



Empirica

Scale: 5" / 100'
Measured Depth Log

Well Name Fairview 3 - Horizontal

Location Sec 5, T2N, R68W

State CO

Country USA

API Number 05-123-41522

Geographic Region DJ Basin

Spud Date 12/6/2015

Surface Coordinates Lat: 40° 9' 56.7324" N
Long: 105° 2' 5.5212" W

Bottom Hole Coordinates Lat: 40° 9' 37.9147" N
Long: 105° 0' 35.2567" W

Ground Elevation 4,948'

Logged Interval 7,300' MD To 15,082' MD

Formation Codell

Type of Drilling Fluid Invert

K.B. Elevation 4,963'

Total Depth 15,082' MD

County Weld

Rig Number Savanna 802

Field Wattenberg

Drilling Completed 1/26/2016

Operator

Company Extraction Oil & Gas

Address 1888 Sherman St., Suite 200
Denver, CO 80203

Geologist

Name Jared Rouse

Company Extraction Oil & Gas

Address 1888 Sherman St., Suite 200
Denver, CO 80203



Other

Equipment ML-197

Comments Start: 1-24-16
End: 1-26-16

Services Provided Mark Gross / Her

Logger Names 2-Man Logging

Address Empirica, LLC.
6360 W Sam Houston
Suite 100
Houston, TX 770

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

Fossils

F FOSSIL

GASTROPOD

OOLITE

OSTRACOD

PELECYPOD

PELLET

BRACHIOPOD

BRYOZOA

CEPHALOPOD

CORAL

CRINOID

ECHINOID

FISH

FORAMINIFERA

ARGILLACEOUS

ARGILLITE GRAIN

B BENTONITE

BITUMENOUS SUBSTANCE

BRECCIA FRAGMENTS

CALCAREOUS

CARBONACEOUS FLAKES

CHTDK

CHLT T

COAL - THIN BEDS

DOLOMITIC

FELDSPAR

FERRUGINOUS PELLET

FERRUGINOUS

GLAUCONITE

GYPSIFEROUS

HEAVY MINERAL

K KAOLIN

MARLSTONE

MINERAL CRYSTALS

NODULES

PHOSPHATE PELLETS

P PYRITE

SALT CAST

SANDY

SILICEOUS

SILTY

TUFFACEOUS

Stringer

ANHYDRITE STRINGER

BENTONITE STRINGER

COAL STRINGER

DOLOMITE STRINGER

GYPSUM STRINGER

LIMESTONE STRINGER

MARLSTONE (CALO) STRG

MARLSTONE (DOL) STRG

SANDSTONE STRINGER

SHALE STRINGER

SILTSTONE STRINGER

Oil Show

ORGANIC

PINPOINT

DEAD

VUGGY

EVEN

QUESTIONABLE

Engineering

SPOTTED STAINING

BIT

CASING

Porosity

CONNECTION (LEFT)

EARTHY

CONNECTION (RIGHT)

FENESTRAL

CONNECTION GAS

FRACTURE

CORE - LOST

INTERCRYSTALLINE

CORE - RECOVERED

INTEROOLITIC

DOWNTIME GAS

MOLDIC

DST INTERVAL

Oil

Other Symbols

FAULT  WIRELINE TESTED - RT **BS** GRAINSTONE

 FORMATION TOP **L** LITHOGRAPHIC

 GAS SHOW **MX** MICROXLN

Rounding

MMDEPT  MN DEPTH **A** ANGULAR **MS** MUDSTONE

NORMAL FAULT **R** ROUNDED **PS** PACKSTONE

 OIL SHOW **B** SUBANG **WS** WACKESTONE

OVERTURNED STRATA **P** SUBRND

Sorting

REVERSE FAULT

Textures

SIDEWALL CORE (LEFT) **M** MODERATE

SIDEWALL CORE (RIGHT) **P** POOR

SLIDE **C** CHALKY **W** WELL

 SURVEY  CRYPTOXLN

TRIP GAS **E** EARTHY

WIRELINE TESTED - LEFT **FX** FINELYXLN

ROP
GAMMA
GAS
DPSX

Extraction OG
Fairview 3
Weld County, CO
Spud Date: 12-06-15
Surface Casing @ 1,552'
2-man logging began: 1-20-16
1% Methane = 100 Units
Depths Correspond to Driller's Pipe Tally

Linear Scale



Slide/Rotate

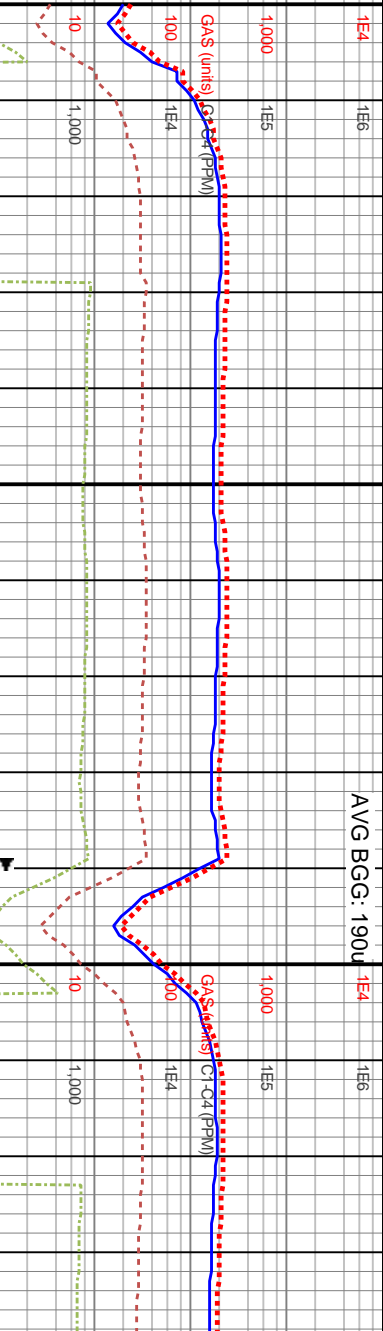
Depth Labels



Total Gas & Chromatograph

GAS
C1
C2
C3
C4

Logarithmic Scale



Well Bore
TVD

TVD (ft)

MD: 7,328'
TVD: 6,842.87'
Inclination: 12.24°
Azimuth: 107.76°
VS: 16.55'

WOB: 28.6Klbs
Rotary: 0RPM
Strokes: 226SPM
Pump Rate: 604GPM

TVD (ft)

MD: 7,424'
TVD: 6,935.42'
Inclination: 18.65°
Azimuth: 86.16°
VS: 41.27'

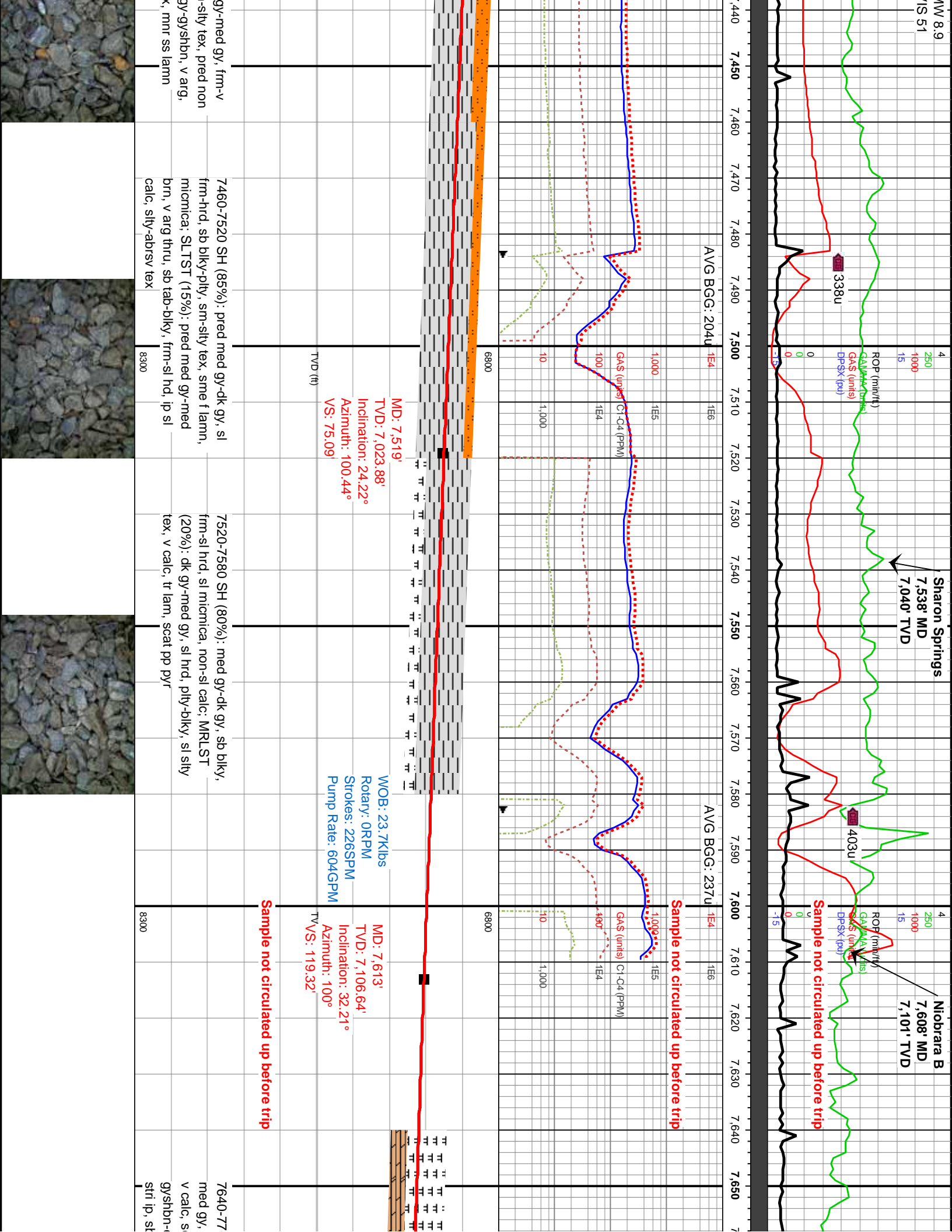
7280-7340 SH (65%): predy med gy-dk gy, sl frm-hrd, sb blkly-pty, sm-sily tex, sme f lamn, micmica; SLTST (35%): predy med gy-med brn, v arg thru, sb tab-blky, frm-sl hd, ip sl calc, sily-abrsv tex

7340-7400 SH (90%): dk gy-med gy, pty-sb spl, frm-sl hrd, sm-sl sily tex, non calc, tr lam, tr bent; SLTST (10%) med gy-lt gy, frm-sl hrd, sily-abrsv tex, micmica, non calc, gridg to med gy sh

7400-7460 SH (75%): dk frm, sl brt, sb tab-pty, sm calc; SLTST (25%): med f pred non calc; sily-grty tex

Images





1/25/2016

MINDEPTH

4

250

1000

15

ROP (in/hr)

GAMMA (units)

GAS (units)

BP-SX (psi)

0

0

0

15

351u

15u

Niobrara C

7,761' MD

7,217.36' TVD

MW 9.0

VIS 51

4

250

1000

15

ROP (in/hr)

GAMMA (units)

GAS (units)

BP-SX (psi)

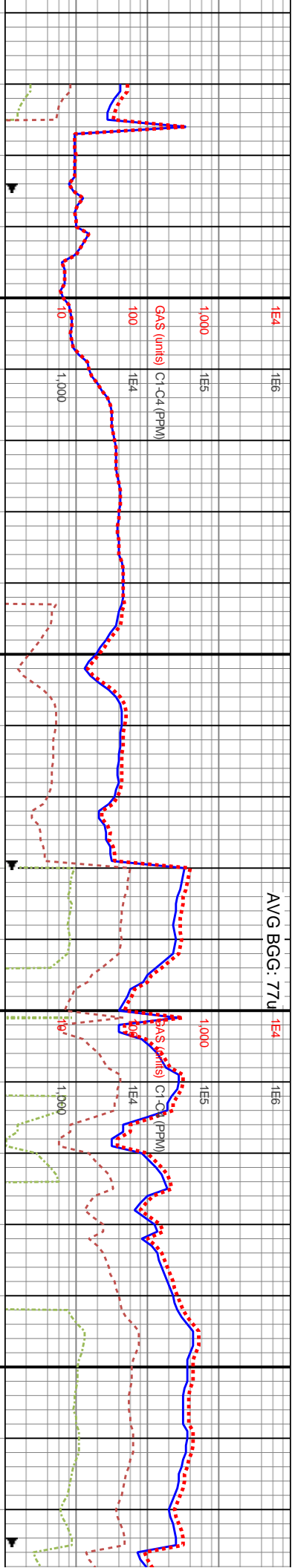
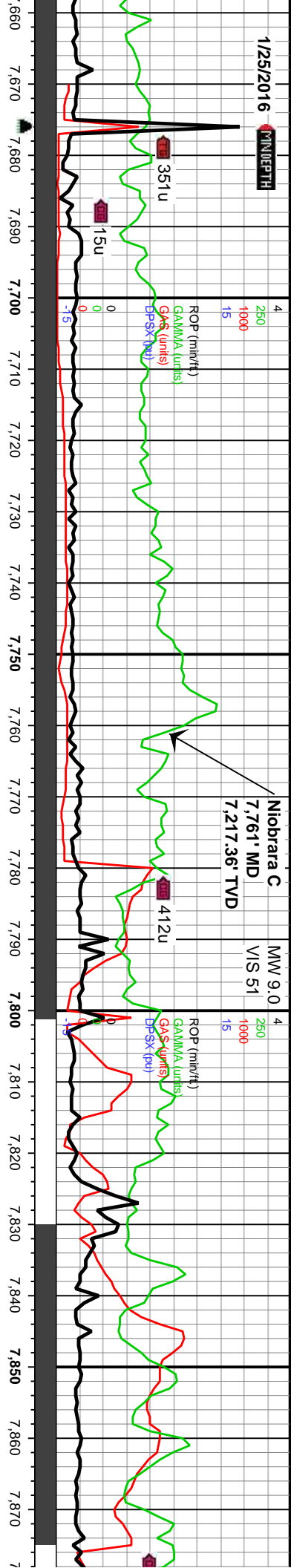
0

0

0

15

412u



TOOH for Motor and Bit

Bit #: 3

Type: E516-B34-Z

Size: 7.88

Depth In: 7.675

Depth Out: 15.082

Hours: 20.5 hrs

Avg Ft/Hr: 361.32 /hr

Jets: 7x10

S/N: A220687

MD: 7,708'

TVD: 7,182.35'

Inclination: 41.94°

Azimuth: 100.4°

VS: 176.3'

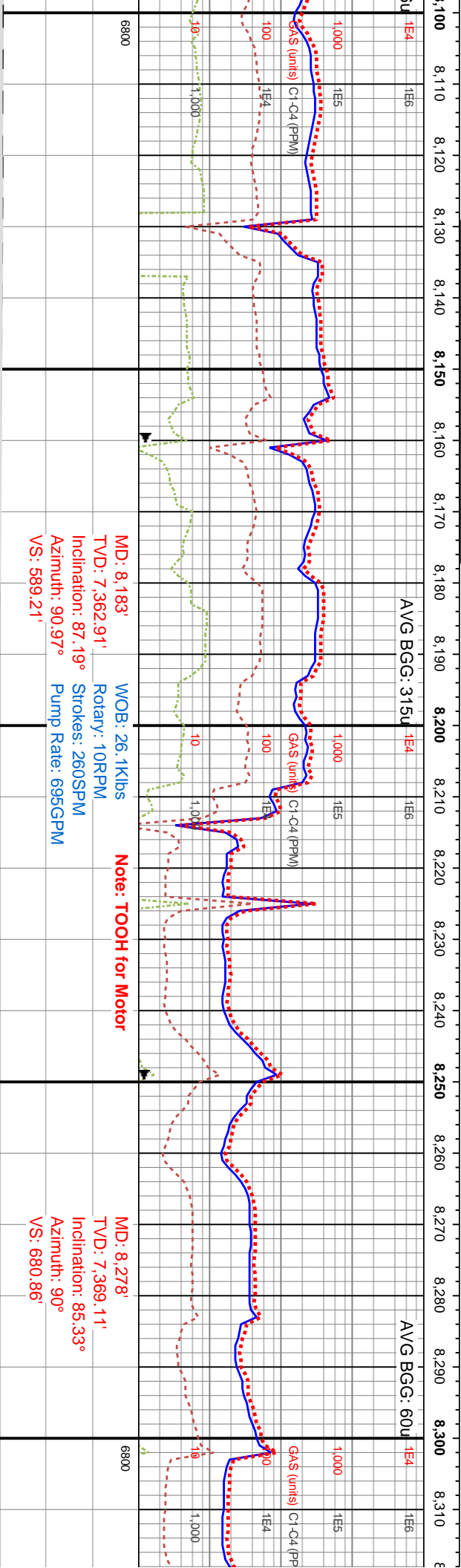
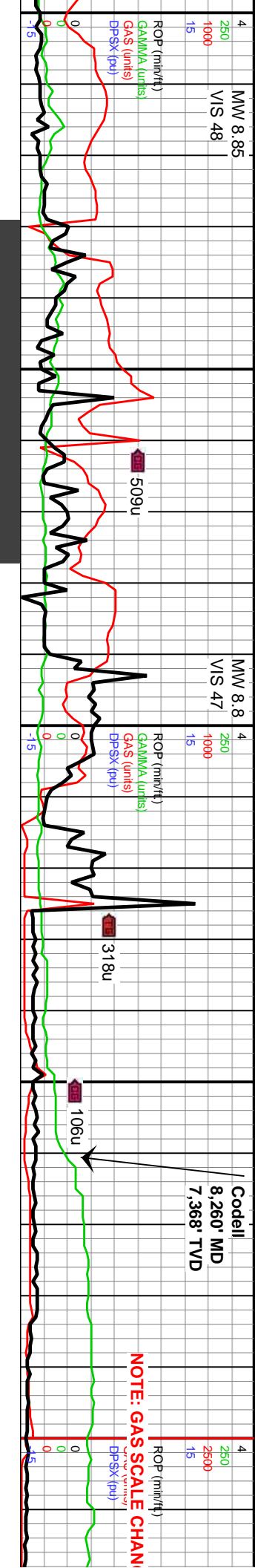
WOB: 26.5Klbs
Rotary: 10RPM
Strokes: 226SPM
Pump Rate: 604GPM

