



Empirica

Scale: 5" / 100'
Measured Depth Log

Well Name Fairview 5

Location Sec 5, T2N, R68W

State CO

Country USA

API Number 05-123-41521

Geographic Region DJ Basin

Spud Date 12/7/2015

Surface Coordinates Lat: 40° 9' 56.7432" N
Long: 105° 2' 6.2412" W

Bottom Hole Coordinates Lat: 40° 9' 44.4735" N
Long: 105° 0' 35.4860" W

Ground Elevation 4,948'

Logged Interval 6,800' To 14,980' MD

Formation Codell

Type of Drilling Fluid Invert

K.B. Elevation 4,963'

Total Depth 14,980' MD

County Weld

Rig Number Savannah 802

Field Wattenberg

Drilling Completed 1/17/2016

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: 01-15-16
End: 01-17-16

Services Provided 2-man logging

Logger Names Mark Gross / Henry F

Address Empirica, LLC.
6360 W Sam Houston
Suite 100
Houston, TX 77041

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

PELECYPOD

PELLET

PISOLUTE

BRACHIOPOD

CEPHALOPOD

BRYOZOA

CORAL

CRINOID

ECHINOID

FISH

FORAMINIFERA

ARGILLACEOUS

ARGILLITE GRAIN

B BENTONITE

BITUMENOUS SUBSTANCE

BRECCIA FRAGMENTS

CALCAREOUS

CARBONACEOUS FLAKES

CHTDK

CHLT - COAL - THIN BEDS

DOLOMITIC

FELDSPAR

FERRUGINOUS PELLET

FERRUGINOUS

GLAUCONITE

GYPSIFEROUS

HEAVY MINERAL

KAOLIN

MARLSTONE

MINERAL CRYSTALS

NODULES

PHOSPHATE PELLETS

PYRITE

SALT CAST

SANDY

SILTY

TUFFACEOUS

STRINGER

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 S

ORGANIC

PINPOINT

DEAD

VUGGY

EVEN

QUESTIONABLE

SPOTTED STAINING

BIT

CASING

REVE

OVER

OIL 1

NOR

MUDSTONE

GAS

Engineering

POROSITY

E EARTHY

FENESTRAL

F FRACTURE

INTERCRYSTALLINE

INTEROOLITIC

MOLDIC

FAULT

WIRE

CORE - LOST

SUN

SLIDE

SIDE

CONNECTION (LEFT)

CONNECTION (RIGHT)

SIDE

CONNECTION GAS

CORE - RECOVERED

WIRE

WIRE

Oil Show

ORGANIC

PINPOINT

DEAD

VUGGY

EVEN

QUESTIONABLE

SPOTTED STAINING

BIT

CASING

REVE

OVER

OIL 1

NOR

MUDSTONE

GAS

Symbols

FORMATION TOP

L LITHOGRAPHIC

SHOW

Rounding

 MICROCLN

MIN DEPTH

 ANGULAR

 MUDSTONE

WALL FAULT

 ROUNDED

 PACKSTONE

SHOW

 SUBANG

 WACKESTONE

RETURNED STRATA

 SUBRND

Sorting

ERSE FAULT

Textures

WALL CORE (LEFT)


 MODERATE

WALL CORE (RIGHT)  BOUNDSTONE

 POOR

 CHALKY

 WELL

 CRYPTOXLN


P GAS

 EARTHY

LINE TESTED - LEFT

 FINELYXLN

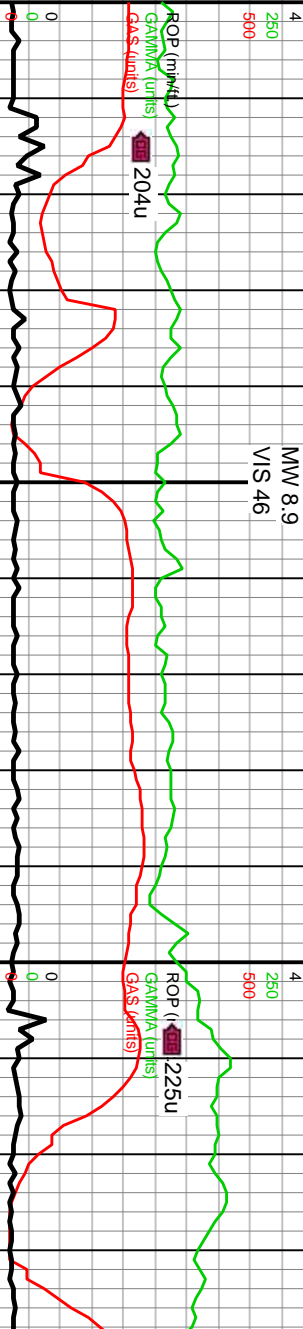
LINE TESTED - RT

 GRAINSTONE

ROP
GAMMA
GAS

Extraction OG
Weld County, CO
Spud Date: 12-7-15
Surface Casing @ 1,542'
2-man logging began: 1-15-16
1% Methane = 100 Units
Depths Correspond to Driller's Pipe Tally

Linear Scale



MW 8.9
VIS 46

Slide/Rotate

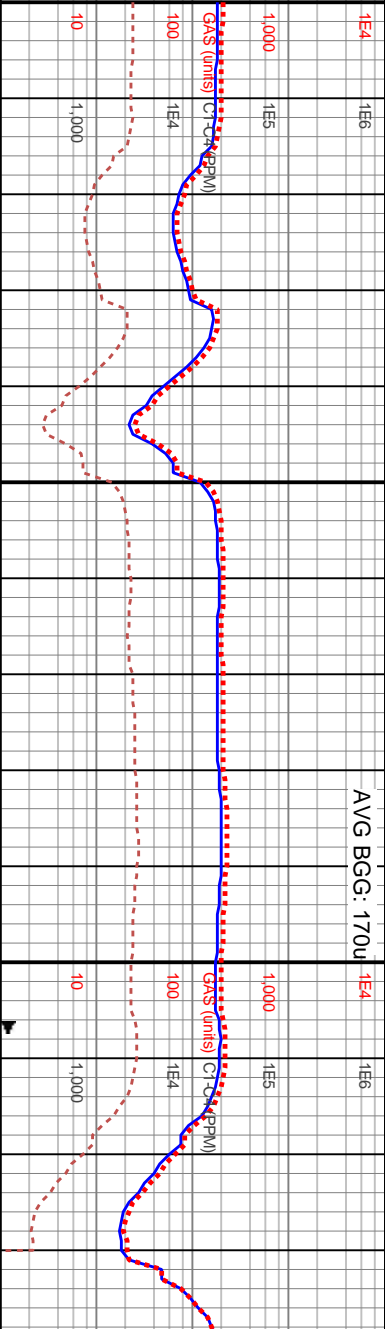
Depth Labels



Total Gas & Chromatograph

GAS
C1
C2
C3
C4

Logarithmic Scale



Well Bore
TVD

6-B34-Z
1,542'
: 13,479'
7 hrs
376.56 '/hr

MD: 7,140'
TVD: 6,883.83'
Inclination: 15.6°
Azimuth: 105.55°
VS: -371.19'

WOB: 42.7Klbs
Rotary: 0RPM
Strokes: 226SPM
Pump Rate: 604GPM

MD: 7,235'
TVD: 6,972.7'
Inclination: 28°
Azimuth: 105°
VS: -338.35'

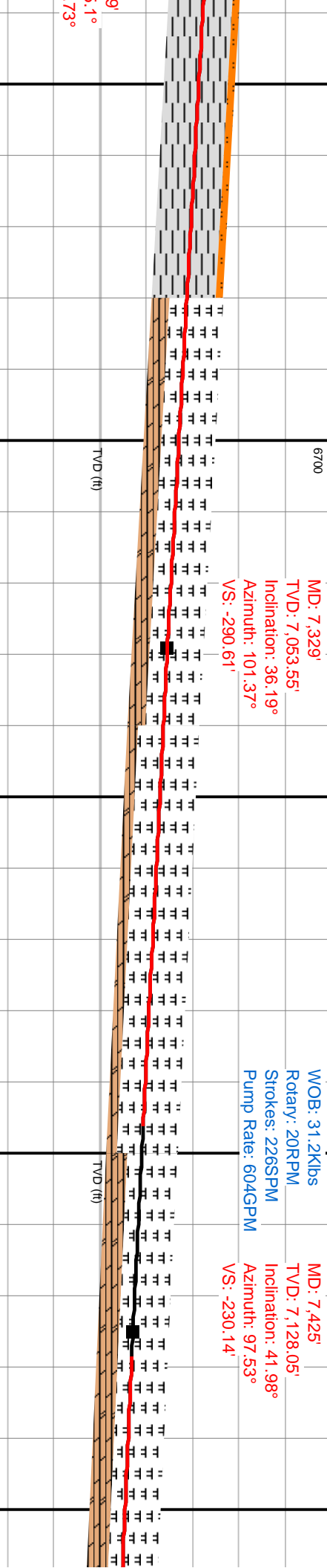
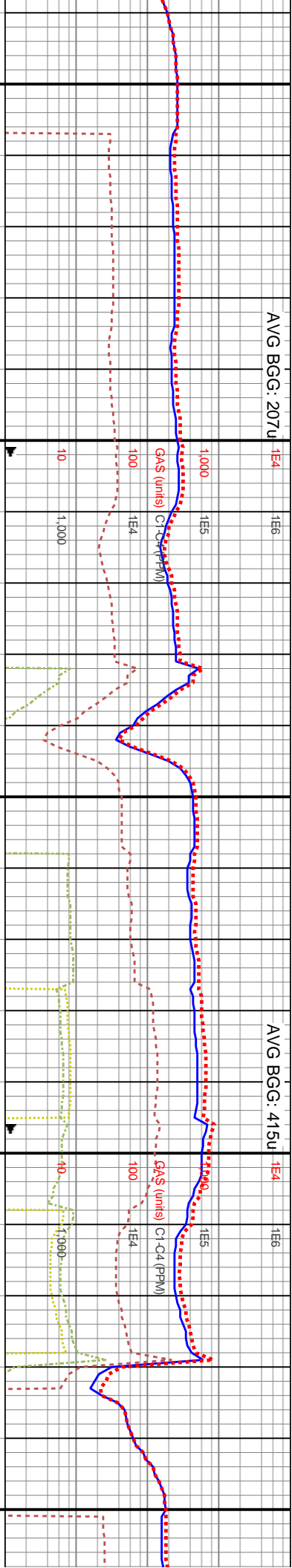
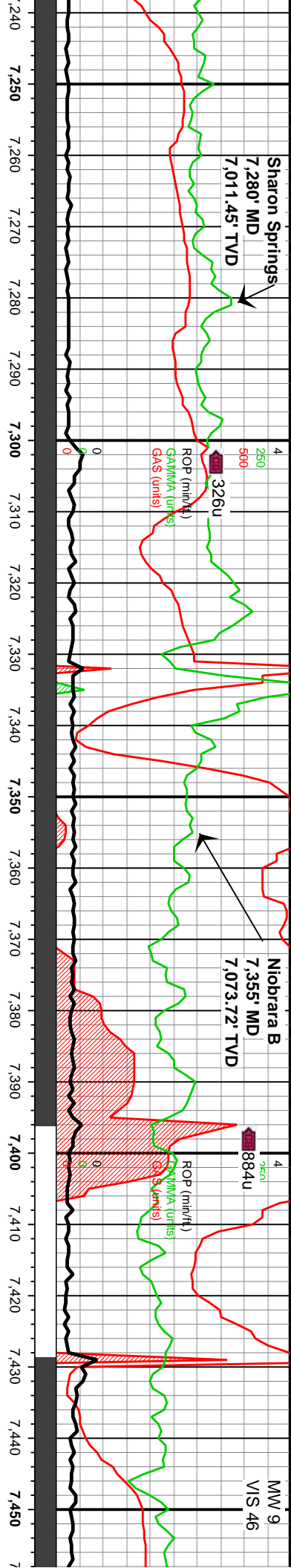
7100-7160 SH (90%): dk gy-med gy, sme blk, blk-y-pity, frm-sl hrd, sl calc, sm tex; SLTST (10%): pred med gy-sl dk gy, frm-sl hrd, sb blk-y-pity, sl calc, pred rgh tex, tr micnica

7160-7220 SH (80%): dk gy-med gy, frm-v frm, sl fri, sb tab-pity, sm-sily tex, pred non calc; SLTST (20%): med gy-gy-shbn, v arg, pred non calc; sily-grty tex-7700

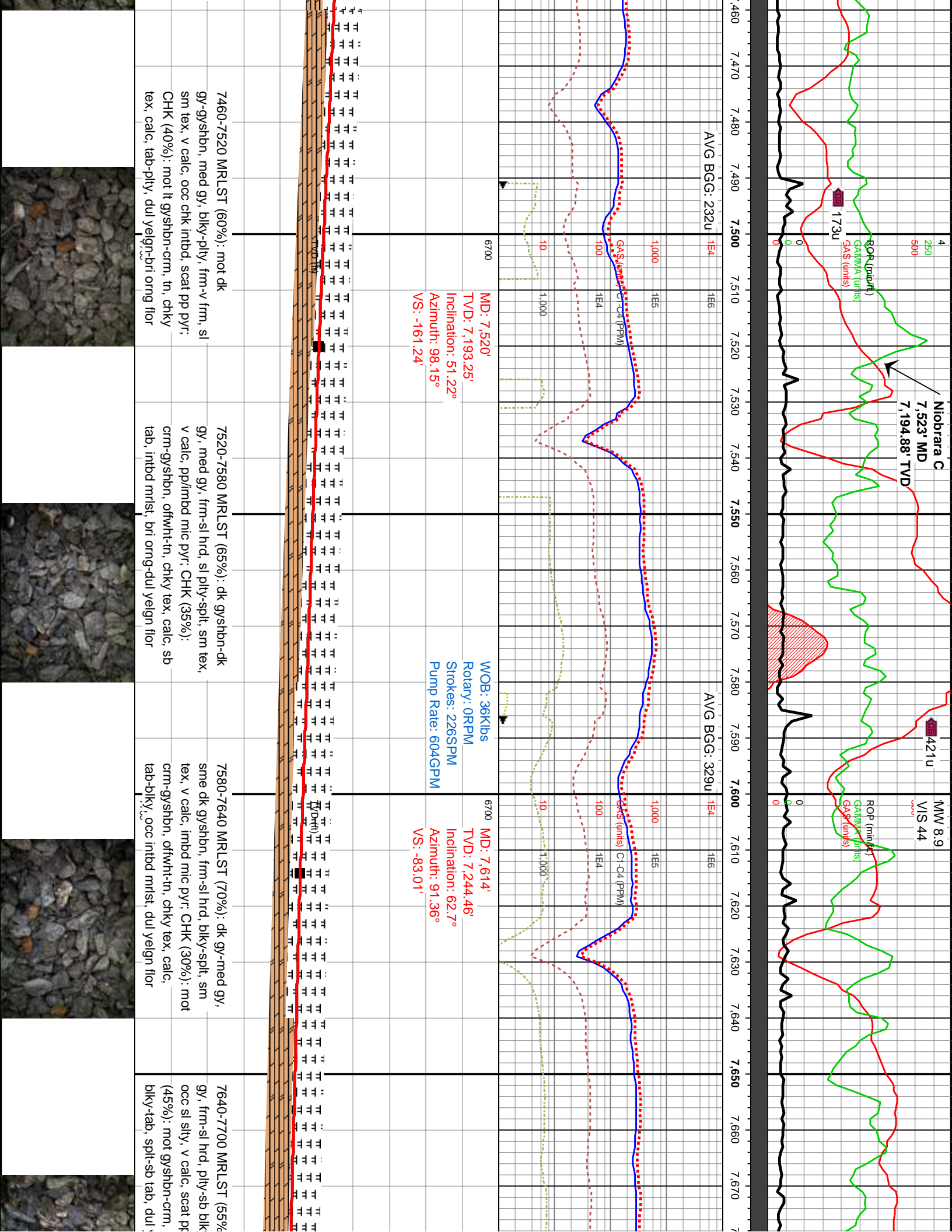
7220- blk-y-f- (10%): blk-y-f-

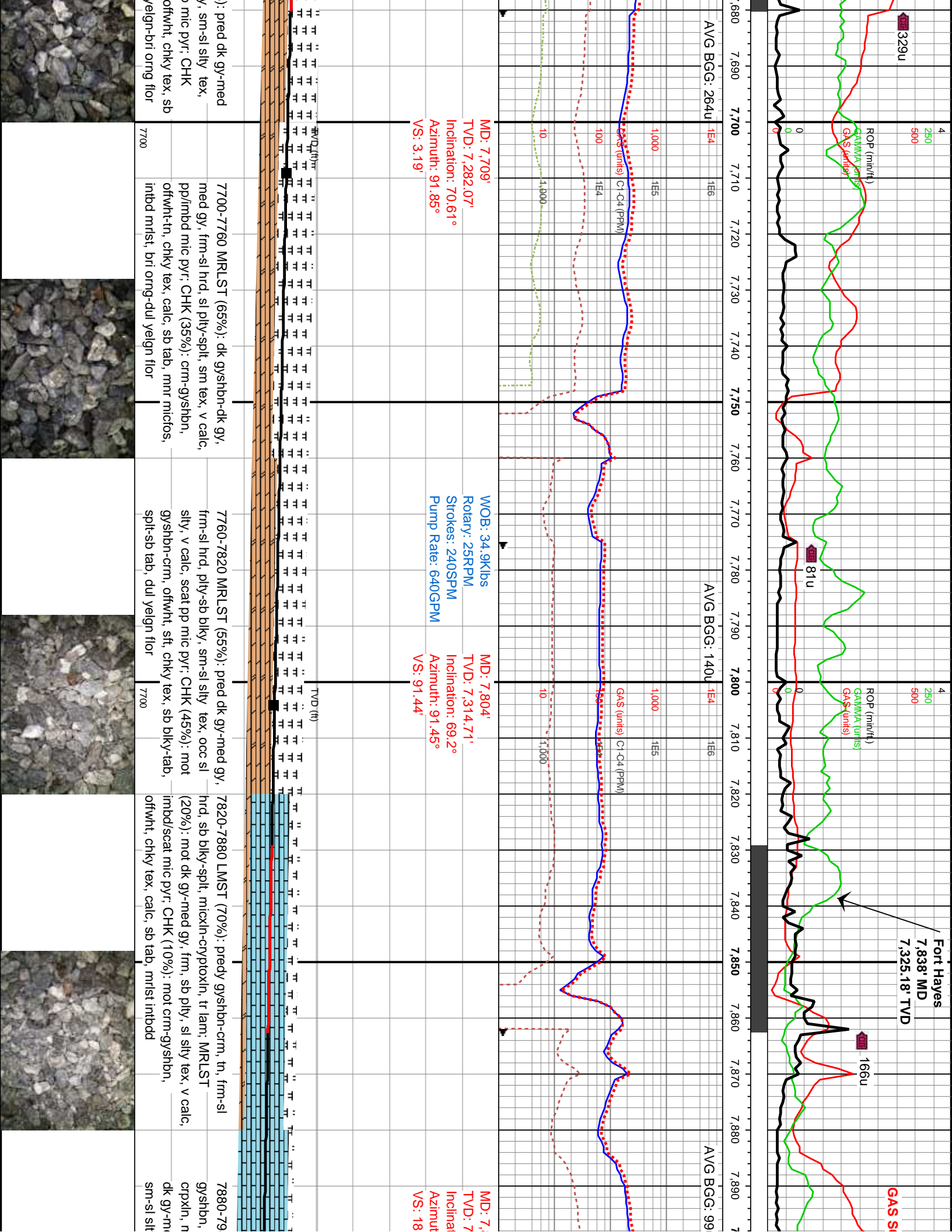
Images





7280-7340 MRLST (75%): dk gy-v dk gy, med gy-gyshbn, frm-sl hrd, pily-dlky, sm-sl sily tex, v calc, tr f lam, scat pyrc nod/free mic pyr; CHK (25%): pred lt gysbhn-crm, tn, chky tex, calc, split-sb tab, bri omg flor	7340-7400 MRLST (85%): predy dk gy-dk gysbhn, frm-v frm, pred sb pily, sl sily tex, v calc, mmr micos, scat pyrc nod; CHK (15%): mot gysbhn-crm, chky tex, calc, sb split-pily, mlst intbdd, bri omg-dul yelgn flor	7400-7460 MRLST (70%): predy dk gy-dk gysbhn, frm-v frm, pred sb pily, sl sily tex, v calc, mmr micos, scat pyrc nod; CHK (30%): mot gysbhn-crm, chky tex, calc, sb split-pily, mlst intbdd, bri omg-dul yelgn flor
7280 SH (90%): med gy, sme dk gy, pily, frm-sl hrd, sl calc, sm tex; SLTST (10%): pred med gy-sl dk gy, frm-sl hrd, sb pily, sl calc, pred igh tex, tr micmica		





MW 8.8+ 1/16" VIS 46

MW 8.8+ VIS 45

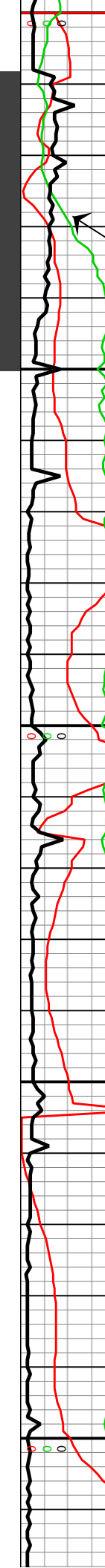
Codeil 7,928' MD 7,350.05' TVD

SCALE CHANGE

ROP (min/ft)
GAMMA (units)
GAS (units)

