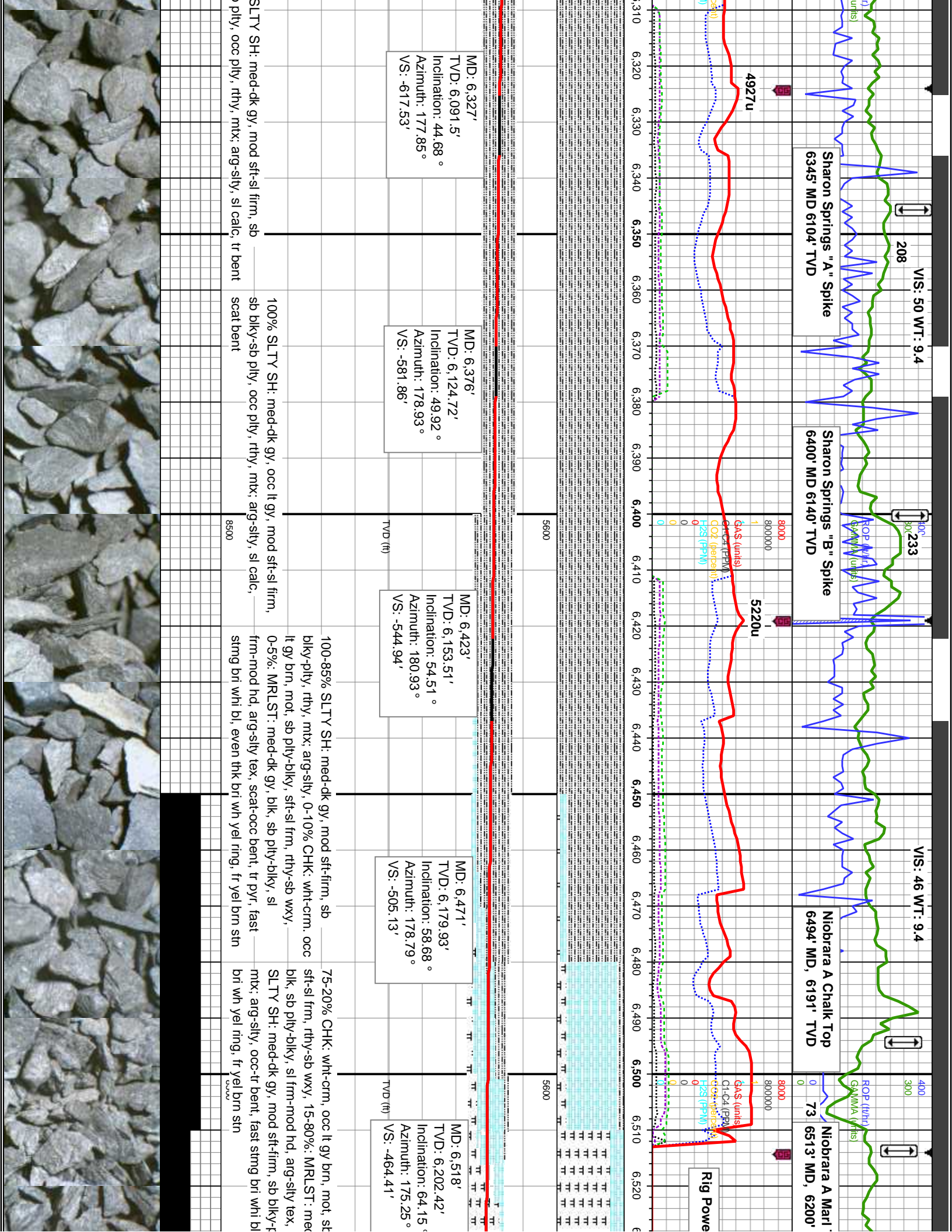
100% SLTY SH: lt-med gy, some dk gy, mod sft - sl
firm, sb blk-y-sb pily, occ pily, rthy, mtx; arg-sily, sl calc,
tr shly ss

Oil Show

E
G
M
F
T
S

Images





Tangent Section
INC: 69.44, 6562'-6632'

Niobrara B Chalk Top
6674' MD, 6255' TVD

VIS: 45 WT: 9.3+



Top TVD

321

155

61

5119u

109

ROP (ft/hr)

GAMMA (units)

C1-C4 (PPM)

CO2 (percent)

H2S (PPM)

Red line

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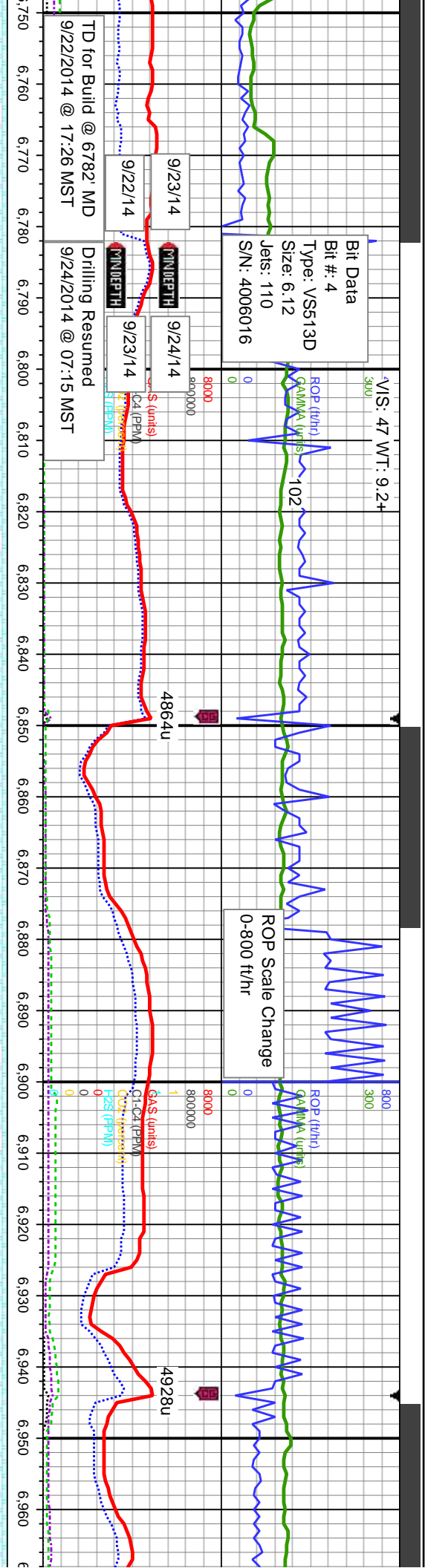
9,820

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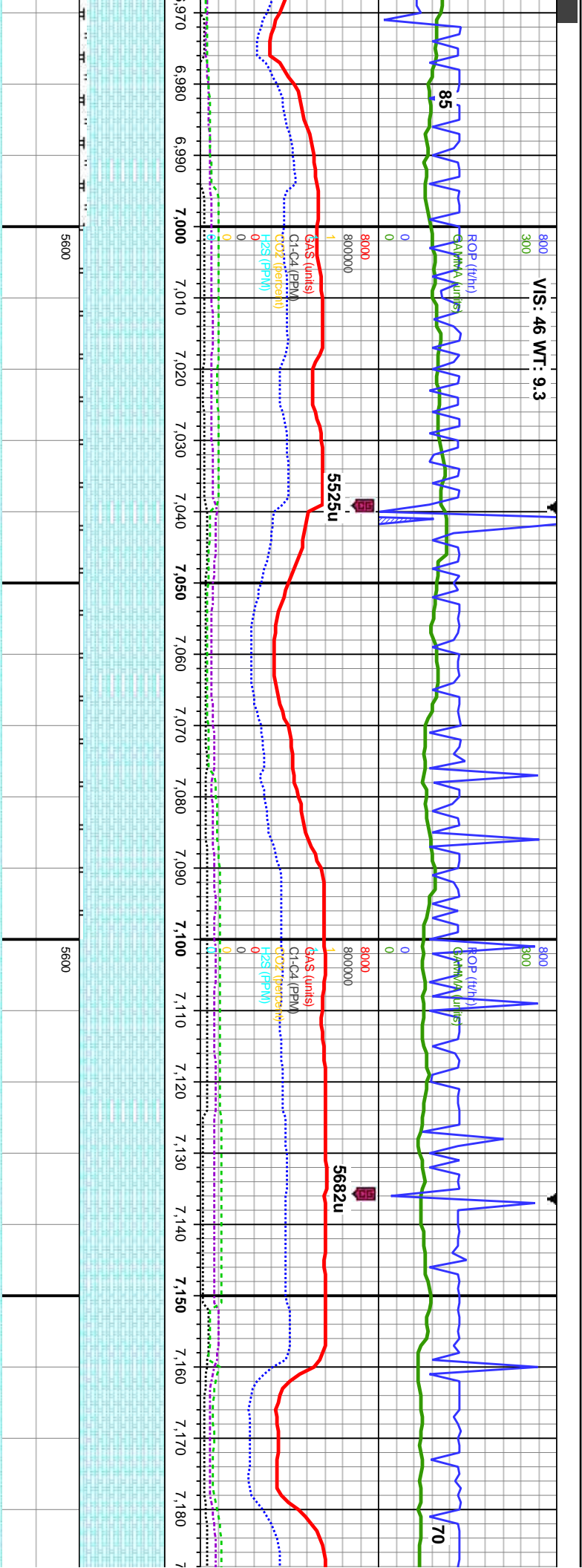
9,860



