GMT operations – Detector Operator Instructions

The GMT system is 8 small GEM chambers at various locations just outside the outer radius of the TPC. They are intended to provide precise space-points at select locations to monitor the TPC distortion corrections.

The chambers have 3 subsystems: High Voltage, Gas, Low Voltage and readout. The High Voltage and the Low Voltage and Readout are housed in a single custom crate on the platform. The only interaction with GMT normally required by the detector operator is to set the high voltage to "Standby" or "Physics"

GMT high voltage is controlled from the *gmt-ops* PC. The screen is located to the right of and above the TPC control PC screens. The computer is *gmt-ops*, user is *gmt-ops* and the password is in the shift leader's red notebook.
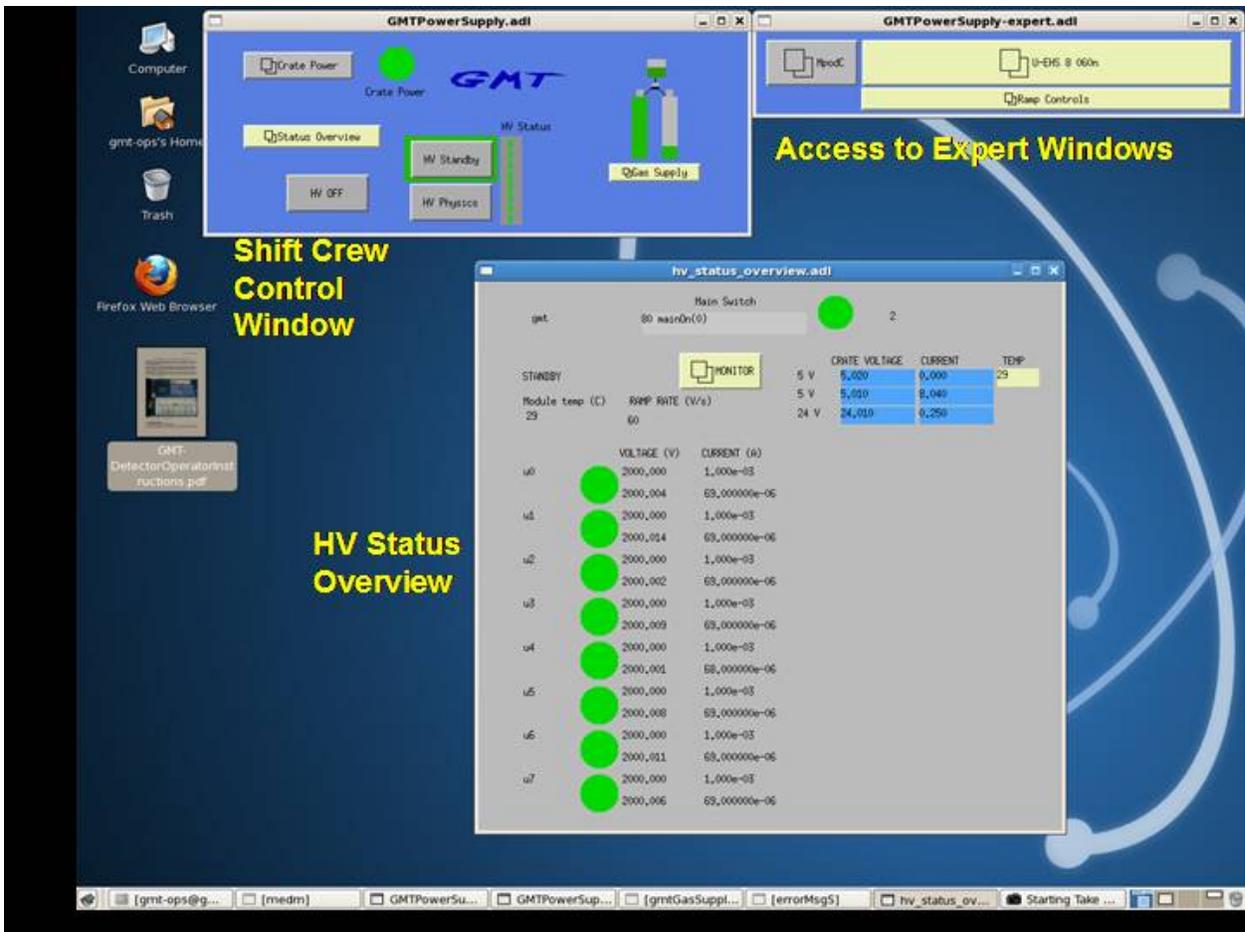

