

LOG created using L PLOT VH Version 3.0, May 22, 2013, Copyright (C) 1999-2009 Pason Systems Corp.

OPERATOR:	NOBLE ENERGY INC.
WELL:	SAUER F33-77-1HNX
LOCATION:	SESW SEC 33 T5N R65W
COUNTY:	WELD
STATE:	COLORADO
SPOT:	237 FSL 1677 FWL
ELEVATION:	4,670' GL, 4,684' KB
FIELD:	WATTENBERG
SPUD DATE:	05/15/2013
TD DATE:	05/22/2013
DATES LOGGED:	05/16/2013 - 05/22/2013
DEPTHS LOGGED:	602' - 10971' MD
LOGGERS:	KYLE KNIGHT,NATHAN MURPHY,ERIC BERNARDO
DRILLING FLUID:	FW, LSND
DRILLING RIG:	ENSIGN 121
API:	05-123-37261
LOG TYPE:	Vertical
SCALE:	1:240 (5 inches per 100 feet)
REMARKS:	Wellsite Geological Services Provided By Columbine Logging Inc. LAT, LONG: 40.34913/-104.67184

LITHOLOGIES



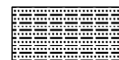
Sandstone



Shaly Sandstone



Shaly Siltstone



Silty Shale

ENGINEERING SYMBOLS



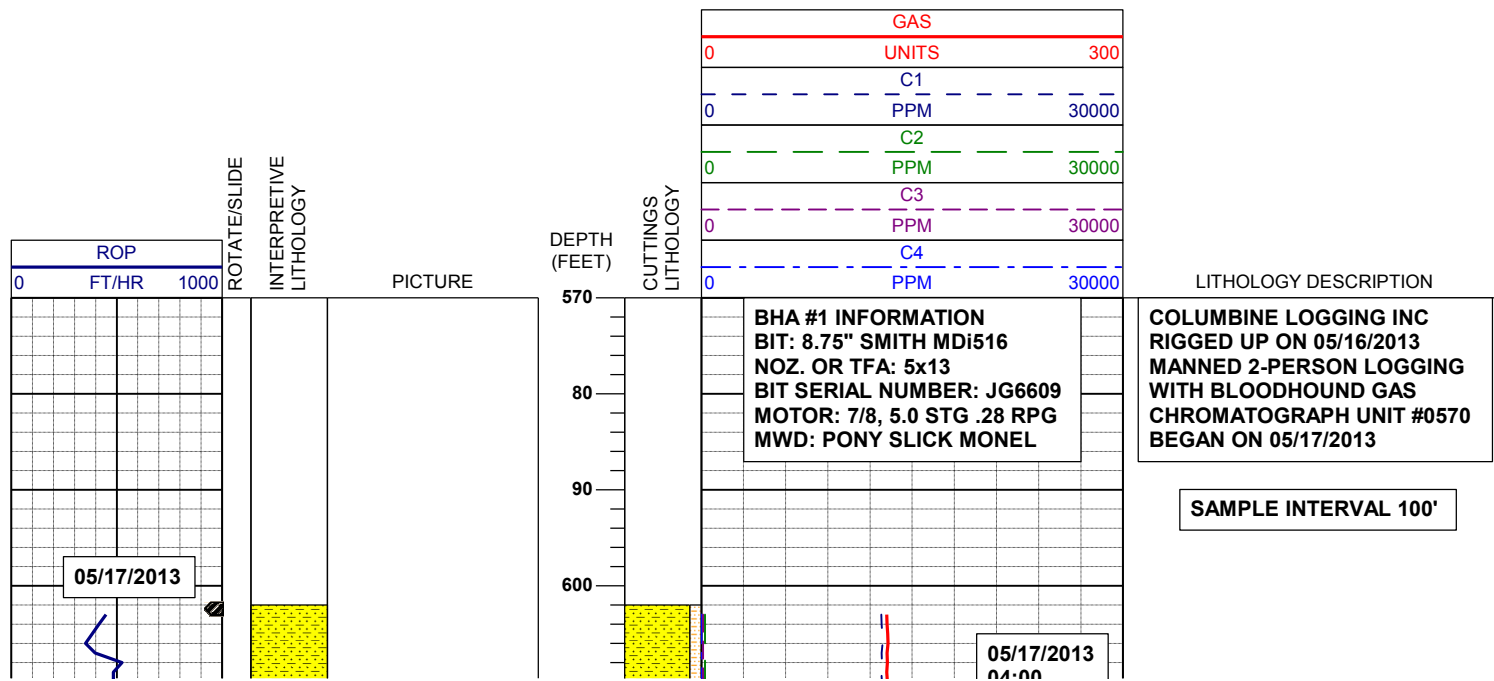
Connection

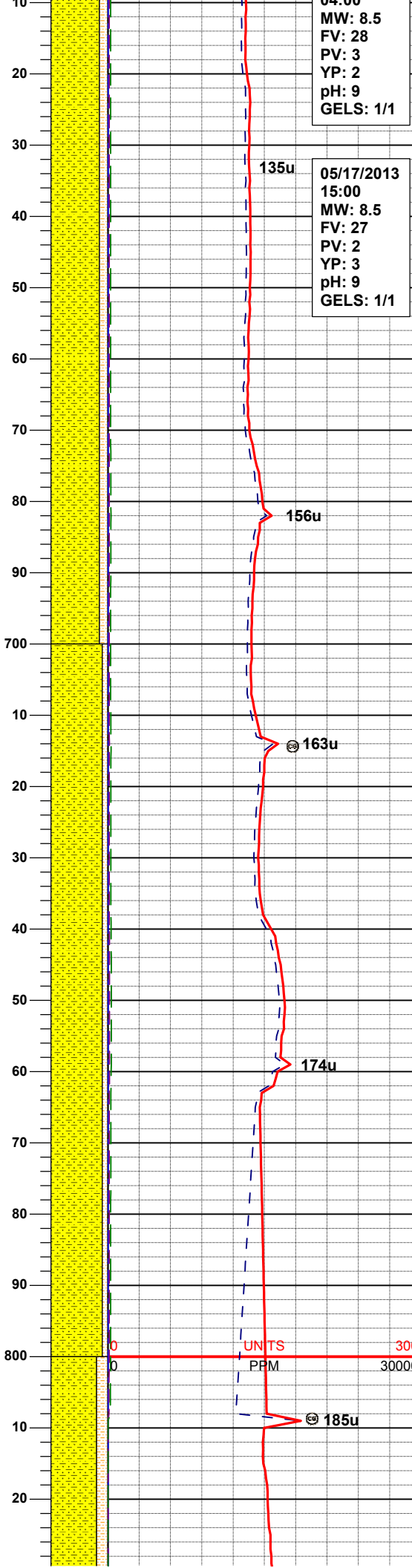
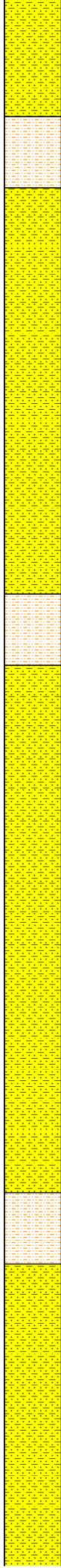
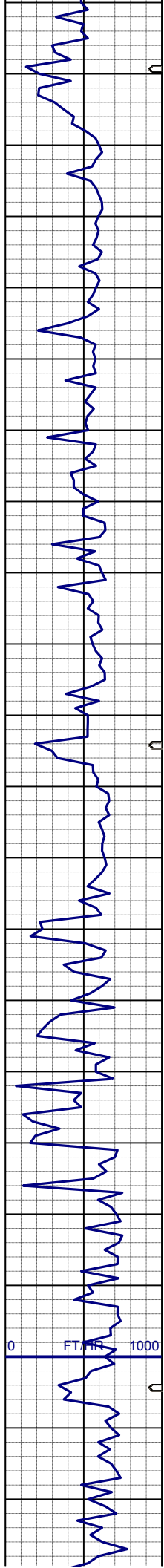


Connection Gas



Midnight Depth





04.00
MW: 8.5
FV: 28
PV: 3
YP: 2
pH: 9
GELS: 1/1

05/17/2013
15:00
MW: 8.5
FV: 27
PV: 2
YP: 3
pH: 9
GELS: 1/1

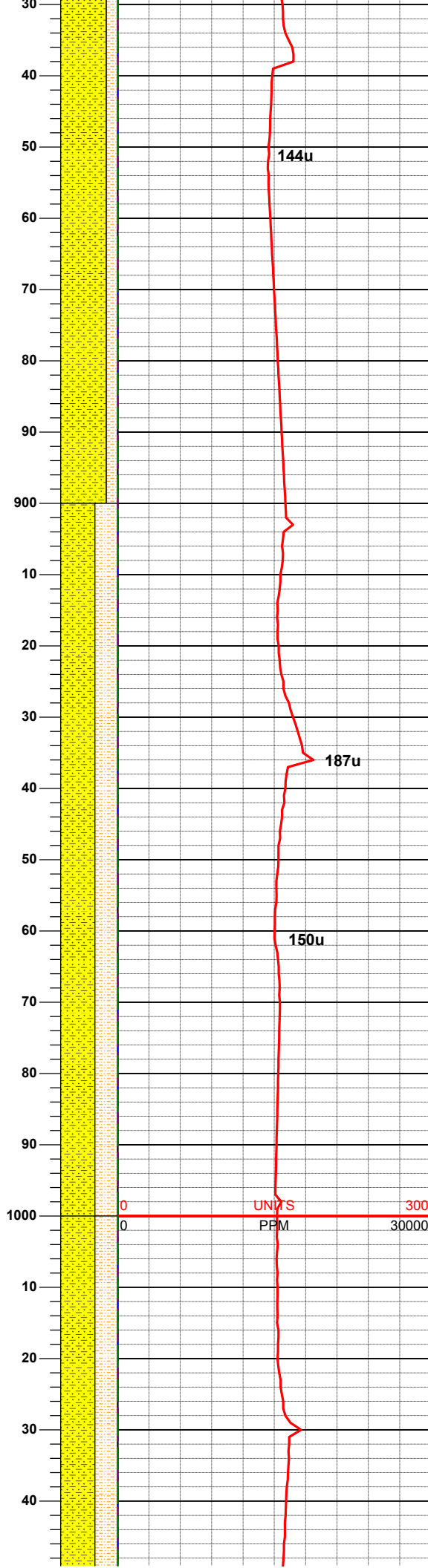
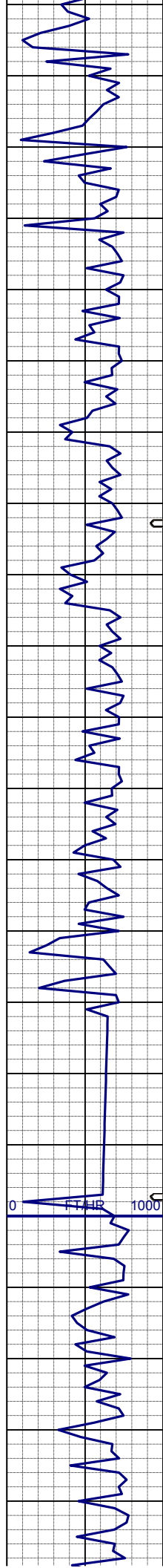
SHYSS: lt-mgy, f-mfgr, sbrd-sbang,
mod-psrt, sft, ppor, argcmt, sicalc,
phlog
SHYSLTST: lt-mgy, occ dk gy, f-vfgr,
sbrd-sbang, mod srt, arg mtx

SURVEY
MD 663'
INC 0.8°
AZI 159.7°
TVD 662.99'

SHYSS: lt-mgy, f-mfgr, sbrd-sbang,
mod-psrt, sft, ppor, argcmt, sicalc,
phlog
SHYSLTST: lt-mgy, occ dk gy, f-vfgr,
sbrd-sbang, mod srt, arg mtx

SURVEY
MD 758'
INC 0.9°
AZI 152.2°
TVD 757.98'

MUD WT: 8.4 LBS/GAL



MUD WT: 8.4 VIS: 28 IN
MUD WT: 8.4 VIS: 28 OUT

SHYSLTST: lt-mgy, occ dk gy, f-vfgr,
sbrd-sbang, mod srt, arg mtx, grd to
SHYSS: lt-mgy, f-mfgr, sbrd-sbang,
mod-psrt, sft, ppor, argcmt, sicalc,
phlog, tr ss

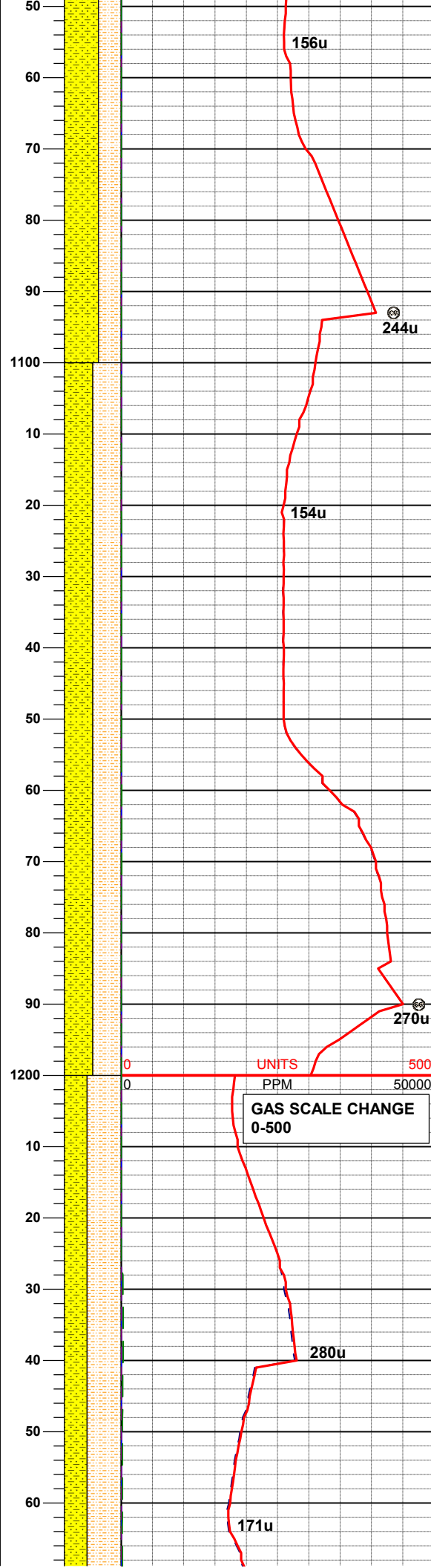
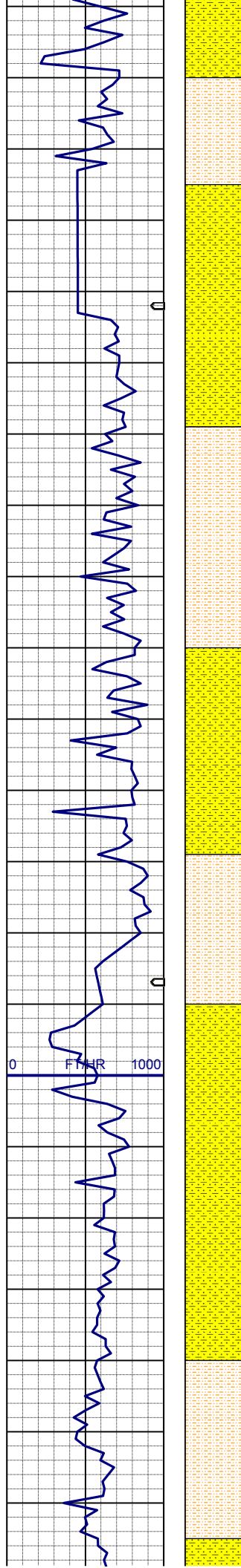
SURVEY
MD 853'
INC 3.7°
AZI 174.3°
TVD 852.90'