ROP (min/ft)
GAMMA (units)
GAS (units)

ROP (min/ft)
GAMMA (units)
GAS (units)

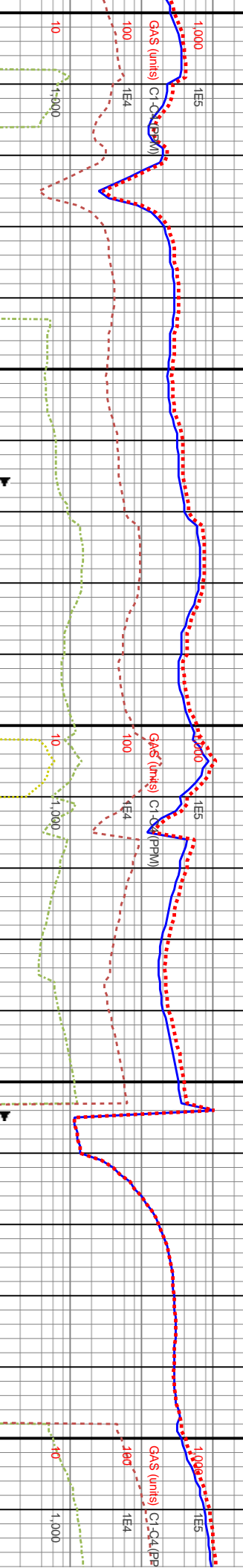


1E4 1E6

AVG BGG: 379u

1E4 1E6

AVG BGG: 329u



899'00
,343.98'
ion: 74.9°
h: 90.84°
0.68'

MD: 7,994'
TVD: 7,363.87'
Inclination: 80.91°
Azimuth: 92.25°
VS: 272.5'

WOB: 28.4Klbs
Rotary: 25RPM
Strokes: 240SPM
Pump Rate: 642GPM

MD: 8,090'
TVD: 7,373.97'
Inclination: 87.01°
Azimuth: 91.54°
VS: 366.95'

TVD (ft)

8000-8060 SS: mot med gy-gyshbn, lt gy, trnsl grs thru, mod strd, sb ang-sb rd, vf-f grs, gr sup cls wi arg-silic cnt, sl calc, dul yeign flr, wk mky cut, bishwh resdl ring; SH (5%); dk gy, frm, blkly, rgh tex, slty, tr f lam, non calc

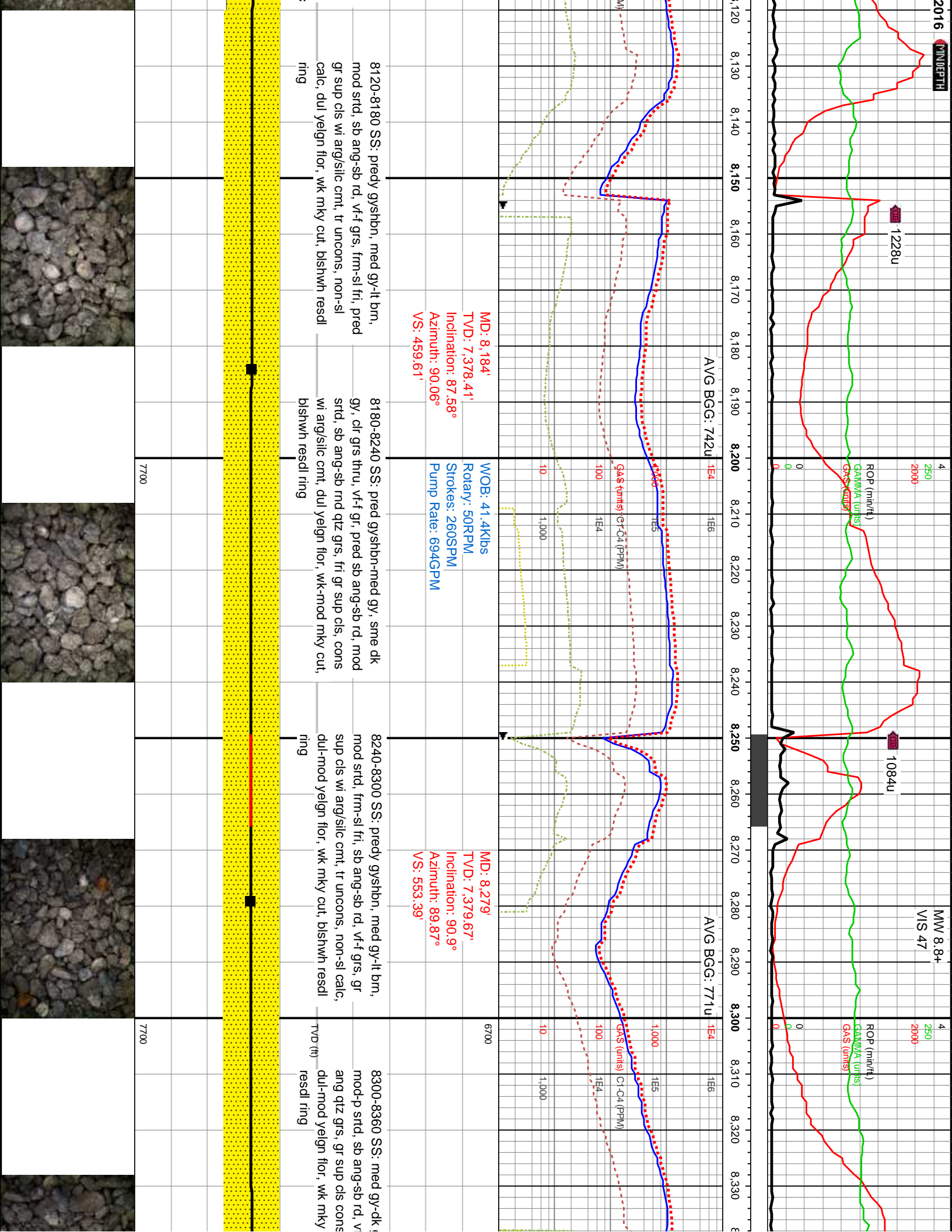
TVD (ft)

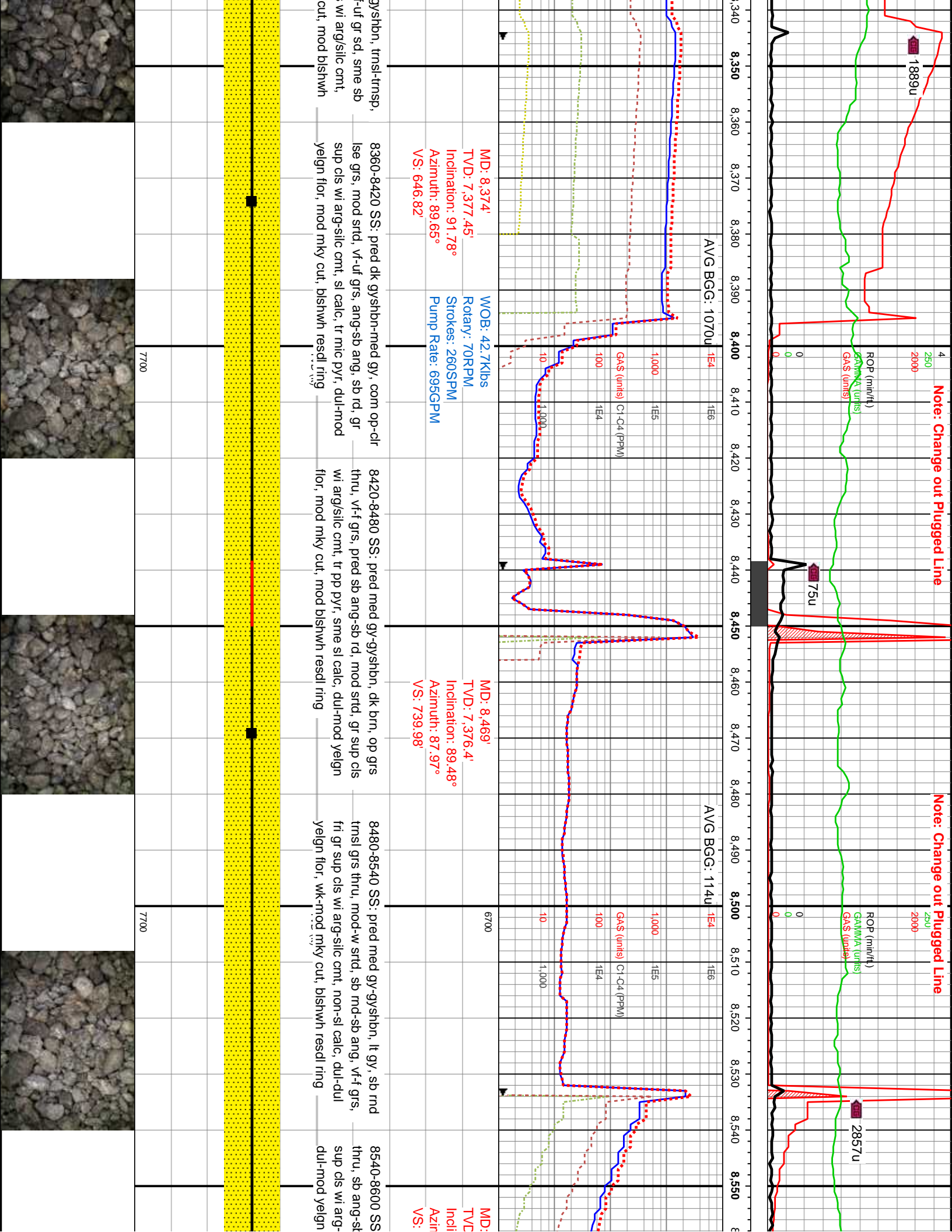
8060-8120 SS (90%): predy med gy-gyshbn, mod w strd, vf-uf grs, sb ang-sb rd, gr sup cls wi arg/silic cnt, sme sl calc, dul yeign flr, wk-mod mky cut, bishwh resdl ring; SH (5%) dk gy, frm-sl hrd, blkly-sb blkly, slty, sl-non calc

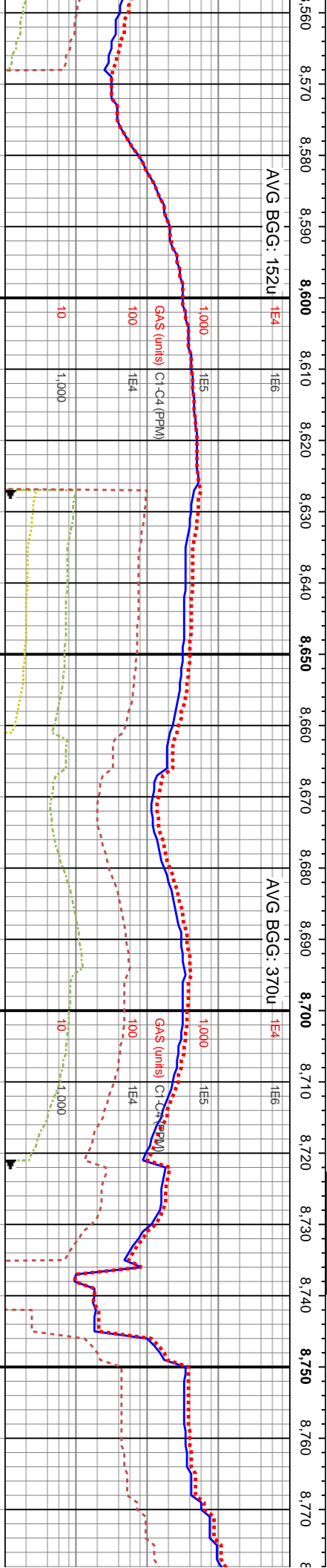
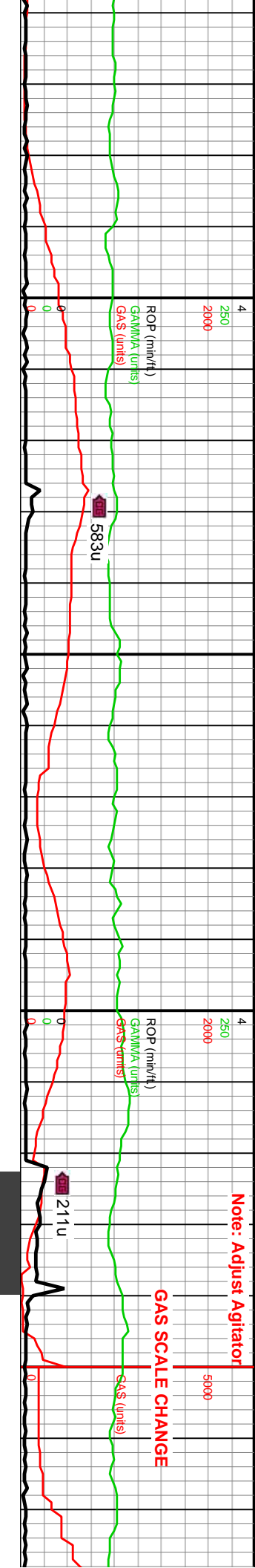
740 LS (90%): cm-lt gy, tn ip, occ mot frm-sl hrd, sb blkly-pty, sme spl, undst, chky tex, v calc, MRLST (10%): ed gy, frm-sl hrd, pty-sb blkly, lam ip, y tex, imbdd wi ls, tr scat mic pyr

7940-8000 SS: predy gy-med gy, sme dk gy brn, mod strd, predy sb ang-sb rd vf-uf grs, sb ang-sb rd grs, uncongs grs-fri gr sup cls cons wi arg/silic cnt, sl calc, dul-bri yeign flr, v wk mky cut, bishwh resdl ring; tr LS









8,564' WOB: 44Klbs⁰
Rotary: 55RPM
Inclination: 89.62°
Azimuth: 88.06°
Pump Rate: 695GPM

MD: 8,659'
TVD: 7,377.71'
Inclination: 89.7°
Azimuth: 86.74°
VS: 925.55'

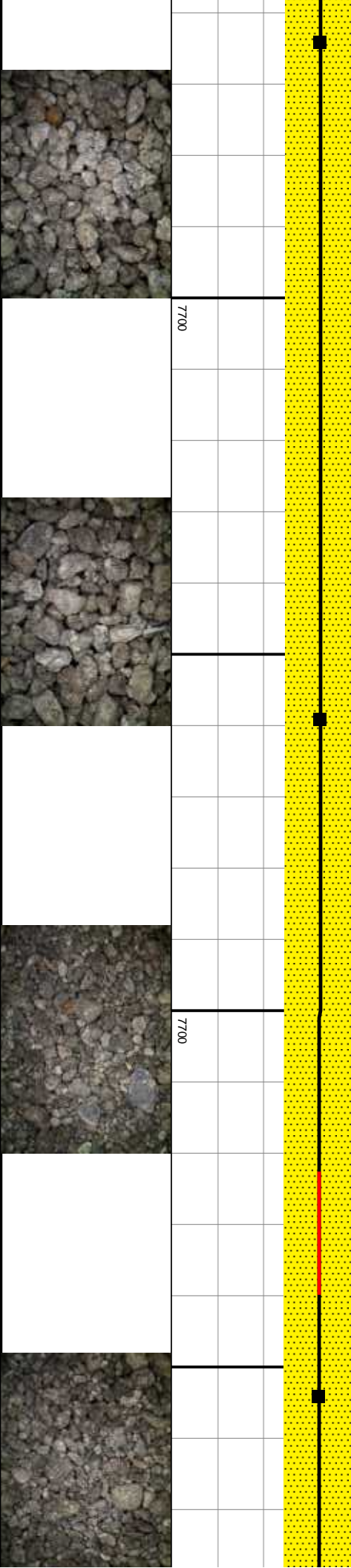
MD: 8,754'
TVD: 7,379.45'
Inclination: 88.2°
Azimuth: 89.87°
VS: 1,018.52'

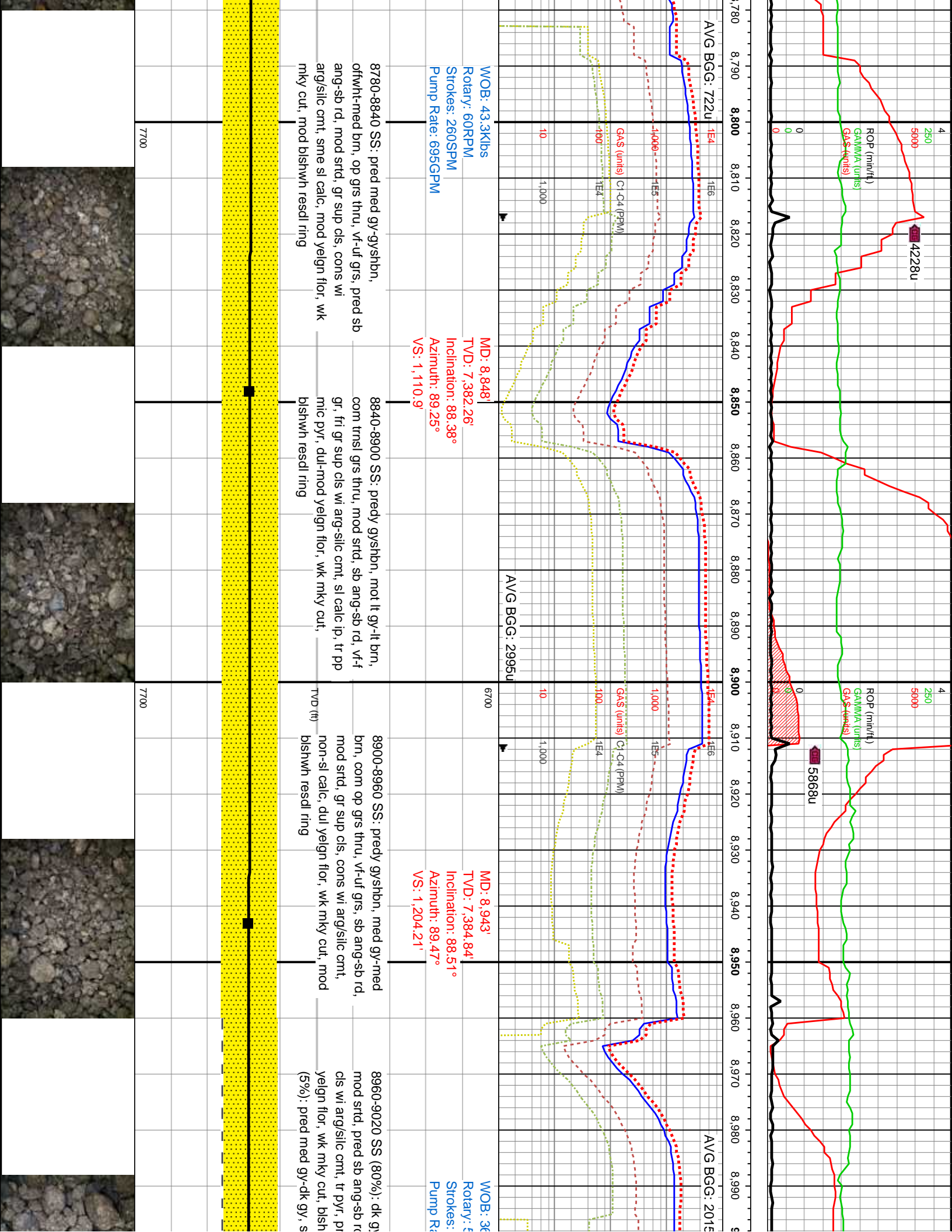
predy gysbhn-med gy, com trnsj grs
rd, mod strd, vf-uf grs, fri-sl frm, gr
slic cnt, tr pp mic pyr, sl calc ip,
flor, wk mky cut, bishwh resd ring