Figure 1. Screen shot from GMT control desktop on *gmt-ops.*

1.   Setting GMT High Voltage:

  Use the password to unlock the screen if necessary

  The first (leftmost) desktop should look like fig. 1. There are 3 GUI's normally displayed on this desktop. The top-right-most (Figure 2) gives access to expert GUI's. The detector operator

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normally does not need to do anything on this GUI but should be aware of its existence since a GMT expert may ask you to use it to help solve a problem or it may be needed to reset a HV trip.
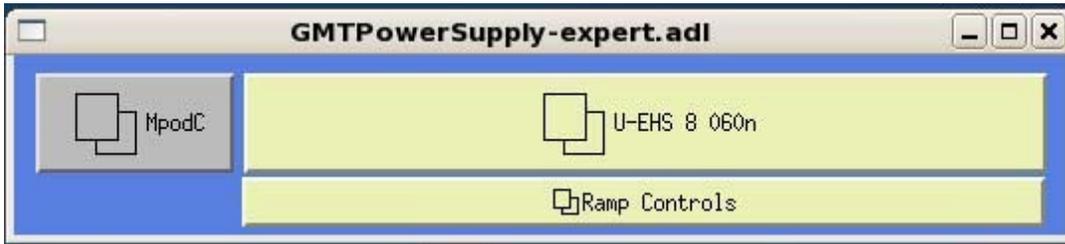

Figure 2. Main Expert GUI. The Detector Operator will access this only to reset a HV trip or under guidance from a GMT expert.
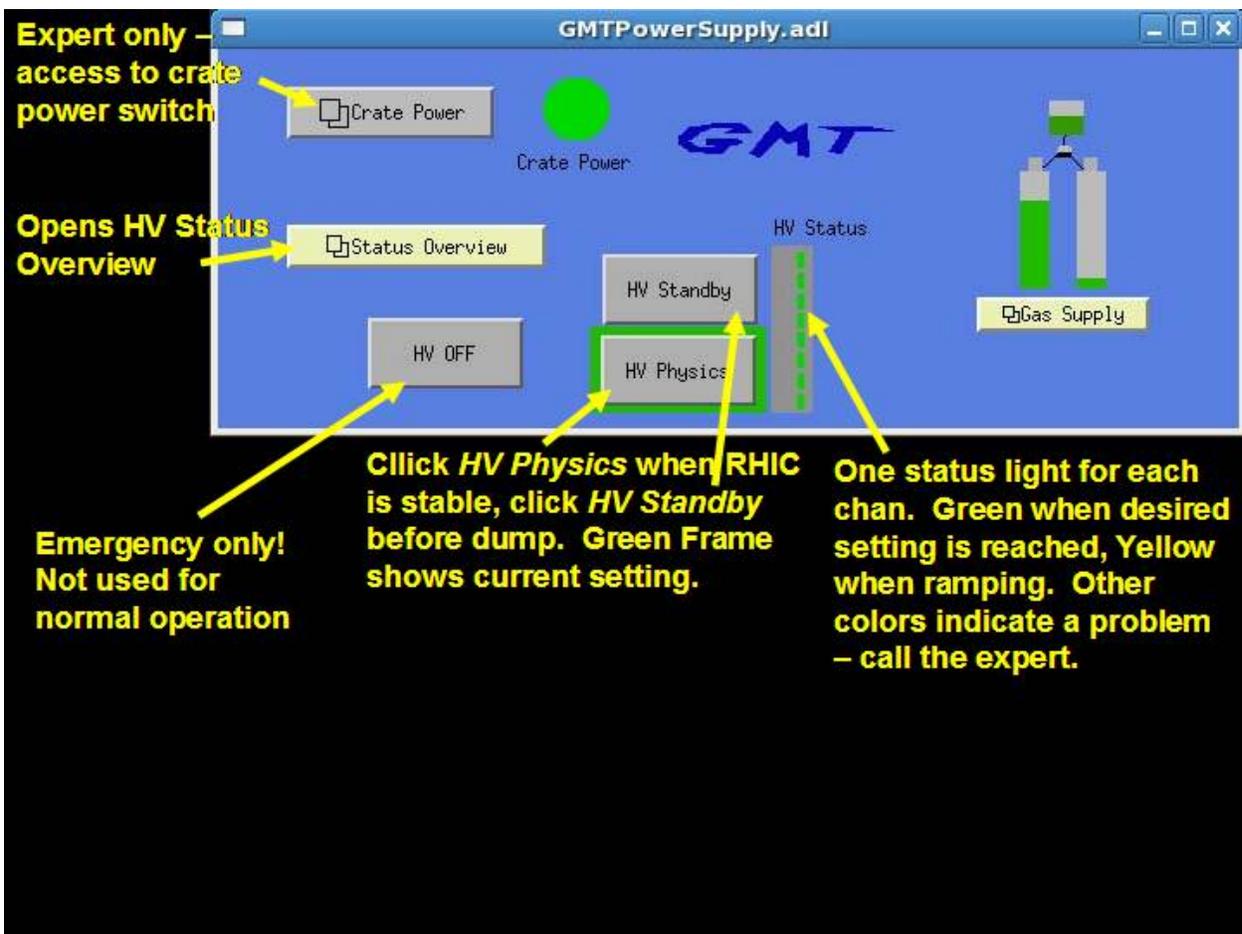