Projection to Bit: 6782.0 INC: 89.50 AZM: 174.00' TVD: 6268' VS: 218'	MD: 6,795' TVD: 6,268.48' Inclination: 90.17° Azimuth: 172.33° VS: -205.18'	MD: 6,890' TVD: 6,267.83' Inclination: 90.62° Azimuth: 175.14° VS: -112.41'
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brn, occ wht-crm, mot, sb b wxy, 30-25%: MRLST: Ky, sl frm-mod hd, arg-sily me uphole contaminants, thk bri wh yel ring, fr yel brn	80% CHK: lt-med gy brn, occ wht-crm, mot, sb pily-blky, sft-sl frm, rthy-sb wxy, 20%: MRLST: med-dk gy, blk, sb pily-blky, sl frm-mod hd, arg-sily tex, mtx, calc, tr cal frags, mod od, fast sting bri whi bl, even thk bri wh yel ring, fr yel brn stn	85% CHK: lt-med gy brn, occ wht-crm, mot, sb pily-blky, sft-sl frm, rthy-sb wxy, 15%: MRLST: med-dk gy, blk, sb pily-blky, sl frm-mod hd, arg-sily tex, mtx, calc, tr cal frags, mod chk flor, mod od, fast sting bri whi bl, even thk bri wh yel ring, fr yel brn stn	85% CHK: lt-med gy brn, occ wht-crm, mot, sb pily-blky, sft-sl frm, rthy-sb wxy, 15%: MRLST: med-dk gy, blk, sb pily-blky, sl frm-mod hd, arg-sily tex, mtx, calc, tr cal frags, tr fos frags, mod chk flor, mod od, fast sting bri whi bl, even mod bri wh yel ring, fr yel brn stn	90% CHK: lt-me sb pily-blky, sft- MRLST: med-dl frm-mod hd, arg frags, mod chk k bl, even mod br
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MD: 6,985'
TVD: 6,267.98'
Inclination: 89.2 °
Azimuth: 177.76 °
VS: -18.79'

MD: 7,080'
TVD: 6,269.43'
Inclination: 89.04 °
Azimuth: 177.84 °
VS: 75.19'

MD: 7,175'
TVD: 6,270.41'
Inclination: 89.78 °
Azimuth: 178.42 °
VS: 169.26'

sd gy brn, occ wht-crm, mot,
sl frm, rthy-sb wxy, 10%:
k gy, blk, sb pily-blky, sl
-sily tex, mx; calc, tr cal
lor, g od, fast stmg bri whi
bri wh yel ring, fr yel brn stn

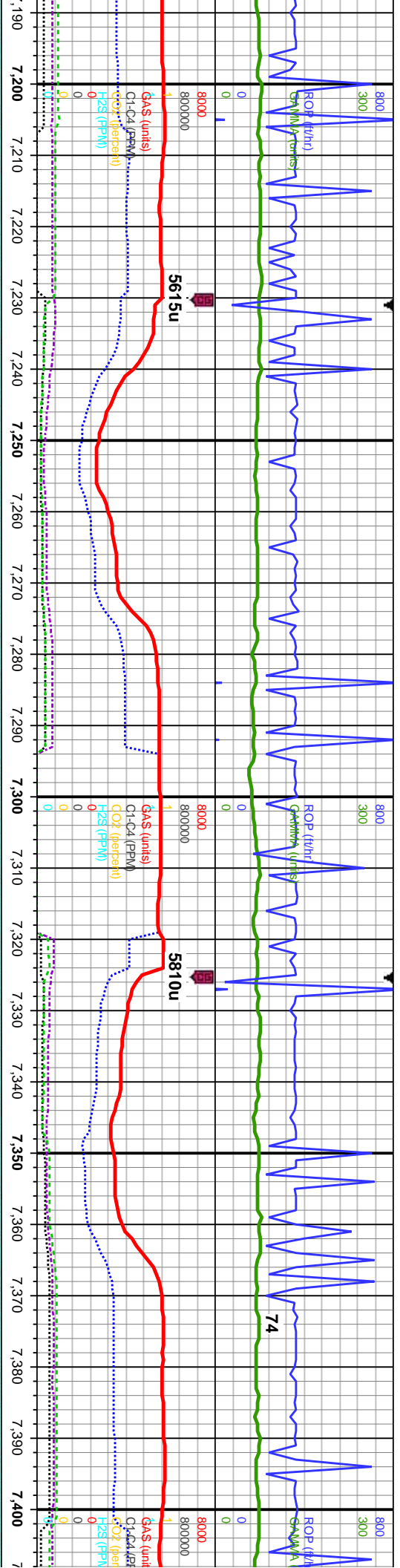
95% CHK: lt-med gy brn, occ wht-crm, mot,
sb pily-blky, sft-sl frm, rthy-sb wxy, 5%:
MRLST: med-dk gy, blk, sb pily-blky, sl
frm-mod hd, arg-sily tex, mx; calc, tr cal
frags, mod chk flor, g od, fast stmg bri whi
bl, even mod bri wh yel ring, mod yel brn
stn

95% CHK: lt-med gy brn, occ wht-crm, mot,
sb pily-blky, sft-sl frm, rthy-sb wxy, 5%:
MRLST: med-dk gy, blk, sb pily-blky, sl
frm-mod hd, arg-sily tex, mx; calc, tr cal
frags, mod chk flor, g od, fast stmg bri whi
bl, even mod bri wh yel ring, mod yel brn
stn

100% CHK: lt-med gy brn, occ wht-crm,
mot, sb pily-blky, sft-sl frm, rthy-sb wxy, g
chk flor, g od, v fast stmg bri whi bl, even thk
bri wh yel ring, thk yel amb stn

100% CHK: lt-med gy brn, occ wht-
mot, sb pily-blky, sft-sl frm, rthy-sb
chk flor, g od, v fast stmg bri whi bl
bri wh yel ring, thk yel amb stn





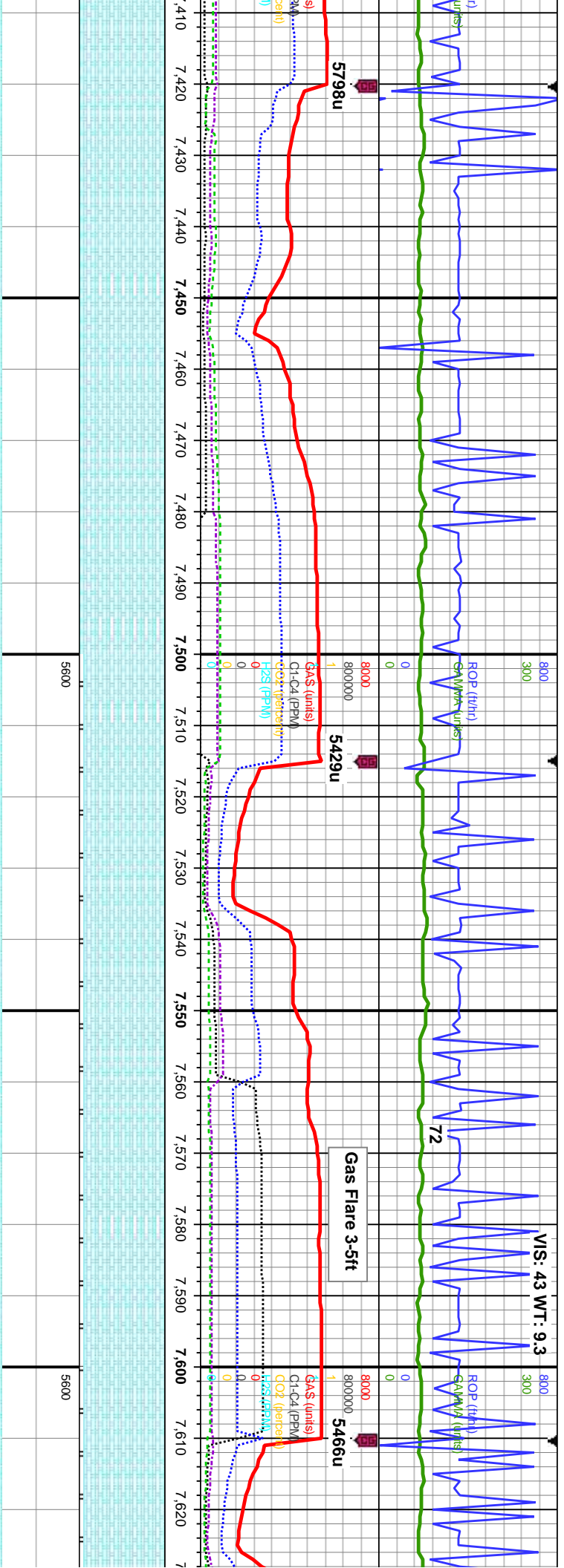
5600		5600		5600
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MD: 7,269'
TVD: 6,270.85'
Inclination: 89.69 °
Azimuth: 178.35 °
VS: 262.39'

MD: 7,364'
TVD: 6,271.59'
Inclination: 89.41 °
Azimuth: 178.34 °
VS: 356.51'