SURVEY
MD 947'
INC 4°
AZI 181°
TVD 946.69'

SHYSLTST: lt-mgy, occ dk gy, f-vfgr,
sbrd-sbang, mod srt, arg mtx, grd to
SHYSS: lt-mgy, f-mfgr, sbrd-sbang,
mod-psrt, sft, ppor, argcmt, sicalc,
phlog, tr ss

SURVEY
MD 1042'
INC 3.5°
AZI 181.9°
TVD 1041.48'

SHYSLTST: lt-mgy, occ dk gy, f-vfgr,



SHYSLTST: lt-mgy, occ dk gy, f-vfgr,
sbrd-sbang, mod srt, arg mtX, grd to
SHYSS: lt-mgy, f-mfgr, sbrd-sbang,
mod-psrt, sft, ppor, argcmt, slcalc,
phlog, tr ss

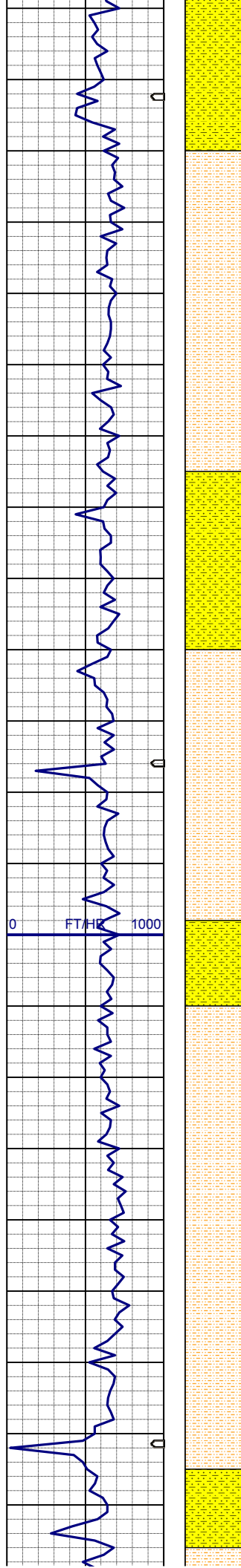
SURVEY
MD 1137'
INC 3.3°
AZI 174.5°
TVD 1136.32'

SHYSLTST: lt-mgy, occ dk gy, f-vfgr,
sbrd-sbang, mod srt, arg mtX, grd to
SHYSS: lt-mgy, f-mfgr, sbrd-sbang,
mod-psrt, sft, ppor, argcmt, slcalc,
phlog, tr ss

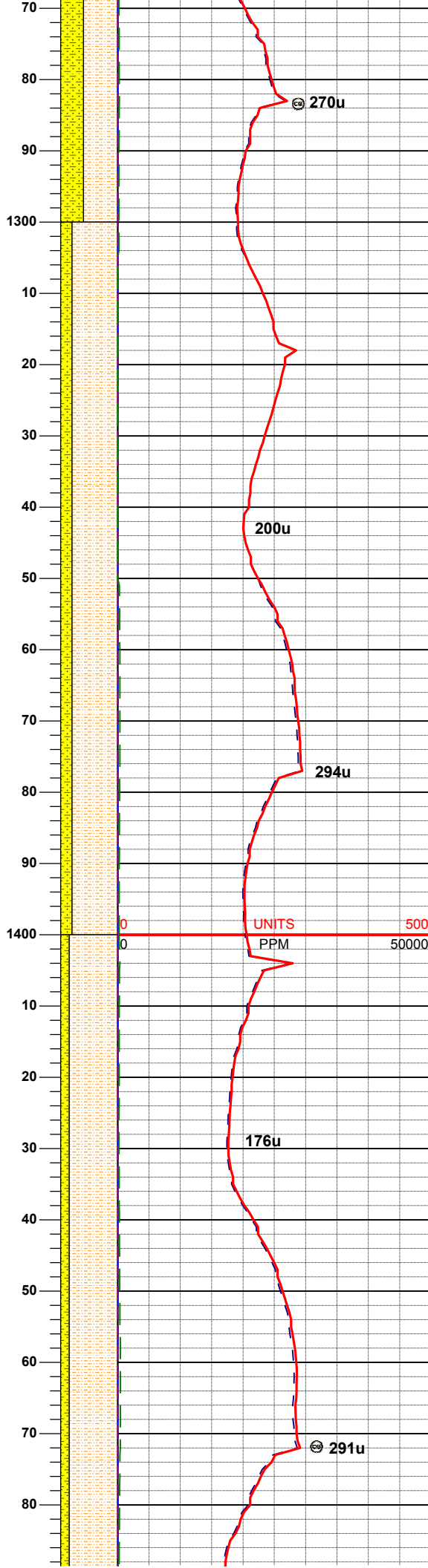
UNITS 0 500
PPM 0 50000
GAS SCALE CHANGE
0-500

SURVEY
MD 1232'
INC 3.6°
AZI 168.2°
TVD 1231.15'

SHYSLTST: lt-mgy, occ dk gy, f-vfgr,
sbrd-sbang, mod srt, arg mtX, grd to
SHYSS: lt-mgy, f-mfgr, sbrd-sbang,
mod-psrt, sft, ppor, argcmt, slcalc,
phlog, tr ss



0 FT/HZ 1000



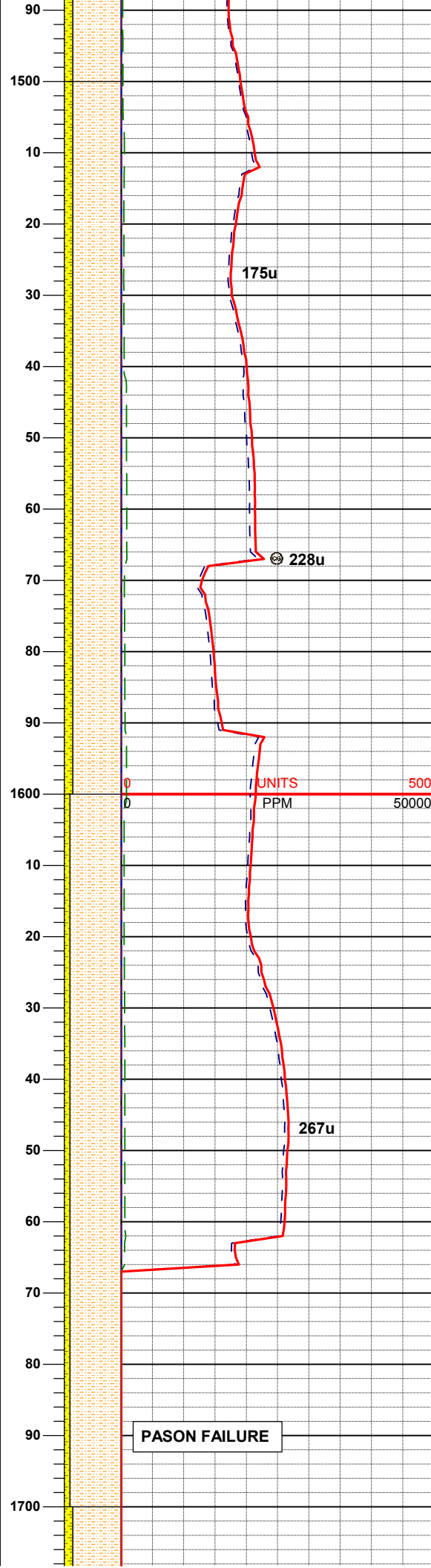
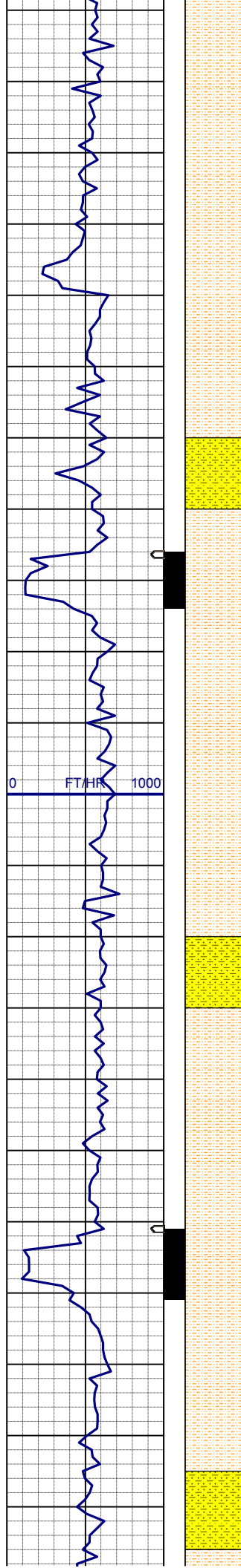
0 1400 0 50000 UNITS PPM 500

SURVEY
MD 1326'
INC 3.9°
AZI 166.9°
TVD 1324.94'

SHYSLTST: lt-mgy, occ dk gy, f-vfgr,
sbrd-sbang, mod srt, arg mtx, grd to
SHYSS: lt-mgy, f-mfgr, sbrd-sbang,
mod-psrt, sft, ppor, argcmt, slcalc,
phlog, tr ss

SURVEY
MD 1421'
INC 4.0°
AZI 164.8°
TVD 1419.72'

SHYSLTST: lt-mgy, occ dk gy, f-vfgr,
sbrd-sbang, mod srt, arg mtx, grd to
SHYSS: lt-mgy, f-mfgr, sbrd-sbang,
mod-psrt, sft, ppor, argcmt, slcalc,
phlog, tr ss



SURVEY
MD 1516'
INC 3.9°
AZI 166.2°
TVD 1514.49'

SHYSLTST: lt-mgy, occ dk gy, f-vfgr,
sbrd-sbang, mod srt, arg mtx, grd to
SHYSS: lt-mgy, f-mfgr, sbrd-sbang,
mod-psrt, sft, ppor, argcmt, slcalc,
phlog, tr ss

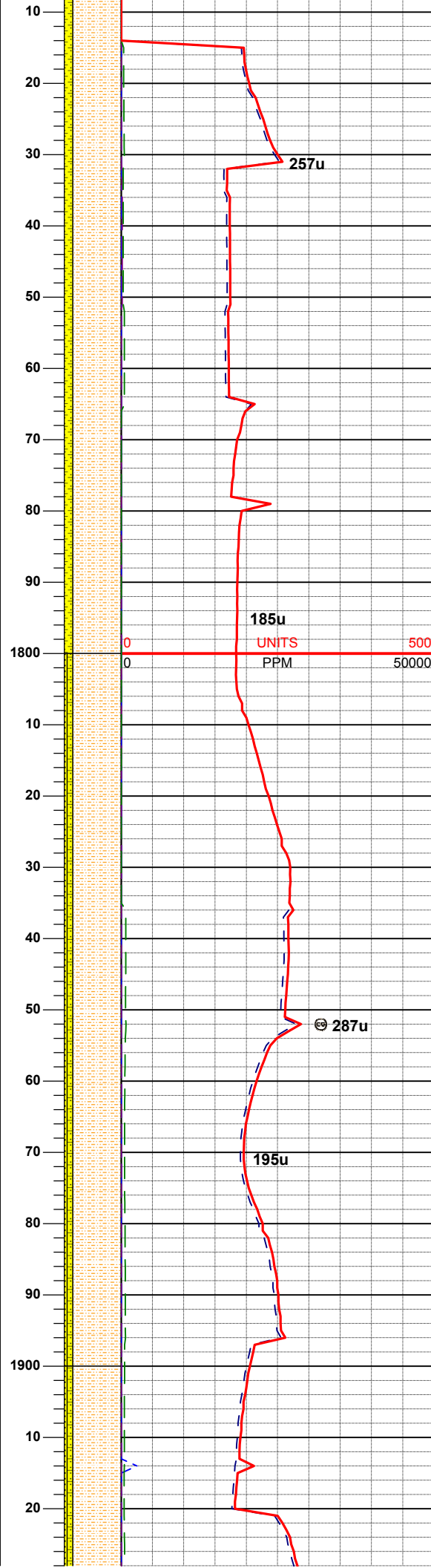
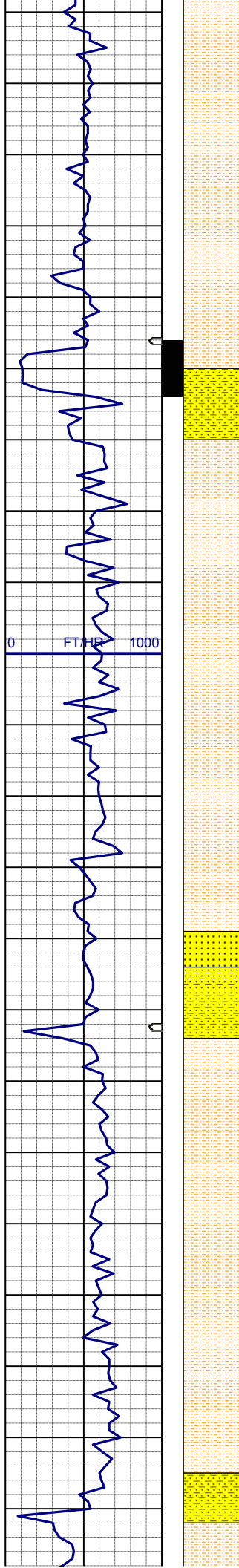
MUD WT: 8.4 VIS: 27 IN
MUD WT: 8.5 VIS: 28 OUT

SURVEY
MD 1611'
INC 3.9°
AZI 156.0°
TVD 1609.27'

SHYSLTST: lt-mgy, occ dk gy, f-vfgr,
sbrd-sbang, mod srt, arg mtx, grd to
SHYSS: lt-mgy, f-mfgr, sbrd-sbang,
mod-psrt, sft, ppor, argcmt, slcalc,
phlog, tr ss

PASON FAILURE

SURVEY
MD 1706'
INC 2.7°
AZI 131.4°
TVD 1704.12'