Figure 3. Detector operator GUI for GMT HV control.

The top-left GUI (Figure 3) is for shift crew operations. The only controls used by detector operators for normal operations are *HV Standby* and *HV Physics*. When RHIC has a stable fill and other detectors are being ramped to full voltage, push *HV Physics* to ramp to full operating voltages. Before the RHIC beams are dumped, push *HV Standby* to ramp to a safe voltage. The

ramp from standby to physics should take about 2.5 minutes. The ramp from physics to standby should take about 20 seconds. While the HV is ramping the 8 status lights to the right of the control buttons will turn yellow. When the desired settings are reached the lights will turn green. Any other color indicates a problem. If the problem is a single tripped HV channel follow the procedure in section **2.** below to reset and restore that channel. For any other problem an expert should be notified. NOTE: the normal UP ramp will pause for ~60 sec. every 600 V.

   The buttons on the left side of the operator's GUI allow access to various expert functions. Detector operators do not need to use these but should be aware of them since an expert may ask you to use them to help solve a problem.

   The icon on the right side of the GUI gives an indication of the status of the gas supply. GMT uses the FGT gas supply. Since the FGT is not installed for the 2014 run, GMT experts will maintain the gas. If there is any problem call a GMT expert.

   The bottom GUI on the desktop (Figure 4) is a status page. There are no control options from this page – it is "read only" with the exception of the button to open a strip chart display of HV and current readings. Detector operators shouldn't need to open this chart.

Figure 4. Illustration HV Status Overview GUI.

The meaning of the various indicators on the GUI is shown in Figure 4 It is good practice to keep this window open and on top since a tripped channel can be spotted easily.

2. Resetting a High Voltage Trip and restoring voltage.
A tripped HV channel – most easily spotted in the Status Overview Gui by having a red status indicator (the Green circle for the channel is now red) – can be reset as follows:

A. Open the "iseg.adl" GUI. Look for it on the task bar at the bottom of the computer screen and click to restore. If it is not on the task bar it can be opened from the "GMTPowerSupply-expert.adl" GUI. Click on the large button labeled "U-EHS 8 060n." This should open the "iseg.adl" GUI which will look like figure 5.

B. You will notice the status indicator for the tripped channel is red and the readback voltage is ~0. The trip reset button is at the lower right edge of the red status indicator (detail shown in fig. 6). Click it to reset the trip. The red status indicator may briefly disappear and return. Wait a few seconds and then click and drag the HV On Button for the channel to the right. The slider button should stick in the right position and the status indicator turn green. The high voltage for that channel will slowly ramp to the present setting (about 5 min. to get to physics voltage).

