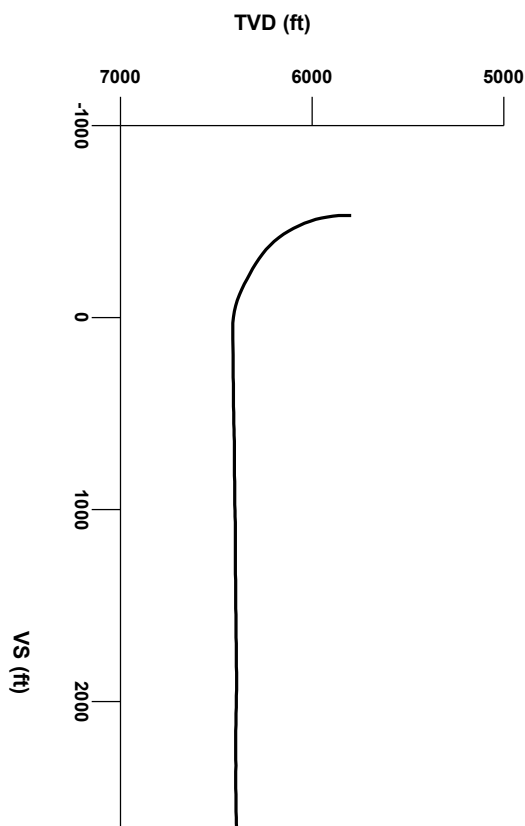




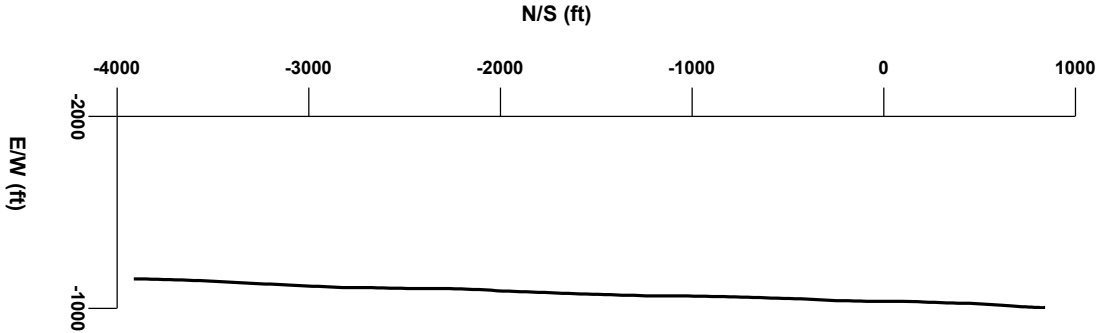
LOG created using Lplot VH Version 3.0, October 31, 2012, Copyright (C) 1999-2009 Pason Systems Corp.

OPERATOR: BONANZA CREEK ENERGY INC.
WELL: ANTELOPE-F-J-17HZ
LOCATION: NENW Sec 17 T5N R62W
COUNTY: WELD
STATE: COLORADO
SPOT: 734 FNL 2027 FWL
ELEVATION: 4690GL 4705KB
FIELD: WATTENBERG
SPUD DATE: 10/22/2012
TD DATE: 10/31/2012
DATES LOGGED: 10/25/2012- 10/31/2012
DEPTHS LOGGED: 5990'- 11,214'
LOGGERS: KEVIN GERAGHTY, RYAN SHILLING
DRILLING FLUID: LSND
DRILLING RIG: ENSIGN 128
API: 05-123-3610600
LOG TYPE: HORIZONTAL
SCALE: 1:240 (5 inches per 100 feet)
REMARKS: Wellsite Geological Services Provided By Columbine Logging Inc.
LAT: 40.40461, 104.34918

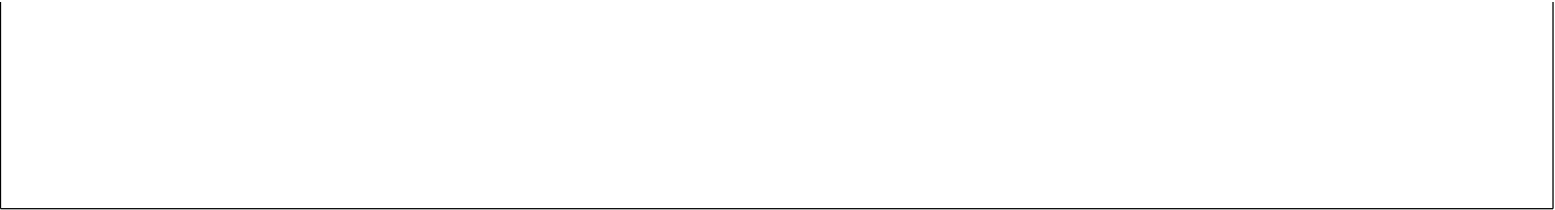


Survey Elevation

Survey Plan



3000 4000 5000



LITHOLOGIES

Chalk

Marl

Sandstone

Shaly Sandstone

Silty Shale

MODIFIERS

B

Bentonite

F

Fossils

ENGINEERING SYMBOLS

Casing

Connection

Connection Gas

Midnight Depth

Casing

Arrow

DEPTH (FEET)

5990

6000

10

20

30

40

50

60

70

SLIDE/ROTATE

0

200

ROP

FT/HR

0

200

GAS

UNITS

6000

C1

PPM

600000

C2

PPM

600000

C3

PPM

600000

C4

PPM

600000

COLUMBINE LOGGING

RIGGED UP ON 10/24/12

MANNED 2-PERSON LOGGING

WITH BLOODHOUND GAS

CHROMATOGRAPH UNIT #0034

HZ BEGAN ON 10/26/2012 @ 01:04 MST

Slight Trace

80% SLTY: SH: mgy-lgy, modst-si firm, sbply-sbply, silty-aren, si-n calc, tr inbd/ ss, occ pyr ct, grdg to sh

20% SHY: SS: lt-mgy, occ s&p, vf-mt gr, sbang-sbrd, mod st-fti, modst- pstt, arg cnt, calc, sme ss, occ sh

75% SLTY: SH: mgy-lgy, modst-si firm, si sbply, silty-aren, si-n calc, tr inbd/ ss, occ ct, grdg to sh

25% SHY: SS: lt-mgy, occ s&p, vf-mt gr, si sbd, mod st-fti, modst- pstt, arg cnt, calc ss, occ sh

TVD

ft

7500

5700

0

300

GAMM

0

300

MD 6005'

INC 1.1°

AZI 52.9°

TVD 5797.06'

MD 6036'

INC 1.7°

AZI 128.0°

TVD 5828.06'

MD 6069'

INC 4.1°

AZI 158.6°

TVD 5861.01'

CUTTINGS LITHOLOGY

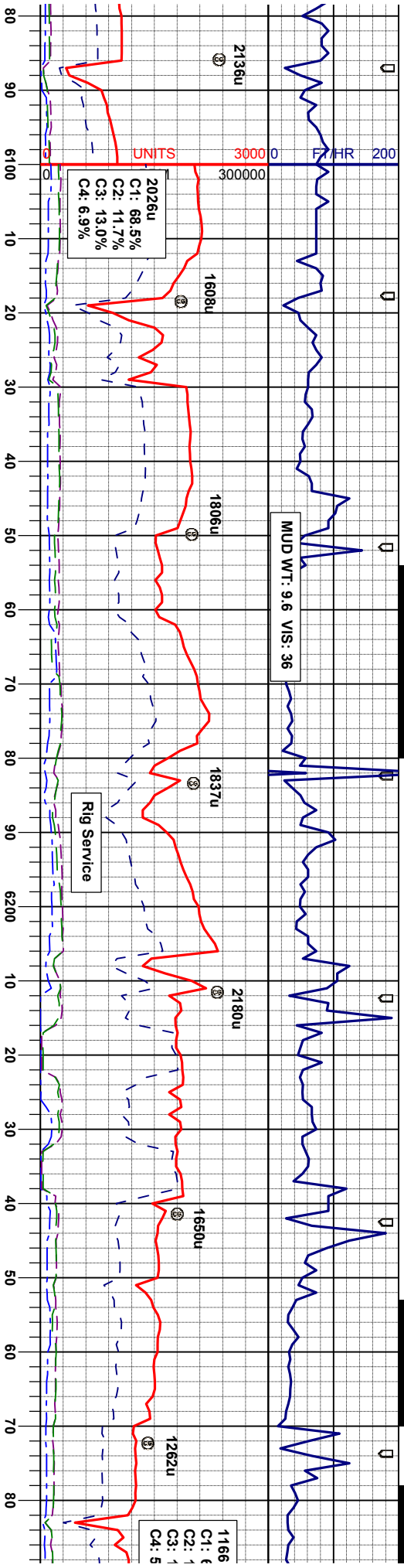
90

OIL SHOW

T F G

7500

SAMPLE PHOTOS



MD 6100'
INC 6.8°
AZI 173.2°
TVD 5691.87'

MD 6131'
INC 9.9°
AZI 179.7°
TVD 5922.54'

MD 6161'
INC 13.1°
AZI 181.6°
TVD 5951.94'

MD 6191'
INC 16.1°
AZI 182.0°
TVD 5980.96'

MD 6222'
INC 19.2°
AZI 183.4°
TVD 6010.50'

MD 6264'
INC 21.9°
AZI 182.8°
TVD 6040.46'

MD 6285'
INC 25.1°
AZI 182.7°
TVD 6068'

80% SLTY: SH: mgy-lygy, modst-si firm, spbly-sbly, sly-aren, sl-n calc, tr mtd/ ss, tr pyr cl, grdg to sh
20% SHY: SS: lk-mgy, occ s&p, vf-mf gr, spang-sbrd, mod st-fti, modst- psrt, arg cntl, calc, sme ss, occ sh

80% SLTY: SH: lly-mgy, occ gybrn, modst-si firm, brt, spbly-sbly, sly-aren, sl-n calc, tr mtd/ ss, 20% SHY: SS: lk-mgy, occ s&p, vf-mf gr, spang-sbrd, mod st-fti, modst- psrt, arg cntl, calc, tr pyr, tr ss

85% SLTY: SH: lly-mgy, occ gybrn, occ dkgy, modst-si firm, brt, spbly-sbly, aren-arg, sl-n calc, calc, occ mtd/ ss, 15% SHY: SS: lk-mgy, occ s&p, vf-mf gr, spang-sbrd, mod st-fti, modst- psrt, arg cntl, calc, sme pyr, tr ss, sme mdst

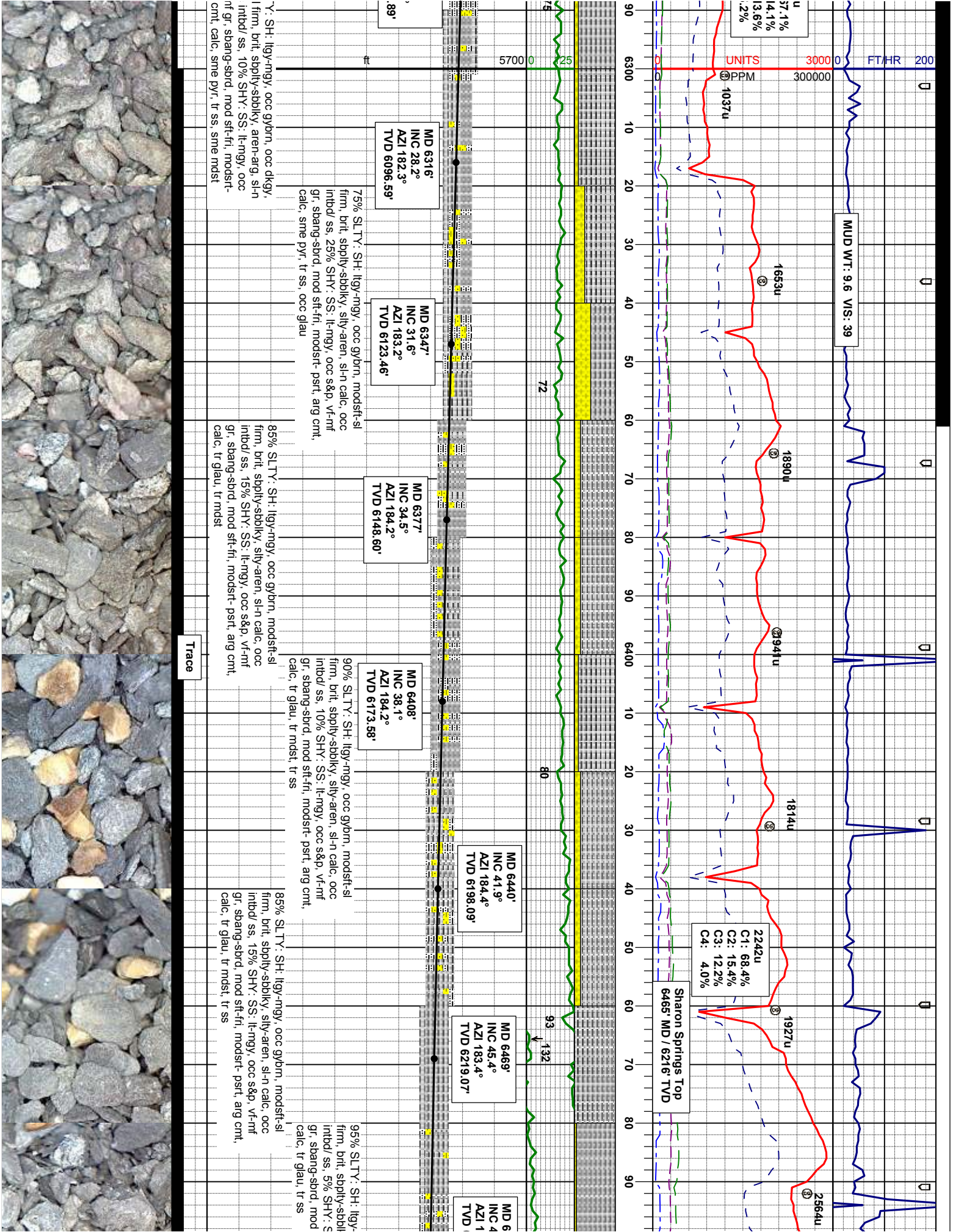
80% SLTY: SH: lly-mgy, occ gybrn, modst-si firm, brt, spbly-sbly, sly-aren, sl-n calc, tr mtd/ ss, 25% SHY: SS: lk-mgy, occ s&p, vf-mf gr, spang-sbrd, mod st-fti, modst- psrt, arg cntl, calc, tr ss