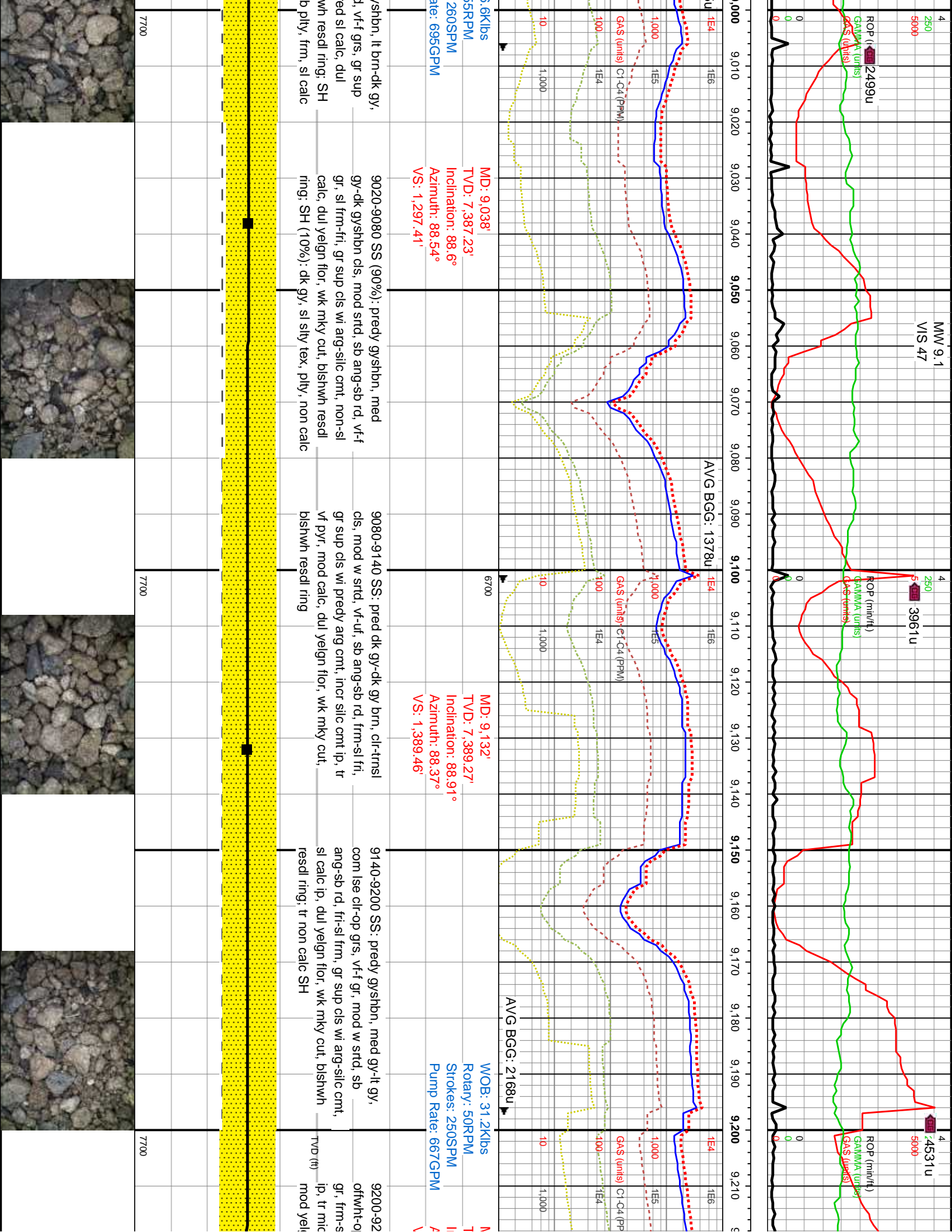
8600-8660 S.S.: predy gysbhn, med gy-dk gy brn,
vf-f grs, mod strd, pred sb ang-sb rd, fri gr sup cts,
cons wi arg/slic cnt, non-sl calc, tr pp mic pyr, dul
ornng flor, mod mky cut, mod bishwh resd ring

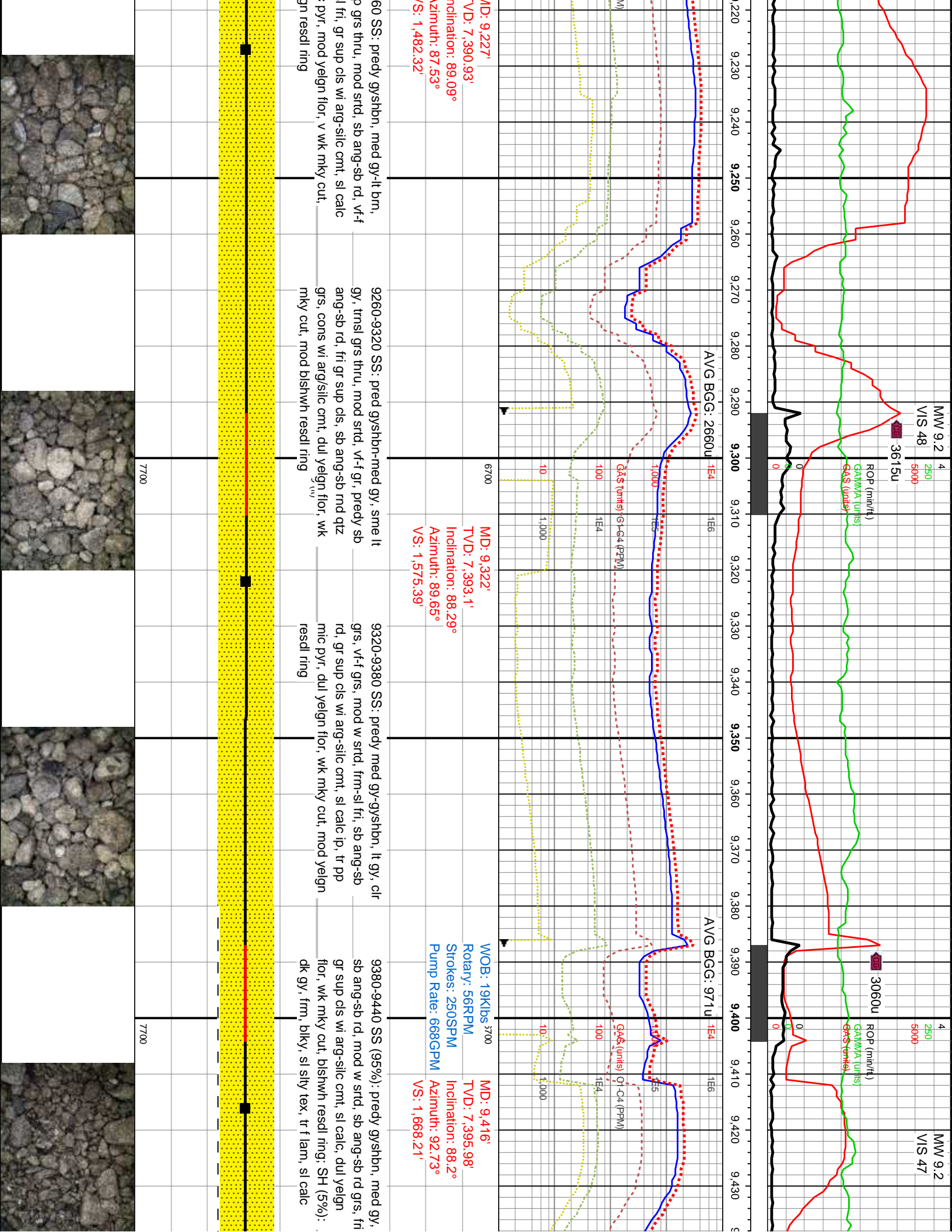
8660-8720 S.S.: pred gy-med gy, sme dk gy brn,
op grs thru, pred sb ang-sb rd, vf-uf grs, mod
strd, uncons grs-fri gr sup cts cons wi arg/slic
cnt, sl calc, tr dul yeign flor, wk-mod mky cut,
mod bishwh resd ring

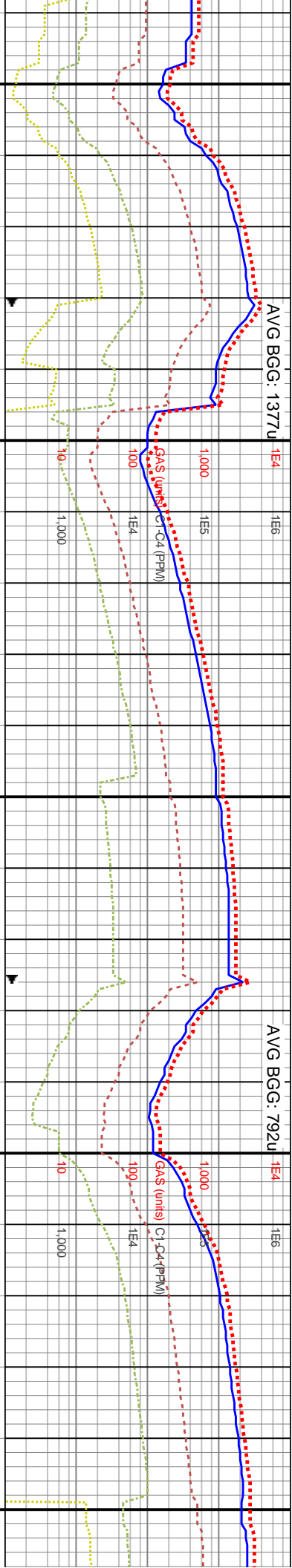
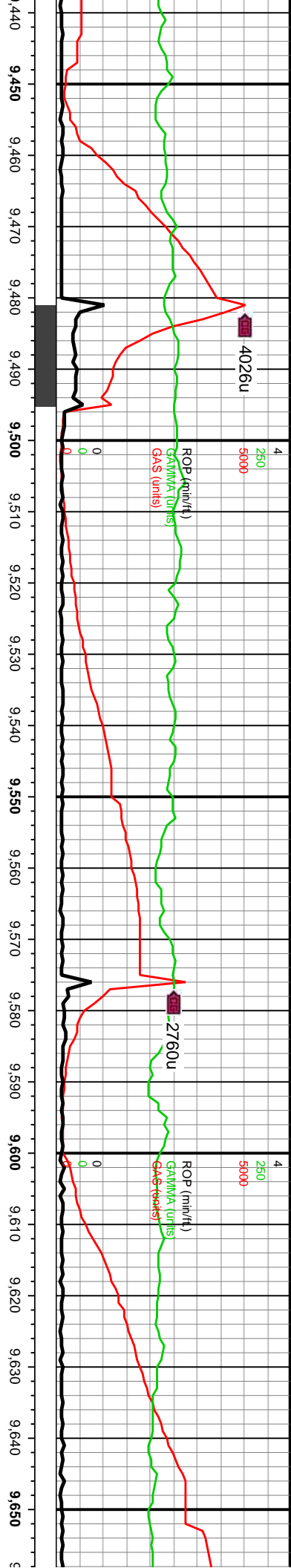
8720-8780 S.S.: pred gysbhn-it gy, lt brn, sme
op grs thru, pred sb ang-sb rd, vf-f gr, mod
strd, fri-sl frm, gr sup cts wi arg/slic cnt, sme
sl calc, mod yeign flor, wk mky cut, mod
bishwh resd ring









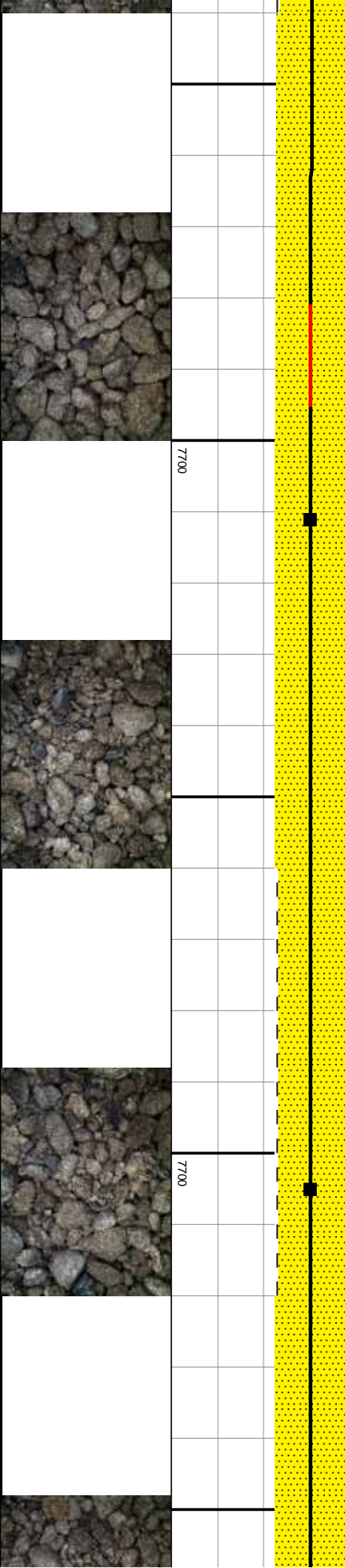


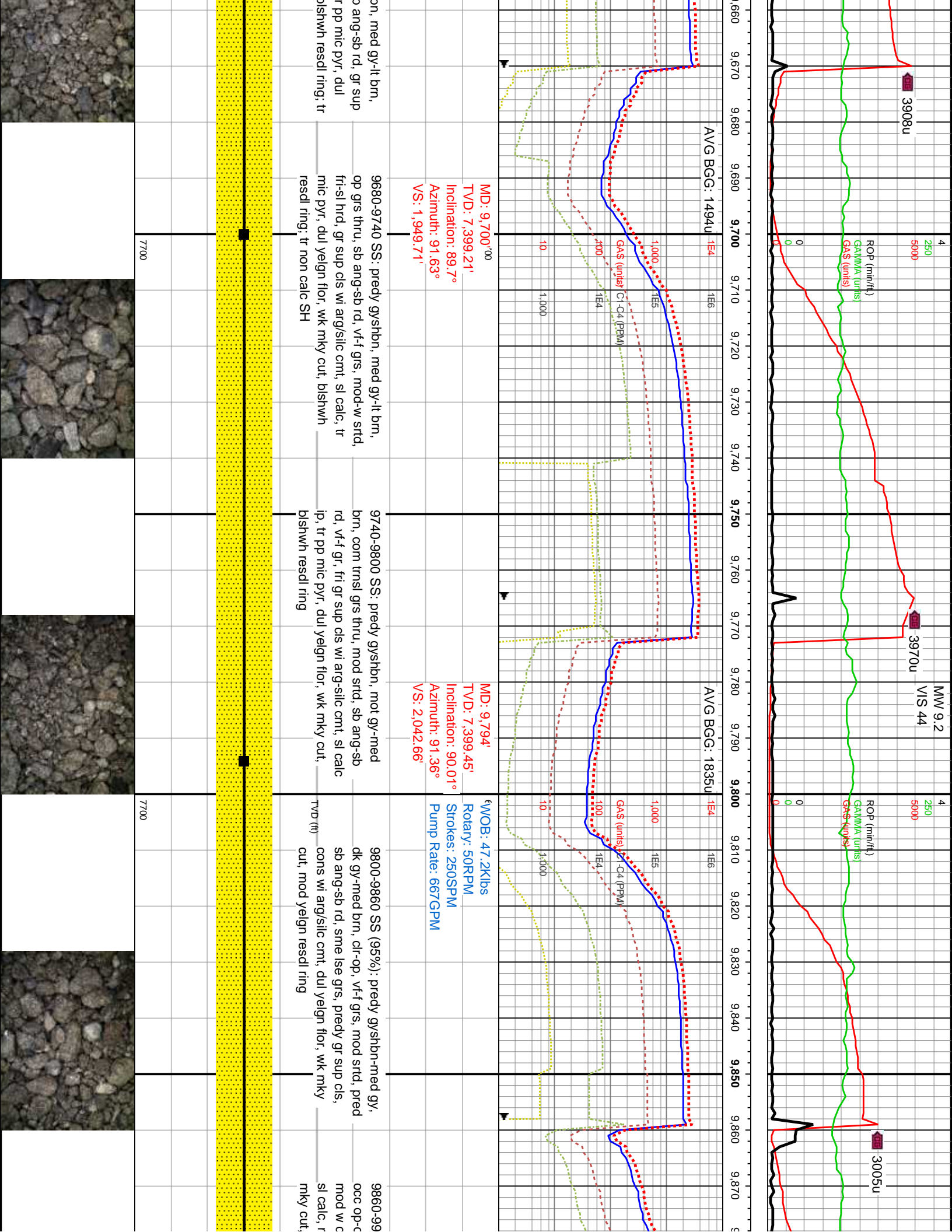
9440-9500 SS: predy gyshbn, med gy-med brn, med gy-lt brn, clt-op lse grs, vf-f grs, sb ang-sb rd, mod strd, gr sup cls wi arg/silic cnt, pred sl calc, tr scat mic pyr, dul yelgn flor, wk mky cut, bishwh resdl ring	TVD (ft)	9500-9560 SS: med gy-gyshbn, dk gy, vf-f grs, pred sb ang-sb rd, mod strd, gr sup cls wi arg/silic cnt, sme sl calc, com lse grs, tr scat mic pyr, dul yelgn flor, wk mky cut, dul yelgn resdl ring	9560-9620 SS (95%): med gy-gyshbn, vf-f gr, sb ang-sb rd, mod strd, frm, gr sup cls wi arg-silic cnt, non calc, dul yelgn flor, wk mky cut, bishwh resdl ring; SH (5%): v dk gy, frm, blkly, silty tex, tr f lam, non-v sl calc	9620-9680 SS: predy gyshbn, med gy-med brn, med gy-lt brn, clt-op lse grs, vf-f grs, sb ang-sb rd, mod strd, gr sup cls wi arg/silic cnt, pred sl calc, tr scat mic pyr, wk mky cut, bishwh resdl ring

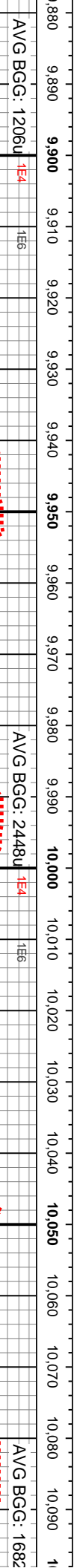
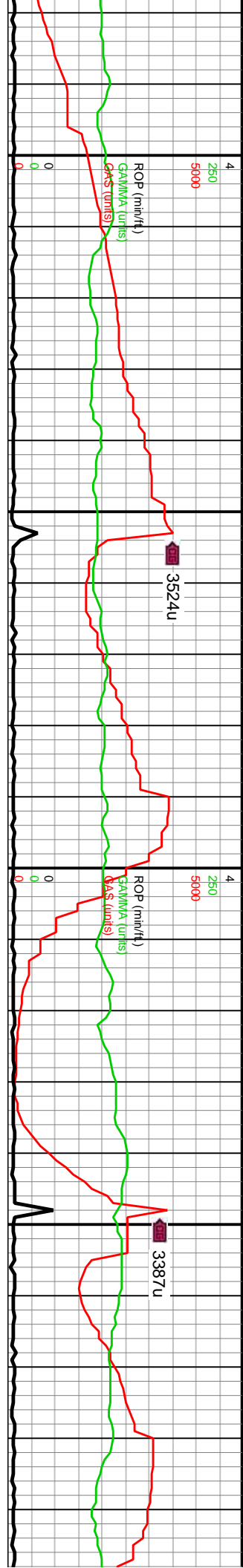
MD: 9,511'
TVD: 7,397.91'
Inclination: 89.48°
Azimuth: 92.95°
VS: 1,762.43'

WOB: 42.9Klbs
Rotary: 50RPM
Strokes: 250SPM
Pump Rate: 667GPM

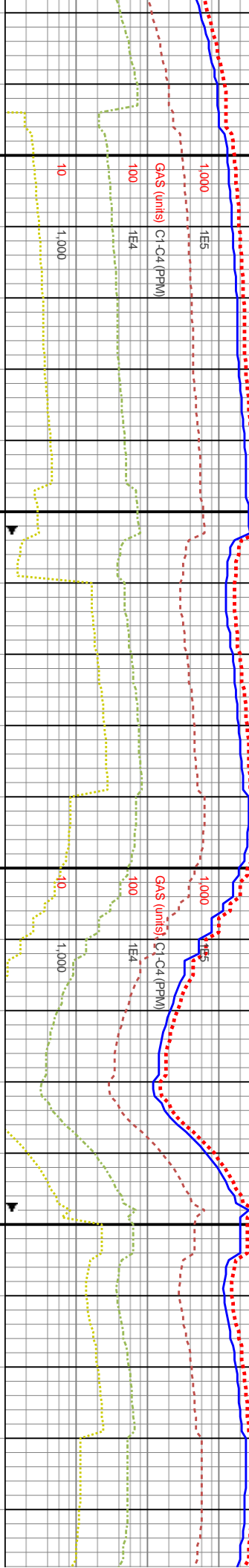
MD: 9,605'
TVD: 7,398.64'
Inclination: 89.62°
Azimuth: 92.47°
VS: 1,865.65'



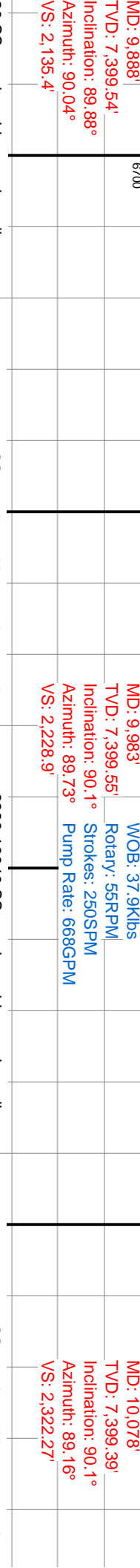




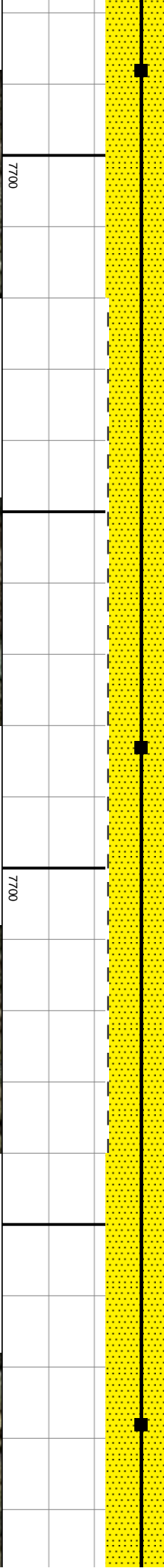
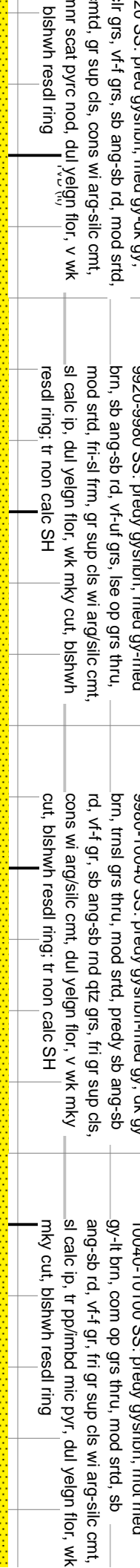
AVG BGG: 1206u



