



# RESERVOIR GROUP

Scale: 5" / 100'  
Measured Depth Log

**Well Name** Critter Creek 202-1807H\_Horizontal

**Location** SEC.18-T11N-R63W

**State** Colorado

**Country** United States of America

**API Number** 051234493500

**Geographic Region** Rockies

**Spud Date** 11/29/2017

**Surface Coordinates** Lat: 40.915606, Long: -104.482342  
215 FSL 828 FWL

**Bottom Hole Coordinates** Sec: 7 Twp: 11N 63W  
300 FFNLL 1,000 FFWLL

**Ground Elevation** 5,336'

**Logged Interval** 3,000' **To** 17,965'

**Formation** Niobrara B Chalk

**Type of Drilling Fluid** Oil Based Mud

**K.B. Elevation** 5,357'

**Total Depth** 17,965'

**Drilling Completed** 12/2/2017

**AFE #** 22017012

**Field** Hereford

**Rig Number** Unit 406

**County** Weld

## Operator

**Company** Fifth Creek Energy

**Address** 5251 DTC Parkway, Suite 420  
Greenwood Village, Colorado 80111



## Geologist

**Name** Ben Burke, Aryn Rowe

**Company** Fifth Creek Energy

**Address** 5251 DTC Parkway, Suite 420  
Greenwood Village, Colorado 80111



## Other

**Logging Services Provided By:** ALS Oil & Gas Byron Pitul

**Services Provided:** Logging

Massspectro  
Gas Monitor  
XRD & XRF  
Pyrolysis

**Service Start Date** 11/29/2017

**Service End Date:** 12/2/2017

**Job #** 0846RK17

Zone Color Coding

Oil

Note

Error

Condensate

Core

Water

Gas

Pressure

Seal

Rock Types

UNKNOWN

ANHYDRITE

GYPSUM

SALT

CHALK

LIMESTONE

DOLOMITE

CHERT

COAL

MARLSTONE

CLAYSTONE

SHALE

SHALE GRAY

SHALE COLORED

SILTSTONE

SANDSTONE

CONGLOMERATE

BRECCIA

TILL

BENTONITE

TUFF

IGNEOUS

METAMORPHIC

CEMENT

Accessories

F FOSSIL

GASTROPOD

OOLITE

OSTRACOD

BELEMNITE

BIOCLASTIC

BRACHIOPOD

BRYOZOA

CEPHALOPOD

CORAL

CRINOID

ECHINOID

FISH

FORAMINIFERA

ARGILLACEOUS

ARGILLITE GRAIN

B BENTONITE

BITUMINOUS SUBSTANCE

BRECCIA FRAGMENTS

CALCAREOUS

CARBONACEOUS FLAKES

CHERT

COAL - THIN BEDS

DOLOMITIC

FELDSPAR

FERRUGINOUS PELLET

FERRUGINOUS

GLAUCONITE

GYPSIFEROUS

HEAVY MINERAL

KAOLIN

MARLSTONE

MINERAL CRYSTALS

NODULES

PHOSPHATE PELLET

PYRITE

SALT CAST

SANDY

SILTY

TUFFACEOUS

ANHYDRITE STRINGER

BENTONITE STRINGER

COAL STRINGER

DOLOMITE STRINGER

GYPSUM STRINGER

LIMESTONE STRINGER

MARLSTONE (CALC) STRG

MARLSTONE (DOL) STRG

SANDSTONE STRINGER

SHALE STRINGER

SILTSTONE STRINGER

Other :

ORGANIC

PINPOINT

VUGGY

MUD

EVEN

NOT

Engineering

QUESTIONABLE

OIL

SPOTTED STAINING BIT

OVER

Porosity

CASING

REV

CONNECTION (LEFT)

SID

E EARTHY

CONNECTION (RIGHT)

SID

FENESTRAL

CONNECTION GAS

SLID

F FRACTURE

CORE - LOST

SH

INTERCRYSTALLINE

CORE - RECOVERED

TH

INTEROOLITIC

DST INTERVAL

WIR

MOLDIC

FAULT

WIR

# Symbols

FORMATION TOP ] L LITHOGRAPHIC

S SHOW **Rounding** **M**X MICROXLN

**PTH** MN DEPTH **A** ANGULAR **M**S MUDSTONE

RMAL FAULT **R** ROUNDED **P**S PACKSTONE

SHOW **B** SUBANG **W**S WACKESTONE

ERTURNED STRATA **T** SUBRND

## Sorting

/ERSE FAULT

## Textures

EWALL CORE (LEFT) **B**S BOUNDSTONE **M** MODERATE

EWALL CORE (RIGHT) **B**S BOUNDSTONE **P** POOR

**E** **C** CHALKY **W** WELL

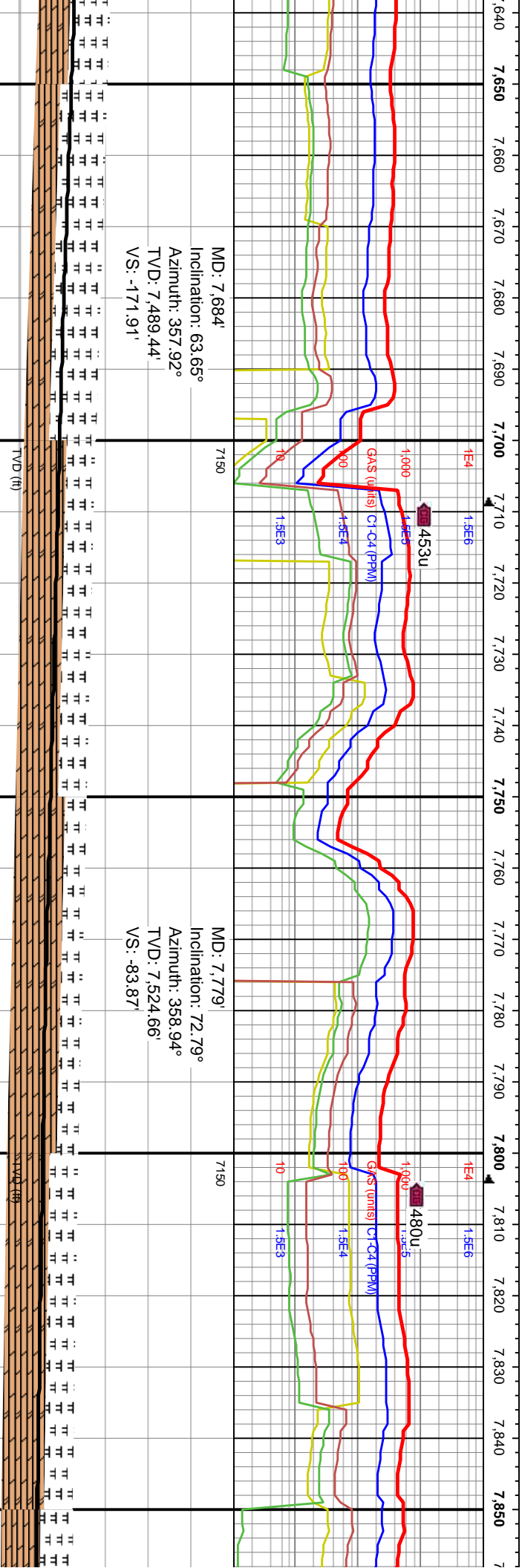
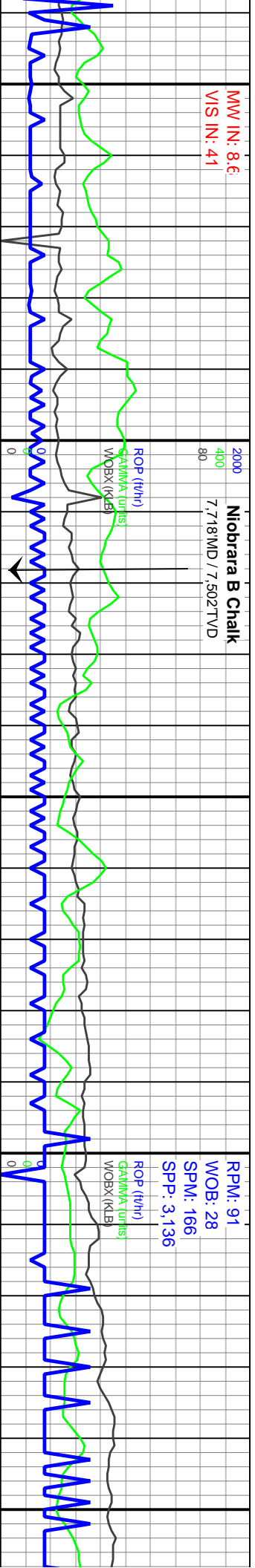
JRVEY **C**X CRYPTOXLN

RIP GAS **E** EARTHY

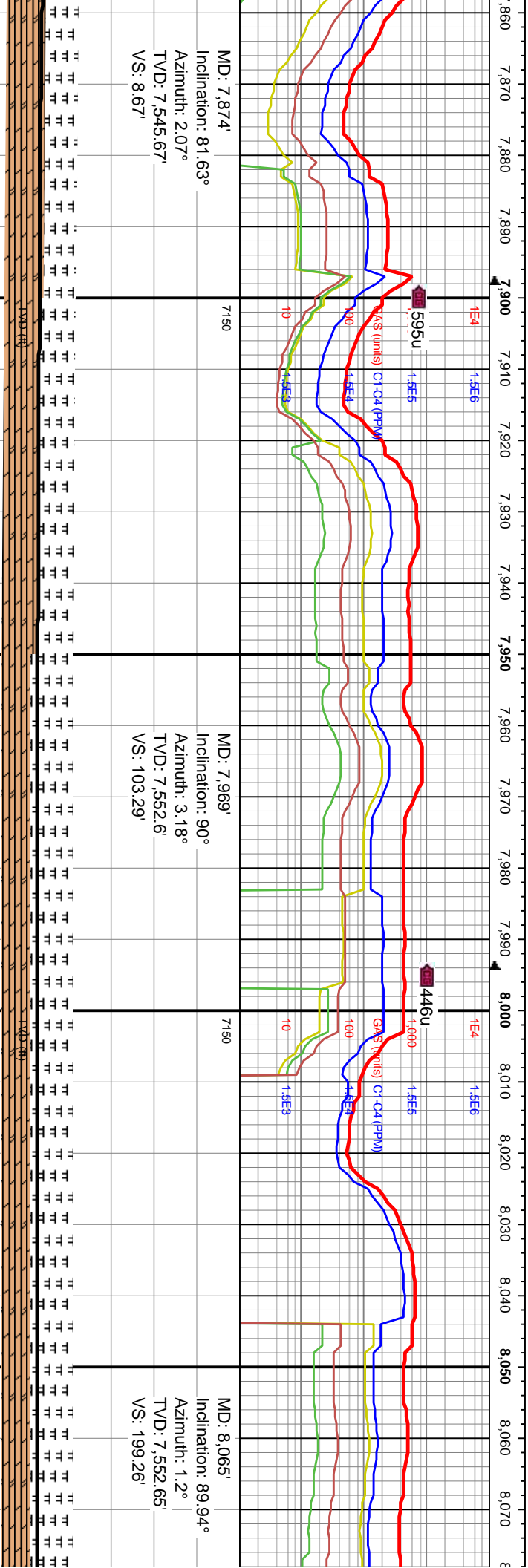
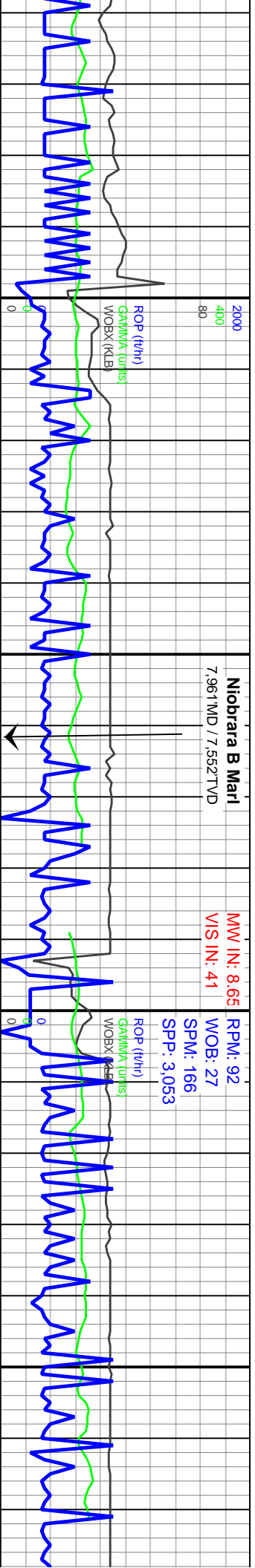
ELINE TESTED - LEFT **F**X FINELYXLN





ELINE TESTED - RT **G**S GRAINSTONE

<div> <div>ROP</div> <div>ROP</div> <div>GAMMA</div> <div>WOBX</div> </div>	<div> Fifth Creek Energy  Crittter Creek 202-1807H  Weld County, CO  Spud Date: 11/29/2017  Surface Casing @ 1,499'  2 Man Logging / Mass Spec  Began on 11/29/2017  16:52hrs MST  All Depths  Correspond to  Drillers Pipe Tally </div>	<div> <div>2000</div> <div>400</div> <div>80</div> <div>0</div> <div> <div>ROP (ft/hr)</div> <div>GAMMA (units)</div> <div>WOBX (K/B)</div> </div> <div> Lower Sharon  Springs GR Marker  7,527 MD / 7,402 TVD </div> <div> Niobrara A Chalk  7,597 MD / 7,445 TVD </div> <div> <div>RPM: 93</div> <div>WOB: 25</div> <div>SPP: 166</div> <div>SPP: 3,113</div> <div> <div>ROP (ft/hr)</div> <div>GAMMA (units)</div> <div>WOBX (K/B)</div> </div> <div> Niobrara A Marl  7,609 MD / 7,451 TVD </div> </div> </div>
<div>Slide/Rotate</div>		
<div>Depth Labels</div>	<div>7,4607,4707,4807,4907,5007,5107,5207,5307,5407,5507,5607,5707,5807,5907,6007,6107,6207,630</div>	
<div>Total Gas &amp; Chromatograph</div> <div> <div>GAS</div> <div>C1</div> <div>C2</div> <div>C3</div> <div>C4</div> </div>	<div> Note: Using Yellow Box  ML-557 &amp; ML-545 for Gas, ROP &amp; WOBX   SYSTEM CALIBRATED  1% Methane = 100 units  100% Methane = 10000 units </div>	
<div>Well Bore</div> <div>TVD</div>	<div> Bit #: 1  Type: AT605F  Size: 8.5  Depth In: 1,499'  Depth Out: 17,965'  Hours: 49.5 hrs  Avg Ft/Hr: 333 '/hr  Jets: 5x15  S/N: 7163675 </div>	<div> <div>7150</div> <div>7150</div> <div> <div>MD: 7,590'</div> <div>Inclination: 55.32°</div> <div>Azimuth: 358.32°</div> <div>TVD: 7,441.76'</div> <div>VS: -252.72'</div> </div> <div> <div>7150</div> <div>7150</div> </div> </div>
<div>Images</div>	<div>Continuation of vertical log</div>	<div> <div>7500-7550 70% SLTY SH: med-lt gy, occ dk gy, sb ang-sb pty, fri-fm, sl rgh, silty-sm, hi calc, 30% SLTST: lt-med gy, blk-y-sb blk-y-sb ang, sft, flss, sm silty tex, com intbd sh, v calc</div> <div> <div>7550-7600 80% CHK: lt gy-med gy, sme offwht, blk-y-sme pty, frm-sft, chky tex, mnr intbd MRLST, hi calc, 10% MRLST: dk gysbn-med gy, pty-sb blk-y, rgh tex, com intbd CHK lam, calc, 10% SLTY SH: med-lt gy, occ dk gy, ang-sb pty, fri-fm, rgh tex, sme silty-sm, hi calc</div> <div> <div>7600-7650 55% MRLST: dk gysbsh gy, pty-sb blk-y, rgh tex, com intbd lam, calc, 45% CHK: lt gy-med gy, offwht, blk-y-sme pty, frm-sft, chky intbd MRLST, hi calc</div> </div> </div> </div>

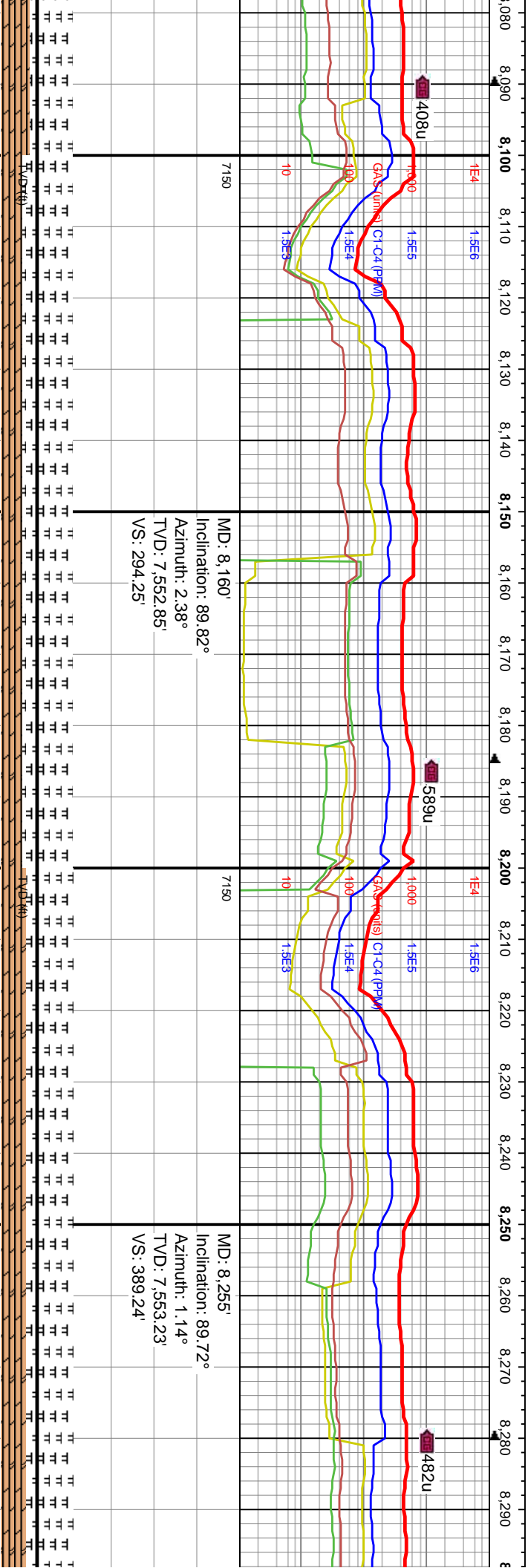
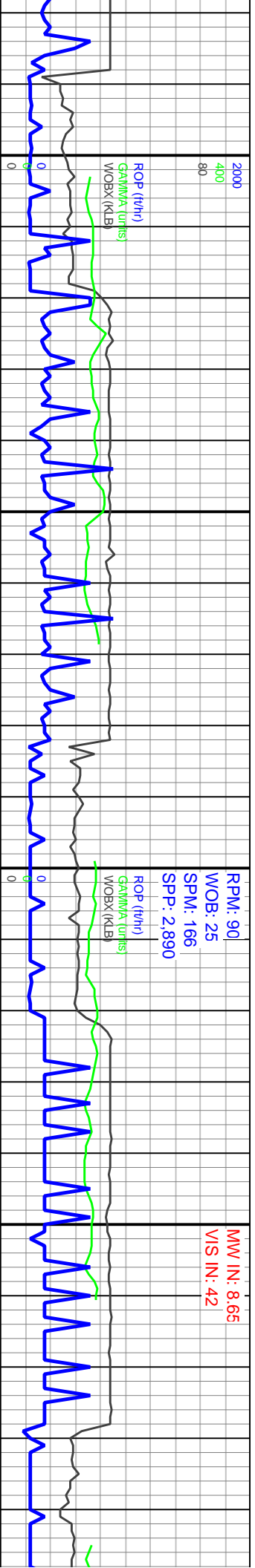



7650-7700 65% MRLST: dk gysbhn-med gy, pily-sb blkly, rgh tex, mot, com intbd CHK lam, calc; 35% CHK: lt gy-med gy, sme ofwht frag, blkly-sme pily, frm-sft, rgh-ckly tex, com intbd MRLST, hi calc; 40% MRLST: dk gysbhn-med gy, pily-sb blkly, rgh tex, mot, com intbd CHK lam, calc	7700-7750 60% CHK: lt gy-med gy, sme ofwht frag, blkly-sme pily, frm-sft, rgh-ckly tex, com intbd MRLST, hi calc; 40% MRLST: dk gysbhn-med gy, pily-sb blkly, rgh tex, mot, com intbd CHK lam, calc	7750-7800 70% CHK: lt gy-med gy, sme ofwht frag, blkly-sme pily, frm-sft, rgh-ckly tex, com intbd MRLST, hi calc; 30% MRLST: dk gysbhn-med gy, pily-sb blkly, rgh tex, mot, com intbd CHK lam, calc	7800-7850 60% CHK: med-lt gy, occ scat wnt frag, sb blkly-pily, frm-sft, rgh-ckly tex, com intbd MRLST, calc; 40% MRLST: gysbhn-dk gy, sb ang, pily, occ sb blkly, mot rgh tex, com intbd CHK, calc; tr intbdd mic pp, pyr	7850-7
med CHK sme tex, mnr				

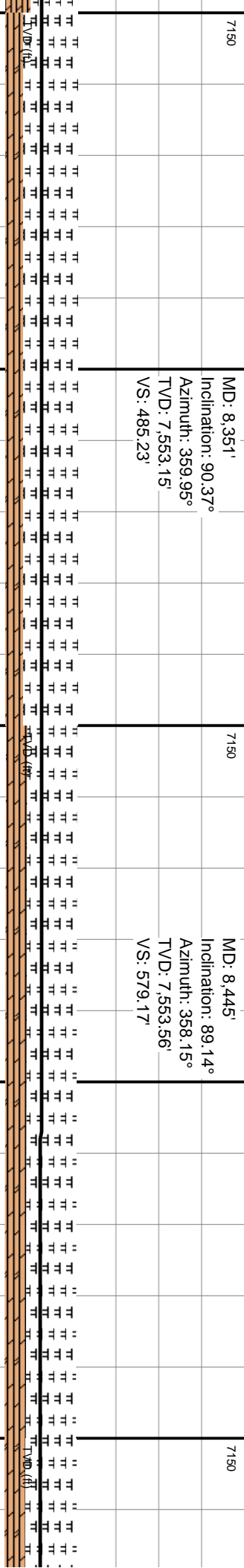
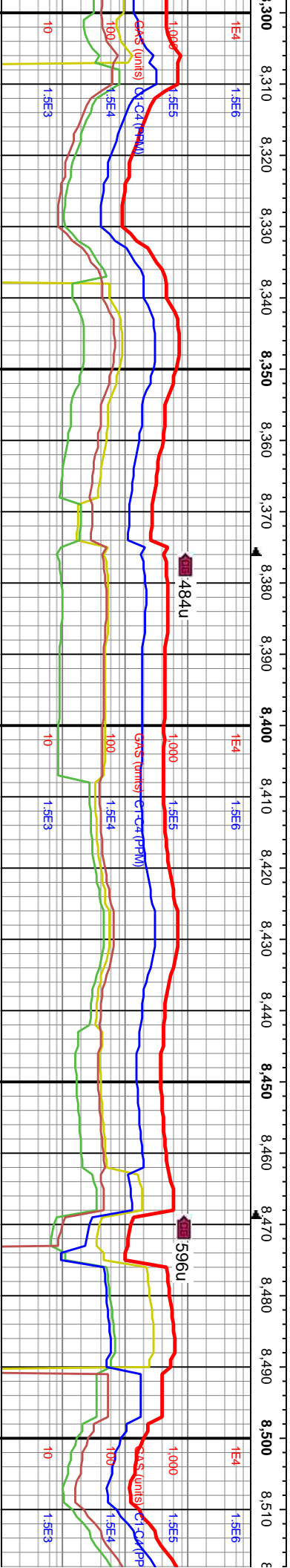
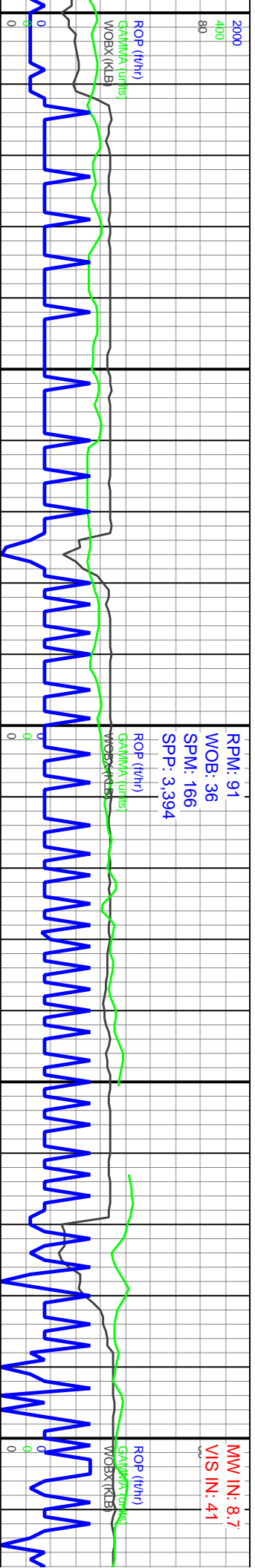


9900 55% CHK: med-it gy, occ scat g, sb blkly-pty, frm-sft, rgh-cky tex, bd MRLST, calc; 45% MRLST: -dk gy, sb ang, pty, occ sb blkly, mot com intbd CHK, calc	7900-7950 50% MRLST: gys/bn-dk gy, sb ang, pty, occ sb blkly, mot rgh tex, com intbd CHK, calc; 50% CHK: med-it gy, occ scat wht frag, sb blkly-pty, frm-sft, rgh-cky tex, com intbd MRLST, calc	7950-8000 60% MRLST: gys/bn-dk gy, sb blkly-ang, pty, occ sb blkly, mot rgh tex, com intbd CHK, calc; 40% CHK: med-it gy, occ scat wht frags, sb blkly-sb ang, frm-sft, rgh-cky tex, com intbd MRLST, calc	8000-8100 60% MRLST: blkly-ang, pty, occ sb bl com intbd CHK, calc; 40 gy, occ scat wht frags, s frm-sft, rgh-cky tex, co calc
			