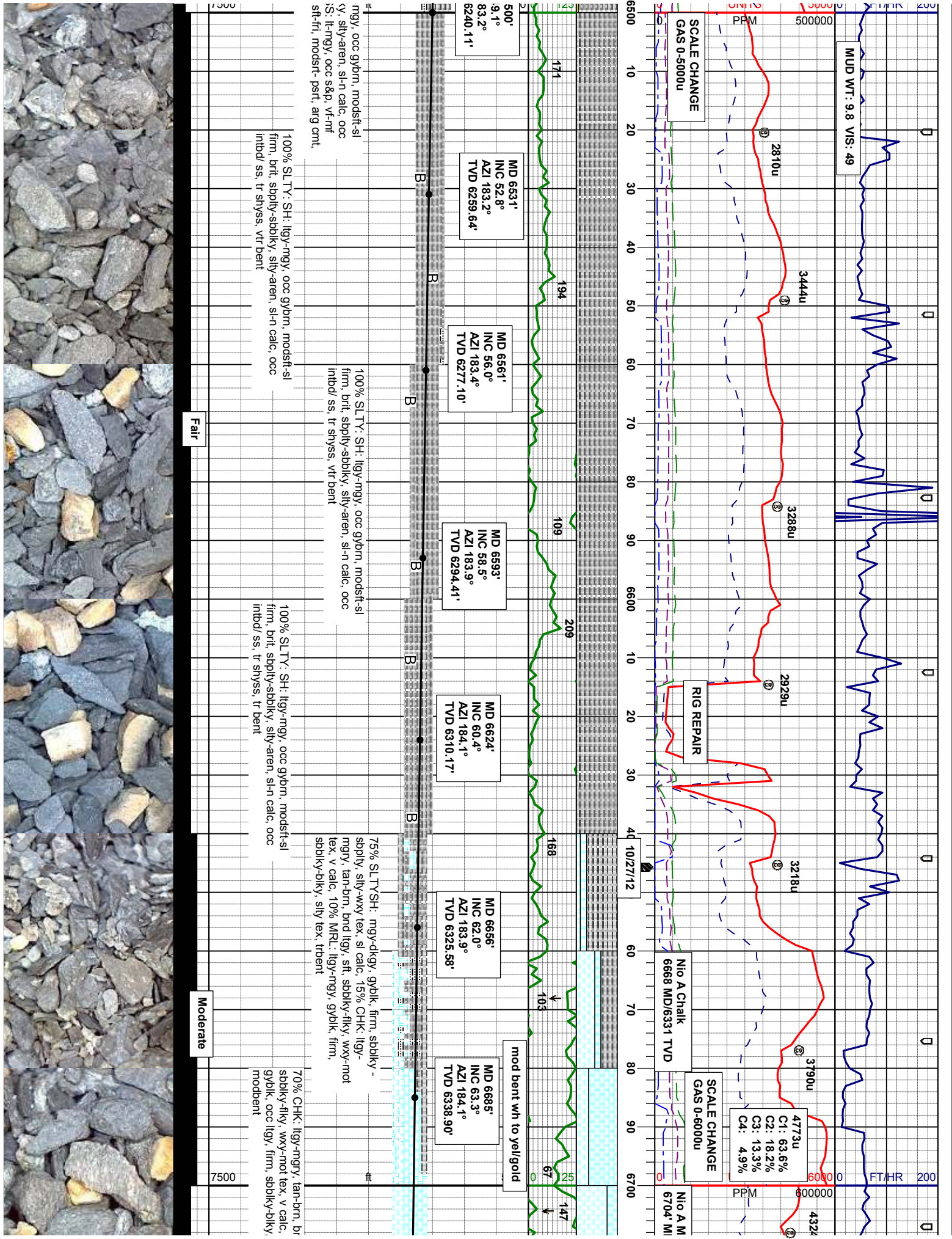
85% SLTY: SH: lly-mgy, occ gybrn, modst-si firm, brt, spbly-sbly, aren-arg, sl-n calc, calc, occ mtd/ ss, 15% SHY: SS: lk-mgy, occ s&p, vf-mf gr, spang-sbrd, mod st-fti, modst- psrt, arg cntl, calc, sme pyr, tr ss, sme coal, sme mdst

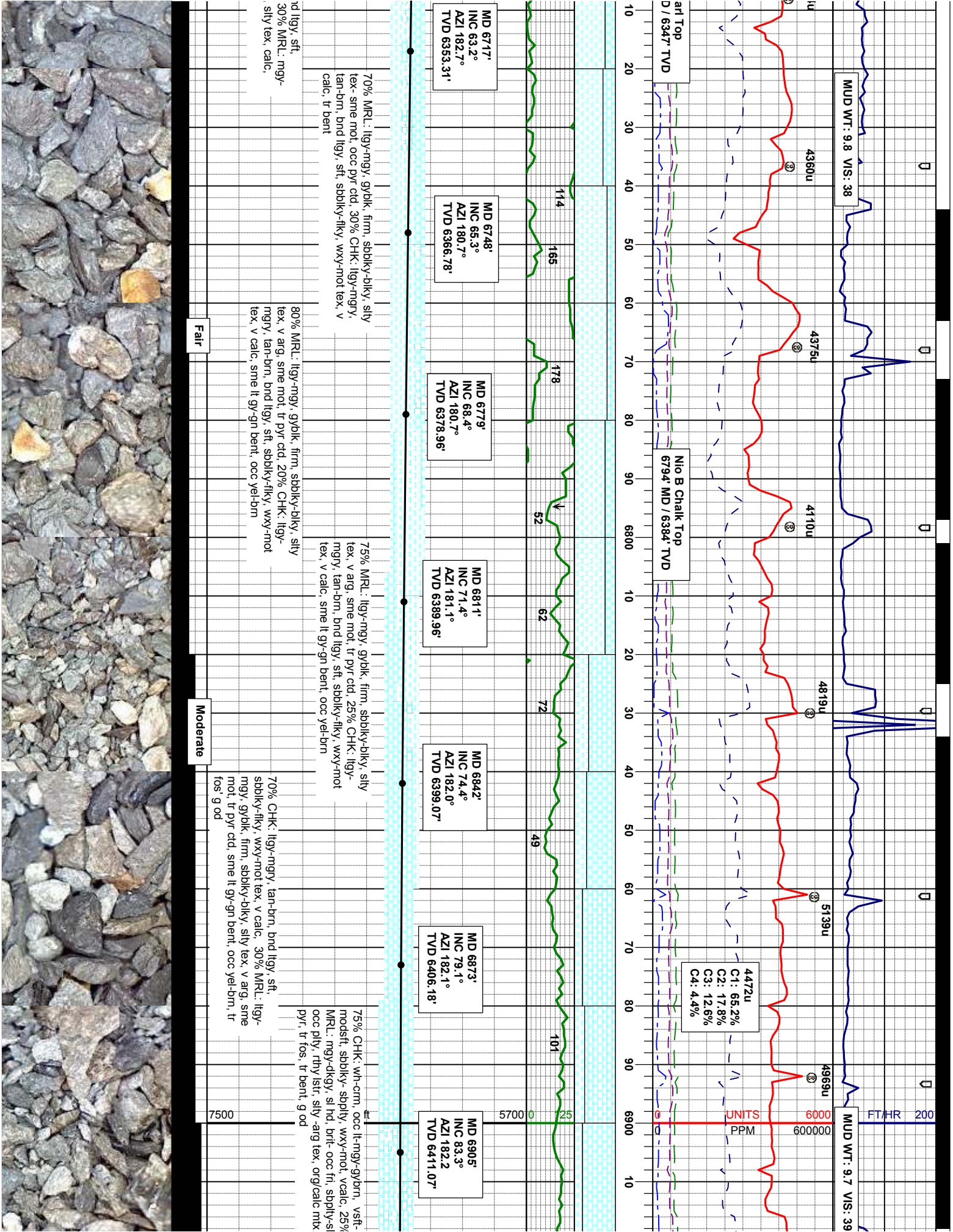
90% SLTY: modst-s calc, occ s&p, vf-n psrt, arg

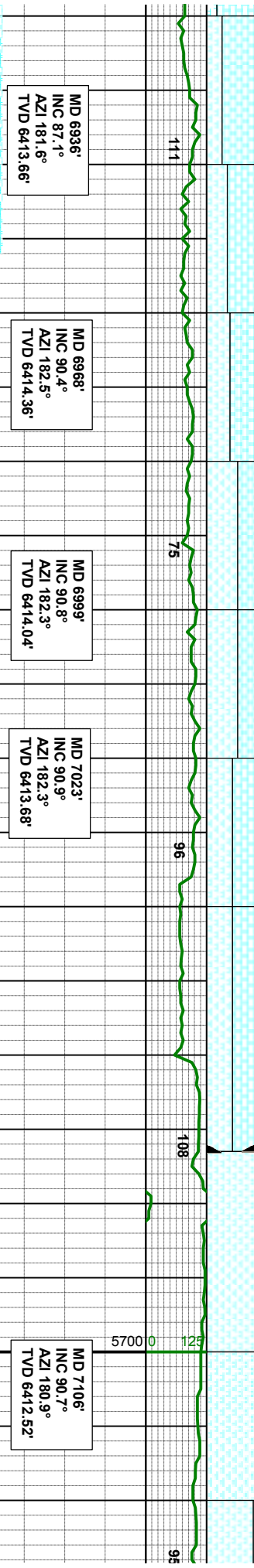
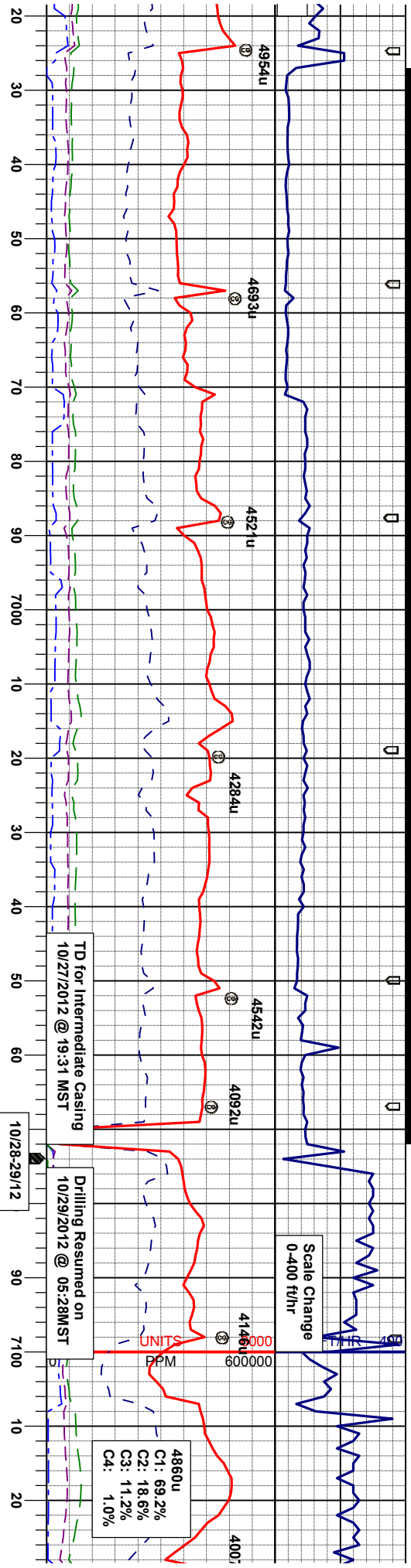
Slight Trace











