Instructions on Using the STAR Magnet Control Graphical User Interface
Version 1.3, last revision Dec. 17, 2002.
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Contents:

A. How to start up the Control Page if it is not already running.

The magnet control program is run on the magnet control computer. This computer is located in the two level cluster of four computers in the South East (to the right of the windows to the DAQ room) corner of the STAR control room. It is the bottom left terminal in the cluster of four terminals.

The program is reached from the StartUp page by clicking on the sequence of menu items: **Start**, **RHIC Applications**, **Magnet Control (STAR)**. Usually you will just have to select the last item above.

B. How to use the page when everything works properly.

On startup the CAS watch turns the power supplies over to us in **StandBy** and set to **Zero** current. Check that **Zero** field is selected on the control page and then select **"On"** for the **Desired PS State**. **The Actual PS State** will now go to **"On"**. Select the **Desired Magnetic Field** (**Zero**, **Half**, or **Full**) and then click on the **Ramp** button. The magnet will then ramp up in the correct order for the power supplies, taking about 15 minutes for a ramp to full field, and about 7.5 minutes for a ramp to half field. The analog displays show the setpoint (requested current for requested field strength) and actual current versus time.

C. The Emergency Off button.

The magnet control GUI contains an **Emergency-Off** button. If confirmed on the next red message (window appears asking for confirmation of Emergency off request) this causes an immediate setting of the power supplies to **StandBy**. THIS SHOULD BE

USED ONLY IN EMERGENCIES SINCE IT WILL PROBABLY CAUSE BLOWN FUSES IN THE POWER SUPPLIES.

For reference, please recall that a Magnet Ramp down button also exists on the STAR Global Interlock (SGIS) system in the DAQ room. Activating this SGIS button causes the magnet power supplies to ramp down in an approximately two minute ramp. If one cannot control the magnet via the control GUI, and needs to ramp down the magnet, use of the SGIS ramp down is the preferred method if time allows.

D. Procedure for Power Supply Trips

If one of the magnet power supplies trips, one should use the magnet control GUI to **Ramp** the magnet back down to **Zero** field, and then call for assistance from the CAS watch. Once the magnet has been ramped to **Zero**, the magnet should be left in the **On** state, rather than put to the **Standby** state. Putting the magnet to the Standby state clears the warning lights on the power supplies themselves, which could make it more difficult for the responding CAS watch personnel to diagnose the problem.

Please note that whether one leaves the power supplies in the **On** state, or one puts them into the **Standby** state, the archiving in the magnet PLC interlock system retains the alarm information. This information can be accessed by selecting the "Alarms Summary" button on the magnet PLC computer (please see section F below).

E. What if not everything works properly?

Use the online help, which is reached by right clicking on the various labels on the STAR magnet control GUI. As indicated there, the usual course of action is to call MCR to request assistance; whatever information can be gleaned from the online help should be passed on to MCR (e.g. CAS watch needed).

Typically, if assistance from the CAS watch is needed one should **Ramp** the magnet down to **Zero** field, and then go to **StandBy** before calling MCR.

A common failure mode is having a power supply go from "**StandBy**" to "**Off**" instead of to "**On**". This requires a reset by the CAS watch, so try to do this step (change state of power supplies from **StandBy** to **On**) while the watch staff is still here.

Sometimes an "odd (i.e. not usually there)" small window appears which indicates "Power Supply is being adjusted", or some similar message. The presence of these new windows can block ones ability to insert commands to the magnet control GUI. If this happens, try to "right click" on the top bar of the small window and select "Dismiss". If you are offered a choice, just dismiss/kill the "odd" small window.

F. The magnet PLC control system.

This is an independent control and monitoring system. It does not accept commands other than to select the page to be viewed. It runs on the lower right terminal in the cluster of four computers (to the immediate right of the Magnet Control Computer).

The main page has a graphical description of the power supply system, showing the state (on, standby, or off), and the current and voltage for each supply. The polarity and control source (remote for our use, local for power supply experts) are also shown. This page allows us to see the state of the power supplies even if our control system is not working properly. The computer is on an Uninterrupted Power Supply (UPS), and so will survive short power dips. There are many other pages selected by graphical "buttons", including "magnet monitor", which gives information on trips, and other pages giving full details on the behavior of the temperature and voltage monitor/trip systems. The data are logged locally. Browsing of the pages is recommended to familiarize yourself with the information available.

This system has proved invaluable in diagnosing problems.

G. Starting the STAR Magnet Control program from scratch.

Select a host from the list on the STAR Magnet Control xterminal (lower left terminal in cluster of four, acnsun65 has been the most reliable lately). Log in as "stmagnet". Ask Ken Foley, Ron Longacre, Ralph Brown, or Bill Christie for the password.

Get the **StartUp** page to the top level. From the application menu click "**Start**", then "**RHIC Applications**" then "**Magnet Control (STAR)**". The page should then appear; if not try another host; if that fails, call MCR, x4662, for help. If at any point it asks you about utilities not running, tell it to continue.

H. Front End Computer (FEC) reboots

With the installation of new front end computers reboots happen much less often. However, they do occur during power dips, etc, so the STAR Magnet Control page senses this fault and reports to the operator. A page pops up indicating that the WFG 's needed to be initialized, and gives the reference current that will be set for each supply. One must then check the main PLC page on the bottom right hand computer monitor to see if any supply that is in the "on" state has an actual current different from that shown in the "WFG pop up page" by more that a few amps (the tolerance of the ADC's). If this is the case do not hit "confirm" which would cause sudden changes in currents that could blow fuses in supplies; the correct course of action is explained below. If the currents for

all supplies that are in the "on" state match the WFG pop up page reference current it is OK to hit confirm and so regain communications with the power supplies; if all supplies are at the right current no further action is needed; in most power dips some supplies trip, so one then **Ramp**s to **Zero** and then sets to **StandBy** before calling x4662 for assistance.

If a current mismatch occurs as discussed above the only safe way to reinitialize is to use the 2 minute power supply rundown in the STAR interlock (SGIS) system and confirm the initialization when the supplies are all at **StandBy** or **Off**. Again one then **Ramp**s to **Zero** and sets to **StandBy** before calling x4662 for assistance.

I. Comments on occasional glitches

The following bug has supposedly been fixed, but just in case we'll describe the problem and solution. Please note time and date below if it occurs again.

Sometimes during ramping the STAR Magnet Control page disappears. It can be brought back by clicking on **Magnet Control (STAR)** on the "**RHIC Applications**" startup page. However, it can get confused about the state of the ramp, not recognizing that it has completed, and the only action allowed is "**Stop Ramp**". If this happens, click on **Stop Ramp**, then select the magnetic field (try the actual setting first, though I'm not sure if this always works) and start a **Ramp**. Then stop the ramp immediately, select the desired field and **Ramp**. It should then work properly.

The above solution also works for similar glitches where the STAR Magnet Control page hangs or has empty fields or when the ramp stops. Of course in this case one must first quit the STAR Magnet Control program via the menu reached by the icon on the top left hand corner of the page before bringing up the new page.

If desperate one can go to an earlier version of the control page by typing "xterm" on the console page and the typing in the xterm page:

/operations/commissioning/bin/emc.old