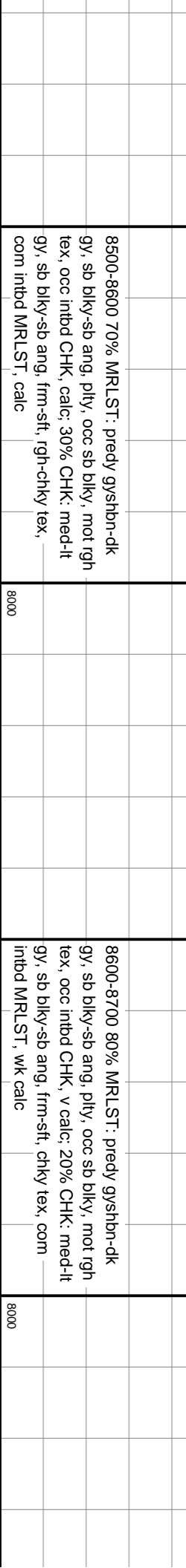
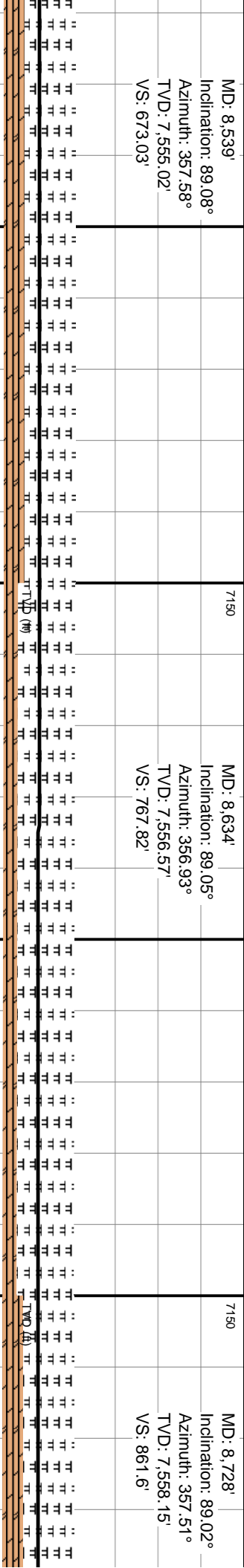
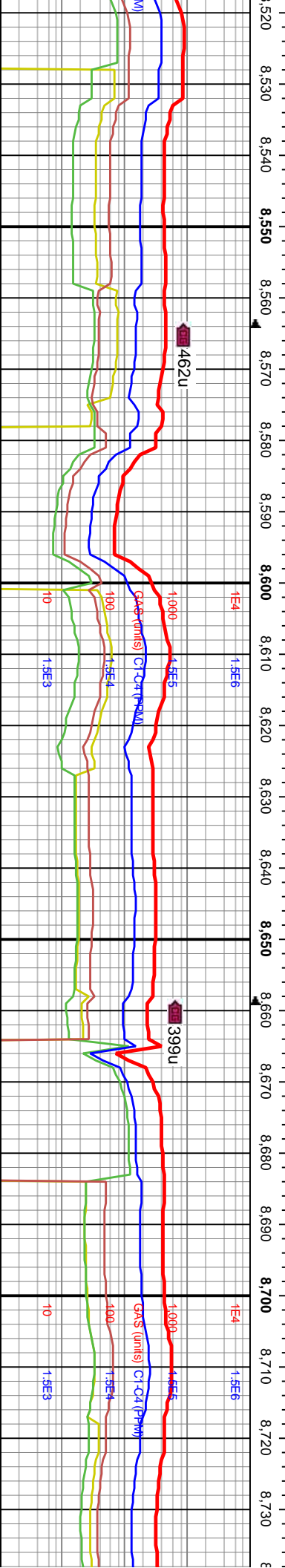
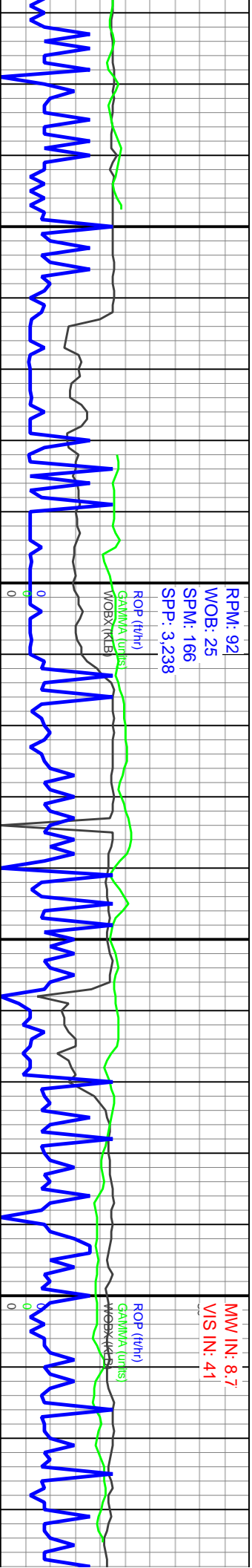


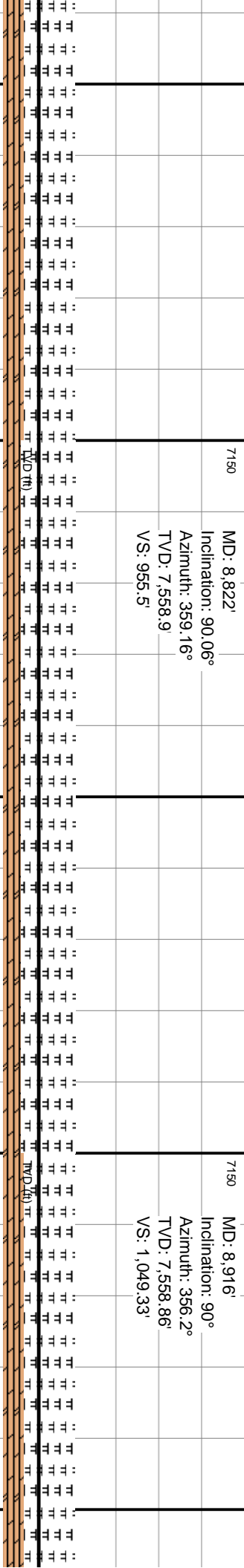
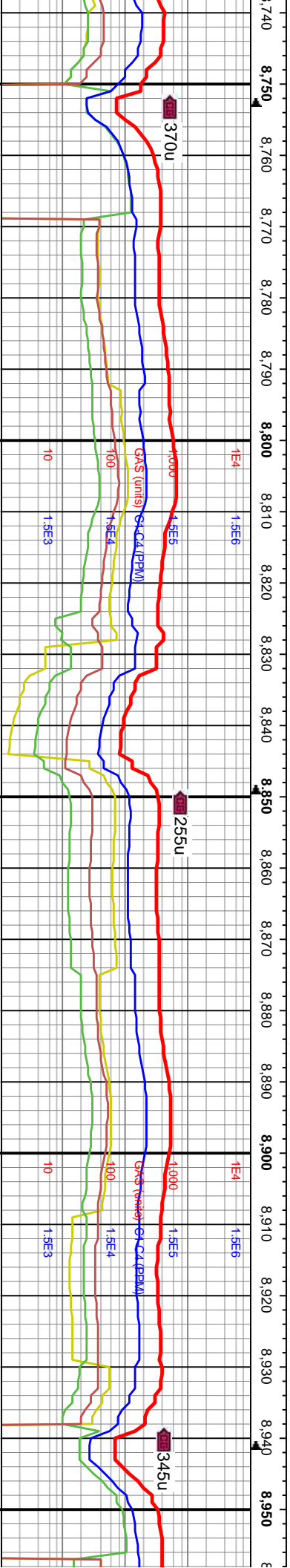
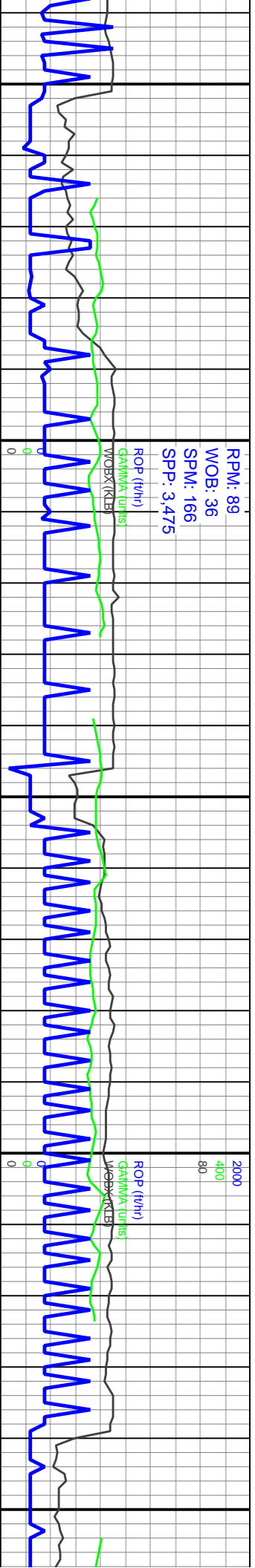
<p>gysbhn-dk gy, sb ky, mot rgh tex, 9% CHK: med-it sb blk-y-sb ang, m intbd MRLST,</p>	<p>8100-8200 70% MRLST: gysbhn-dk gy, sb blk-y-ang, pty, occ sb blk-y, mot rgh tex, com intbd CHK, calc; 30% CHK: med-it gy, occ scat wht frags, sb blk-y-sb ang, frm-sft, rgh-ckly tex, com intbd MRLST, v calc</p>	<p>8200-8300 65% MRLST: gysbhn-dk gy, sb blk-y-ang, pty, occ sb blk-y, mot rgh tex, com intbd CHK, calc; 35% CHK: med-it gy, occ scat wht frags, sb blk-y-sb ang, frm-sft, rgh-ckly tex, com intbd MRLST, v calc; tr intbdd mtc pp PYR</p>
		



8000	8300-8400 75% MRLST: predy gysbn-dk gy, sb blk-y-sb ang, pily, occ sb blk-y, mot rgh tex, occ intbd CHK, calc; 25% CHK: med-it gy, sb blk-y-sb ang, frm-sft, rgh-chky tex, com intbd MRLST, wk calc	8000	8400-8500 70% MRLST: predy gysbn-dk gy, sb blk-y-sb ang, pily, occ sb blk-y, mot rgh tex, occ intbd CHK, calc; 30% CHK: med-it gy, sb blk-y-sb ang, frm-sft, rgh-chky tex, com intbd MRLST, wk calc	8000
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8700-8800 70% MRLST: predy gysbhn-dk gy, sb biky-sb ang, pily, occ sb biky, mot rgh tex, occ intbd CHK, calc; 30% CHK: med-it gy, sb biky-sb ang, frm-sft, chky tex, com intbd MRLST, wk calc; tr pp mic PYR	8000
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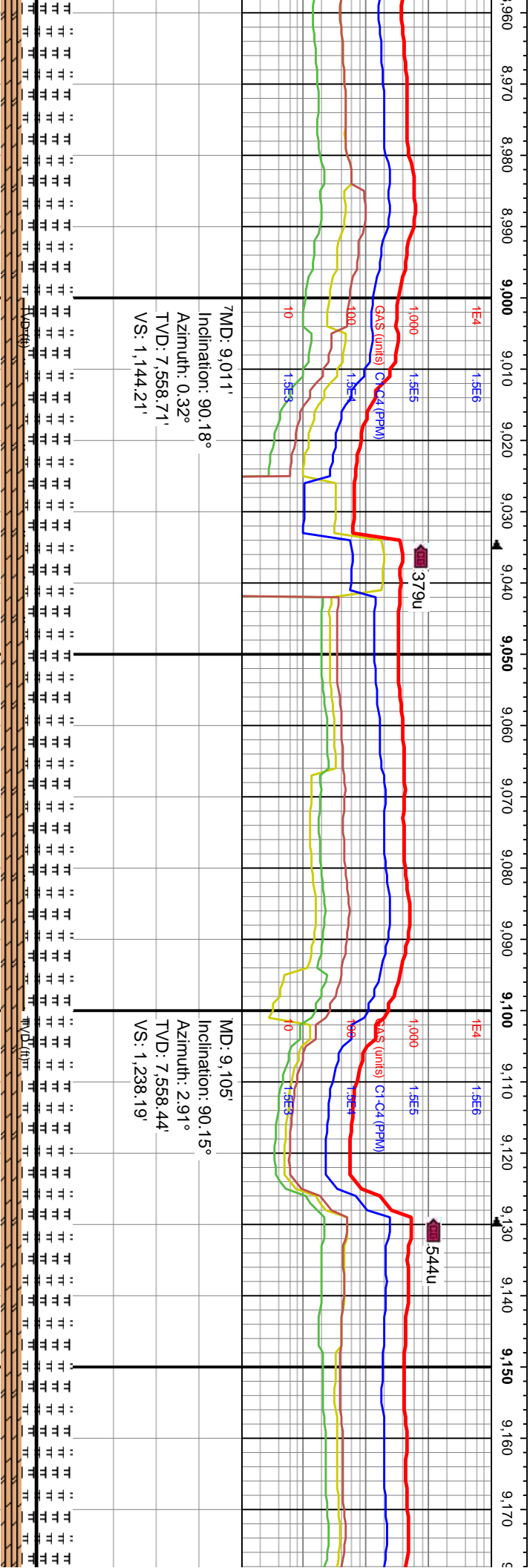
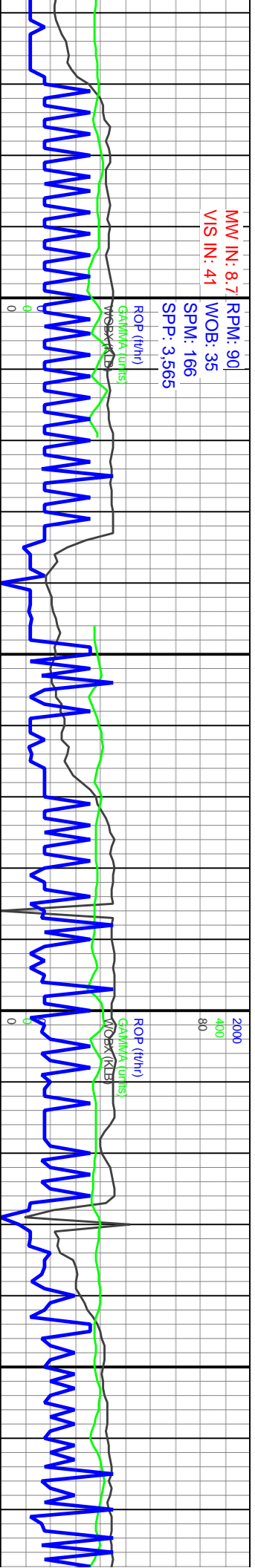


8800-8900 75% MRLST: predy gysbhn-dk gy, sb biky-sb ang, pily, occ sb biky, mot rgh tex, occ intbd CHK, calc; 25% CHK: med-it gy, sb biky-sb ang, frm-sft, chky tex, com intbd MRLST, wk calc; tr pp mic PYR	8000
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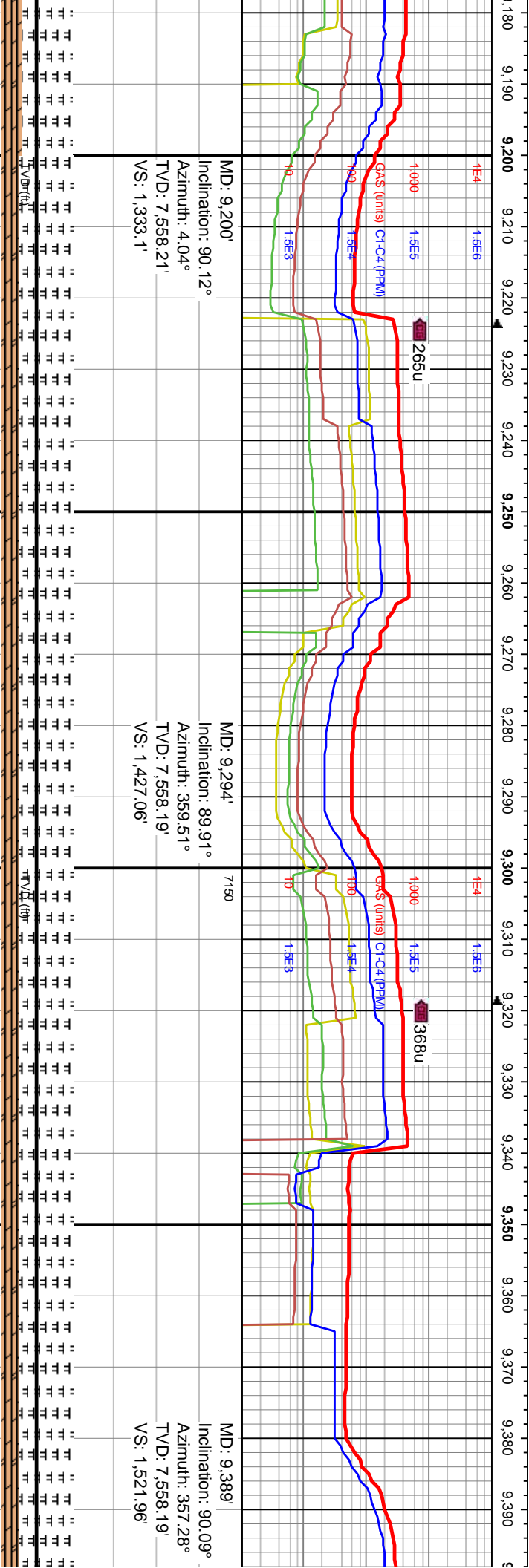
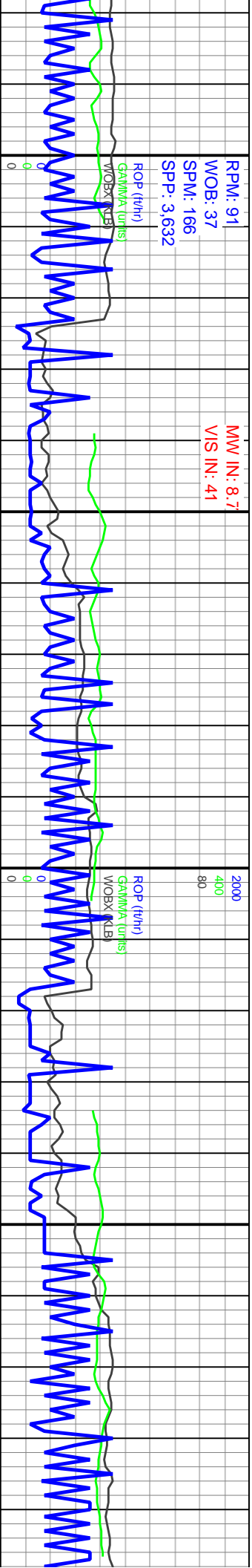


8900-9000 80% MRLST: predy gysbhn-dk gy, sb biky-sb ang, pily, occ sb biky, mot rgh tex, occ intbd CHK, calc; 20% CHK: med-it gy, sb biky-sb ang, frm-sft, chky tex, com intbd MRLST, wk calc; tr pp mic PYR	8000
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9000 70% MRLST: gysbhn-dk gy, sb o ang, pily, occ sb blk, mot rgh tex, intbd CHK, calc; 30% CHK: med-it gy, y-sb ang, frm-sft, chky tex, com intbd T calc	8000	9000-9100 65% MRLST: gysbhn-dk gy, sb bly-sb ang, pily, occ sb blk, mot rgh tex, sme intbd CHK, calc; 35% CHK: med-it gy, tr offwrt frags, sb bly-sb ang, frm-sft, chky tex, com intbd MRLST, wk-no calc	8000	9100-9200 70% MRLST: bly-sb ang, pily, occ sb sme intbd CHK, calc; 30% tr offwrt frags, sb bly-sb tex, com intbd MRLST, w
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gyshbn-dk gy, sb olky, mot rgh tex, % CHK: med-it gy, ang, frm-sft, chky k calc	8000	9200-9300 75% MRLST: gyshbn-dk gy, sb biky-sb ang, pily, occ sb biky, mot rgh tex, sme intbd CHK, calc: 25% CHK: med-it gy, incrg offwht frags, sb biky-sb ang, frm-sft, chky tex, com intbd MRLST, wk calc	8000	9300-9400 75% MRLST: gyshbn-dk gy, sb biky-sb ang, pily, occ sb biky, mot rgh tex, sme intbd CHK, calc: 25% CHK: med-it gy, incrg offwht frags, sb biky-sb ang, frm-sft, chky tex, com intbd MRLST, wk calc	8000
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RPM: 92  
WOB: 36  
SPM: 166  
SPP: 3,652

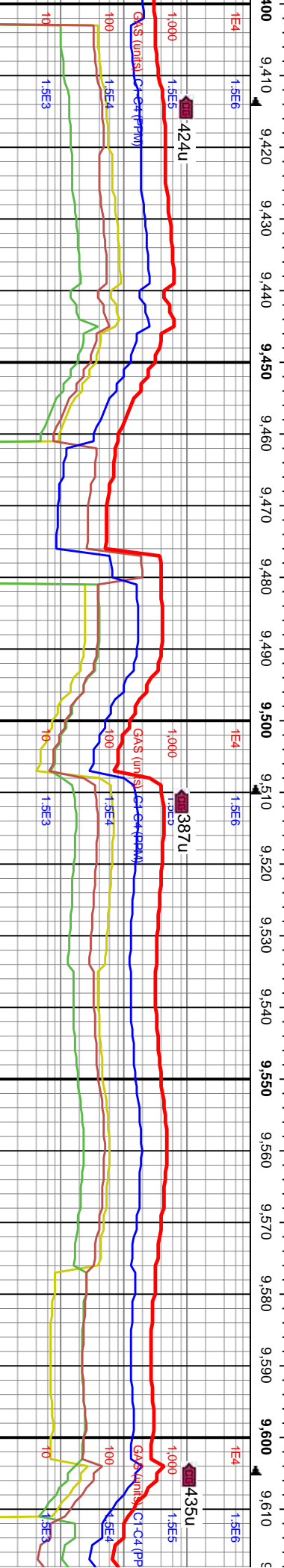
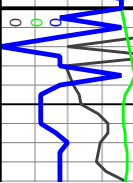
ROP (ft/hr)  
GAMMA (units)  
WOBX (KlB)



MM IN: 8.8  
VIS IN: 42

RPM: 93  
WOB: 32  
SPM: 166  
SPP: 3,722

ROP (ft/hr)  
GAMMA (units)  
WORK (KLB)



MD: 9,485'  
Inclination: 90°  
Azimuth: 0.4°  
TVD: 7,558.11'  
VS: 1,617.89'

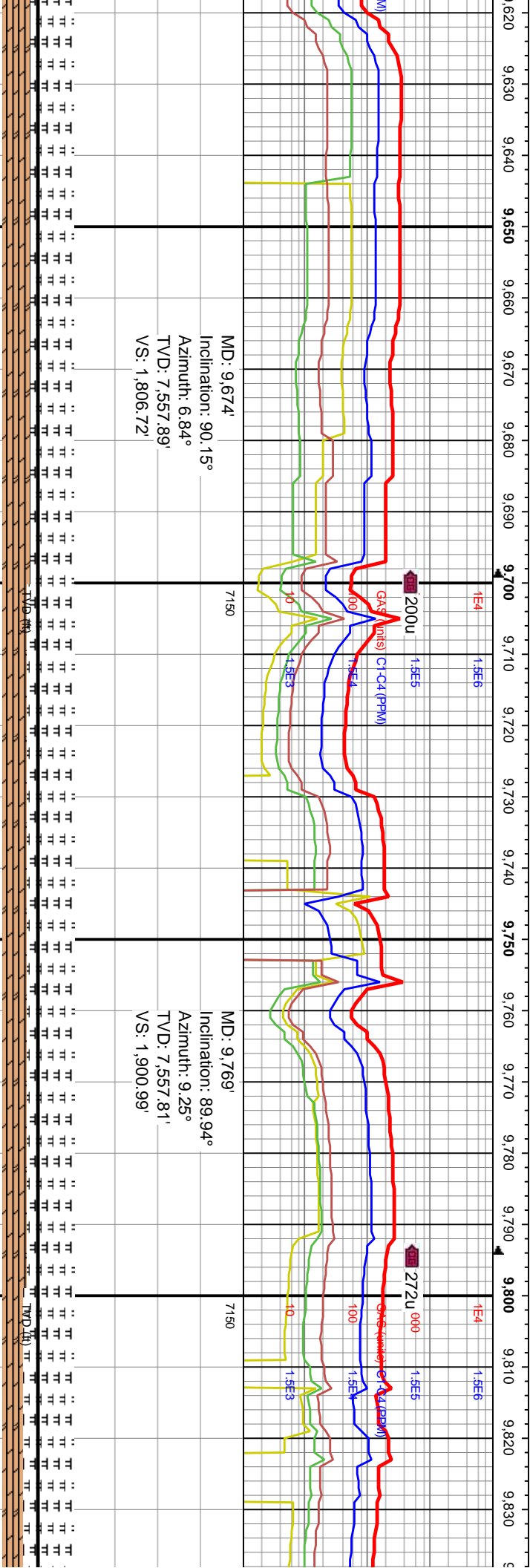
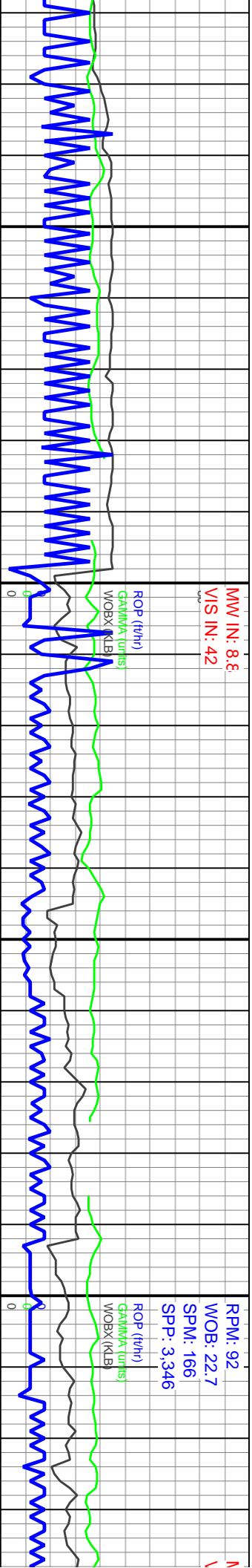
MD: 9,580'  
Inclination: 90.06°  
Azimuth: 358.37°  
TVD: 7,558.06'  
VS: 1,712.85'