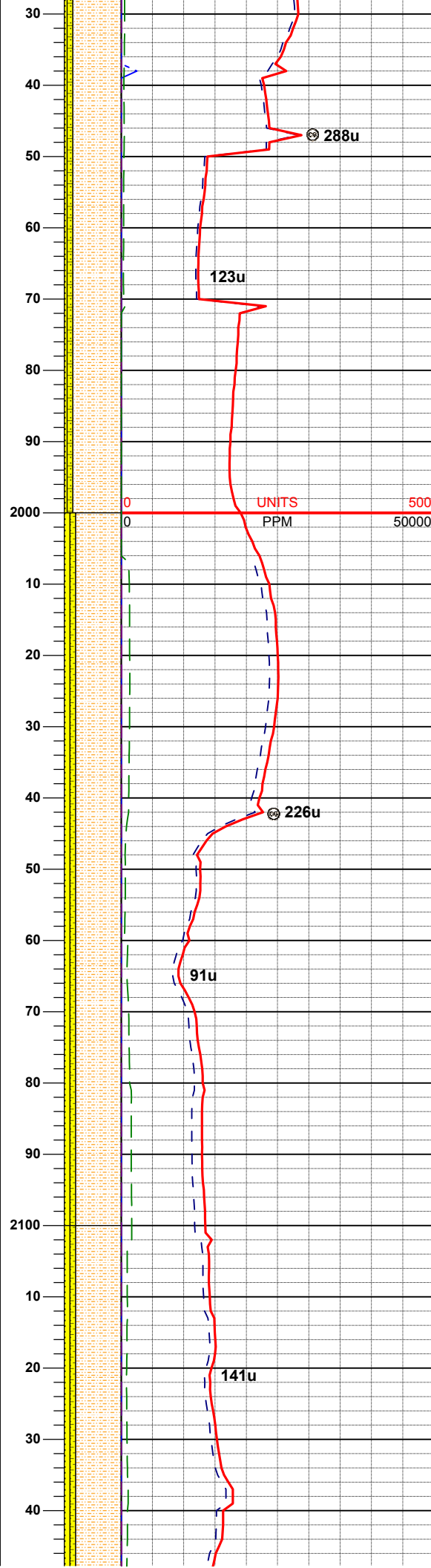
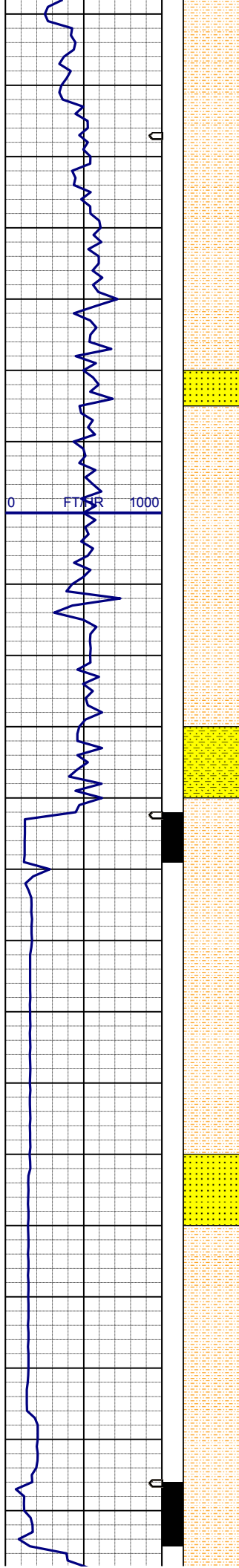


SHYSLTST: lt-mgy, occ dk gy, f-vfgr,
sbrd-sbang, mod srt, arg mtX, grd to
SHYSS: lt-mgy, f-mfgr, sbrd-sbang,
mod-psrt, sft, ppor, argcmt, slcalc,
phlog, tr ss

SURVEY
MD 1801'
INC 1.8°
AZI 100.1°
TVD 1799.05'

SHYSLTST: lt-mgy, occ tan, f-vfgr,
sbrd-sbang, mod srt, arg mtX, grd to
SHYSS: lt-mgy, f-mfgr, sbrd-sbang,
mod-psrt, sft, ppor, argcmt, slcalc,
phlog
SS: w-ltgy, s&p, mf-c gr, sbrd, mod-
wsrt, ppor, argcmt, slcalc, phlog, tr
glau

SURVEY
MD 1896'
INC 1.8°
AZI 98.1°
TVD 1894.00'



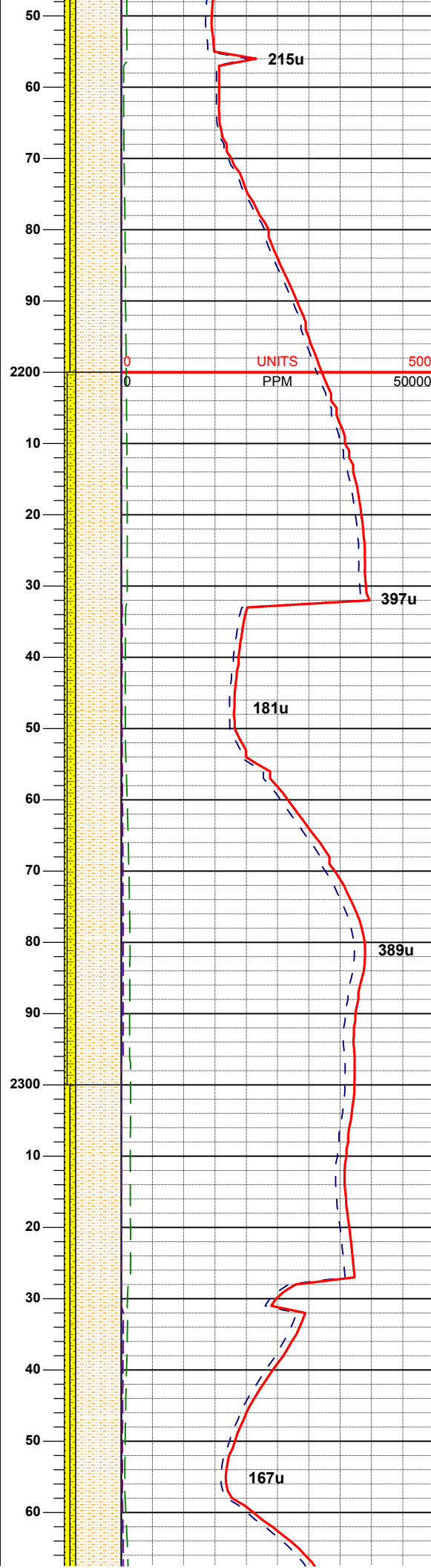
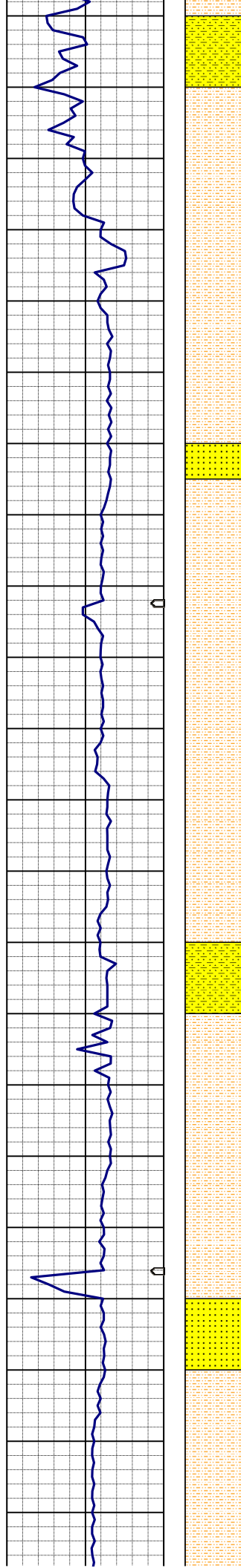
SHYSLTST: lt-mgy, occ tan, f-vfgr,
sbrd-sbang, mod srt, arg mtx, grd to
SHYSS: lt-mgy, f-mfgr, sbrd-sbang,
mod-psrt, sft, ppor, argcmt, slcalc,
phlog
SS: w-ltgy, s&p, mf-c gr, sbrd, mod-
wsrt, ppor, argcmt, slcalc, phlog, tr
glau

SURVEY
MD 1991'
INC 1.9°
AZI 85.5°
TVD 1988.95'

SHYSLTST: lt-mgy, occ tan, f-vfgr,
sbrd-sbang, mod srt, arg mtx, grd to
SHYSS: lt-mgy, f-mfgr, sbrd-sbang,
mod-psrt, sft, ppor, argcmt, slcalc,
phlog
SS: w-ltgy, s&p, mf-c gr, sbrd, mod-
wsrt, ppor, argcmt, slcalc, phlog, tr
glau

SURVEY
MD 2086'
INC 1.1°
AZI 50.7°
TVD 2083.92'

SHYSLTST: lt-mgy, occ tan, f-vfgr,
sbrd-sbang, mod srt, arg mtx, grd to
SHYSS: lt-mgy, f-mfgr, sbrd-sbang,



mod-psrt, sft, ppor, argcmt, slcalc, phlog
SS: w-ltgy, s&p, mf-c gr, sbrd, mod-wsrt, ppor, argcmt, slcalc, phlog, tr glau

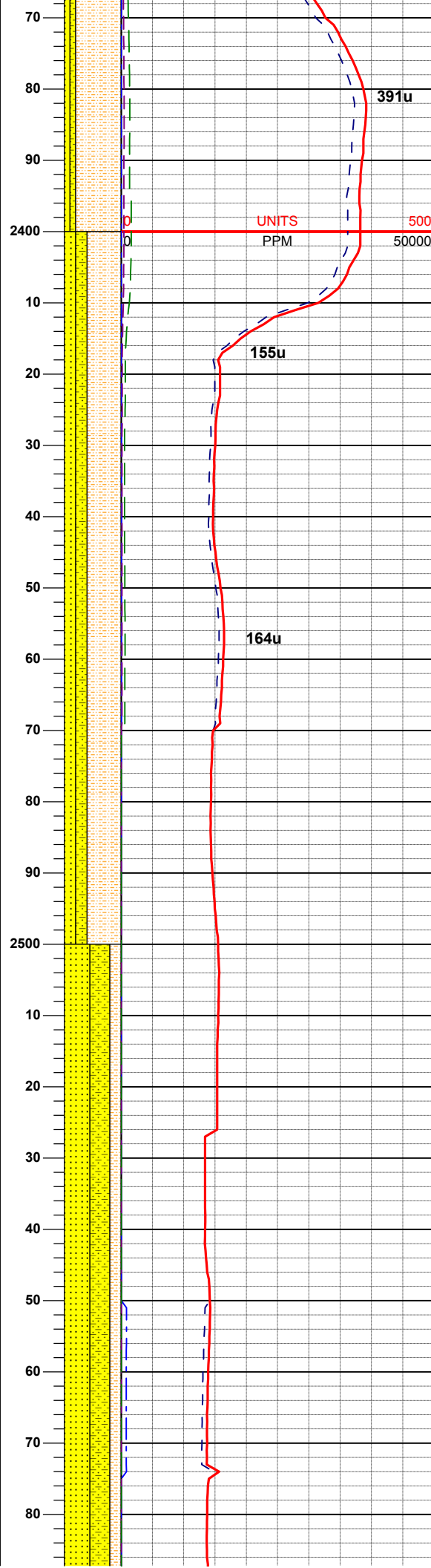
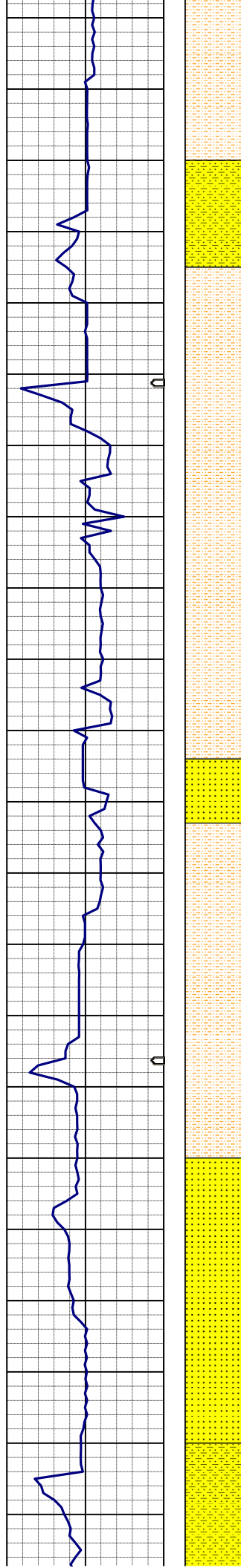
SURVEY
MD 2181'
INC 0.5°
AZI 302.6°
TVD 2178.91'

SHYSLTST: lt-mgy, occ tan, f-vfgr, sbrd-sbang, mod srt, arg mtx, grd to SHYSS: lt-mgy, f-mfgr, sbrd-sbang, mod-psrt, sft, ppor, argcmt, slcalc, phlog
SS: w-ltgy, s&p, mf-c gr, sbrd, mod-wsrt, ppor, argcmt, slcalc, phlog, tr glau

SURVEY
MD 2276'
INC 0.5°
AZI 295.2°
TVD 2273.91'

SHYSLTST: lt-mgy, occ tan, f-vfgr, sbrd-sbang, mod srt, arg mtx, grd to SHYSS: lt-mgy, f-mfgr, sbrd-sbang, mod-psrt, sft, ppor, argcmt, slcalc, phlog
SS: w-ltgy, s&p, mf-c gr, sbrd, mod-wsrt, ppor, argcmt, slcalc, phlog, tr glau