70% CHK: lt-mgy-gybrn, occ wh-crm, vsft-modstf, sbblky-sbply, wxy-mot, vcalc, 30% MRl: mgy-dkgy, sl hd, brlt-occ frt, sbply-sbblky, occ ply, rthy lstr, slty-arg tex, orgcalc mtx, sme pyr, tr fos, abnt inbnd sec calcite, tr bent, g od

55% CHK: lt-mgy-gybrn, occ wh-crm, vsft-modstf, sbblky-sbply, wxy-mot, vcalc, 45% MRl: mgy-dkgy, sl hd, brlt-occ frt, sbply-sbblky, occ ply, rthy lstr, slty-arg tex, orgcalc mtx, sme pyr, sme lse fos, sme sec calcite, tr bent, g od

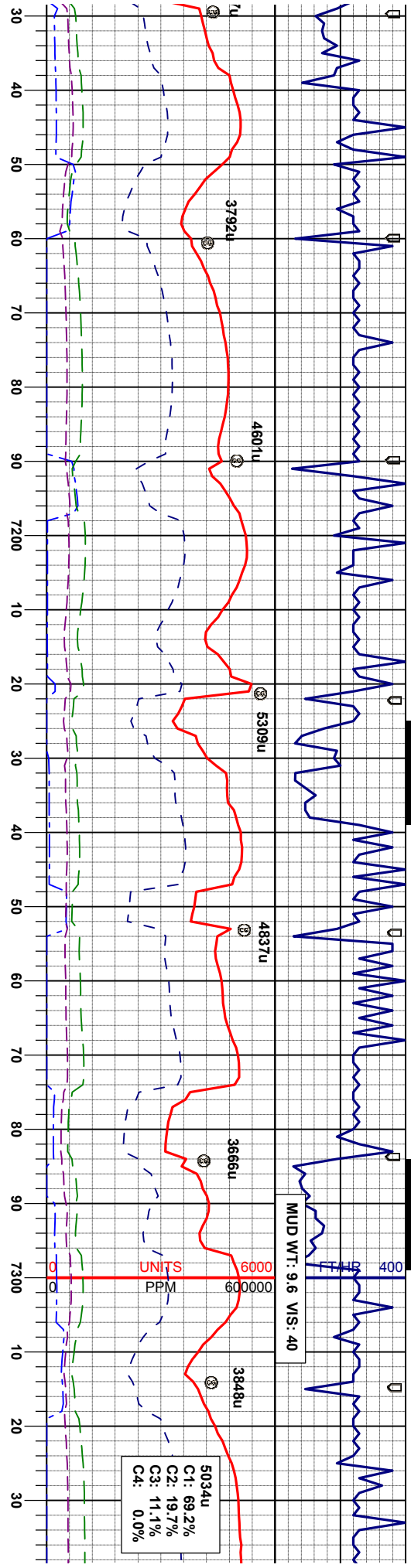
60% MRl: mgy-dkgy, sl hd, brlt-occ frt, sbply-sbblky, occ ply, rthy lstr, slty-arg tex, orgcalc mtx, 40% CHK: lt-mgy-gybrn, occ wh-crm, vsft-modstf, sbblky-sbply, wxy-mot, vcalc, tr lse fos tr pyr, trsec calcite, vtr bent, fr-g od

50% CHK: lt-mgy-gybrn, occ wh-crm, vsft-modstf, sbblky-sbply, wxy-mot, vcalc, 50% MRl: mgy-dkgy, sl hd, brlt-occ frt, sbply-sbblky, occ ply, rthy lstr, slty-arg tex, orgcalc mtx, tr lse fos, tr pyr, trsec calcite, vtr bent, fr-g od

100% MRl: mgy-dkgy, gyblk, sl hd, brlt-occ frt, sbply-sbblky, occ ply, rthy lstr, slty-arg tex, orgcalc mtx, sme lse fos tr pyr, occ calcite, tr fos, sme llyn-gy, bent, sme chk, fr od

90% MR sbblky, o mtx, 10% modstf, s fos, sme





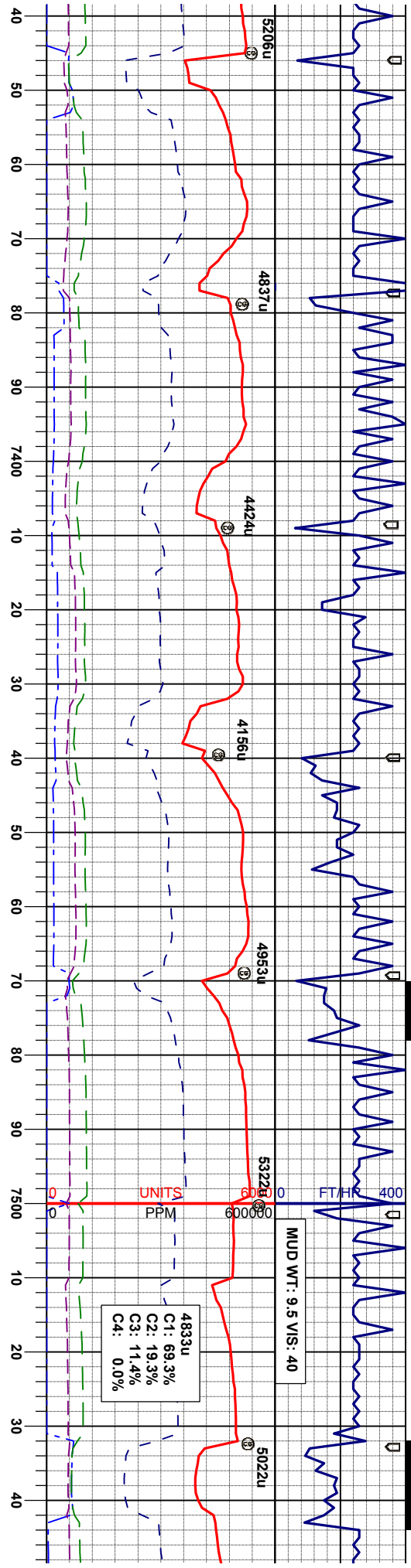
MUD WT: 9.6 VIS: 40

5034u
C1: 69.2%
C2: 19.7%
C3: 11.1%
C4: 0.0%

MD 7137' INC 90.1° AZI 180.5° TVD 6412.31'	MD 7169' INC 90.0° AZI 179.3° TVD 6412.28'	MD 7200' INC 90.2° AZI 179.1° TVD 6412.22'	MD 7230' INC 90.8° AZI 180.4° TVD 6411.96'	MD 7262' INC 90.8° AZI 180.7° TVD 6411.52'	MD 7293' INC 90.5° AZI 180.5° TVD 6411.16'	MD 7324' INC 90.6° AZI 182.1° TVD 6410.87'
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85% MRL: mgy-dkgy, sl hd, brt- occ fri, sbply- sbply, occ ply, rthy lstr, silty -arg tex, org/calc mtx, 15% CHK: lt-mgy-gybrn, occ wh-crm, vsft- modstf, sbblky- sbply, wxy-mot, vcalc, sme ise fos, sme ise calcite, tr bent, fr od	80% MRL: mgy-dkgy, sl hd, brt- occ fri, sbply- sbblky, occ ply, rthy lstr, silty -arg tex, org/calc mtx, 20% CHK: lt-mgy-gybrn, occ wh-crm, vsft- modstf, sbblky- sbply, wxy-mot, vcalc, scat ise fos, sme ise calcite, tr bent, fr od	80% MRL: mgy-dkgy, sl hd, brt- occ fri, sbply- sbblky, occ ply, rthy lstr, silty -arg tex, org/calc mtx, 20% CHK: lt-mgy-gybrn, occ wh-crm, vsft- modstf, sbblky- sbply, wxy-mot, vcalc, scat ise fos, sme ise calcite, scat bent, fr od	85% MRL: mgy-dkgy sbblky, occ ply, rthy mtx, 15% CHK: lt-m modstf, sbblky- sbpl fos, sme ise calcite,
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MD 7355'
INC 90.6°
AZI 181.8°
TVD 6410.54'

MD 7387'
INC 90.8°
AZI 181.3°
TVD 6410.23'

MD 7417'
INC 90.8°
AZI 180.5°
TVD 6409.89'

MD 7448'
INC 91.5°
AZI 181.3°
TVD 6409.27'

MD 7479'
INC 91.4°
AZI 183.2°
TVD 6408.49'

MD 7509'
INC 91.6°
AZI 182.0°
TVD 6407.70'

MD 7541'
INC 91.0°
AZI 183.2°
TVD 6406.98'

85% MRL: mgy-dkgy, sl hd, brt-occ fti, sbply-sbblky, occ pily, rthy lst, sily-arg tex, org/calc mtx, 15% CHK: lt-mgy-gybrn, occ wh-crm, vsft-modstf, sbblky-sbply, wxy-mot, vcalc, sme ise fos, sme ise calcite, scat bent, fr od

85% MRL: mgy-dkgy, sl hd, brt-occ fti, sbply-sbblky, occ pily, rthy lst, sily-arg tex, org/calc mtx, 15% CHK: lt-mgy, occ wh-crm, vsft-modstf, sbblky-sbply, wxy-mot, vcalc, sme ise&intbd fos, sme ise calcite, sme bent, tr pyr fr od

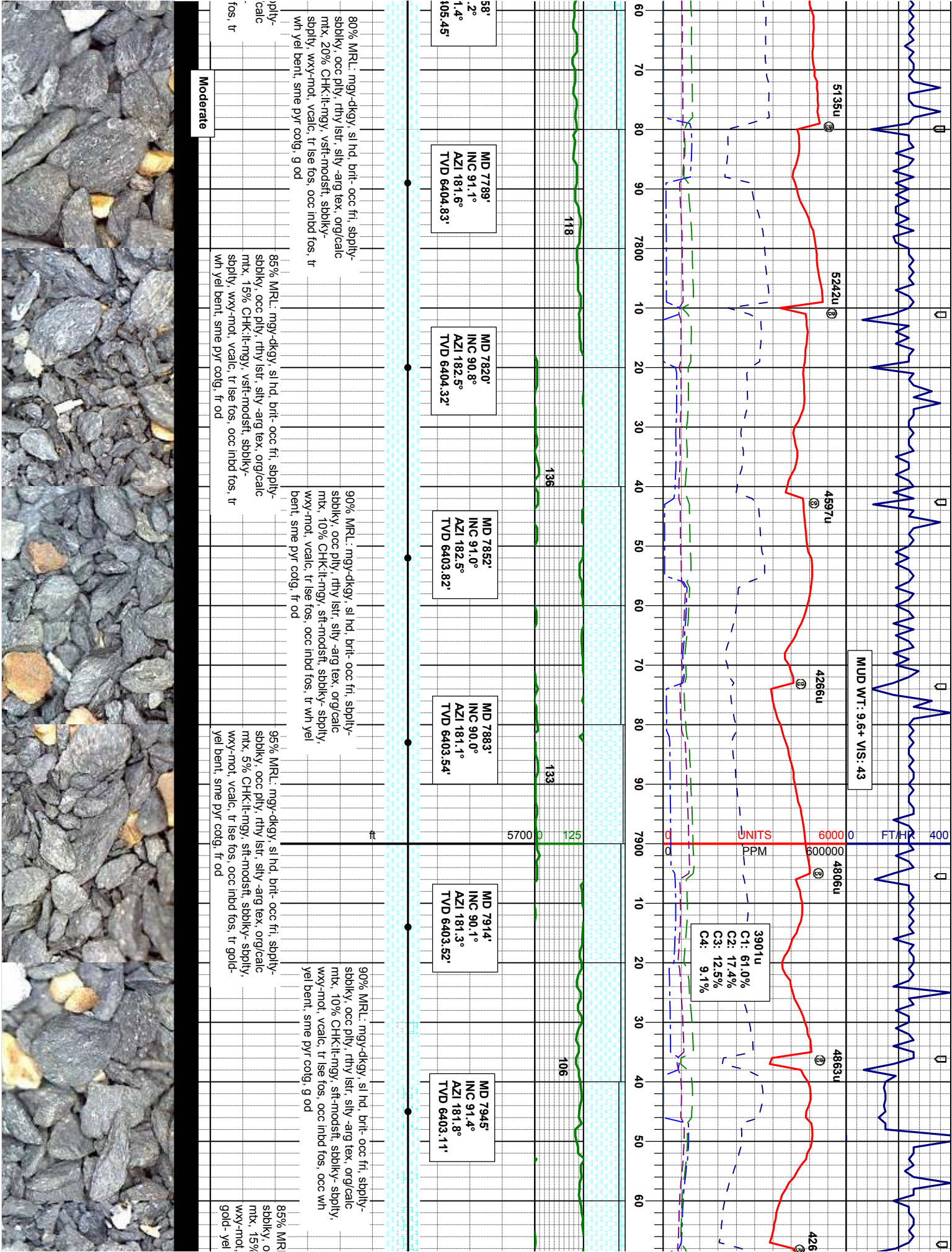
75% MRL: mgy-dkgy, sl hd, brt-occ fti, sbply-sbblky, occ pily, rthy lst, sily-arg tex, org/calc mtx, 25% CHK: lt-mgy, occ wh-crm, vsft-modstf, sbblky-sbply, wxy-mot, vcalc, sme ise&intbd fos, sme ise calcite, abnt bent,