9400-9500 70% MRLST: gys/shn-dk gy, sb  
bly-sb ang, pty, occ sb blyk, mot rgn tex,  
sme intbd CHK, calc: 30% CHK: med-lt gy,  
-incrg offwht frags, sb blyk-sb ang, frm-sft,  
chky tex, com intbd MRLST, wk calc

9500-9600 65% MRLST: gyshbn-dk gy, sb  
biky-sb ang, pily, occ sb bikly, mot rgh tex,  
sme intbd CHK, calc: 35% CHK: med-ll gy,  
incrg offwrt frags, sb bikly-sb ang, frm-sft,  
chky tex, com intbd MRLST, mod calc



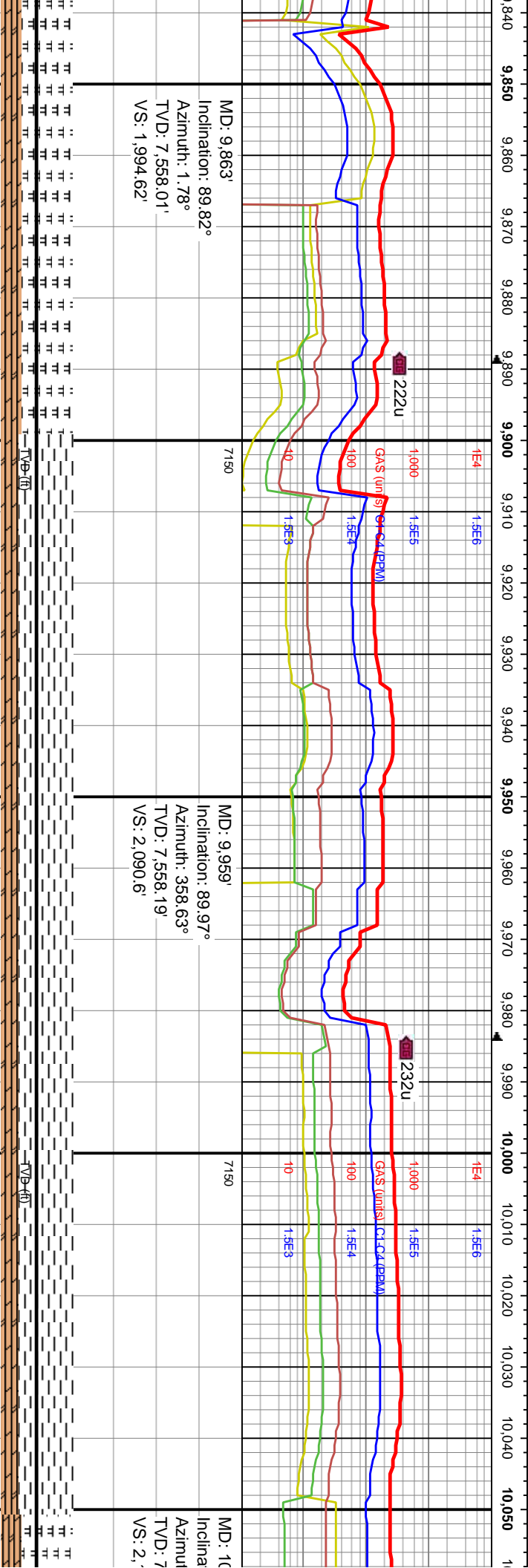
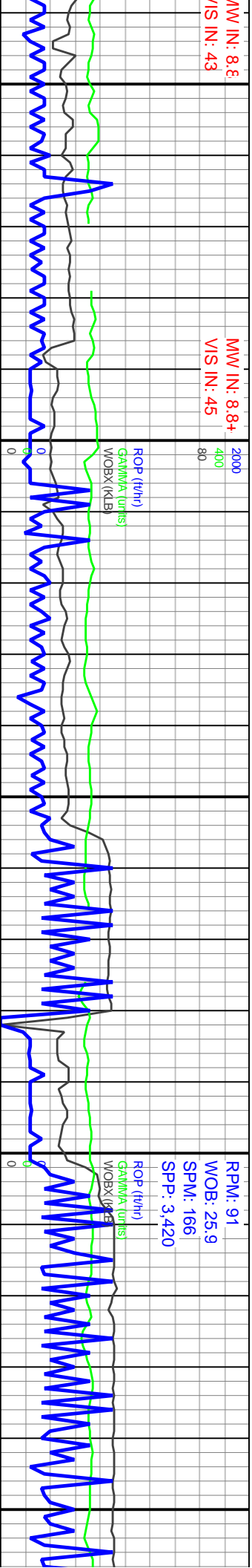




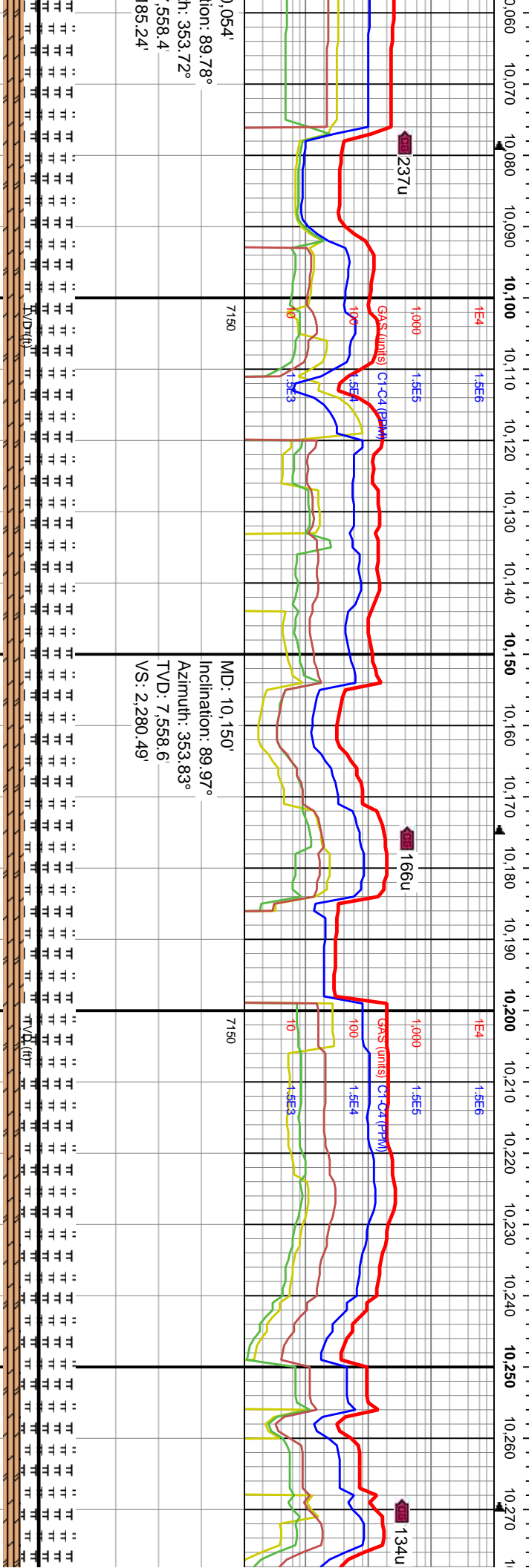
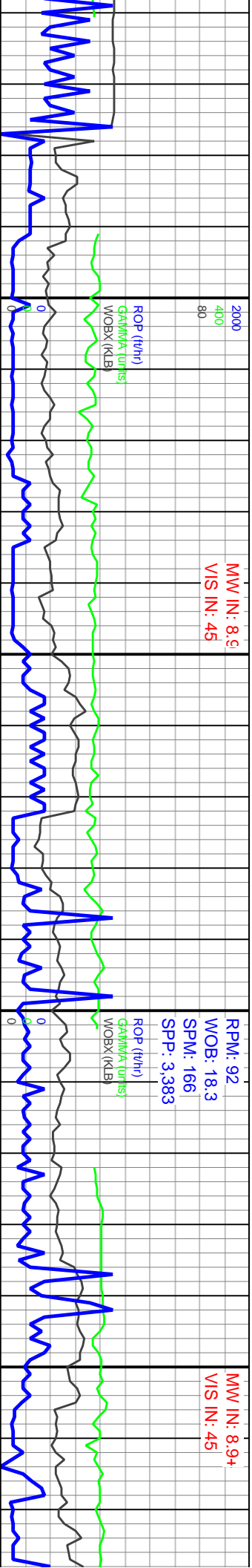
9600-9700 60% MRLST: gysshn-dk gy, ang, sb pty-sb blk, frm-hrd, mot rgn tex, com intbd CHK, occ cal frac fl, calc: 40% CHK: pred lt-med gy, occ scat wht frags, sb blk-sb ang, frm-sft, rgn-chky tex, com intbd MRLST, mod calc, tr PYR nod	8000	9700-9800 65% MRLST: gysshn-dk gy, ang, sb pty-sb blk, frm-hrd, mot rgn tex, com intbd CHK, occ cal frac fl, mod calc: 35% CHK: pred lt-med gy, occ scat wht-crm frags, sb blk-sb ang, frm-sft, rgn-chky tex, com intbd MRLST, wk calc, tr pp PYR	8000
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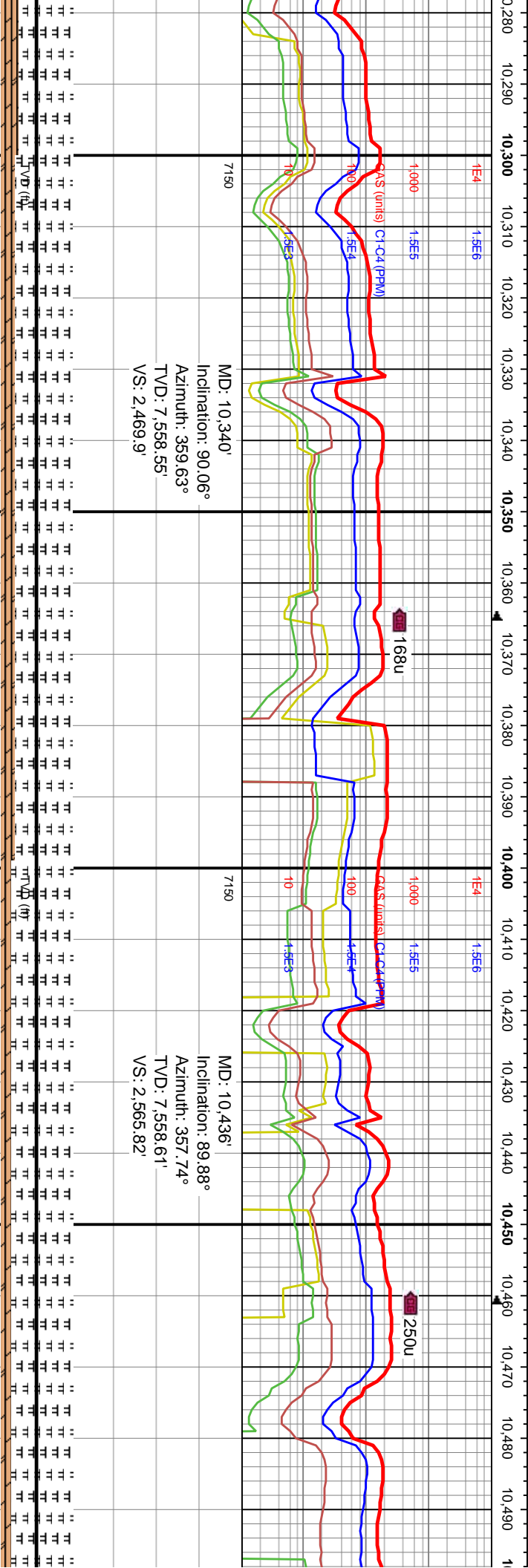
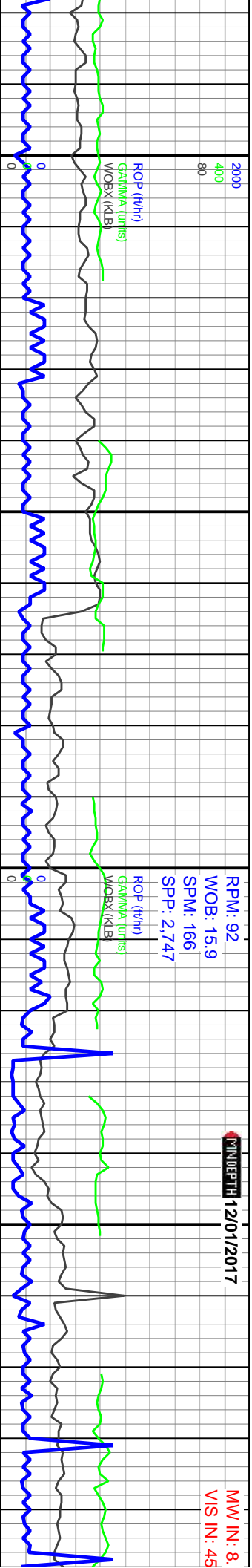







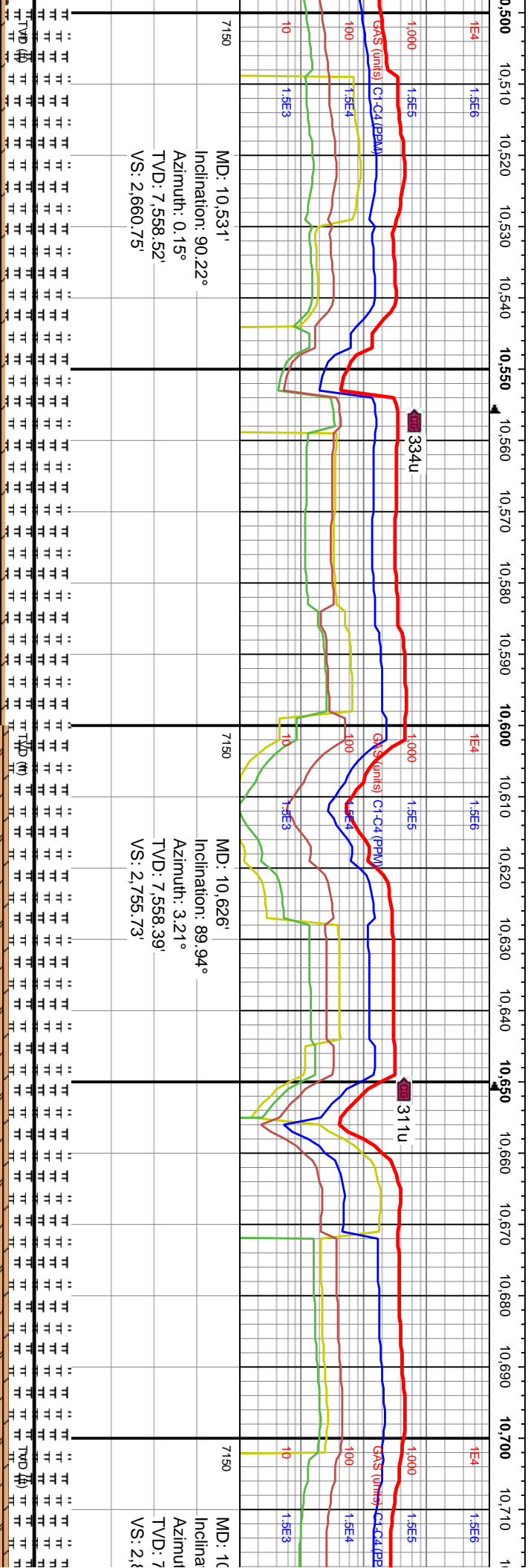
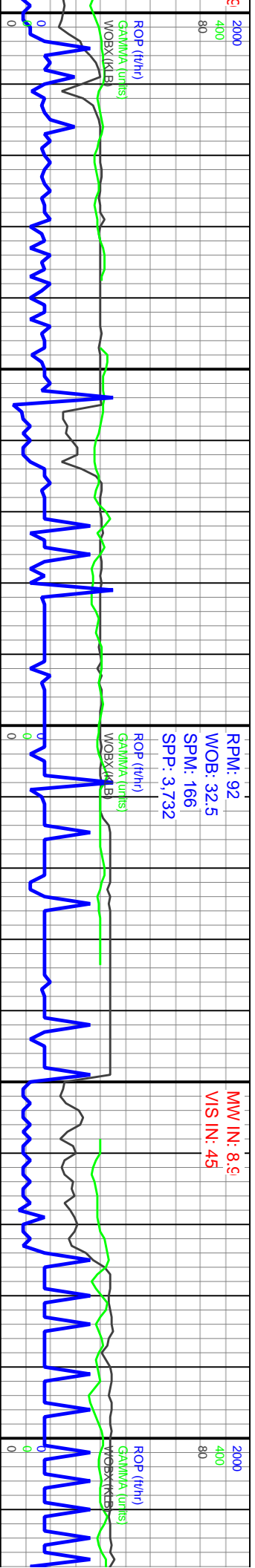
9800-9900 70% MRLST: pred dk gy-gyshbn, ang, sb ply-sb biky, frm-hrd, mot rgh tex, com intbd CHK, occ cal frac fl, mod calc; 30% CHK: pred med-lt gy-gyshbn, decing scat wht-frm frags, sb biky-sb ang, frm-sft, rgh-ckly tex, com intbd MRLST, wk calc; tr pp PYR, scatt PYR nod	8000	9900-10000 75% MRLST: pred dk gy-gyshbn, ang, sb ply-sb biky, frm-hrd, mot rgh tex, com intbd CHK, occ cal frac fl, v calc; 25% CHK: pred med gy-gyshbn, rr wht-frm frags, sb biky-sb ang, frm-sft, rgh-ckly tex, com intbd MRLST, mod calc; tr PYR	8000	10000- gy-gys rgh tex 30% C ang, frm mod c
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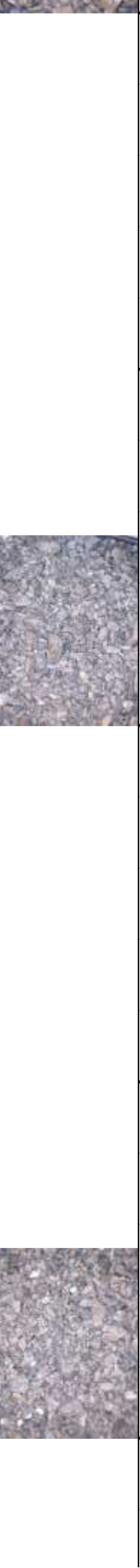
10100-10200 70% MRLST: pred dk, sme hbn, ang, sb pily-sb blkly, frm-hrd, mot , com intbd CHK, occ cal frac fl, v calc; CHK: pred med gy-gyshbn, sb blkly-sb m-sft, rgh-ckly tex, com intbd MRLST, calc; tr PYR nod	8000	10100-10200 70% MRLST: dk gy-gyshbn, ang, sb pily-sb blkly, frm-hrd, mot rgh tex, com intbd CHK, occ cal frac fl, calc; 30% CHK: pred lt-med gy, incrg scat wht-orm frags, sb blkly-sb ang, frm-sft, rgh-ckly tex, com intbd MRLST, mod calc; tr pp PYR	8000	10200-10300 75% MRLS gyshbn-dk gy, sb blkly-sb blkly, mot rgh tex, occ intbd CHK: med-it gysghbn, scat blkly-sb ang, frm-sft, ckly MRLST, wk calc; tr scat F	
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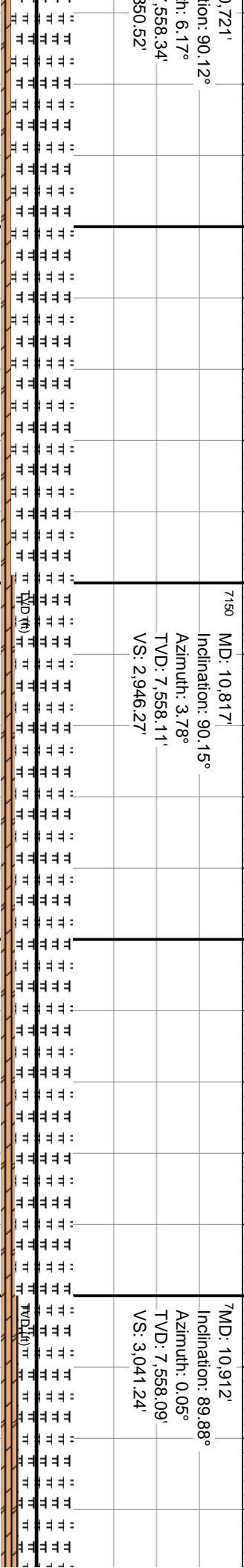
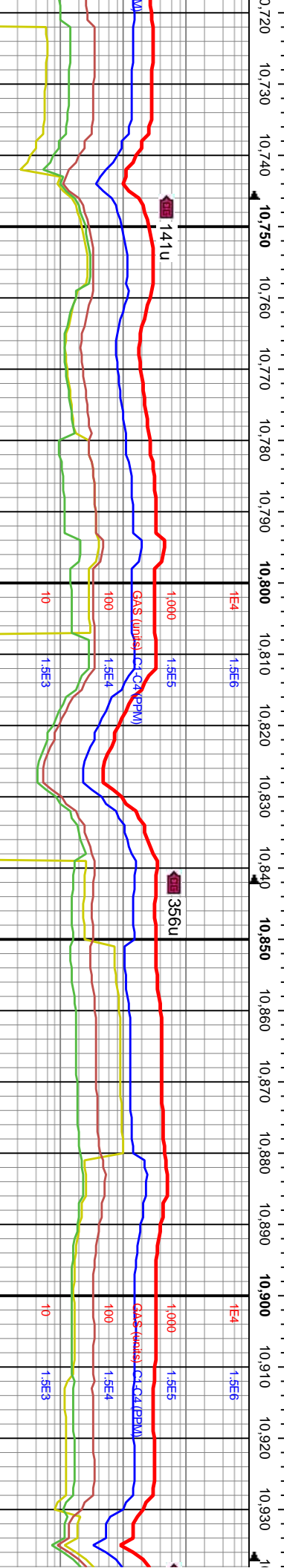
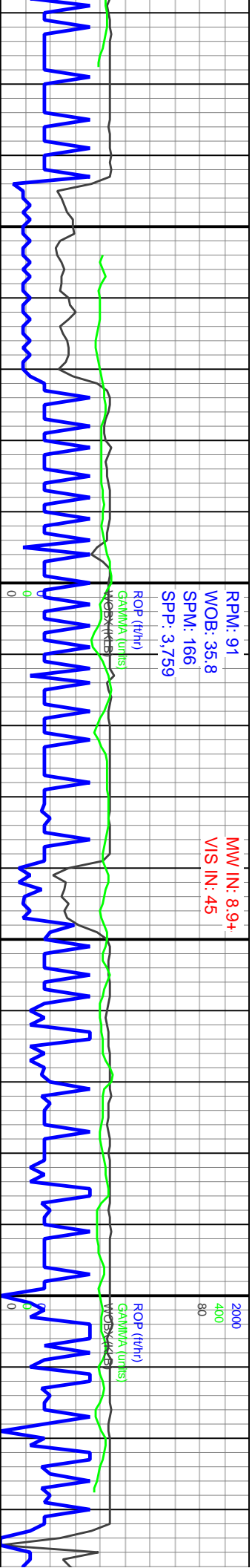


T: predy ang, pty, occ sb d CHK, calc: 25% wh-cm frags, sb tex, com intbd PYR, tr SA	8000	10300-10400 80% MRLST: dk gy-gyshbn, ang, sb pty-sb blk, frm-hrd, mot rgh tex, com intbd CHK, occ cal frac fl, calc: 20% CHK: pred lt-med gy, scat wh-cm frags, sb blk-sb ang, frm-sft, rgh-cky tex, com intbd MRLST, wk calc; scat PYR nod, tr SA, tr cal	8000	10400-10500 85% MRLST: dk gy-gyshbn, ang, pty-sb blk, frm-hrd, mot rgh tex, com intbd CHK, occ cal frac fl, calc: 15% CHK: pred med gy, decing wh-cm frags, sb blk-sb ang, frm-sft, rgh-cky tex, com intbd MRLST, wk calc; scat PYR nod	  
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7150	MD: 10,531' Inclination: 90.22° Azimuth: 0.15° TVD: 7,558.52' VS: 2,660.75'	10500-10600 90% MRLST: dk gy-gyshbn, ang, ply-sb blkly, frm-hrd, mot rgh tex, com intbd CHK, occ cal frac fl, v calc; 10% CHK: pred med gy, mtr wht-crm frags, sb blkly-sb ang, frm-sft, rgh-chky tex, com intbd MRLST, wk calc; tr intbdd mic pp pyr	8000
7150	MD: 10,626' Inclination: 89.94° Azimuth: 3.21° TVD: 7,558.39' VS: 2,755.73'	10600-10700 85% MRLST: pred dk gy-gyshbn, ang, ply-sb blkly, frm-hrd, mot rgh tex, com intbd CHK, occ cal frac fl, v calc; 15% CHK: pred med gy-gyshbn, tr wht-crm frags, sb blkly-sb ang, frm-sft, rgh-chky tex, com intbd MRLST, wk calc; tr cal, tr SA	8000

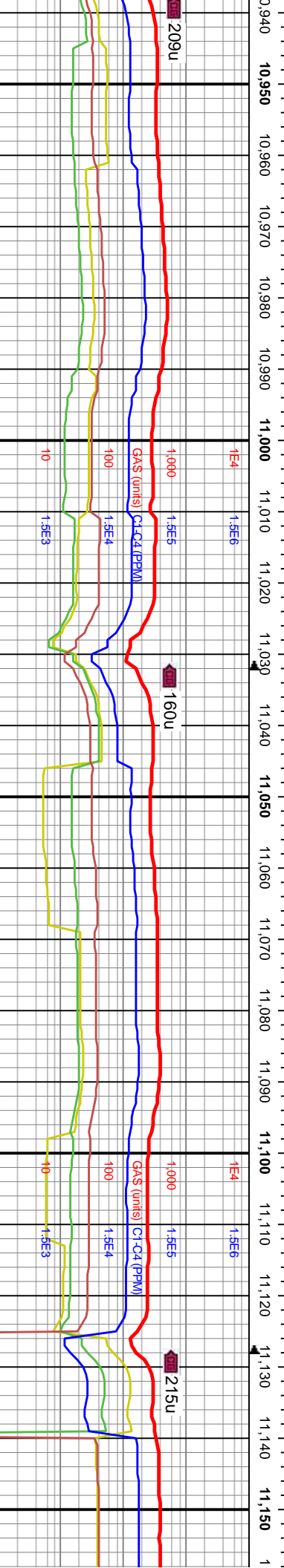
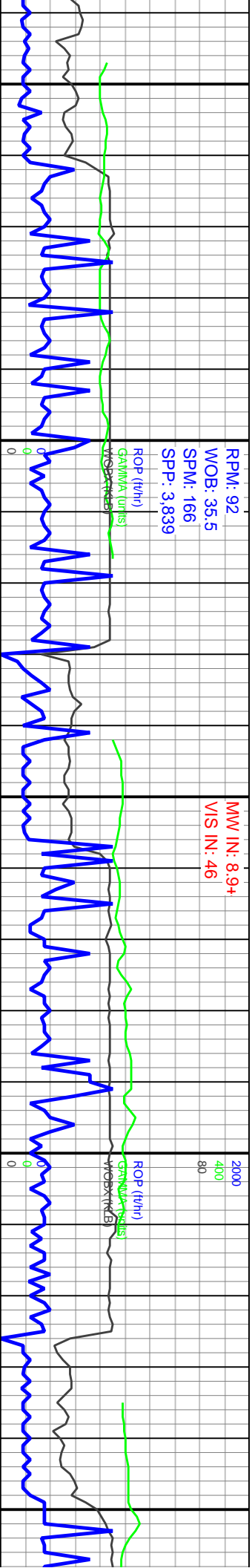