SURVEY



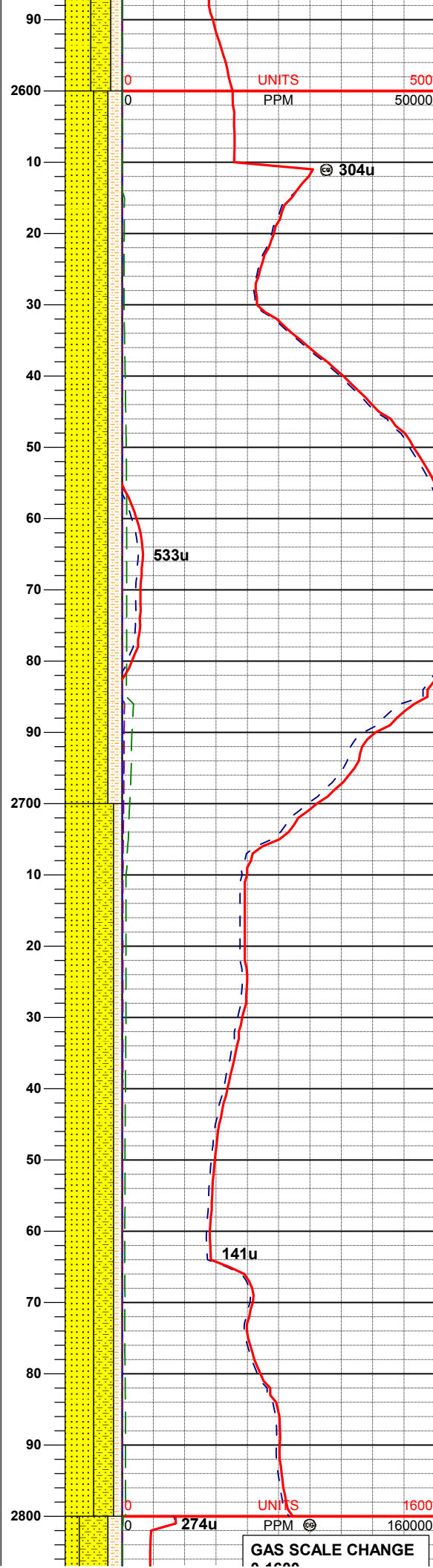
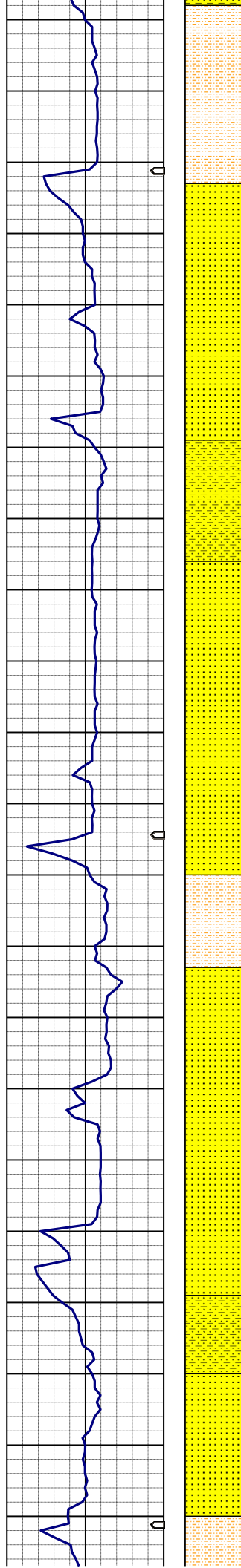
MD 2371'
INC 0.4°
AZI 313.5°
TVD 2368.91'

SHYSLTST: lt-mgy, occ tan, f-vfgr, sbrd-sbang, mod srt, arg mtz, grd to
SHYSS: lt-mgy, f-mfgr, sbrd-sbang, mod-psrt, sft, ppor, argcmt, slcalc, phlog
SS: w-ltgy, s&p, mf-c gr, sbrd, mod-wsrt, ppor, argcmt, slcalc, phlog, tr glau

SURVEY
MD 2466'
INC 0.8°
AZI 320.0°
TVD 2463.90'

SS: w-ltgy, s&p, mf-c gr, sbrd, mod-wsrt, ppor, argcmt, slcalc, phlog, tr glau, grd to
SHYSS: lt-mgy, f-mfgr, sbrd-sbang, mod-psrt, sft, ppor, argcmt, slcalc, phlog
SHYSLTST: lt-mgy, occ tan, f-vfgr, sbrd-sbang, mod srt, arg mtz,

SURVEY
MD 2560'
INC 0.3°
AZI 284.3°
TVD 2557.9'



SS: w-ltgy, s&p, mfc-c gr, sbdr, mod-
wsrt, ppor, argcmt, slcalc, phlog, tr
glau, grd to
SHYSS: lt-mgy, f-mfgr, sbdr-sbang,
mod-psrt, sft, ppor, argcmt, slcalc,
phlog
SHYSLTST: lt-mgy, occ tan, f-vfgr,
sbdr-sbang, mod srt, arg mtx,

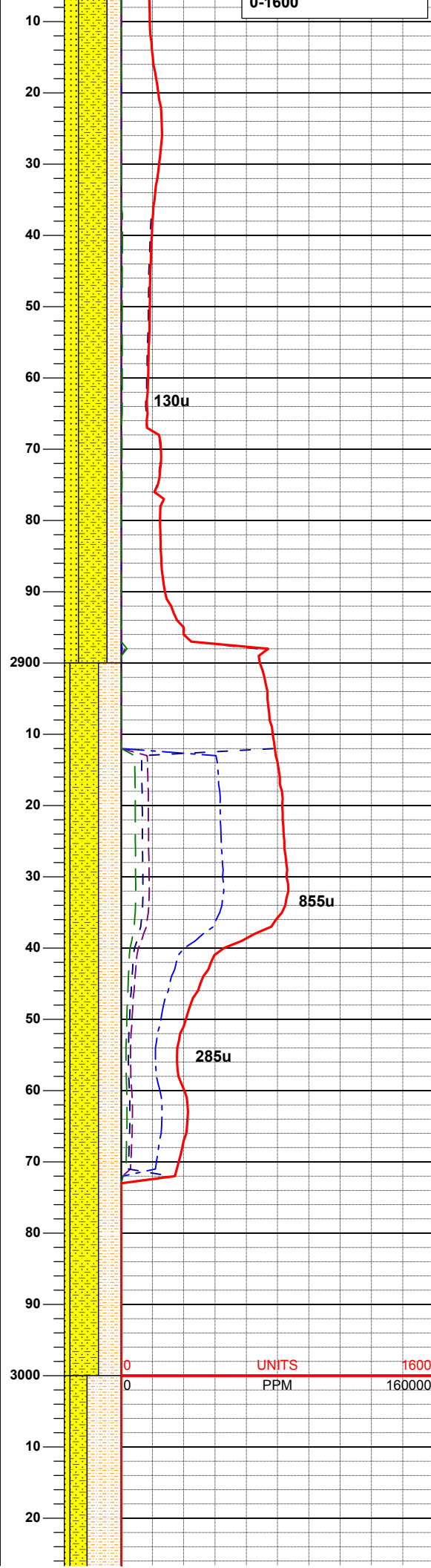
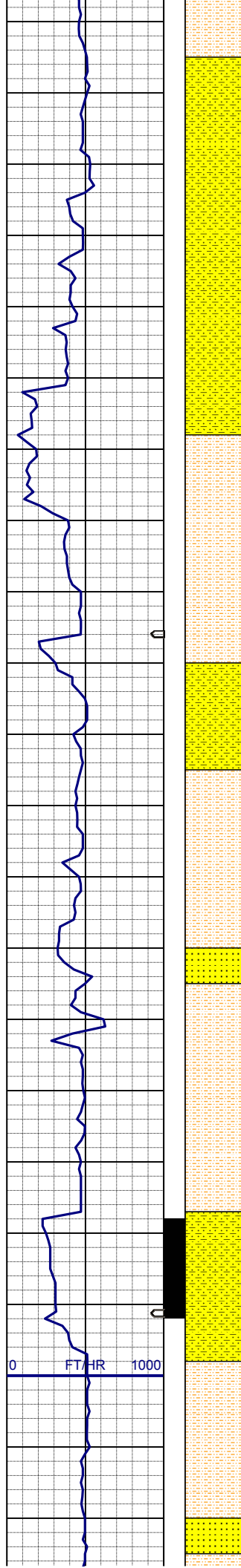
SURVEY
MD 2655'
INC 0.4°
AZI 269.1°
TVD 2652.9'

SS: w-ltgy, s&p, mf-c gr, sbrd, mod-
wsrt, ppor, argcmt, scalc, phlog, tr
glau, grd to
SHYSS: lt-mgy, f-mfgr, sbrd-sbang,
mod-psrt, sft, ppor, argcmt, scalc,
phlog
SHYSLTST: lt-mgy, occ tan, f-vfgr,
sbrd-sbang, mod srt, arg mtx,

SURVEY
MD 2750'
INC 0.4°
AZI 293.5°
TVD 2747.89'

MUD WT: 8.4+ VIS: 28 IN
MUD WT: 8.4+ VIS: 28 OUT

MUD WT: 8.4+ VIS: 28 OUT



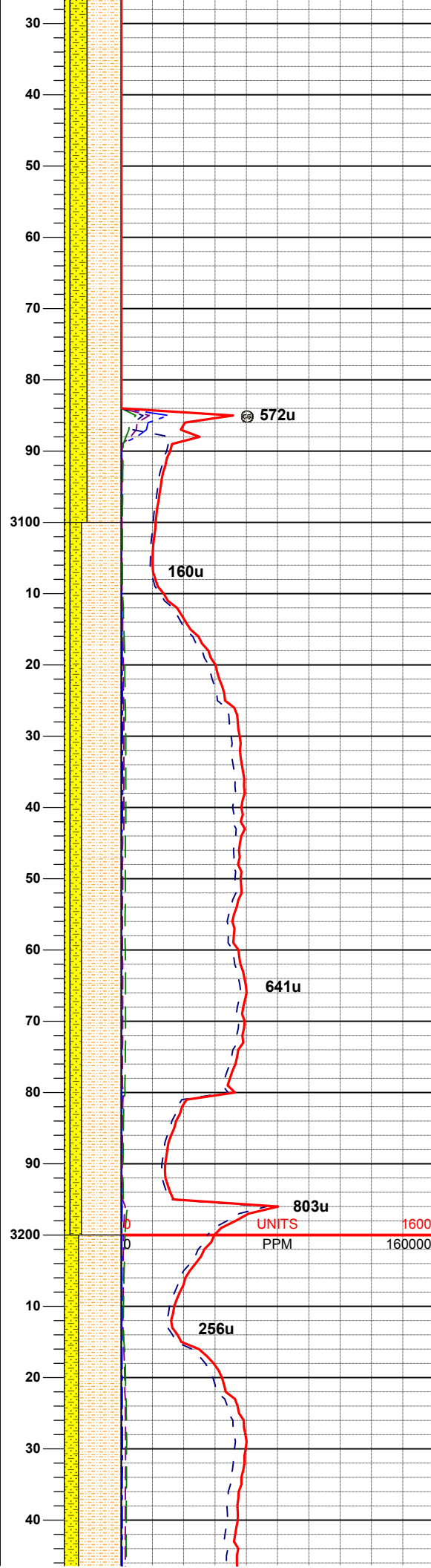
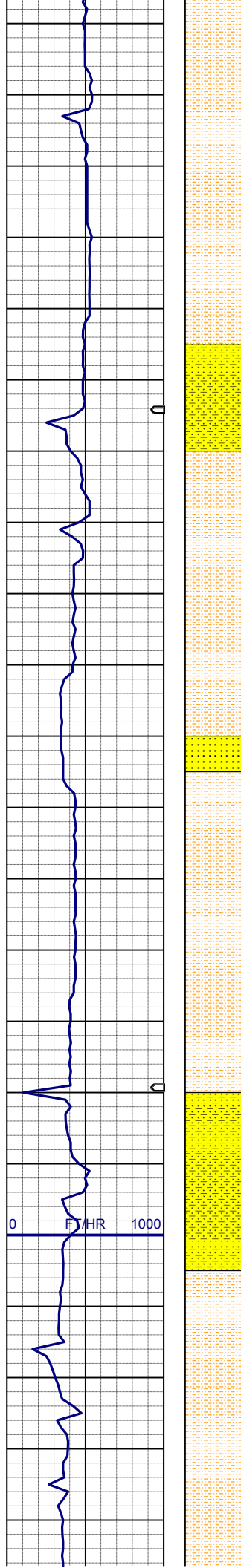
SURVEY
MD 2845'
INC 0.2°
AZI 274.2°
TVD 2842.89'

SHYSS: lt-mgy, f-mfgr, sbrd-sbang,
mod-psrt, sft, ppor, argcmt, slcalc,
phlog, grd to
SHYSLTST: lt-mgy, occ tan, f-vfgr,
sbrd-sbang, mod srt, arg mtx,
SS: w-ltgy, s&p, mf-c gr, sbrd, mod-
wsrt, ppor, argcmt, slcalc, phlog, tr
glau

SURVEY
MD 2940'
INC 0.3°
AZI 209.3°
TVD 2937.89'

SHYSS: lt-mgy, f-mfgr, sbrd-sbang,
mod-psrt, sft, ppor, argcmt, slcalc,
phlog, grd to
SHYSLTST: lt-mgy, occ tan, f-vfgr,
sbrd-sbang, mod srt, arg mtx,
SS: w-ltgy, s&p, mf-c gr, sbrd, mod-
wsrt, ppor, argcmt, slcalc, phlog, tr
glau

SURVEY



SURVEY
MD 3034'
INC 0.3°
AZI 234.8°
TVD 3031.89'

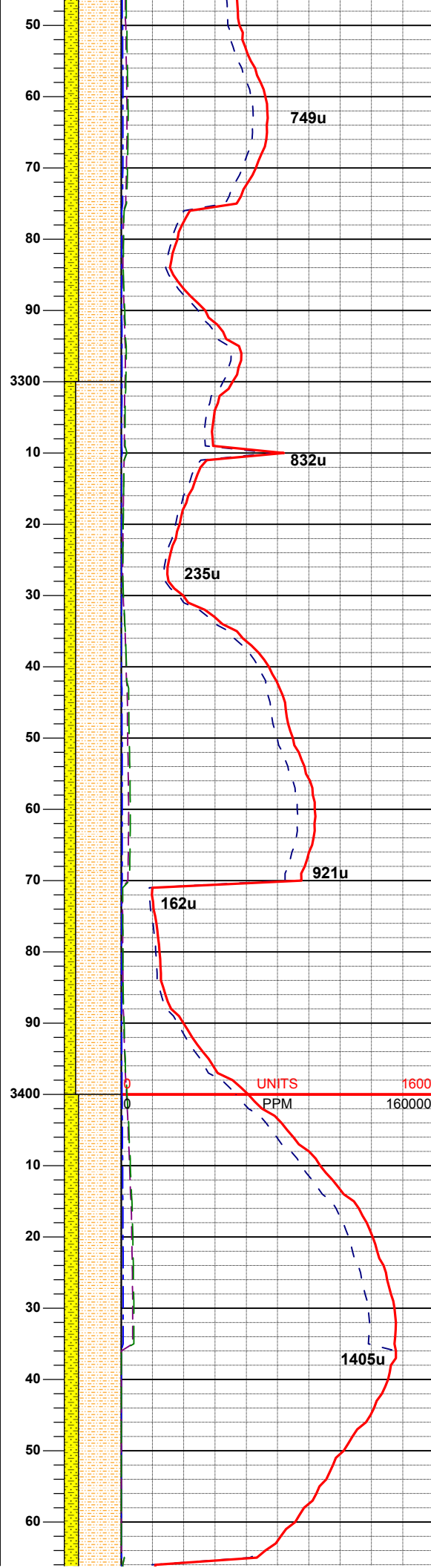
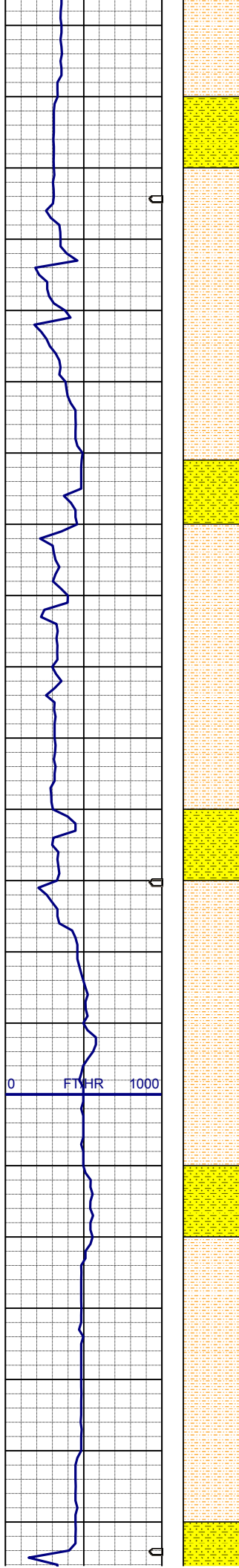
SHYSLTST: lt-mgy, occ tan, f-vfgr, sbrd-sbang, mod srt, arg mtx, SHYSS: lt-mgy, f-mfgr, sbrd-sbang, mod-psrt, sft, ppor, argcmt, slcalc, phlog, grd to SS: w-ltgy, s&p, mf-c gr, sbrd, mod-wsrt, ppor, argcmt, slcalc, phlog, tr glau