000 MRLST (70%): dk gy-dk gysbhn, frm-sl hrd, pty-sb blk, sm-sl silty tex, cat pp mic pyr; CHK (30%): mot crm, ofwht, stf, mnr mic fos, chky tex, b blk-tab

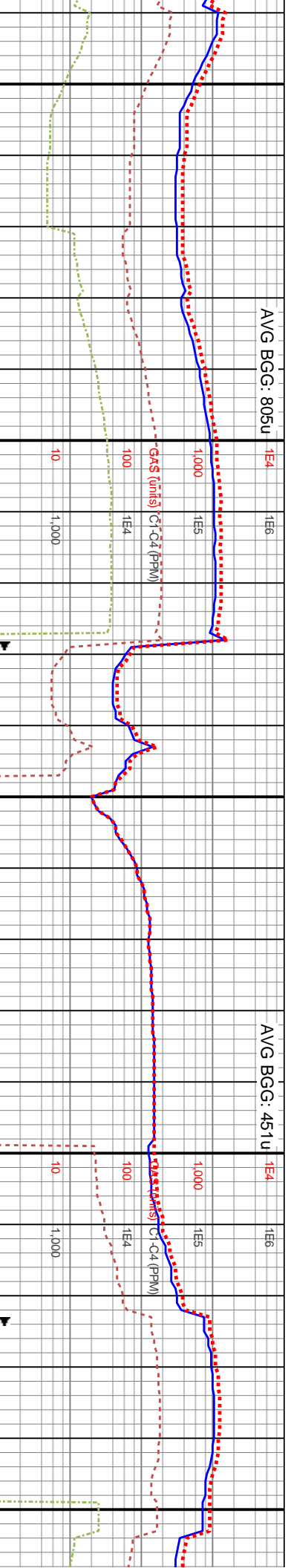
7700-7760 MRLST (80%): dk gy-v dk gy, med gy-gysbhn, frm-sl hrd, pty-blky, sm-sl silty tex, v calc, tr f lam, scat mic pyr; CHK (20%): pred lt gysbhn-crm, tn, chky tex, calc, mnr mifos, spltsb tab, dul yelgn flr

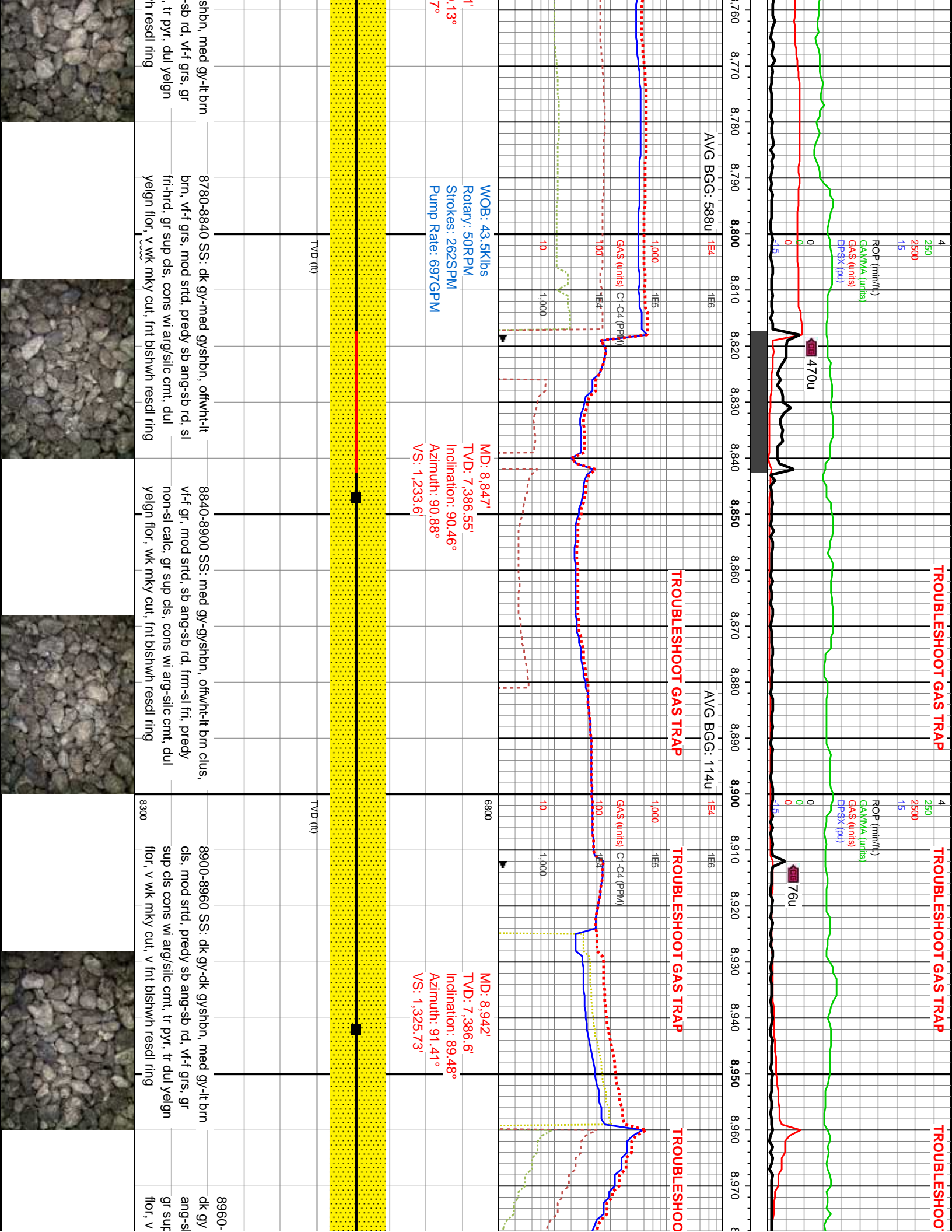
7760-7820 MRLST (65%): dk gy-v dk gy, med gy-gysbhn, sm-sl silty tex, frm-sl hrd, pty-blky, v calc, tr f lam, scat pp pyr; CHK (35%): predy ofwht-lt gysbhn, occ crm-tn, chky tex, calc, lam ip, mntst intbdd, dul yelgn flr

7820-7880 MRLST (75%): mot dk gy-med gy, frm-sl hrd, sb blk-spl, sl silty tex, v calc, mnr mifos, scat pyrc nod; CHK (25%): mot crm-lt gysbhn, chky tex, calc, sb tab-blky, mntst intbdd, dul yelgn flr



8120-8180 LMST (95%): .mot gysbhn-lt gy, offwht-in, sb tab-bkly, frm-sl hrd, v calc, micxln, stri ip, tr pp mic pyr: SH (5%): .predy dk gy-med gy, sme v dk gy, sb spl-bkly, calc, tr micmica, chk intbd, tr microf	8180-8240 LMST (90%): .mot dk gysbhn-med gy, occly tn-brn, hrd, bkly-tab, v calc, micxln-cryptoxln, tr pp mic pyr: MRLST (10%): .pred dk gy-med gy, sb bkly, v calc, tr micmica, lmst intbd	8240-8300 SS: .predy med gy, occly lt gysbhn, occ clr grs thru, mod strt, pred sb ang-sb rd, vf-uf grs, ang-sb rd qtz grs, tr unconcs qtz grs, predy fri gr sup cls, cons wi arg/silic cmt, v dul yelgn fltor, v wk mky cut, fnt bishwh resdl ring	8300-8300 SS: .predy med gy, occly lt gysbhn, offwht-in, sb tab-bkly, frm-sl hrd, v calc, micxln, stri ip, tr pp mic pyr: SH (5%): .predy dk gy-med gy, sme v dk gy, sb spl-bkly, calc, tr micmica, chk intbd, tr microf
TVD (ft)	TVD (ft)	TVD (ft)	TVD (ft)

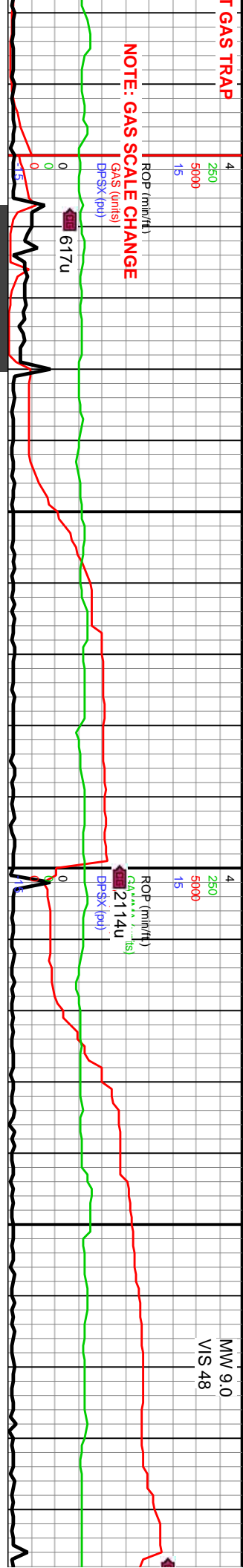
A vertical strip of five grayscale images showing a textured surface, likely gravel or crushed stone. The images are arranged in a sequence, with alternating white and dark segments, suggesting a scanning or stitching process. The texture is composed of small, irregular particles of varying shades of gray.



1 GAS TRAP

MW 9.0
VIS 48

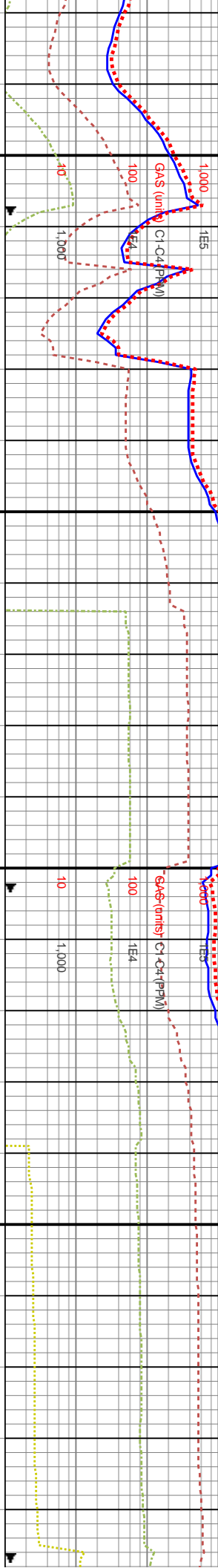
NOTE: GAS SCALE CHANGE



8,980 8,990 9,000 9,010 9,020 9,030 9,040 9,050 9,060 9,070 9,080 9,090 9,100 9,110 9,120 9,130 9,140 9,150 9,160 9,170 9,180 9,190 9,200

AVG BGG: 100u 1E4 1E6

1 GAS TRAP



WOB: 42.7Klbs
Rotary: 60RPM
Strokes: 260SPM
Pump Rate: 695GPM

MD: 9,037'
TVD: 7,387.57'
Inclination: 89.35°
Azimuth: 89.16°
VS: 1,417.49'

MD: 9,131'
TVD: 7,389.28'
Inclination: 88.56°
Azimuth: 88.63°
VS: 1,507.66'

WOB: 4
Rotary: 4
Strokes: 260SPM
Pump Rate: 695GPM

TVD (ft)

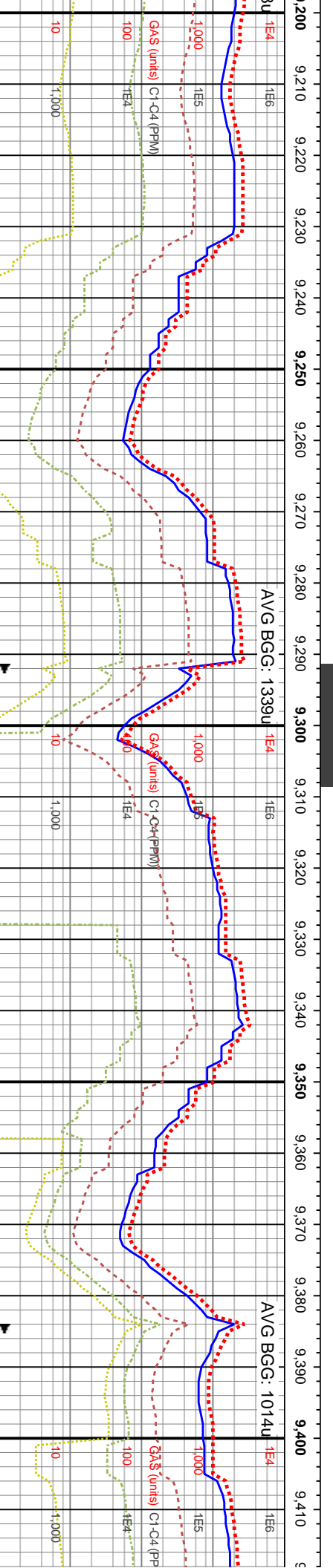
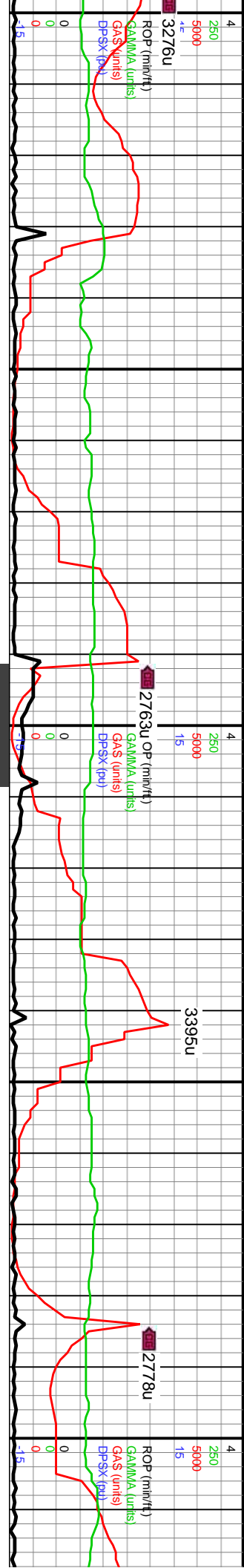
TVD (ft)

9020-9080 SS: predy gysbhn-med gy, sme
dk gy bm, v-f gr, trnsl grs thru, predy sb
ang-sb rd, mod std, sb ang-sb rnd qtz grs,
fri gr sup cls wi arg/silic cnt, dul yelgn flr,
mod mky cut, mod blshwh resdl ring

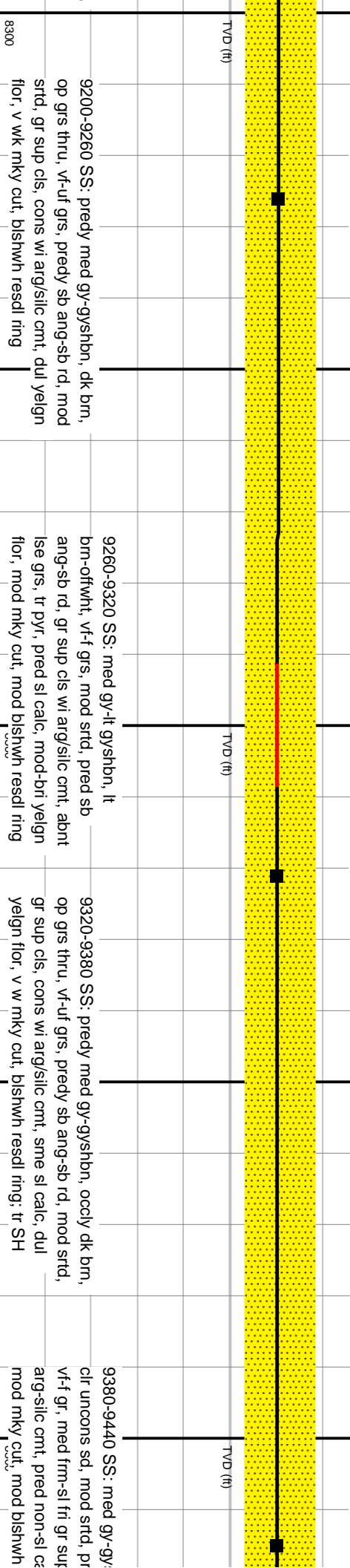
9080-9140 SS: predy gysbhn-med gy, sme
dk gy bm, trnsl grs thru, mod std, predy sb
ang-sb rd, v-f gr, sb ang-sb rnd qtz grs, fri
gr sup cls, cons wi arg/silic cnt, dul yelgn
flr, v wk mky cut, fnt blshwh resdl ring

9140-9200 SS: med gy-gysbhn, lt bm cls, v-f gr,
mod std, predy sb ang-sb rd, med frm-sl fri gr
sup cls, cons wi arg-silic cnt, predy sl calic, dul
yelgn flr, mod mky cut, mod blshwh resdl ring