	10700-10800 85% MRLST: dk gy-gyshbn, ang, pily-sb blkly, frm-hrd, mot rgh tex, com intbd CHK, occ cal frac fl, v calc; 15% CHK: pred med gy-gyshbn, tr wht-crm frags, sb blkly-sb ang, frm-sft, rgh-chky tex, com intbd MRLST, wk calc;	8000	10800-10900 80% MRLST: dk gy-gyshbn, ang, pily-sb blkly, frm-hrd, mot rgh tex, com intbd CHK, occ cal frac fl, calc; 20% CHK: pred med gy-gyshbn, scat lt gy-wht frags, sb blkly-sb ang, frm-sft, rgh-chky tex, com intbd MRLST, wk calc; tr SA	8000







	MD: 11,007' Inclination: 90.18° Azimuth: 0.26° TVD: 7,558.04' VS: 3,136.24'		MD: 11,103' Inclination: 89.91° Azimuth: 0.56° TVD: 7,557.96' VS: 3,232.23'	
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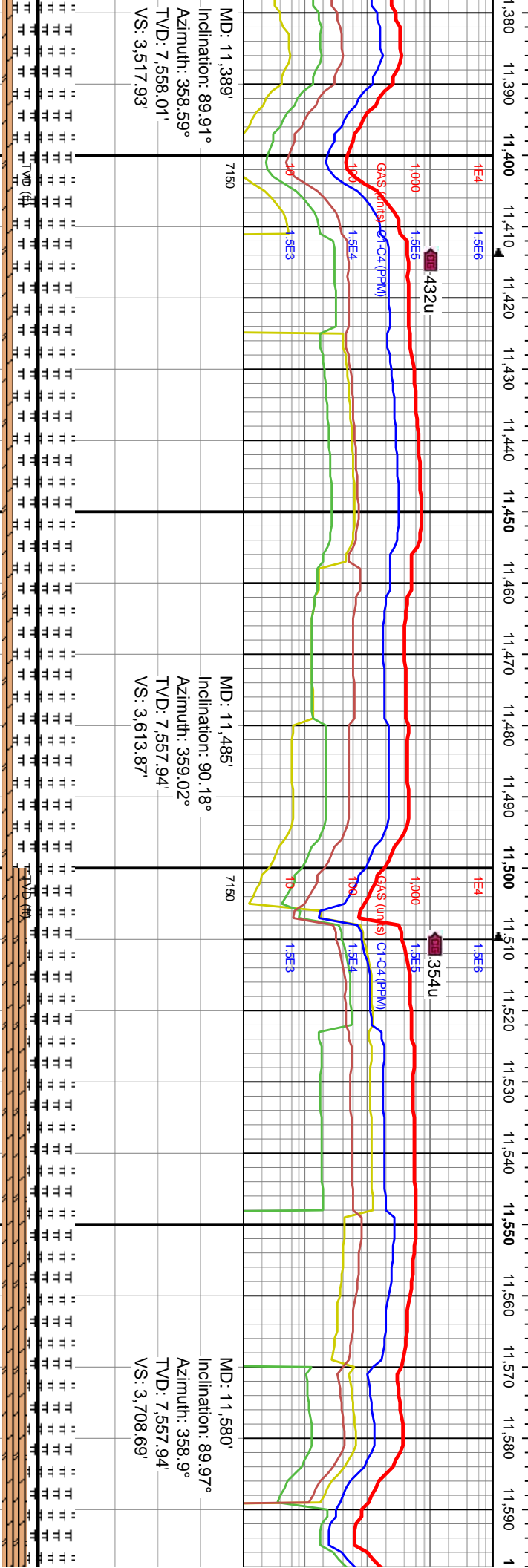
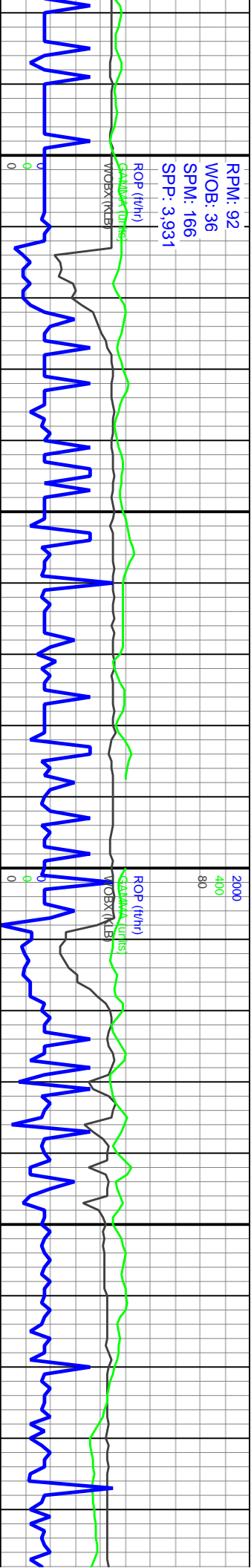
10900-11000 75% MRLST: pred dk gy-gyshbn, ang, pty-sb blkly, frm-hrd, mot rgh tex, com intbd CHK, occ cal frac fl, calc; 25% CHK: pred med gy-gyshbn, sme lt gy-whi frags, sb blkly-sb ang, frm-sft, rgh-chky tex, com intbd MRLST, mod calc	8000	11000-11100 70% MRLST: dk gy-gyshbn, ang, pty-sb blkly, frm-hrd, mot rgh tex, com intbd CHK, occ cal frac fl, calc; 30% CHK: pred med gy-gyshbn, sme lt gy-crm frags, sb blkly-sb ang, frm-sft, rgh-chky tex, com intbd MRLST, mod calc; tr pp PYR, tr SA, tr PYR nod, tr cal	8000	11100
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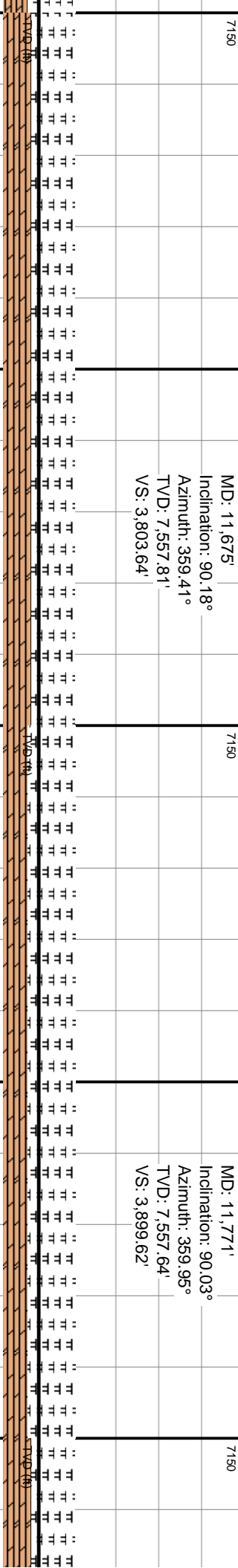
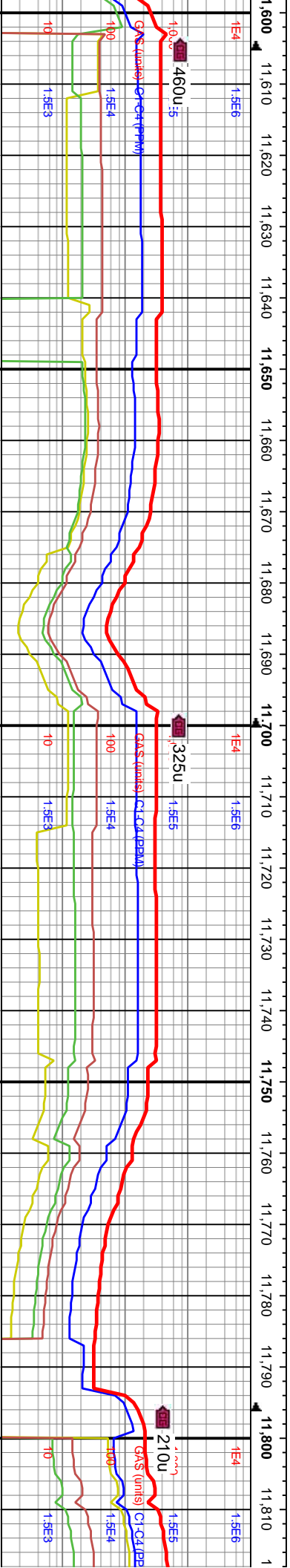
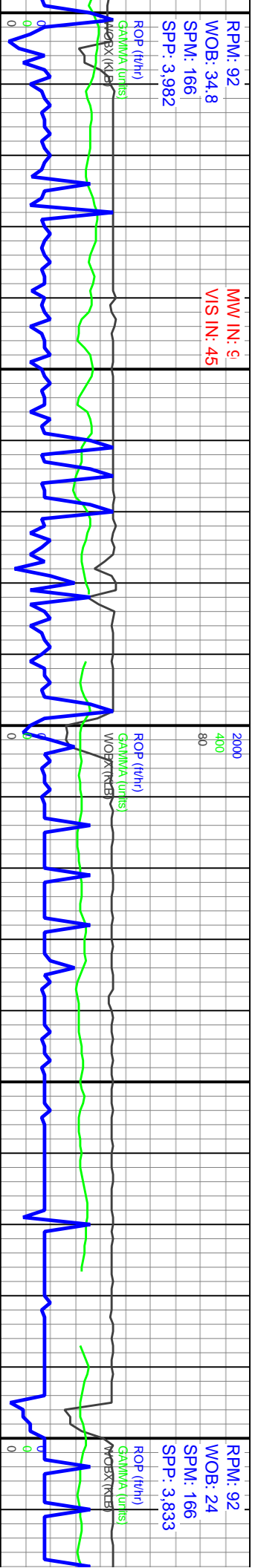
11100  
gy-gys  
rgh tex  
25% C  
gy-whi  
rgh-ch  
SA, sc



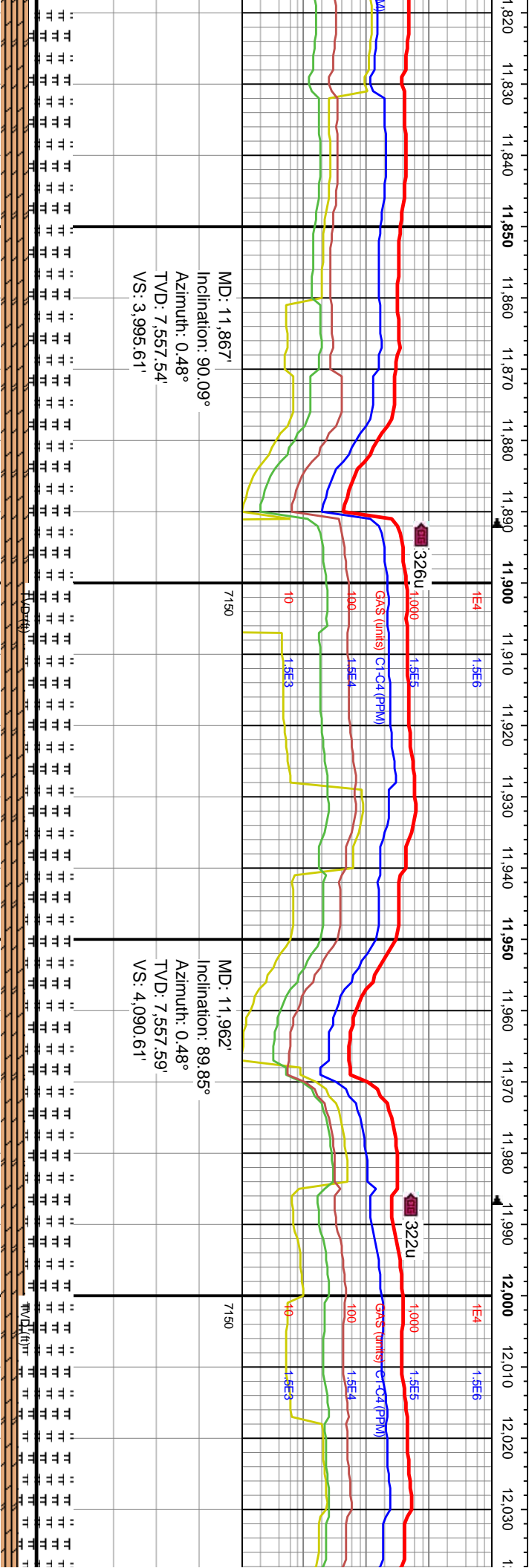
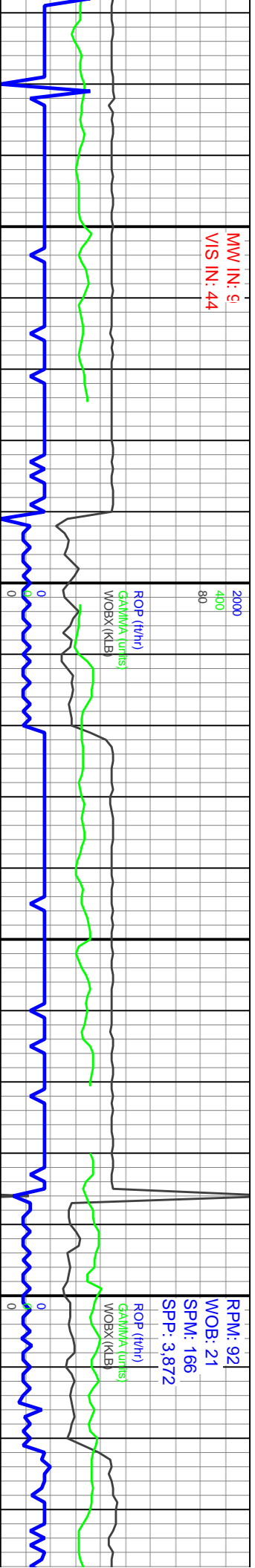




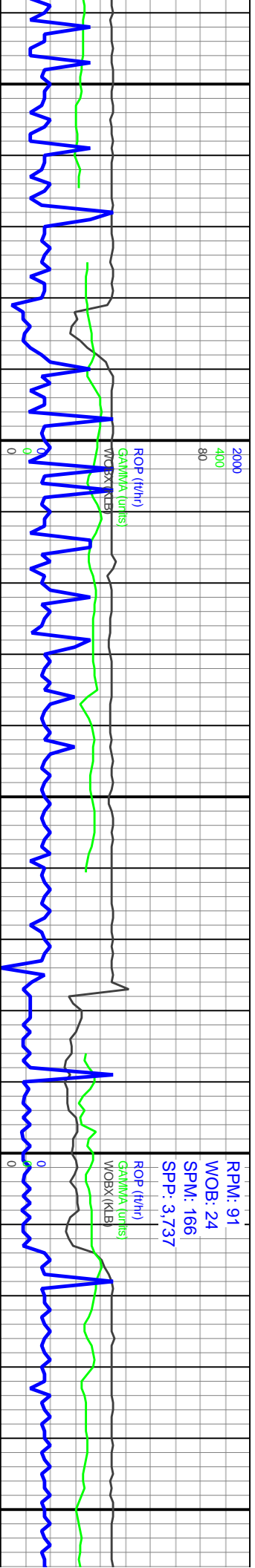
T: dk gy-gyshbn, rd, mot c tex wi K, cal frac fl, calc; n, sme lt gy-crm sft, slty-sm chky alc	8000	11400-11500 85% MRLST: dk gy-gyshbn, sb ang, sb blk-y-pty, frm-hrd, mot c tex wi f-vf cmtd gr, com lam CHK, cal frac fl, calc; 15% CHK: pred gy-gyshbn, sme lt gy-crm frags, sb blk-y-sb ang, frm-sft, slty-sm chky tex, com intbd MRLST, calc; tr intbd pp mic PYR, tr arg SS frag	8000	11500-11600 65% MRLST: dk gy-gyshbn, sb ang, sb blk-y-pty, frm-hrd, mot c tex wi f-vf cmtd gr, com lam CHK, cal frac fl, calc; 35% CHK: pred gy-gyshbn, sme lt gy-crm frags, sb blk-y-sb ang, frm-sft, slty-sm chky tex, com intbd MRLST, calc; tr intbd pp mic PYR, tr arg SS frag, tr LCM		
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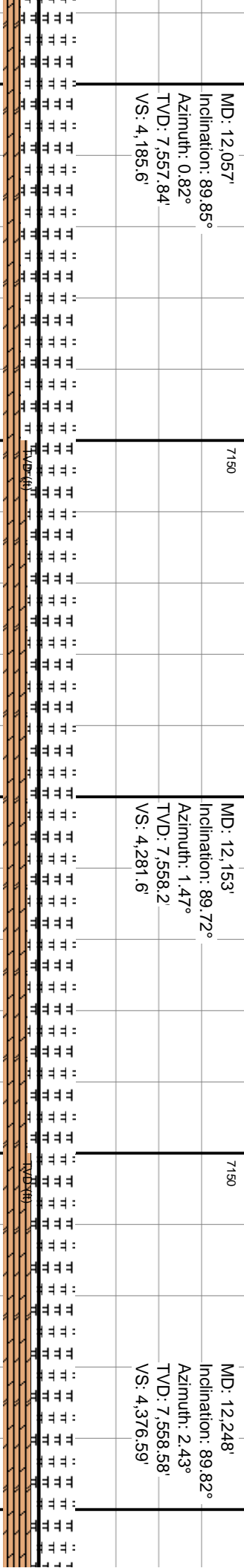
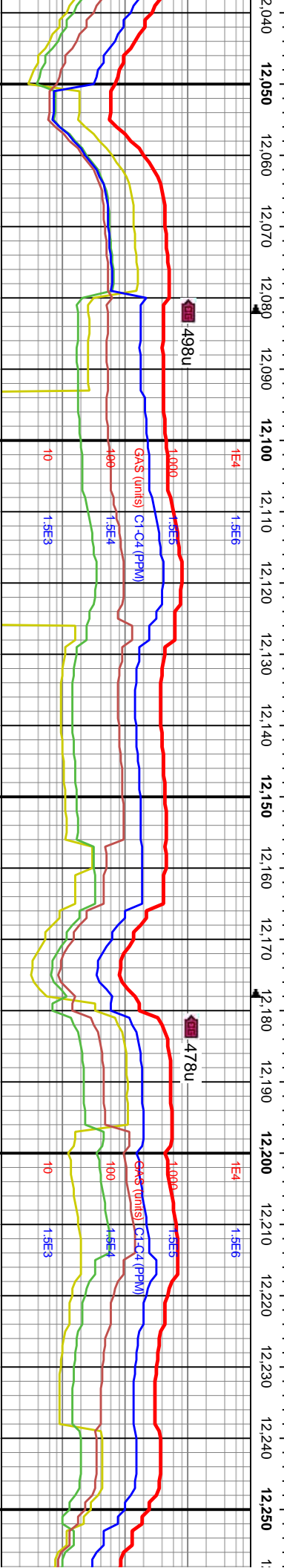
11600-11700 60% MRLST: dk gy-gyshbn, sb ang, sb blkly-pty, frm-hrd, mot c tex wi f-vf cmtid gr, com lam CHK, cal frac fl, calc, sme intbd mic pp PYR; 40% CHK: pred gy-gyshbn, sme lt gy-crm frags, sb blkly-sb ang, frm-sft, silty-sm chky tex, com intbd MRLST, calc; tr intbd pp mic PYR, tr arg SS	
11700-11800 65% MRLST: dk gy-gyshbn, sb ang, sb blkly-pty, frm-hrd, mot c tex wi f-vf cmtid gr, com lam CHK, cal frac fl, calc, tr intbd pp mic PYR; 35% CHK: pred gy-gyshbn, sme lt gy-crm frags, sb blkly-sb ang, frm-sft, silty-sm chky tex, com intbd MRLST, calc; tr scat PYR nod	



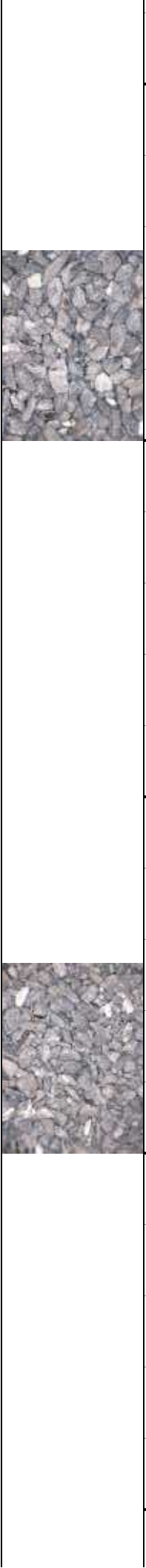
11800-11900 60% MRLST: gysbhn-dk gy, sb ang, sb blkly-pty, frm-hrd, mot c tex wi f-vf cntd gr, com lam CHK, cal frac fl, calc; 40% CHK: pred gy-gysbhn, sme lt gy-crm frags, sb blkly-sb ang, frm-sft, silty-sm chky tex, com intbd MRLST, calc; tr scat PYR nod	8000	
11900-12000 65% MRLST: gysbhn-dk gy, sb ang, sb blkly-pty, frm-hrd, mot c tex wi f-vf cntd gr, com lam CHK, spy, calc; 35% CHK: pred gy-gysbhn, sme lt gy-crm frags, sb blkly-sb ang, frm-sft, silty-sm chky tex, com intbd MRLST, calc	8000	



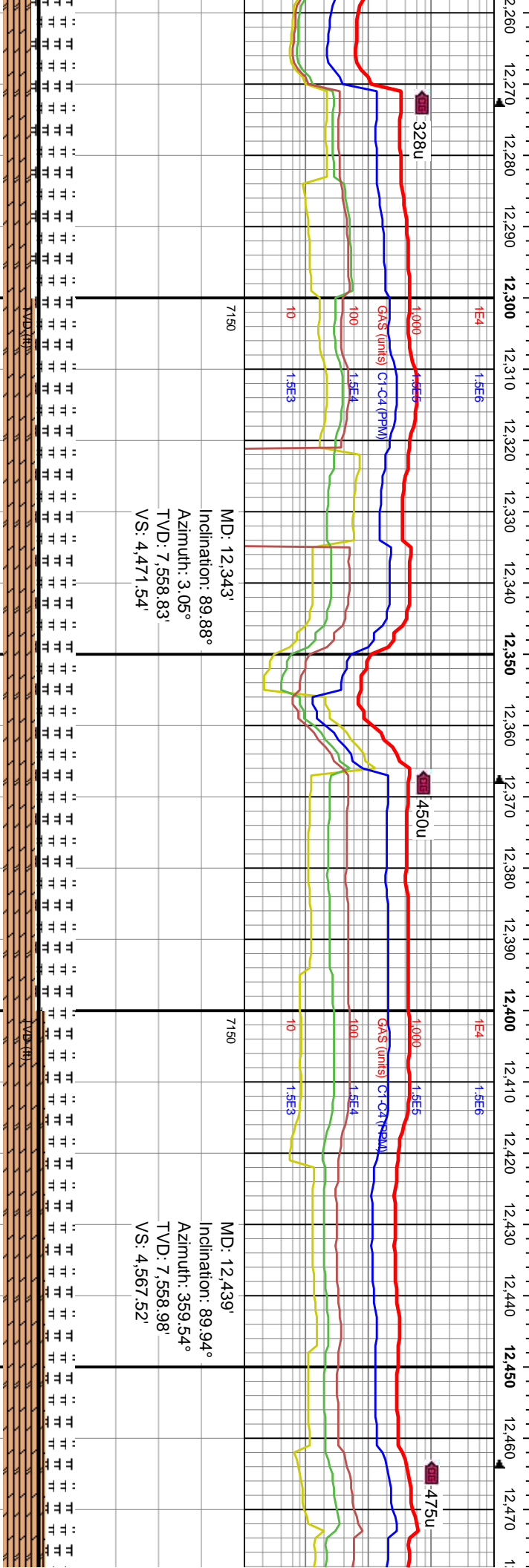
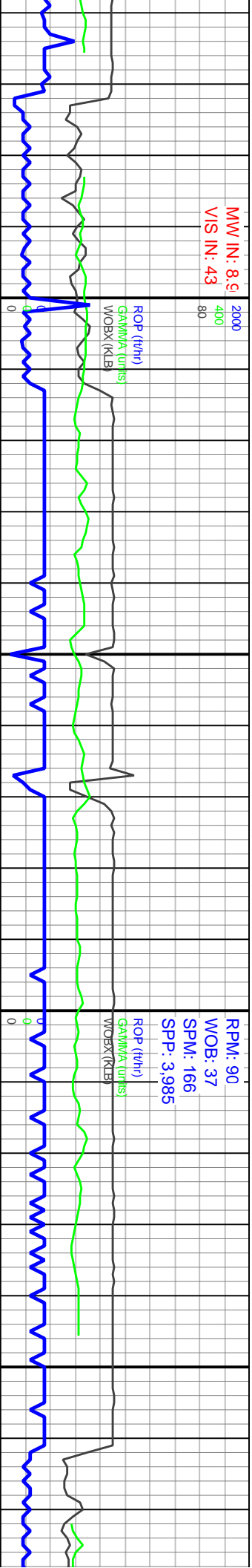
RPM: 91  
WOB: 24  
SPM: 166  
SP: 3.737