SURVEY
MD 3129'
INC 0.4°
AZI 219.8°
TVD 3126.89'

SHYSLTST: lt-mgy, occ tan, f-vfgr, sbrd-sbang, mod srt, arg mtx, SHYSS: lt-mgy, f-mfgr, sbrd-sbang, mod-psrt, sft, ppor, argcmt, slcalc, phlog, grd to SS: w-ltgy, s&p, mf-c gr, sbrd, mod-wsrt, ppor, argcmt, slcalc, phlog, tr glau

SURVEY
MD 3224'
INC 0.5°
AZI 174.1°
TVD 3221.89'

SHYSLTST: lt-mgy, occ tan, f-vfgr,



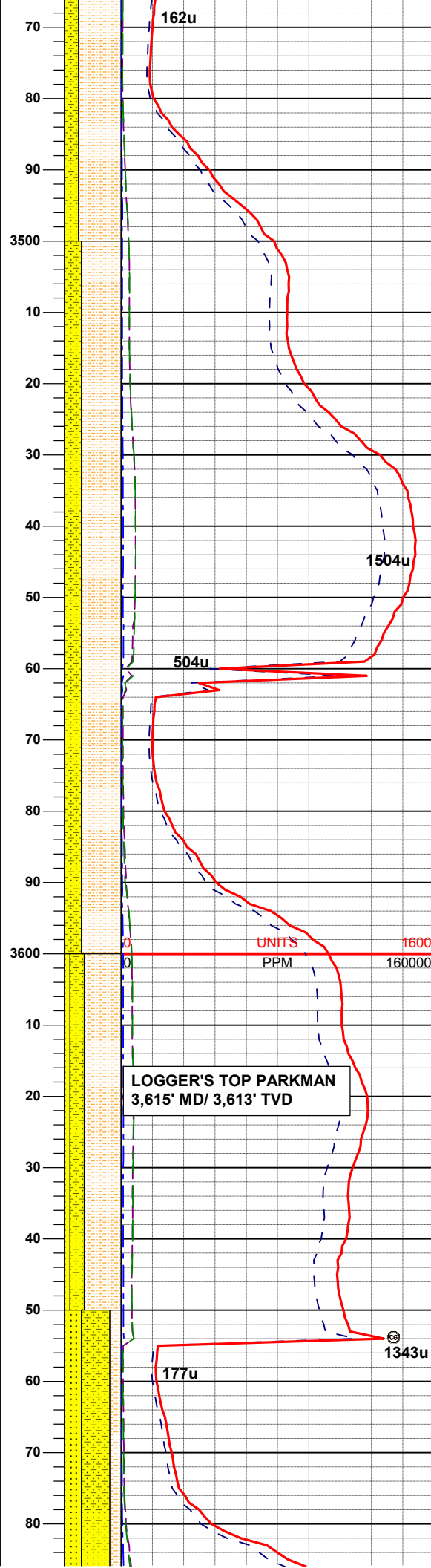
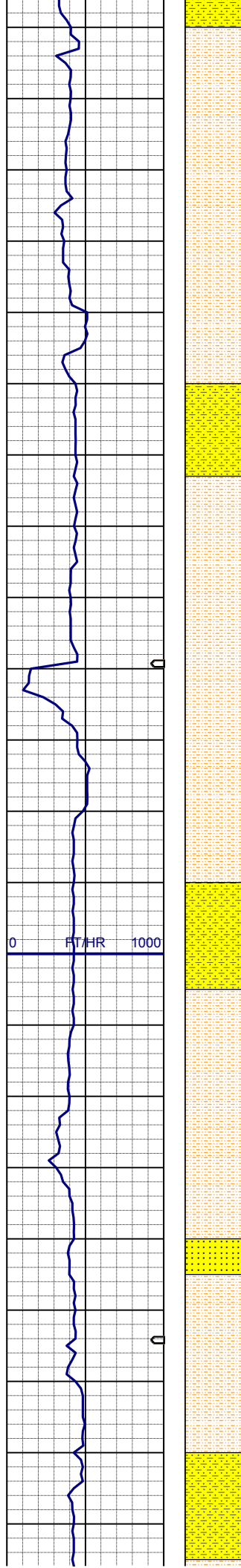
sbrd-sbang, mod srt, arg mtx, grd to
SHYSS: lt-mgy, f-mfgr, sbrd-sbang,
mod-psrt, sft, ppor, argcmt, slcalc,
phlog, sme ss

SURVEY
MD 3319'
INC 0.7°
AZI 162.5°
TVD 3316.88'

SHYSLTST: lt-mgy, occ tan, f-vfgr,
sbrd-sbang, mod srt, arg mtx, grd to
SHYSS: lt-mgy, f-mfgr, sbrd-sbang,
mod-psrt, sft, ppor, argcmt, slcalc,
phlog, sme ss

SURVEY
MD 3414'
INC 0.8°
AZI 163.1°
TVD 3411.87'

SHYSLTST: lt-mgy, occ tan, f-vfgr,
sbrd-sbang, mod srt, arg mtx, grd to
SHYSS: lt-mgy, f-mfgr, sbrd-sbang,
mod-psrt, sft, ppor, argcmt, slcalc,
phlog, sme ss



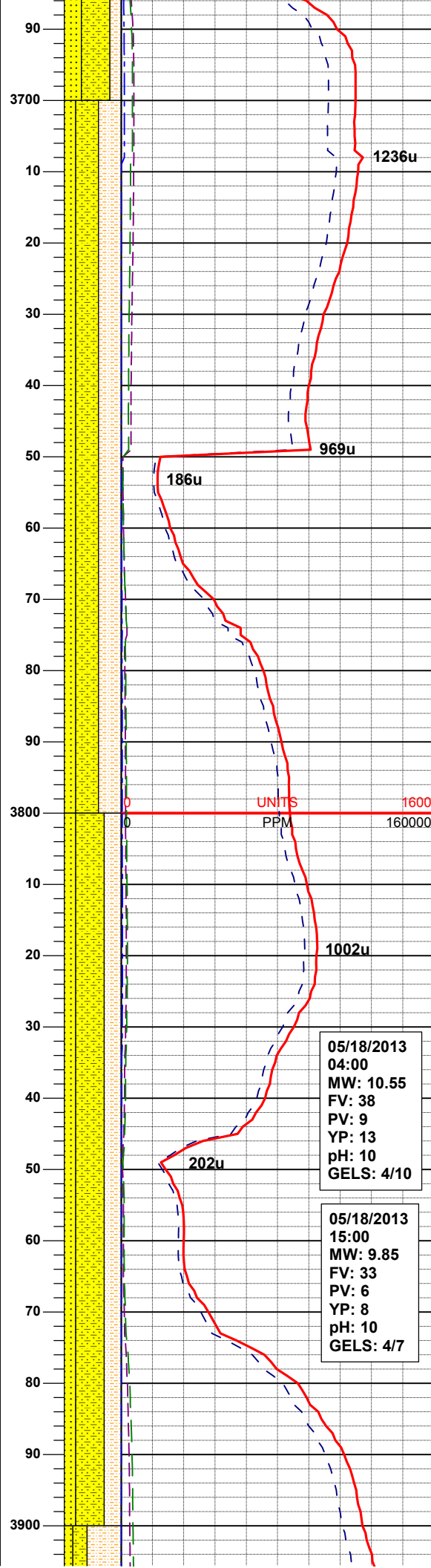
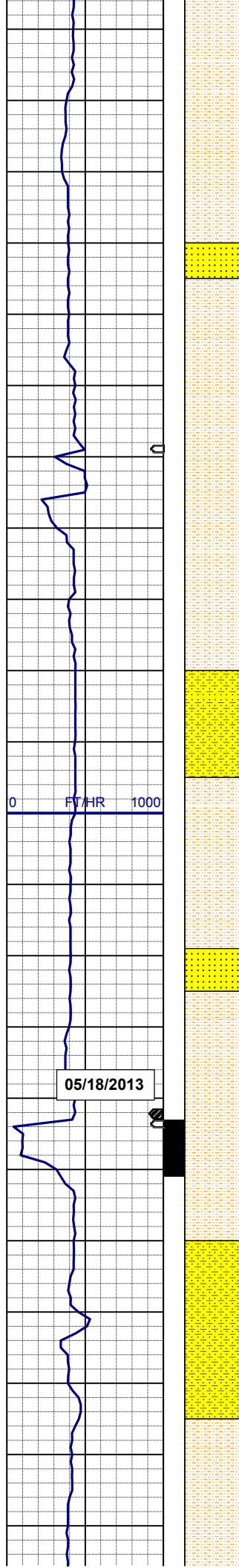
SURVEY
MD 3508'
INC 1.0°
AZI 162.2°
TVD 3505.86'

SHYSLTST: lt-mgy, occ tan, f-vfgr, sbrd-sbang, mod srt, arg mtx, grd to SHYSS: lt-mgy, f-mfgr, sbrd-sbang, mod-psrt, sft, ppor, argcmt, slcalc, phlog, sme ss

SURVEY
MD 3603'
INC 1.1°
AZI 153.4°
TVD 3600.85'

SHYSLTST: lt-mgy, occ tan, f-vfgr, sbrd-sbang, mod srt, arg mtx, SHYSS: lt-mgy, f-mfgr, sbrd-sbang, mod-psrt, sft, ppor, argcmt, slcalc, phlog, grd to SS: w-ltgy, s&p, mf-c gr, sbrd, mod-wsrt, ppor, argcmt, slcalc, phlog, tr glau

SHYSS: lt-mgy, f-mfgr, sbrd-sbang, mod-psrt, sft, ppor, argcmt, slcalc, phlog SS: w-ltgy, s&p, mf-c gr, sbrd, mod-wsrt, ppor, argcmt, slcalc, phlog, tr glau, grd to SHYSLTST: lt-mgy, occ tan, f-vfgr, sbrd-sbang, mod srt, arg mtx,



SURVEY
MD 3698'
INC 1.1°
AZI 169.2°
TVD 3695.83'

SHYSLTST: lt-mgy, occ tan, f-vfgr, sbrd-sbang, mod srt, arg mtx,
SHYSS: lt-mgy, f-mfgr, sbrd-sbang, mod-psrt, sft, ppor, argcmt, slcalc, phlog, grd to
SS: w-ltgy, s&p, mf-c gr, sbrd, mod-wsrt, ppor, argcmt, slcalc, phlog, tr glau

SURVEY
MD 3825'
INC 1.6°
AZI 176.9°
TVD 3822.79'

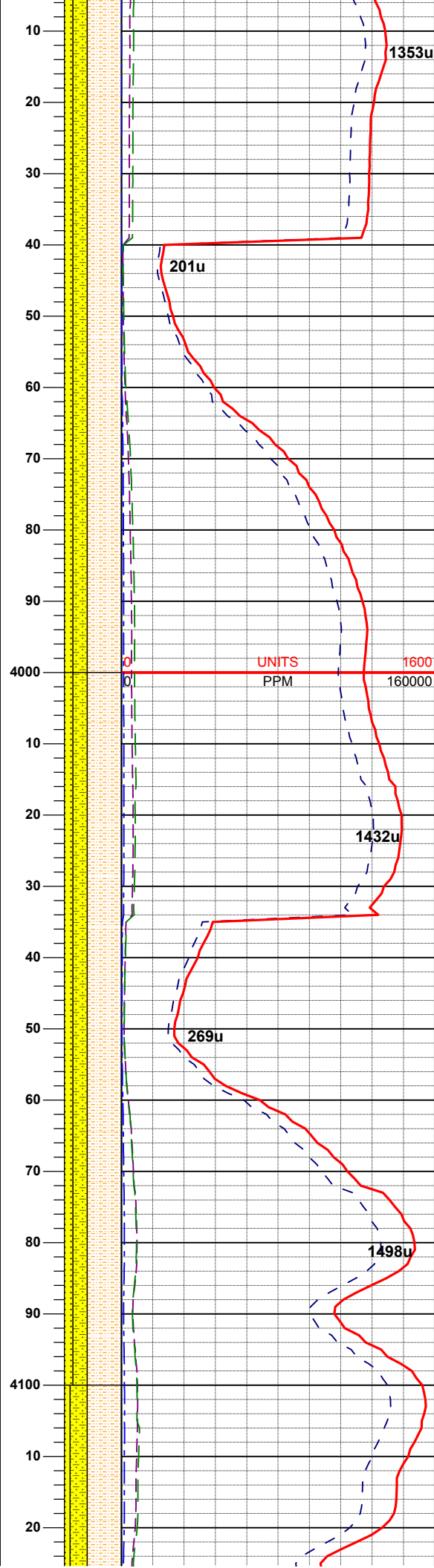
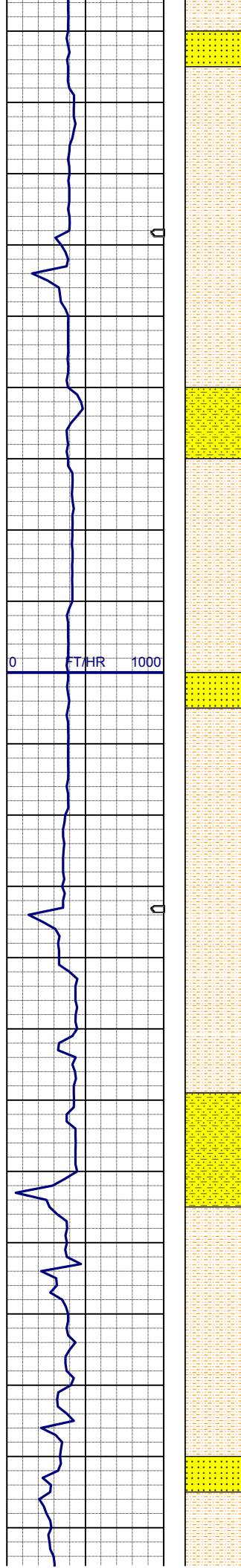
MUD WT: 8.4 VIS: 28 IN
MUD WT: 8.4+ VIS: 29 OUT