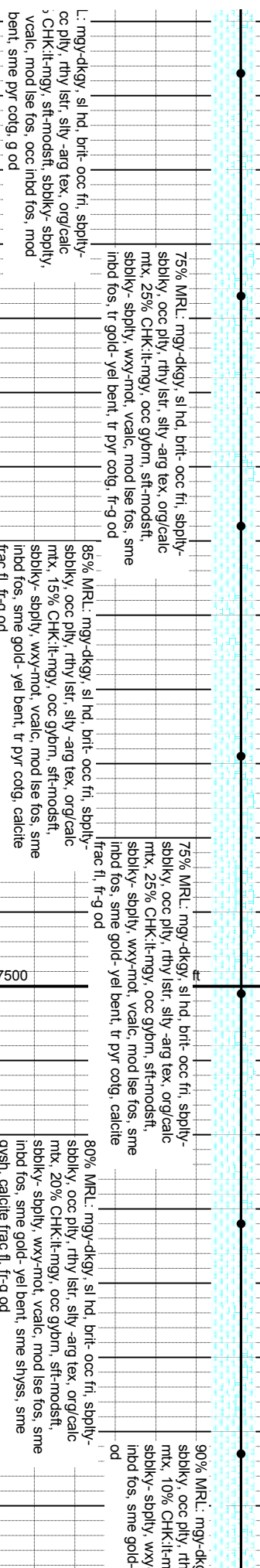
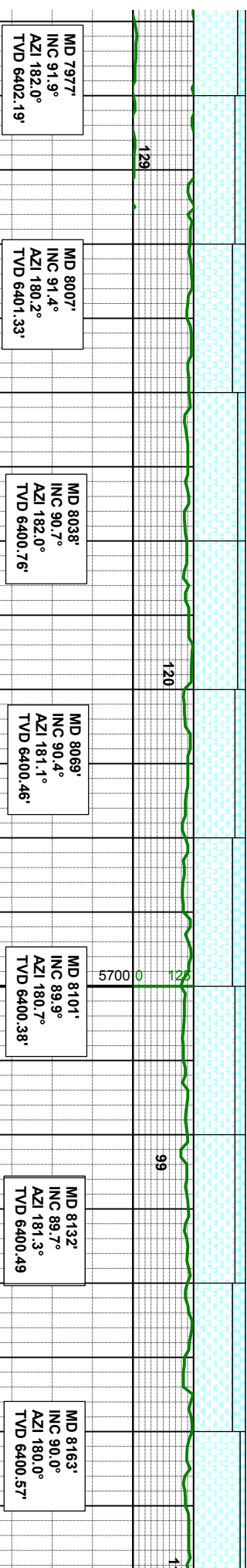
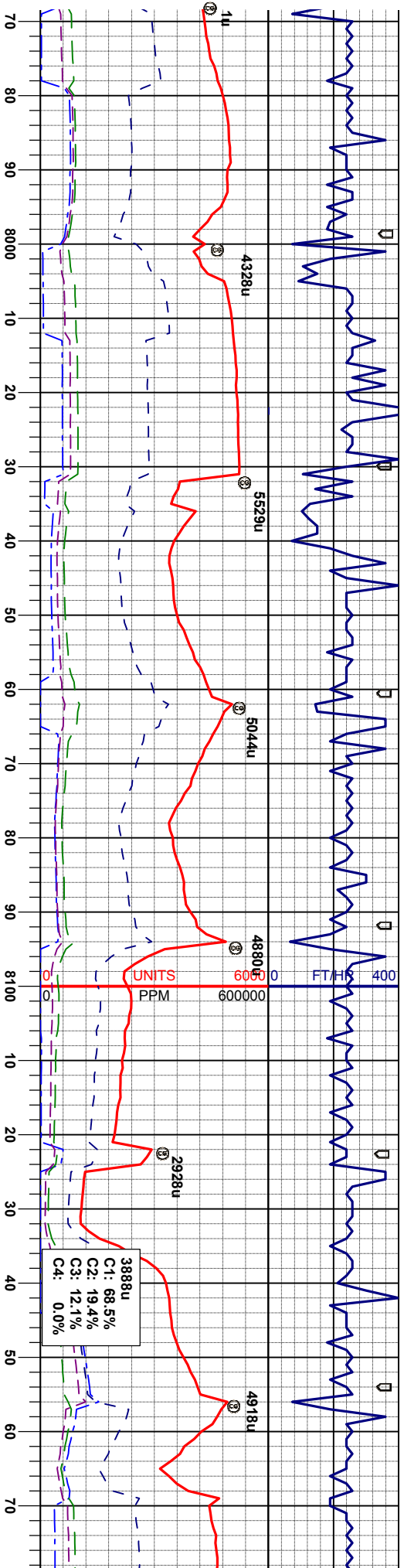
y, sl hd, brt-occ fti, sbply-lstr, sily-arg tex, org/calc gy-gybrn, occ wh-crm, vsftly, wxy-mot, vcalc, sme ise scat bent, fr od

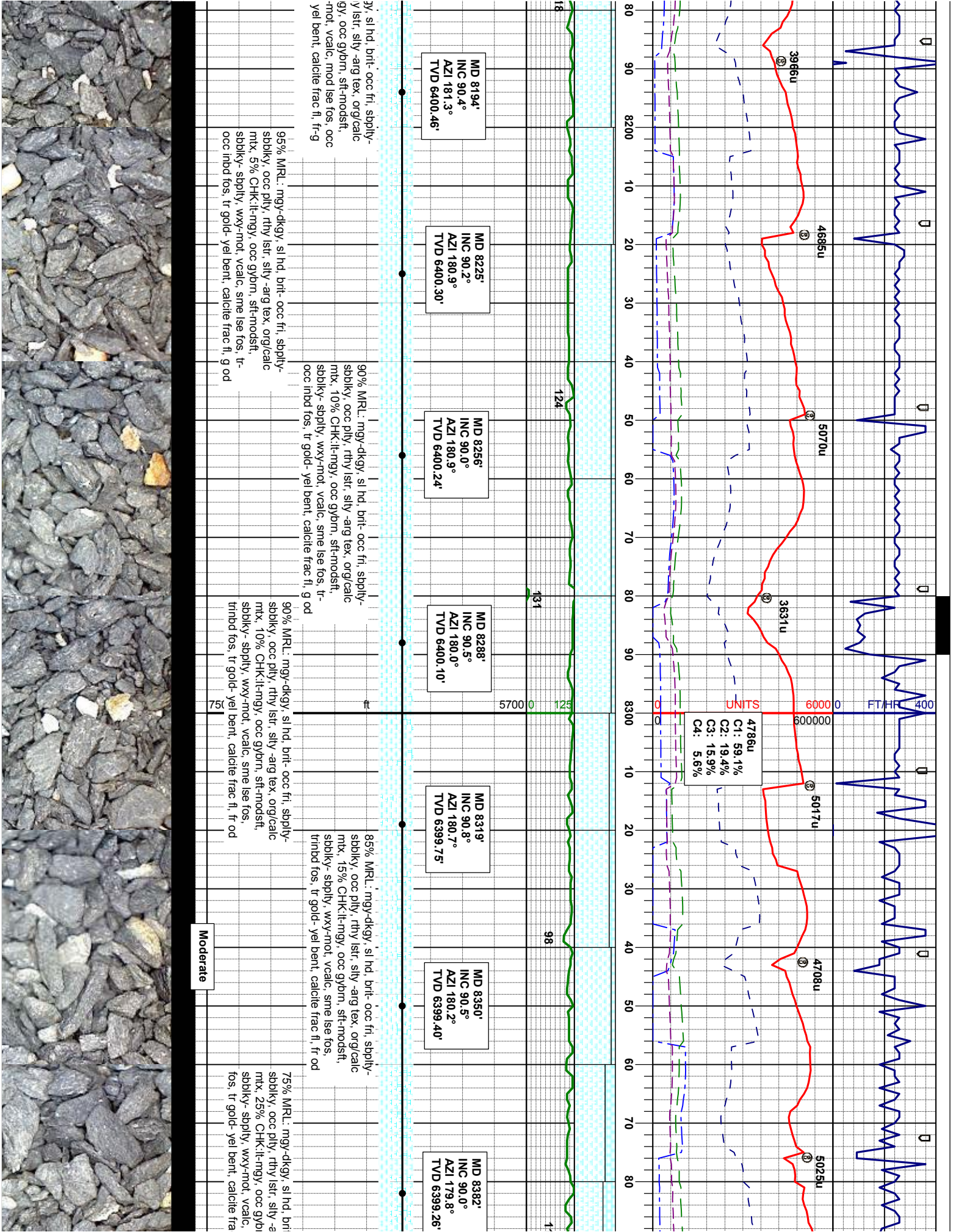
80% MRL: mgy-dkgy, sl hd, brt-occ fti, sbply-sbblky, occ pily, rthy lst, sily-arg tex, org/calc mtx, 20% CHK: lt-mgy-gybrn, occ wh-crm, vsft-modstf, sbblky-sbply, wxy-mot, vcalc, sme ise&intbd fos, tr ise calcite, scat bent, fr od

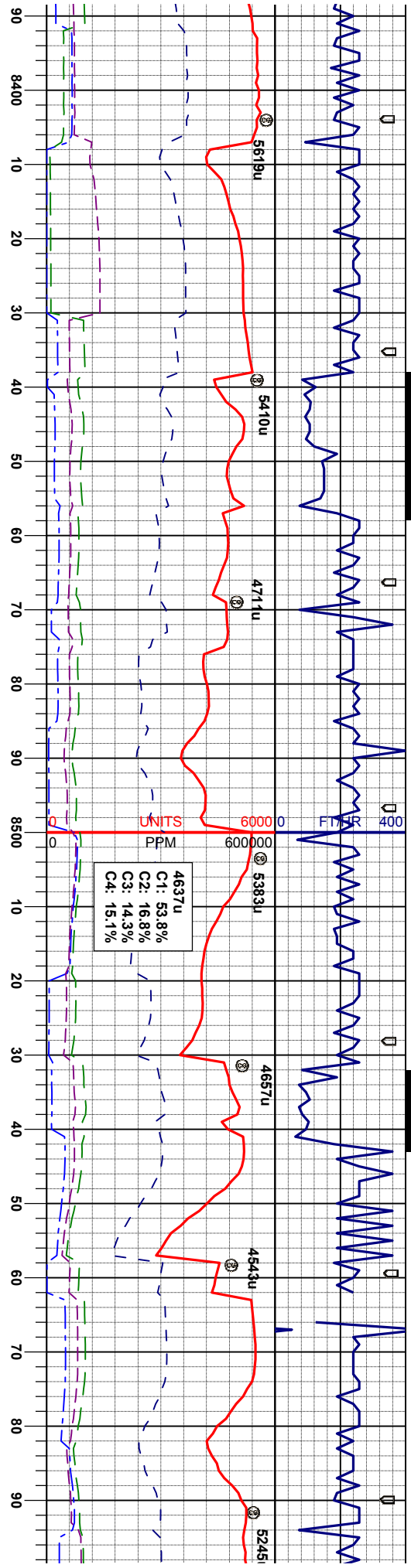
75% MRL: mgy-dkgy, sl hd, brt-occ fti, sbply-sbblky, occ pily, rthy lst, sily-arg tex, org/calc mtx, 25% CHK: lt-mgy, occ wh-crm, vsft-modstf, sbblky-sbply, wxy-mot, vcalc, sme ise&intbd fos, sme ise calcite, sme bent, tr pyr fr od











MD 8413'
INC 90.2°
AZI 180.2°
TVD 6399.21'

MD 8443'
INC 90.6°
AZI 181.3°
TVD 6399.00'

MD 8475'
INC 91.2°
AZI 182.3°
TVD 6398.49'

MD 8506'
INC 90.7°
AZI 181.4°
TVD 6397.98'

MD 8536'
INC 90.4°
AZI 180.9°
TVD 6397.69'

MD 8568'
INC 90.3°
AZI 181.3°
TVD 6397.50'

MD 85'
INC 90
AZI 18
TVD 6:

70% MRL: mgy-dkgy, sl hd, brlt- occ fri, sbply-
sbblky, occ pily, rthy lstr, silv- arg tex, org/calc
mx, 30% CHK- lt-mgy, gybm, sft-modstf, sbblky
- sbply, wxy-mot, vcalc, tr lse fos, trnbd fos, tr
gold- yel bent, calcite frac fl, fr od

80% MRL: mgy-dkgy, sl hd, brlt- occ fri, sbply-
sbblky, occ pily, rthy lstr, silv- arg tex, org/calc
mx, 20% CHK- lt-mgy, occ gybm, sft-modstf,
sbblky- sbply, wxy-mot, vcalc, vtr lse fos,
vtrnbd fos, vtr gold- yel bent, calcite frac fl, fr-g
od