12000-12100 75% MRLST: gysbhn-dk gy, sb ang, sb blkly-pty, frm-hrd, mot c tex wi f-vf spy cntd gr, com lam CHK, calc; 25% CHK: pred gy-gysbhn, sme lt gy-crm frags, sb blkly-sb ang, frm-sft, silty-sm chky tex, com intbd MRLST, calc	8000	12100-12200 65% MRLST: gysbhn-dk gy, sb ang, sb blkly-pty, frm-hrd, mot c tex wi f-vf spy cntd gr, com lam CHK, calc, tr mic pyrc incl; 35% CHK: pred gy-gysbhn, sme lt gy-crm frags, sb blkly-sb ang, frm-sft, silty-sm chky tex, com intbd MRLST, calc; tr arg SS frag	8000	12200-12300 55% MRLST: gysbhn-dk gy, sb ang, sb blkly-pty, frm-hrd, mot c tex wi f-vf spy cntd gr, com lam CHK, calc, tr mic pyrc incl; 45% CHK: pred gy-gysbhn, sme lt gy-crm frags, sb blkly-sb ang, frm-sft, silty-sm chky tex, com intbd MRLST, calc; tr arg SS frag	8000
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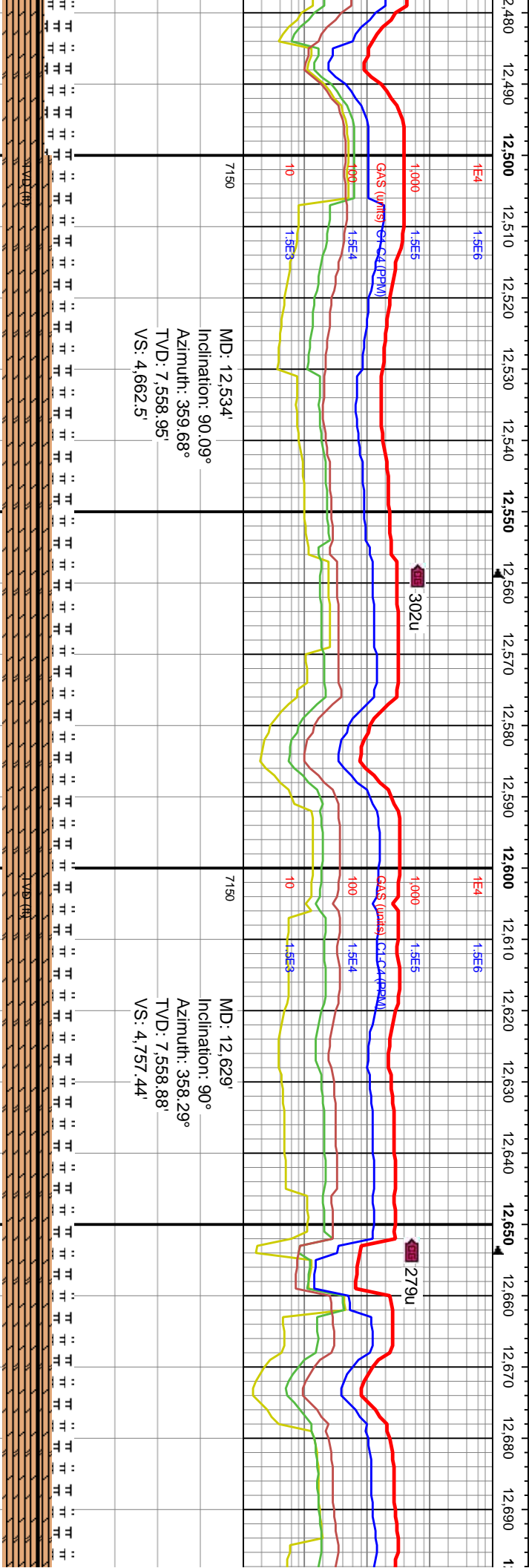
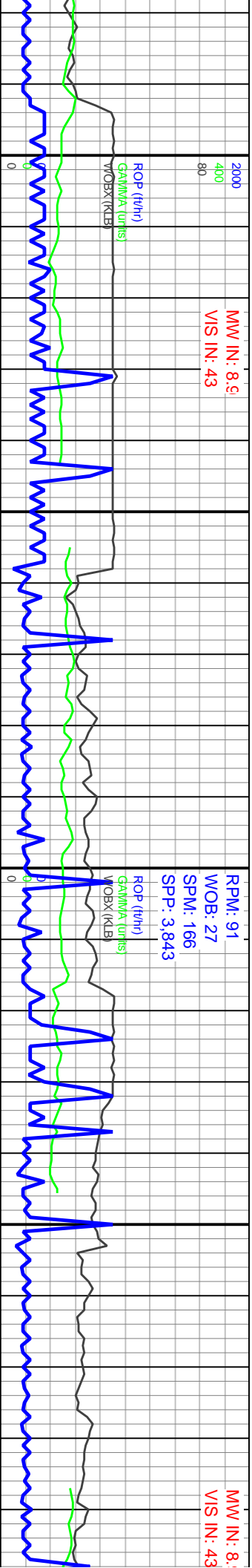




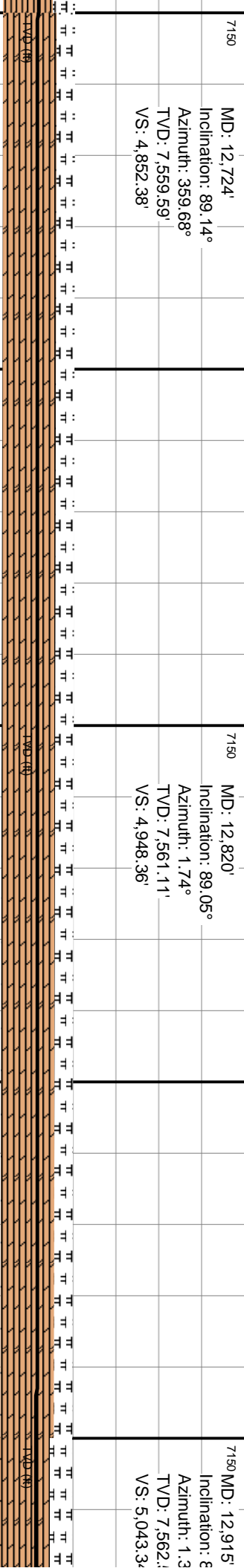
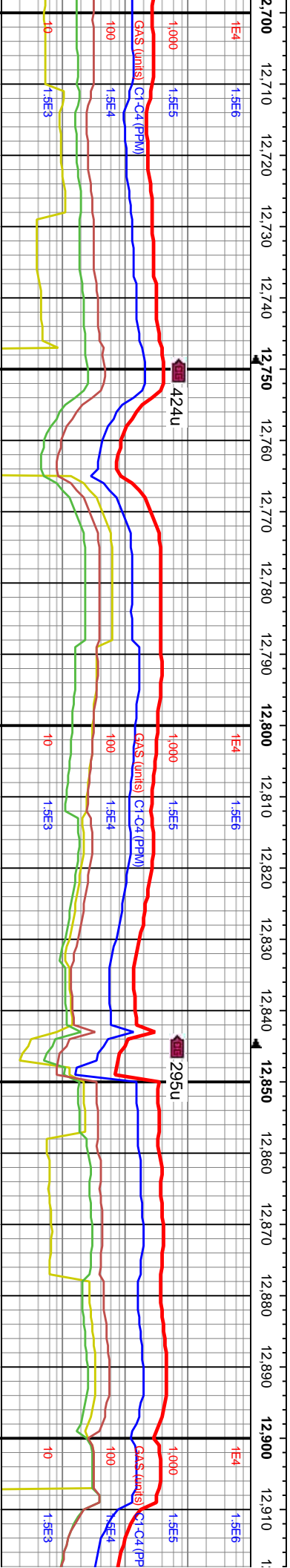
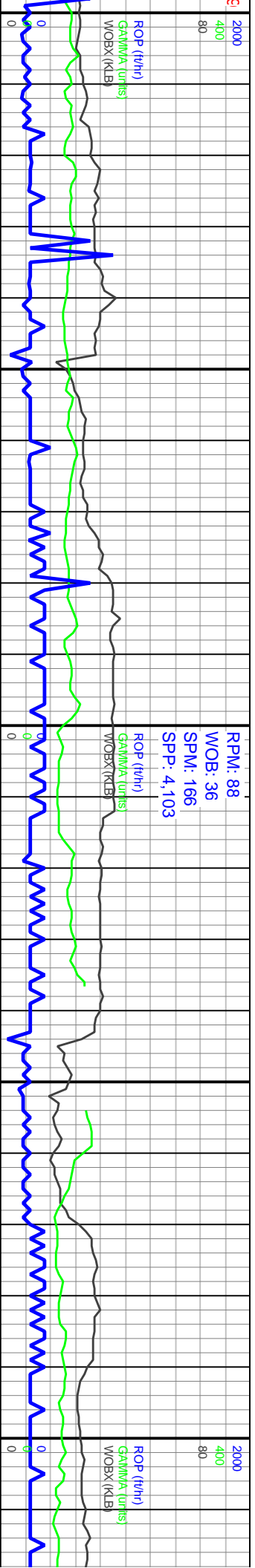


12300-12400 60% MRLST: gyshbn-dk gy, sb biky-pty, frm-hrd, mot c tex wi f-vf id gr, com intbd CHK, calc, tr mic pyrc % CHK: pred gy-gyshbn, sme lt frags, sb biky-sb ang, frm-sft, silty-sm x, com intdc MRLST, calc, tr arg SS	8000	12300-12400 55% MRLST: gyshbn-dk gy, sb ang, sb biky-pty, frm-hrd, mot c tex wi f-vf spy cntd gr, com intbd CHK, calc, tr mic pyrc incl: 45% CHK: pred gy-gyshbn, sme lt gy-crm frags, sb biky-sb ang, frm-sft, silty-sm chky tex, com mrlf intcls, calc, tr arg SS frag	8000	12400-12500 60% CHK: f sme lt gy-crm frags, sb bily silty-sm chky tex, com mrlf MRLST: gyshbn-dk gy, sb frm-hrd, mot c tex wi f-vf s intbd CHK, calc, tr mic pyrc	
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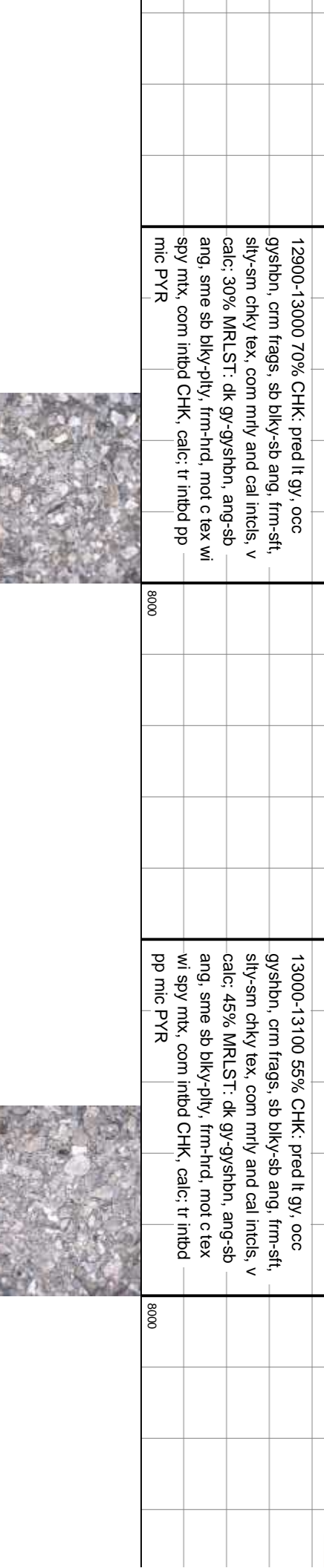
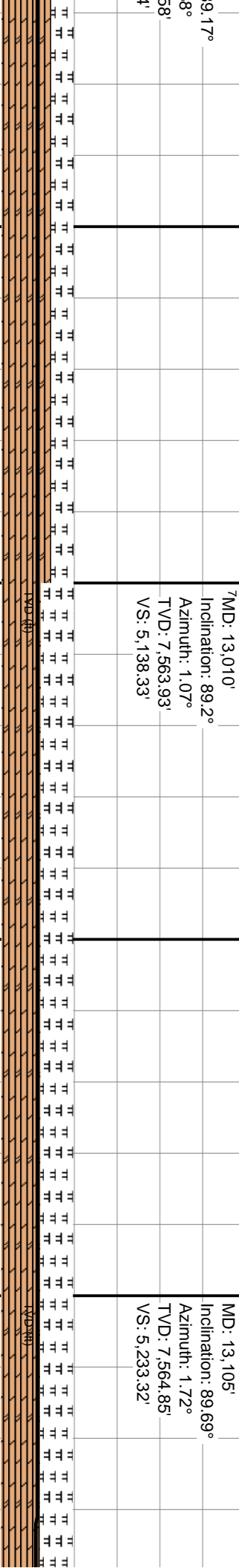
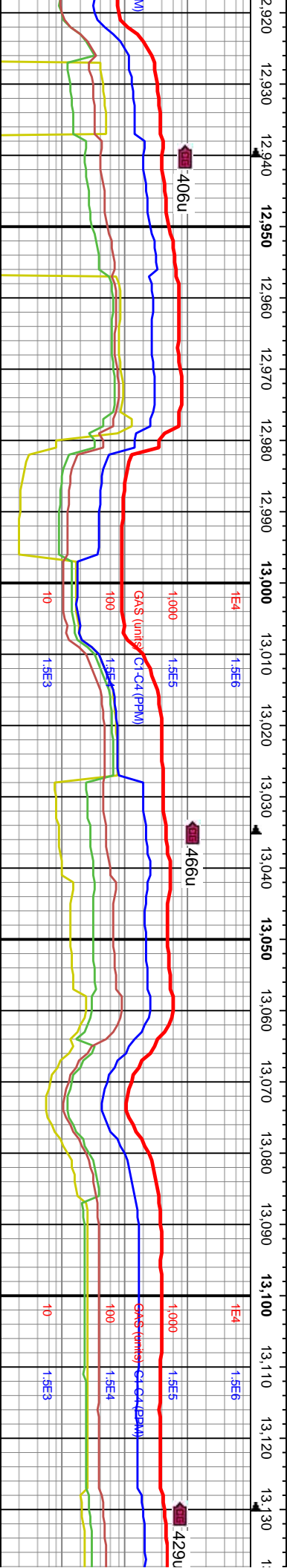
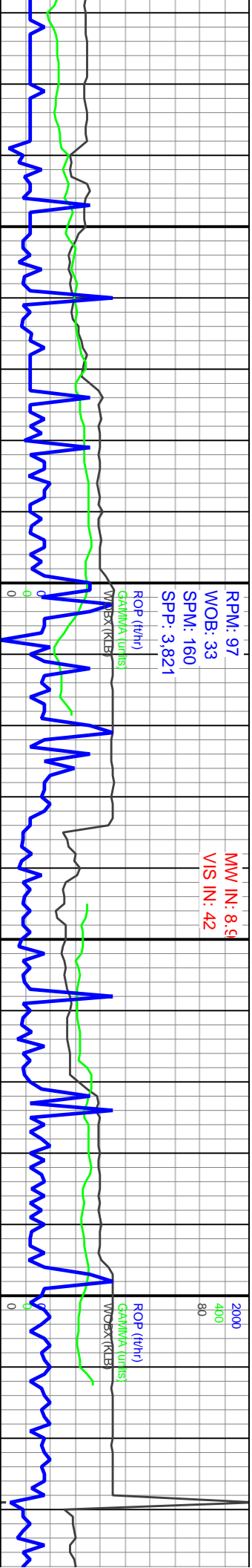
red gy-gyshbn, sly-sb ang, frm-sft, v intds, calc; 40% ang, sb blk-y-pty, py cmtid gr, com c inci; tr SA	8000	12500-12600 70% CHK: pred lt gy, occ gyshbn, crm frags, sb blk-y-sb ang, frm-sft, sly-sm chky tex, com mrlly intds, calc, tr intbd mic pp PYR; 30% MRLST: dk gy-gyshbn, ang-sb ang, sb blk-y-pty, frm-hrd, mot c tex wi f-vf spy cmtid gis, com intbd CHK, calc	8000	12600-12700 70% CHK: pred lt gy, occ gyshbn, crm frags, sb blk-y-sb ang, frm-sft, sly-sm chky tex, com mrlly and cal intds, v calc; 30% MRLST: dk gy-gyshbn, ang-sb ang, sme sb blk-y-pty, frm-hrd, mot c tex wi spy mtz, com intbd CHK, calc	
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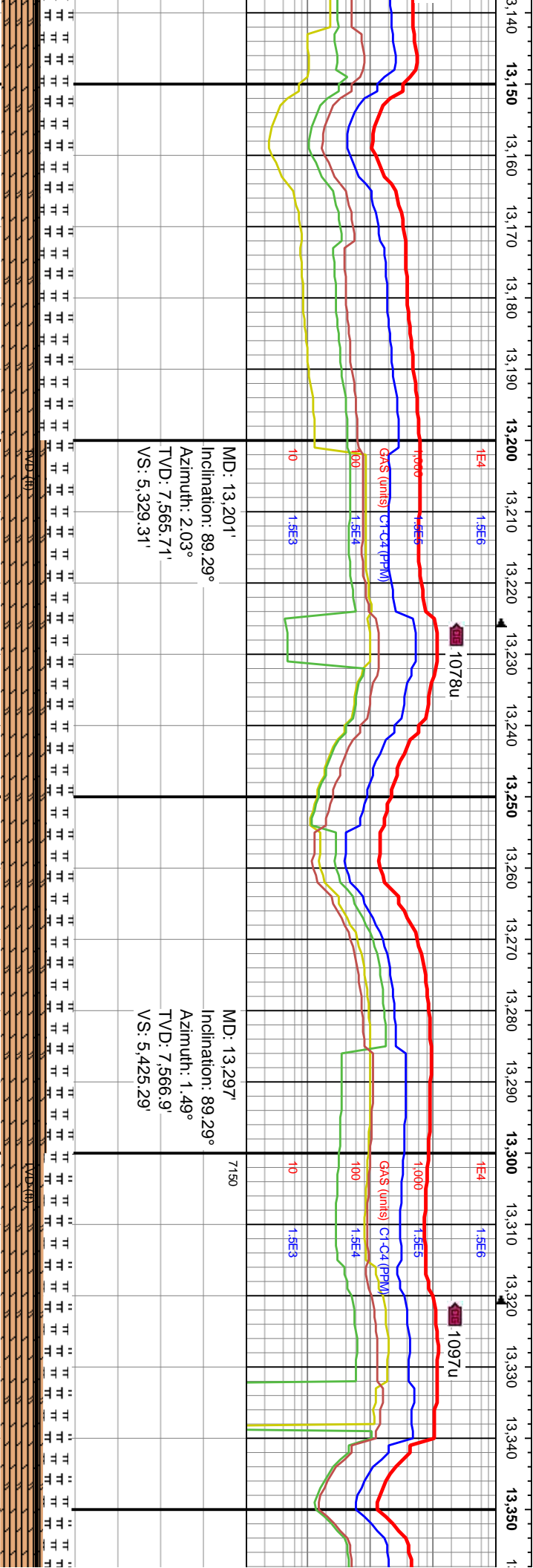
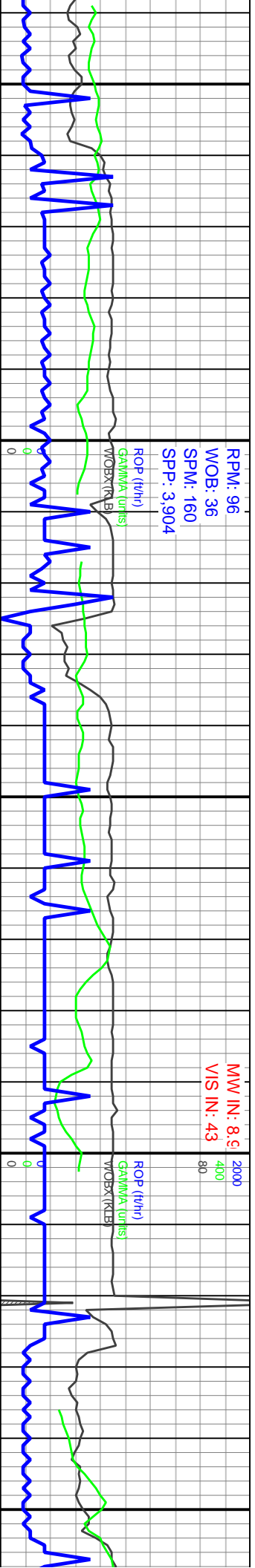


12700-12800 75% CHK: pied lt gy-gyshbn, sme crm frags, sb blk-y-sb ang, frm-sft, silty-sm chky tex, com mrlly and cal intcls, v calc; 25% MRLST: dk gy-gyshbn, ang-sb ang, sme sb blk-y-pty, frm-hrd, mot c tex wi spy mtz, com intbd CHK, calc

12800-12900 75% CHK: pied lt gy, occ gyshbn, crm frags, sb blk-y-sb ang, frm-sft, silty-sm chky tex, com mrlly and cal intcls, v calc; 25% MRLST: dk gy-gyshbn, ang-sb ang, sme sb blk-y-pty, frm-hrd, mot c tex wi spy mtz, com intbd CHK, calc

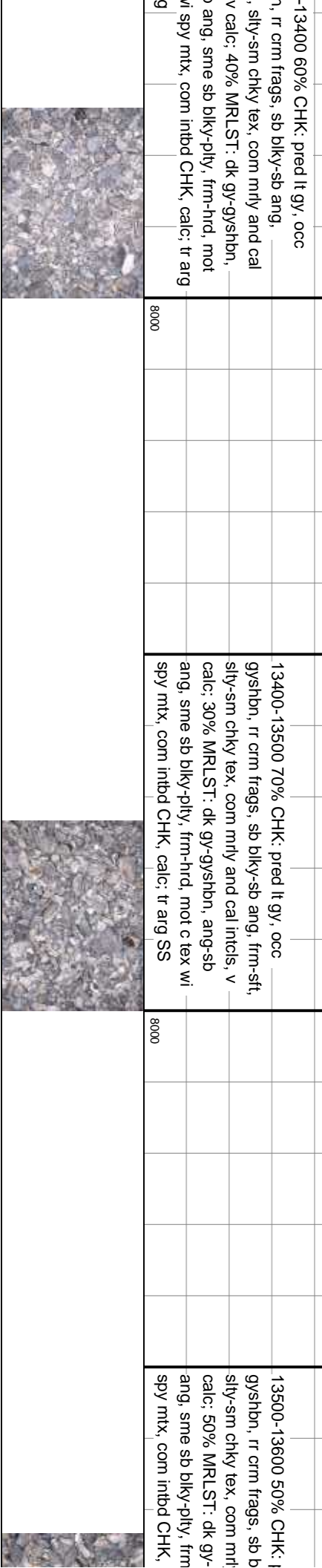
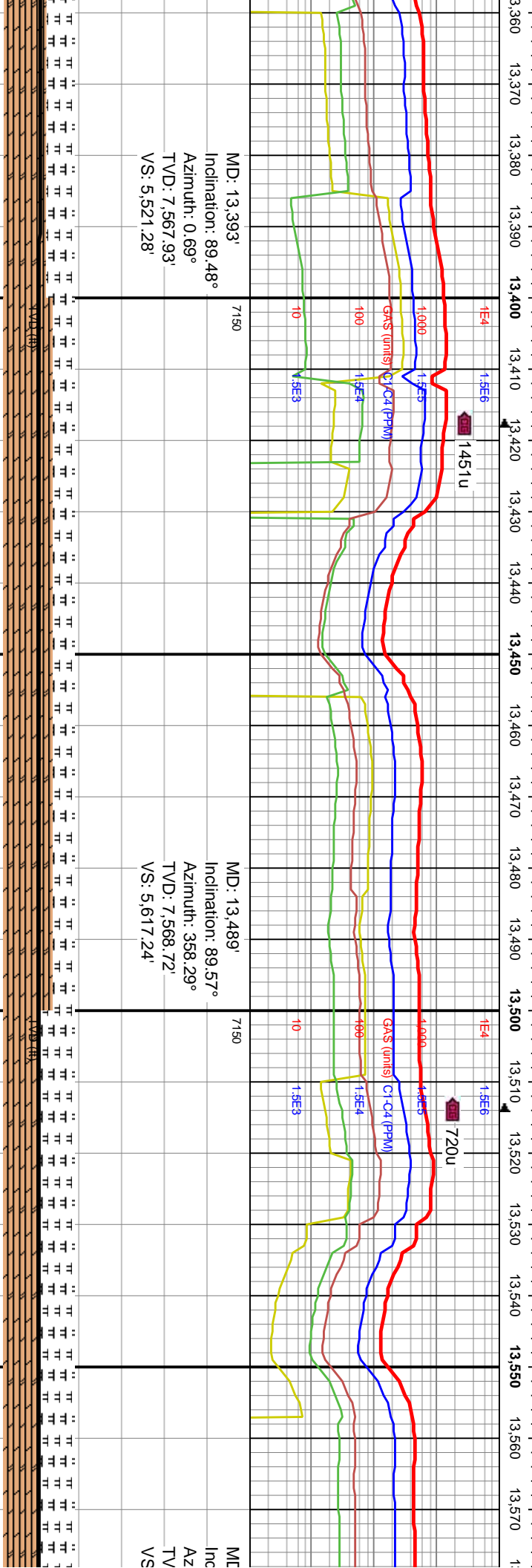
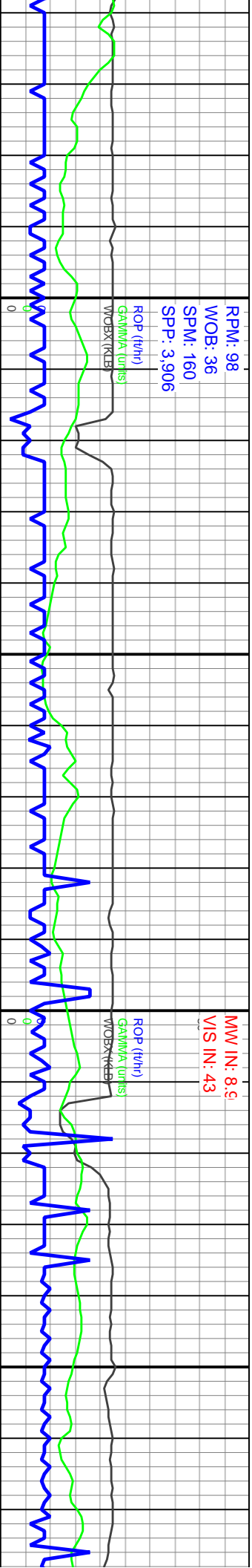