SHYSS: lt-mgy, f-mfgr, sbrd-sbang, mod-psrt, sft, ppor, argcmt, slcalc, phlog
SS: w-ltgy, s&p, mf-c gr, sbrd, mod-wsrt, ppor, argcmt, slcalc, phlog, tr glau, grd to
SHYSLTST: lt-mgy, occ tan, f-vfgr, sbrd-sbang, mod srt, arg mtx,

SURVEY
MD 3888'
INC 1.0°
AZI 178.4°
TVD 3885.77'

05/18/2013
04:00
MW: 10.55
FV: 38
PV: 9
YP: 13
pH: 10
GELS: 4/10

05/18/2013
15:00
MW: 9.85
FV: 33
PV: 6
YP: 8
pH: 10
GELS: 4/7

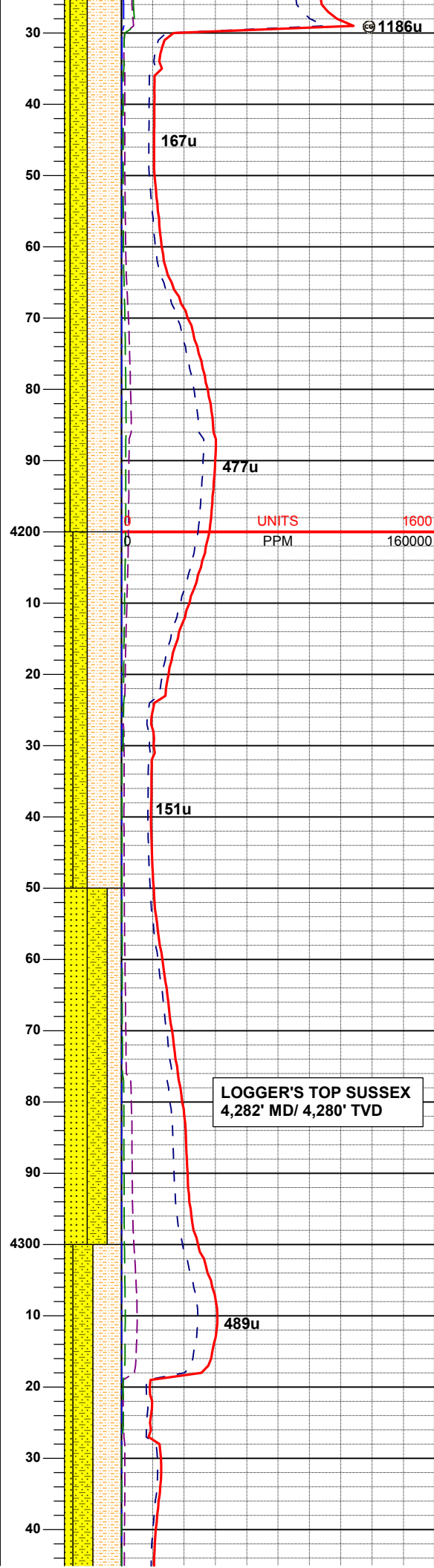
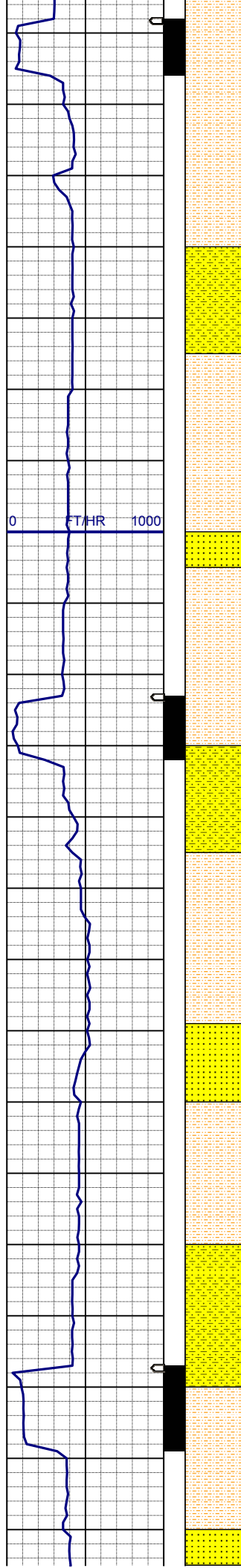


SHYSLTST: lt-mgy, occ tan, f-vfgr,
sbrd-sbang, mod srt, arg mtx,
SHYSS: lt-mgy, f-mfgr, sbrd-sbang,
mod-psrt, sft, ppor, argcmt, slcalc,
phlog, grd to
SS: w-ltgy, s&p, mf-c gr, sbrd, mod-
wsrt, ppor, argcmt, slcalc, phlog, tr
glau

SURVEY
MD 3983'
INC 1.0°
AZI 170.1°
TVD 3980.76'

SHYSLTST: lt-mgy, occ tan, f-vfgr,
sbrd-sbang, mod srt, arg mtx,
SHYSS: lt-mgy, f-mfgr, sbrd-sbang,
mod-psrt, sft, ppor, argcmt, slcalc,
phlog, grd to
SS: w-ltgy, s&p, mf-c gr, sbrd, mod-
wsrt, ppor, argcmt, slcalc, phlog, tr
glau

SURVEY
MD 4078'
INC 1.2°
AZI 162.7°
TVD 4075.74'



SHYSLTST: lt-mgy, occ tan, f-vfgr, sbrd-sbang, mod srt, arg mtx, SHYSS: lt-mgy, f-mfgr, sbrd-sbang, mod-psrt, sft, ppor, argcmt, slcalc, phlog, grd to SS: w-ltgy, s&p, mf-c gr, sbrd, mod-wsrt, ppor, argcmt, slcalc, phlog, tr glau

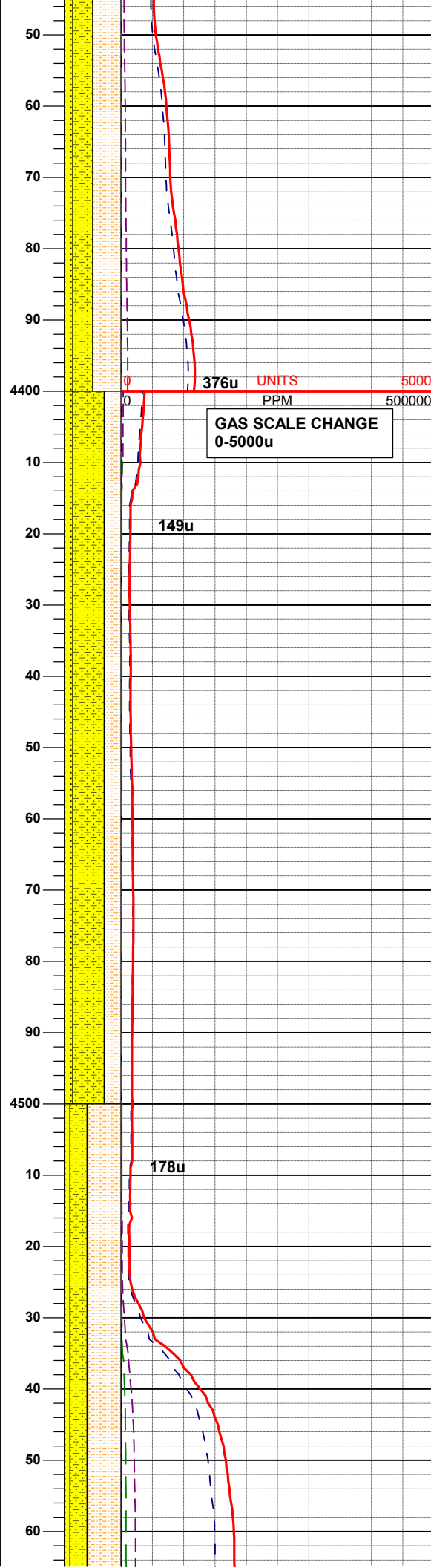
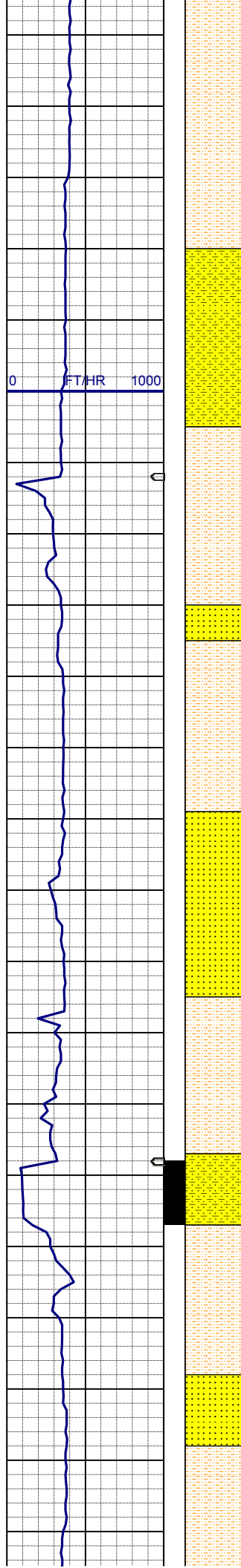
SURVEY
MD 4172'
INC 1.8°
AZI 171.7°
TVD 4169.71'

SHYSLTST: lt-mgy, occ tan, f-vfgr, sbrd-sbang, mod srt, arg mtx, SHYSS: lt-mgy, f-mfgr, sbrd-sbang, mod-psrt, sft, ppor, argcmt, slcalc, phlog, grd to SS: w-ltgy, s&p, mf-c gr, sbrd, mod-wsrt, ppor, argcmt, slcalc, phlog, tr glau

SURVEY
MD 4267'
INC 1.6°
AZI 188.0°
TVD 4264.67'

SS: w-ltgy, s&p, mf-c gr, sbrd, mod-wsrt, ppor, argcmt, slcalc, phlog, tr glau, grd to SHYSLTST: lt-mgy, occ tan, f-vfgr, sbrd-sbang, mod srt, arg mtx, SHYSS: lt-mgy, f-mfgr, sbrd-sbang, mod-psrt, sft, ppor, argcmt, slcalc, phlog

SHYSLTST: lt-mgy, occ tan, f-vfgr, sbrd-sbang, mod srt, arg mtx, SHYSS: lt-mgy, f-mfgr, sbrd-sbang, mod-psrt, sft, ppor, argcmt, slcalc, phlog



SHYSS: lt-mgy, f-mtgr, sbrd-sbang,
mod-psrt, sft, ppor, argcmt, slcalc,
phlog, grd to
SS: w-ltgy, s&p, mf-c gr, sbrd, mod-
wsrt, ppor, argcmt, slcalc, phlog, tr
glau

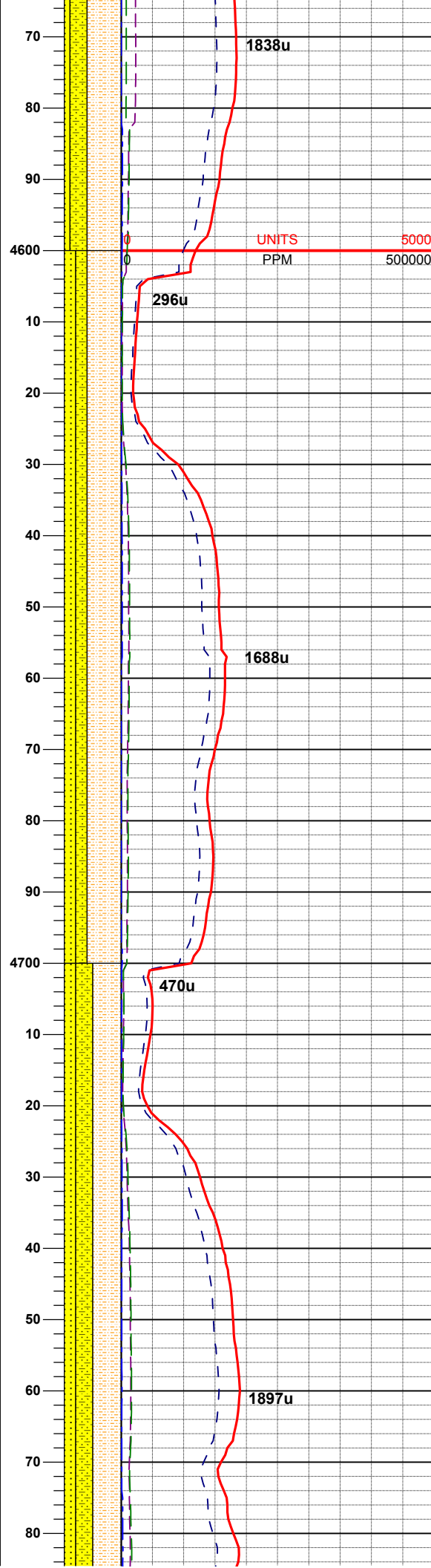
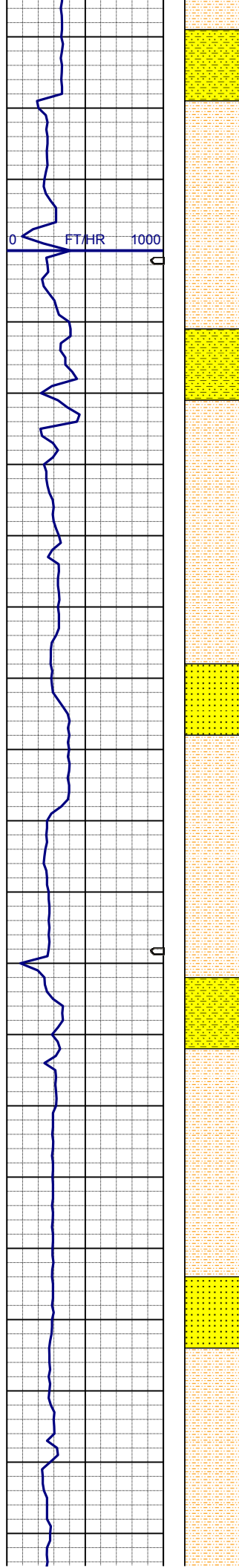
SURVEY
MD 4362'
INC 0.4°
AZI 82.7°
TVD 4359.66'

SHYSS: lt-mgy, f-mfgr, sbrd-sbang,
mod-psrt, sft, ppor, argcmt, slcalc,
phlog, grd to
SHYSLTST: lt-mgy, occ tan, f-vfgr,
sbrd-sbang, mod srt, arg mtz,
SS: w-ltgy, s&p, mf-c gr, sbrd, mod-
wsrt, ppor, argcmt, slcalc, phlog, tr
glau

SURVEY
MD 4457'
INC 0.4°
AZI 119.1°
TVD 4454.66'

SHYSLTST: lt-mgy, occ tan, f-vfgr,
sbrd-sbang, mod srt, arg mtz, grd to
SHYSS: lt-mgy, f-mfgr, sbrd-sbang,
mod-psrt, sft, ppor, argcmt, slcalc,
phlog
SS: w-ltgy, s&p, mf-c gr, sbrd, mod-
wsrt, ppor, argcmt, slcalc, phlog, tr
glau