TVD (ft)	100% CHK: lt-med gy brn, occ wht-crm, mot, sb ply-blky, sft-sl frm, rthy-sb wxy, v g chk flor, g od, v fast stimg bri whi bl, even thk bri wh yel ring, thk yel amb stn	TVD (ft)	100% CHK: lt-med gy brn, occ wht-crm, mot, sb ply-blky, sft-sl frm, rthy-sb wxy, v g imbd cal, tr cal frags, g chk flor, g od, v fast stimg bri whi bl, even thk bri wh yel ring, thk yel amb stn	TVD (ft)	100% CHK: lt-med gy brn, occ wht-crm, mot, sb ply-blky, sft-sl frm, rthy-sb wxy, occ imbd cal, tr cal frags, g chk flor, g od, v fast stimg bri whi bl, even thk bri wh yel ring, thk yel amb stn
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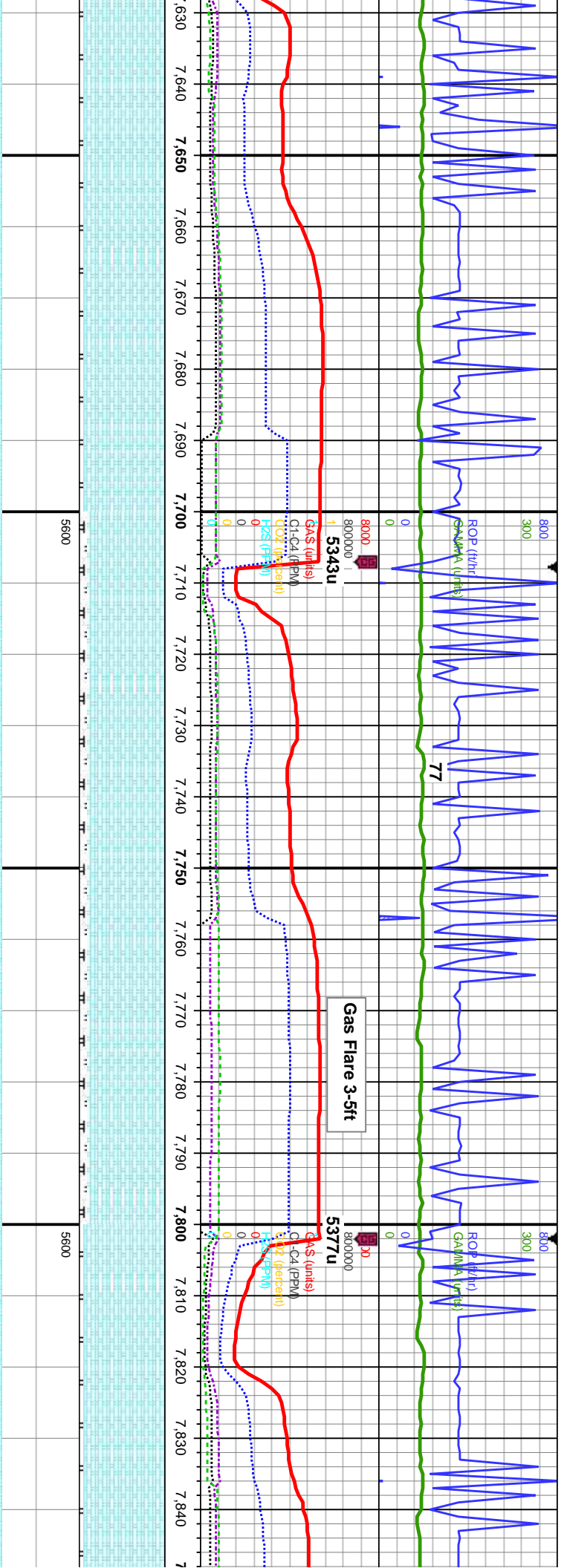


MD: 7,459'
TVD: 6,272.03'
Inclination: 90.06 °
Azimuth: 178.57 °
VS: 450.65'

MD: 7,553'
TVD: 6,272.21'
Inclination: 89.72 °
Azimuth: 178.63 °
VS: 543.83'

CHK: lt-med gy brn, occ wht-crm, o ply-blky, sft-sl frm, rthy-sb wxy, occ al, tr cal frags, g chk flor, g od, fast sting bri whi bl, even mod bri wh yel ring, al amb stn	100% CHK: lt-med gy brn, occ wht-crm, mot, sb ply-blky, sft-sl frm, rthy-sb wxy, occ imbd cal, tr cal frags, g chk flor, g od, fast sting bri whi bl, even mod bri wh yel ring, mod yel amb stn	95% CHK: lt-med gy brn, occ wht-crm, mot, sb ply-blky, sft-sl frm, rthy-sb wxy, tr imbd cal 5%: MRLST: med-dk gy, blk, sb ply-blky, sl frm-mod hd, arg-sily tex, mtx; calc, tr cal frags, mod chk flor, g od, v fast sting bri whi bl, even thk bri wh yel ring, thk yel amb sin	95% CHK: lt-med gy brn, occ wht-crm, mot, sb ply-blky, sft-sl frm, rthy-sb wxy, tr imbd cal 5%: MRLST: med-dk gy, blk, sb ply-blky, sl frm-mod hd, arg-sily tex, mtx; calc, tr cal frags, mod chk flor, g od, v fast sting bri whi bl, even thk bri wh yel ring, thk yel amb sin	95% CHK: lt-med gy brn, occ wht-crm, mot, sb ply-blky, sft-sl frm, rthy-sb wxy, tr imbd cal 5%: MRLST: med-dk gy, blk, sb ply-blky, sl frm-mod hd, arg-sily tex, mtx; calc, tr cal frags, g chk flor, g od, fast sting bri whi bl, even mod bri wh yel ring, even mod bri wh yel ring,
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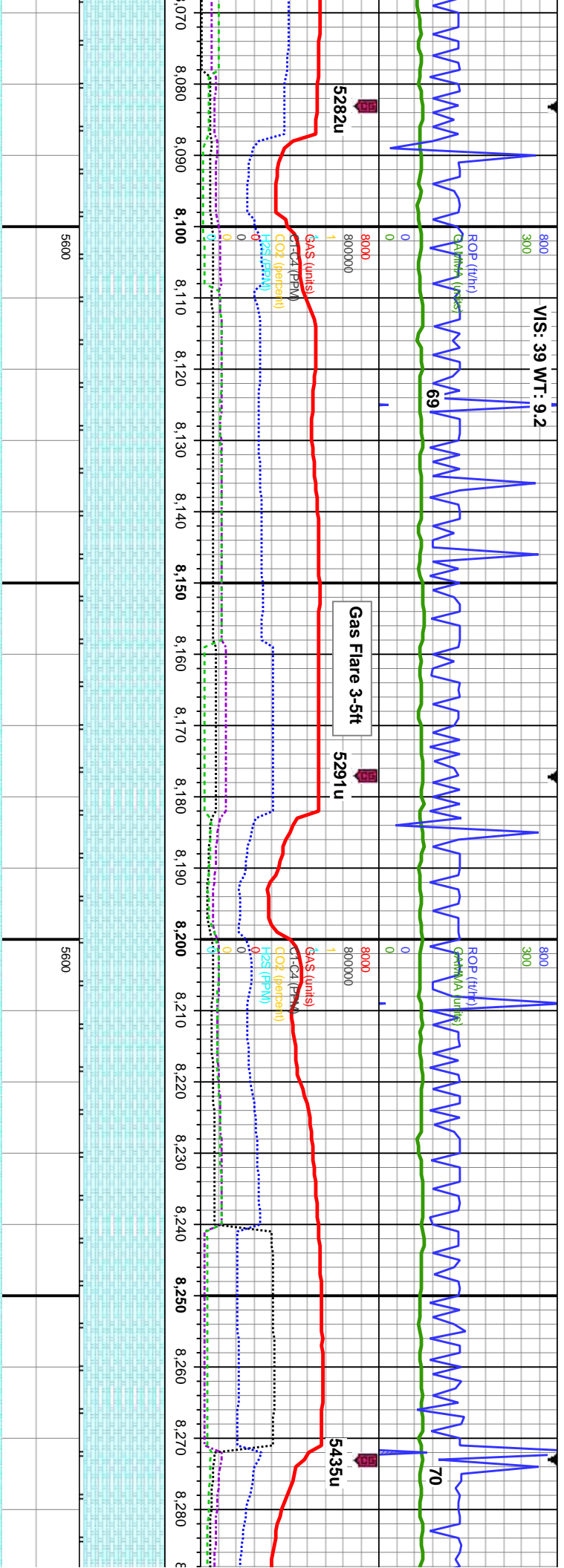
MD: 7,648'
TVD: 6,272.85'
Inclination: 89.51 °
Azimuth: 178.24 °
VS: 637.96'

MD: 7,742'
TVD: 6,273.2'
Inclination: 90.06 °
Azimuth: 178.55 °
VS: 731.1'

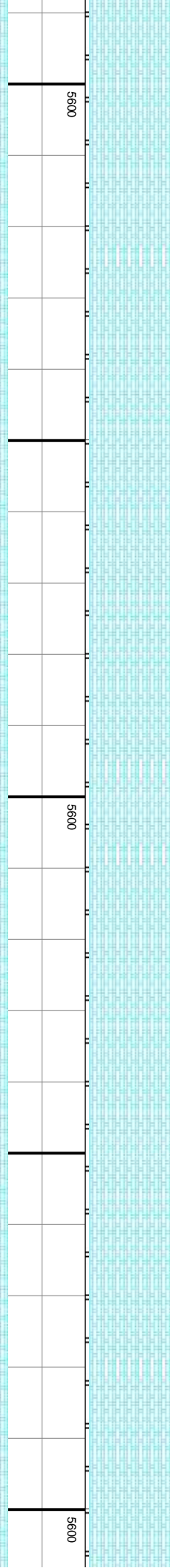
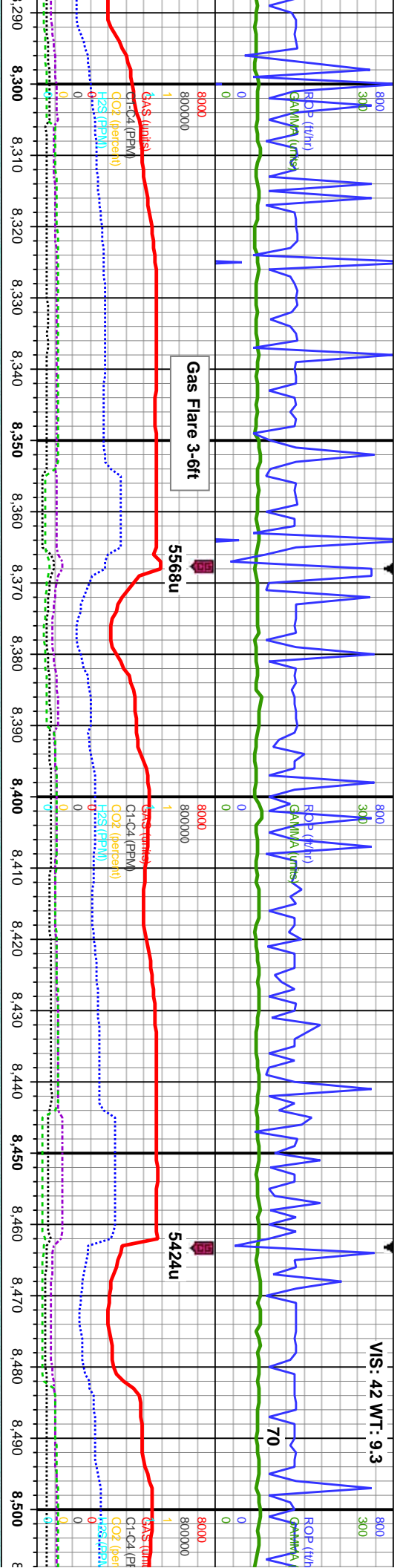
MD: 7,838'
TVD: 6,273.31'
Inclination: 89.82 °
Azimuth: 178.34 °
VS: 826.23'