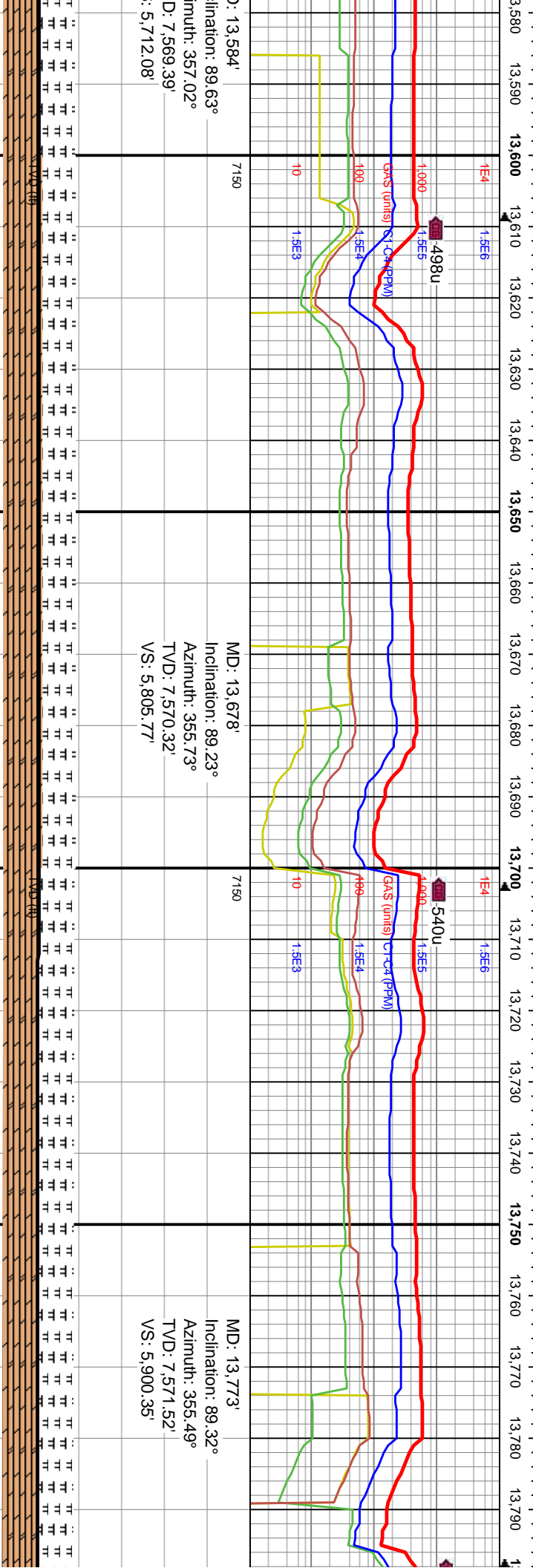
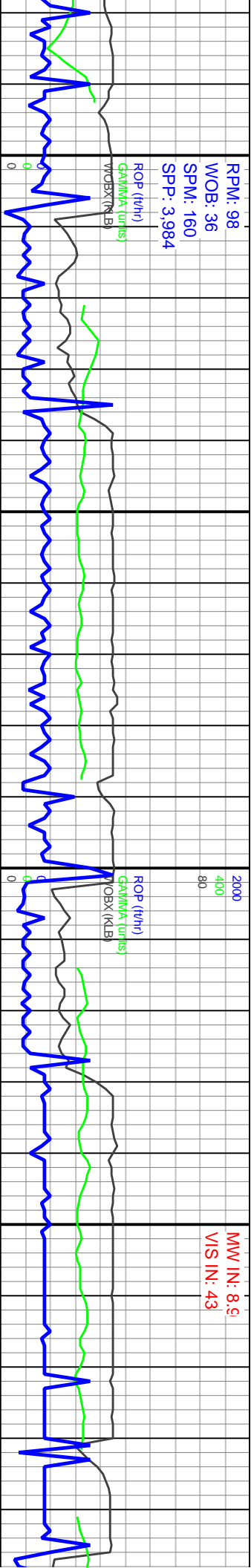


13100-13200 55% CHK: pred lt gy, occ gysbhn, rr crm frags, sb blk-y-sb ang, frm-sft, sily-sm chky tex, com mrlly and cal intcls, v calc; 45% MRLST: dk gy-gysbhn, ang-sb ang, sme sb blk-y-pty, frm-hrd, mot c tex wi spy mtx, com intbd CHK, calc; tr intbdd pp mic PYR	8000	13200-13300 65% CHK: pred lt gy, occ gysbhn, rr crm frags, sb blk-y-sb ang, frm-sft, sily-sm chky tex, com mrlly and cal intcls, v calc; 35% MRLST: dk gy-gysbhn, ang-sb ang, sme sb blk-y-pty, frm-hrd, mot c tex wi spy mtx, com intbd CHK, calc; tr intbdd pp mic PYR	8000	13300 gysbhn, rr crm frags, sb blk-y-sb ang, frm-sft, sily-sm chky tex, com mrlly and cal intcls, v calc; 35% MRLST: dk gy-gysbhn, ang-sb ang, sme sb blk-y-pty, frm-hrd, mot c tex v SS fra
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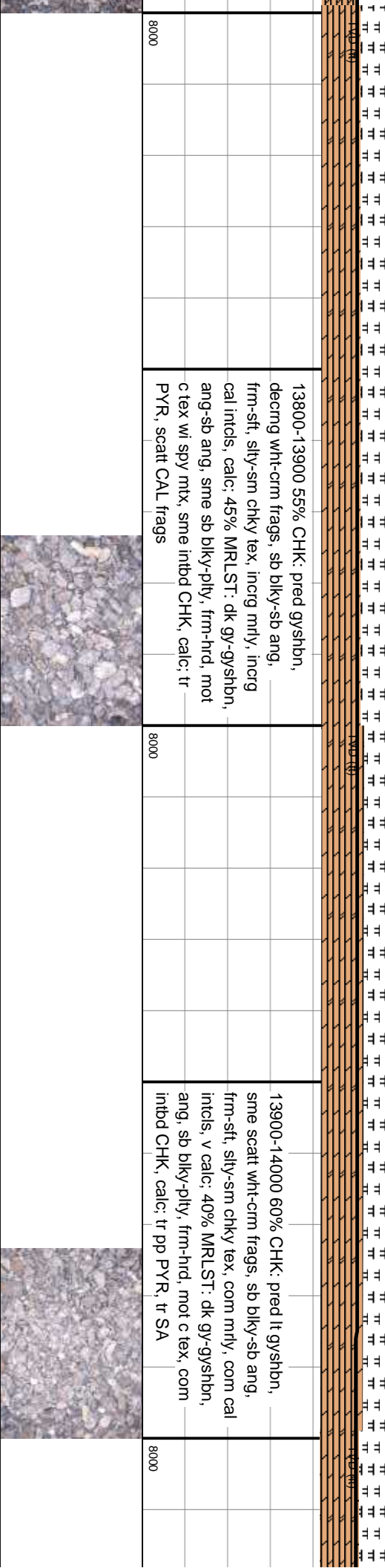
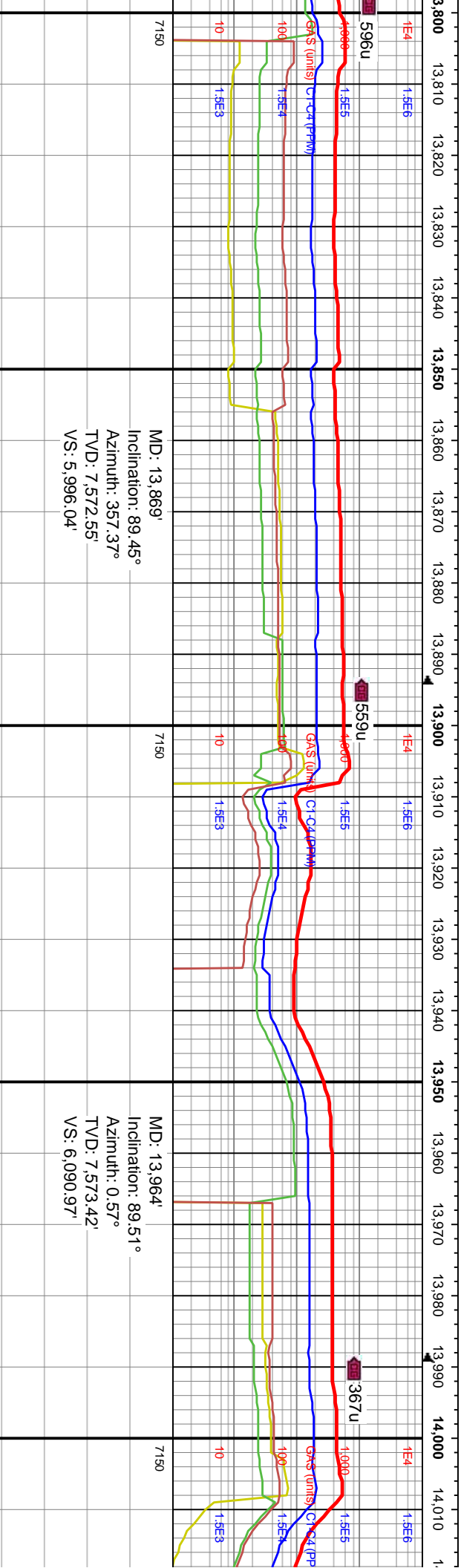
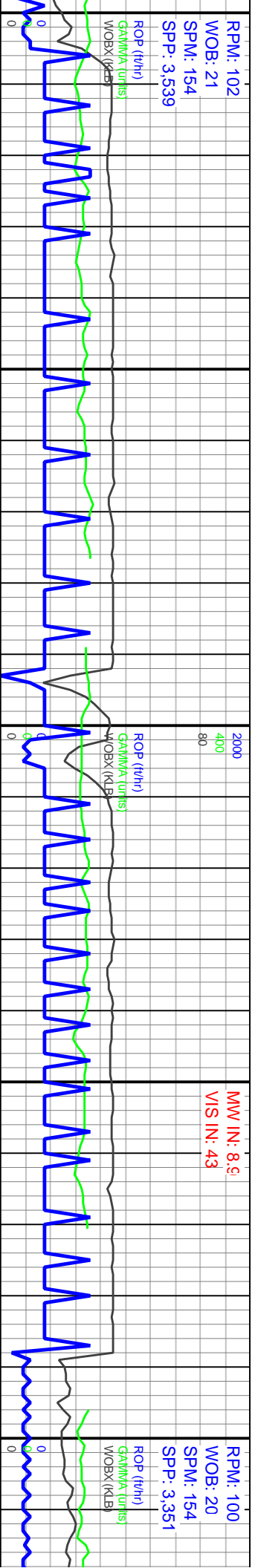


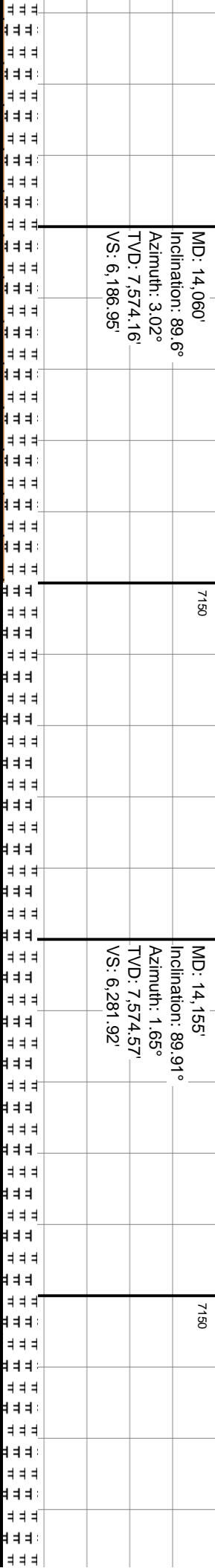
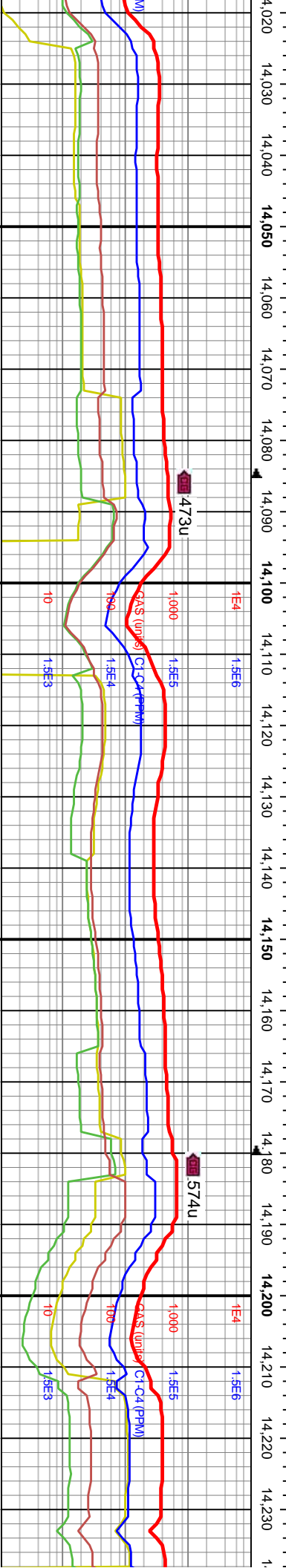
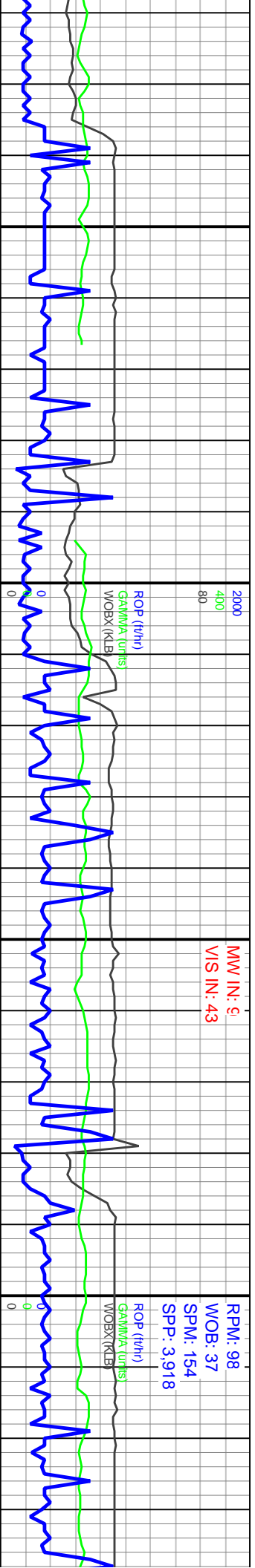




pred lt gy, occ glyshbn ang, frm-sft, y and cal intcls, v glyshbn, ang-sb -hrd, mot c tex wi calc	8000	13600-13700 55% CHK: pred lt gy, occ glyshbn, rr crm frags, sb blk-y-sb ang, frm-sft, sily-sm chky tex, incrg mrly and cal intcls, v calc; 45% MRLST: dk gy-glyshbn, ang-sb ang, sme sb blk-y-pty, frm-hrd, mot c tex wi spy mtix, sme intbd CHK, calc	8000	13700-13800 50% CHK: pred lt gy, occ glyshbn, rr crm frags, sb blk-y-sb ang, frm-sft, sily-sm chky tex, incrg mrly and cal intcls, v calc; 50% MRLST: dk gy-lt blk, sme glyshbn, ang-sb ang, sme sb blk-y-pty, frm-hrd, mot c tex wi spy mtix, sme intbd CHK, calc	8000
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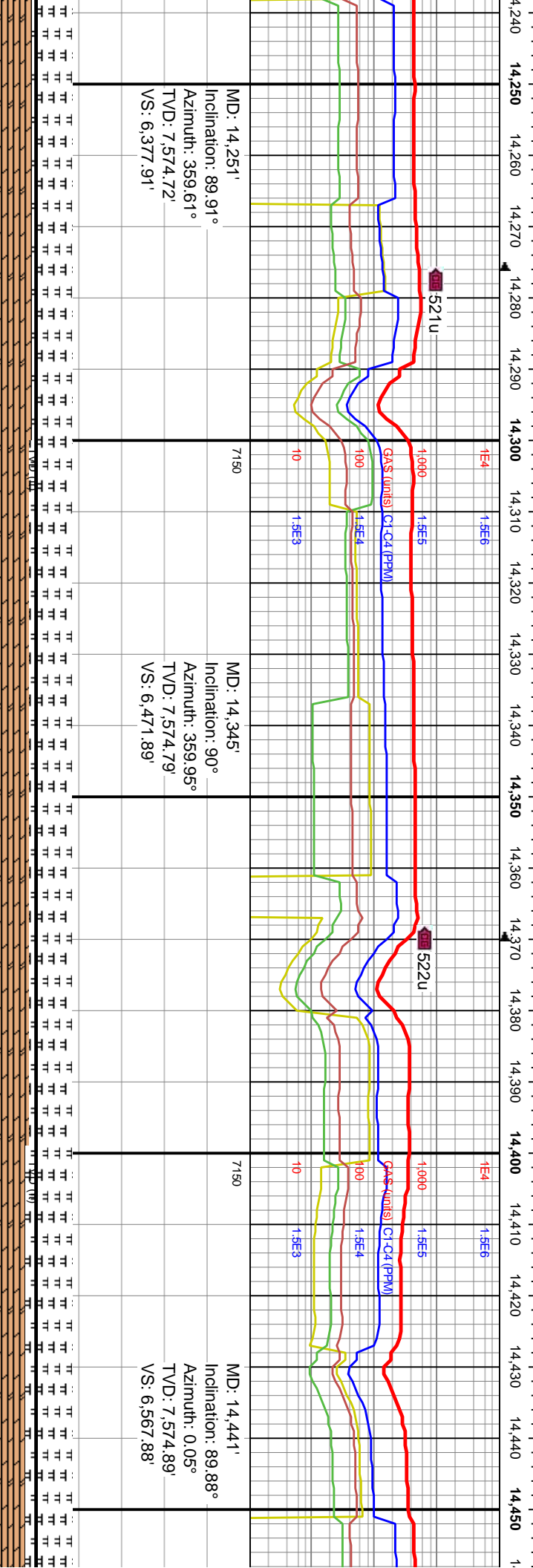
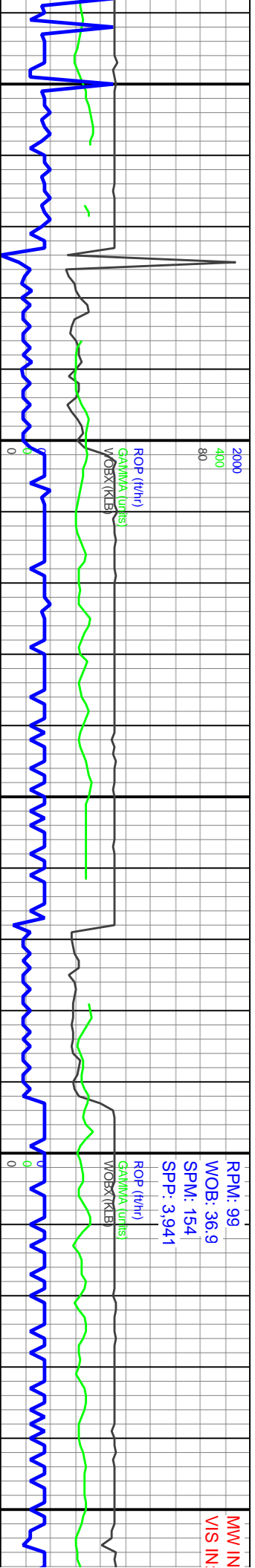






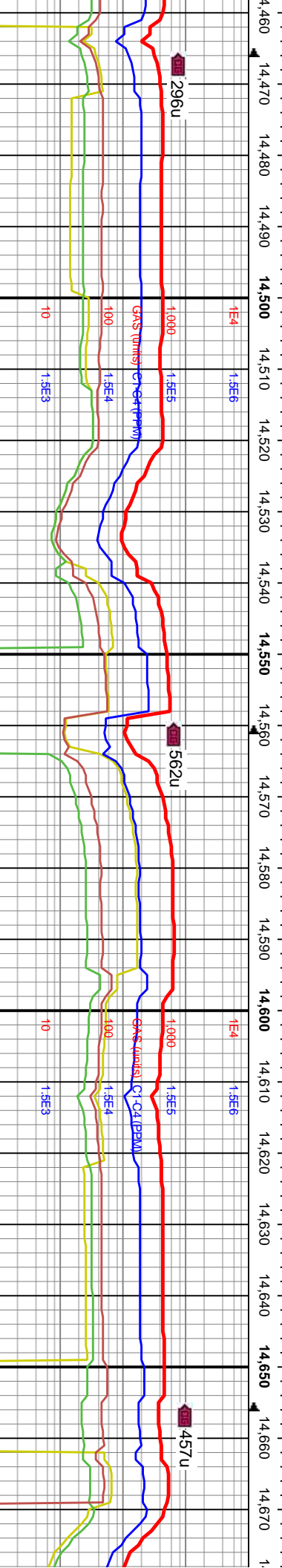
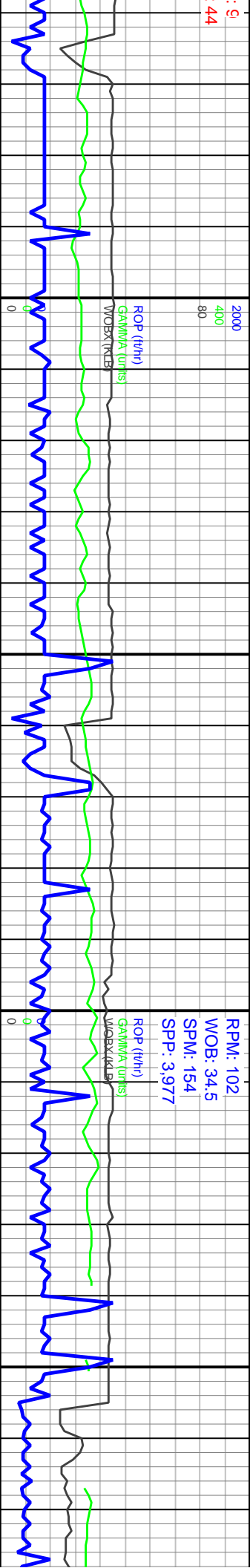
14000-14100 55% CHK: pred gy-gyshbn, sme oftwht-crm frags, sb blk-y-sb ang, frm-sft, silty-sm tex, mrlly, cal intcls, v calc; 45% MRLST: dk gy-gyshbn, ang-sb ang, sme sb pily-sb blk-y, frm-hrd, spy mtz, com intbd CHK, calc; tr PYR nod, incrg SA grs	8000
14100-14200 50% MRLST: dk gy-gyshbn, ang, sb pily-sb blk-y, frm-hrd, mot rgh tex, com intbd CHK, cal frac fl, calc; 50% CHK: pred med gy-gyshbn, occ scat oftwht frags, sb blk-y-sb ang, frm-sft, rgh-chky tex, com intbd MRLST, mod calc; tr SA, tr PYR	8000





14200-14300 55% MRLST: pred gyshbn, sme dk gy, ang-sb ang, sb pty-sb blkly, frm-hrd, mot c tex, f spy cntd gr, com intbd CHK, calc: 45% CHK: pred gy-gyshbn, decmg gy-crm frags, sb blkly-sb ang, frm-sft, silty-sm chky tex, com mrlly intcls, calc: pp PYR, tr SA	8000	
14300-14400 60% MRLST: gyshbn-dk gy, ang-sb ang, sb pty-blky, frm-hrd, mot tex wi f spy cntd gr, com intbd CHK, calc: 40% CHK: pred gy-gyshbn, sme lt gy-crm frags, sb blkly-sb ang, frm-sft, silty-sm chky tex, com intclc MRLST, calc: tr SA, tr arg SS frag	8000	
14400 sb ang tex wi CHK: f blkly-sf mrlly, it incl, tr		

5  
44



MD: 14,536'  
Inclination: 90.09°  
Azimuth: 359.37°  
TVD: 7,574.92'  
VS: 6,662.86'

MD: 14,631'  
Inclination: 90°  
Azimuth: 357.17°  
TVD: 7,574.84'  
VS: 6,757.75'

14500-65% MRLST: dk gy-gyshbn, ang, sme pty-sb blkly, frm-hrd, mot c spy mtx, sme intbd CHK, calc: 35% pred gyshbn, scatt lt gy-crm frags, sb ang, frm-sft, silty-sm chky tex, incrg incrg cal intcls, calc: tr SS wi mic PYRc CAL