SURVEY
MD 4552'
INC 1.1°



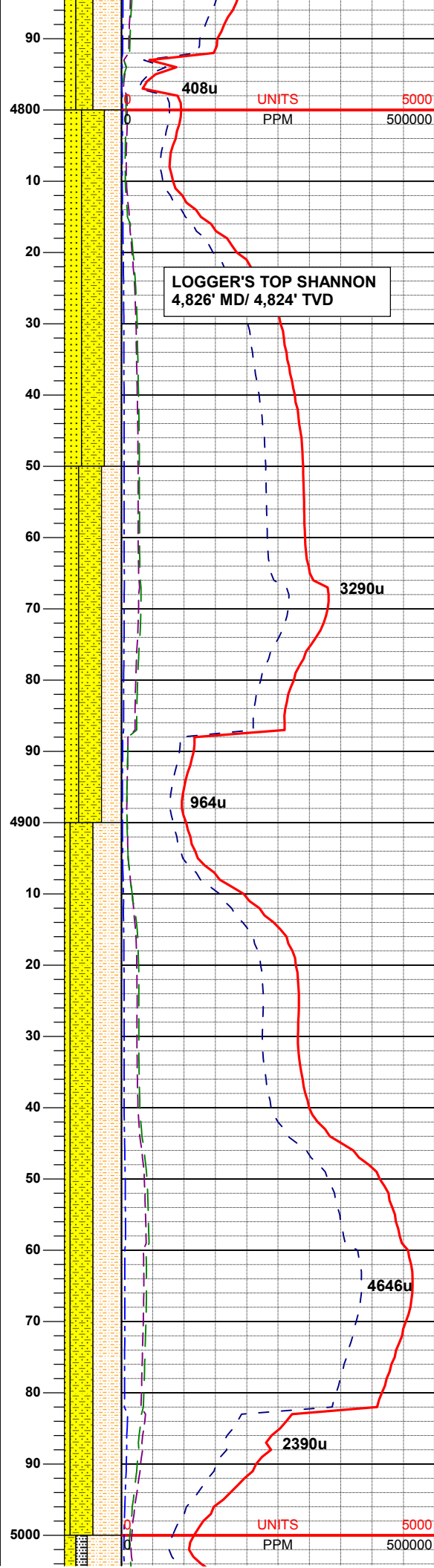
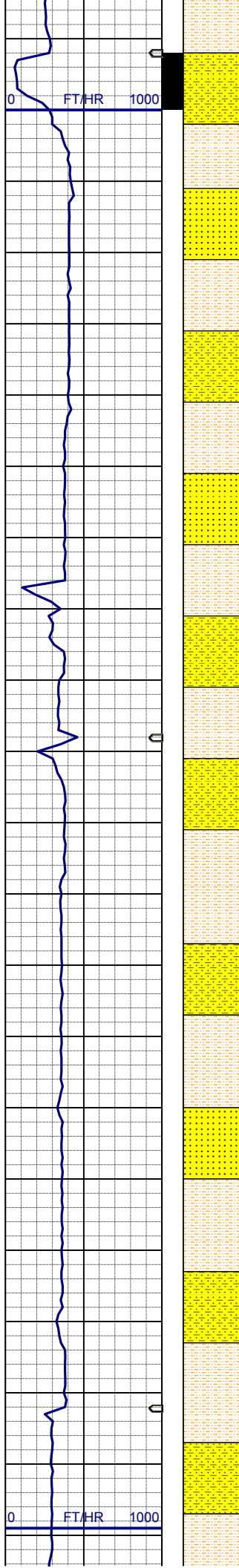
AZI 24.0°
TVD 4549.65'

SURVEY
MD 4646'
INC 0.6°
AZI 327.8°
TVD 4643.64'

SHYSLTST: lt-mgy, occ tan, f-vfgr, sbrd-sbang, mod srt, arg mtz, grd to SHYSS: lt-mgy, f-mfgr, sbrd-sbang, mod-psrt, sft, ppor, argcmt, slcalc, phlog
SS: w-ltgy, s&p, mf-c gr, sbrd, mod-wsrt, ppor, argcmt, slcalc, phlog, tr glau

SURVEY
MD 4741'
INC 0.9°
AZI 268.9°
TVD 4738.63'

SHYSS: lt-mgy, f-mfgr, sbrd-sbang, mod-psrt, sft, ppor, argcmt, slcalc, phlog, grd to SHYSLTST: lt-mgy, occ tan, f-vfgr, sbrd-sbang, mod srt, arg mtz, SS: w-ltgy, s&p, mf-c gr, sbrd, mod-wsrt, ppor, argcmt, slcalc, phlog, tr glau



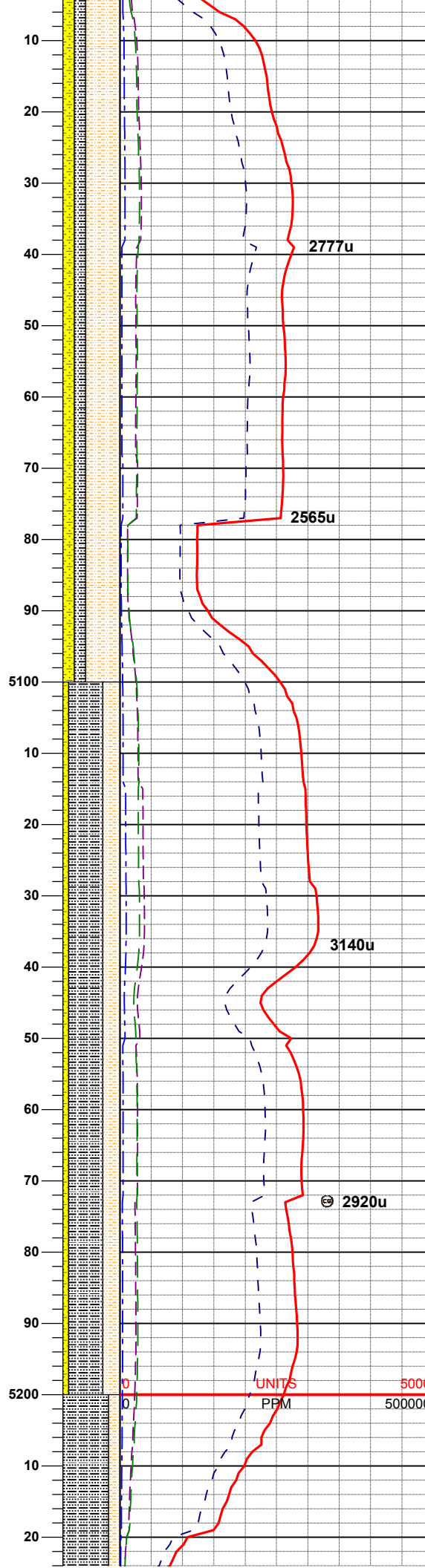
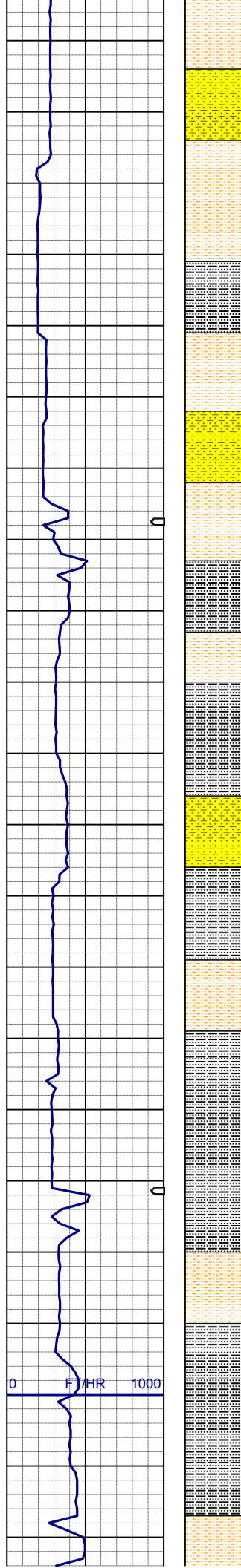
SHYSLTST: lt-mgy, occ tan, f-vfgr, sbrd-sbang, mod srt, arg mtx, grd to SHYSS: lt-mgy, f-mfgr, sbrd-sbang, mod-psrt, sft, ppor, argcmt, slcalc, phlog, SS: w-ltgy, s&p, mf-c gr, sbrd, mod-wsrt, ppor, argcmt, slcalc, phlog, tr glau

SURVEY
MD 4836'
INC 1.2°
AZI 274.5°
TVD 4833.62'

SHYSS: lt-mgy, f-mfgr, sbrd-sbang, mod-psrt, sft, ppor, argcmt, slcalc, phlog, grd to SHYSLTST: lt-mgy, occ tan, f-vfgr, sbrd-sbang, mod srt, arg mtx, SS: w-ltgy, s&p, mf-c gr, sbrd, mod-wsrt, ppor, argcmt, slcalc, phlog, tr glau

SURVEY
MD 4931'
INC 0.5°
AZI 291.6°
TVD 4928.61'

SHYSLTST: lt-mgy, occ tan, f-vfgr, sbrd-sbang, mod srt, arg mtx, grd to SHYSS: lt-mgy, f-mfgr, sbrd-sbang, mod-psrt, sft, ppor, argcmt, slcalc, phlog, SS: w-ltgy, s&p, mf-c gr, sbrd, mod-wsrt, ppor, argcmt, slcalc, phlog, tr glau



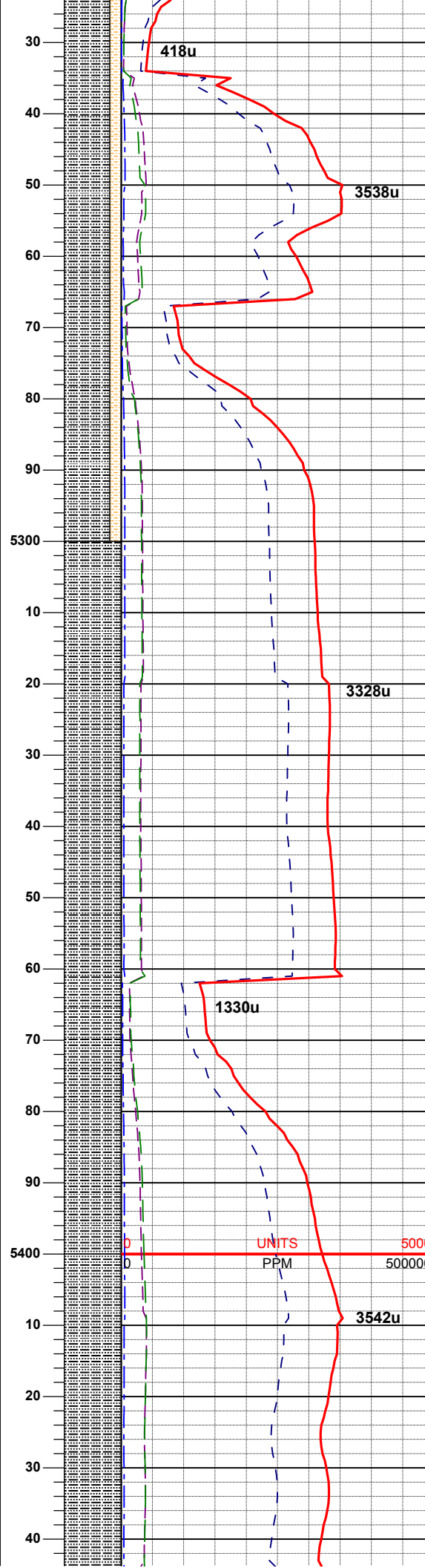
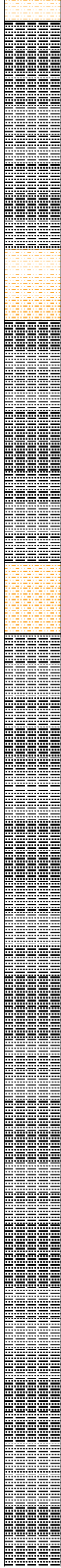
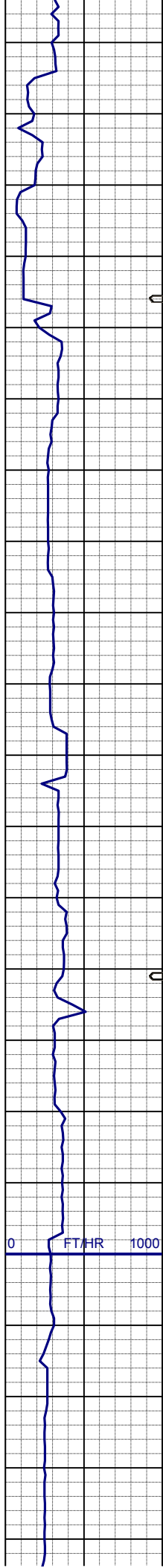
SURVEY
MD 5026'
INC 0.5°
AZI 240.1°
TVD 5023.60'

SHYSLTST: lt-mgy, occ tan, f-vfgr,
sbrd-sbang, mod srt, arg mtz, grd to
SHYSS: lt-mgy, f-mfgr, sbrd-sbang,
mod-psrt, sft, ppor, argcmt, slcalc,
phlog
SLTYSH: lt - mgy, dk gy, occ tan, v f
gr, fri-brit, sbply-sbbiky, sl calc, tr pyr
ctd, tr cln ss

SURVEY
MD 5120'
INC 0.7°
AZI 212.1°
TVD 5117.60'

SLTYSH: lt - mgy, dk gy, occ tan, v f
gr, fri-brit, sbply-sbbiky, sl calc, grd to
SHYSLTST: lt-mgy, occ tan, f-vfgr,
sbrd-sbang, mod srt, arg mtz,
SHYSS: lt-mgy, f-mfgr, sbrd-sbang,
mod-psrt, sft, ppor, argcmt, slcalc,
phlog, trss, tr pyr ctd

SURVEY
MD 5215'
INC 1.0°
AZI 213.9°
TVD 5212.59'