AVG BGG: 2448u



AVG BGG: 1682



MD: 9,888'
TVD: 7,399.54'
Inclination: 89.88°
Azimuth: 90.04°
VS: 2.135.4'

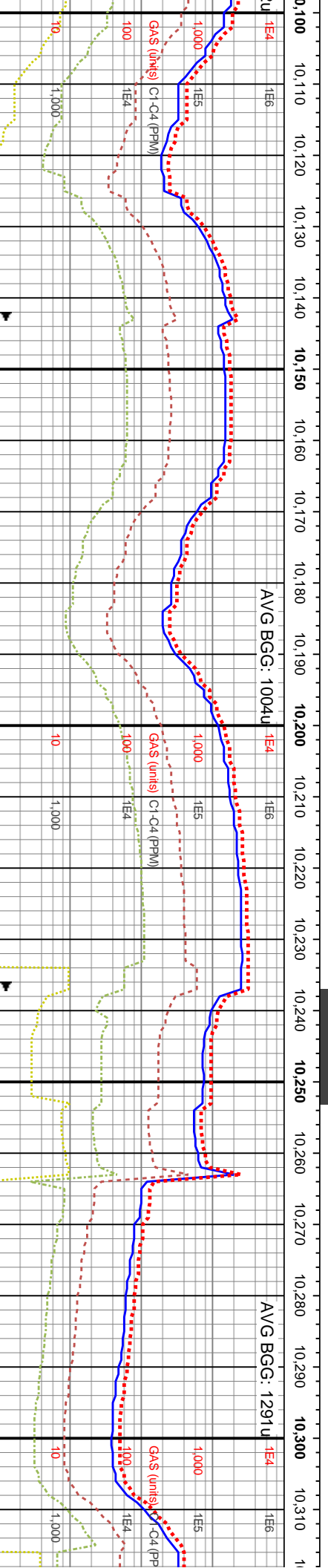
MD: 9,983'
TVD: 7,399.55'
Inclination: 90.1°
Azimuth: 89.73°
VS: 2.228.9'

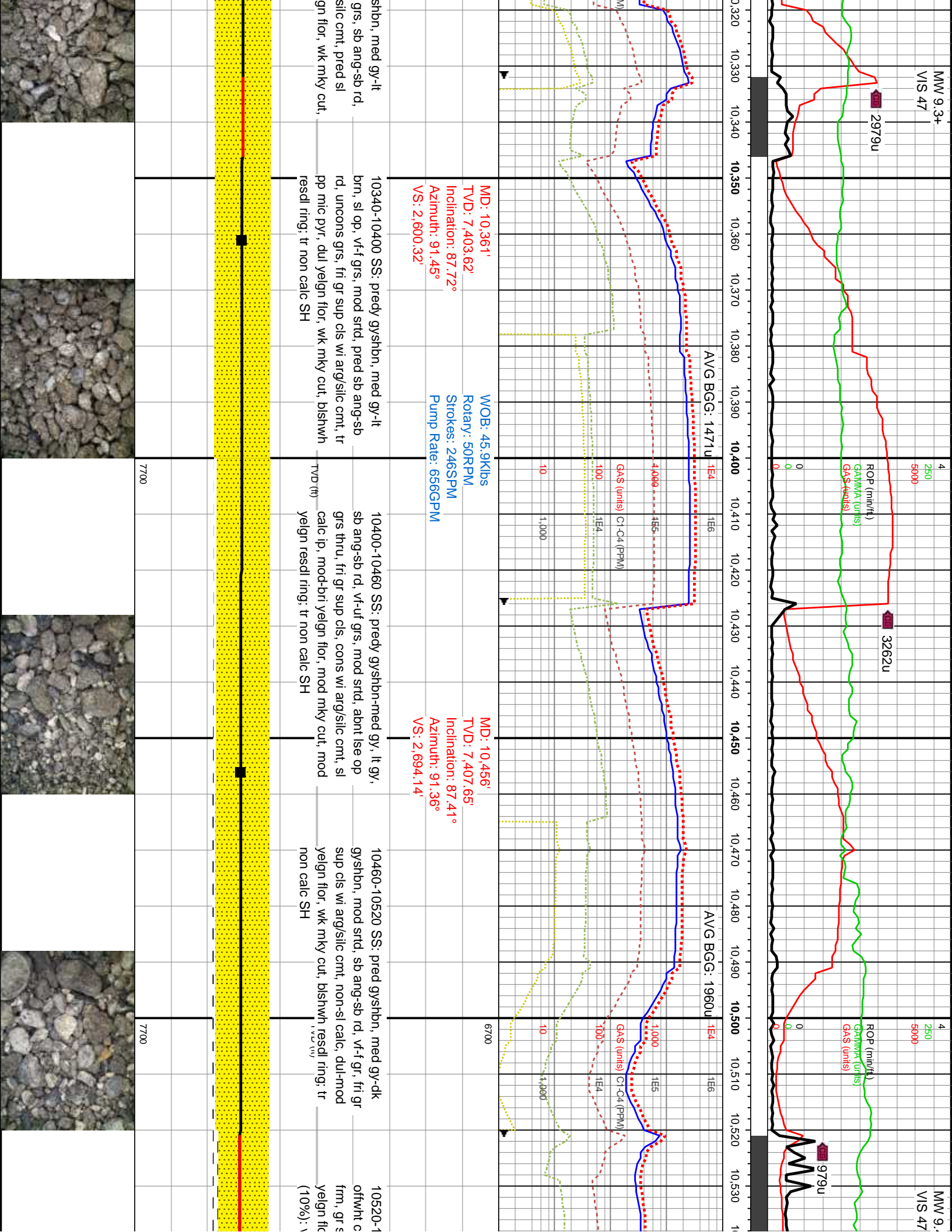
MD: 10,078'
TVD: 7,399.39'
Inclination: 90.1°
Azimuth: 89.16°
VS: 2.322.27'

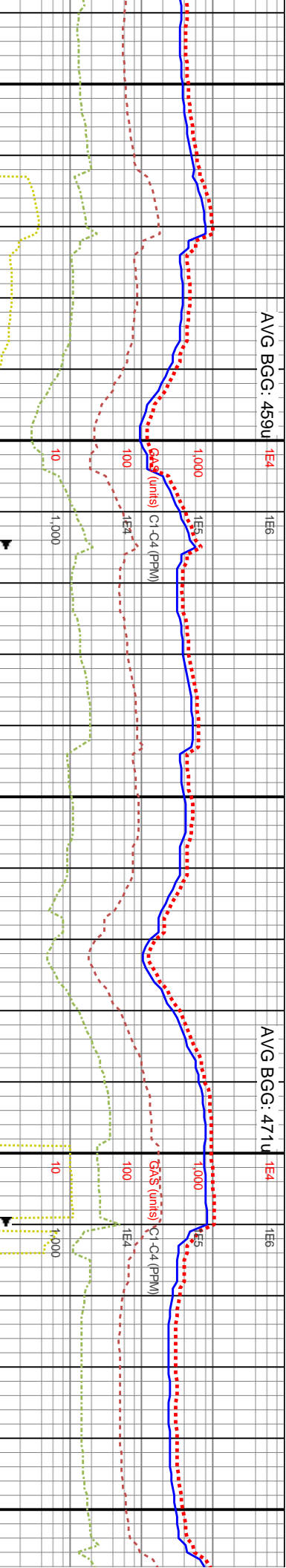
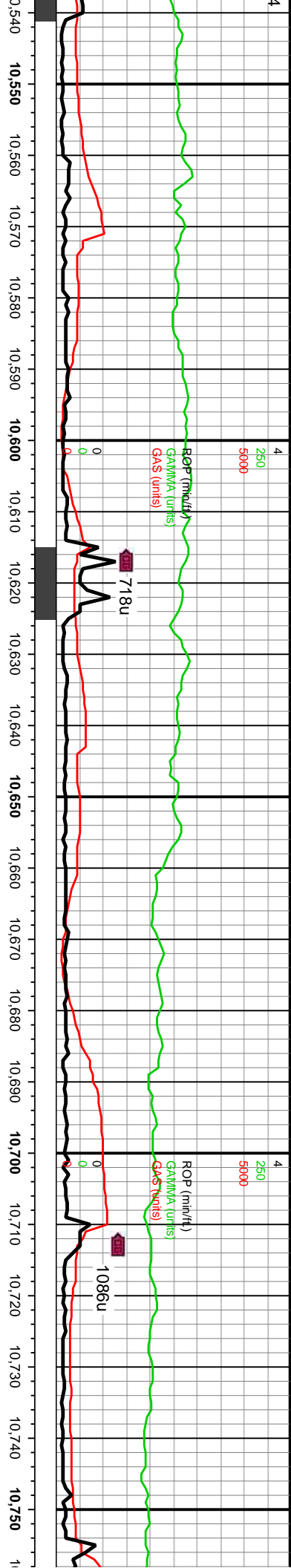
9920-9980 SS: predy gysbhn, med gy-dk gy, brn, sb ang-sb rd, mod srt, mod srt, fri-si frm, gr sup cls wi arg/silic cnt, si calc lp, dul yelgn flr, v wk resdl ring; tr non calc SH

9980-10040 SS: predy gysbhn-med gy, dk gy brn, trnsl grs thru, mod srt, 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, bishwh resdl ring; tr non calc SH

10040-10100 SS: predy gysbhn, mot med gy-it brn, com op grs thru, mod srt, sb ang-sb rd, v-f gr, fri gr sup cls wi arg-silic cnt, si calc lp, tr pp/lmbd mic pyr, dul yelgn flr, wk mky cut, bishwh resdl ring

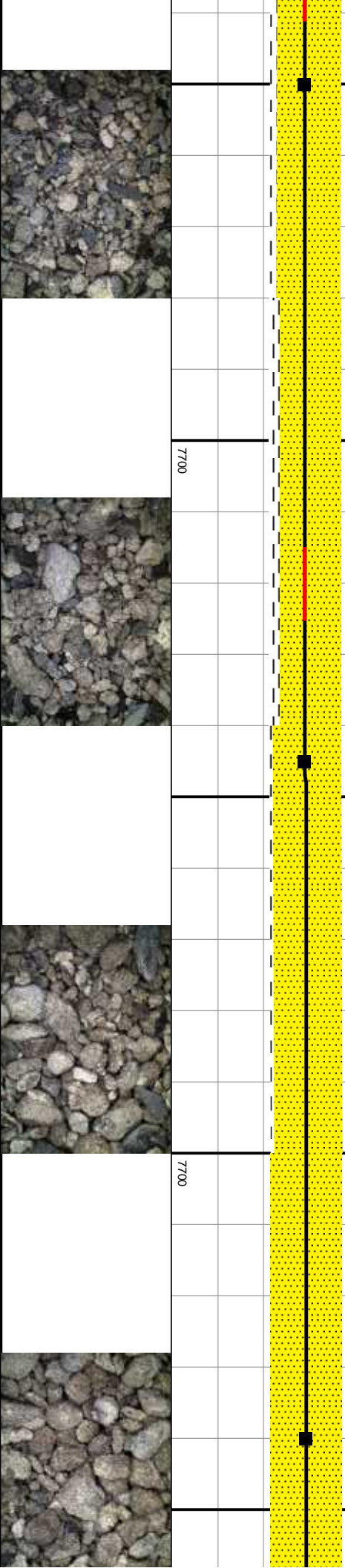
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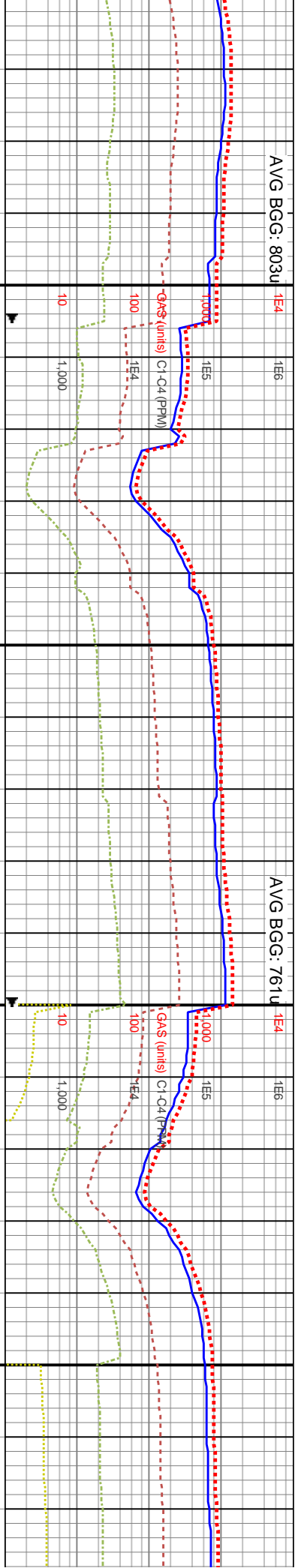
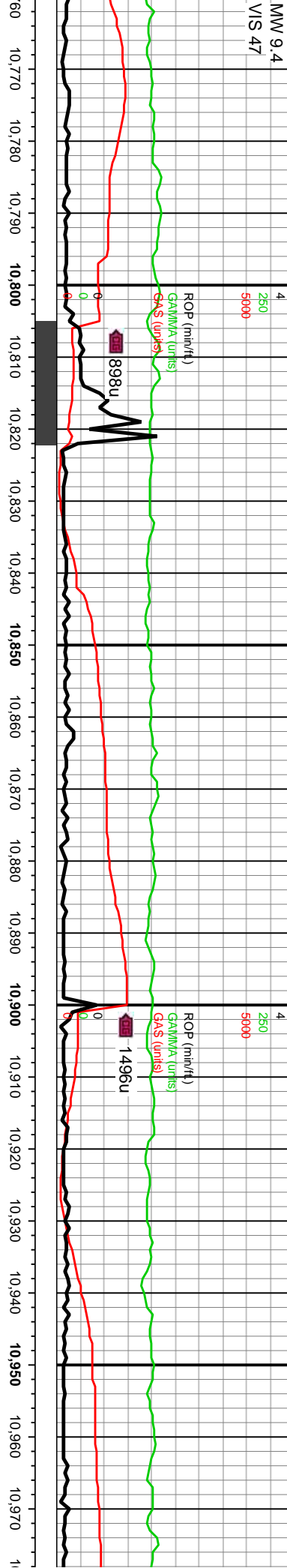




MD: 10,550' TVD: 7,409.95' Inclination: 89.79° Azimuth: 92.16° VS: 2,787.12'	WOB: 31.4Klbs Rotary: 50RPM Strokes: 240SPM Pump Rate: 640GPM	MD: 10,645' TVD: 7,409.3' Inclination: 90.99° Azimuth: 93.26° VS: 2,881.33'	MD: 10,740' TVD: 7,406.67' Inclination: 92.18° Azimuth: 93.57° VS: 2,975.65'
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10580-10640 SS (85%): med gy-gyshbn, cls, mod strd, sb ang-sb rd, v-f gr, si firm-fri, gr sup cls wi arg-silic cnt, non-sl calc, dul flor, wk mky cut, bishwh resdl ring; SH (15%): dk gy, sl silty tex, ply, non calc	10640-10700 SS: pred gysbhn-med gy, sme dk gysbhn, op grs thru, pred sb ang-sb rd, v-f grs, mod strd, fri gr sup cls wi arg/silic cnt, sl calc, scat pp mic pyr, dul yelgn flor, wk mky cut, bishwh resdl ring; tr non calc SH	10700-10760 SS: predy gysbhn, med gy-lt gy clr grs, mod w strd, sb ang-sb rd, v-f grs, ang-sb rd, uncons grs, fri gr sup cls wi arg-silic cnt, sl calc ip, dul yelgn flor, wk mky cut, bishwh resdl ring
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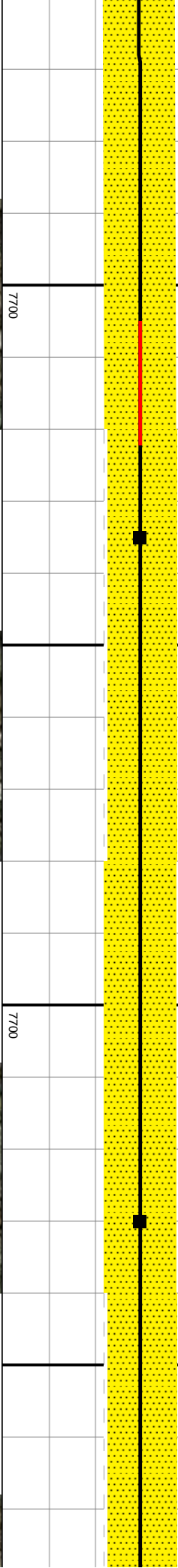


WOB: 37.9Klbs
Rotary: 65RPM
Strokes: 234SPM
Pump Rate: 624GPM

MD: 10,835'
TVD: 7,404.97'
Inclination: 89.88°
Azimuth: 92.25°
VS: 3,069.88'

MD: 10,930'
TVD: 7,405.38'
Inclination: 89.62°
Azimuth: 91.85°
VS: 3,163.95'

10760-10820 SS: predy dk gysbhn-med gy, vf-f grs, sb ang-sb rd, mod strd, op-clr grs, mod w cntd, gr sup cls wi arg-silic cnt, sl calc, tr pyrc nod, dul yelgn flor, wk mky cut, bishwh resd ring	10820-10880 SS: predy med gy-gysbhn, lt gy, sb ang-sb rd, vf-uf grs, mod strd, lse op grs thru, fri gr sup cls, cons wi arg/silic cnt, sl calc, ip, dul yelgn flor, wk mky cut, bishwh resd ring; tr non calc SH	10880-10940 SS: predy gysbhn-lt gy, offwht, vf-f grs, mod strd, op-clr grs thru, pred sb ang-sb rd, fri gr sup cls wi arg/silic cnt, sl calc, scat mic pyr, mod-brt yelgn flor, mod mky cut, mod yelgn-bishwh resd ring	10940-11000 SS: predy gy lt gy-gysbhn, vf-f grs, mod s sl hrd-frn, cons wi arg/silic dul yelgn flor, wk mky cut, t non calc SH
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MW 9.4
VIS 47

4
250
5000

ROP (min/ft)
GAMMA (units)
GAS (units)

1149u

0
0
0

0
0
0

ROP (min/ft)
GAMMA (units)
GAS (units)

1320u

0
0
0

0
0
0

ROP (min/ft)
GAMMA (units)
GAS (units)

1803u

0
0
0

0
0
0

0.980 10.990 11.000 11.010 11.020 11.030 11.040 11.050 11.060 11.070 11.080 11.090 11.100 11.110 11.120 11.130 11.140 11.150 11.160 11.170 11.180 11.190 1

AVG BGG: 627u

1E4

1E6

AVG BGG: 732u

1E4

1E6

AVG BGG: 852u

1E4

1E6

GAS (units) C1-C4 (PPM)

1000 115

1E4

GAS (units) C1-C4 (PPM)

1000 115

1E4

10 1000

1E4

10 1000

1E4

10 1000

1E4

10 1000

1E4

10 1000

1E4

WOB: 33.2Klbs
Rotary: 50RPM
Strokes: 232SPM
Pump Rate: 620GPM

MD: 11,025'
TVD: 7,405.36'
Inclination: 90.41°
Azimuth: 92.47°
VS: 3,258.04'

shbn, med gy clus,
srd, sb ang-sb rd,
cmnt, non-sl calc,
blshwh resdl ring; tr

11000-11060 SS: predy gysbhn, med gy-dk
gy, trns, vf-f grs, sb ang-sb rd, mod strd,
hrd-sl fri gr sup cls wi arg/silic cnt, sb ang qtz
grs, tr scat mtc pyr, sl calc, dul yeign flor, v wk
mky cut, blshwh resdl ring

11060-11120 SS: predy gysbhn, med gy-it
brn, mod strd, sb ang-sb rd, vf-f grs, frm-sl fri,
pred gr sup cls, cons wi arg/silic cnt, non-sl
calc, dul yeign flor, wk-mod mky cut, blshwh
resdl ring