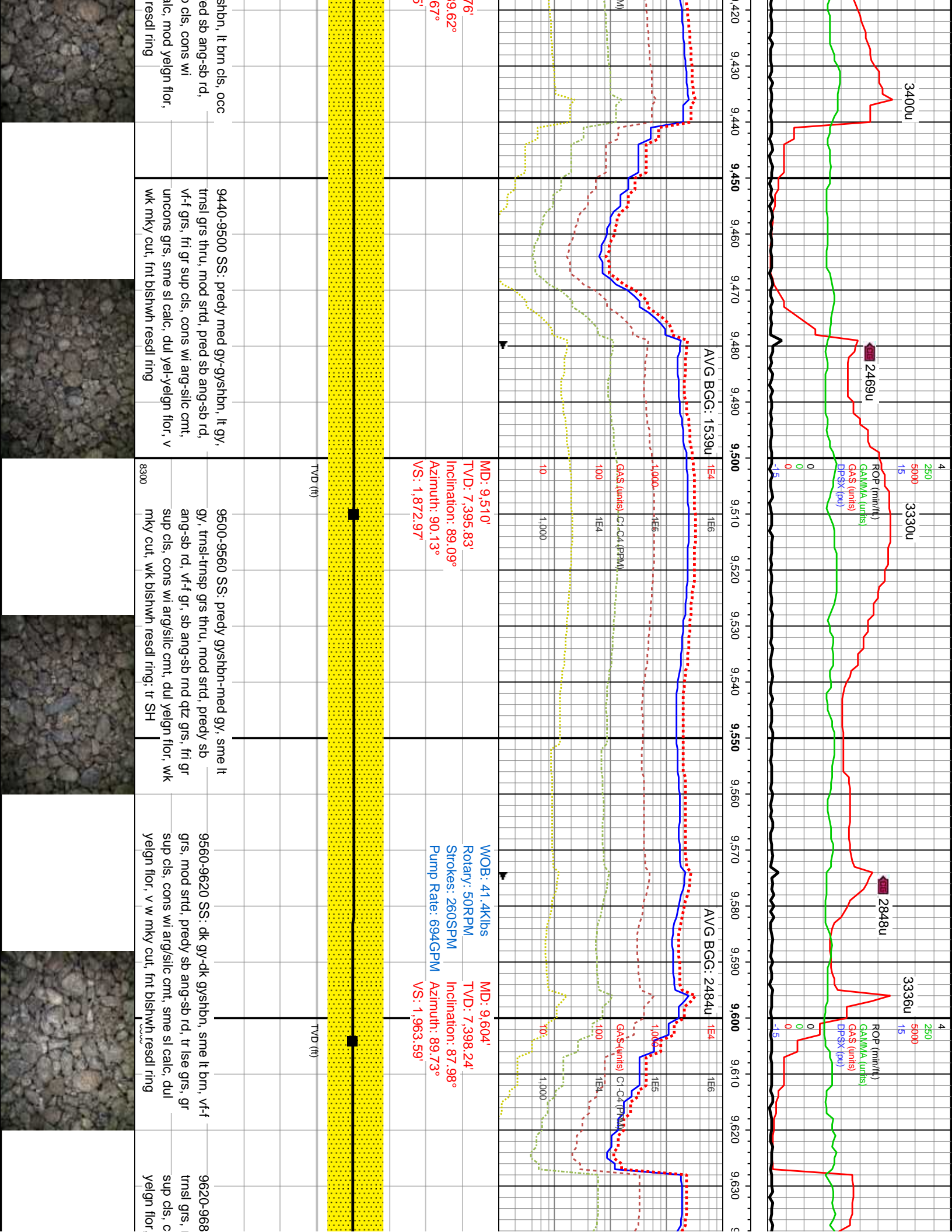


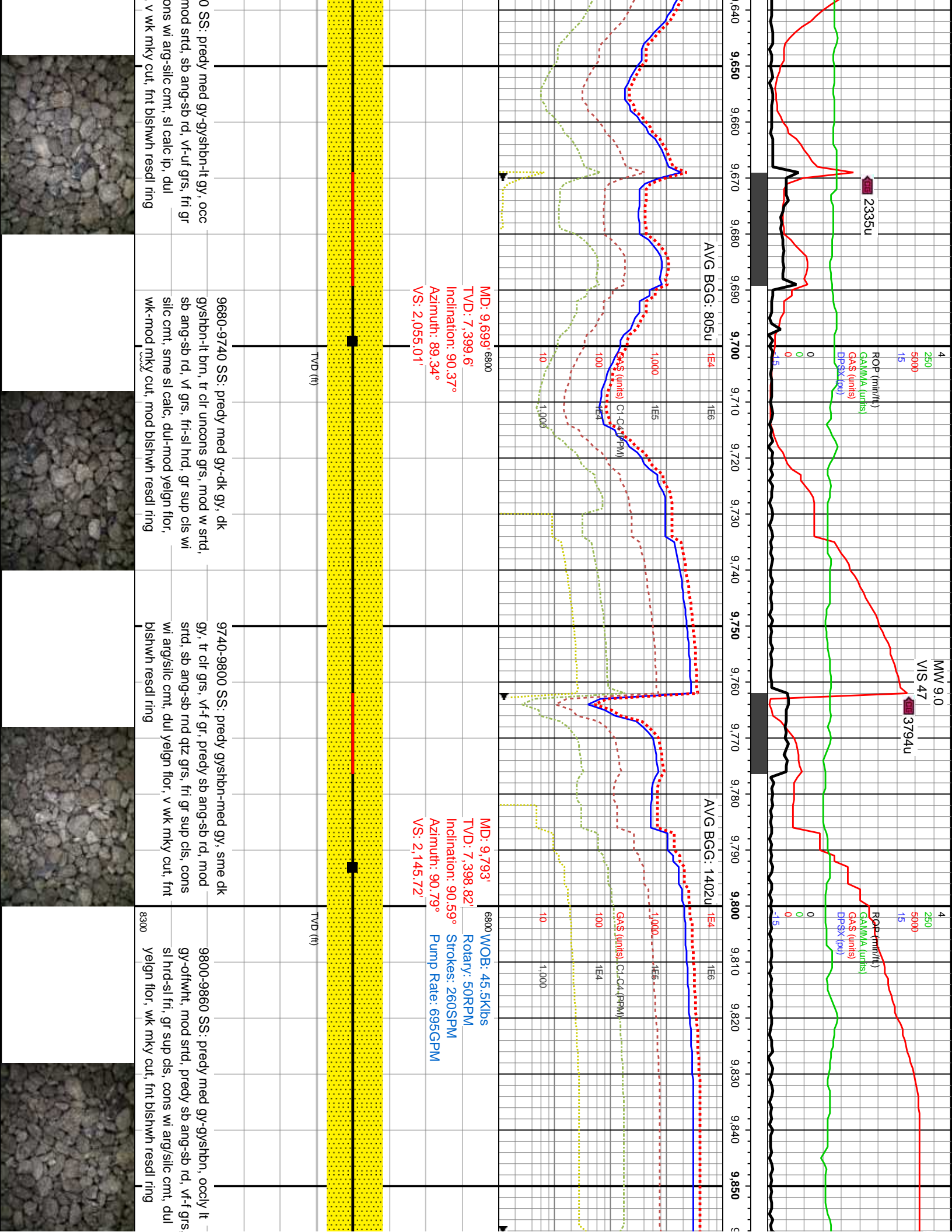


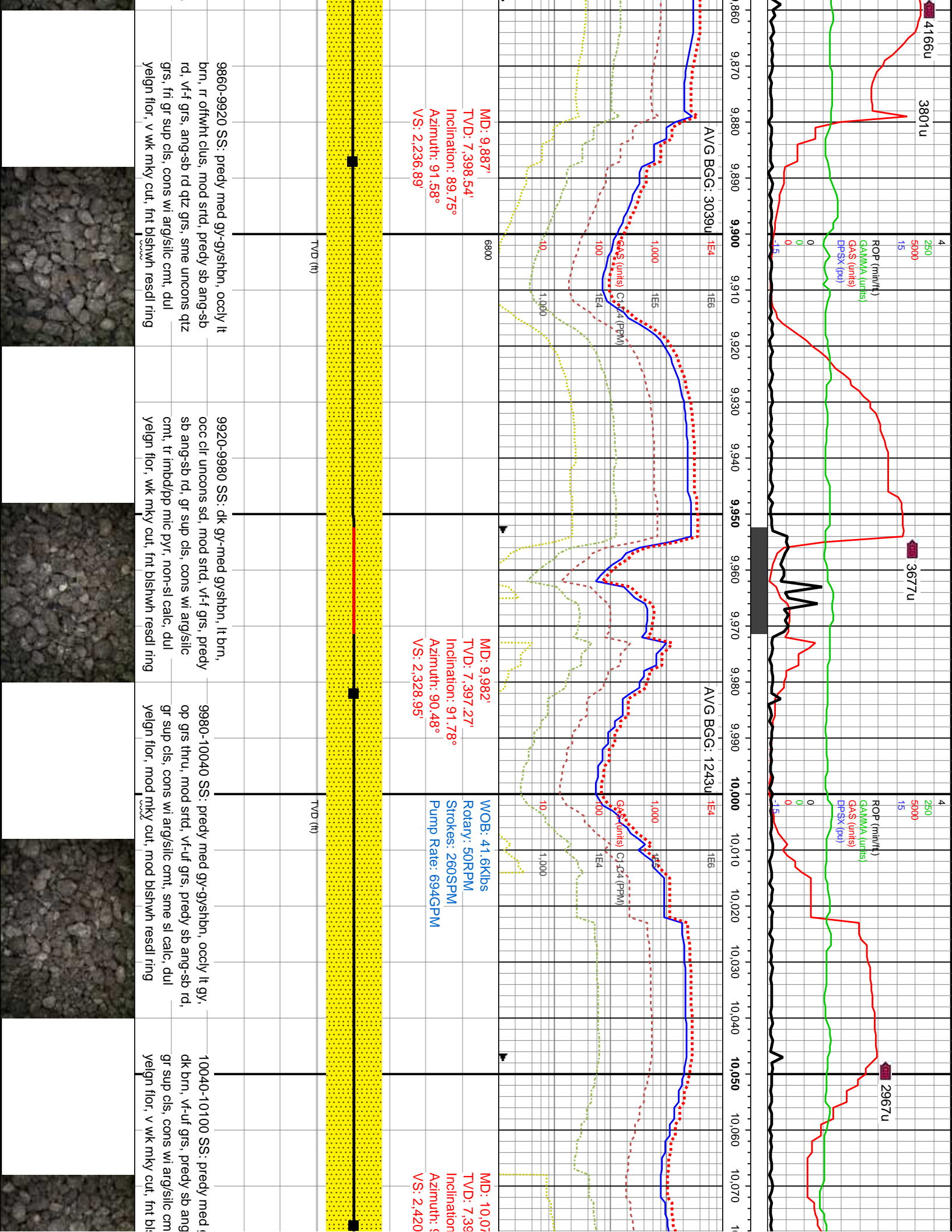
2.9klbs	MD: 9.226'					6800	MD: 9.321'					WOB: 38.1klbs Rotary: 50RPM	6800	MD: 9.415'
50RPM	TVD: 7,392.08'						TVD: 7,394.07'					Strokes: 260SPM		TVD: 7,394.
.260SPM	Inclination: 88.07°						Inclination: 89.53°					Pump Rate: 693GPM		Inclination: 8
Date: 694GPM	Azimuth: 87.57°						Azimuth: 91.1°							Azimuth: 91
	VS: 1,598.39'						VS: 1,689.7'							VS: 1,780.9'

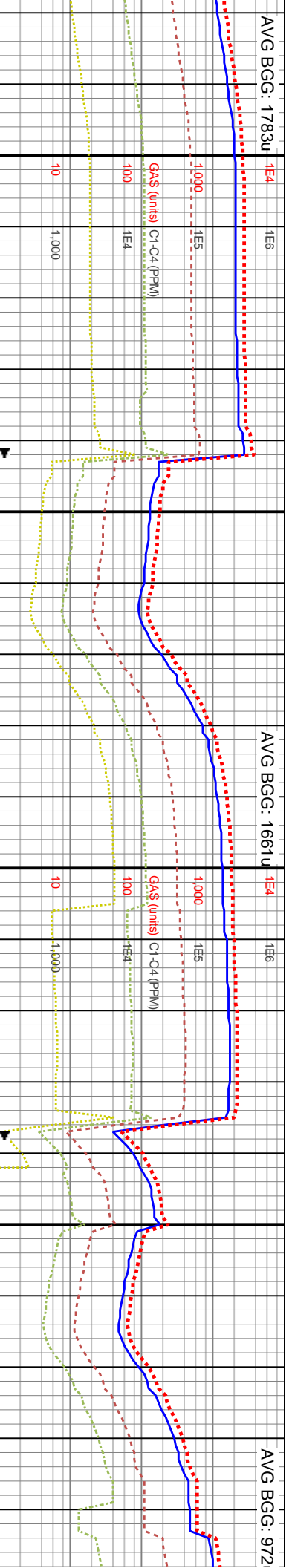
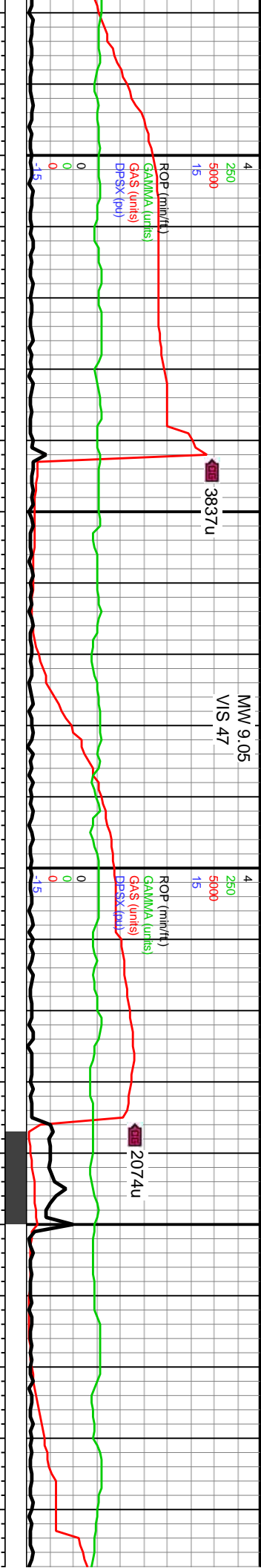


A vertical strip of four grayscale images showing a textured surface, likely soil or rock, with varying degrees of detail and lighting. The images are arranged vertically, with the top image showing a more uniform, lighter texture and the bottom image showing a more detailed, darker texture.





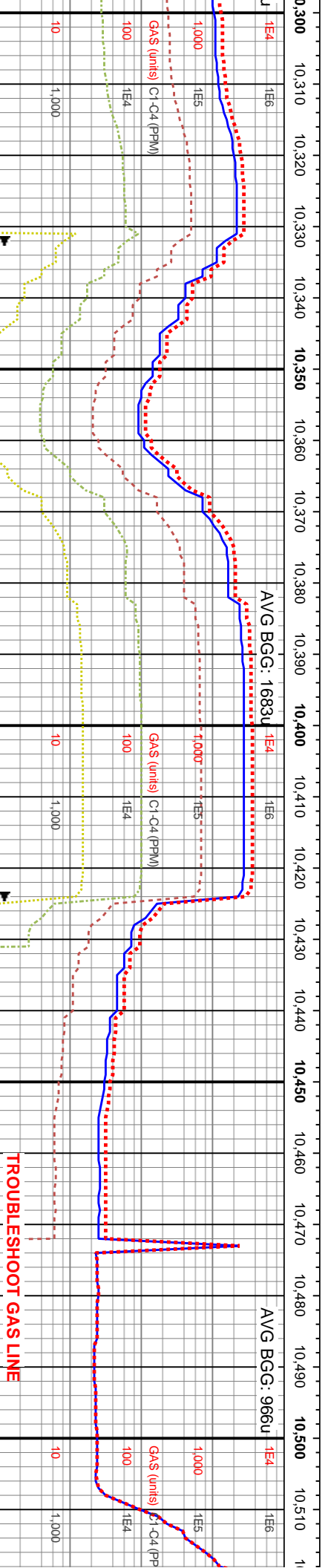
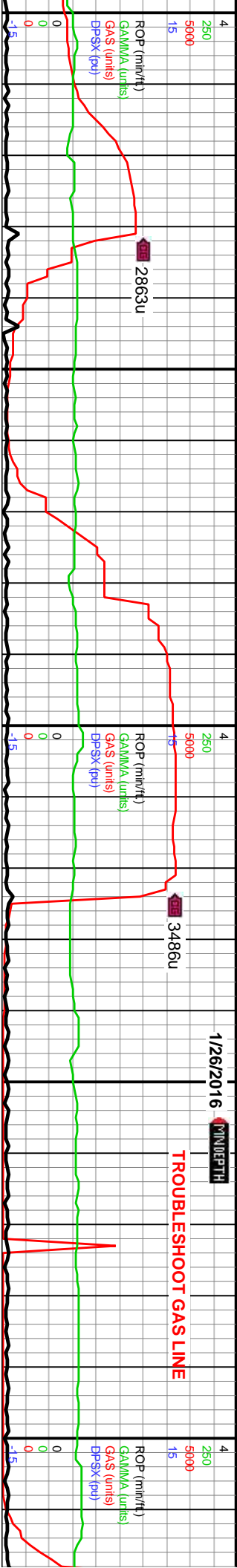




MD: 10,171'
TVD: 7,393.55'
Inclination: 90.85°
Azimuth: 90.04°
VS: 2,511.47'

WOB: 41.4Klbs
Rotary: 60RPM
Strokes: 260SPM
Pump Rate: 693GPM

MD: 10,266'
TVD: 7,393.6'
Inclination: 89.09°
Azimuth: 90.97°
VS: 2,603.33'