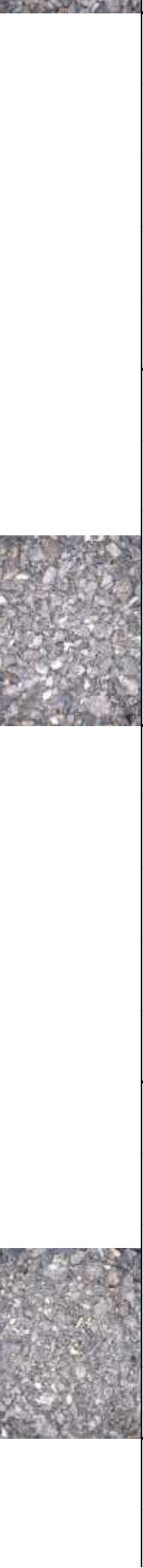
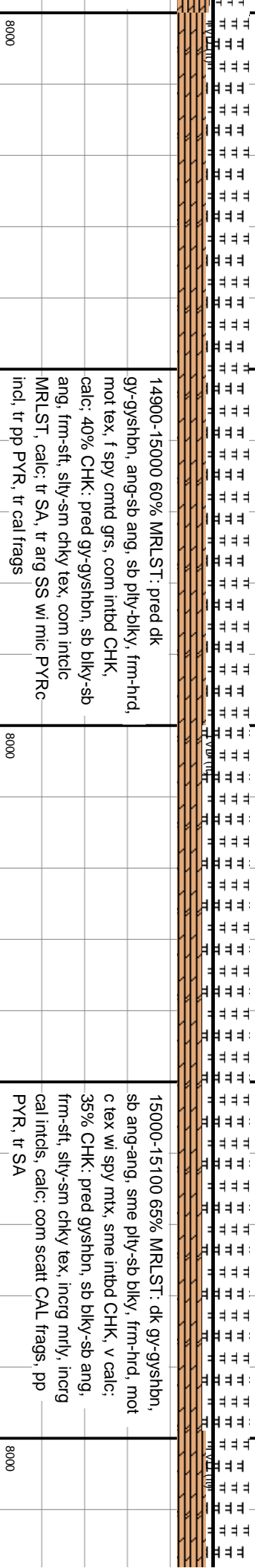
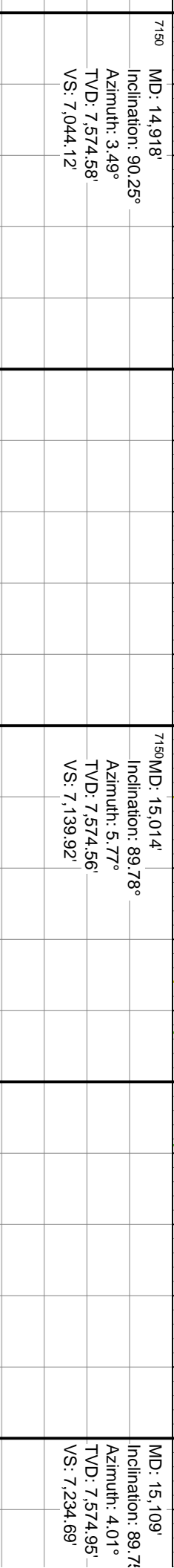
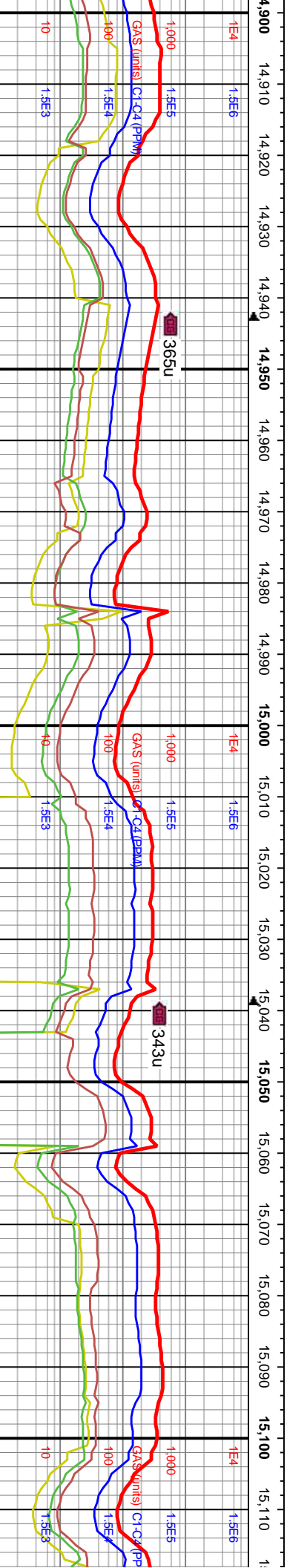
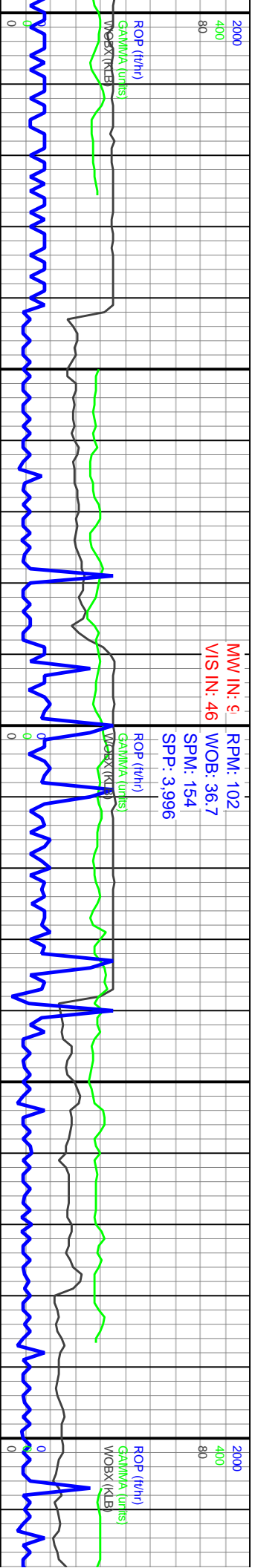
14500-14600 70% MRLST: gyshbn-dk gy, sb ang, sb blkly-pty, frm-hrd, mot c tex wi f-vf spy cmtd gr, com lam CHK, v calc: 30% CHK: pred gy-gyshbn, sb blkly-sb ang, frm-sft, silty-sm chky tex, com intbd MRLST, calc: tr SA, tr CAL, tr pp PYR

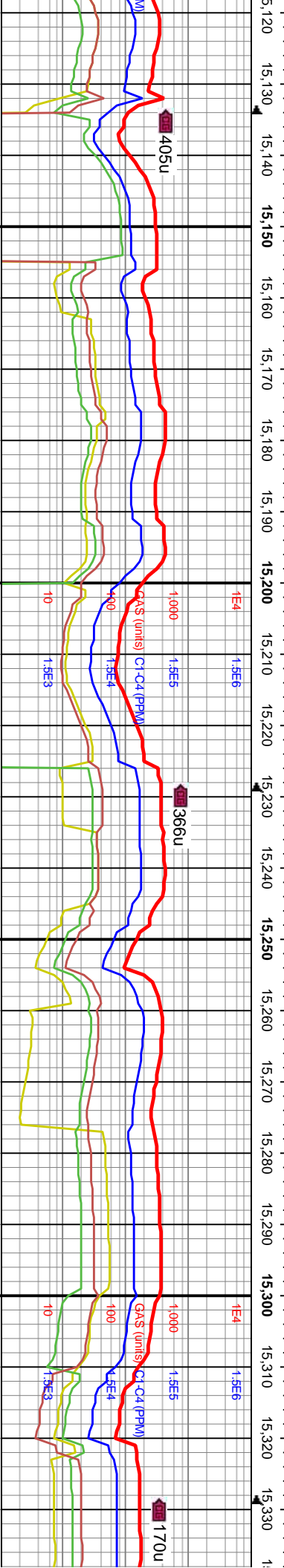
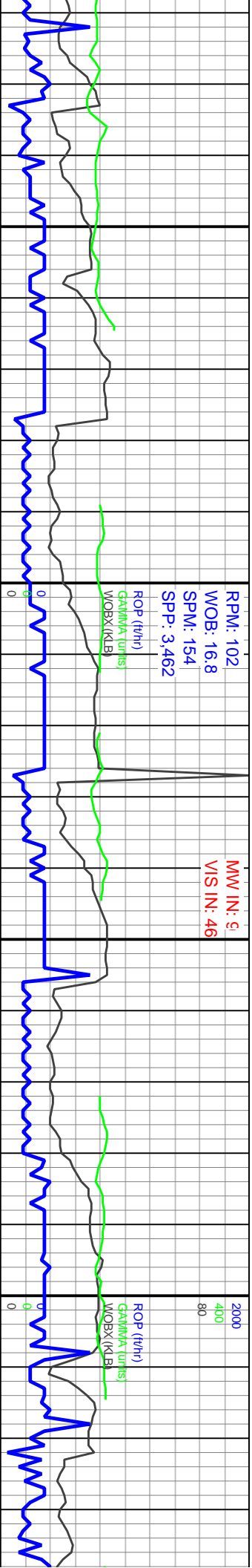
14600-14700 65% MRLST: ang, sb pty-sb blkly, frm-h com intbd CHK, cal frac fl, pred med gy-gyshbn, occ sb blkly-sb ang, frm-sft, rgl intbd MRLST, mod calc: r









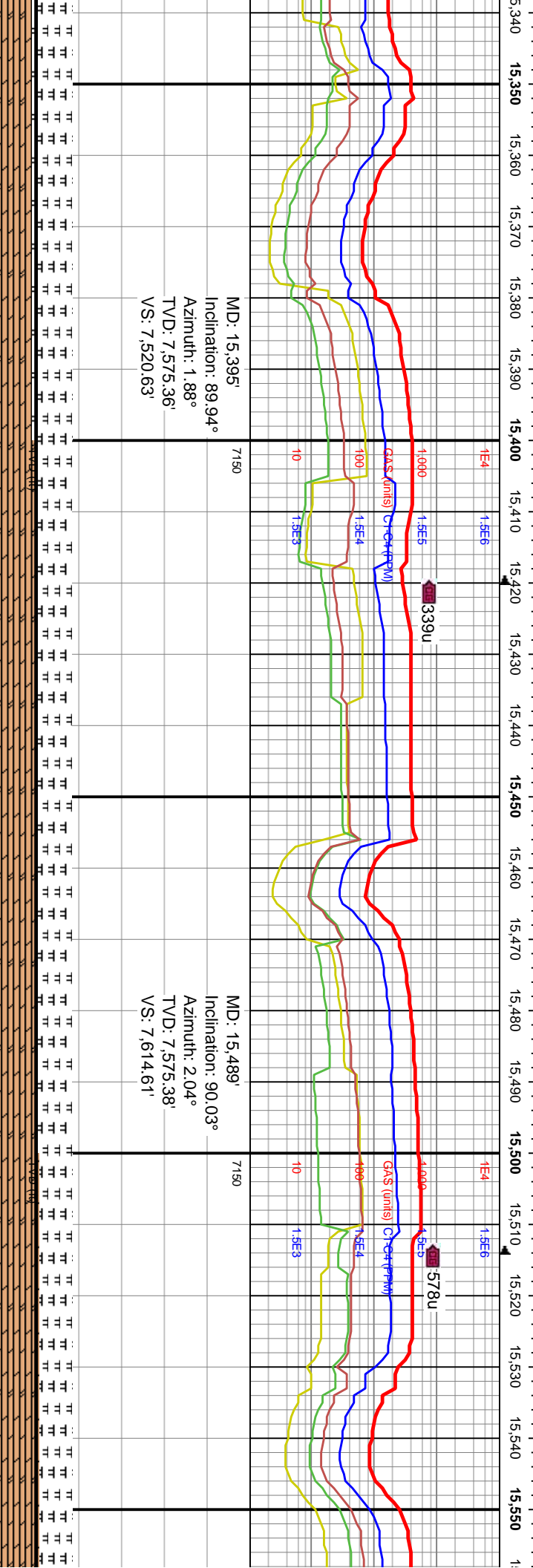
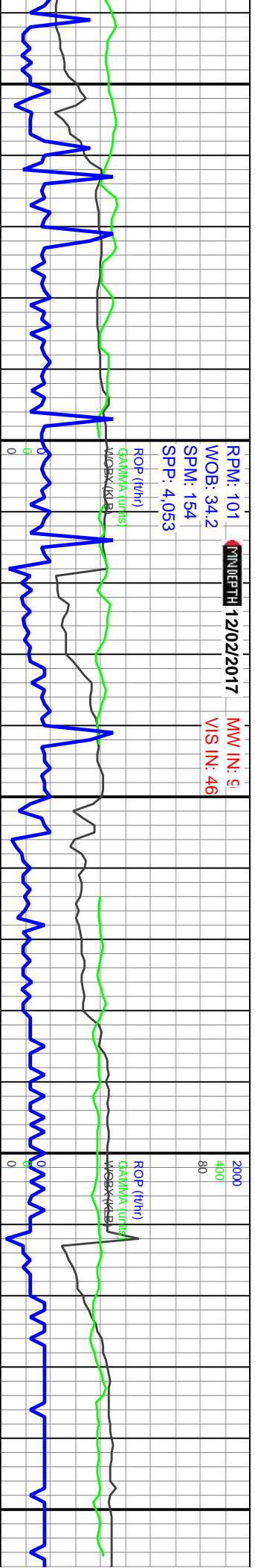


MD: 15,204'  
Inclination: 89.97°  
Azimuth: 1.46°  
TVD: 7,575.18'  
VS: 7,329.63'

MD: 15,299'  
Inclination: 89.94°  
Azimuth: 1.02°  
TVD: 7,575.26'  
VS: 7,424.63'

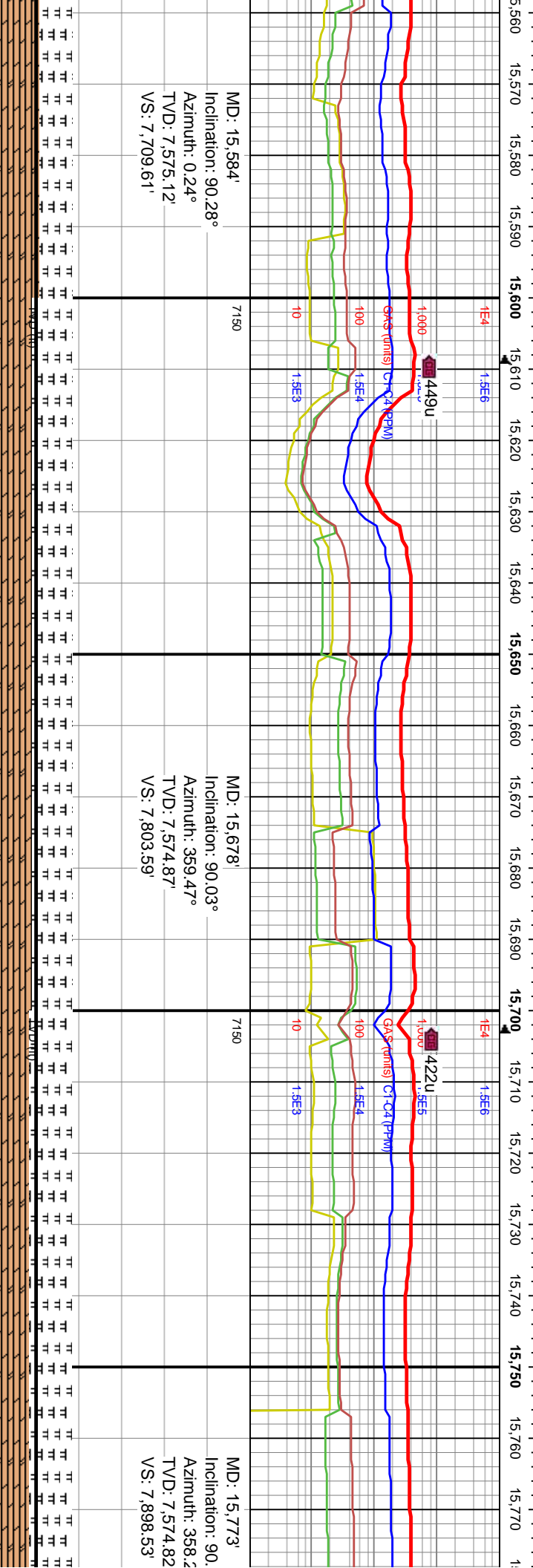
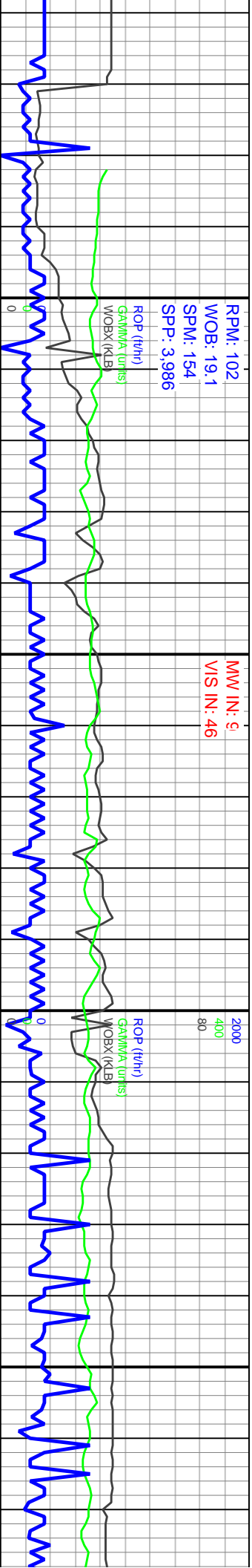
15100-15200 60% MRLST: gysbhn-dk gy, ang-sb ang, sb pily-blky, frm-hrd, mot tex, f spy cntd gr, com intbd CHK, calc: 40% CHK: pred gy-gysbhn, incrg offwht-lt gy frags, sb blky-sb ang, frm-sft, silty-sm chky tex, com intlc MRLST, calc: tr SA, tr PYR, tr CAL	8000	15200-15300 65% MRLST: pred gysbhn, sme dk gy, ang-sb ang, sb pily-sb blky, frm-hrd, mot c tex, f spy cntd gr, com intbd CHK, calc: 35% CHK: pred gy-gysbhn, decrnng offwht-lt gy frags, sb blky-sb ang, frm-sft, silty-sm chky tex, com mrlty intcls, mod calc: pp PYR	8000
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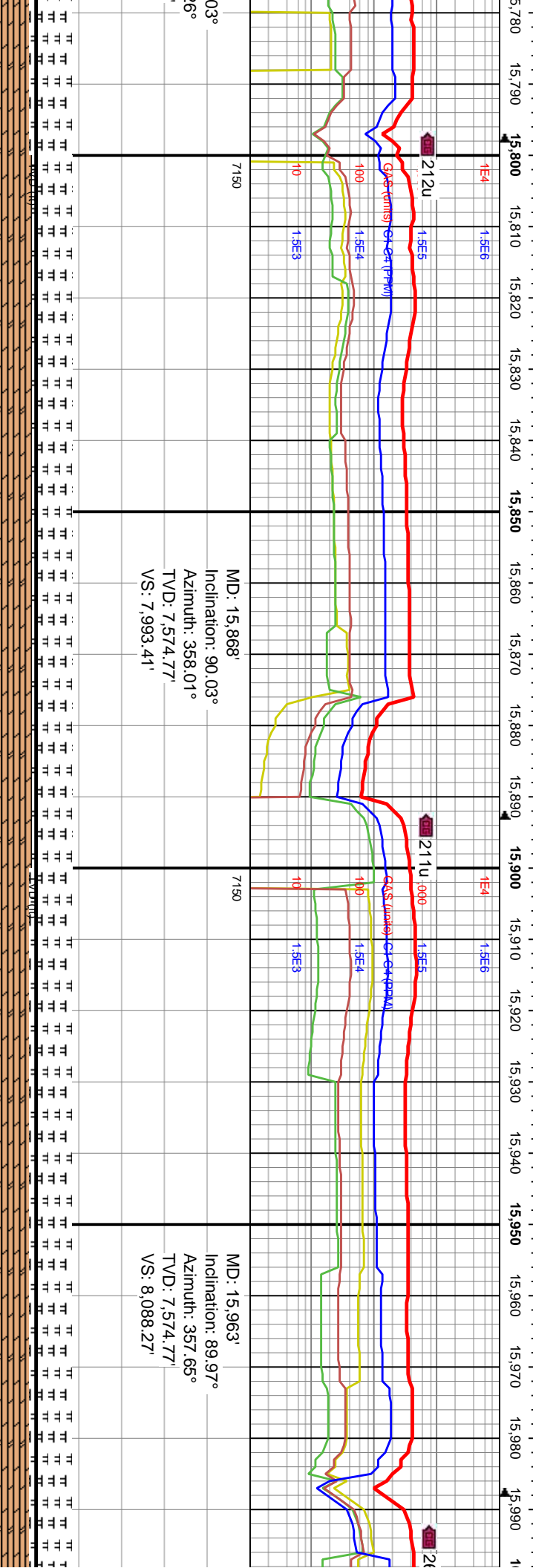
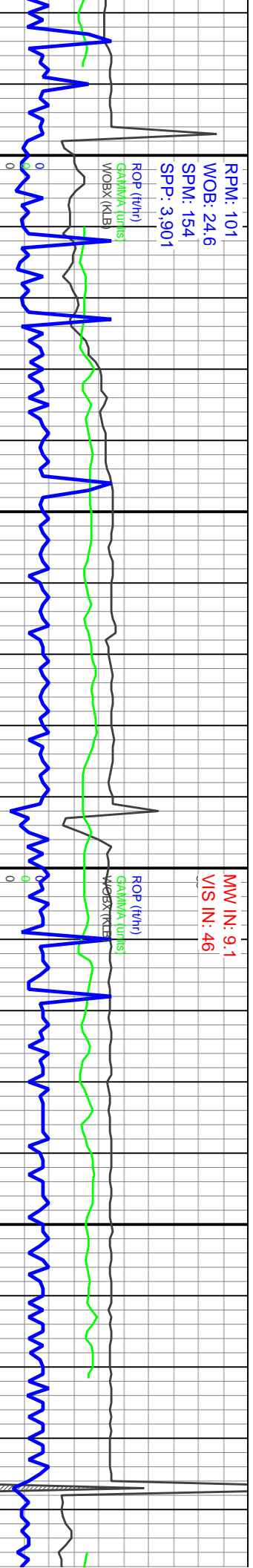


15300-15400 55% MRLST: pred gysbhn, sme dk gy, ang-sb ang, sb pily-sb blk, frm-hrd, mot, f spy cmtd gr, com intbd CHK, calc, 45% CHK: pred gy-gysbhn, sme gy-crm frags, sb blk-sb ang, frm-sft, silty-sm chky tex, com mrlly intcls, calc, pp PYR, tr CAL frags, tr SA	8000	15400-15500 50% MRLST: dk gy-lt blk, sme gysbhn, ang-sb ang, sme sb blk-pily, frm-hrd, mot c tex wi spy mix, sme intbd CHK, calc 50% CHK: pred gysbhn occ lt gy-crm frags, sb blk-sb ang, frm-sft, silty-sm chky tex, incrg mrlly, com cal intcls, v calc	8000	15500
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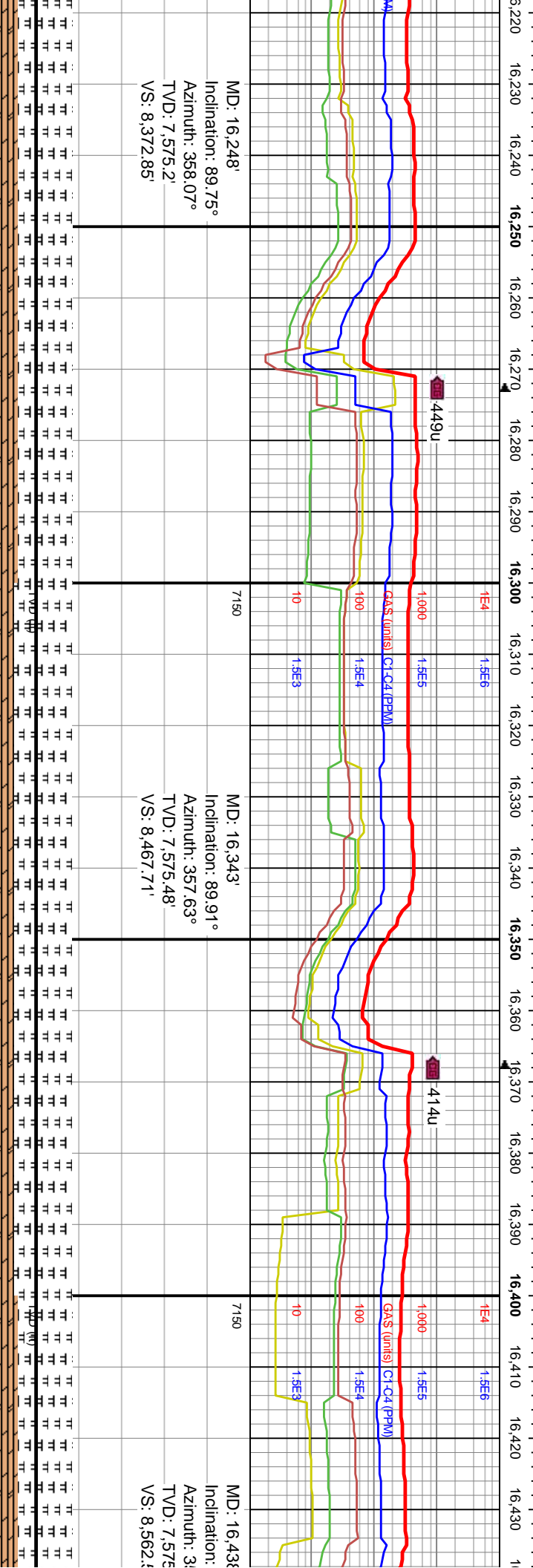
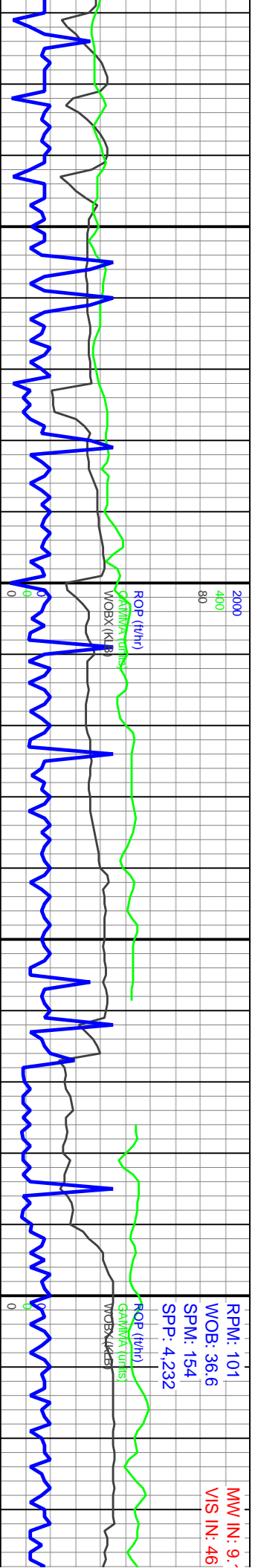
MD: 15,584' Inclination: 90.28° Azimuth: 0.24° TVD: 7,575.12' VS: 7,709.61'	7150	15600-15700 55% MRLST: dk gy-gyshbn, sb ang-ang, sme ply-sb blkly, frm-hrd, mot c tex wi spy mtx, sme intbd CHK, calc: 45% CHK: pred lt gy-gyshbn, sb blkly-sb ang, frm-sft, silty-sm, chky tex, mrlly, com cal intcls, calc: com scatt CAL frags, pp PYR nod, tr SA	8000
MD: 15,678' Inclination: 90.03° Azimuth: 359.47° TVD: 7,574.87' VS: 7,803.59'	7150	15700-15800 60% MRLST: dk gy-gyshbn, sb ang-ang, sme ply-sb blkly, frm-hrd, mot c tex wi spy mtx, sme intbd CHK, calc: 45% CHK: pred lt gy-gyshbn, sb blkly-sb ang, frm-sft, silty-sm, chky tex, mrlly, com cal intcls, calc: com scatt CAL frags, pp PYR nod, tr SA	8000
MD: 15,773' Inclination: 90.03° Azimuth: 358.2° TVD: 7,574.82' VS: 7,898.53'	7150	15800-15900 60% MRLST: dk gy-gyshbn, sb ang-ang, sme ply-sb blkly, frm-hrd, mot c tex wi spy mtx, sme intbd CHK, calc: 45% CHK: pred lt gy-gyshbn, sb blkly-sb ang, frm-sft, silty-sm, chky tex, mrlly, com cal intcls, calc: com scatt CAL frags, pp PYR nod, tr SA	8000