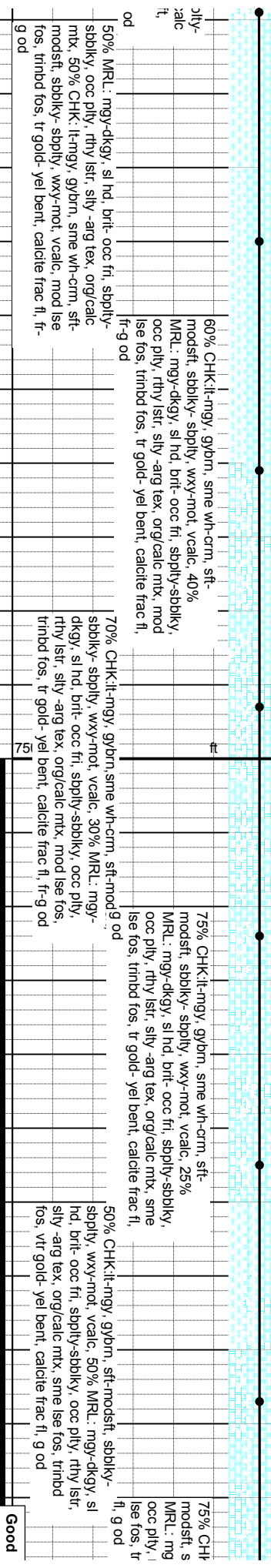
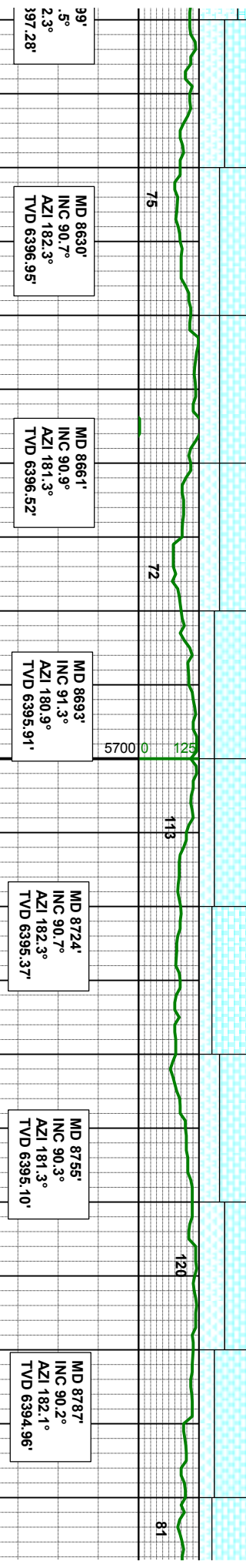
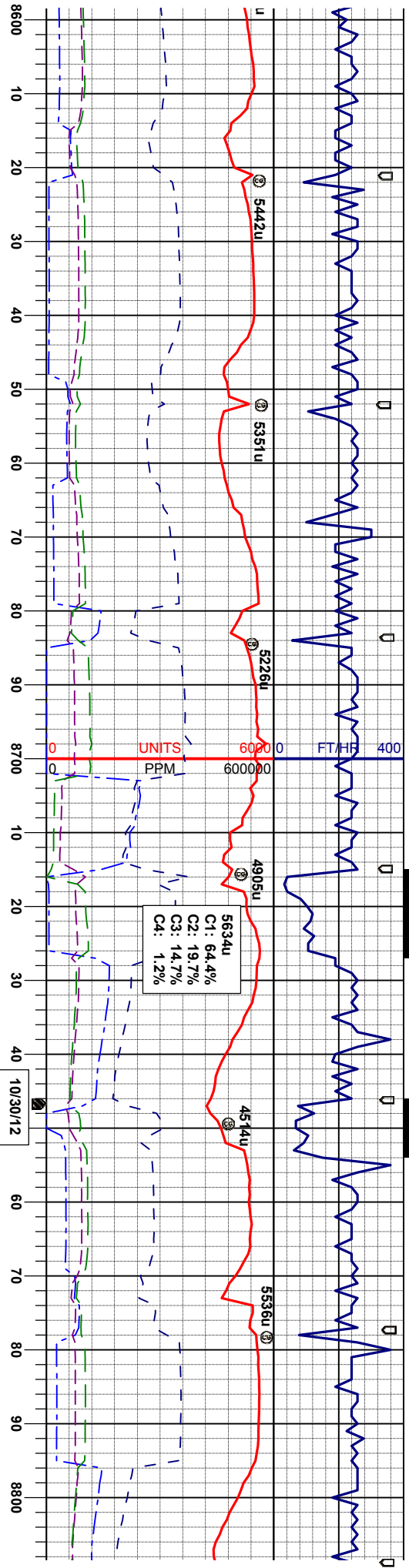
80% MRL: mgy-dkgy, sl hd, brlt- occ fri, sbply-
sbblky, occ pily, rthy lstr, silv- arg tex, org/c
mx, 20% CHK- lt-mgy, occ gybm, sft-modstf
sbblky- sbply, wxy-mot, vcalc, sme lse fos,
trnbd fos, tr gold- yel bent, calcite frac fl, fr

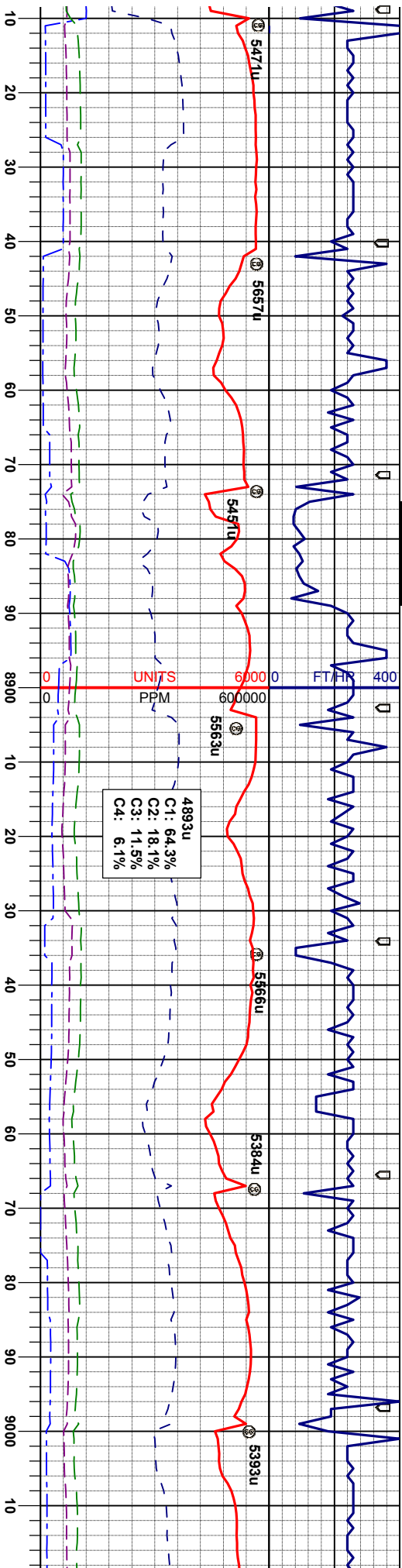
60% MRL: mgy-dkgy, sl hd, brlt- occ fri, sbply-
sbblky, occ pily, rthy lstr, silv- arg tex, org/calc
mx, 40% CHK- lt-mgy, occ gybm, sft-modstf,
sbblky- sbply, wxy-mot, vcalc, tr lse fos, trnbd
fos, tr gold- yel bent, calcite frac fl, fr-g od

90% MRL: mgy-dkgy, sl hd, brlt- occ fri, sbply-
sbblky, occ pily, rthy lstr, silv- arg tex, org/calc
mx, 10% CHK- lt-mgy, occ gybm, sft-modstf,
sbblky- sbply, wxy-mot, vcalc, vtr lse fos,
vtrnbd fos, vtr gold- yel bent, calcite frac fl, fr-g

Moderate







MD 8818'
INC 90.5°
AZI 182.3°
TVD 6394.77'

MD 8849'
INC 90.6°
AZI 181.8°
TVD 6394.47'

MD 8881'
INC 89.5°
AZI 182.5°
TVD 6394.44'

MD 8912'
INC 89.3°
AZI 181.8°
TVD 6394.77'

MD 8943'
INC 89.2°
AZI 182.3°
TVD 6395.17'

MD 8974'
INC 89.0°
AZI 182.5°
TVD 6395.66'

MD 9005'
INC 89.0°
AZI 182.1°
TVD 6396.20'

clt-mgy, wh-crm, sme gybrn, sft-
bdky- sbply, wxy-mot, vcalc, 25%
y-dkgy, sl hd, brit- occ fr, sbply-sbdky,
rthy lstr, sily-arg tex, orgcalc mtx, tr
inbd fos, vtr gold- yel bent, calcite frac

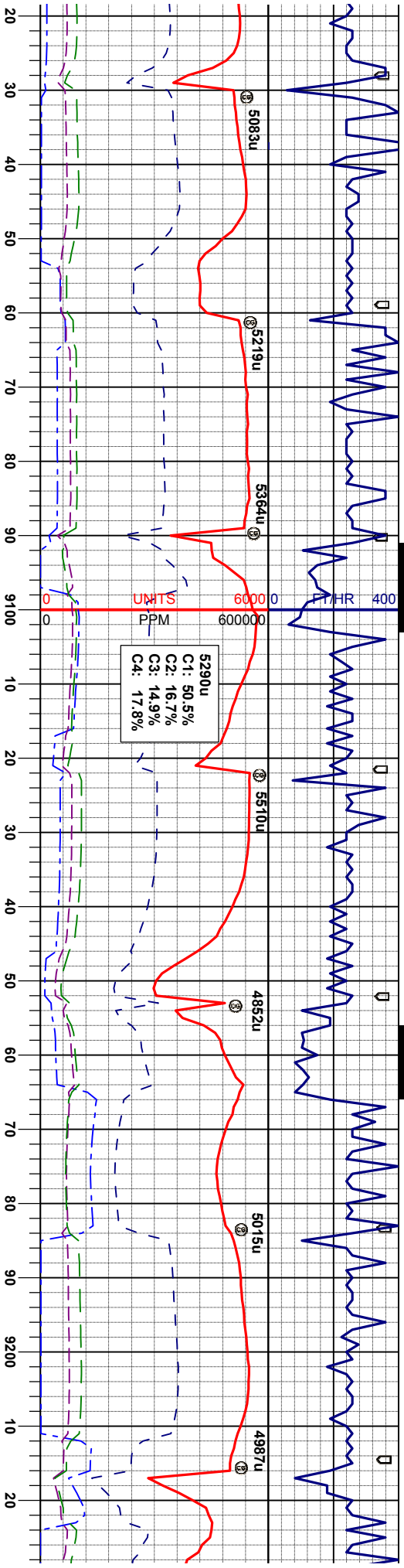
90% CHK:lt-mgy, wh-crm, sme gy brn, sft-
modstf, sbdky- sbply, wxy-mot, vcalc, 10%
MRL: mgy-dkgy, sl hd, brit- occ fr, sbply-sbdky,
occ ply, rthy lstr, sily-arg tex, orgcalc mtx, sme
lse fos, trnbd fos, calcite frac fl, g od

60% CHK:lt-mgy, wh-crm, sme gybrn, sft-
modstf, sbdky- sbply, wxy-mot, vcalc, 40%
MRL: mgy-dkgy, sl hd, brit- occ fr, sbply-sbdky,
occ ply, rthy lstr, sily-arg tex, orgcalc mtx, tr
lse fos, trnbd fos, vtr gold- yel bent, calcite frac
fl, g od

75% CHK:lt-mgy- gybrn, occ wh-crm, sft-modstf,
sbdky- sbply, wxy-mot, vcalc, 25% MRL: mgy-
dkgy, sl hd, brit- occ fr, sbply-sbdky, occ ply,
rthy lstr, sily-arg tex, orgcalc mtx, sme lse fos,
trnbd fos, g od

60% MRL: mgy-dkgy
sbdky, occ ply, rthy
mtx, 40% CHK:lt-mg
modstf, sbdky- sbply
fos, trnbd fos, tr sec





MD 9037
INC 88.3°
AZI 182.0°
TVD 6397.49'

MD 9068
INC 88.8°
AZI 182.0°
TVD 6397.49'

MD 9099
INC 88.8°
AZI 181.8°
TVD 6398.11'

MD 9130
INC 88.8°
AZI 182.1°
TVD 6398.76'

MD 9161
INC 89.6°
AZI 182.3°
TVD 6399.19'

MD 9192
INC 90.0°
AZI 182.7°
TVD 6399.30'

MD 9224
INC 90.6°
AZI 183.5°
TVD 6399.3'

85% MRL: mgy-dkgy, sl hd, brlt- occ fti, sbply-
sbply, occ pily, rthy lstr, silty -arg tex, org/calc
mtx, 15%CHK:lt-mgy- gybm, occ wh-crm, sft-
modstf, sbply- sbply, wxy-mot, vcalc, sme lse
fos, trindb fos, tr gold-yel bent, calcite frac fl, fr
od