occ wht-crm, mot, /-sb wxy, occ imbd	95% CHK: lt-med gy brn, occ wht-crm, mot, sb pily-biky, sft-sl frm, rthy-sb wxy, occ imbd cal 5%: MRLST: med-dk gy, blk, sb pily-biky, sl frm-mod hd, arg-sily tex, tr bent, tr cal frags, g chk flor, g od, fast sting bri whi bl, even mod bri wh yel ring, mod yel amb stn	90% CHK: lt-med gy brn, occ wht-crm, mot, sb pily-biky, sft-sl frm, rthy-sb wxy, 10%: MRLST: med-dk gy, blk, sb pily-biky, sl frm-mod hd, arg-sily tex, scatt cal frags, mod chk flor, g od, fast sting bri whi bl, even mod bri wh yel ring, mod yel amb stn	90% CHK: lt-med gy brn, occ wht-crm, mot, sb pily-biky, sft-sl frm, rthy-sb wxy, 10%: MRLST: med-dk gy, blk, sb pily-biky, sl frm-mod hd, arg-sily tex, scatt cal frags, mod chk flor, g od, fast sting bri whi bl, even mod bri wh yel ring, mod yel amb stn	95% CHK: lt-med gy brn, occ wht-crm, mot, sb pily-biky, sft-sl frm, rthy-sb wxy, 5%: MRLST: med-dk gy, blk, sb pily-biky, sl frm-mod hd, arg-sily tex, scatt cal frags, mod chk flor, g od, fast sting bri whi bl, even mod bri wh yel ring, mod yel amb stn
occ wht-crm, mot, /-sb wxy, occ imbd	95% CHK: lt-med gy brn, occ wht-crm, mot, sb pily-biky, sft-sl frm, rthy-sb wxy, occ imbd cal 5%: MRLST: med-dk gy, blk, sb pily-biky, sl frm-mod hd, arg-sily tex, tr bent, tr cal frags, g chk flor, g od, fast sting bri whi bl, even mod bri wh yel ring, mod yel amb stn	90% CHK: lt-med gy brn, occ wht-crm, mot, sb pily-biky, sft-sl frm, rthy-sb wxy, 10%: MRLST: med-dk gy, blk, sb pily-biky, sl frm-mod hd, arg-sily tex, scatt cal frags, mod chk flor, g od, fast sting bri whi bl, even mod bri wh yel ring, mod yel amb stn	90% CHK: lt-med gy brn, occ wht-crm, mot, sb pily-biky, sft-sl frm, rthy-sb wxy, 10%: MRLST: med-dk gy, blk, sb pily-biky, sl frm-mod hd, arg-sily tex, scatt cal frags, mod chk flor, g od, fast sting bri whi bl, even mod bri wh yel ring, mod yel amb stn	95% CHK: lt-med gy brn, occ wht-crm, mot, sb pily-biky, sft-sl frm, rthy-sb wxy, 5%: MRLST: med-dk gy, blk, sb pily-biky, sl frm-mod hd, arg-sily tex, scatt cal frags, mod chk flor, g od, fast sting bri whi bl, even mod bri wh yel ring, mod yel amb stn





d gy brn, occ wht-ctrm, mot, sl frm, rthy-sb wxy, occ cal	95% CHK: lt-med gy brn, mot, sb pty-blky, sft-sl frm, rthy-sb wxy, occ cal incl, 5%: MRLST: med-dk gy, blk, sb pty-blky, sl frm-mod hd, arg-sily tex, scat imbd cal, mod chk flr, g od, fast sting bri	95% CHK: lt-med gy brn, mot, sb pty-blky, sft-sl frm, rthy-sb wxy, occ cal incl, 5%: MRLST: med-dk gy, blk, sb pty-blky, sl frm-mod hd, arg-sily tex, scat imbd cal, mod chk flr, g od, fast sting bri whi bl, even mod yel amb ring, mod yel amb sin	95% CHK: lt-med gy brn, mot, sb pty-blky, sft-sl frm, rthy-sb wxy, occ cal incl, 5%: MRLST: med-dk gy, blk, sb pty-blky, sl frm-mod hd, arg-sily tex, scat imbd cal, occ fos frags, g chk flr, g od, v fast sting bri whi bl, even thk bri wh yel ring, thk yel amb sin
mod hd, arg-sily tex, scat chk flr, g od, fast sting bri yel amb ring, mod yel amb	95% CHK: lt-med gy brn, mot, sb pty-blky, sft-sl frm, rthy-sb wxy, occ cal incl, 5%: MRLST: med-dk gy, blk, sb pty-blky, sl frm-mod hd, arg-sily tex, scat imbd cal, mod chk flr, g od, fast sting bri whi bl, even mod yel amb ring, mod yel amb sin	95% CHK: lt-med gy brn, mot, sb pty-blky, sft-sl frm, rthy-sb wxy, occ cal incl, 5%: MRLST: med-dk gy, blk, sb pty-blky, sl frm-mod hd, arg-sily tex, scat imbd cal, mod chk flr, g od, fast sting bri whi bl, even mod yel amb ring, mod yel amb sin	95% CHK: lt-med gy brn, mot, sb pty-blky, sft-sl frm, rthy-sb wxy, occ cal incl, 5%: MRLST: med-dk gy, blk, sb pty-blky, sl frm-mod hd, arg-sily tex, scat imbd cal, occ fos frags, g chk flr, g od, v fast sting bri whi bl, even thk bri wh yel ring, thk yel amb sin
MD: 8,123' TVD: 6,273.04' Inclination: 90.06 ° Azimuth: 178.41 ° VS: 1,108.62'	MD: 8,218' TVD: 6,272.89' Inclination: 90.12 ° Azimuth: 178.57 ° VS: 1,202.77'	MD: 8,218' TVD: 6,272.89' Inclination: 90.12 ° Azimuth: 178.57 ° VS: 1,202.77'	MD: 8,218' TVD: 6,272.89' Inclination: 90.12 ° Azimuth: 178.57 ° VS: 1,202.77'
TVD (ft)	TVD (ft)	TVD (ft)	TVD (ft)



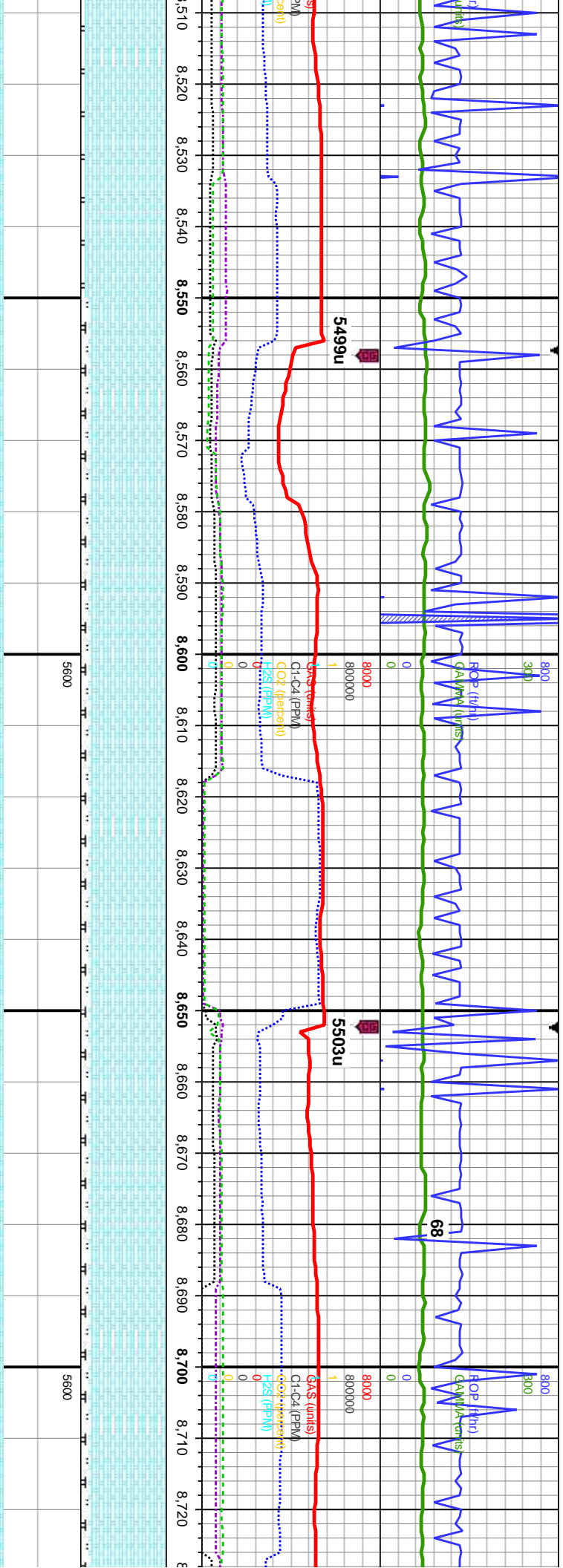
MD: 8,313'
TVD: 6,272.64'
Inclination: 90.18 °
Azimuth: 178.33 °
TVI
VS: 1,296.91'