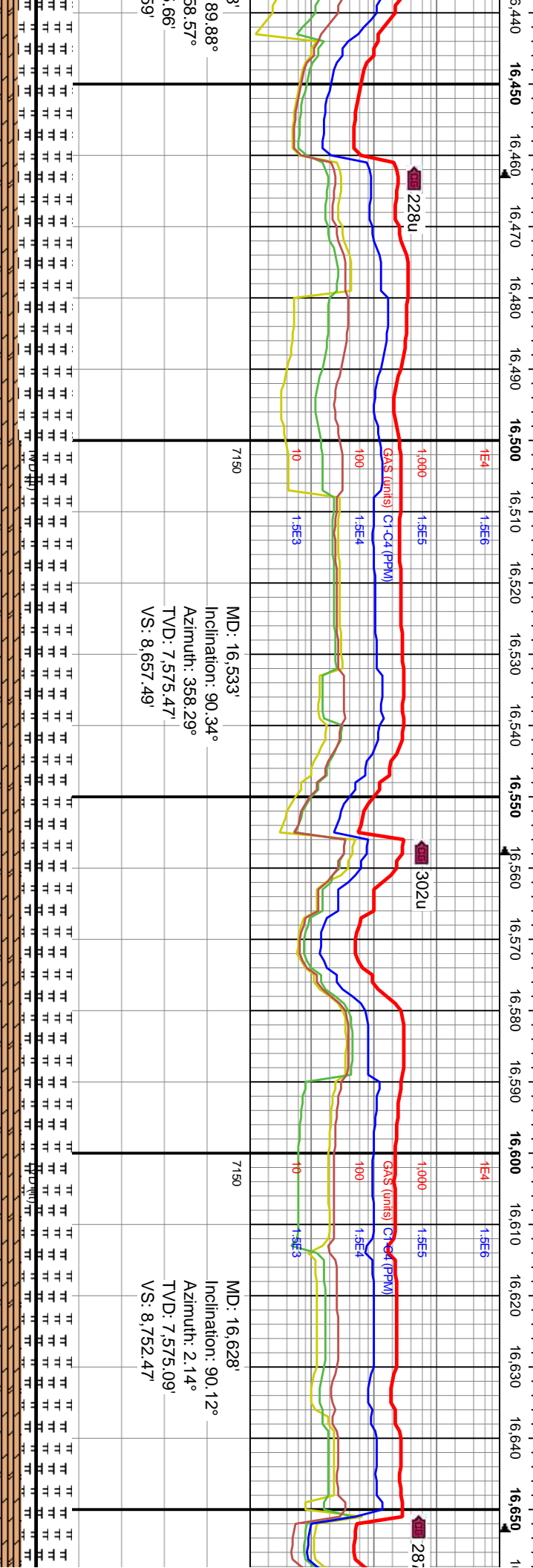
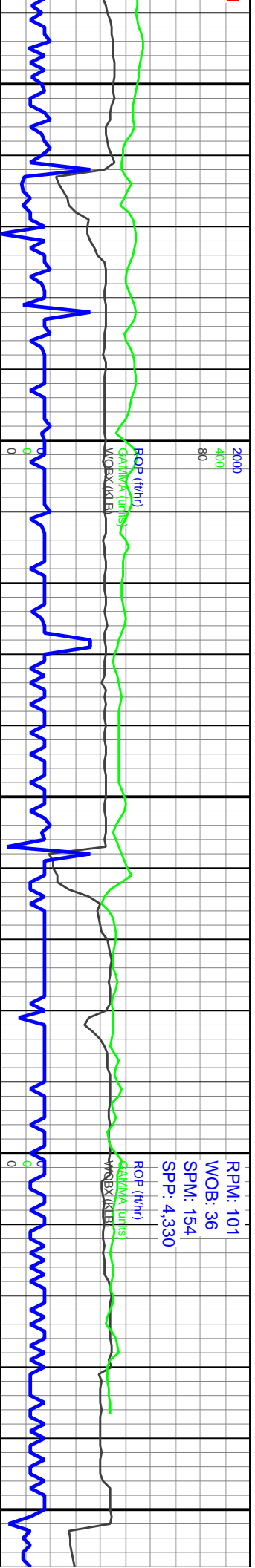
15800-15900	55% MRLST: pred gysbhn, sme dk gy, ang-sb ang, sb pily-sb biky, frm-hrd, mot, f spy cmtid gr, com intbd CHK, calc; 45% CHK; pred lt gy-gysbhn, sme gy-offwht frags, sb biky-sb ang, frm-sft, sily-sm chky tex, com mrlly intcls, calc; tr CAL frags	8000
15900-16000	60% MRLST: pred dk gy-gysbhn, ang-sb ang, sb pily-biky, frm-hrd, mot tex, spy cmtid, f grs, com intbd CHK, v calc; 40% CHK; pred lt gy-gysbhn, sb biky-sb ang, frm-sft, sily-sm chky tex, com intcl MRLST, calc; tr cal frags, tr pp PYR	8000





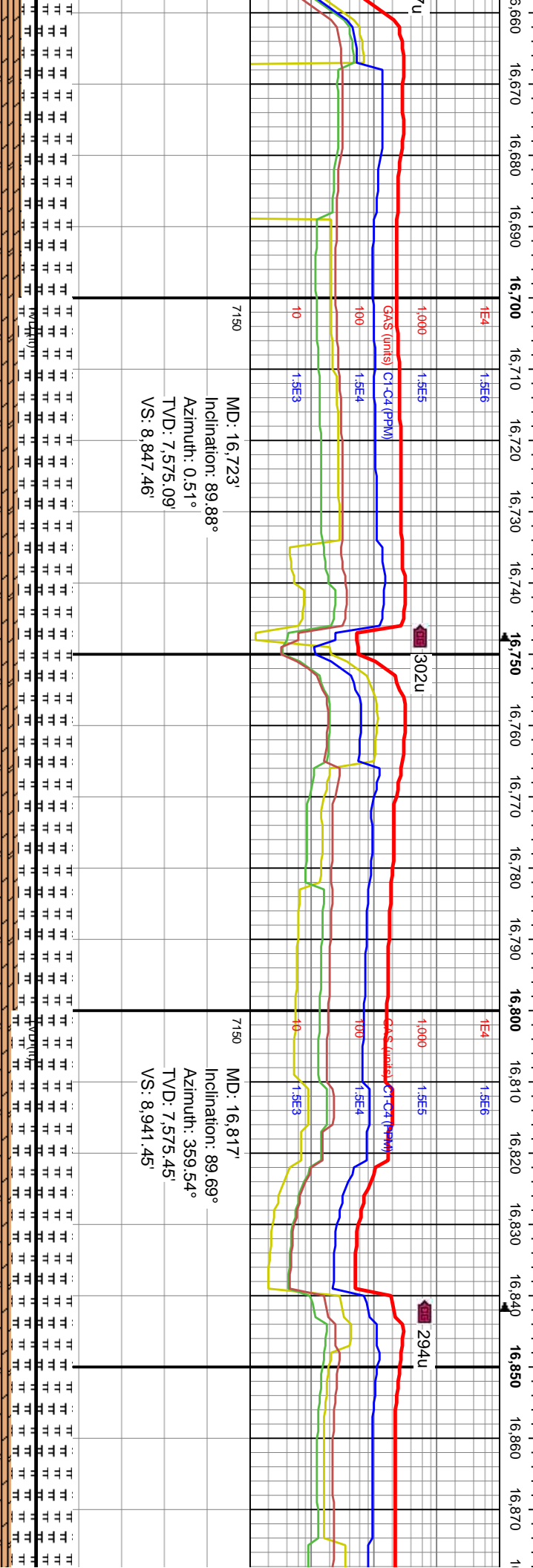
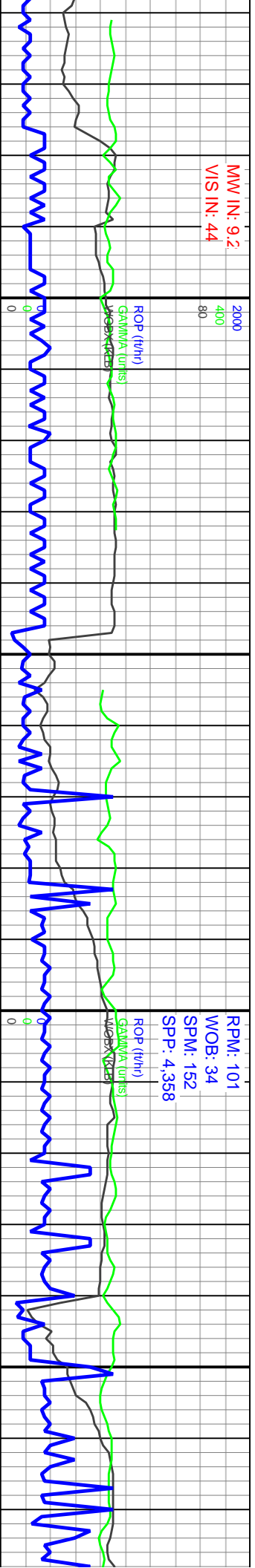



16200-16300 75% MRLST: pred dk gy-gyshbn, ang-sb ang, sb pily-blky, frm-hrd, mot tex, spy cmtd, f grs, rgh tex, com intbd CHK, calc; 25% CHK: pred lt gy-gyshbn, sb blky-sb ang, frm-sft, sily-sm chky tex, com intlc MRLST, v calc; tr incrg LCM	8000	
16300-16400 80% MRLST: pred dk gy-gyshbn, ang-sb ang, sb pily-blky, frm-hrd, mot tex, spy cmtd, f grs, rgh tex, com intbd CHK, calc; 20% CHK: pred lt gy-gyshbn, sb blky-sb ang, frm-sft, sily-sm chky tex, com intlc MRLST, v calc; tr decmg LCM	8000	

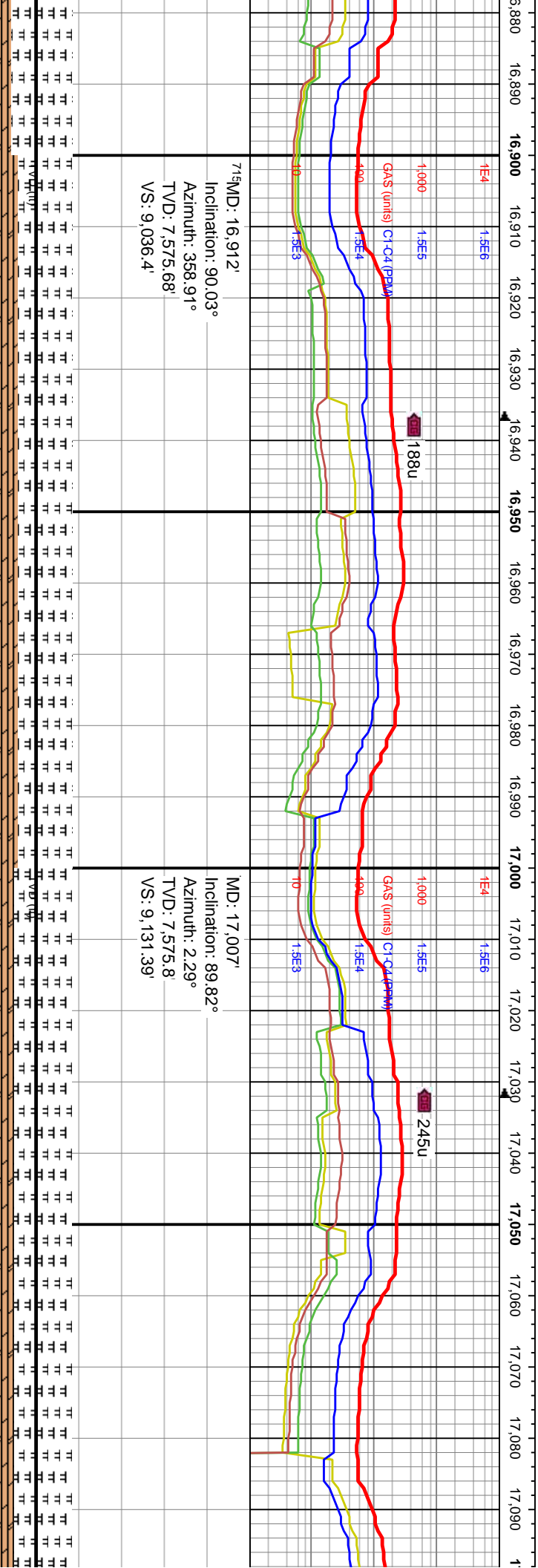
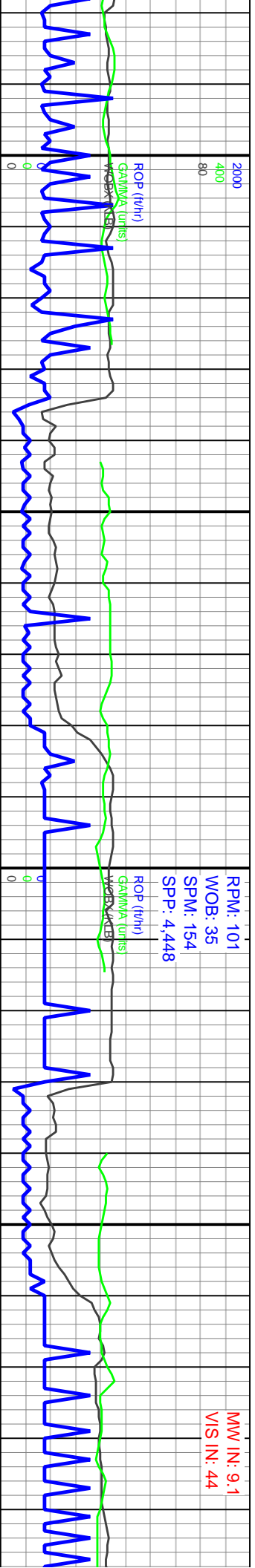


89.88° 58.57° .66' 9'		7150	MD: 16,533' Inclination: 90.34° Azimuth: 358.29° TVD: 7,575.47' VS: 8,657.49'	16500-16600 70% MRLST: dk gy-gyshbn, ang-sb ang, sb pily-biky, frm-hrd, mot tex, spy cmtd, f grs, rgh tex, com intbd CHK, calc: 30% CHK: pred lt gy-gyshbn, sb biky-sb ang, frm-sft, silty-sm chky tex, com intlc MRLST, v calc	8000
		7150	MD: 16,628' Inclination: 90.12° Azimuth: 2.14° TVD: 7,575.09' VS: 8,752.47'	16600- ang-sb spy cr calc: 3 biky-st intlc	





16700-16800 70% MRLST: dk gy-gyshbn, ang, sb ply-dlky, frm-hrd, mot tex, catd, f grs, rgh tex, com intbd CHK, 0% CHK: pred lt gy-gyshbn, sb ang, frm-sft, silty-sm chky tex, com MRLST, v calc; tr ang SS	8000	16700-16800 75% MRLST: dk gy-gyshbn, ang-sb ang, sb ply-dlky, frm-hrd, mot tex, spy cntd, f grs, rgh tex, com intbd CHK, calc; 25% CHK: pred lt gy-gyshbn, sb bly-sb ang, frm-sft, silty-sm chky tex, com intlc MRLST, v calc; tr ang SS w/ intbd mic pp PYR, tr LCM	8000	16800-16900 85% MRLS ang-sb ang, sb ply-dlky, f spy cntd, f grs, rgh tex, c calc; 15% CHK: pred lt gy bly-sb ang, frm-sft, silty-s intlc MRLST, v calc; tr at pp PYR, tr decmg LCM	
					



715MD: 16,912'  
Inclination: 90.03°  
Azimuth: 358.91°  
TVD: 7,575.68'  
VS: 9.036,4'

MD: 17,007'  
Inclination: 89.82°  
Azimuth: 2.29°  
TVD: 7,575.8'  
VS: 9.131,39'

T: dk gy-gyshbn, frm-hrd, mot tex, com intbd CHK, -gyshbn, sb m chky tex, com g SS wi intbd mic

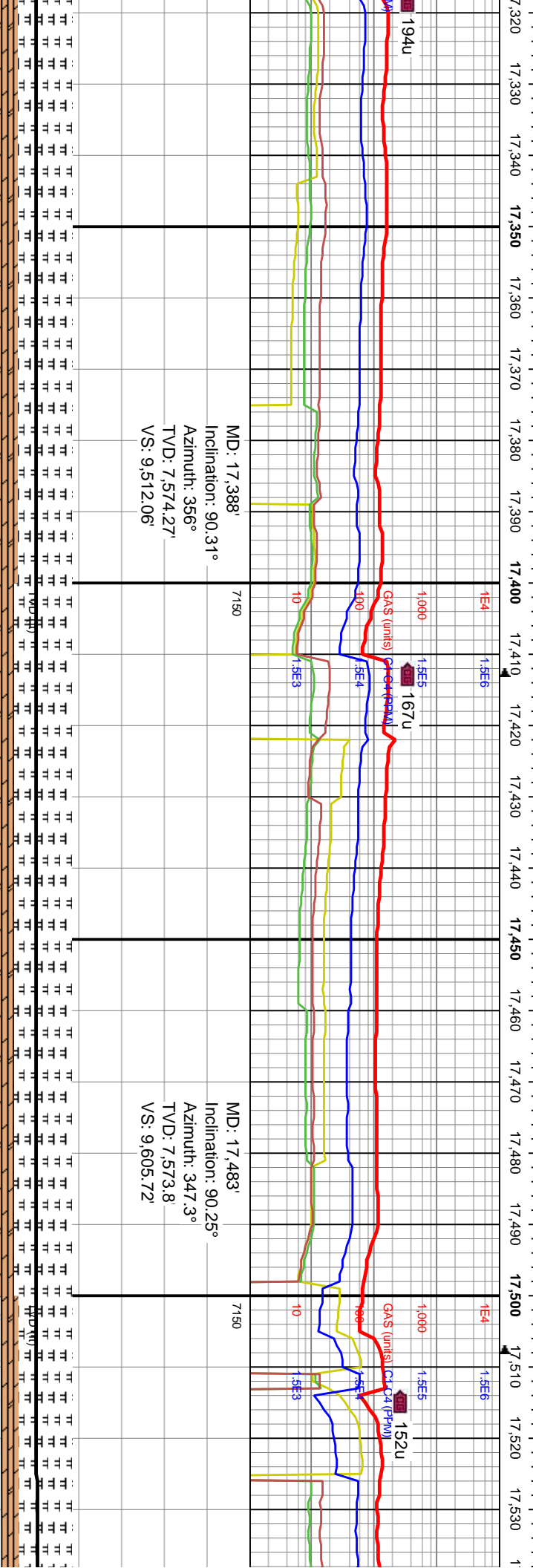
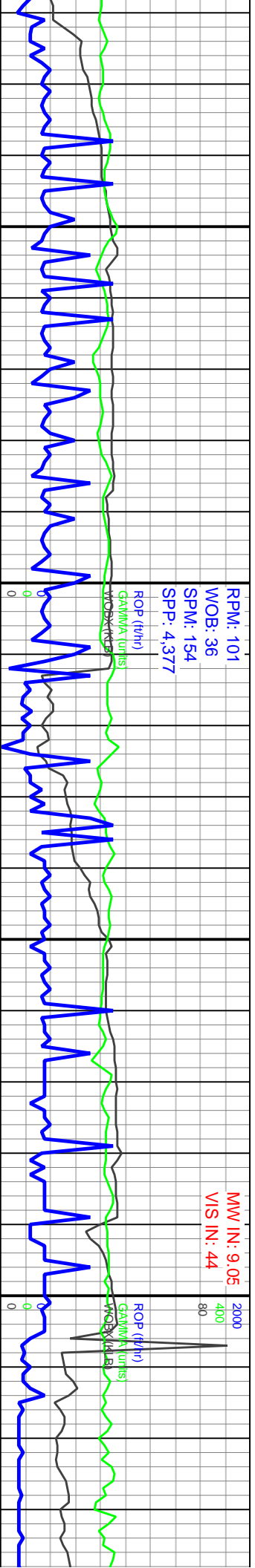
16900-17000 75% MRLST: dk gy-gyshbn, ang-sb ang, sb ply-biky, frm-hrd, mot tex, spy cntd, f gfs, rgh tex, com intbd CHK, calc: 25% CHK: pred lt gy-gyshbn, sb biky-sb ang, frm-sft, slty-sm chky tex, com intlc MRLST, v calc: tr arg SS wi intbd mic pp PYR, tr decmg LCM

17000-17100 80% MRLST: predy lt blk, dk gy-gyshbn, ang-sb ang, sb ply-biky, frm-hrd, mot tex, spy cntd, f gfs, rgh tex, com intbd CHK, calc: 20% CHK: pred lt gy-gyshbn, sb biky-sb ang, frm-sft, slty-sm chky tex, com intlc MRLST, v calc: tr arg SS





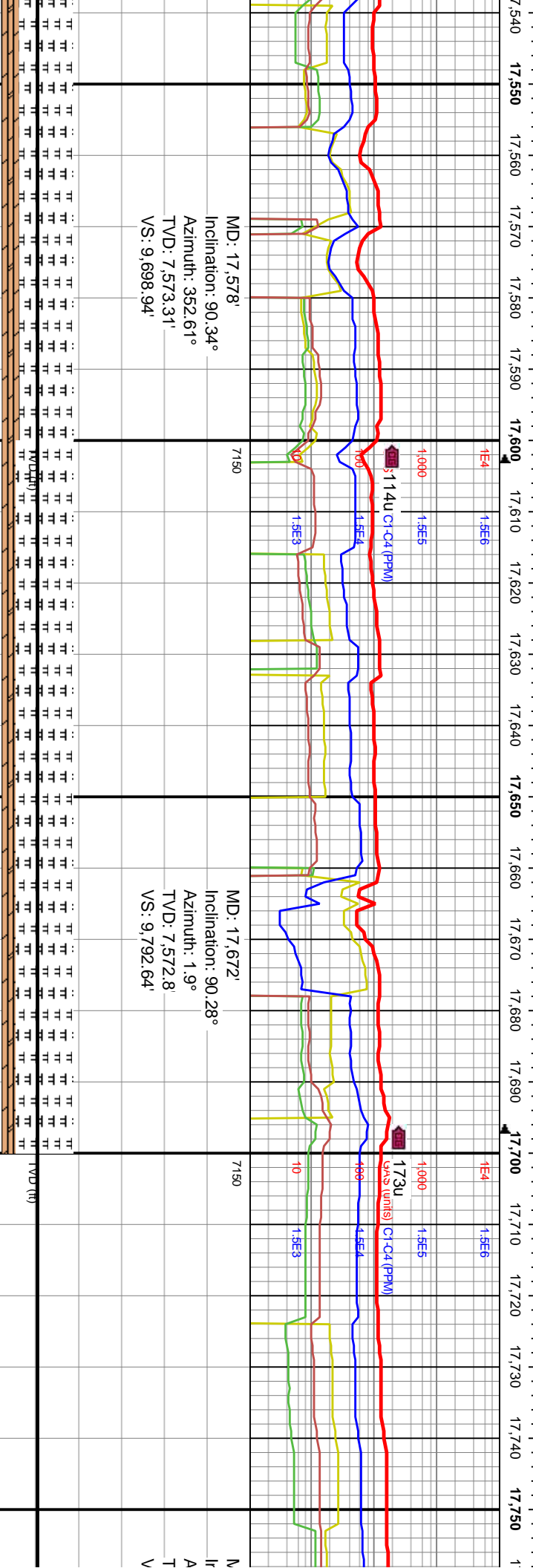
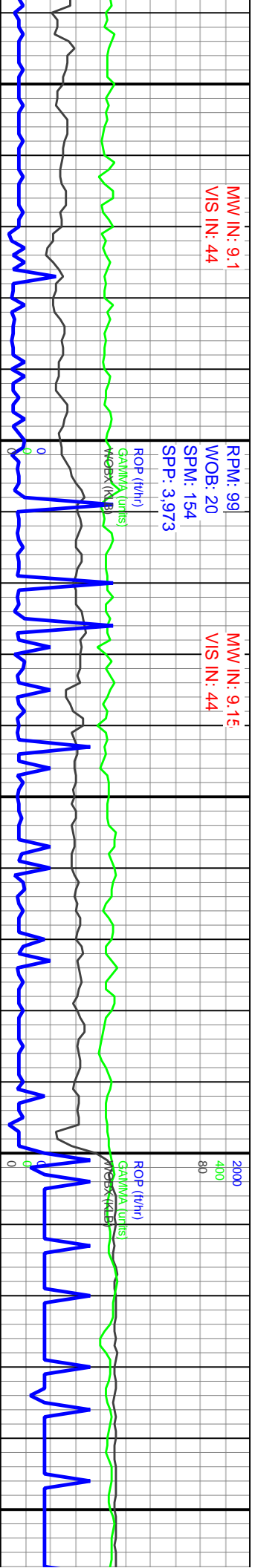




17300-17400 75% MRLST: dk gy-gyshbn, ang-sb ang, sb pily-biky, frm-hrd, mot, spy cntd, rgh tex, com intbd lam CHK, calc; 25% CHK: pred lt gy-gyshbn, sb biky-sb ang, frm-sft, silty-sm chky tex, sme intlc MRLST and SS, v calc

8000





17500-17600 75% MRLST: dk gy-gyshbn, ang-sb ang, sb pily-blky, frm-hrd, mot, spy cmtd, rgh tex, com intbd lam CHK, calc; 25% CHK: pred lt gy-gyshbn, sb blky-sb ang, frm-sft, silty-sm chky tex, sme intlc MRLST, v calc	8000	
17600-17700 80% MRLST: dk gy-gyshbn, ang-sb ang, sb pily-blky, frm-hrd, mot, spy cmtd, rgh tex, com intbd lam CHK, calc; 20% CHK: pred lt gy-gyshbn, sb blky-sb ang, frm-sft, silty-sm chky tex, sme intlc MRLST, v calc	8000	
17700-17800 85% MRLST: dk gy-gyshbn, ang-sb ang, sb pily-blky, frm-hrd, mot, spy cmtd, rgh tex, com intbd lam CHK, calc; 15% CHK: pred lt gy-gyshbn, sb blky-sb ang, frm-sft, silty-sm chky tex, sme intlc MRLST, v calc	8000	