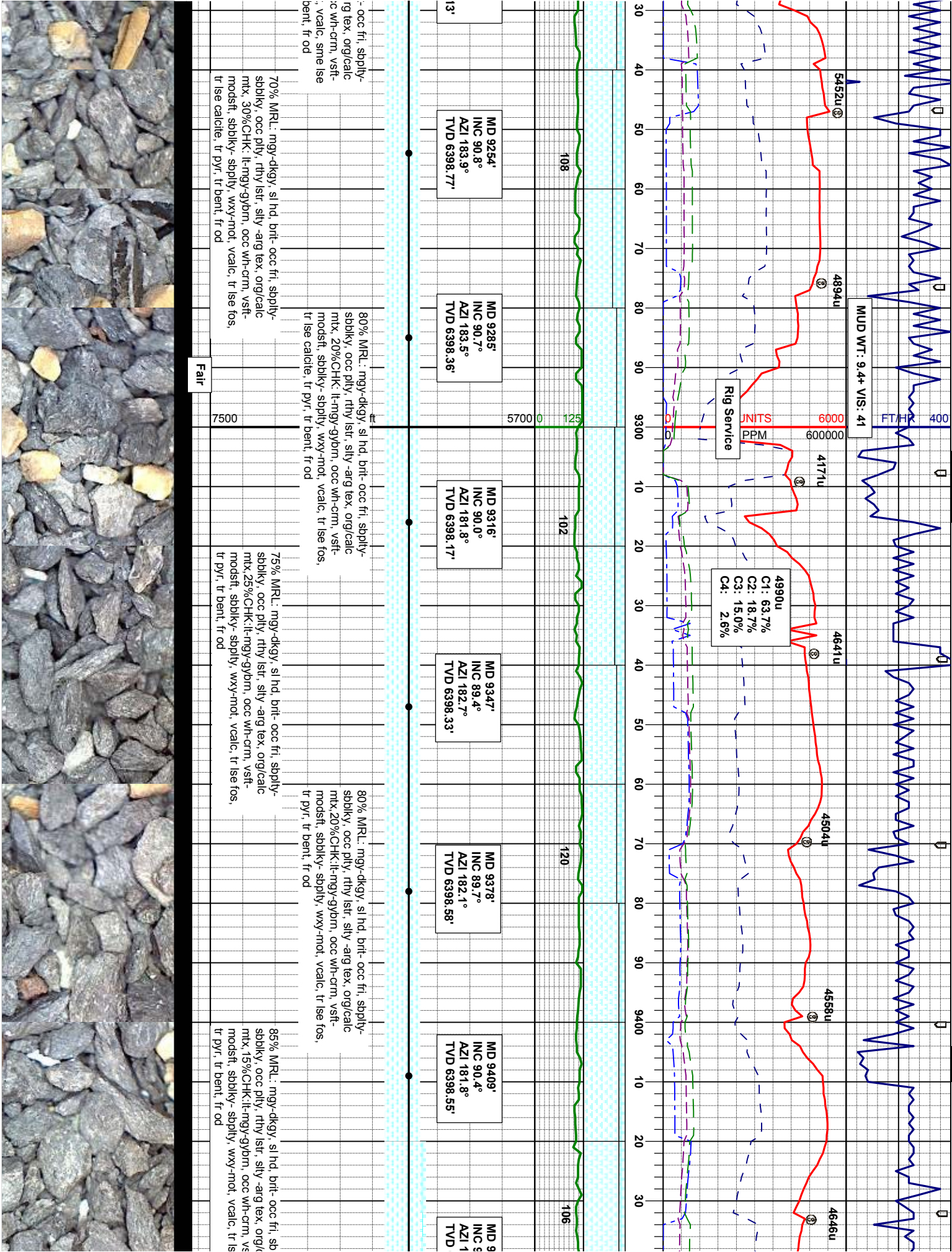
75% MRL: mgy-dkgy, sl hd, brlt- occ fti, sbply-
sbply, occ pily, rthy lstr, silty -arg tex, org/calc
mtx, 25%CHK:lt-mgy-gybm, occ wh-crm, vsft-
modstf, sbply- sbply, wxy-mot, vcalc, sme lse
fos, occ lse calcite, tr pyr, sme bent, fr od

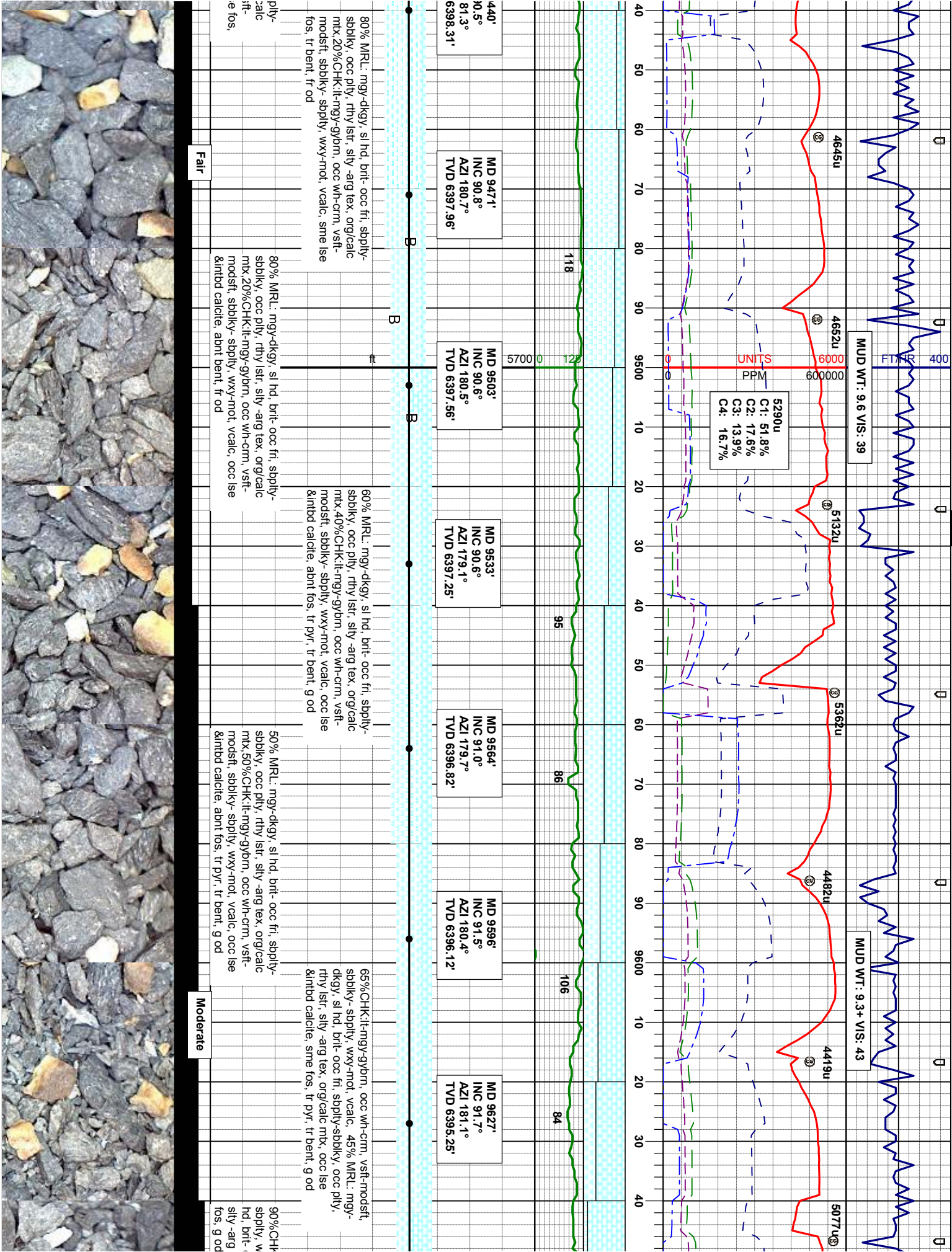
80% MRL: mgy-dkgy, sl hd, brlt- occ fti, sbply-
sbply, occ pily, rthy lstr, silty -arg tex, org/calc
mtx, 20%CHK:lt-mgy-gybm, occ wh-crm, vsft-
modstf, sbply- sbply, wxy-mot, vcalc, sme lse
fos, occ lse calcite, tr pyr, sme

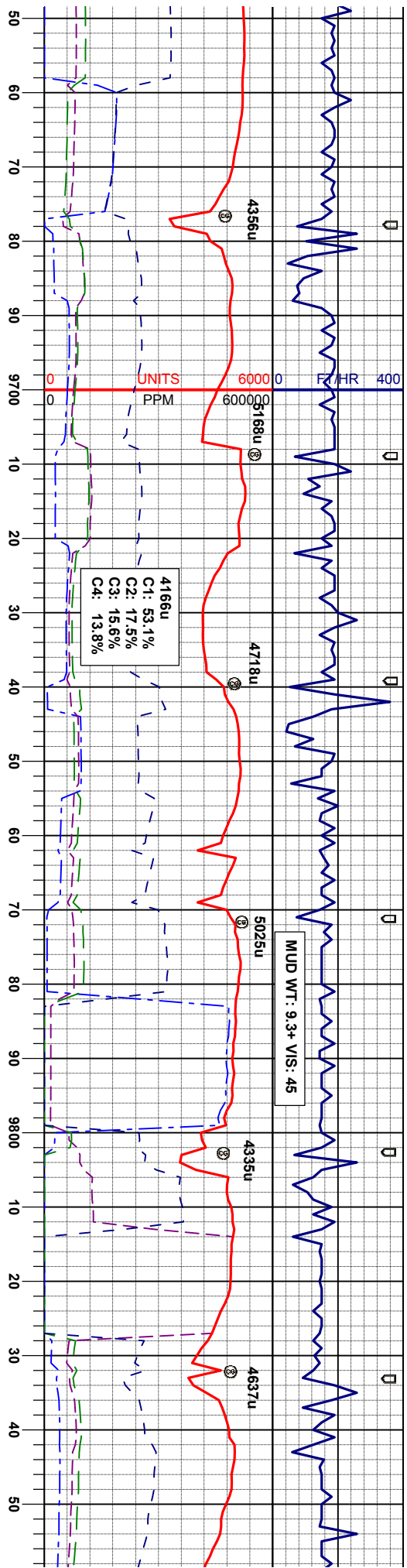
/, sl hd, brlt- occ fti, sbply-
lstr, silty -arg tex, org/calc
ly- gybm, occ wh-crm, sft-
ly, wxy-mot, vcalc, mod lse
: calcite, fr-g od

Moderate









MD 9658'	INC 92.0°	AZI 180.0°	TVD 6394.25'	MD 9689'	INC 91.7°	AZI 180.9°	TVD 6393.25'	MD 9721'	INC 90.9°	AZI 181.4°	TVD 6392.53'	MD 9751'	INC 90.4°	AZI 181.1°	TVD 6392.19'	MD 9782'	INC 90.7°	AZI 181.3°	TVD 6391.89'	MD 9814'	INC 90.4°	AZI 181.4°	TVD 6391.58'	MD 9845'	INC 89.5°	AZI 181.3°	TVD 6391.61'
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90%CH₃Cl:it-ny, occ wh-crm, sft-modsft, sbbky-sbply, wxy-mot, vcalc, 10% MRL: mgy-dky, slnd, brit-occ fr, sbply-sbbky, occ ply, rthy lstr, sily-aig tex, org/calc mtx, tr use &intbd calcite, tr fos, g od

95%CHK:It-mgy, occ wh-crm, sft-modsft, sbbky-sbply, wxy-mot, vcalc, 5% MRL: mgy-dkgy, sl hd, brit-occ fri, sbply-sbbky, occ pily, rthy lstr, sily-aig tex, org/calc mtx, tr use &intbd calcite, tr fos, g od