MD: 8,408'
TVD: 6,272.42'
Inclination: 90.09 °
Azimuth: 178.28 °
VS: 1,391.02'

MD: 8,503'
TVD: 6,272.3
Inclination: 8
Azimuth: 178
VS: 1,485.1'

95% CHK: lt-med gy bm, occ wht-crm, mot, sb ply-biky, sft-sl frm, rthy-sb wxy, occ cal incl, 5%: MRLST: med-dk gy, blk, sb ply-biky, sl frm-mod hd, arg-sily tex, occ imbd cal, occ fos frags, mod chk flor, g od, fast-mod sting bri whi bl, even mod yel amb ring, mod yel amb stn	95% CHK: lt-med gy bm, occ wht-crm, mot, sb ply-biky, sft-sl frm, rthy-sb wxy, occ cal incl, 5%: MRLST: med-dk gy, blk, sb ply-biky, sl frm-mod hd, arg-sily tex, mtx: calc, occ imbd cal, occ fos frags, mod chk flor, mod od, fast-mod sting bri whi bl, even mod yel amb ring, mod yel amb stn	95% CHK: lt-med gy bm, occ wht-crm, mot, sb ply-biky, sft-sl frm, rthy-sb wxy, occ cal incl, 5%: MRLST: med-dk gy, blk, sb ply-biky, sl frm-mod hd, arg-sily tex, mtx: calc, occ imbd cal, occ fos frags, mod chk flor, mod od, fast-mod sting bri whi bl, even mod yel amb ring, mod yel amb stn	95% CHK: lt-med gy bm, mot, sb ply-biky, sft-sl frm, rthy-sb wxy, occ cal incl, 5%: MRLST: med-dk gy, blk, sb ply-biky, sl frm-mod hd, arg-sily tex, mtx: calc, tr fos frags, g chk flor, g od, fast-mod sting bri whi bl, even mod yel amb ring, mod yel amb stn	95% C sft-sl fr MRLS frm-m imbd c fast-m amb r
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99'
9.94 °
.09 °

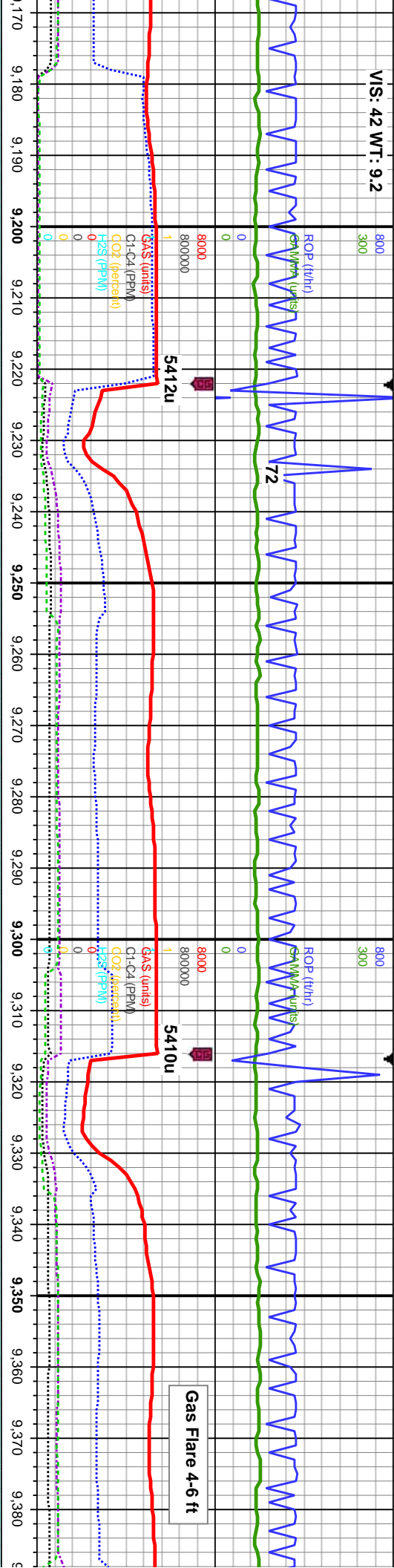
MD: 8,598'
TVD: 6,272.72'
Inclination: 89.66 °
Azimuth: 177.09 °
VS: 1,579.04'

MD: 8,691'
TVD: 6,273.12'
Inclination: 89.85 °
Azimuth: 177.58 °
VS: 1,670.93'

HK: lt-med gy brn, mot, sb pty-blky, rthy-sb wxy, occ cal incl, 5%: T: med-dk gy, blk, sb pty-blky, sl hd, arg-sily tex, mx; calc, occ cal, tr fos frags, g chk flor, g od, stmg bri whi bl, even mod yel ng, mod yel amb stn	90% CHK: lt-med gy brn, mot, sb pty-blky, sft-sl frm, rthy-sb wxy, occ cal incl, 10%: MRLST: med-dk gy, blk, sb pty-blky, sl frm-mod hd, arg-sily tex, mx; calc, tr imbd cal, tr fos frags, g chk flor, g od, fast-mod stmg bri whi bl, even mod yel amb stn	90% CHK: lt-med gy brn, mot, sb pty-blky, sft-sl frm, rthy-sb wxy, occ cal incl, 10%: MRLST: med-dk gy, blk, sb pty-blky, sl frm-mod hd, arg-sily tex, mx; calc, tr imbd cal, tr fos frags, g chk flor, g od, fast stmg bri whi bl, even thk bri wh yel ring, mod yel brn stn	90% CHK: lt-med gy brn, mot, sb pty-blky, sft-sl frm, rthy-sb wxy, occ cal incl, 10%: MRLST: med-dk gy, blk, sb pty-blky, sl frm-mod hd, arg-sily tex, tr imbd cal, tr fos frags, mod chk flor, g od, fast stmg bri whi bl, even thk bri wh yel ring, mod yel brn stn	90% CHK: lt-med gy brn, mot, sb pty-blky, sft-sl frm, rthy-sb wxy, occ cal incl, 10%: MRLST: med-dk gy, blk, s frm-mod hd, arg-sily tex, t frags, mod chk flor, g od, bl, even thk bri wh yel ring
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VS: 42 WT: 9.2



5600

5600

3.05'
90.06°
76.74°
94'

TVD (ft)

MD: 9,260'
TVD: 6,273'
Inclination: 90°
Azimuth: 176.32°
VS: 2,232.6'

TVD (ft)

MD: 9,355'
TVD: 6,273.02'
Inclination: 89.97°
Azimuth: 175.98°
VS: 2,326.15'

90% CHK: lt-med gy brn, mot, sb pty-blky, b wxy, occ cal incl, 5%: k gy, blk, sb pty-blky, sl arg-sily tex, scatt cal frags, g chf flor, g od, fast sting bri whi bl, even thk mod yel brn stn

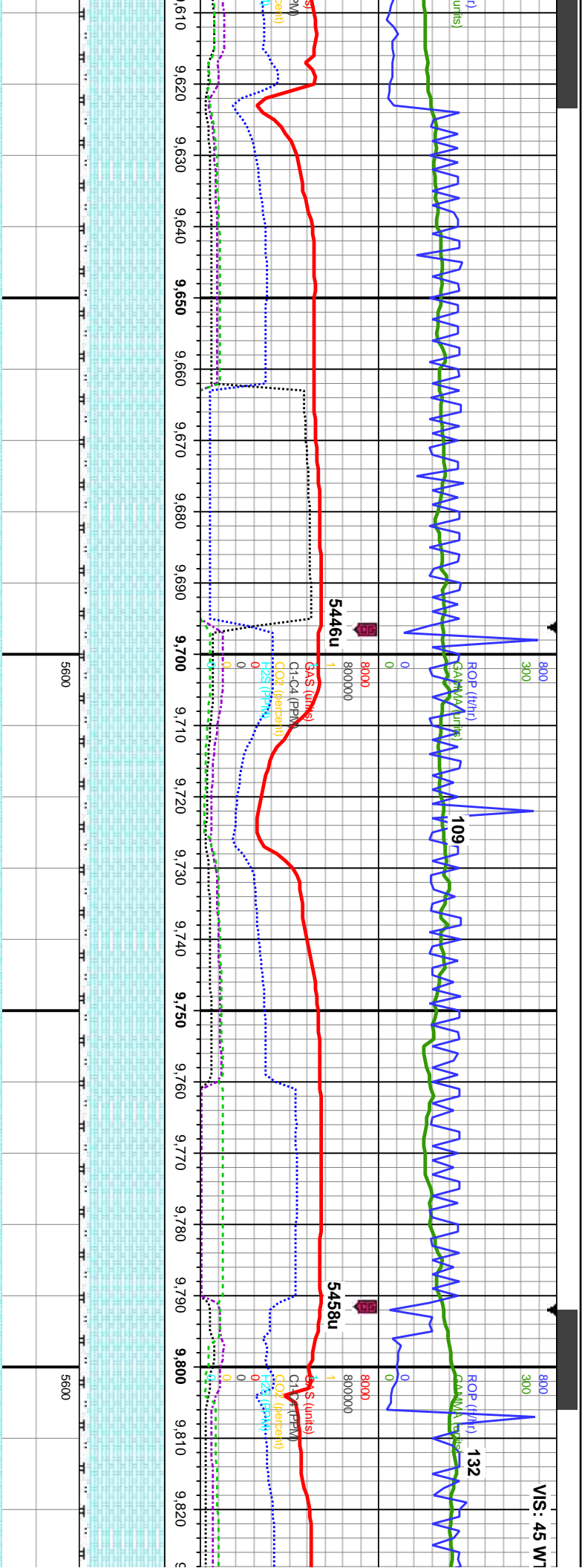
90% CHK: lt-med gy brn, mot, sb pty-blky, sft-sl frm, rthy-sb wxy, tr cal incl, 10%: MRLST: med-dk gy, blk, sb pty-blky, sl frm-mod hd, arg-sily tex, abnt cal frags, g chf flor, g od, fast sting bri whi bl, even thk bri wh yel ring, mod yel brn sin