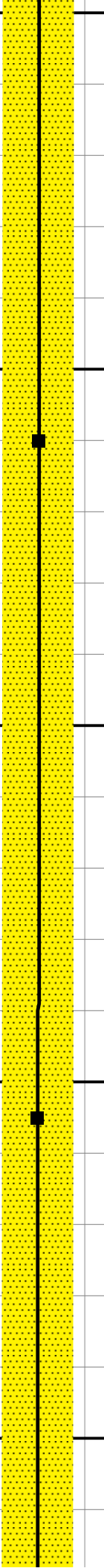


MD: 10,360'
TVD: 7,395.56'
Inclination: 88.51°
Azimuth: 91.67°
VS: 2,694.53'

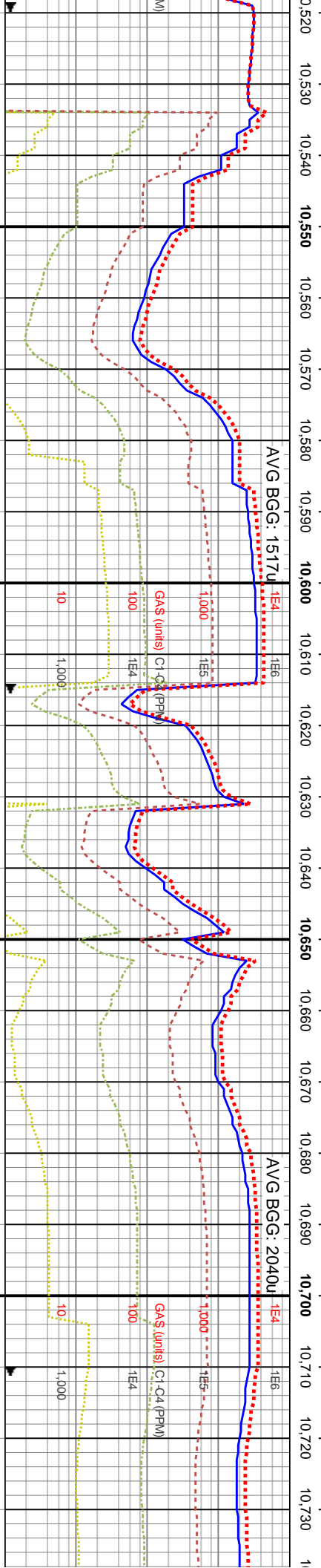
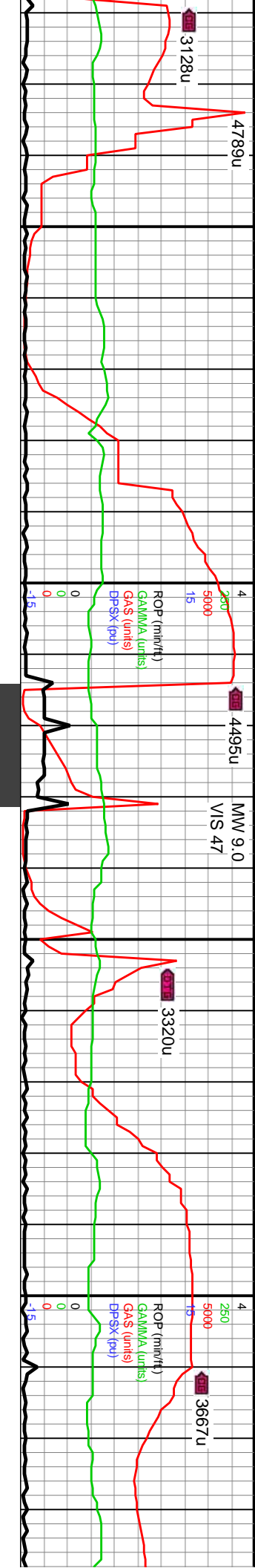
WOB: 44.2Klbs
Rotary: 60RPM
Strokes: 250SPM
Pump Rate: 666GPM

MD: 10,455'
TVD: 7,398.11'
Inclination: 88.42°
Azimuth: 91.5°
VS: 2,786.8'

TROUBLESHOOT GAS LINE



10340 SS: predy gyshbn-med gy, mot	10340-10400 SS: predy med gy-gyshbn, oftwht,	10400-10460 SS: dk gy-dk gysbhn, sme lt bm,	10460-10520 SS: predy gyshbn-med gy,
ofthwht-trnsf, tr lse grs, vf-f grs, mod	mod strd, vf-f grs, predy sb ang-sb rd, gr sup cls,	vf-f grs, mod strd, predy sb ang-sb rd, tr lse grs,	tr cli-op grs, sb ang-sb rd, vf-f grs, mod
edy sb ang-sb rd, predy gr sup cls,	tr pp pyr, cons wi arg/silic cmt, sme sl calc, mod	gr sup cls, cons wi arg/silic cmt, sme sl calc, dul	strd, fri-sl frm, gr sup cls, mod cmtd, cons
arg/silic cmt, tr imbd mic pyr, dul	yelgn flor, mod mky cut, mod blshwh resd ring	yelgn flor, v wk mky cut, fnt blshwh resd ring	wi arg-silic cmt, sl calc ip, dul yelgn flor,
or, wk mky cut, fnt blshwh resd ring			wk mky cut, fnt blshwh resd ring

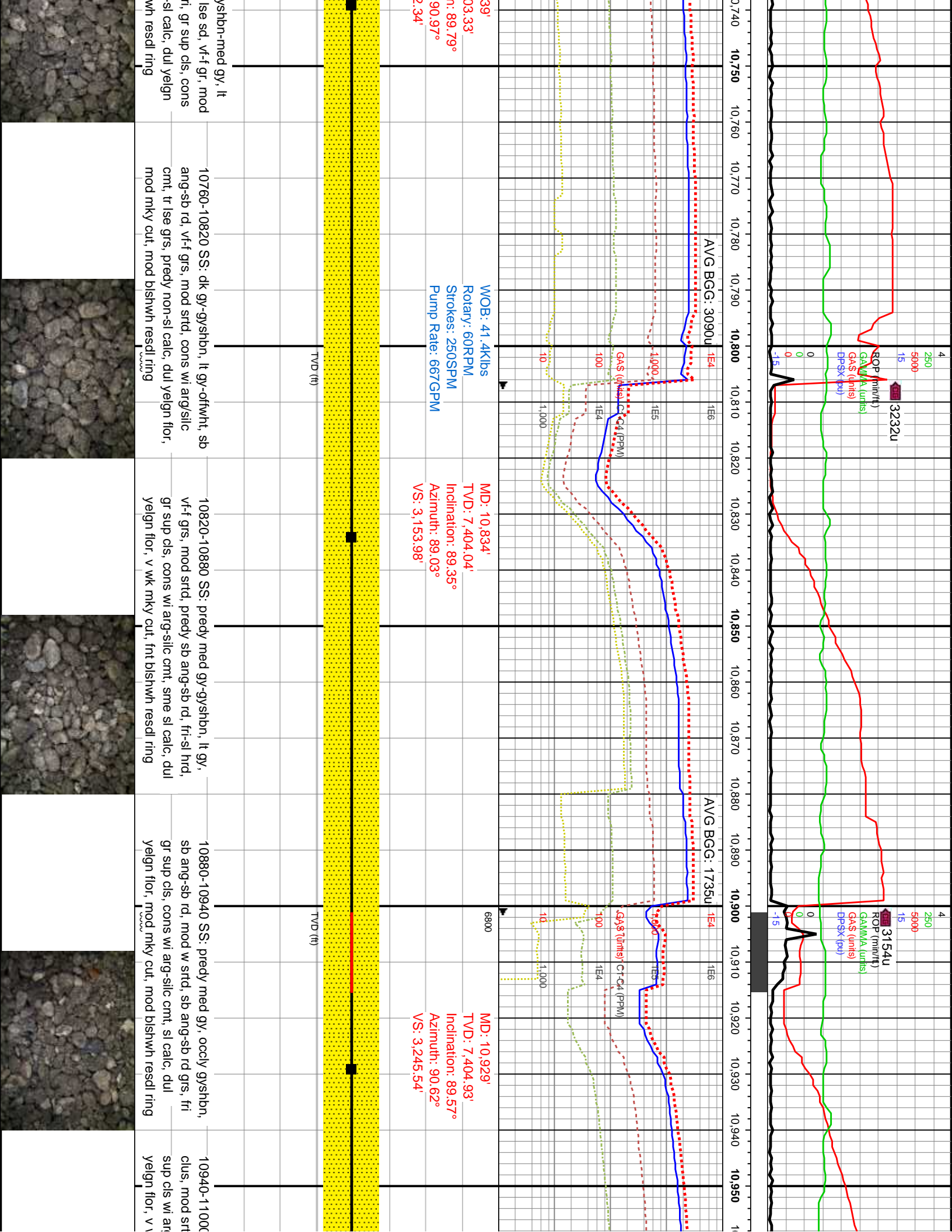


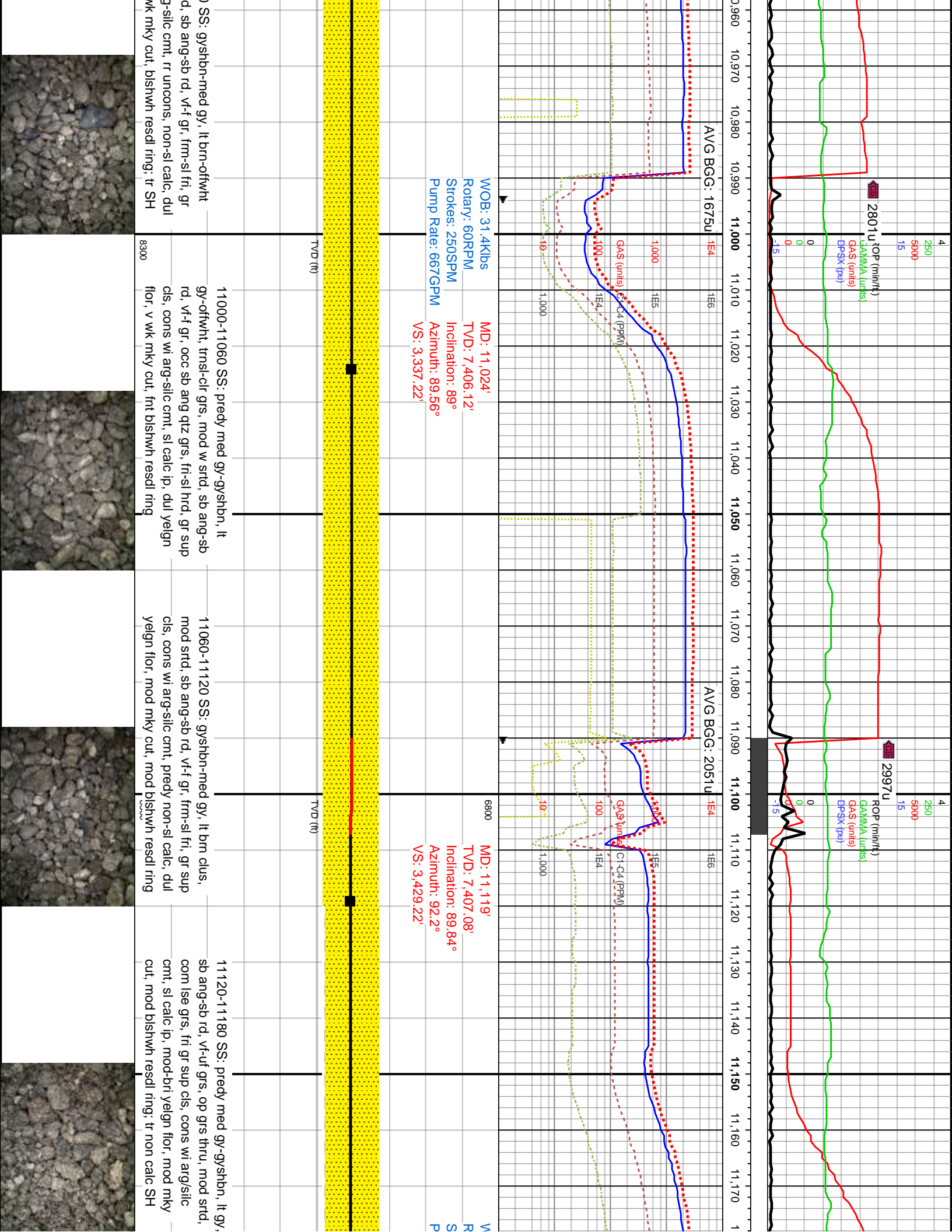
MD: 10,549'
TVD: 7,401.02'
Inclination: 88.03°
Azimuth: 91.58°
VS: 2,878.07'

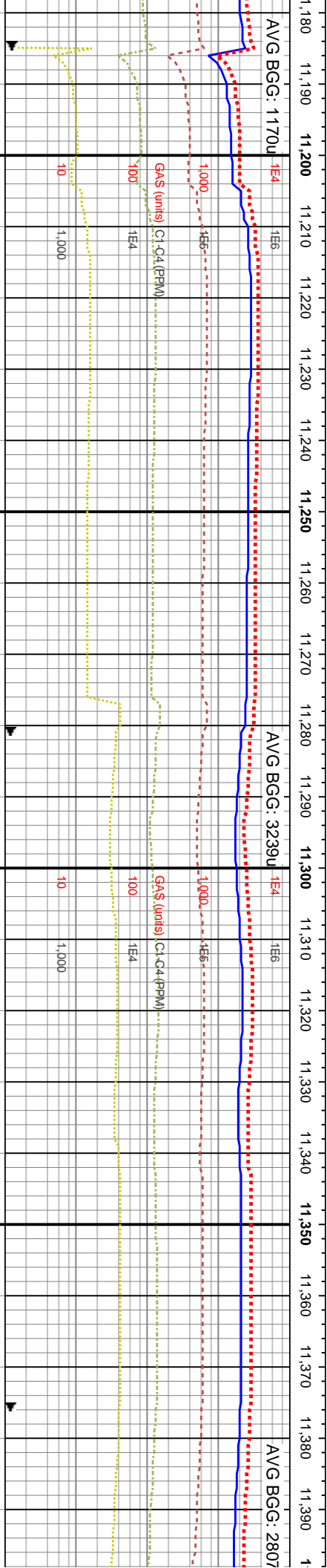
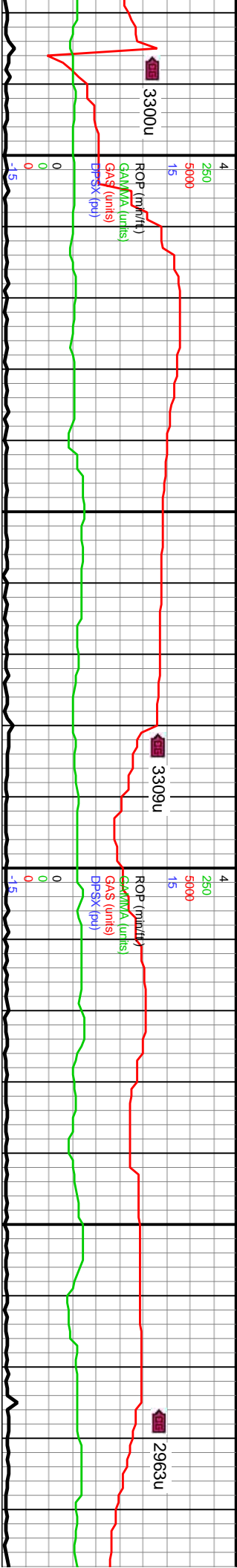
WOB: 42.9klbs
Rotary: 60RPM
Strokes: 250SPM
Pump Rate: 666GPM

MD: 10,644'
TVD: 7,402.9'
Inclination: 89.7°
Azimuth: 91.1°
VS: 2,970.26'

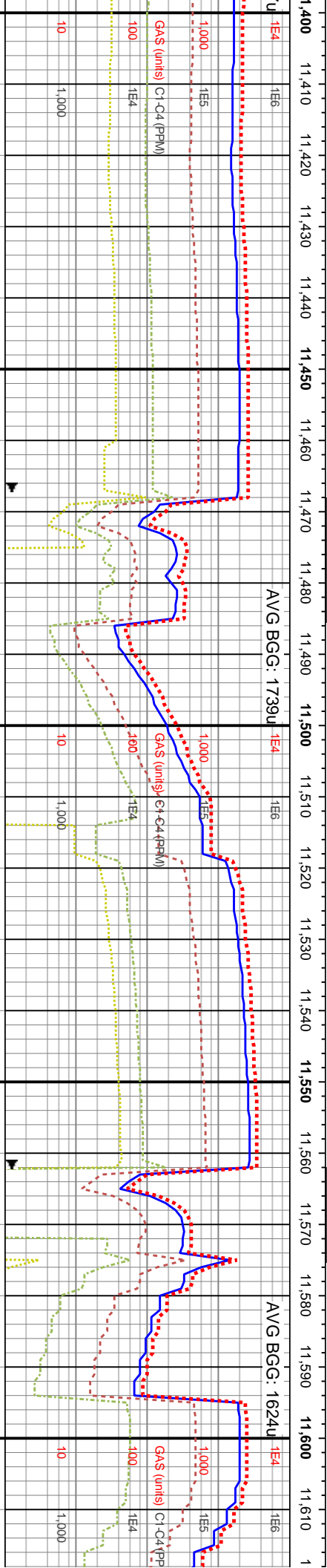
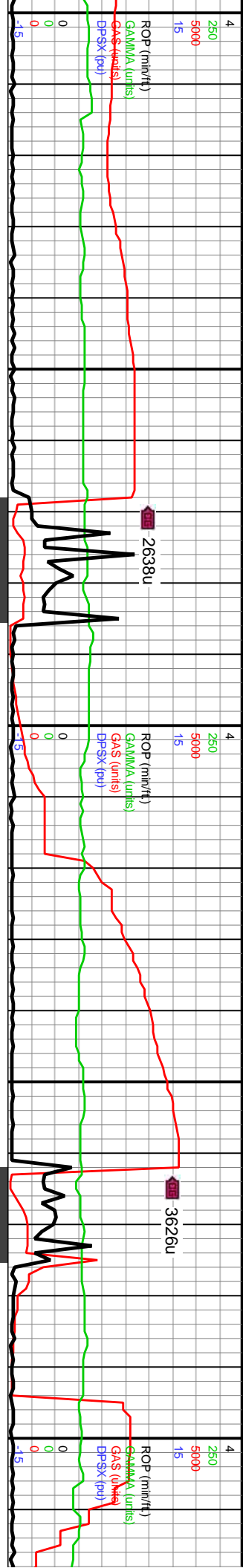
10520-10580 SS: predy dk gy-med gy, gysbhn, offwht-trnsl, vf-f grs, predy sb ang-sb rd, mod strd, tr lse grs, gr sup cls, cons wi arg/slic cmt, dul yelgn flor, v wk mky cut, bishwh resdl ring		TVD (ft)	10580-10640 SS: predy med gy-gysbhn, lt gy, occ cl-trnsl grs, mod w strd, sb ang-sb rd, vf-f gr, sb ang qtz grs thru, fri-sl frm, gr sup cls wi arg-slic cmt, sl calc ip, dul yelgn flor, v wk mky cut, fnt bishwh resdl ring		TVD (ft)
10640-10700 SS: med gy-gysbhn, offwht-lt brn clus, vf-f gr, mod strd, sb ang-sb rd, frm-sl fri, predy non-sl calc, gr sup cls, cons wi arg-slic cmt, dul yelgn flor, mod mky cut, mod bishwh resdl ring			10700-10760 SS: predy g brn-offwht clus, occ cl-op strd, sb ang-sb rd, frm-sl f wi arg-slic cmt, predy non-flor, v wk mky cut, fnt bish		