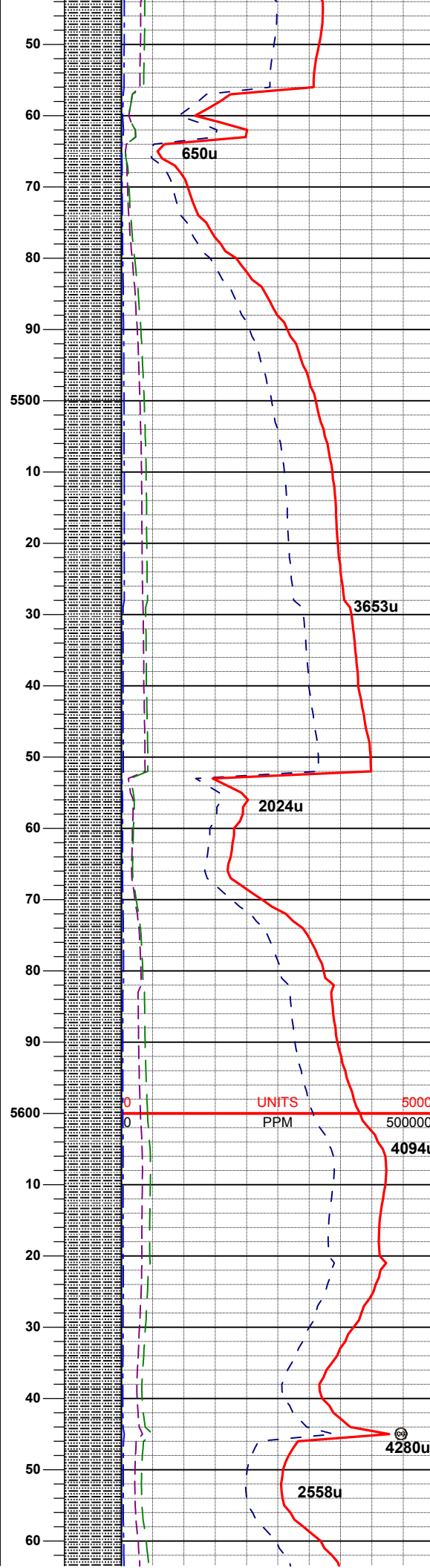
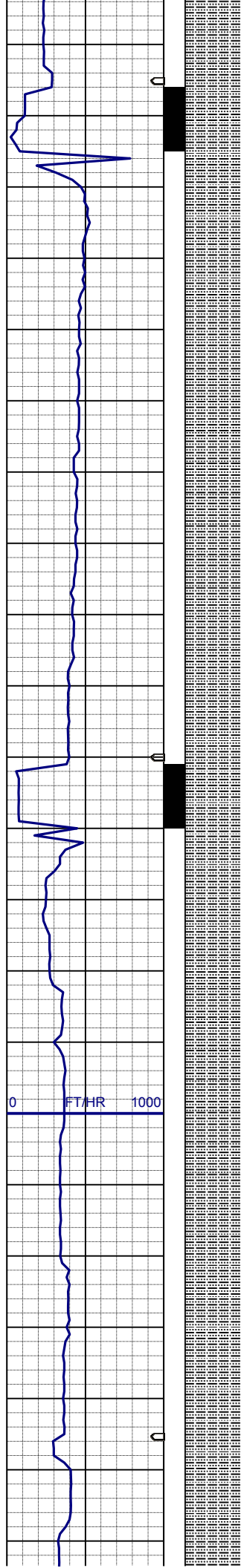


SLTYSH: lt - mgy, dk gy, occ tan, v f
gr, fri-brit, sbplty-sbbiky, sl calc, grd to
SHYSLTST: lt-mgy, occ tan, f-vfgr,
sbrd-sbang, mod srt, arg mtx, sme
shyss, trss, tr pyr ctd

SURVEY
MD 5310'
INC 1.0°
AZI 214.0°
TVD 5307.57'

SLTYSH: lt - mgy, dk gy, occ tan, v f
gr, fri-brit, sbplty-sbbiky, sl calc, tr
shysltst, tr shyss, tr pyr ctd

SURVEY
MD 5405'
INC 1.2°
AZI 234.3°
TVD 5402.56'



SLTYSH: lt - mgy, dk gy, occ tan, v f
gr, fri-brit, sbplty-sbblky, sl calc, tr
shysltst, tr shyss, tr pyr ctd

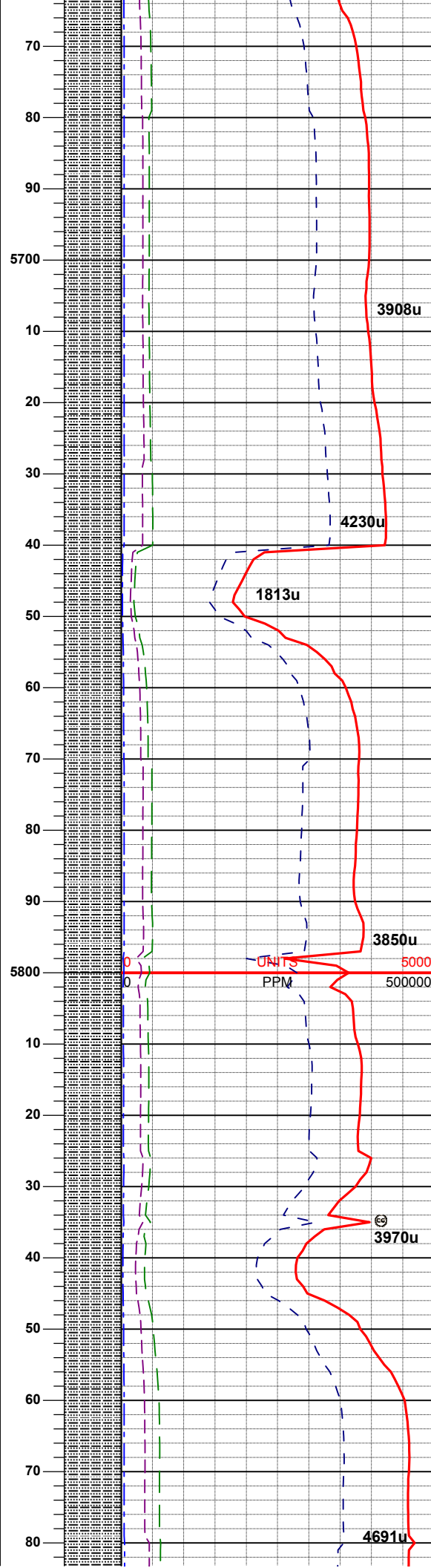
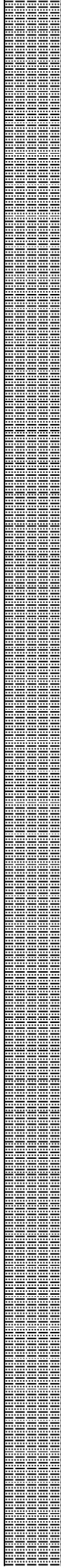
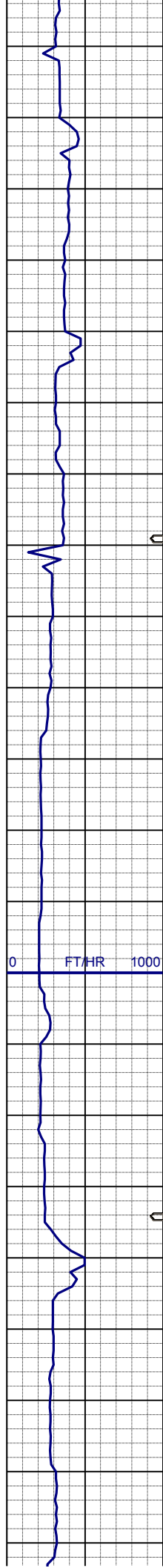
SURVEY
MD 5500'
INC 1.3°
AZI 221.2°
TVD 5497.53'

MUD WT: 8.9 VIS: 30 IN
MUD WT: 8.9 VIS: 30 OUT

SLTYSH: lt - mgy, dk gy, occ tan, v f
gr, fri-brit, sbplty-sbblky, sl calc, tr
shysltst, tr shyss, tr pyr ctd, tr calcite

SURVEY
MD 5594'
INC 1.1°
AZI 118.4°
TVD 5591.52'

SLTYSH: lt - mgy, dk gy, occ tan, v f
gr, fri-brit, sbplty-sbblky, sl calc, tr
shysltst, tr shyss, tr pyr ctd



SURVEY
MD 5689'
INC 1.2°
AZI 116.7°
TVD 5686.50'

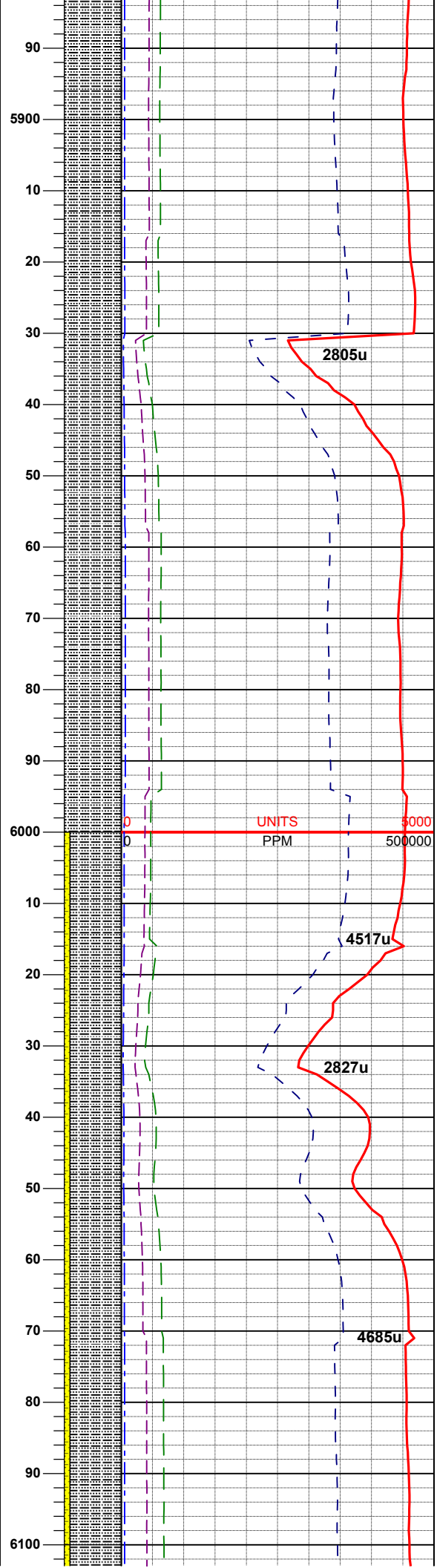
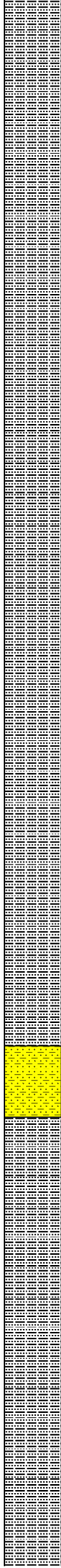
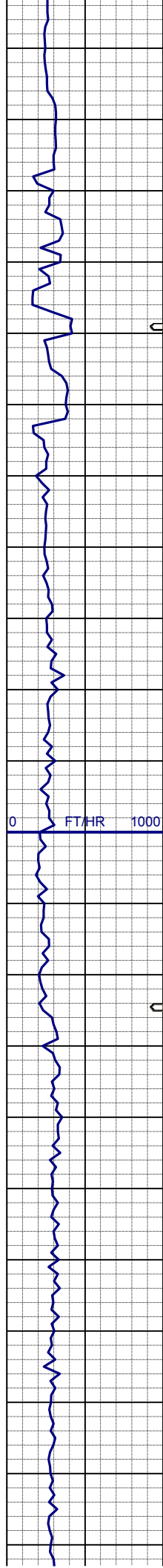
SLTYSH: lt - mgy, dk gy, v f gr, fri-brit,
sbplty-sbbiky, sl calc, tr shysltst, tr
shyss

MUD WT: 9.1 **VIS: 31 IN**
MUD WT: 9.1 **VIS: 32 OUT**

SURVEY
MD 5783'
INC 0.8°
AZI 136.7°
TVD 5780.49'

SLTYSH: lt - mgy, dk gy, v f gr, fri-brit,
sbplty-sbbiky, sl calc, tr shysltst, tr
shyss

SURVEY
MD 5879'
INC 0.9°
AZI 139.5°



TVD 5876.48'

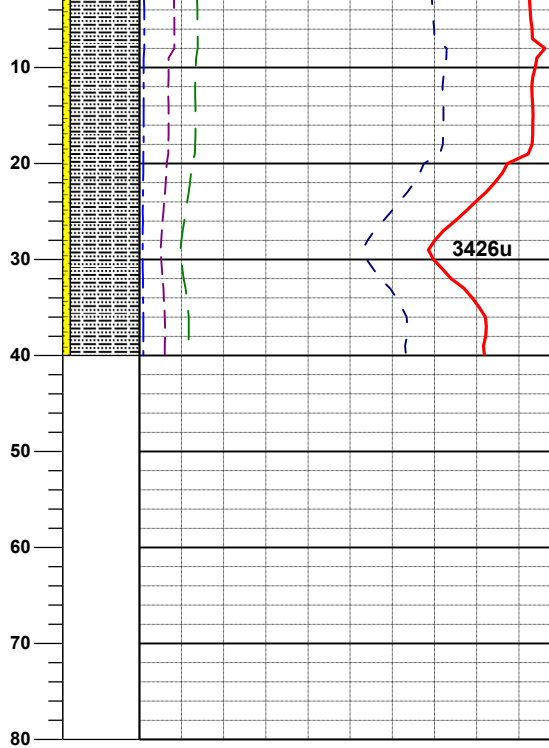
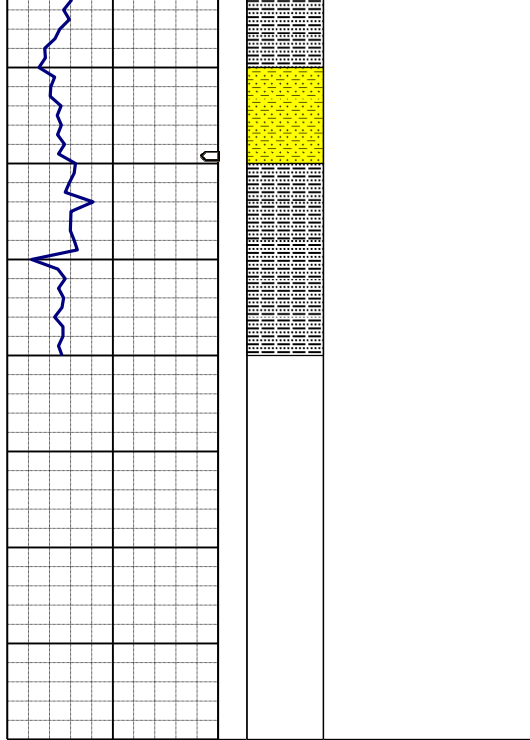
SLTYSH: lt - mgy, dk gy, v f gr, fri-brit, sbplty-sbbiky, sl calc, tr shysltst, tr shyss

MUD WT: 9.3 VIS: 32 IN
MUD WT: 9.3 VIS: 31 OUT

SURVEY
MD 5974'
INC 0.7°
AZI 114.7°
TVD 5971.47'

SLTYSH: lt - mgy, dk gy, v f gr, fri-brit, sbplty-sbbiky, sl calc
SHYSS: lt-mgy, f-mggr, sbrd-sbang, mod-psrt, ppor, argcmt

SURVEY
MD 6068'
INC 1.0°
AZI 109.4°
TVD 6065.46'



MUD WT: 9.7 VIS: 33 IN
MUD WT: 9.5 VIS: 32 OUT

TD VERTICAL @ 6,140' MD
@ 11:56 MST 05/18/2013

LOG CONTINUES ON LPLOT
SAUER F33-77-1HNXHORIZONTAL

THANK YOU FOR USING
COLUMBINE LOGGING INC.