90% CHK: lt-med gy brn, mot, sb pty-blky, sft-sl frm, rthy-sb wxy, tr cal incl, 10%: MRLST: med-dk gy, blk, sb pty-blky, sl frm-mod hd, arg-sily tex, abnt cal frags, g chf flor, g od, fast sting bri whi bl, even thk bri wh yel ring, mod yel brn stn

95% CHK: lt-med gy brn, mot, sb pty-blky, sft-sl frm, rthy-sb wxy, tr cal incl, 5%: MRLST: med-dk gy, blk, sb pty-blky, sl frm-mod hd, arg-sily tex, tr cal frags, tr tos frags, g chf flor, g od, fast sting bri whi bl, even mod thk mod yel amb ring, mod yel brn sin

95% CHK: lt-med gy brn, mot, sb sft-sl frm, rthy-sb wxy, tr cal incl, 5%: MRLST: med-dk gy, blk, sb pty-blky, sl frm-mod hd, arg-sily tex, tr cal frags, g chf flor, g od, fast sting b even mod thk mod yel amb ring, r brn sin



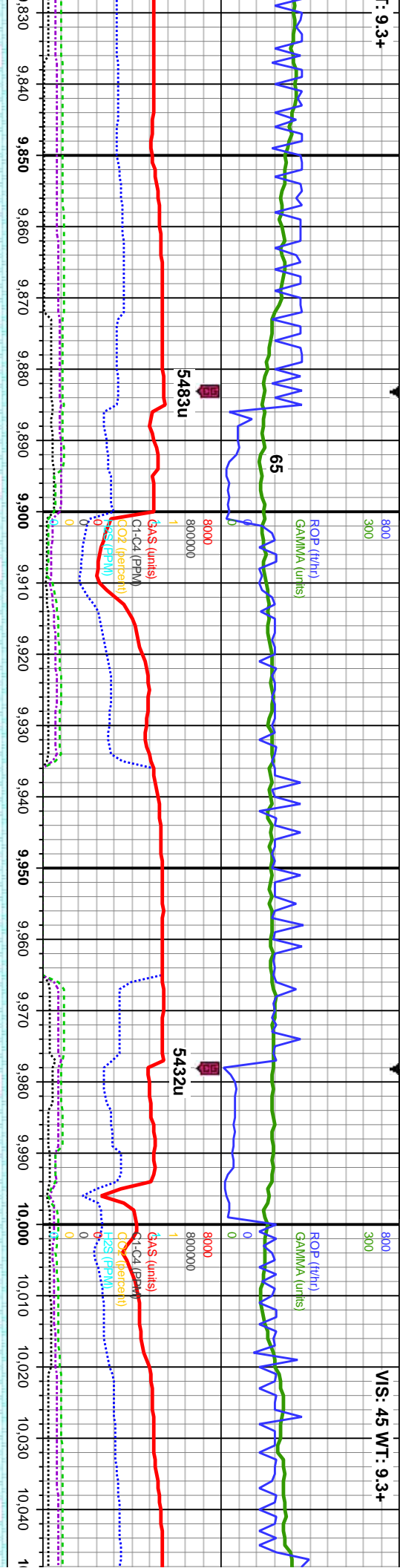


90% CHK: lt-med gy brn, mot, sb ply-blky, sft-sl frm, rthy-sb wxy, 10%: MRLST: med-dk gy, blk, sb ply-blky, sl frm-mod hd, arg-sily tex, tr cal frags, mod chk flor, g od, fast-mod sting bri whi bl, even mod thk mod yel amb ring, mod yel brn sin		90% CHK: lt-med gy brn, mot, sb ply-blky, sft-sl frm, rthy-sb wxy, 10%: MRLST: med-dk gy, blk, sb ply-blky, sl frm-mod hd, arg-sily tex, tr cal frags, mod chk flor, g od, fast-mod sting bri whi bl, even mod thk mod yel amb ring, mod yel brn sin		90% CHK: lt-med gy brn, mot, sb ply-blky, sft-sl frm, rthy-sb wxy, 10%: MRLST: med-dk gy, blk, sb ply-blky, sl frm-mod hd, arg-sily tex, tr cal frags, mod chk flor, g od, fast-mod sting bri whi bl, even mod thk mod yel amb ring, mod yel brn sin	
TVD (ft)		TVD (ft)		TVD (ft)	
MD: 9,734' TVD: 6,269.62' Inclination: 90.8° Azimuth: 177.79° VS: 2.699.86'		MD: 9,734' TVD: 6,269.62' Inclination: 90.8° Azimuth: 177.79° VS: 2.699.86'		MD: 9,734' TVD: 6,269.62' Inclination: 90.8° Azimuth: 177.79° VS: 2.699.86'	
TVD (ft)		TVD (ft)		TVD (ft)	
90% CHK: lt-med gy brn, mot, sb ply-blky, sft-sl frm, rthy-sb wxy, 10%: MRLST: med-dk gy, blk, sb ply-blky, sl frm-mod hd, arg-sily tex, tr cal frags, mod chk flor, g od, fast-mod sting bri whi bl, even mod thk mod yel amb ring, mod yel brn sin		90% CHK: lt-med gy brn, mot, sb ply-blky, sft-sl frm, rthy-sb wxy, 10%: MRLST: med-dk gy, blk, sb ply-blky, sl frm-mod hd, arg-sily tex, tr cal frags, mod chk flor, g od, fast-mod sting bri whi bl, even mod thk mod yel amb ring, mod yel brn sin		90% CHK: lt-med gy brn, mot, sb ply-blky, sft-sl frm, rthy-sb wxy, 10%: MRLST: med-dk gy, blk, sb ply-blky, sl frm-mod hd, arg-sily tex, tr cal frags, mod chk flor, g od, fast-mod sting bri whi bl, even mod thk mod yel amb ring, mod yel brn sin	



9.3+

VIS: 45 WT: 9.3+



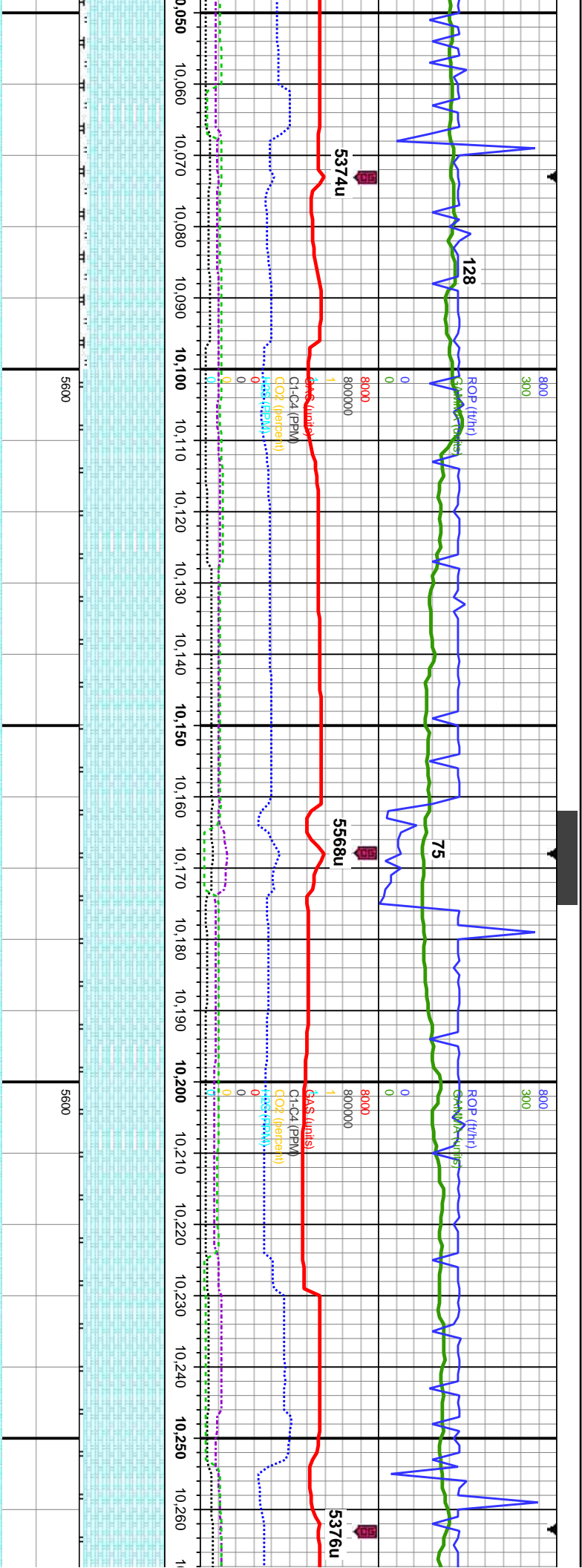
329'
268.57'
ion: 90.46 °
n: 178.11 °
93.88'

MD: 9,924'
TVD: 6,267.75'
Inclination: 90.53 °
Azimuth: 177.97°
VS: 2,887.92'

MD: 10,018'
TVD: 6,268.76'
Inclination: 88.24 °
Azimuth: 178.85 °
VS: 2,981.05'