WOB: 41.4Klbs	MD: 11,214'	MD: 11,308'	WOB: 40.9Klbs
Rotary: 60RPM	TVD: 7,407.21'	TVD: 7,407.84'	Rotary: 60RPM
Strokes: 250SPM	Inclination: 90.01°	Inclination: 89.22°	Strokes: 250SPM
Pump Rate: 667GPM	Azimuth: 91.85°	Azimuth: 90.35°	Pump Rate: 666GPM

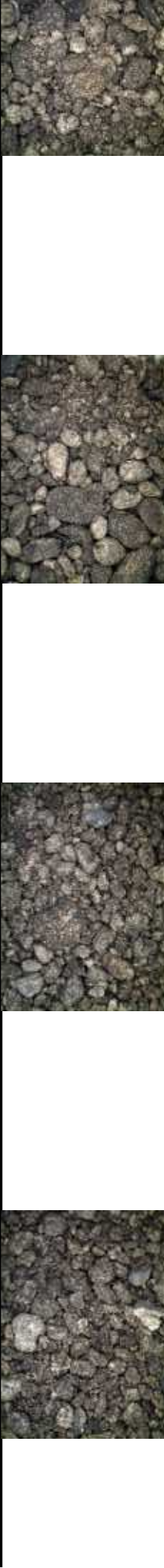


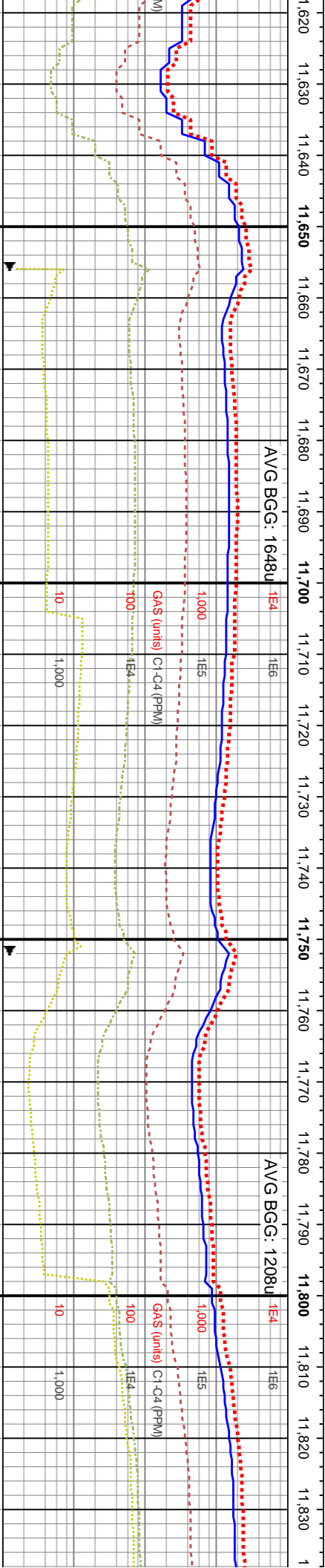
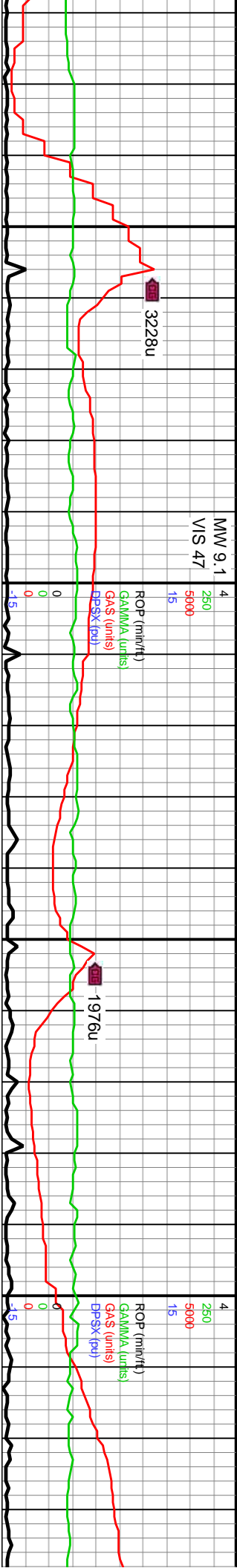
MD: 11,403'
TVD: 7,409.39'
Inclination: 88.91°
Azimuth: 88.72°
VS: 3,704.25'

MD: 11,498.800
TVD: 7,410.54'
Inclination: 89.7°
Azimuth: 91.01°
VS: 3,795.83'

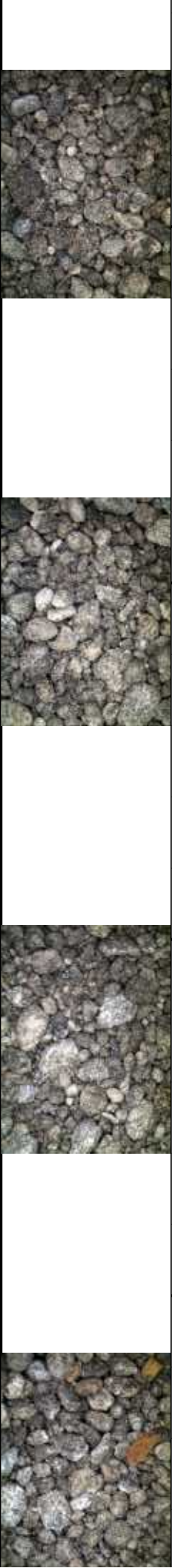
MD: 11,592'
TVD: 7,409.36'
Inclination: 91.74°
Azimuth: 91.36°
VS: 3,886.99'

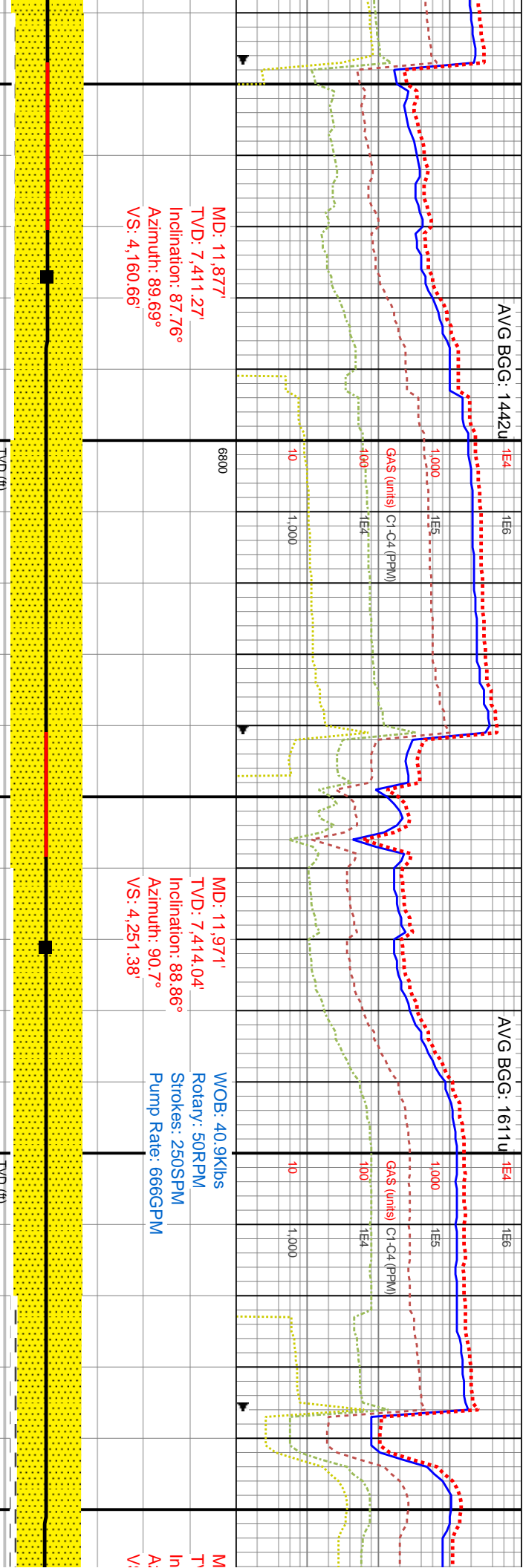
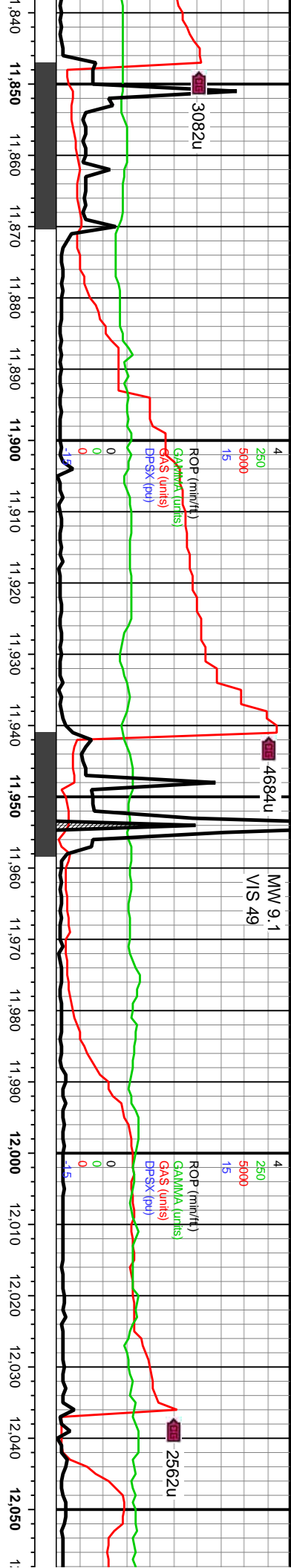
11420-11480 SS: pred med gy-gyshbn, mot lt	
brn, vf-f grs, mod strd, pred sb ang-sb rd,	
ang-sb rd qtz grs, sme unconcs qtz grs, fri gr	
sup cls, cons wi arg/silic cmt, mod yeign flor,	
wk-mod mky cut, mod bishwh resd ring	
11480-11540 SS: predy gyshbn, med gy-dk	
gyshbn, vf-f gr, pred sb ang-sb rd, mod strd,	
clt grs thru, fri gr sup cls wi arg/silic cmt, tr mic	
pyr, mod yeign flor, wk-mod mky cut, bishwh	
resd ring; tr non calc SH	
11540-11600 SS: predy dk gyshbn, dk	
gy-med brn, sb ang-sb rd, vf-uf grs, op grs	
thru, mod strd, com lse grs, fri gr sup cls,	
cons wi arg/silic cmt, sl calc ip, mod-bri yeign	
flor, mod mky cut, mod bishwh resd ring	





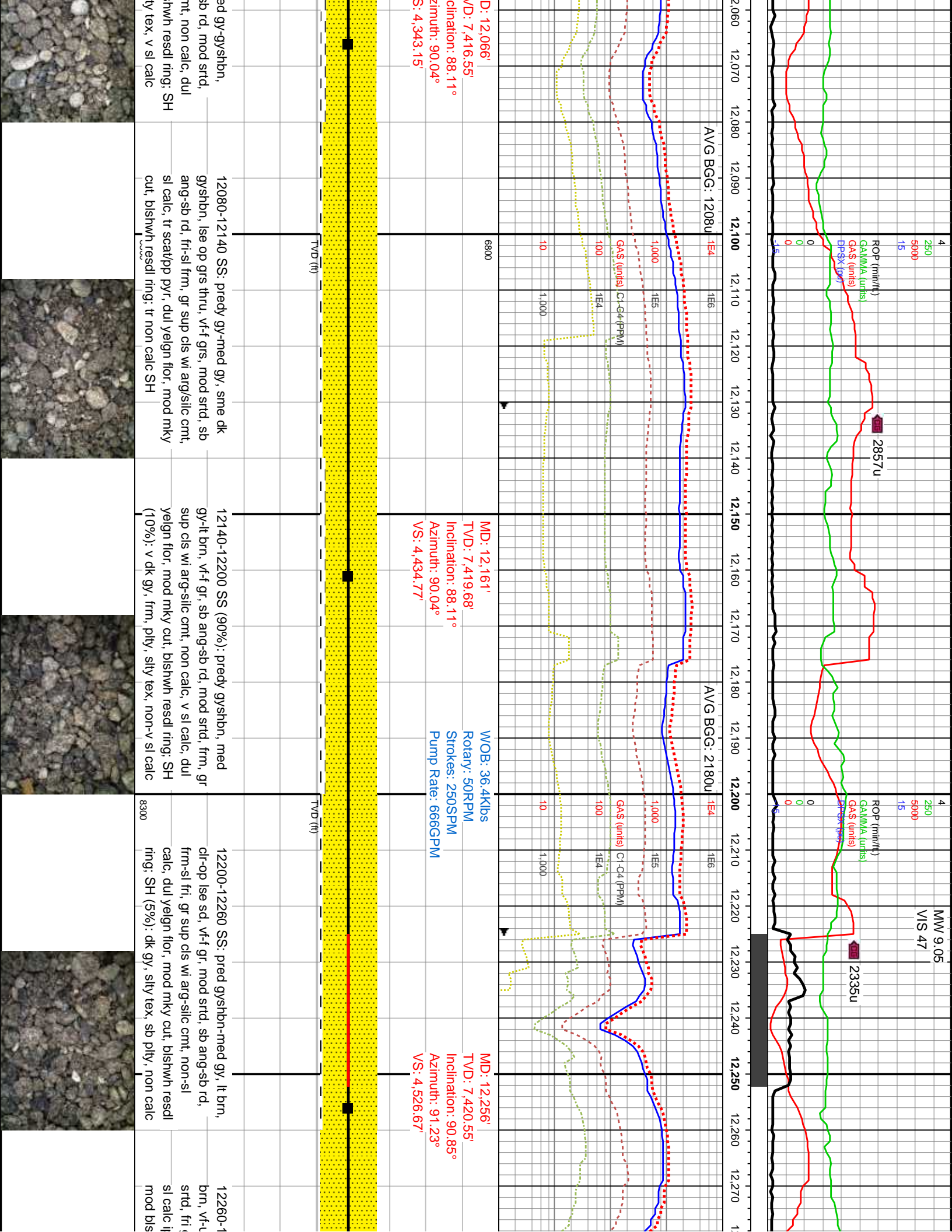
11660-11720 SS: predy med gy-gyshbn clus, occ op lse grs, vf-f gr, mod strt, sb ang-sb rd, frm-sl fri, predy non-sl calc, gr sup cls wi arg-slic cnt, tr pp mic pyr, dul-mod yelgn flor, wk-mod mky cut, mod blshwh resdl ring		11720-11780 SS: predy med gy, gyshbn-lt gy, abnt oftwht-op grs thru, mod w strt, sb ang-sb rd, vf-uf gr, com sb ang qtz thru, fri-sl frm, gr sup cls wi arg-slic cnt, sl calc ip, dul yelgn flor, wk mky cut, blshwh resdl ring		11780-11840 SS: predy med gy-gyshbn, lt brn, vf-f grs, com lse cl-op qtz grs, sb ang-sb rd, mod strt, gr sup cls wi arg/slic cnt, sme sl calc, mmr imbd/scat mic pyr, dul yelgn flor, wk mky cut, blshwh resdl ring	
11660 SS: predy gysbhn, med gy, com		11720-11780 SS: predy med gy, gyshbn-lt gy,		11780-11840 SS: predy med gy-gyshbn, lt	
brn, mod w strt, sb ang-sb rd, vf-f gr, frms qtz grs thru, predy cons wi		abnt oftwht-op grs thru, mod w strt, sb ang-sb rd, vf-uf gr, com sb ang qtz thru, fri-sl		brn, vf-f grs, com lse cl-op qtz grs, sb ang-sb	
cmt, sl calc ip, dul yelgn flor, wk-mod blshwh resdl ring		yelgn flor, wk mky cut, blshwh resdl ring		rd, mod strt, gr sup cls wi arg/slic cnt, sme	
				sl calc, mmr imbd/scat mic pyr, dul yelgn flor,	
				wk mky cut, blshwh resdl ring	