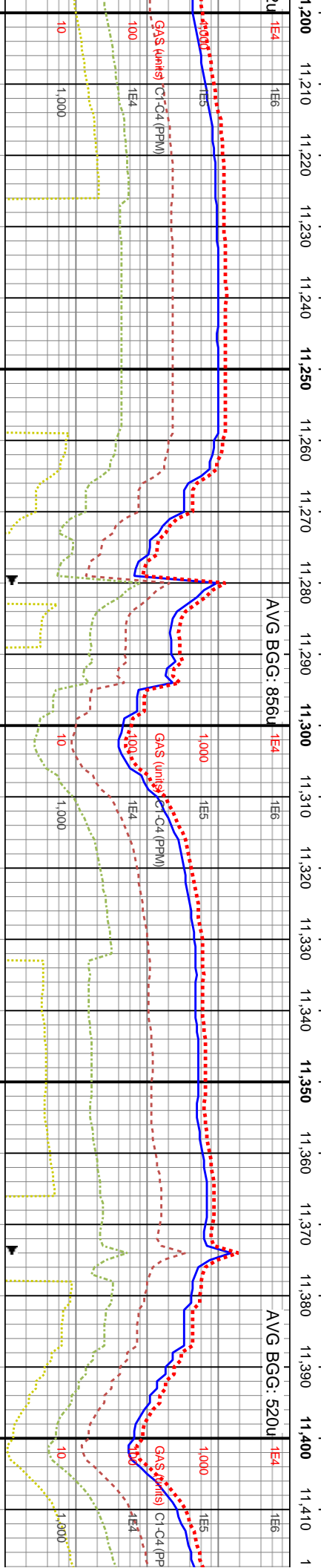
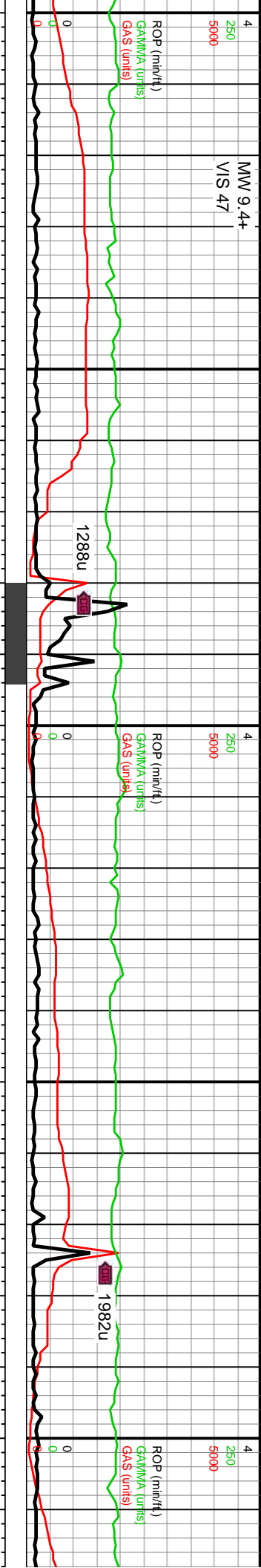
11120-11180 SS: predy gysbhn, med gy-it
brn, vf-f grs, com lse grs, mod strd, pred sb
ang-sb rd, gr sup cls wi arg/silic cnt, sme sl
calc, dul yeign flor, wk-mod mky cut, blshwh
resdl ring; tr non calc SH

11180-1
oftwh-it
ang-sb r
arg/silic c
mky cut,

7700

7700





6700 MD: 11,215'
TVD: 7,402.82'
Inclination: 91.21°
GPM Azimuth: 92.64°
VS: 3,446.39'

MD: 11,309'
TVD: 7,401.74'
Inclination: 90.1°
Azimuth: 92.55°
VS: 3,539.58'

WOB: 40.5Klbs
Rotary: 60RPM
Strokes: 230SPM
Pump Rate: 613GPM

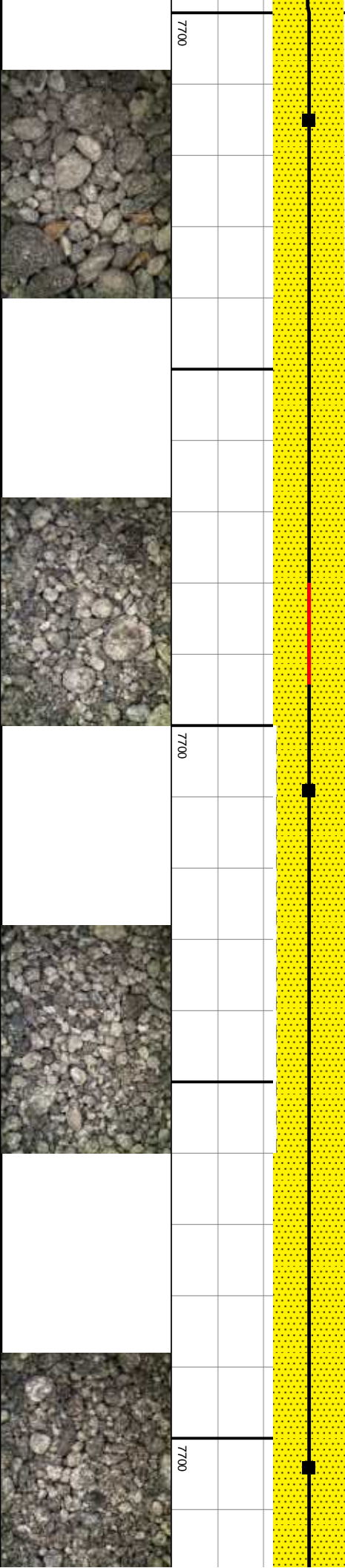
MD: 11,404'
TVD: 7,401.98'
Inclination: 89.6°
Azimuth: 91.63°
VS: 3,633.65'

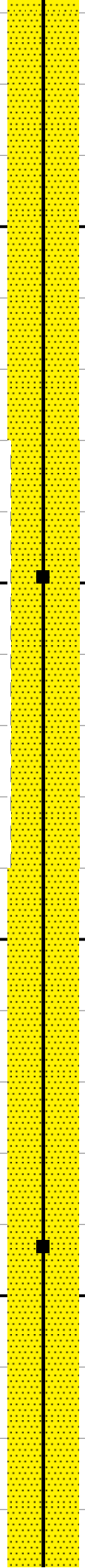
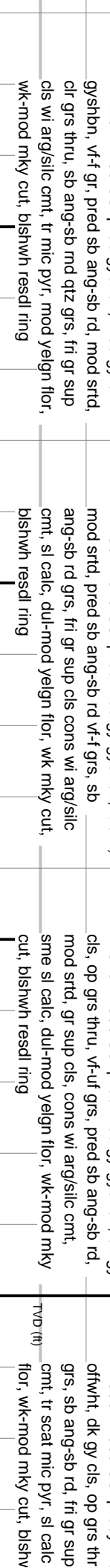
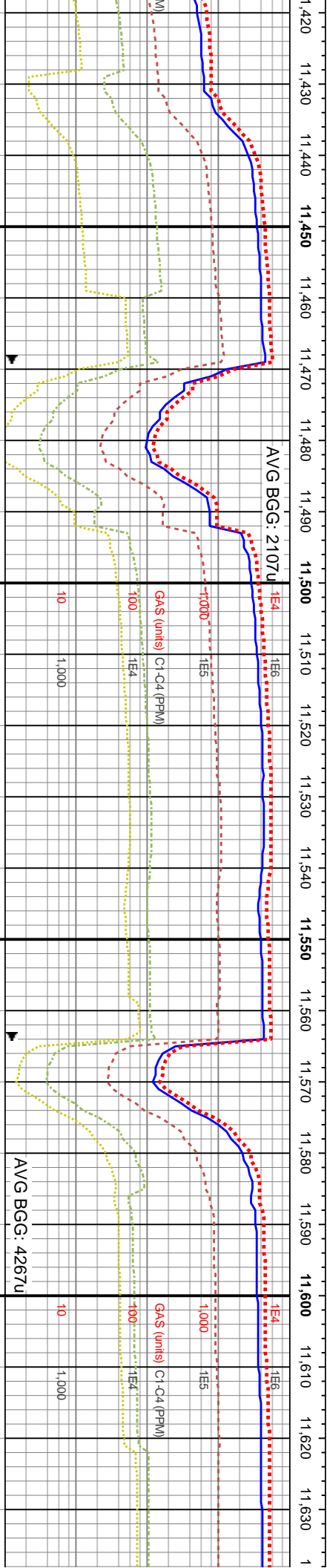
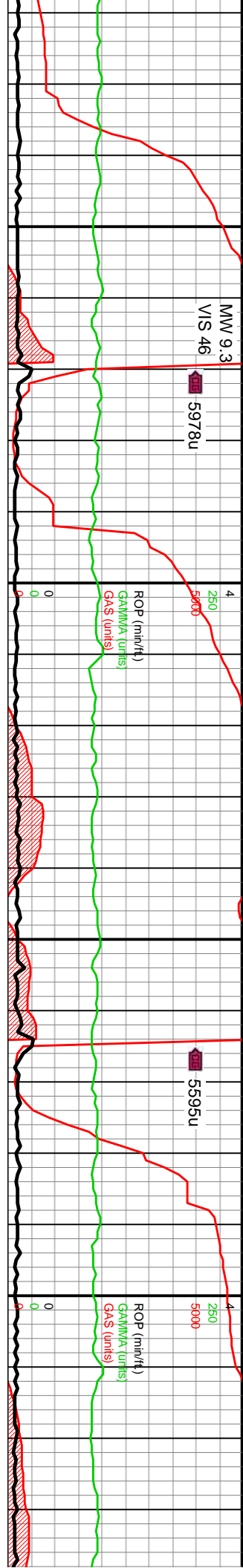
11240 SS: predy med gy-gyshbn, gy, mod srt, com ise op-clr grs, sb vf-f grs, fri gr sup cis, cons wi bishwh resd ring

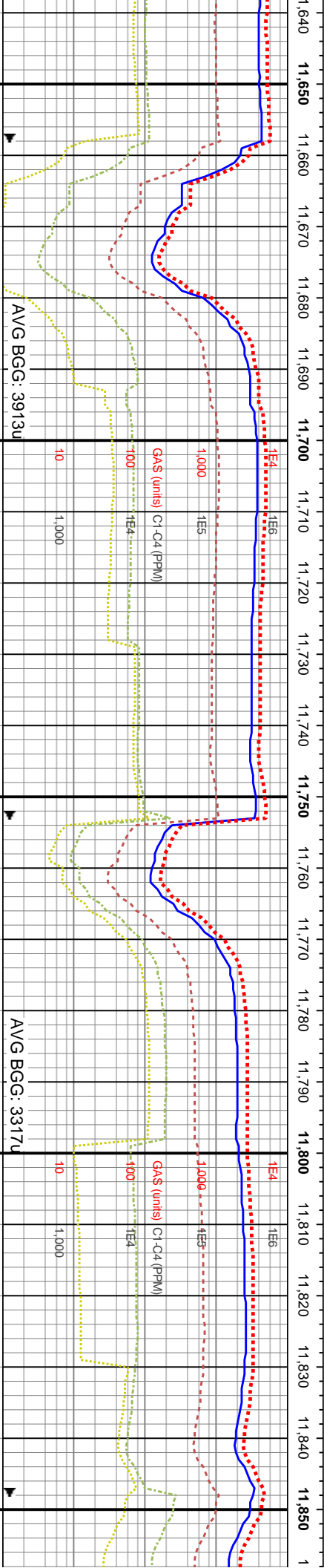
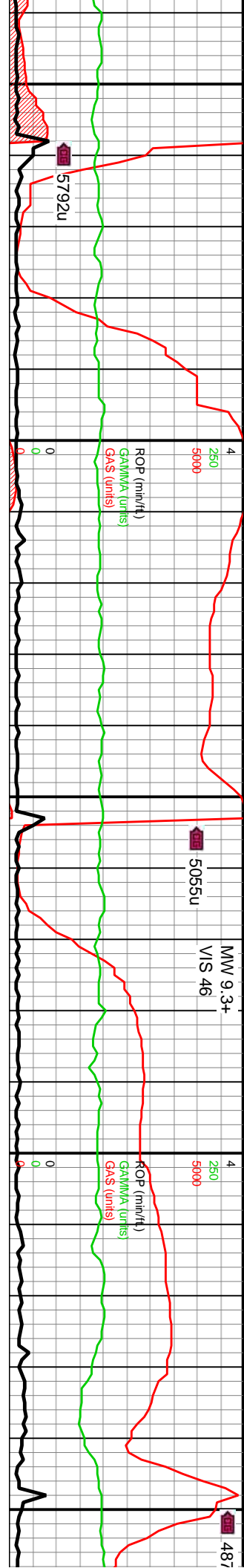
11240-11300 SS: pred gysbhn-med gy, dk gy, vf-f gr, sb ang-sb rd, mod srt, clr grs thru, sb ang-sb rnd qtz grs, fri gr sup cis wi arg/silc cnt, tr mic pyr, dul-mod yelgn flr, wk-mod mky cut, bishwh resd ring

11300-11360 SS (95%): predy gysbhn-med gy, offwht, vf-f grs, mod srt, pred sb ang-sb rd, gr sup cis wi arg/silc cnt, sl calc, dul-mod yelgn flr, wk-mod mky cut, bishwh resd ring: tr SH: dk gy, splt, sl calc, rgh tex

11360-11420 SS: predy gysbhn, med gy-it gy, offwht-op grs thru, vf-f gr, sb ang qtz grs thru, mod srt, sb ang-sb rd, fri gr sup cis wi arg-silc cnt, sl calc ip, tr mic pyr, mod yelgn flr, wk-mod mky cut, bishwh resd ring







MD: 11,688'
TVD: 7,401.73'
Inclination: 90.28°
Azimuth: 90.13°
VS: 3,914.08'

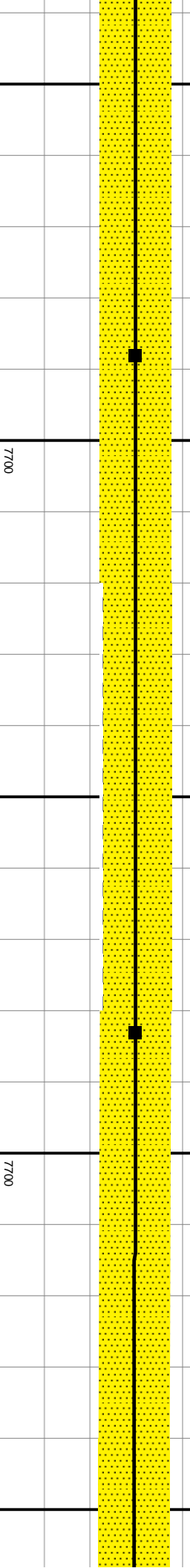
11660-11720 SS: priedy gyshbn-med gy, lt gy,
v-f grs, sb ang-sb rd, op grs thru, mod strd, fri
gr sup cls, cons wi ang/slic cnt, com lse grs,
sl calc ip, dul-mod yelgn flfor, wk-mod mky cut,
blshwn resal ring

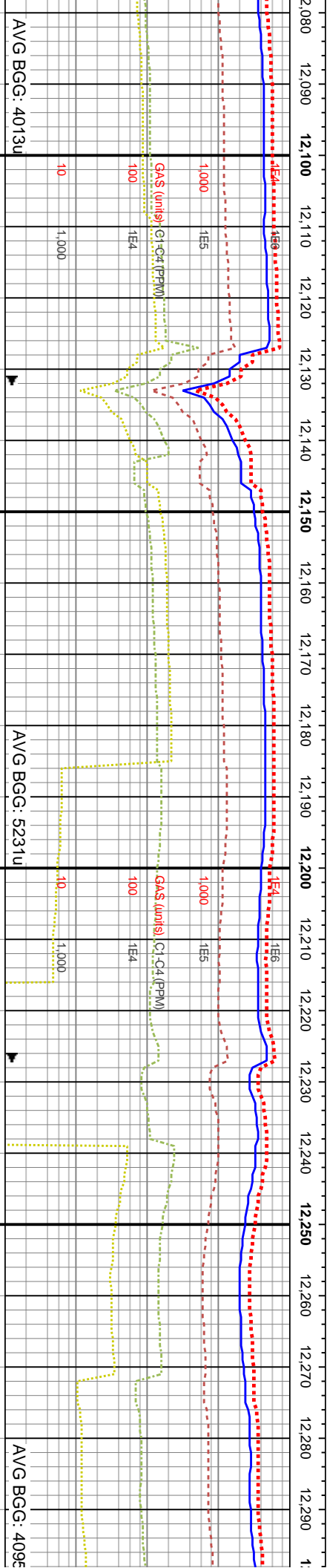
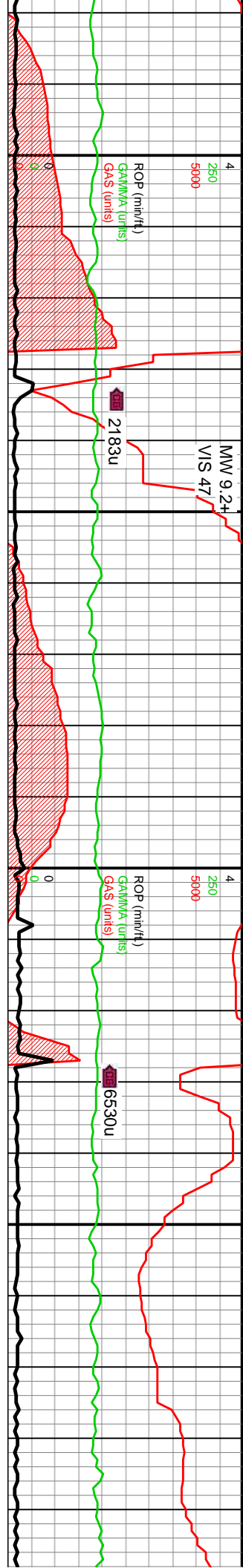
11720-11780 SS: prely med gy-gyxshn, It
brn, cll grs thru, mod strd, vf-f grs, sb ang-4
rd, unconfs qtz grs, fri gr sup cls wi arg/silic
cmt, dul-mod yelgn flor, wk-mod mky cut,
blshwn resd ring; tr non calc SH

MD: 11,783'	WOB: 41.1Klbs
TVD: 7,402.25'	Rotary: 60RPM
Inclination: 89.09°	Strokes: 230SPM
Azimuth: 88.76°	Pump Rate: 613GPM
VS: 4,007.45'	

11780-11840 SS. med gy-gyshbn, sme lt brn,
vf-f grs, com lse grs, sb ang-sb rd, mod strd,
gr sup cls wi ang/silic cmr, sme sl calc, tr imbd
mic pyr, sme l c clr-op qtz, dul yelgn flwr, wk
mky cut, mod bishwn resdl ring

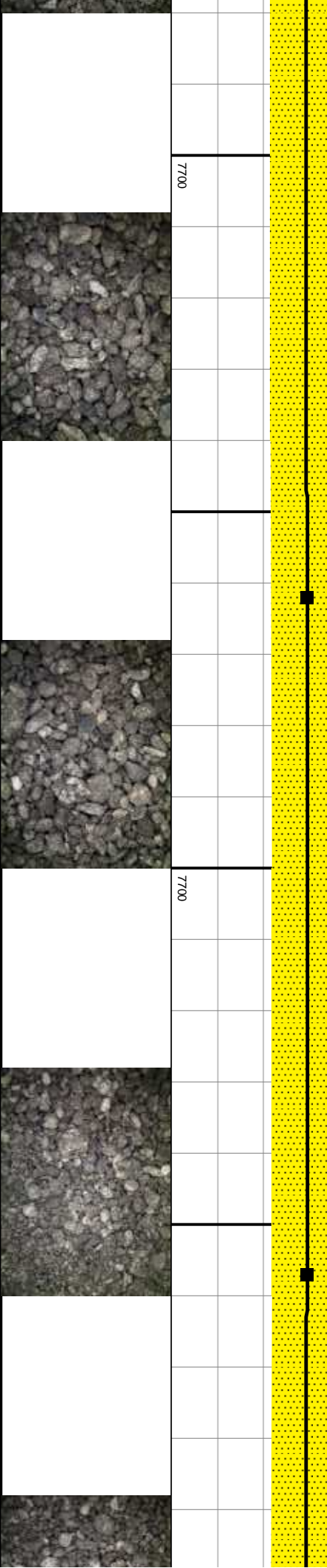
11840-11
med gy, f
mod str, f
sd grns, f
bishwh re

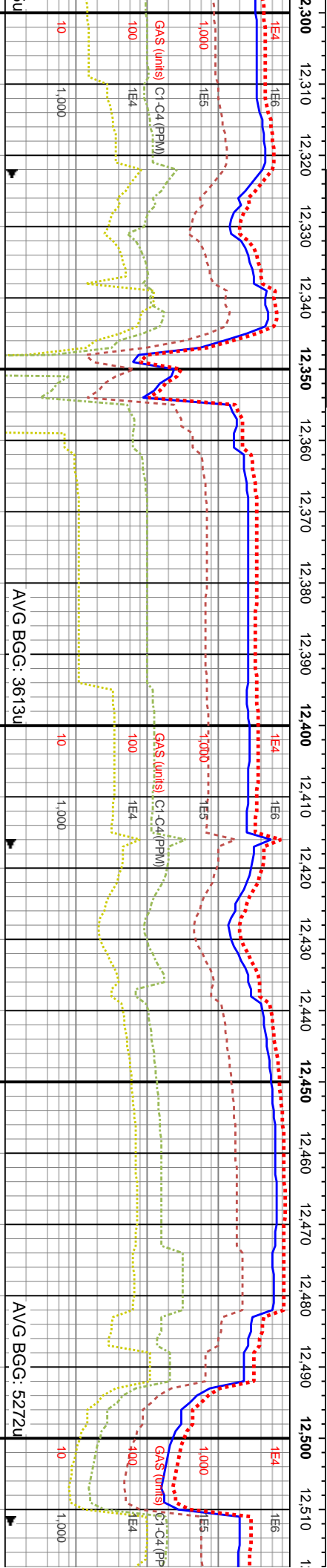
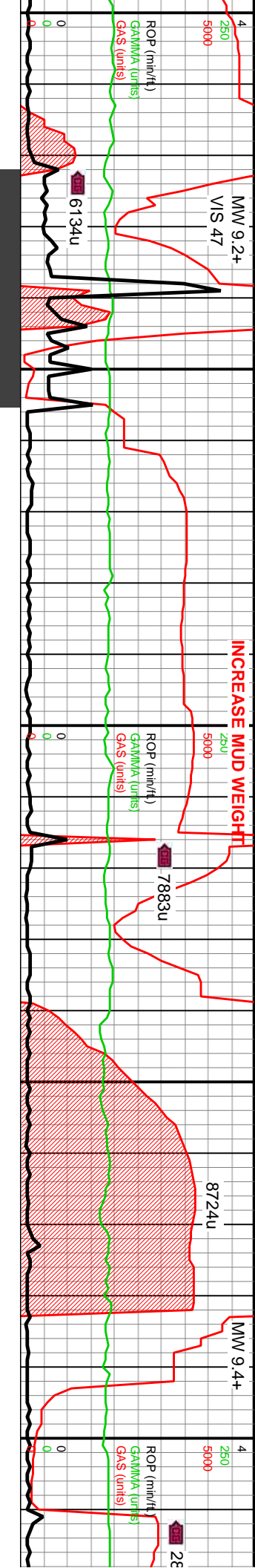