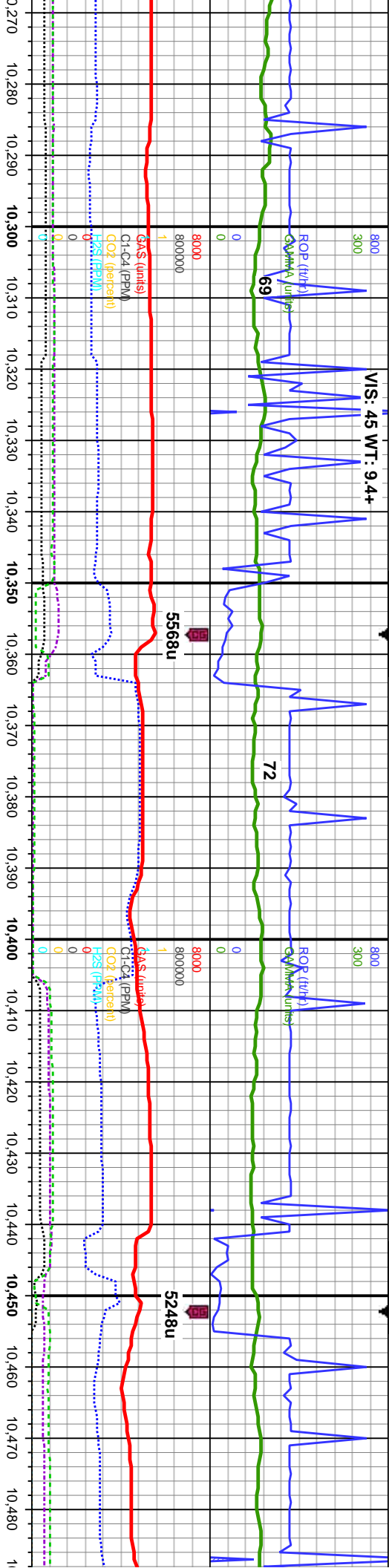
mot, sb ply-bkly, MRLST: _____ gy, sl frm-mod hd, fos frags, mod mng bri whi bl, od ring, mod yel	95% CHK: lt-med gy brn, mot, sb ply-bkly, sft-sl frm, rthy-sb wxy, 5%: MRLST: med-dk gy, blk, sb ply-bkly, sl frm-mod hd, arg-sily tex, tr cal frags, tr fos frags, mod chk flor, g od, fast-mod sting bri whi bl, even mod thk mod yel amb ring, mod yel brn stn	90% CHK: lt-med gy brn, occ dk gy, mot, sb ply-bkly, sft-sl frm, rthy-sb wxy, 10%: MRLST: med-dk gy, blk, sb ply-bkly, sl frm-mod hd, arg-sily tex, tr cal frags, mod chk flor, g od, some o to surf, fast sting bri whi bl, even thk wht yel ring, thk yel brn stn	90% CHK: lt-med gy brn, occ dk gy, mot, sb ply-bkly, sft-sl frm, rthy-sb wxy, 10%: MRLST: med-dk gy, blk, sb ply-bkly, sl frm-mod hd, arg-sily tex, tr cal frags, mod chk flor, g od, some o to surf, fast sting bri whi bl, even thk wht yel ring, thk yel brn stn	90% CHK: lt-med gy brn, occ dk gy, mot, sb ply-bkly, sft-sl frm, rthy-sb wxy, 10%: MRLST: med-dk gy, sb ply-bkly, sl frm-mod hd, arg-sily tex, tr cal frags, mod chk flor, g od, fast-mod sting bri whi bl, even mod thk mod yel amb ring, mod yel brn stn
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MD: 10,113' TVD: 6,271.75' Inclination: 88.15 ° Azimuth: 178.72 ° VS: 3,075.22'		95% CHK: lt-med gy brn, mot, sb pily-biky, sft-sl frm, rthy-sb wxy, 5%: MRLST: med-dk gy, sb pily-biky, sl frm-mod hd, arg-sily tex, tr cal frags, mod chk flor, g od, fast-mod sting bri whi bl, even mod thk mod yel amb ring, mod yel brn stn	90% CHK: lt-med gy brn, occ dk gy, mot, sb pily-biky, sft-sl frm, rthy-sb wxy, 10%: MRLST: med-dk gy, sb pily-biky, sl frm-mod hd, arg-sily tex, tr cal frags, mod chk flor, g od, fast-mod sting bri whi bl, even mod thk mod yel amb ring, mod yel brn stn
MD: 10,208' TVD: 6,274.34' Inclination: 88.73 ° Azimuth: 179.35 ° VS: 3,169.45'		95% CHK: lt-med gy brn, mot, sb pily-biky, sft-sl frm, rthy-sb wxy, 5%: MRLST: med-dk gy, sb pily-biky, sl frm-mod hd, arg-sily tex, tr cal frags, mod chk flor, g od, fast-mod sting bri whi bl, even mod yel amb ring, mod yel brn stn	95% CHK: lt-med gy, mot, sb pily-biky, sft-sl frm, rthy-sb wxy, 5%: MRLST: med-dk gy, sb pily-biky, sl frm-mod hd, arg-sily tex, tr cal frags, mod chk flor, mod od, fast sting bri whi bl, even thk whi yel ring, thk yel brn stn
MD: 10,250' TVD: 6,274.34' Inclination: 88.73 ° Azimuth: 179.35 ° VS: 3,169.45'		95% CHK: lt-med gy, mot, sb pily-biky, sft-sl frm, rthy-sb wxy, 5%: MRLST: med-dk gy, sb pily-biky, sl frm-mod hd, arg-sily tex, tr cal frags, mod chk flor, mod od, fast sting bri whi bl, even thk whi yel ring, thk yel brn stn	95% CHK: lt-med gy, mot, sb pily-biky, sft-sl frm, rthy-sb wxy, 5%: MRLST: med-dk gy, sb pily-biky, sl frm-mod hd, arg-sily tex, tr cal frags, mod chk flor, mod od, fast sting bri whi bl, even thk whi yel ring, thk yel brn stn





VIS: 45 WT: 9.4+

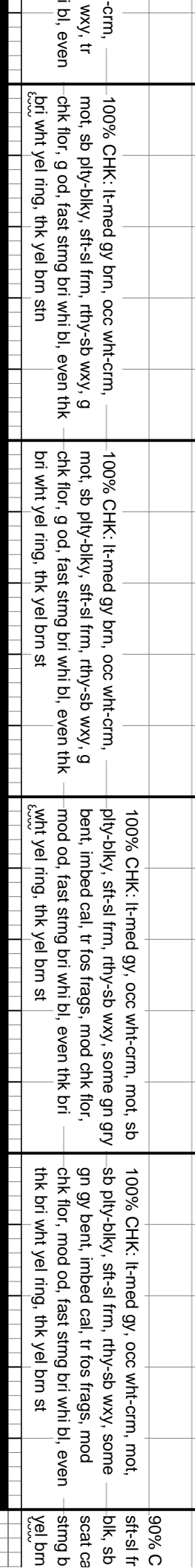
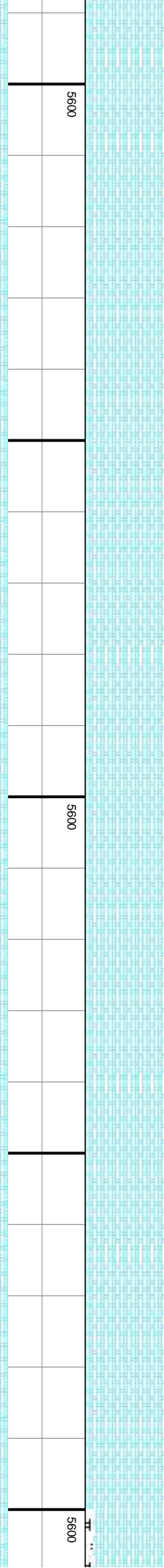
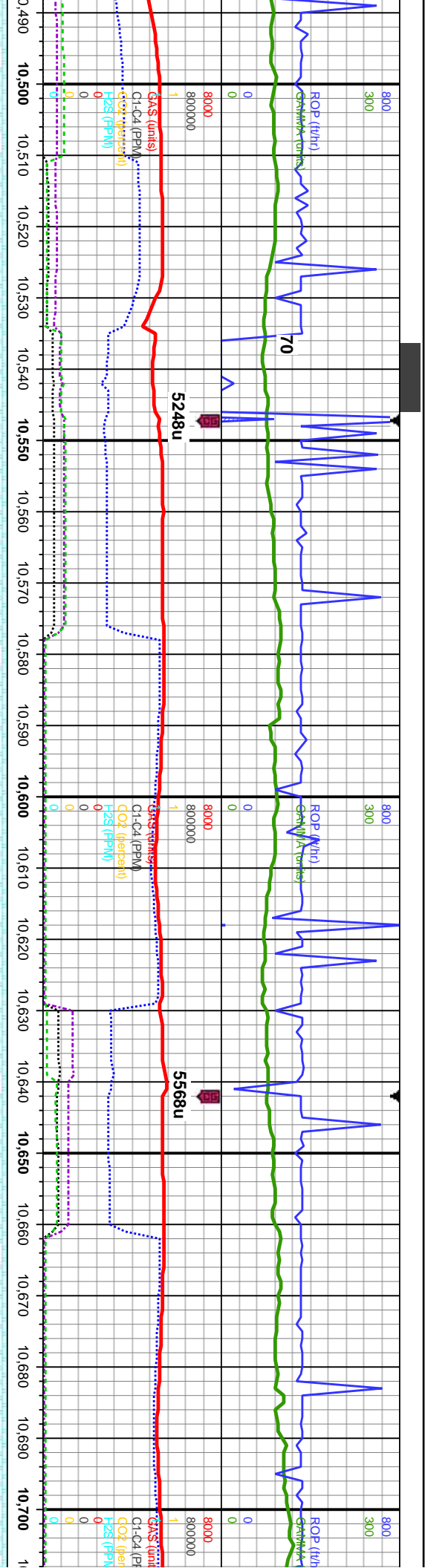
MD: 10,303'
TVD: 6,276.51'
Inclination: 88.65°
Azimuth: 179.66°
VS: 3,263.78'