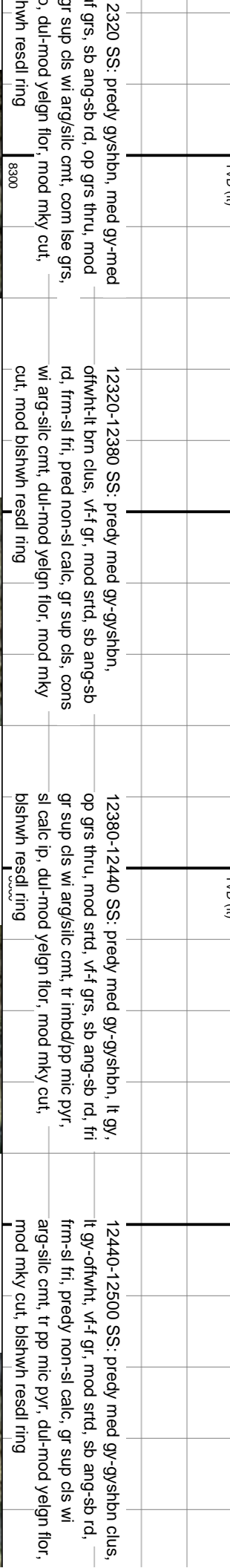
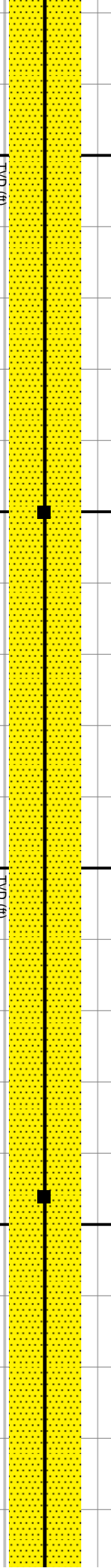
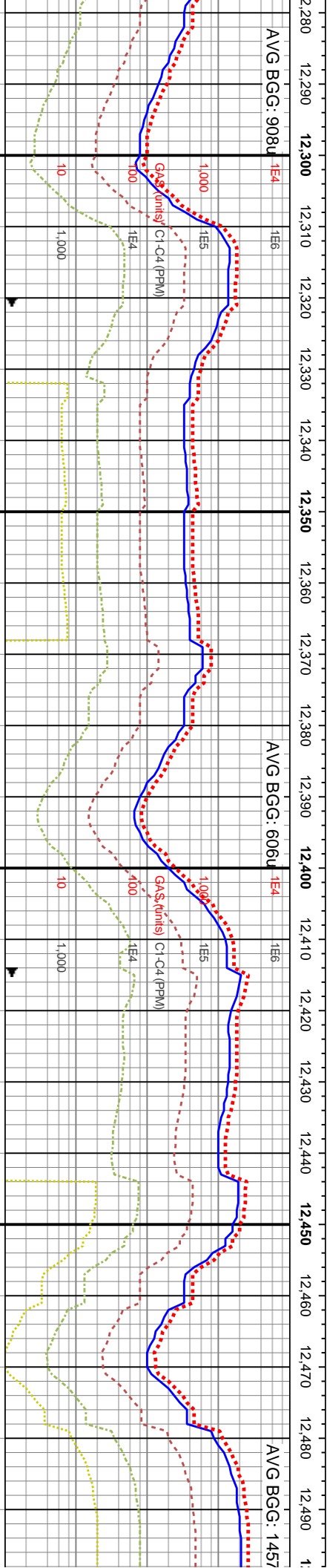
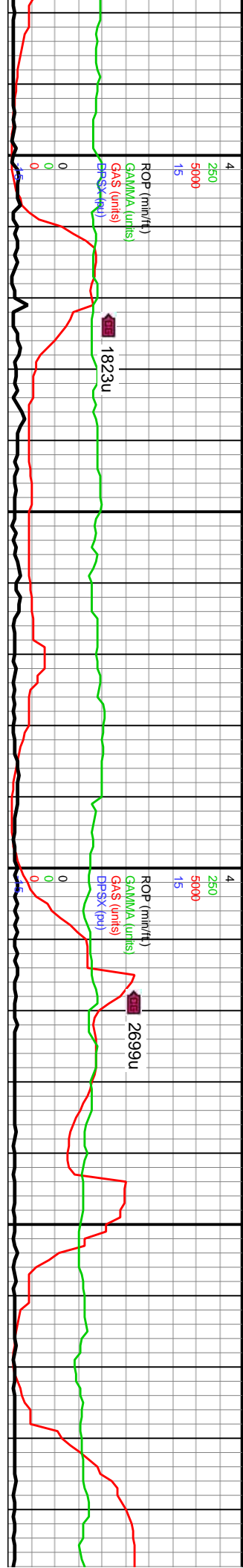




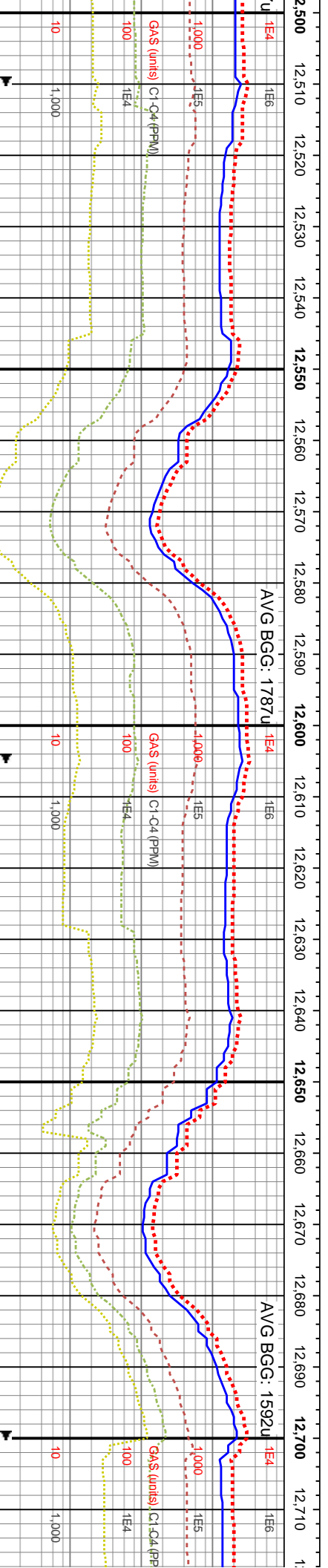
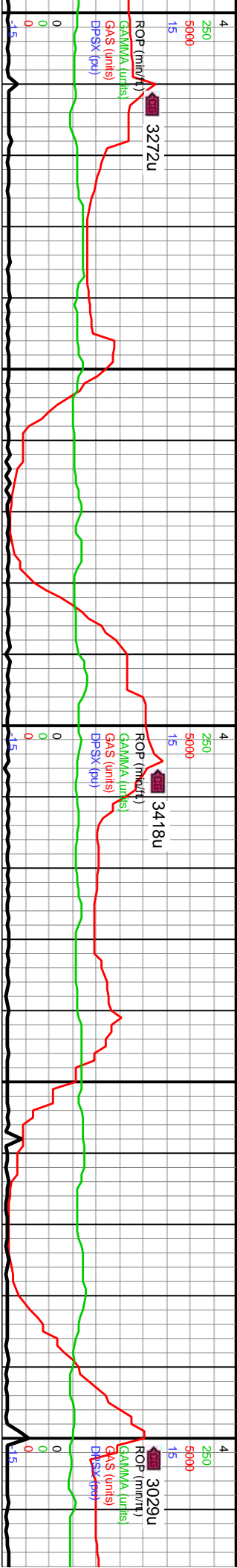
11840-11900 SS: predy med gy-gyshbn, lt gy, vf-uf grs, sb ang-sb rd, op grs thru, mod strd, fri gr sup cls, cons wi arg/silic cnt, com lse grs, sl calc ip, dul yelgn flor, mod mky cut, mod blshwh resdl ring; tr non calc SH	11900-11960 SS: predy med gy-gyshbn, lt gy, trns-l-clr grs, mod w strd, sb ang-sb rd, vf-f gr, sb ang qtz thru, sl hrd, gr sup cls wi arg-silic cnt, sl calc ip, dul yelgn flor, mod mky cut, blshwh resdl ring	11960-12020 SS: predy med gy-gyshbn, lt brn, offwht-crm, com clr grs, mod strd, vf-f grs, sb ang-sb rd, tr uncongs qtz grs, fri gr sup cls wi arg/silic cnt, du-mod yelgn flor, mod mky cut, blshwh resdl ring; tr non calc SH	12020-12080 SS (90%): m offwht clus, vf-f gr, sb ang-s fri gr sup cls wi arg-silic cnt, yelgn flor, mod mky cut, blshwh resdl ring; tr non calc SH
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12320 SS: predy gysbhn, med gy-med if grs, sb ang-sb rd, op grs thru, mod gr sup cls wi arg/silic cnt, com lse grs, o, dul-mod yelgn flor, mod mky cut, hwh resdl ring	12320-12380 SS: predy med gy-gysbhn, oftwh/lt brn clus, vf-f gr, mod srtd, sb ang-sb rd, frm-sl fri, pred non-sl calc, gr sup cls, cons wi arg-silic cnt, dul-mod yelgn flor, mod mky cut, mod blshwh resdl ring	12380-12440 SS: predy med gy-gysbhn, lt gy, op grs thru, mod srtd, vf-f grs, sb ang-sb rd, fri gr sup cls wi arg/silic cnt, tr imbd/pp mic pyr, sl calc ip, dul-mod yelgn flor, mod mky cut, blshwh resdl ring	12440-12500 SS: predy med gy-gysbhn clus, lt gy-oftwh/lt, vf-f gr, mod srtd, sb ang-sb rd, frm-sl fri, predy non-sl calc, gr sup cls wi arg-silic cnt, tr pp mic pyr, dul-mod yelgn flor, mod mky cut, blshwh resdl ring
8300			



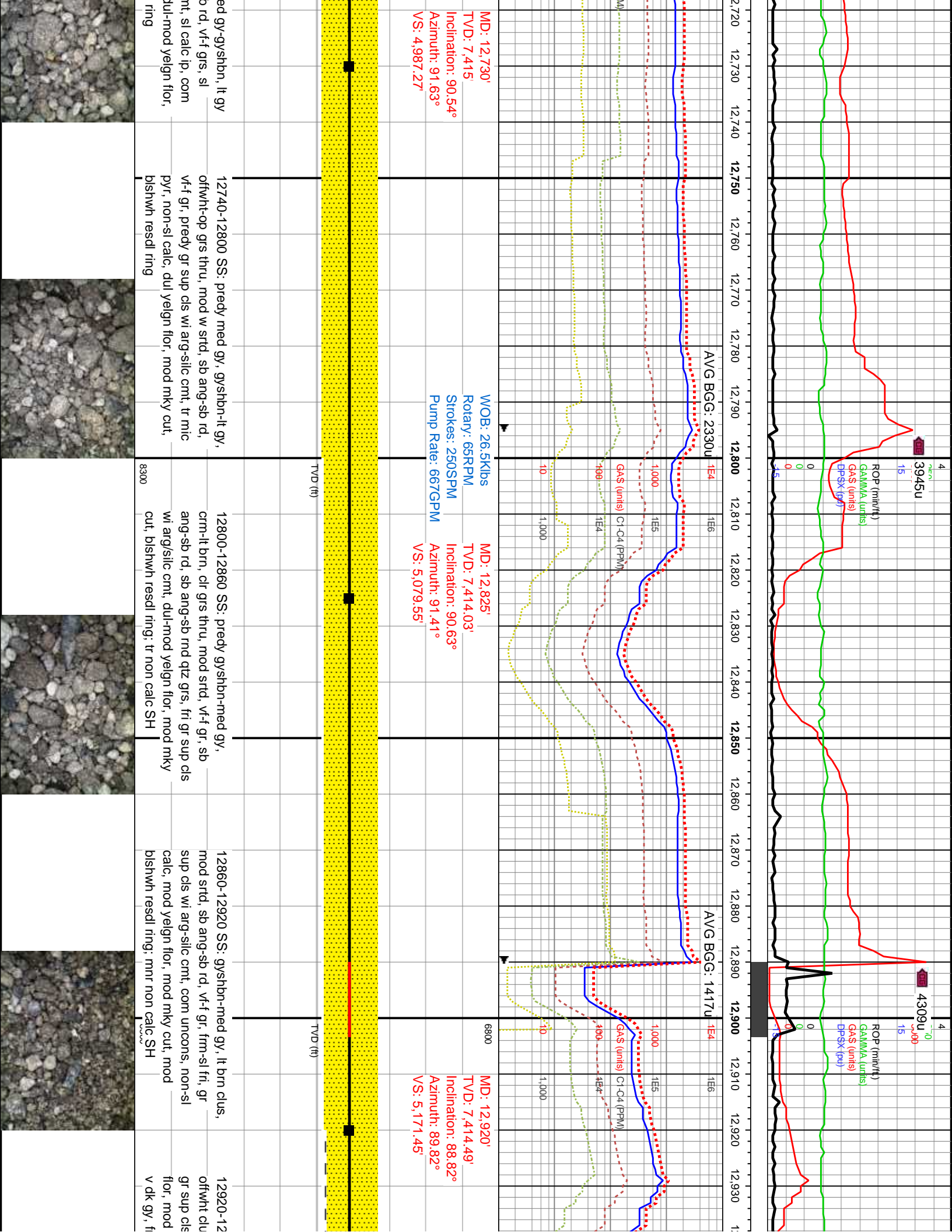
MD: 12,541'
TVD: 7,417.59'
Inclination: 91.16°
Azimuth: 91.76°
VS: 4,803.65'

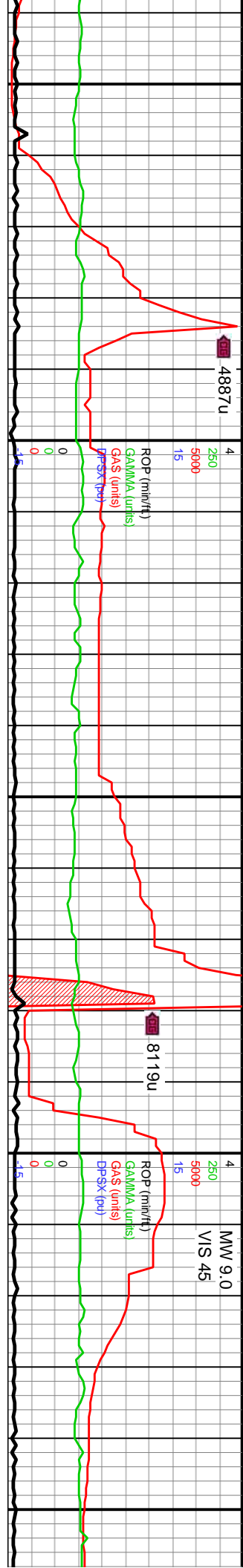
WOB: 31.9Klbs
Rotary: 51RPM
Strokes: 250SPM
Pump Rate: 668GPM

MD: 12,635'
TVD: 7,416.05'
Inclination: 90.72°
Azimuth: 91.5°
VS: 4,894.98'

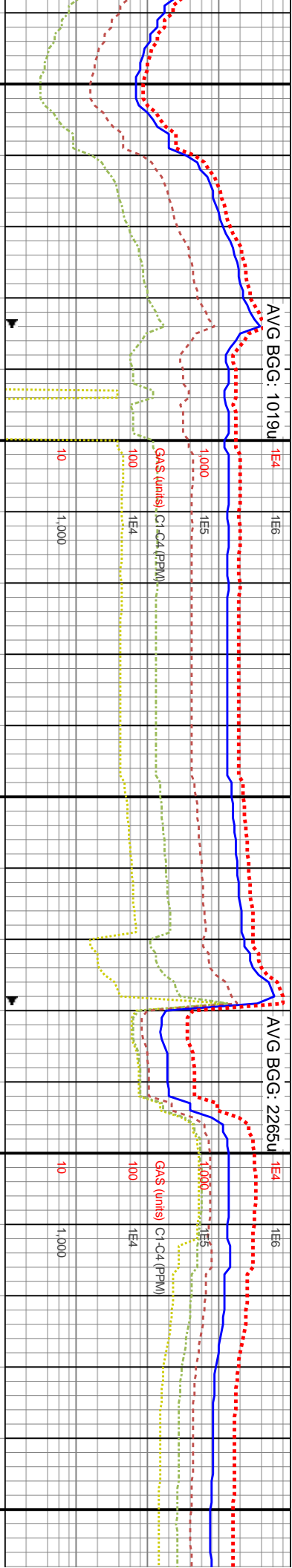
12500-12560 SS: predy gysbhn, lt gy-lt brn, com op uncongs sd, mod srtld, sb ang-sb rd, vf-f grs, gr sup cls, cons wi arg-silic cnt, com lse grs, tr pyr, dul-mod yelgn flor, mod mky cut, blshwh resdl ring		12560-12620 SS: predy med gy-gysbhn, lt brn, abnt clt-op lse grs, vf-f grs, sb ang-sb rd, mod srtld, gr sup cls, cons wi arg-silic cnt, pred non-sl calc, tr pp mic pyr, dul yelgn flor, mod mky cut, blshwh resdl ring		12620-12680 SS: predy med gy-gysbhn, lt gy, vf-f grs, sb ang-sb rd, mod srtld, op-clr grs, mod w cntld, gr sup cls wi arg-silic cnt, sl calc, tr scat/pp mic pyr, dul yelgn flor, mod mky cut, wk blshwh resdl ring		12680-12740 SS: predy m clus, mod w srtld, sb ang-si hrd-fri, gr sup wi arg-silic cr uncongs grs, tr pp mic pyr, c mod mky cut, blshwh resdl	
8300							