NOTE: A GMT HV trip can be reset as soon as it is discovered. You do not have to stop a data run or wait for the end of a run.

C. Minimize the iseg.adl
If the channel trips again while still ramping up, or if the same channel trips more than 4 times in one shift contact a GMT expert.
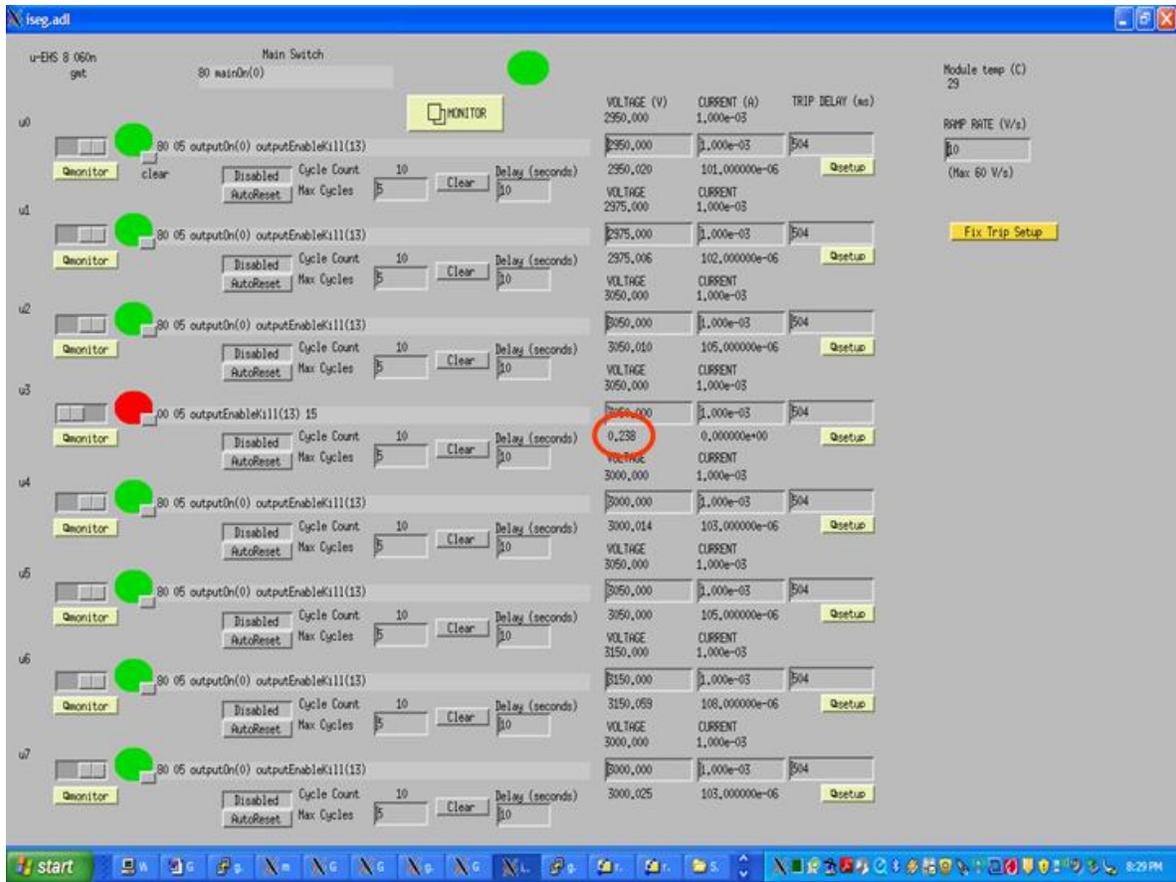
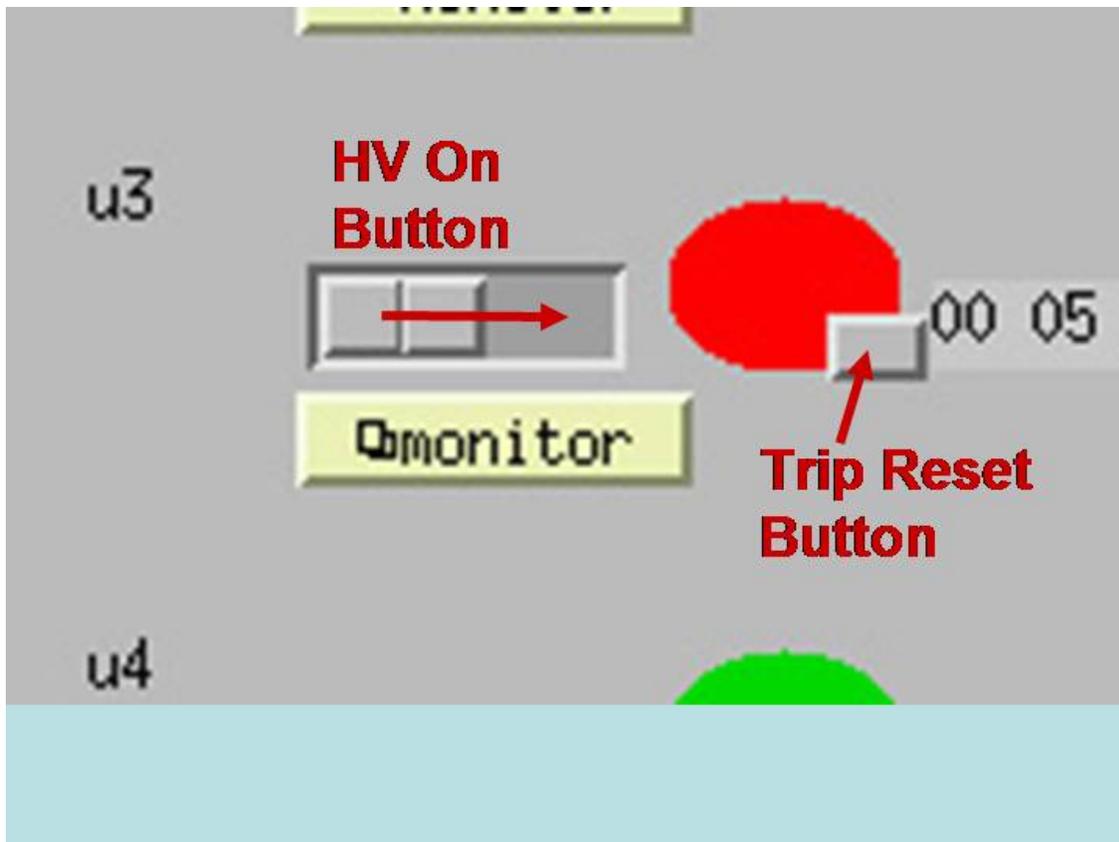**Figure 5.**   iseg.adl with a tripped channel.

Figure 6. HV trip reset detail.

3. Logging on to *gmt-ops* and restarting the GUI
If the GMT control GUI is lost or the login on gmt-ops is lost (power dip, …) you can log in:
user: *gmt-ops*   pw: see shift leader red book

To start the GUI open a terminal window in the leftmost desktop:
from root directory: (*cd /*)
cd /home/gmt-ops/GMT-Display
./run_display
On the shift control GUI (GMTPowerSupply.adl) click the "Status Overwiew" bar (left side, middle) to open the "hv_status_overview" GUI.
Minimize all expert GUI's and arrange the GUI's as shown in Figure 1.

To kill the GUI:
On the task bar at the bottom of the screen, click on the "**[medm]**" task to open the small *medm* GUI. Do File-Exit or click on the "X" in the upper right. This should kill the task and close all GUI windows. Restart the GUI as above.

NOTE: If the control GUI is frozen, even after restarting and/or icons and text areas are blank, the GMT IOC will have to be restarted. This requires a slow controls expert.

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GMT Expert Contact Information
Bold = primary contact

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Copies of this document may be printed from:

http://drupal.star.bnl.gov/STAR/system/files/GMT-DetectorOperatorInstructions.pdf