MD: 10,398'
TVD: 6,278.37'
Inclination: 89.11°
Azimuth: 181.13°
VS: 3,358.28'

MD: 1
TVD: '
Incline
Azimu
VS: 3,

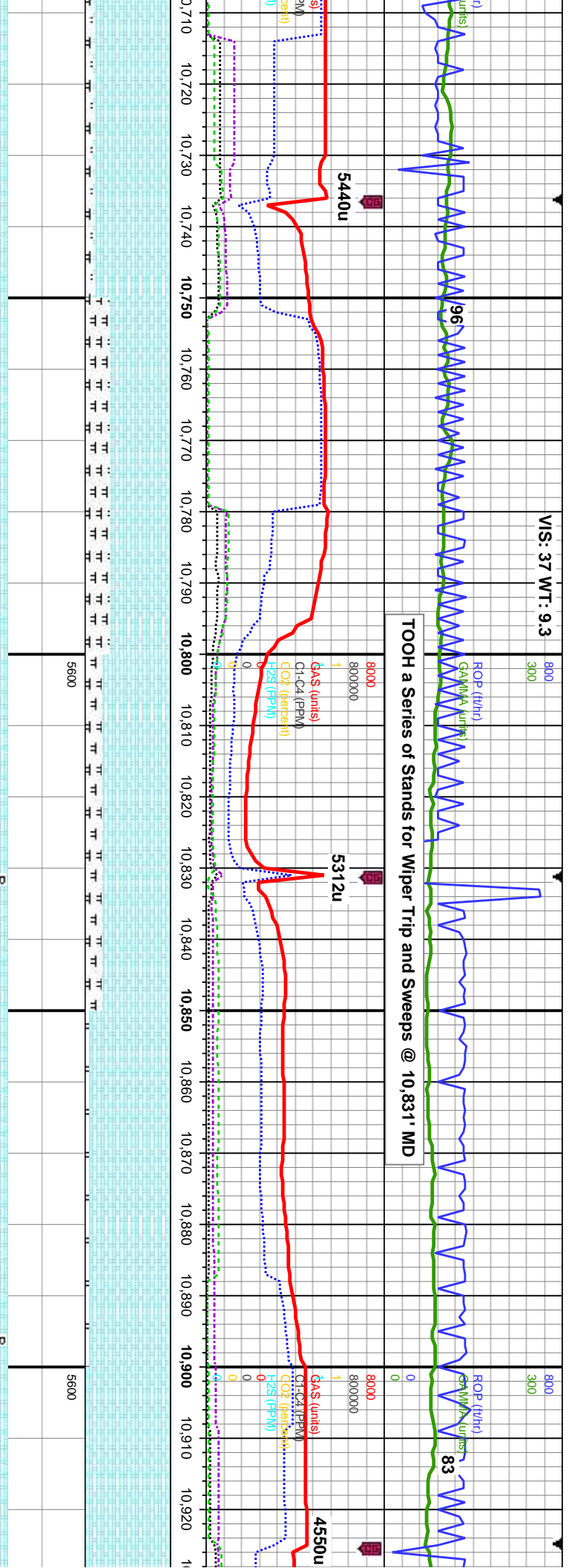
d gy, mot, sb ply-blky, sft-sl	100% CHK: lt-med gy brn, occ wht-crm,	100% CHK: lt-med gy brn, occ wht-crm,	100% CHK: lt-med gy brn, occ wht-crm,
5%: MRLST: med-dk gy, sb	mot, sb ply-blky, sft-sl frm, rthy-sb wxy, tr	mot, sb ply-blky, sft-sl frm, rthy-sb wxy, tr	mot, sb ply-blky, sft-sl frm, rthy-sb wxy, tr
mod hd, arg-sily tex, tr cal	cal frags, mod od, fast stmg bri whi bl, even	cal frags, mod od, fast stmg bri whi bl, even	cal frags, mod od, fast stmg bri whi bl, even
wh wht yel ring, thk yel brn stn	thk wht yel ring, mod yel brn stn	thk wht yel ring, mod yel brn stn	thk wht yel ring, thk yel brn stn





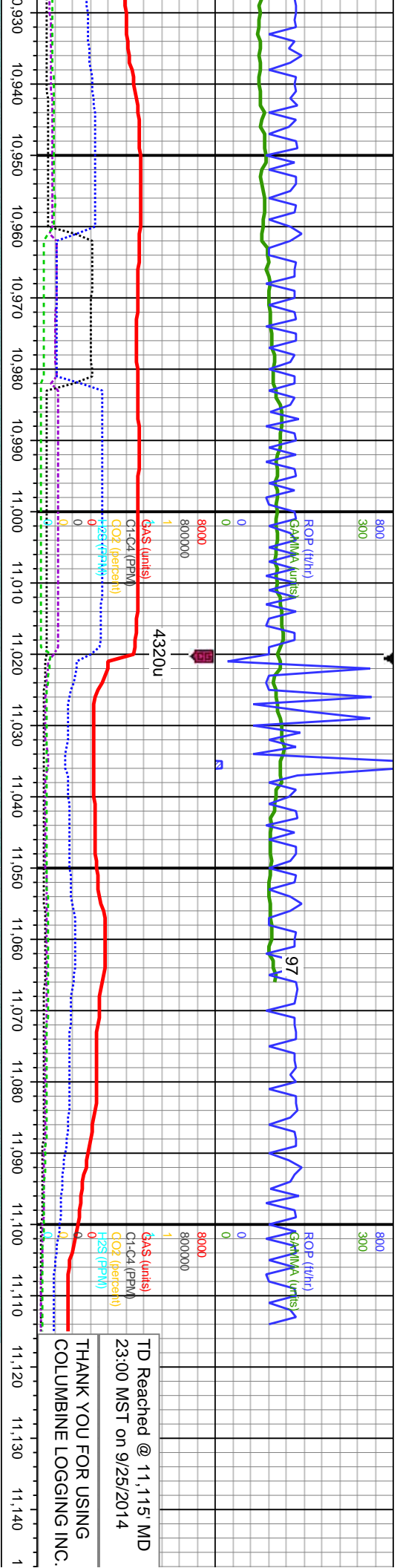
VIS: 37 WT: 9.3

TOOH a Series of Stands for Wiper Trip and Sweeps @ 10,831' MD



MD: 10,777'
TVD: 6,277.93'
Inclination: 90.28 °
Azimuth: 180.97 °
VS: 3,735.77'

HK: med-dk gy brn, mot, sb pty-biky, m, rthy-sb wxy, 10%: MRLST: dk gy, pty-biky, sl frm-mod hd, arg-sily tex, l frags, some gn gy bent, mod-fast st	70% CHK: med-dk gy brn, mot, sb pty-biky, sft-sl frm, rthy-sb wxy, 30%: MRLST: dk gy, blk, sb pty-biky, sl frm-mod hd, arg-sily tex, scat cal frags, fos frags, some gn gy bent, mod-fast sting bri whi bl, even thk bri wht yel ring, thk yel bm st	80% CHK: med-dk gy brn, mot, sb pty-biky, sft-sl frm, rthy-sb wxy, 20%: MRLST: dk gy, blk, sb pty-biky, sl frm-mod hd, arg-sily tex, scat cal frags, fos frags, about gn gy bent, fast sting bri whi bl, even thk bri wht yel ring, fr yel bm stn	95% CHK: med-lt gy brn, mot, sb pty-biky, sft-sl frm, rthy-sb wxy, 5%: MRLST: dk gy, blk, sb pty-biky, sl frm-mod hd, arg-sily tex, tr cal frags, tr fos frags, scat gn gy bent, fast sting bri whi bl, even thk bri wht yel ring, fr yel bm stn	100% CHK: med-lt gy brn pty-biky, sft-sl frm, rthy-s-bm stn
	TVD (ft)	TVD (ft)	TVD (ft)	TVD (ft)



TD Reached @ 11,115' MD
23:00 MST on 9/25/2014

THANK YOU FOR USING
COLUMBINE LOGGING INC.

MD: 10,967'
TVD: 6,277.1'
Inclination: 90.22 °
Azimuth: 181.34 °
VS: 3.925.04'

TVD (ft)

100% CHK: med-lt gy brn, mot, sb
ply-bkly, sft-sl frm, rthy-sb wxy, tr cal frags,
even mod thk mod yel amb ring, mod yel
brn sin

95% CHK: med-lt gy brn, mot, sb ply-bkly,
sft-sl frm, rthy-sb wxy, 5%: MRLST: dk gy,
blk, sb ply-bkly, sl frm-mod hd, arg-sily
tex, tr cal frags, fast sting bri whi bl, even
thk wht yel ring, mod yel brn sin

MD: 11,062'
TVD: 6,276.66'
Inclination: 90.31 °
Azimuth: 180.95 °
VS: 4.019.68'

TVD (ft)

95% CHK: med-lt gy brn, mot, sb ply-bkly, sft-sl frm,
rthy-sb wxy, 5%: MRLST: dk gy, blk, sb ply-bkly, sl
frm-mod hd, arg-sily tex, tr cal frags, fast sting bri whi bl,
even thk wht yel ring, mod yel brn sin

Projection to Bit:
MD: 11116'
INC: 90.31
AZM: 180.95'
TVD: 6276.37'
VS: 4073.46'
Above or Below Plan: 5.39' B
Right or Left of Plan: 29.33' R