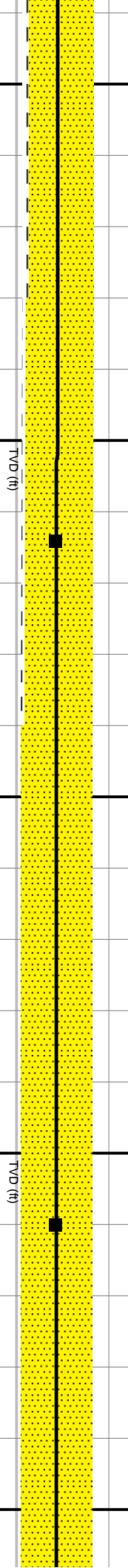




12,940 12,950 12,960 12,970 12,980 12,990 13,000 13,010 13,020 13,030 13,040 13,050 13,060 13,070 13,080 13,090 13,100 13,110 13,120 13,130 13,140 13,150 1-

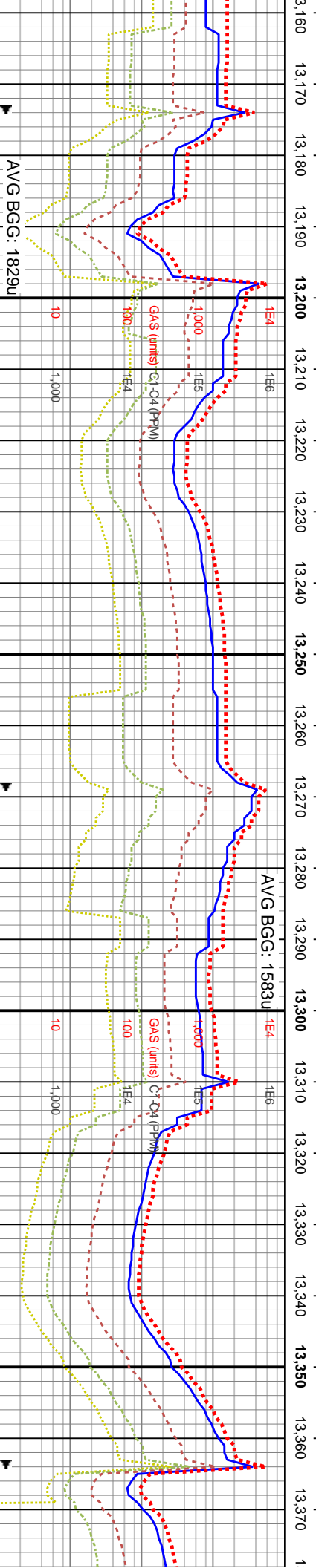
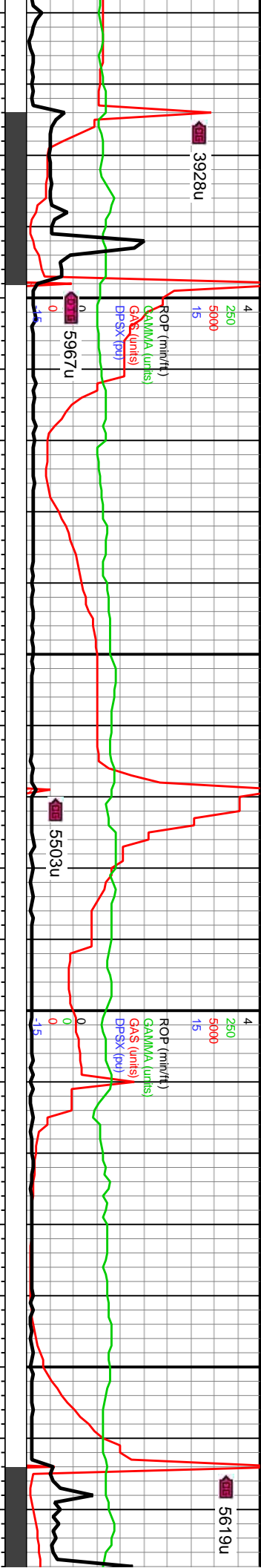


WOB: 23.7Klbs
Rotary: 50RPM
Strokes: 250SPM
Pump Rate: 667GPM
MD: 13,014'
TVD: 7,416.39'
Inclination: 88.86°
Azimuth: 89.03°
VS: 5,261.86'



12980-13040 SS: med gy-dk gysbhn, lt brn, dk gy, vf-f grs, pred sb ang-sb rd, mod strd, gr sup cls, cons wi arg/silic cnt, abnt lse grs, tr pp/imbd pyr, sl calc, dul yelgn flor, mod mky cut, bishwh resdl ring	13040-13100 SS: pred med gy-gysbhn, lt gy-med brn, op grs thru, mod strd, vf-uf grs, pred sb ang-sb rd, gr sup cls, cons wi arg/silic cnt, sme sl calc, dul-mod yelgn flor, mod mky cut, mod bishwh resdl ring	13100-13160 SS: predy med gy-gysbhn, lt gy, com cli-op lse grs, mod strd, sb ang-sb rd, vf-f grs, fir gr sup cls wi arg/silic cnt, non-sl calc, tr pp/imbd mic pyr, dul yelgn flor, mod mky cut, bishwh resdl ring
8300	8300	8300





WOB: 28.7Klbs
Rotary: 51RPM
Strokes: 250SPM
Pump Rate: 667GPM

MD: 13,204'
TVD: 7,421.34'
Inclination: 88.95°
Azimuth: 89.69°
VS: 5,443.89'

MD: 13,299.900
TVD: 7,423.01'
Inclination: 89.04°
Azimuth: 88.32°
VS: 5,535.07'

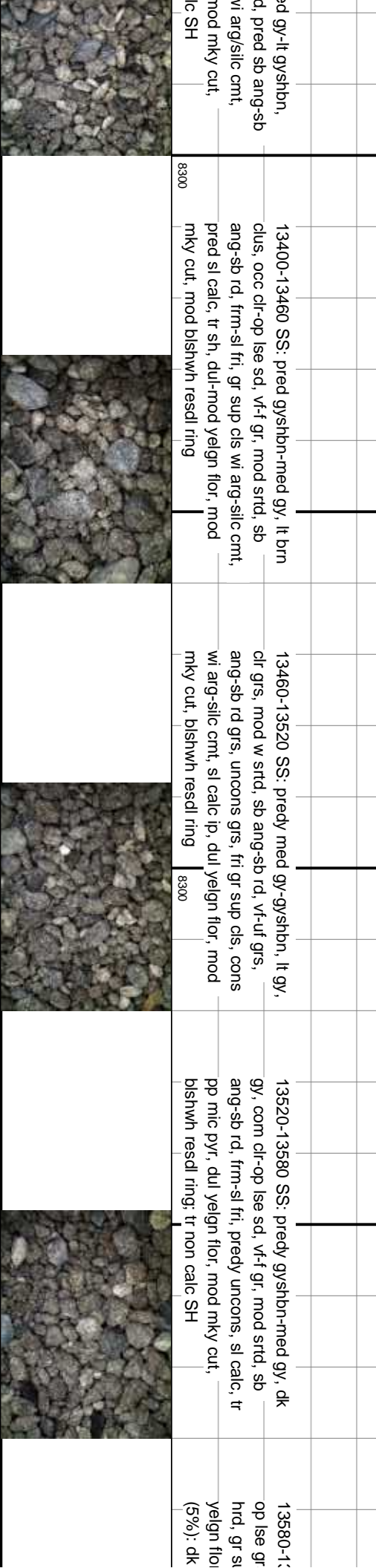
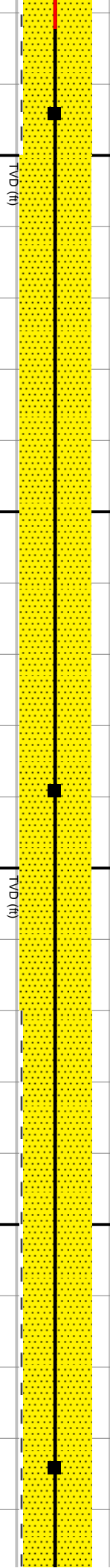
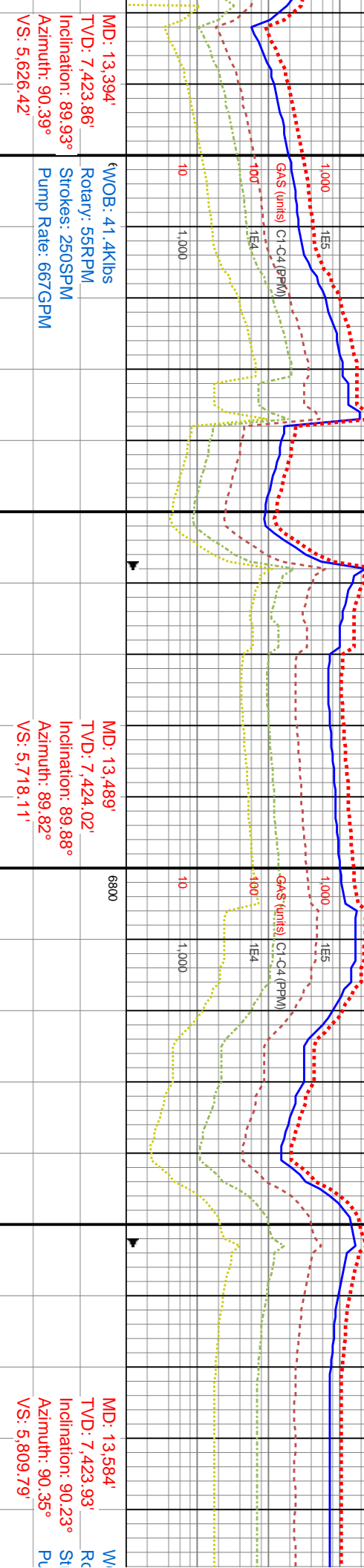
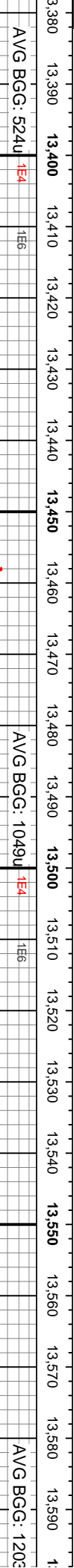
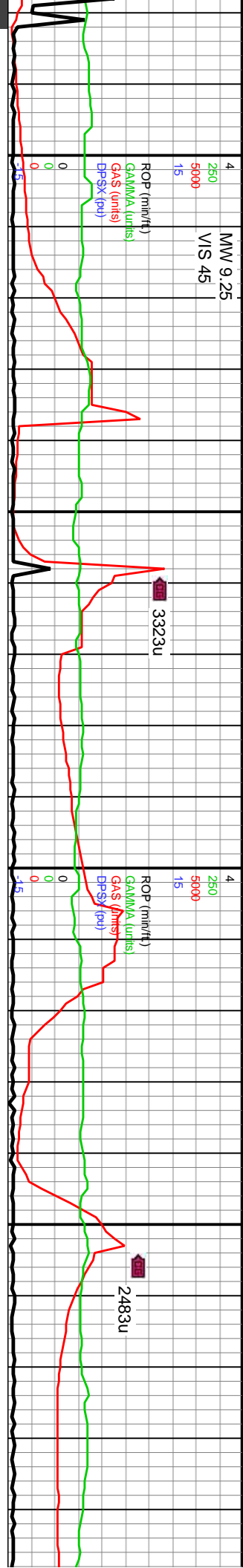
13160-13220 SS: predy med-gyshbn, lt gy, oftwht-crm, op grs thru, predy sb ang-sb rd, vf-f grs, mod std, fri gr sup cls wi arg/silic cnt, sl calc, mnr imbd/scat mic pyr, dul yelgn flor, wk-mod mky cut, bishwh resdl ring

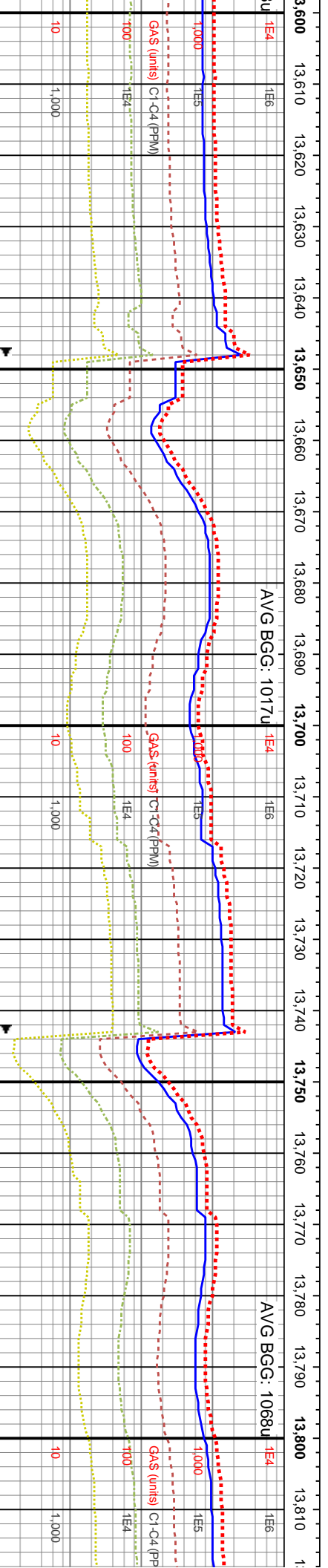
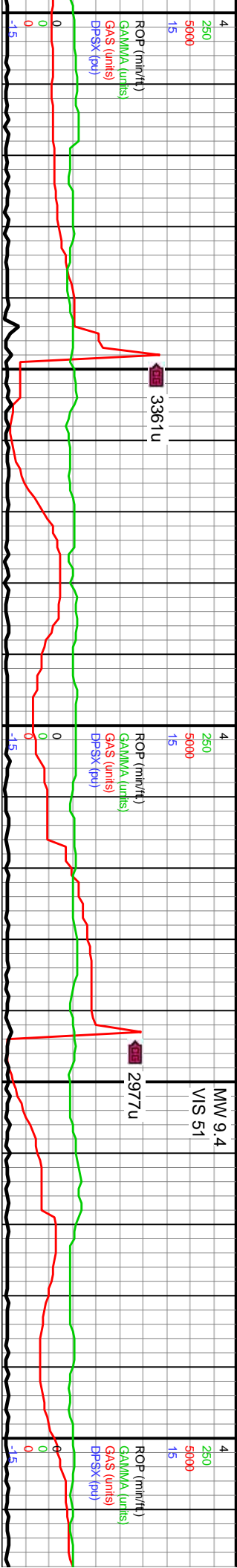
13220-13280 SS: predy gyshbn-lt gy, med gy, clt-op grs, sb ang-sb rd, vf-f gr, mod std, sl calc, sl frm, gr sup cls wi arg-silic cnt, dul yelgn flor, mod mky cut, mod bishwh resdl ring; SH (5%); dk gy, pfty, silty tex, non calc

13280-13340 SS (90%): gyshbn, lt gy-oftwht clus, vf-f gr, sb ang-sb rd, mod std, frm, gr sup cls wi arg-silic cnt, non calc, sl calc, dul yelgn flor, mod mky cut, bishwh resdl ring; SH (10%); dk gy, frm, pfty, silty tex, non calc

13340-13400 SS: predy me





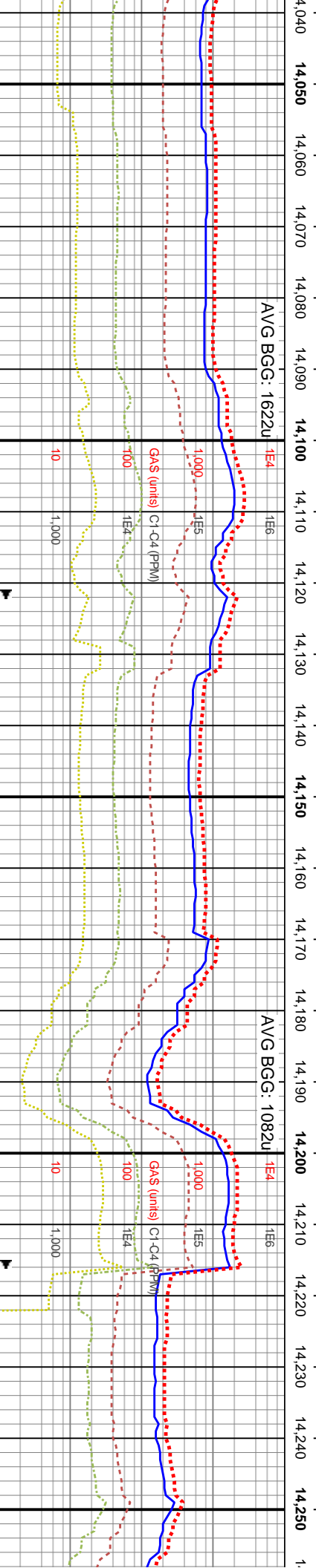
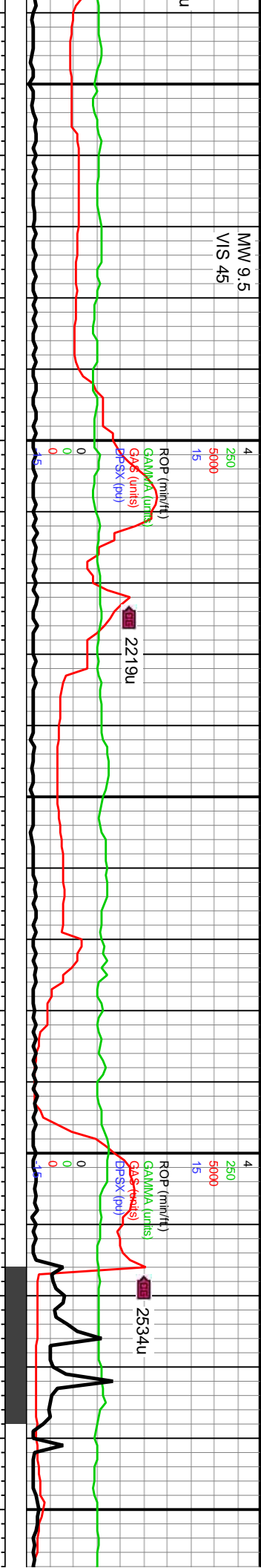