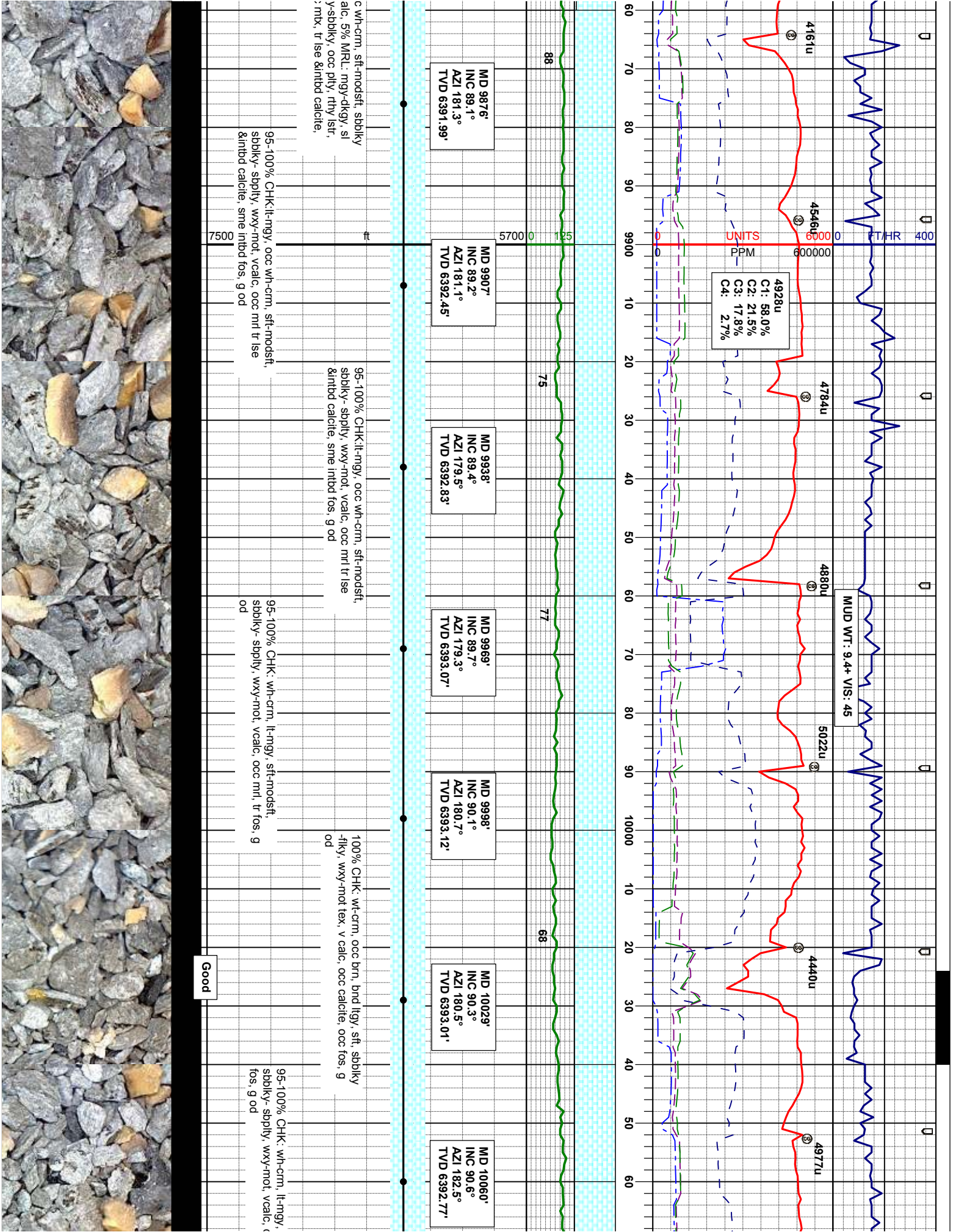
95% CHK:lt-mgy, oc
-sbply, wxy-mot, vc
hd, brit-occ fri, sbplt
sily-arg tex, org/calcc
occ fos, tr pyr, g od

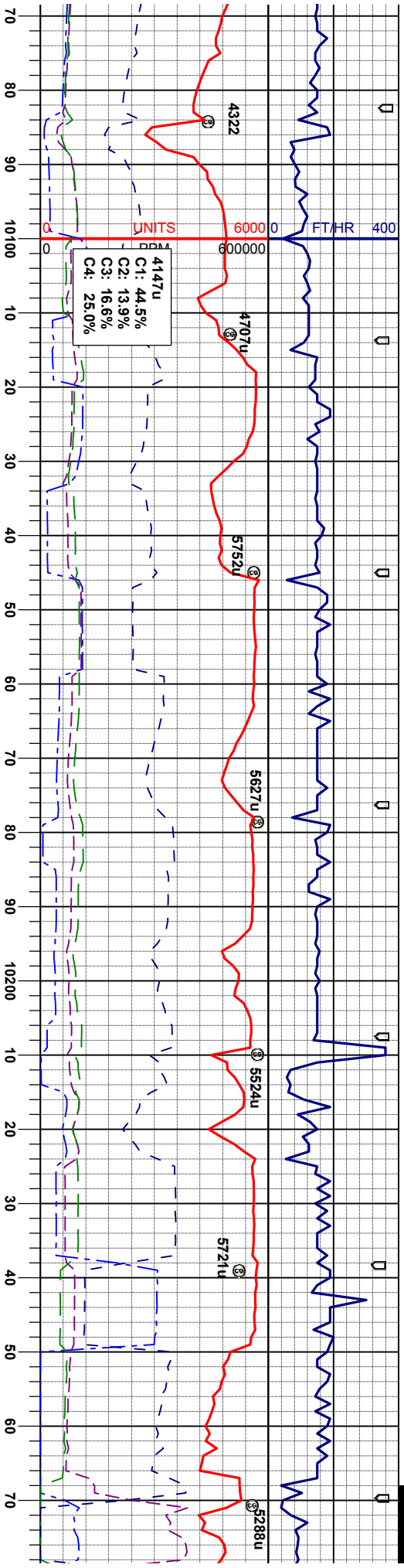
C:lt-mgy, occ wh-crm, sft-modsft, sbblky-
 xy-mot, vcalc, 10% MRL: mgy-dkg, sl
 occ fri, sbply-sbblky, occ ply, rthy lstr,
 tex, org/calc mtx, tr lse &intbd calcite, tr

7500

Good







MD 10092'
INC 90.1°
AZI 183.2°
TVD 6392.56'

MD 10123'
INC 90.0°
AZI 182.8°
TVD 6392.56'

MD 10154'
INC 90.4°
AZI 183.4°
TVD 6392.44'

MD 10185'
INC 90.7°
AZI 182.5°
TVD 6392.14'

MD 10216'
INC 90.6°
AZI 182.0°
TVD 6391.79'

MD 10248'
INC 90.0°
AZI 182.3°
TVD 6391.62'

MD 1
INC 8
AZI 1
TVD 1

95-100% CHK: wh-crm, lt-mgy, sft-modst,
sbbkly- spbly, wxy-mot, vcalc, occ mri, sme ise
fos, g od

95-100% CHK: wh-crm, lt-mgy, sft-modst,
sbbkly- spbly, wxy-mot, vcalc, occ mri, tr ise
fos, g od

95-100% CHK: wh-crm, lt-mgy, sft-modst,
sbbkly- spbly, wxy-mot, vcalc, occ mri, tr ise
fos, g od

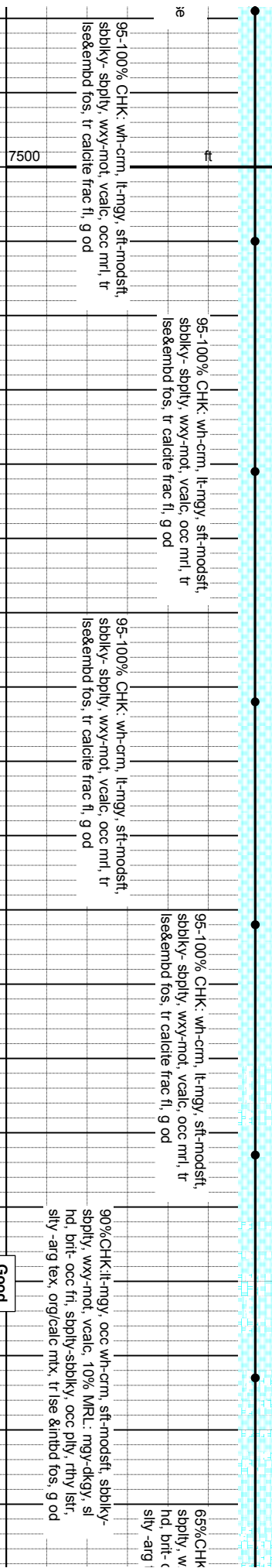
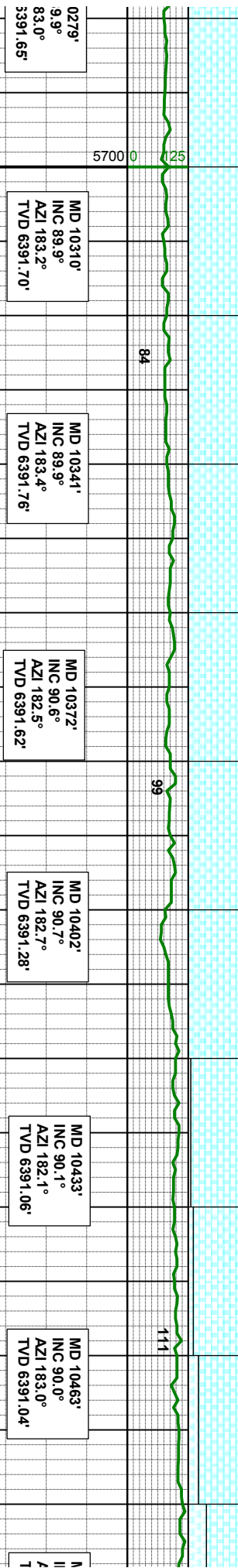
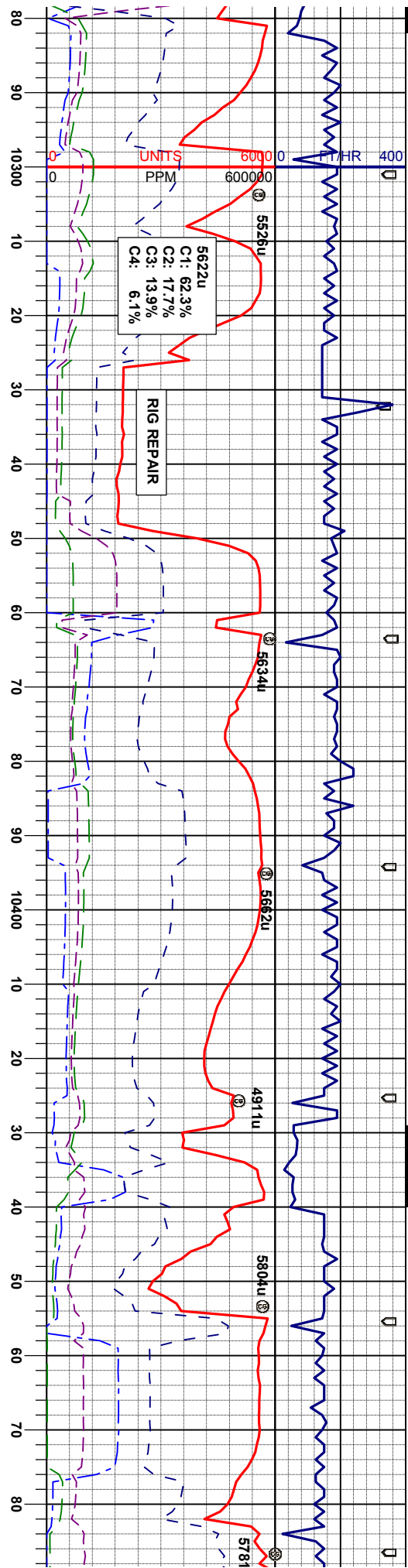
95-100% CHK: wh-crm, lt-mgy, sft-modst,
sbbkly- spbly, wxy-mot, vcalc, occ mri, tr ise
fos, tr calcite frac fl, g od