AVG BGG: 4013u	6700	MD: 12,162' TVD: 7,405.98' Inclination: 90.81° Azimuth: 89.87° VS: 4,378.75'	WOB: 41.8Klbs Rotary: 60RPM Strokes: 230SPM Pump Rate: 613GPM	AVG BGG: 5231u	MD: 12,257' TVD: 7,406.06' Inclination: 89.09° Azimuth: 87.27° VS: 4,471.83'	AVG BGG: 4095u
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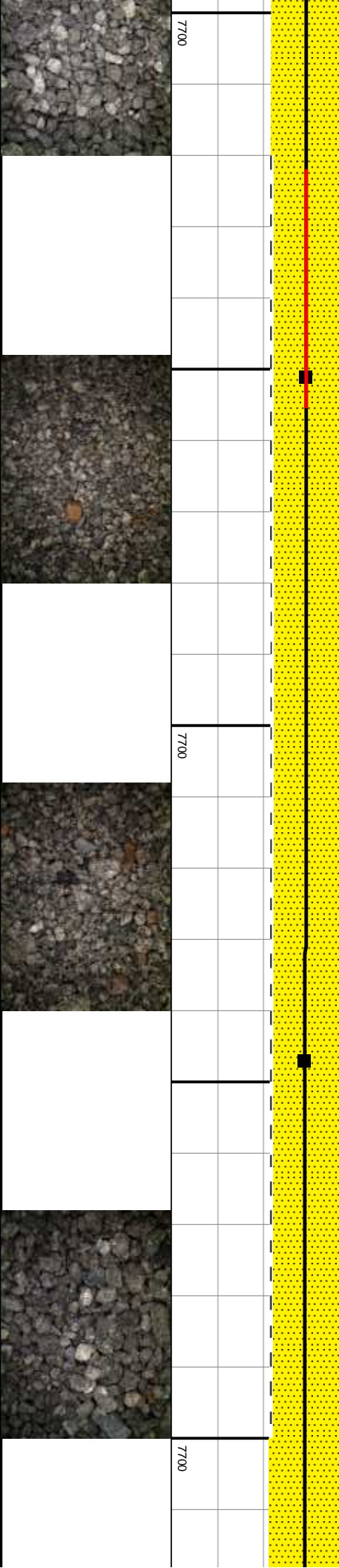
12080-12140 SS: gysbhn-med gy, lt brn clus, mod srtf, sb ang-sb rd, vf-f gr, frm-sl fri, gr sup cls, cons wi arg-silic cnt, com uncons, pred non-sl calc, mod-bri yelgn flor, mod mky cut, mod yelgn-bishwh resdl ring	12140-12200 SS: pred gy-med gy, sme dk gysbhn, op grs thru, pred sb ang-sb rd, vf-f grs, mod srtf, fri gr sup cls wi arg/silic cnt, sl calc, mnr imbd/scat mic pyr, dul yelgn flor, wk mky cut, mod yelgn resdl ring	12200-12260 SS: predy gysbhn, med gy-med brn, com op grs thru, vf-uf grs, sb ang-sb rd, mod srtf, gr sup cls, cons wi arg/silic cnt, non-sl calc, dul-mod yelgn flor, wk mky cut, mod bishwh resdl ring	12260-12320 SS: predy me vf-uf grs, sb ang-sb rd, op g fri gr sup cls, cons wi arg/silic cnt, grs, sl calc ip, bri yelgn flor, bishwh resdl ring
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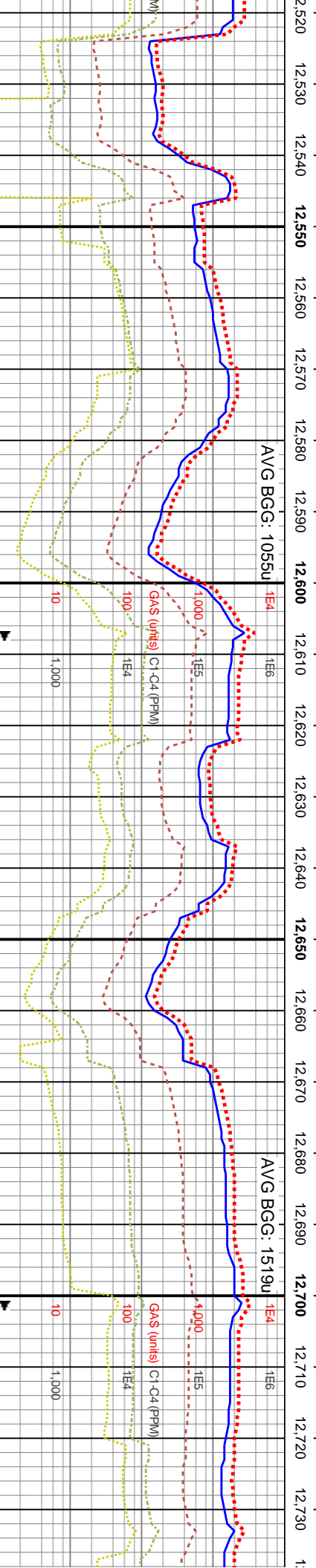
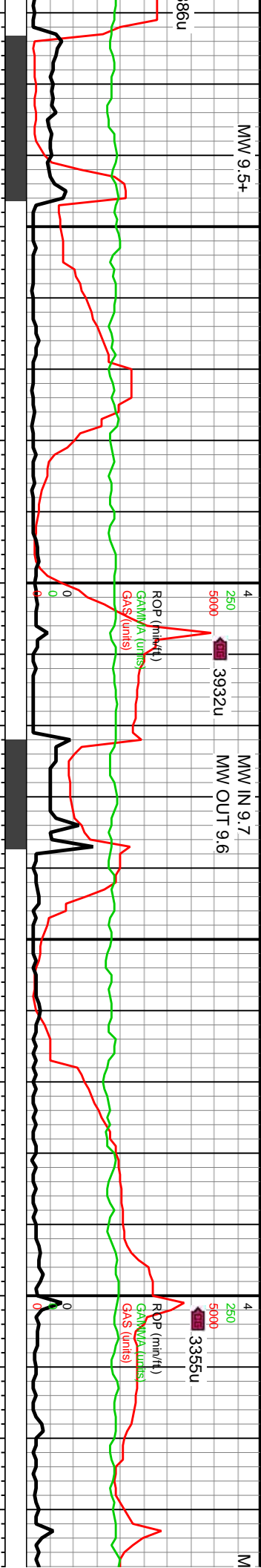




6700	MD: 12,351' TVD: 7,407.55' Inclination: 89.09° Azimuth: 87.75° VS: 4,563.56'	WOB: 42.2Klbs Rotary: 50RPM Strokes: 230SPM Pump Rate: 613GPM	MD: 12,447' TVD: 7,409.56' Inclination: 88.51° Azimuth: 87.44° VS: 4,657.27'	6700
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12320-12380 SS: predy gyshbn, med gy-it gy, com lse cl-op grs, vf-f gr, mod w srt, sb ang-sb rd, fri-sl frm, gr sup cls wi arg-silic cmt, sl calc lp, dul yeign flr, wk mky cut, bishwh resd ring; tr non calc SH	12380-12440 SS: predy gyshbn, med gy-it gy, tr offwht-crm, abnt lse cl-op grs, vf-f gr, mod w srt, sb ang-sb rd, fri-sl frm, gr sup cls wi arg-silic cmt, sl calc lp, dul yeign flr, wk mky cut, bishwh resd ring; tr non calc SH	12440-12500 SS: predy med gy-gyshbn clus, oocly offwht-crm, vf-f gr, mod srt, sb ang-sb rd, frm-sl fri, pred non-sl calc, gr sup cls, cons wi arg-silic cmt, mod-bri yeign flr, wk-mod mky cut, mod bishwh resd ring; tr non calc SH	12500-12510 SS: offwht-crm, srt, f-f gr, fri-sl frm, w cons, wk bishwh
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MD: 12,542'
TVD: 7,411.44'
Inclination: 89.22°
Azimuth: 89.73°
VS: 4,750.34'

WOB: 37.5klbs
Rotary: 50RPM
Strokes: 230SPM
Pump Rate: 614GPM

MD: 12,636'
TVD: 7,411.75'
Inclination: 90.41°
Azimuth: 92.25°
VS: 4,843.15'

6700

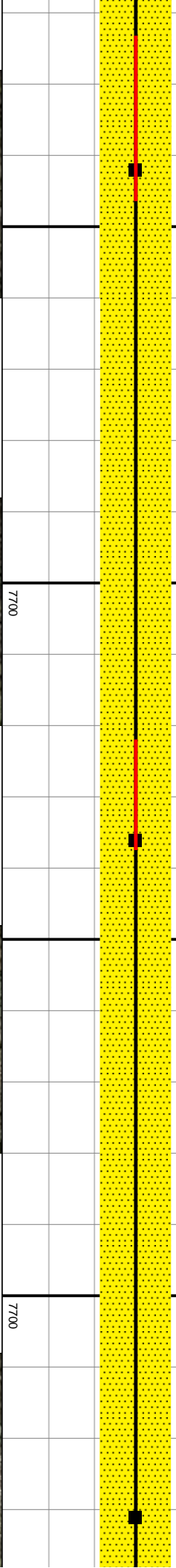
MD: 12,731'
TVD: 7,411.17'
Inclination: 90.2°
Azimuth: 92.47°
VS: 4,937.29'

12560 SS: predy med gy-gyshbn, oocly
m-itn, cl-trnsl grs thru, p-mod w
rfr, sb ang-sb rd, sb ang qtz grs thru,
gr sup cls wi arg-silic cnt, oocly mod
sl calc ip, dul yelgn flr, wk mky cut,
h resd ring

12560-12620 SS: predy dk gy-med gysbhn,
oocly lt brn-tn-olwht, sme lt gy op unconcs sd,
mod srt, vf-f grs, predy sb ang-sb rd, gr sup
cls, cons wi arg/silic cnt, tr imbd/pp mic pyr,
non-sl calc, mod yelgn flr, wk mky cut, mod
blshwh resd ring

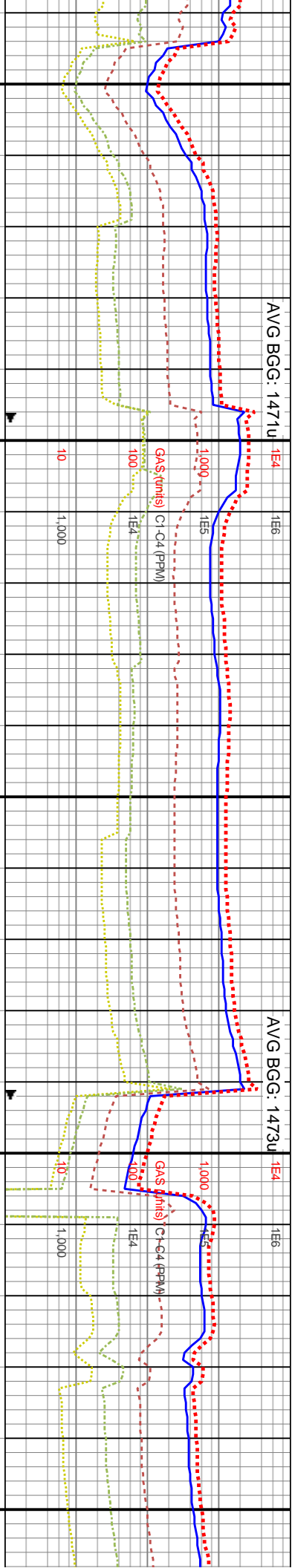
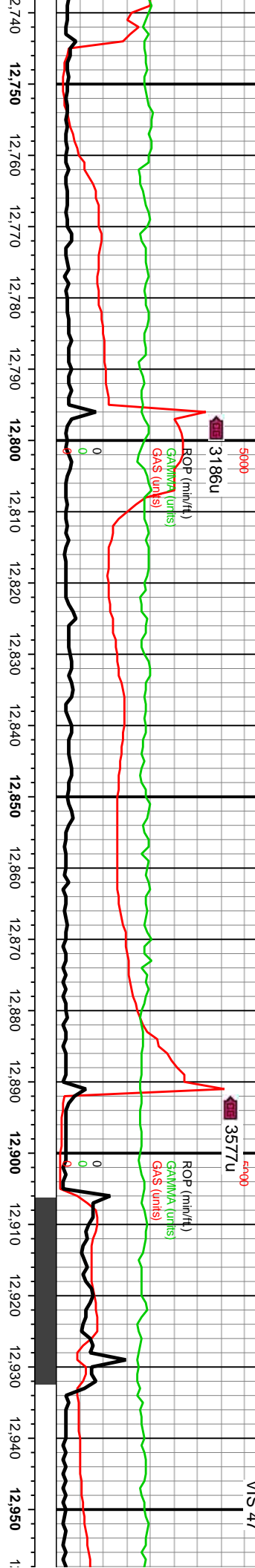
12620-12680 SS: pred med gy-gyshbn, dk gy,
vf-f grs, sb ang-sb rd, mod srt, op-clr grs,
mod w cntd, gr sup cls, cons wi arg-silic cnt,
sl calc, tr pyrc nod, dul yelgn flr, wk mky cut,
wk blshwh resd ring

12680-12740 SS: pred med gy-gyshbn, lt gy
clus, mod w srt, sb ang-sb rd, vf-f grs, sl
hrd-fr gr sup, cons wi arg-silic cnt, sl calc ip,
abt unconcs grs, tr f lam, tr dul yelgn flr,
wk-mod mky cut, lt yelgn-blshwh resd ring



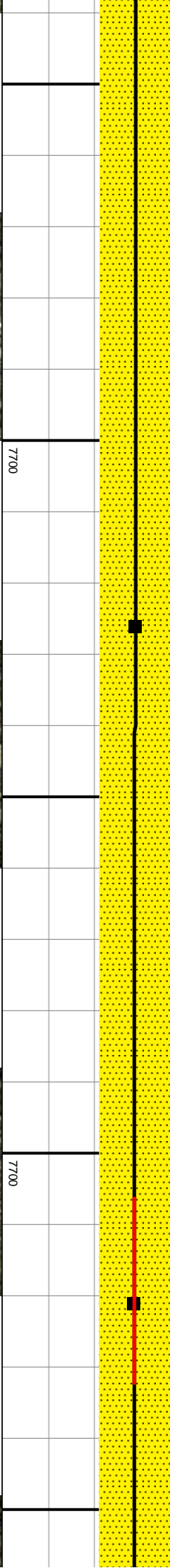
W 9.6

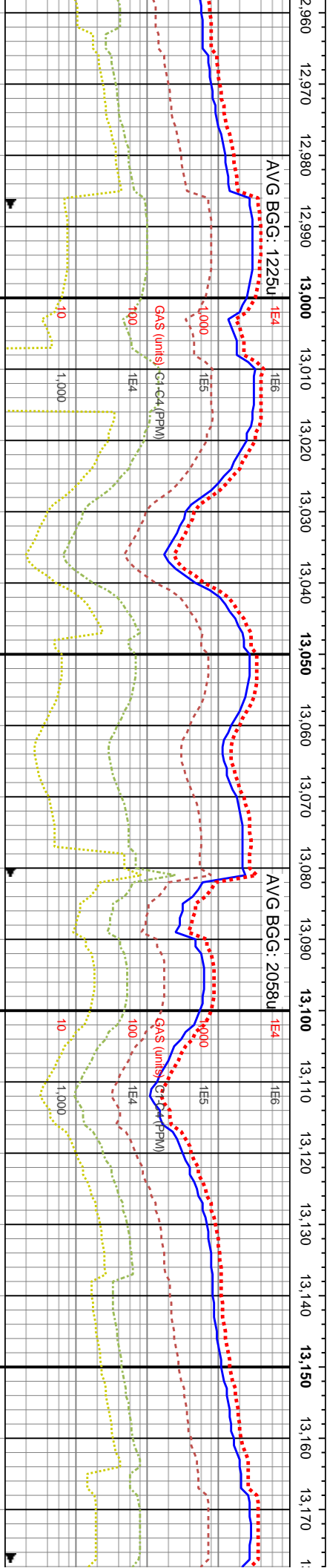
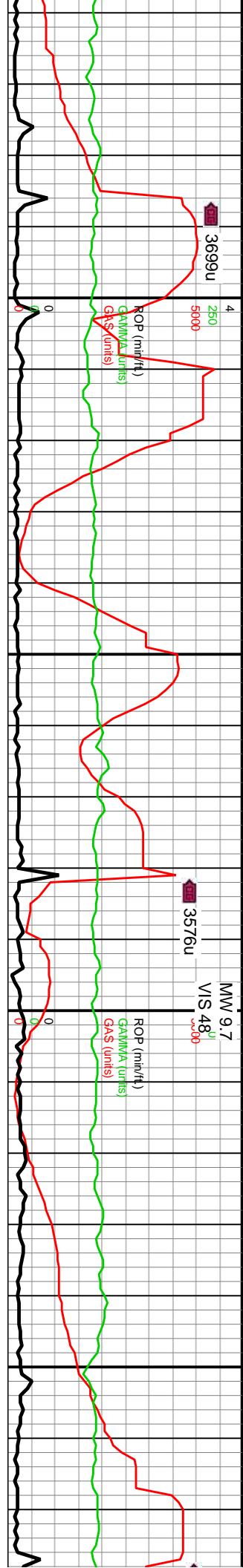
MW 9.7
VIS 47



WOB: 41.1Klbs Rotary: 50RPM Strokes: 230SPM Pump Rate: 614GPM	MD: 12,826' TVD: 7,412.1' Inclination: 88.6° Azimuth: 90.35° VS: 5,031.19'
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12740-12800 SS: pred med gyshbr-it gyshbr, abnt offwht-crm-it tn, frm-v frm, pred gr sup cis cons wi arg/silic cnt, mod srt, sb ang-ang grms, vf-f grnd, abnt unconc sd grms, sb ang-ang, p-mod srt, tr dul yelgn flr, wk mky cut, wk blshwh resdl ring	12800-12860 SS: predy gyshbr-med gy, sme crm-offwht-it tn, clr grs thru, mod srt, vf-f gr, pred sb ang-sb rd, sb ang-sb mod qtz grs, fr gr sup cis wi arg/silic cnt, mod-bri yelgn flr, mod mky cut, mod blshwh resdl ring	12860-12920 SS: predy gyshbr-it gy, occly offwht-it tn, mot med gy, frm-v frm, gr sup cis wi arg/silic cnt, mod srt, sb ang-sb rnd grms, vf-f gr, tr lse sd grms, tr pyrc nod, dul yelgn flr, wk mky cut, blshwh resdl ring	12920-12980 SS: predy med offwht, mot lt brn, vf-f grs, mod ang-sb rd, ang-sb rd qtz grs, t gr sup cis, cons wi arg/silic cm wk-mod mky cut, wk-mod blst
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WOB: 23.9Klbs
Rotary: 60RPM
Strokes: 230SPM
Pump Rate: 614GPM

MD: 13,016'
TVD: 7,413.53'
Inclination: 90.28°
Azimuth: 93.74°
VS: 5,219.35'

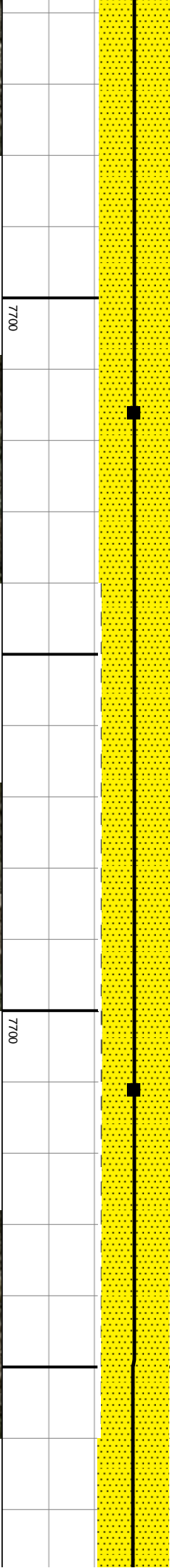
MD: 13,111'
TVD: 7,414.38'
Inclination: 88.69°
Azimuth: 91.36°
VS: 5,313.52'