OB: 42.4Klbs Rotary: 55RPM Strokes: 250SPM Pump Rate: 665GPM	MD: 13.678' TVD: 7,423.8 Inclination: 89.93° Azimuth: 90.66° VS: 5,900.69'	6800
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13640-13700 SS: predy med gy-gyshbn, lt gy, sb ang-sb rd, vf-uf grs, mod strd, abnt lse op grs thru, fri gr sup cls wi arg/silic cnt, sl calc ip, dul-mod yelgn flor, mod mky cut, mod blshwn resd ring	13700-13760 SS: predy gyshbn, med gy-lt brn, mod strd, frm-sl fri, sb ang-sb rd, vf-f grs, gr sup cls wi arg/silic cnt non-sl calc, tr mic pyr, dul yelgn flor, wk mky cut, blshwn resd ring, tr non calc SH	13760-13820 SS: predy med gy-gyshbn, lt gy mod strd, vf-f grs, sb ang-sb rd, op grs thru, fri-sl hrd, gr sup cls wi arg/silic cnt, sl calc ip, tr imbd mic pyr, dul yelgn flor, mod mky cut, blshwn resd ring, tr dk gy non calc SH
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MW 9.5
VIS 45

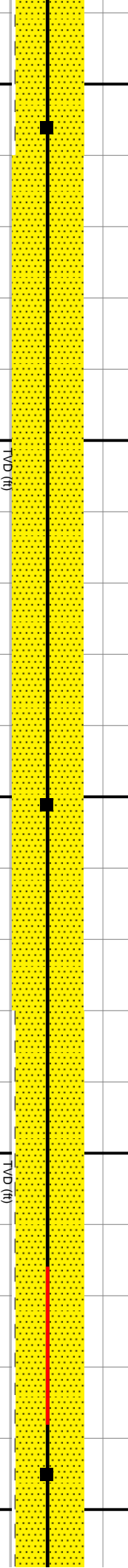


MD: 14,056'
TVD: 7,427.29'
Inclination: 89.75°
Azimuth: 90.62°
VS: 6,266.14'

MD: 14,151'
TVD: 7,428.04'
Inclination: 89.35°
Azimuth: 88.85°
VS: 6,357.66'

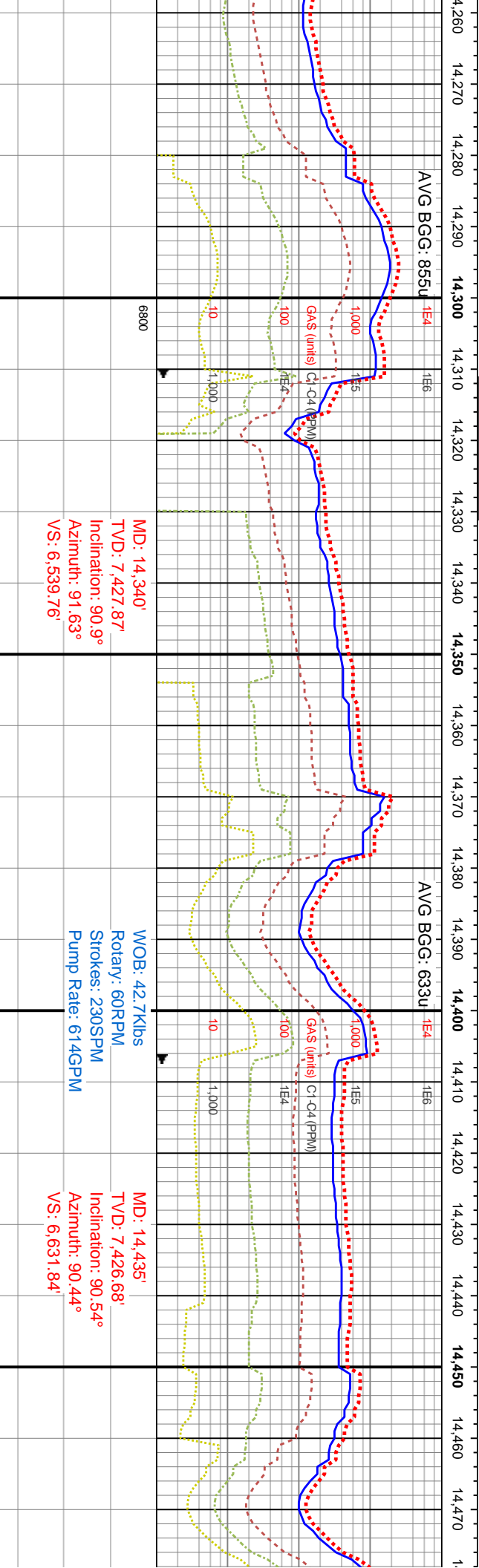
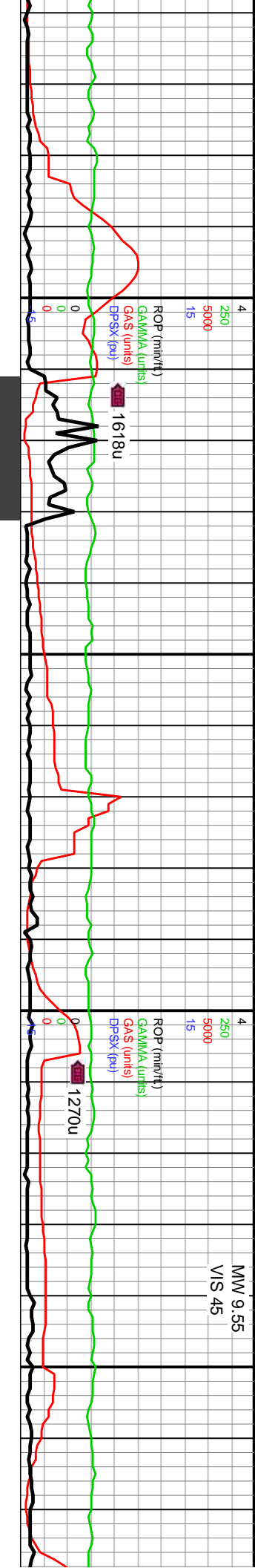
WOB: 43.5Klbs
Rotary: 50RPM
Strokes: 2.440SPM
Pump Rate: 642GPM

MD: 14,245'
TVD: 7,428.59'
Inclination: 89.97°
Azimuth: 89.29°
VS: 6,447.93'

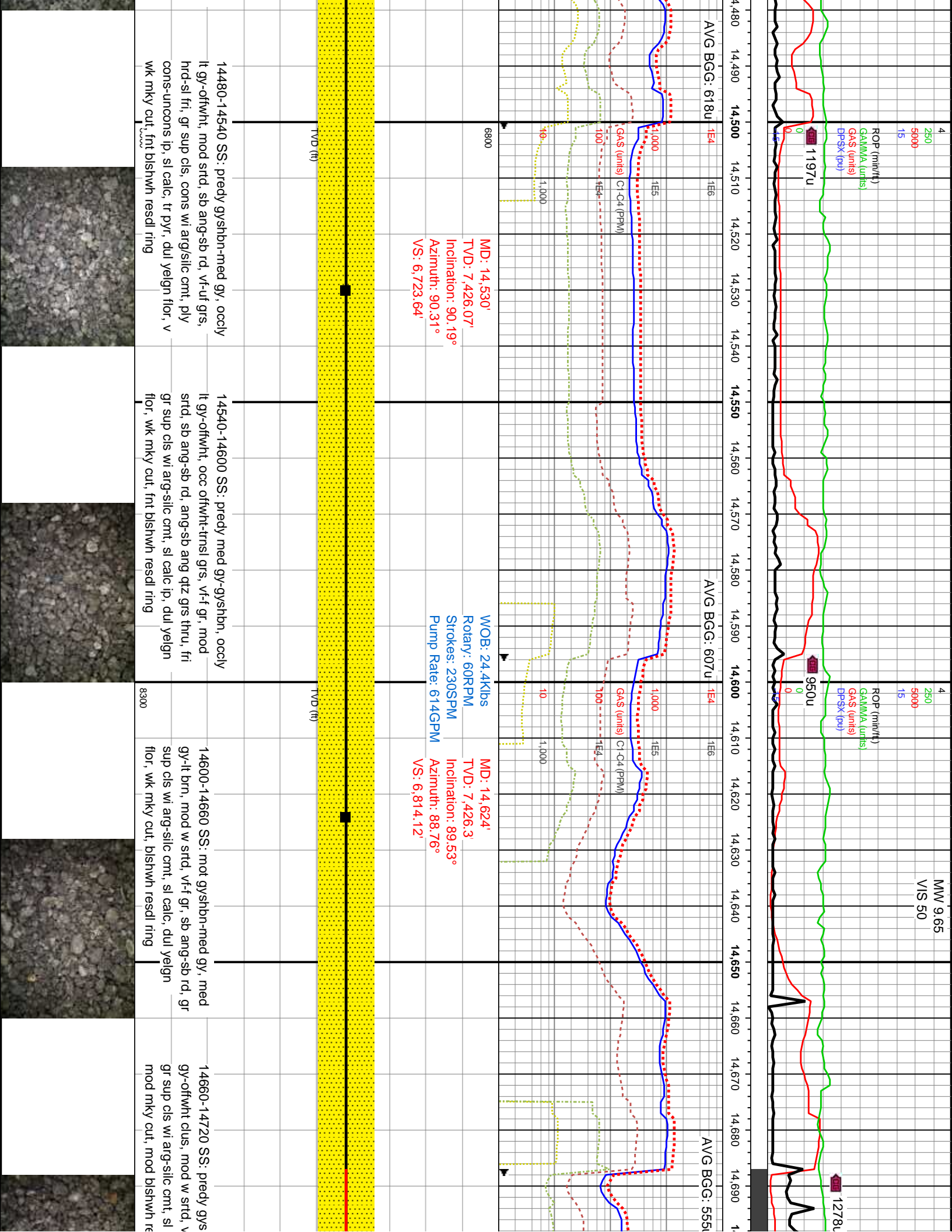


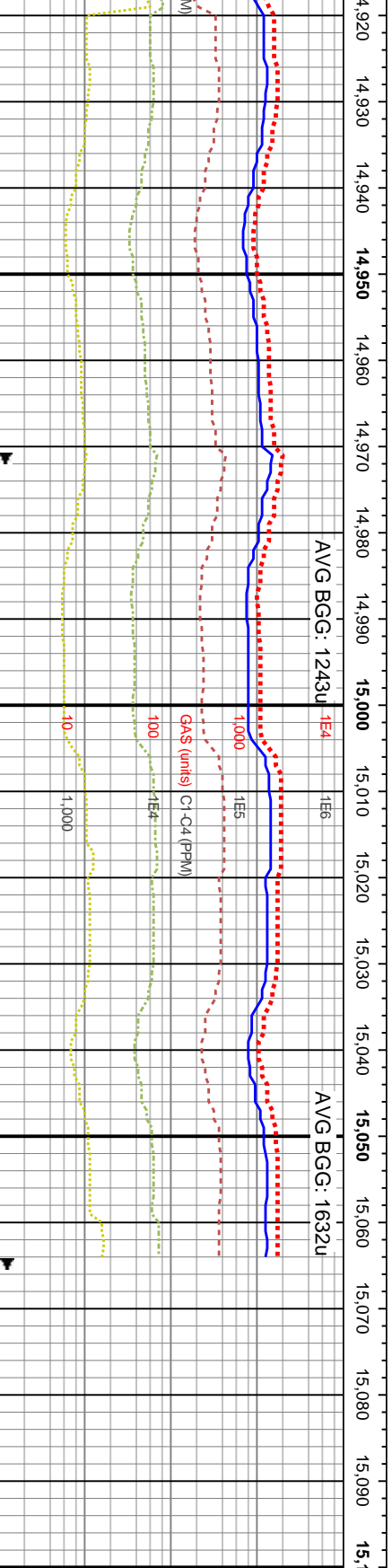
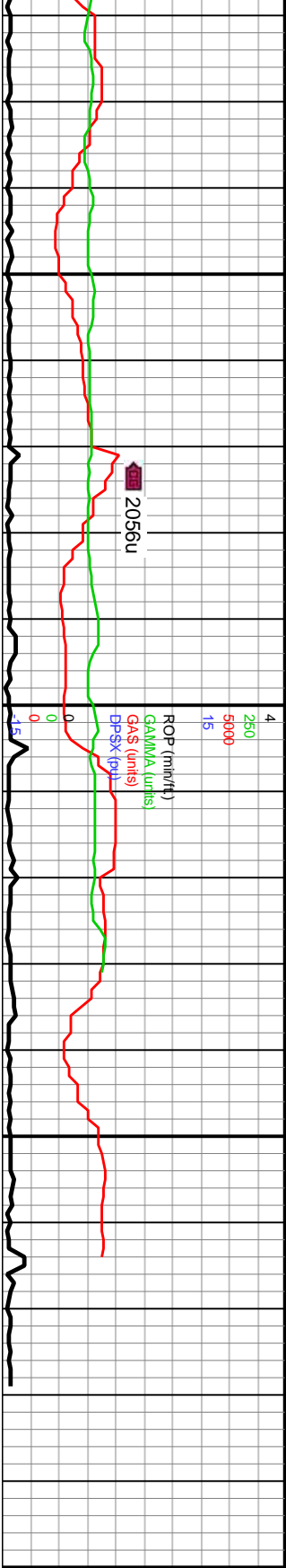
shbn, med gy-ilt ang-sb rd, vf-f grs, on-sl calc, dul shwh resd ring; tr	14060-14120 SS: predy med gy-gyshbn, lt brn, sb ang-sb rd, vf-uf grs, com lse op grs thru, mod strd, fri-sl frm, gr sup cls wi arg/silic cmt, sl calc ip, dul-mod yelgn flor, mod mky cut, mod blshwh resd ring	14120-14180 SS: predy gy-med gy, sme dk gyshbn, lse op grs thru, vf-f grs, mod strd, sb ang-sb rd, sl frm, gr sup cls wi arg/silic cmt, sl calc, tr scatpp pyr, dul yelgn flor, mod mky cut, blshwh resd ring	14180-14240 SS: predy gysbhn, med gy-ilt brn, abnt crm clus, mod strd, frm-sl fri, sb ang-sb rd, vf-f grs, gr sup cls wi arg/silic cmt, non-sl calc, dul yelgn flor, mod mky cut, blshwh resd ring; tr non calc SH	14240-14250 SS: predy gysbhn, med gy-ilt brn, abnt crm clus, mod strd, frm-sl fri, sb ang-sb rd, vf-f grs, gr sup cls wi arg/silic cmt, non-sl calc, dul yelgn flor, mod mky cut, blshwh resd ring; tr non calc SH
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14300 SS: predy gyshbn, occly med i, abnt crm-offwht clus, mod strd, i, sb ang-sb rd, vf-f grs, gr sup cls wi cmt, non-sl calc, dul yelgn flor, v wk fnt bishwn resdl ring; tr non calc SH	14300-14360 SS: predy gyshbn-dk gy, med gy-ilt brn, crm-offwht clus, mod strd, frm, sb ang-sb rd, vf-f grs, gr sup cls wi arg/silc cmt, ply cons-uncons ip, non-sl calc, dul yelgn flor, wk mky cut, bishwn resdl ring; tr non calc SH	14360-14420 SS: predy gyshbn-med gy, occ oftwht clus, oftwht-trnsl grs thru, vf-f grs, predy sb ang-sb rd, mod strd, abnt lse qtz grs, predy gr sup cls, predy ply cons, occly mod w cons wi arg/silc cmt, mod yelgn flor, v wk mky cut, fnt bishwn resdl ring	14420-14480 SS: predy gyshbn-med gy, abnt oftwht clus, mod strd, vf-uf grs, ang-sb ang, sb rd, sl hrd-frm, ply cons-uncons ip, abnt lse qtz grs, gr sup cls wi arg/silc cmt, occ calc cmt, mod-v calc, dul yelgn flor, v wk mky cut, fnt bishwn resdl ring
8300			
TVD (ft)	TVD (ft)	TVD (ft)	TVD (ft)





WOB: 31.5Klbs 6800 MD: 15,018'
Rotary: 50RPM TVD: 7,432.15'
Strokes: 230SPM Inclination: 88.69°
Pump Rate: 613GPM Azimuth: 92.11°
VS: 7,196.82'

MD: 15,082'
TVD: 7,433.62'
Inclination: 88.69°
Azimuth: 92.11°
VS: 7,259.12'
** Projection to Bit **

14960 SS: predy med gy-gyshbn, lt
gy-ofwht-op grs thru, p-mod strd, sb
d, v-f gr, sb ang qtz grs thru, fri gr sup
ons wi arg-silic cnt, sl calc ip, dul
, wk mky cut, fnt blshwh resd ring

14960-15020 SS: predy med gy-gyshbn, lt
gy-ofwht, v-f grs, sb ang-sb rd, op grs thru,
mod strd, sb ang-sb rd qtz grs thru, fri gr sup
cls, cons wi arg-silic cnt, dul yelgn flor, wk
mky cut, fnt blshwh resd ring
3300