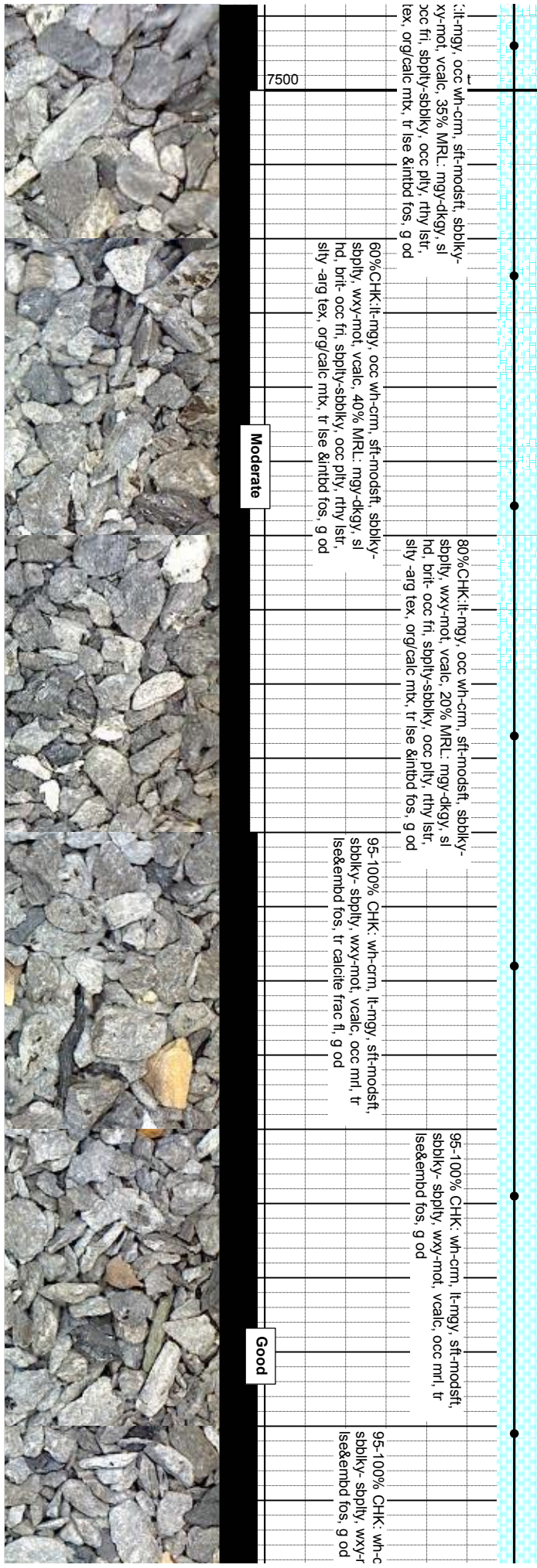
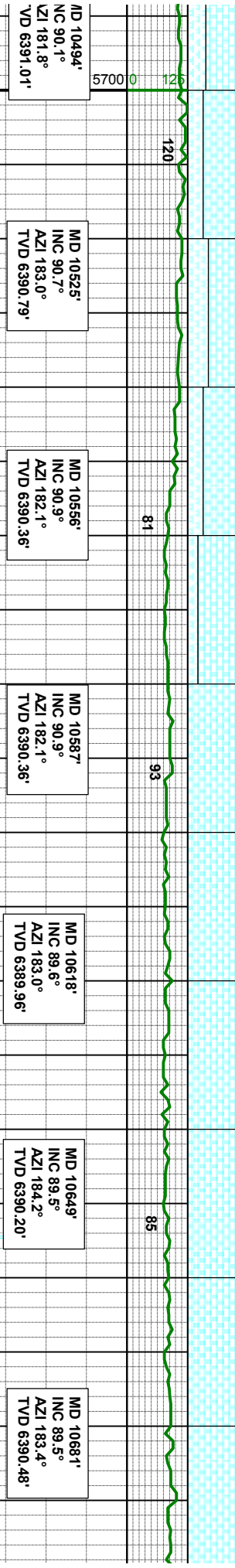
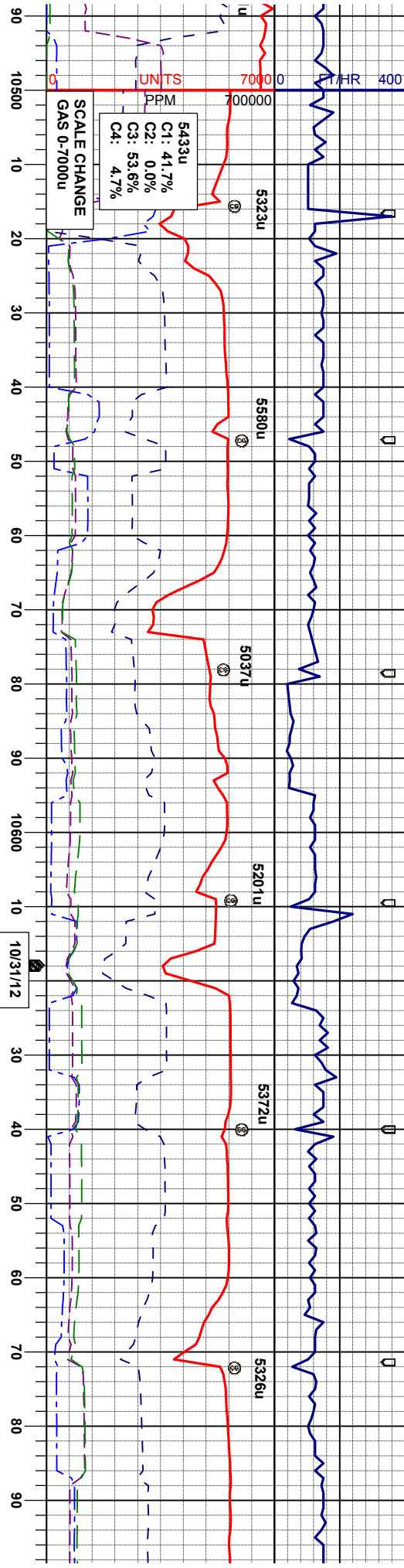
95-100% CHK: wh-crm, lt-mgy, sft-modst,
sbbkly- spbly, wxy-mot, vcalc, occ mri, tr ise
fos, tr calcite frac fl, g od

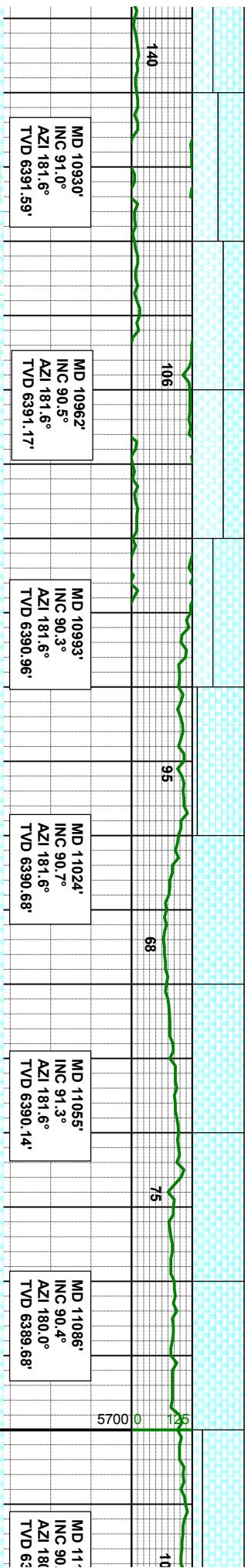
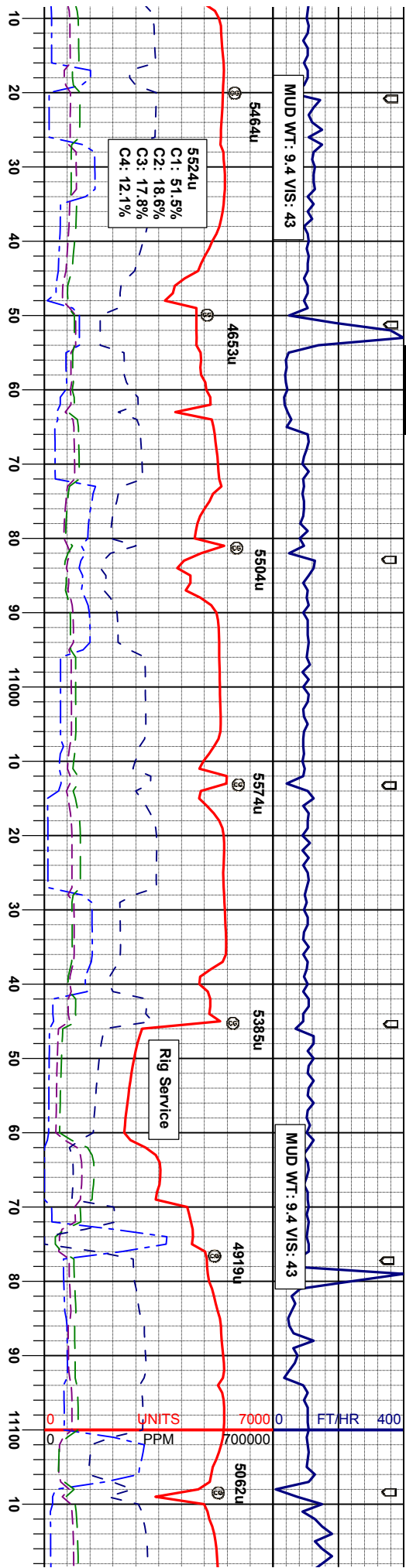
7500

Good







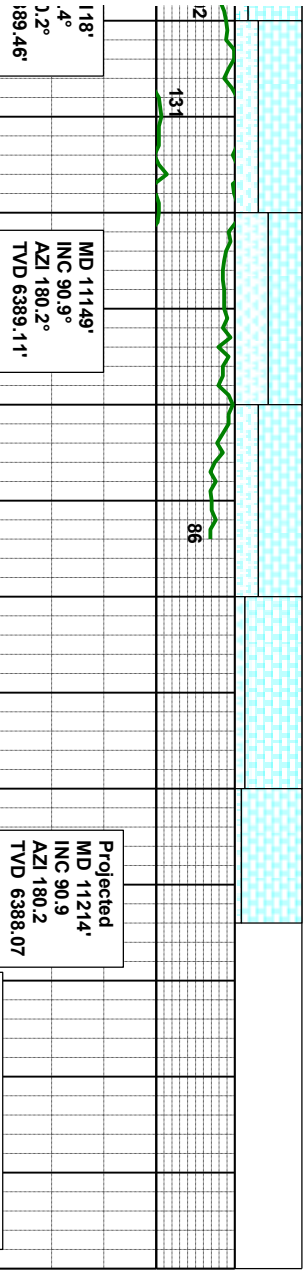
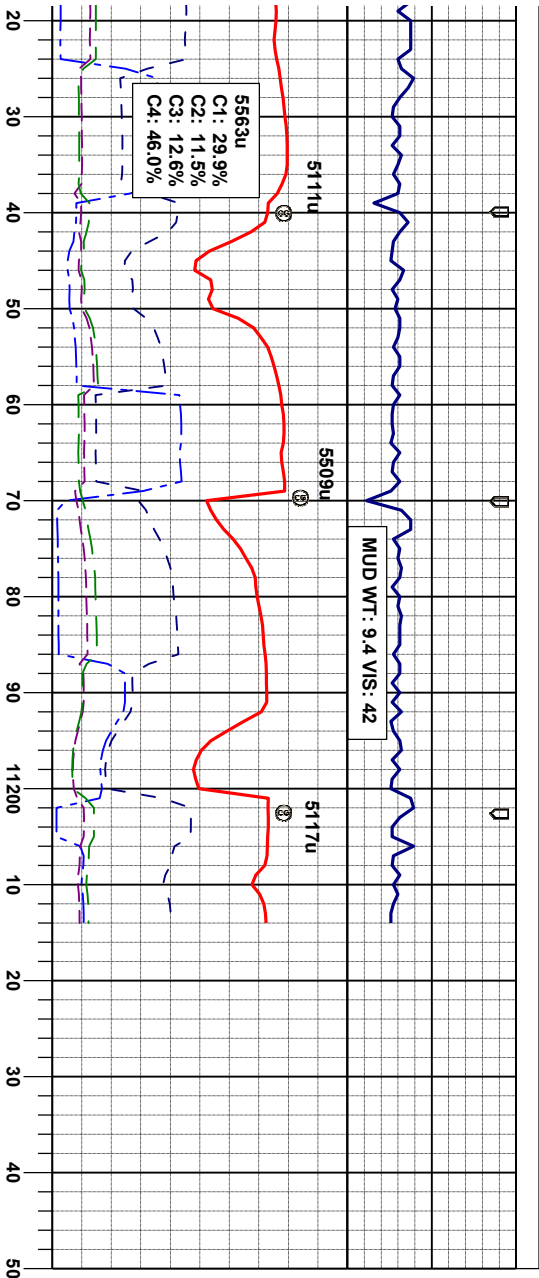
[illegible]

<p>50%CHK: wh-crm, occ il-mgy, sft-modstf, sbblky -sbply, wxy-mot, vcalc, 50% MRL: mgy-dkgy, sl hd, brt-occ fri, sbply-sbblky, occ ply, rthy lstr, sily -arg tex, org/calc mtx, tr ise &mbd calcite, tr fos, tr pyr, tr bent, g od</p>	<p>90%CHK: wh-crm, occ il-mgy, sft-modstf, sbblky -sbply, wxy-mot, vcalc, 10% MRL: mgy-dkgy, sl hd, brt-occ fri, sbply-sbblky, occ ply, rthy lstr, sily -arg tex, org/calc mtx, g od</p>	<div style="border-top: 1px solid black; width: 20px; margin: auto;"></div>	<p>95-100% CHK: wh-crm, occ il-mgy, sft-mov sbblky-sbply, wxy-mot, vcalc, tr imb & ls tr calcite, g od</p>
<div style="float: right; font-weight: bold; padding-right: 10px;">750C</div>			

Moderate

Good





65%CHK: wh-crm, occ lt-mgy, sft-nodstf, sbblky
- sbply, wxy-mot, vcalc, 35% MRL: mgy-dkgy, sl
hd, brlt-occ frt, sbply-sbblky, occ ply, rthy lstr,
sily -arg tex, org/calc mtx, g od

65%CHK: wh-crm, occ lt-mgy, sft-nodstf, sbblky
- sbply, wxy-mot, vcalc, 35% MRL: mgy-dkgy, sl
hd, brlt-occ frt, sbply-sbblky, occ ply, rthy lstr,
sily -arg tex, org/calc mtx, g od

Moderate



TD @ MD 11,214'
on 10/31/2012 @ 09:38 MST

Thank you for using
Columbine Logging Inc.