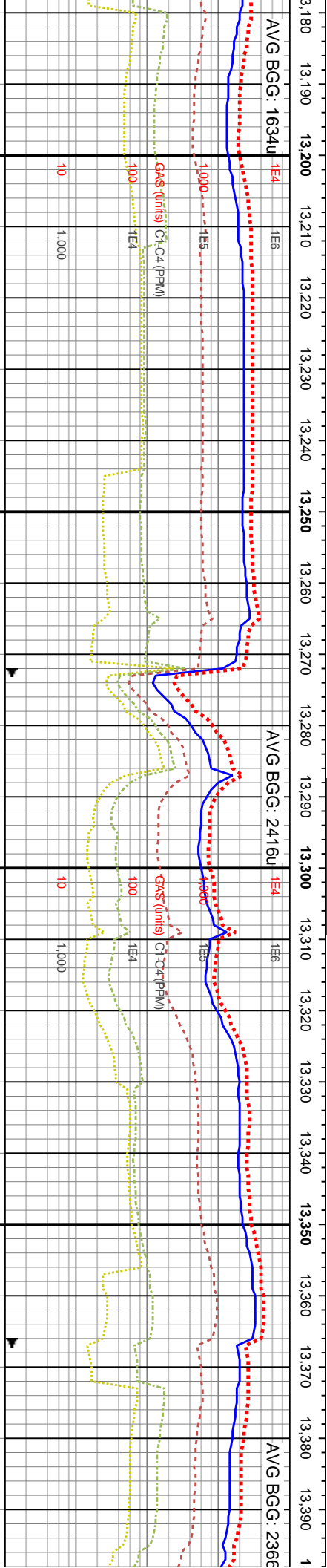
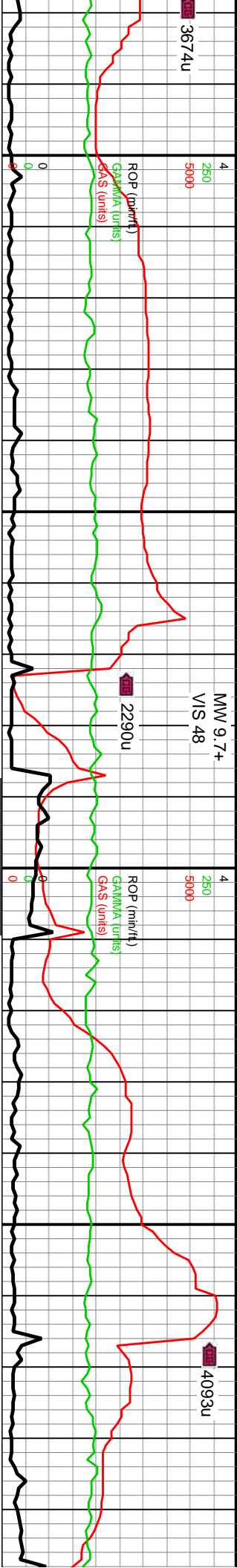
12980-13040 SS: predy med gy-gyshbn, occly
brn-it tn, occ op grs, vf-uf grs, predy sb ang-sb
rd, mod strd, gr sup cls, cons wi arg/silic cmf,
sme sl calc, tr bri yelgn flor, wk mky cut, wk
blshwh resdl ring

13040-13100 SS: predy lt gysbhn-it brn, mot lt
gy, vf-f grs, tr lse grs, mod strd, sb ang-sb rd,
gr sup cls wi arg/silic cmf, sme sl calc, tr mic
pyr, dul-mod yelgn flor, wk mky cut, dul
blshwh resdl ring: tr non calc SH

13100-13160 SS: predy lt gysbhn, occly
offwht-crm-it brn, mot lt gy, vf-f grs, tr lse grs,
mod-ply strd, sb ang-sb rd, gr sup cls wi arg/silic
cmf, sme sl calc, tr mic pyr, dul yelgn flor, wk mky
cut, dul bishwh resdl ring: tr non calc SH

13160-1
offwht-c
vf-f grs,
sl calc, r
wk mky





MD: 13,205'
TVD: 7,416.86'
Inclination: 88.29°
Azimuth: 90.75°
VS: 5,406.32'

WOB: 31.9Klbs
Rotary: 50RPM
Strokes: 224SPM
Pump Rate: 597GPM

MD: 13,300'⁰⁰
TVD: 7,417.68'
Inclination: 90.72°
Azimuth: 92.86°
VS: 5,500.32'

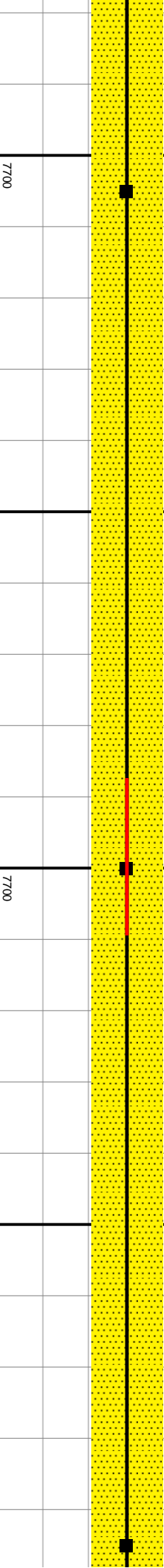
MD: 13,394'
TVD: 7,416'
Inclination:
Azimuth: 9°
VS: 5,594.4'

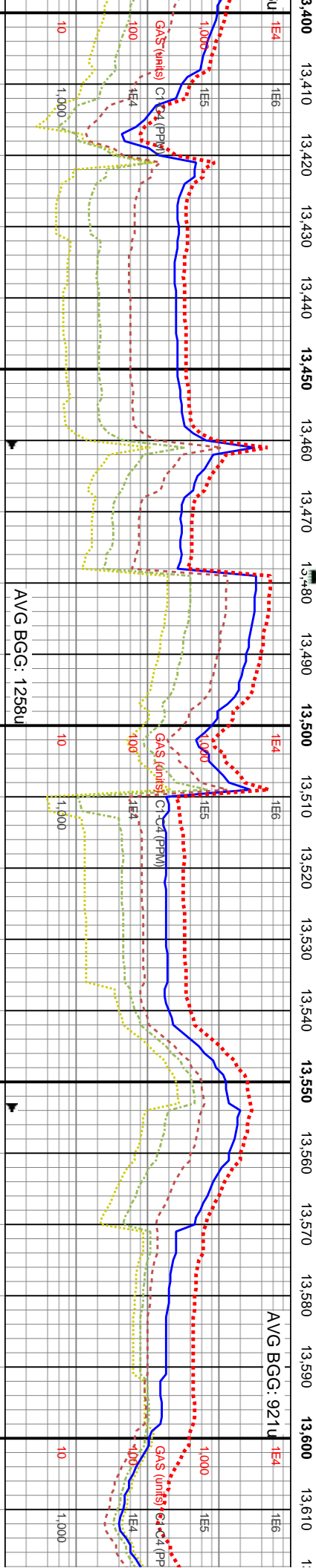
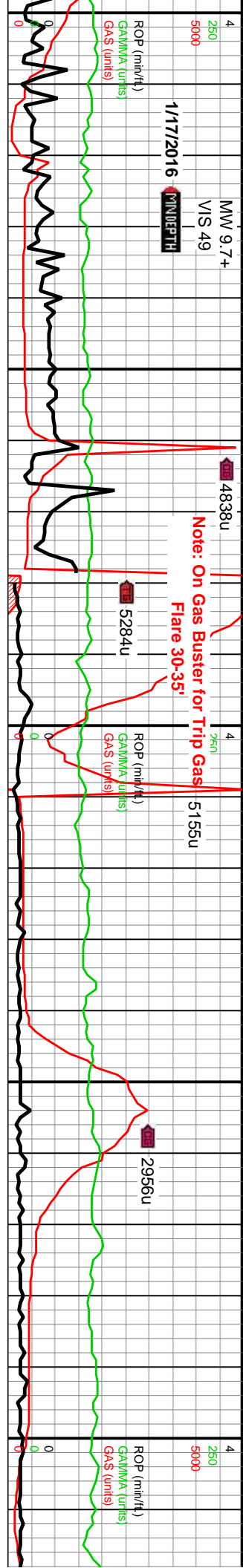
13220 SS: predy med-dk gysbhn, tr
cm, op grs thru, predy sb ang-sb rd,
mod strd, fr gr sup cls wi arg/silic cnt,
nner imbd/scat mic pyr, dul yelgn flor,
cut, mod blshwh resdl ring

13220-13280 SS: predy gysbhn, occly ofwht,
predy sb ang-sb rd, vf-f grs, mod strd, fr gr
sup cls wi arg/silic cnt, sl calc, tr imbd/scat
mic pyr, dul yelgn flor, wk mky cut, wk blshwh
resdl ring

13280-13340 SS: predy med gy-gysbhn, occly
ofwht, abnt clr-op grs thru, mod strd, vf-f grs,
sb ang-sb rd, gr sup cls wi arg-silic cnt, sl
calc, tr scat mic pyr, dul yelgn flor, wk mky cut,
mod blshwh resdl ring

13340-13400 SS: predy lt gy-gysbhn, abnt
ofwht-crm, ofwht-trnsl grs, mod w strd, sb
ang-sb rd, vf-f gr, sb ang qtz grs thru, fr-sl hrd,
gr sup cls wi arg-silic cnt, sl calc lp, tr pyr incl, tr
dul yelgn flor, wk mky cut, wk blshwh resdl ring





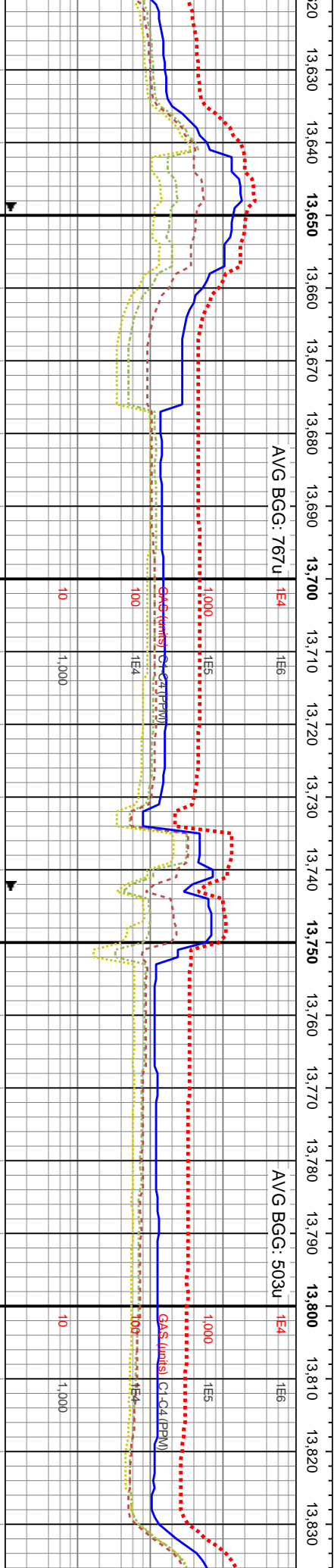
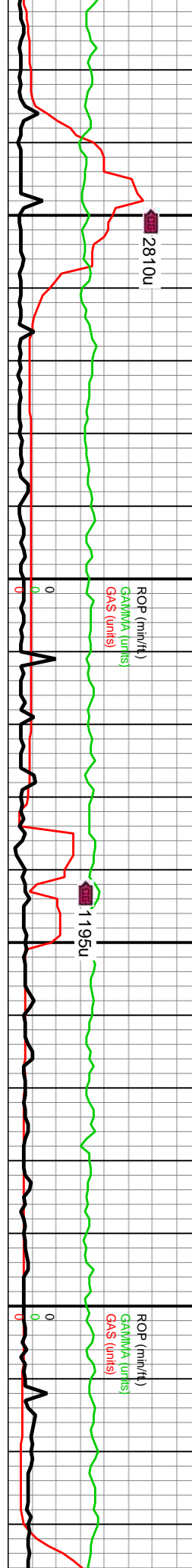
6700	WOB: 34.7Klbs Rotary: 70RPM Strokes: 224SPM Pump Rate: 598GPM	Bit #: RR2 Type: E516-B34-Z Size: 7.88 Depth In: 13,479' Depth Out: 14,980' Hours: 5.9 hrs	MD: 13,489' TVD: 7,415.6 Inclination: 90.81° Azimuth: 92.86° VS: 5,687.87'	13460-13520 SS (95%): gysbhn-med gy, vfr-gr, mod strd, sb ang-sb rd, frm-si fri, gr sup cis wi arg-silic cnt, yelgn flr, wk mky cut, wk bishwh resdl ring; LMST (5%): med-dk gy, pty-blky, v frm, v calc, micxn, scat calc SH
99'				

13400-13460 SS: predy gysbhn-med gy, lt gy clus, occ clr-op lse sd, vfr-gr, mod strd, sb ang-sb rd, frm-si fri, gr sup cis wi arg-silic cnt, pred sl calc, dul yelgn flr, wk mky cut, wk bishwh resdl ring	13460-13520 SS (95%): gysbhn-med gy, vfr-gr, mod strd, sb ang-sb rd, frm, gr sup cis wi arg-silic cnt, si calc, dul yelgn flr, wk mky cut, wk bishwh resdl ring; LMST (5%): med-dk gy, pty-blky, v frm, v calc, micxn, scat calc SH	13520-13580 SS (90%): predy gysbhn-med gy, abnt clr-op lse sd, vfr-gr, mod strd, sb ang-sb rd, frm-si fri, predy uncons, predy sl calc, dul yelgn flr, wk mky cut, wk bishwh resdl ring; LMST (10%): med-dk gy, pty-blky, v frm-hrd, v calc, micxn-cryptoxln, scat calc SH	13580-13640 SS: predy gysbhn-med gy, abnt clr-op lse sd, vfr-gr, mod strd, sb ang-sb rd, frm-si fri, gr sup cis wi arg-silic cnt, occy uncons, predy sl calc, wk mky cut, wk bishwh resdl ring
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7700				
7700				

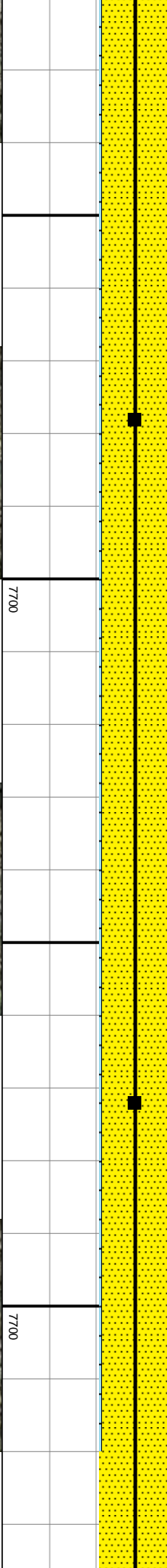


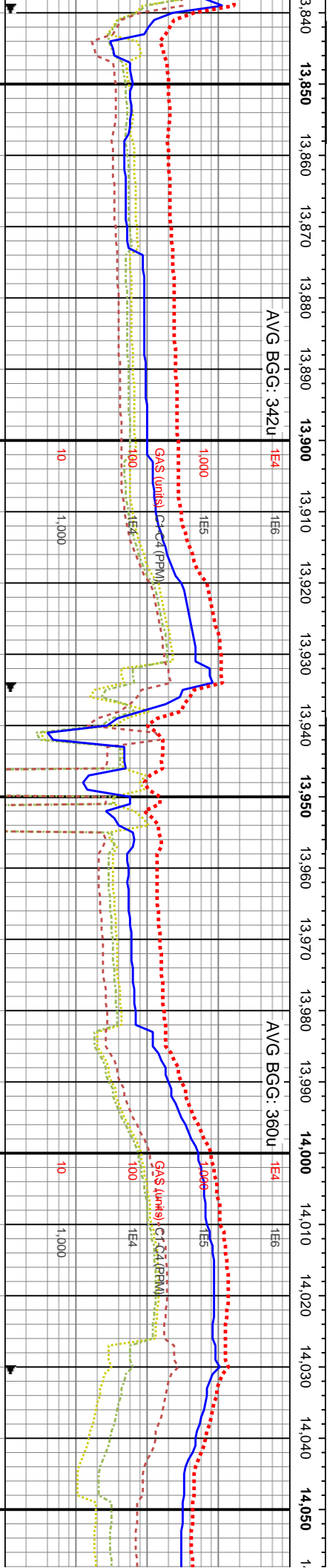
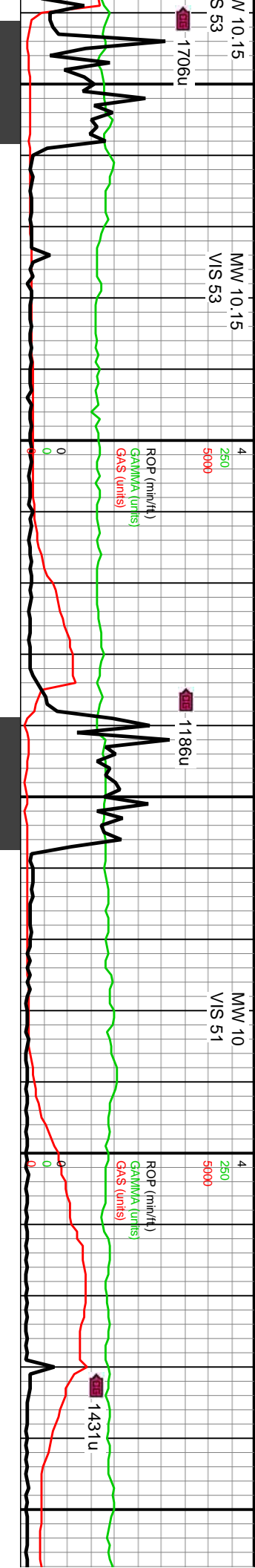
Note: TOO OH for Motor



MD: 13,678' TVD: 7,416.7' Inclination: 89.22° Azimuth: 92.25° VS: 5,875.14'	6700	MD: 13,772' TVD: 7,417.44' Inclination: 89.88° Azimuth: 92.55° VS: 5,968.3'	WOB: 33.2Klbs Rotary: 60RPM Strokes: 220SPM Pump Rate: 587GPM
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13640-13700 SS: predy med gy-lt gy, occly gysbn, sb ang-sb rd, vf-f grs, mod srt, lse op grs thru, fri gr sup cls, cons wi arg/silic cmt, sl calc ip, dul yeign flr, wk mky cut, tr LMST	13700-13760 SS (100%): predy med gy, occly gysbn, occ cl-op grs, mod srt, sb ang-sb rd, vf-f gr, sl frm-fri, gr sup cls wi arg-silic cmt, non-sl calc, dul yeign flr, wk mky cut, fnt bshwh resdl ring: tr LMST	13760-13820 SS: med gy-lt gy, lt th-crm, occ cl-op uncons sd, vf-f gr, mod srt, pred sb ang-sb rd, frm-sl fri, gr sup cls wi arg-silic cmt, pred non-sl calc, wk-mod yeign flr, wk mky cut, mod bshwh resdl ring: tr LMST	13820-13880 SS: med gy-lt gy, lt th-crm, occ cl-op uncons sd, vf-f gr, mod srt, pred sb ang-sb rd, frm-sl fri, gr sup cls wi arg-silic cmt, pred non-sl calc, wk-mod yeign flr, wk mky cut, mod bshwh resdl ring: tr LMST
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MD: 13.867'
TVD: 7,416.79'
Inclination: 90.9°
Azimuth: 91.23°
VS: 6,062.32'

MD: 13.962'
TVD: 7,418.96'
Inclination: 86.48°
Azimuth: 90.04°
VS: 6,155.98'

WOB: 46.8Klbs
Rotary: 60RPM
Strokes: 210SPM
Pump Rate: 562GPM

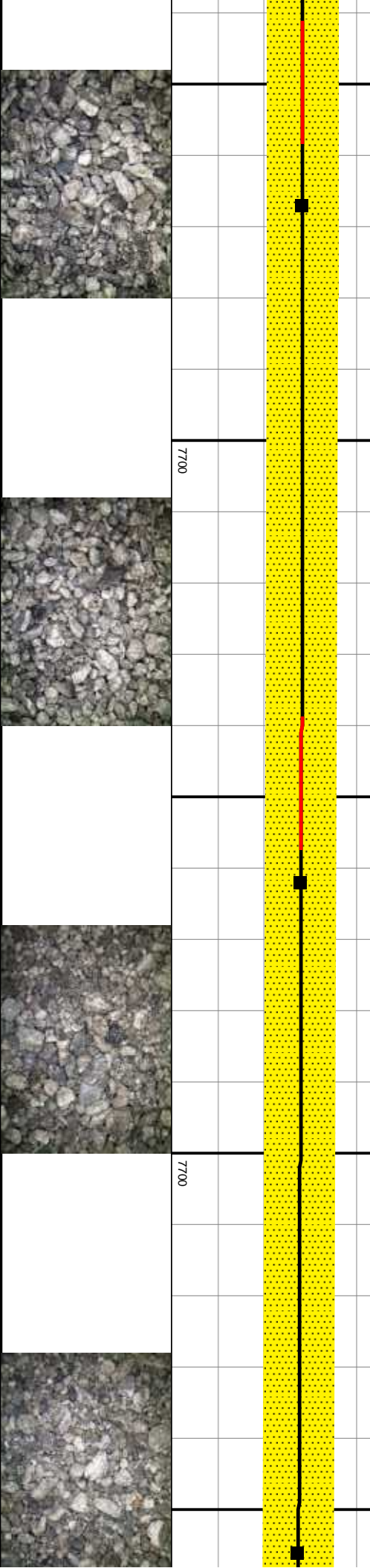
MD: 14.056'
TVD: 7,425.0'
Inclination: 88.0°
Azimuth: 88.0°
VS: 6,248.1'

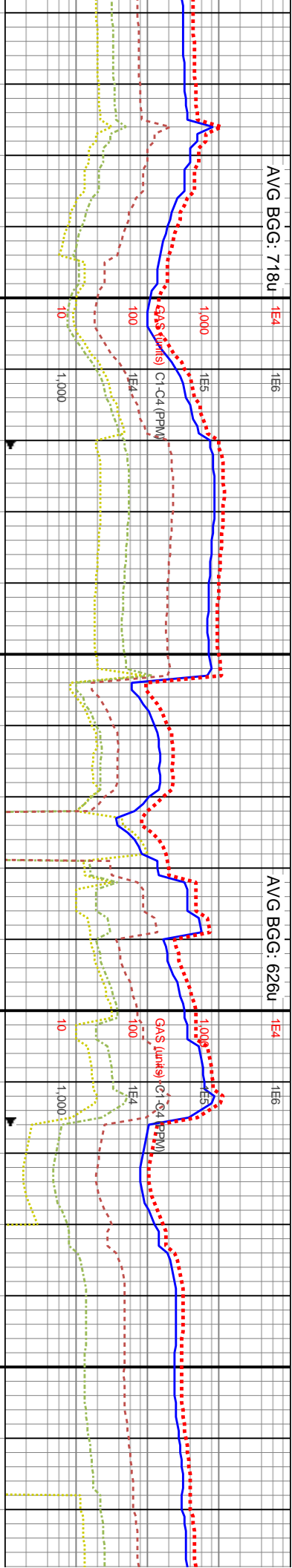
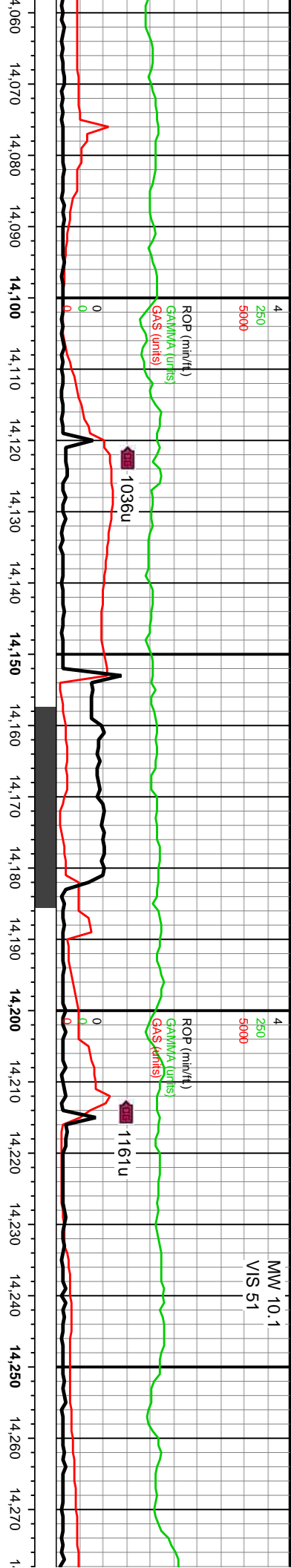
13880 SS: med gy-lt tr-crm, occ clr-op
sd, vf-f gr, mod strd, predy sb ang-sb
fri, gr sup cls wi arg-silic cnt, sl calc,
flor, wk mky cut, wk-mod bishwh
resd ring

13880-13940 SS: lt tr-crm, occly med-dk gy, tr
clr-op uncons sd, vf-f gr, mod strd, predy sb
ang-sb rd, frm-sl fri, gr sup cls wi arg-silic cnt,
sl calc, wk yeign flor, wk mky cut, wk bishwh
resd ring

13940-14000 SS: predy gyshbn, med gy-lt gy
cls, tr clr uncons sd, vf-f gr, mod strd, sb
ang-sb rd, frm-sl fri, gr sup cls wi arg-silic cnt,
sl calc, du yeign flor, wk mky cut, mod bishwh
resd ring

14000-14060 SS: predy gyshbn-med gy, occly
ofwht-crm, vf-f gr, mod strd, sb ang-sb rd, gr
sup cls wi arg-silic cnt, tr mic pyr, du yeign
flor, wk mky cut, wk bishwh resd ring





MD: 14,151'
TVD: 7,431.05'
Inclination: 86.7°
Azimuth: 87.35°
VS: 6,340.76'

WOB: 46.1Klbs
Rotary: 50RPM
Strokes: 210SPM
Pump Rate: 561GPM

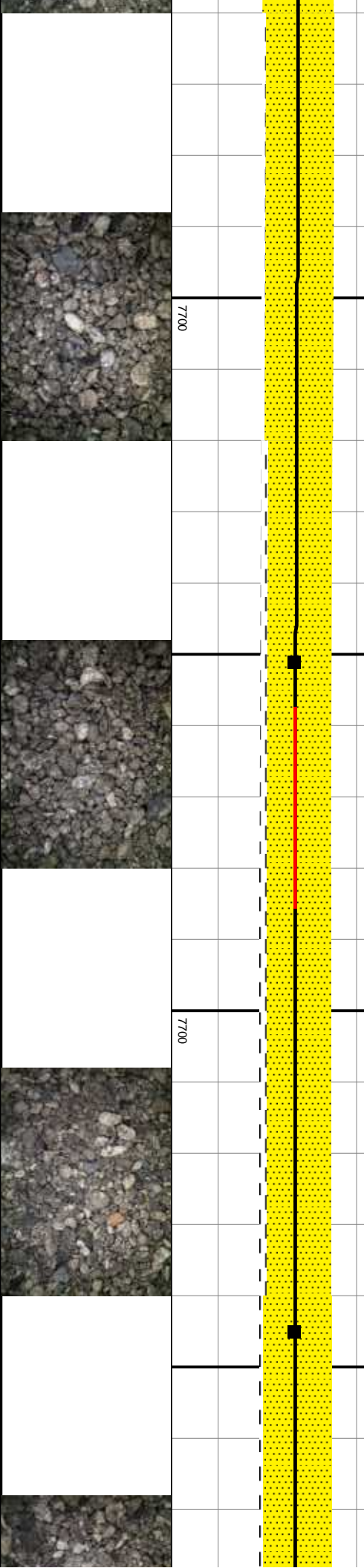
MD: 14,245'
TVD: 7,433.74'
Inclination: 90.01°
Azimuth: 88.46°
VS: 6,432.59'

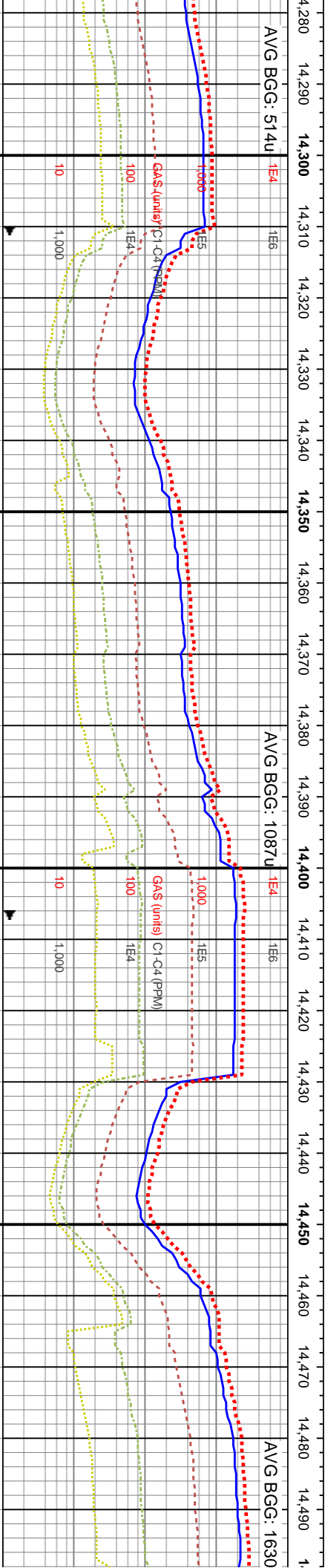
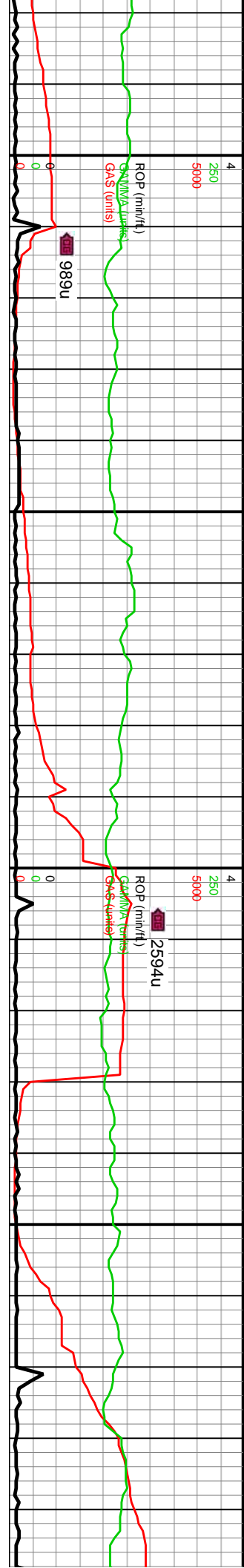
14060-14120 SS: predy gysbhn, med gy-ilt
brn, mod srted, frm-sl fri, sb ang-sb rd, v-f grs,
gr sup cls wi arg/silic cnt non-sl calc, dul
yelgn flor, wk mky cut, blshwn resdl ring, tr
non calc SH

14120-14180 SS (90%): med gy-gysbhn, tr offwht
clus, v-f gr, sb ang-sb rd, mod srted, frm, gr sup
cls wi arg-silic cnt, pred non calc, mod yelgn flor,
wk mky cut, wk blshwn resdl ring: SH (10%): v dk
gy-blk, frm, blk-y-pty, silty tex, non-v sl calc

14180-14240 SS (90%): gysbhn, occ offwht clus,
v-f gr, sb ang-sb rd, mod srted, frm, gr sup cls wi
arg-silic cnt, predy non calc, v sl calc, dul yelgn
flor, wk mky cut, wk blshwn resdl ring: SH (10%):
v dk gy-blk, frm, blk-y-pty, silty tex, non-v sl calc

14240-14300 SS: predy gy
brn, mod srted, frm-sl fri, sb
gr sup cls wi arg/silic cnt n
yelgn flor, wk mky cut, blsh
non calc SH





MD: 14,340'
TVD: 7,433.5'
Inclination: 90.28°
Azimuth: 88.94°
VS: 6,525.73'

WOB: 45Klbs
Rotary: 60RPM
Strokes: 210SPM
Pump Rate: 560GPM

MD: 14,435'
TVD: 7,433.26'
Inclination: 90.01°
Azimuth: 88.37°
VS: 6,618.84'

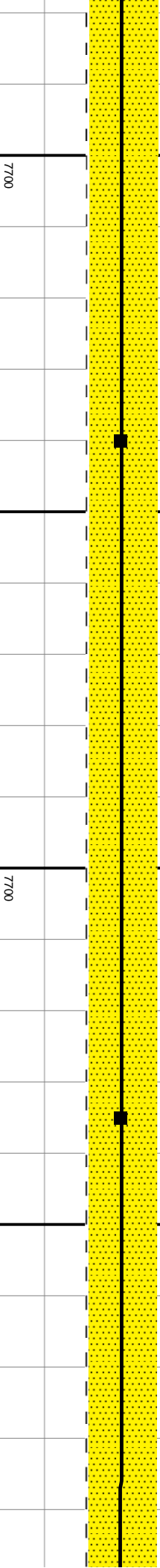
shbn, med gy-lt
ang-sb rd, vf-f grs,
on-si calc, dul
v wh resdl ring, tr

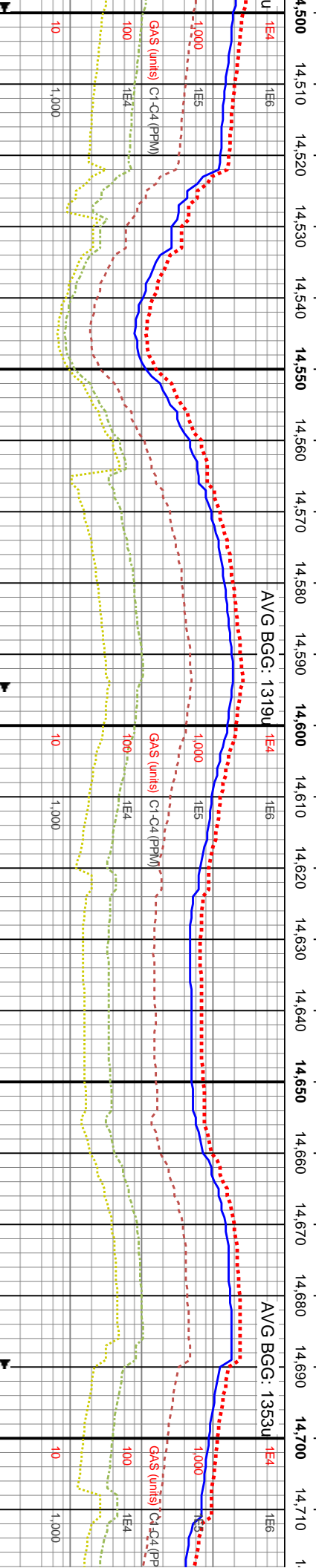
14300-14360 SS: predy gyshbn, med gy-dk
brn, vf-uf grs, predy ang, sb ang-sb rd, gr sup
cls wi arg/silic cnt, sme sl calc, dul yeign flor,
v wk mky cut, blshwh resdl ring; tr non calc SH

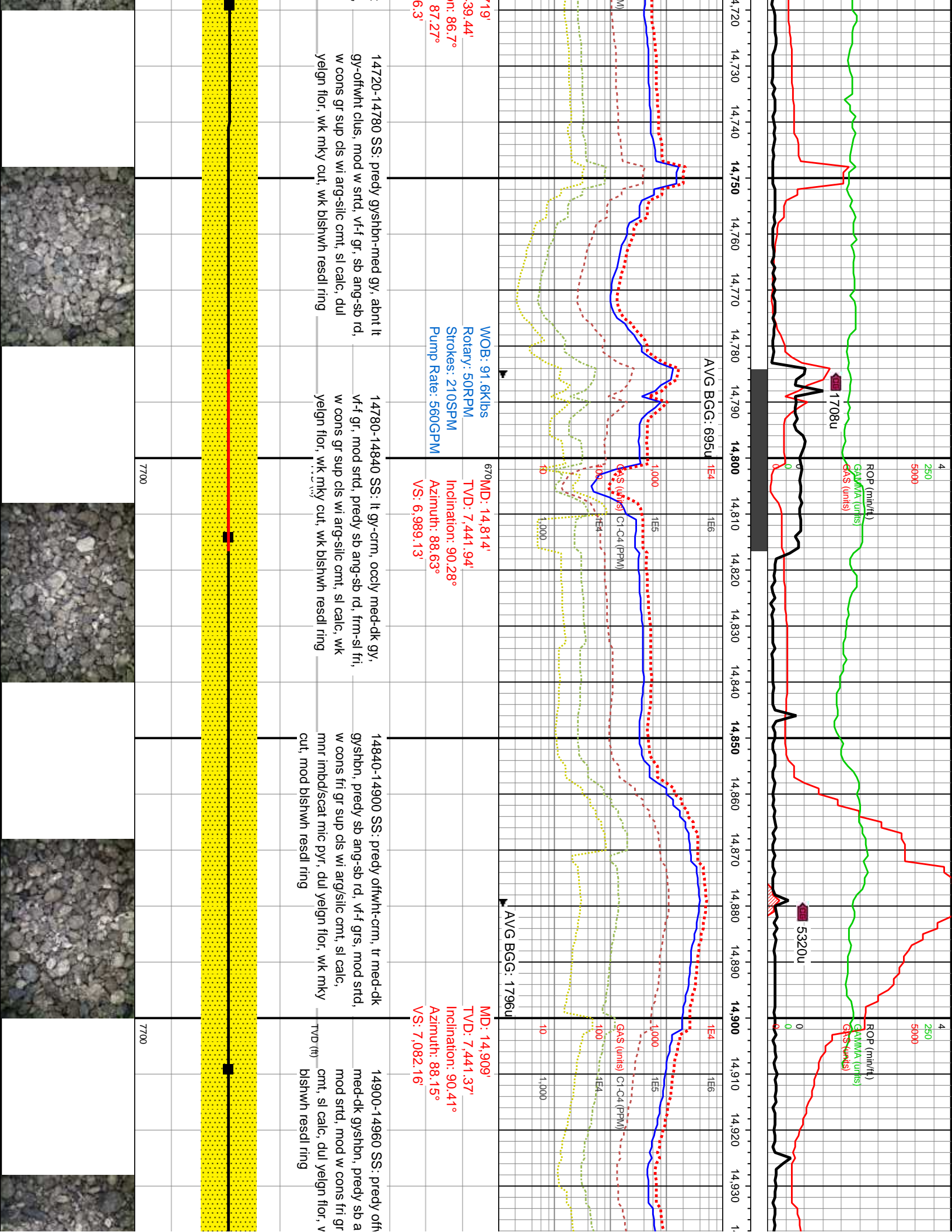
14360-14420 SS: predy gyshbn, med gy-dk
gyshbn, mod strd, sb ang-sb rd, vf-uf grs, sb
ang qtz grs, hrd-si fri, gr sup cls, cons wi
arg/silic cnt, sl calc, dul yeign flor, wk mky cut,
blshwh resdl ring; tr non calc SH

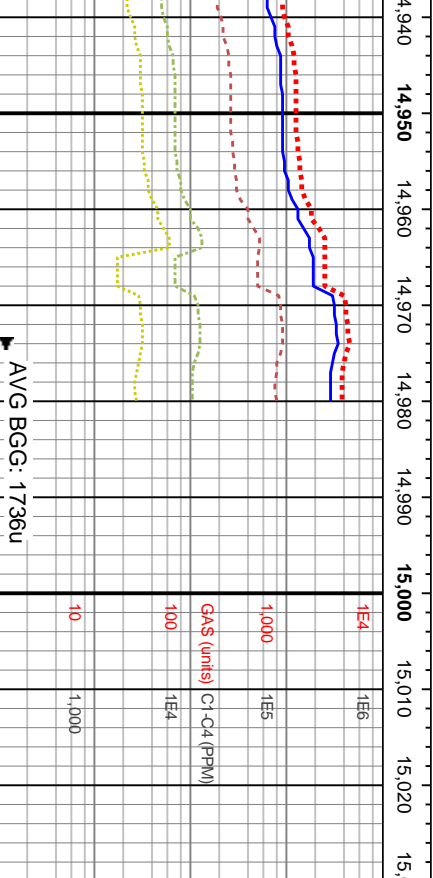
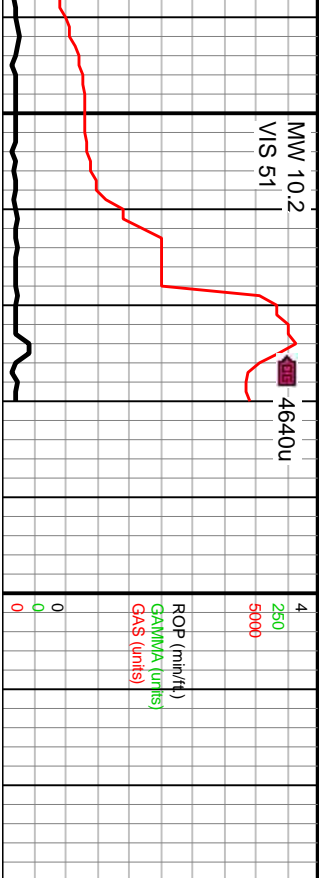
14420-14480 SS: predy gyshbn, occly med gy-lt
gy-ofwhit, mod strd, sb ang-sb rd, vf-uf grs, tr sb
ang qtz grs, hrd-si fri, gr sup cls, cons wi
arg/silic cnt, sl calc, tr pyr, dul yeign flor, wk mky
cut, blshwh resdl ring; tr non calc SH

14480-14500 SS: predy gyshbn, med gy-lt
gy-ofwhit, mod strd, sb ang-sb rd, vf-uf grs, tr sb
ang qtz grs, hrd-si fri, gr sup cls, cons wi
arg/silic cnt, sl calc, tr pyr, dul yeign flor, wk mky
cut, blshwh resdl ring; tr non calc SH









MD: 14,980'
TVD: 7,440.86'
Inclination: 90.41°
Azimuth: 88.15°
VS: 7,151.62'

whit-It gy, occly
ng-sb rd, vf-f grs,
sup cls wi arg/silc
wk mky cut, mod

TV_D (ft)

7700