

From [Dan Edmunds <edmunds@pa.msu.edu>](mailto:edmunds@pa.msu.edu)  
Sent Friday, April 17, 2009 2:30 pm  
To ["d0rc@fnal.gov" <d0rc@fnal.gov>](mailto:d0rc@fnal.gov)  
Cc [Philippe Laurens <Laurens@pa.msu.edu>](mailto:Laurens@pa.msu.edu)  
Subject Shutdown work: TFW SCL Routing Master and L1 Cal Trig

Hello,

Sometime during this summer's shutdown I would like to do the following work. The TFW work could be scheduled for a day that starts out with a power outage or whenever.

TFW, SCL, Routing Master work that will take DAQ down:

1. Replace the rear fan in rack M101 and switch to running on the just the rear fan in this rack. The Routing Master and L1 Cal Trig readout are in rack M101. Replacing this fan requires pulling out all of the cards from the Routing Master and pulling apart part of the bottom 9U card file in this rack. Estimated time 4 hours.
2. Add an air flow switch to M101 so that we can generate a SES Alarm if the air flow in M101 fails. It will take about 1 hour to add the air flow switch (work that must be done with M101 not running) and then some more work later on to make an SES Alarm out of this switch signal.
3. With all power off in M101, M122, M123, M124 I want to check all of the fans (turn them by hand and feel the bearings) and check all of the water hoses and radiators for any indication of problems.
  - Checking the fans includes pulling out the fan tray below the 6U VME TFW "Communications Crate" in the bottom of M124 and accessing the fans in the back of the TFW readout crate and the back of the SCL Hub-End crate both of which require moving some cables just a little bit to see the fans.
  - The water hoses and radiators in the TFW and in M101 were used equipment when they were installed in 1999. This stuff has not been checked over in a long time.
  - Estimate 2 hours to check fans and water hoses and radiators.
4. We have never understood why about once every week or two weeks the monitoring data VME read bus hangs in the Luminosity Per Bunch Scaler crate at the top of M122. This hang is something that can not happen. As you know Philippe has code running in the TFW TCC

that monitors this situation and gets the system out of this problem when it happens and guarantees that only good hang free data is sent to the Luminosity system. But we would still like to understand what is going on and we have one more idea to try. I need power off to install it. Estimated time 2 hours.

5. While the TFW is down for all of the above work it would be a good idea to let Steve Chappa know that there is some time available for him to check things over in the Master Clock rack, e.g. power supplies, fan, water hoses, radiator, ... if he wants to. It could be that Mike Matulik or his group will want to look over the M100 fan. This is the same kind of fan that has given trouble in other racks in recent years. Neither Steve or Mike normally have access with power off to check things over in M100 so we should let them know of this opportunity.

L1 Cal Trig work that will not take DAQ down and can be done at any time during the shutdown:

1. Install the modification in the Wiener power supplies in: the 4 ADF-2 crates, the L1 Cal Communication/Control crate, and in the spare power supply for these crates.
2. Swap the spare power supply mentioned above into one of the ADF-2 crates. The supply from the ADF-2 crate will become the new spare.
3. Run the VME I/O "stress test" in the L1 Cal Trig. This test exercises the communications path between the L1 Cal TCC and the cards in the L1 Cal Trig. We have not run this test for a long time. It can only check the path between TCC and the 80 cards in the 4 ADF crates (you can not readback registers from TAB/GAB) but still this test pushes the TCC, Bit-3, Communications Crate backplane, and the Vertical Interconnects as hard as we can over a wide range of their address and data spaces. This test should run for 12 hours or so. Notes:
  - At MSU Philippe and I have tested the Bit-3 that failed and caused L1 Cal Trig problems and serious loss of beam time on 16,17-FEB-09. We see no problems with it. Thus I really would like to get the above test done during this summer's shutdown.
  - We have the PCI end for a "new" spare L1 Cal Trig Bit-3 but as far as I know we still do not have the VME end for for a spare.

That is all of the items on my current list for the shutdown.  
Thank you, Dan

From [Dan Edmunds <edmunds@pa.msu.edu>](mailto:edmunds@pa.msu.edu)  
Sent Wednesday, April 1, 2009 8:47 pm  
To "[d0rc@fnal.gov](mailto:d0rc@fnal.gov)" <[d0rc@fnal.gov](mailto:d0rc@fnal.gov)>  
Cc [Philippe Laurens <laurens@pa.msu.edu>](mailto:laurens@pa.msu.edu)  
Subject Three little TCCs

Hello,

This note is about the 3 Trigger Control Computers: TFW-TCC, L2-TCC, and the L1\_Cal\_Trig-TCC.

TFW-TCC

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This computer is 11 years old or older. If it fails then: within 5 seconds we loose monitoring, within 1 minute we loose Luminosity information and control of the Luminosity Block Number, and at the next run transition we can not even stop the triggers.

There is a replacement spare for this computer stored in the locked brown cabinet on the 1st floor FCH. Philippe has a written procedure for installing the spare. This procedure is straightforward enough that I think even I could do it.

During this summer's shutdown should we preemptively replace the running TFW-TCC ? Note that if we purchase a new TFW-TCC computer (to install this summer) it will have a new version of the Windows operating system and I think it will need a new version of the Bit-3 drivers to be installed on it. If we purchase a new machine for the TFW-TCC then I would like to first take it to MSU so that Philippe can set it up, test it there, and have it ready to install here.

L2-TCC

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This computer is almost as old as the TFW-TCC. Philippe could tell us how old the L2\_TCC is. If it fails then: within 5 seconds we loose L2 monitoring information and at the next run transition we can not setup the L2 System.

There is a replacement spare for this computer stored in the locked brown cabinet on the 1st floor FCH. Philippe has a *\*basic\** written procedure for installing the spare - but note:

- > This spare is the same spare as the TFW-TCC spare machine.
- > Installed on this spare is only Philippe's L2 Relay software, i.e. the basic link between COOR and the L2 machines.
- > Philippe and I have no idea what other software, script files, monitoring stuff, data files, ... the L2 group has developed over the years and keeps on the L2-TCC's disk.

- > If there is a problem at 4 AM then any of this stuff that the L2 group has developed that is needed to make D-Zero run will need to be installed on the spare L2-TCC when it is swapped in.
- > Philippe and I have no idea whether or not any of this stuff (we assume that there is stuff) on the L2-TCC has been backed up or where one would get a copy of it at 4AM.
- > We do not have a list of what files are actually needed now days to make the L2-TCC work. I believe that there has been a lot of development of the L2 System since Philippe was directly involved with it.
- > Replacing the L2-TCC at 4AM may not be straight forward. I certainly do not know enough to do it.
- > It may be that the L2 group has a complete plan for taking care of replacing the L2-TCC at 4AM if that is needed.

During this summer's shutdown should we preemptively replace the running L2-TCC ? Note that if we purchase a new L2-TCC computer it will have a new version of the Windows operating system and I think it will need a new version of the Bit-3 drivers. If we purchase a new machine for the L2-TCC then I would like to first take it to MSU so that Philippe can get the basic stuff setup and tested so that the L2 group could then work on it to finish getting it ready to use.

#### L1\_Cal\_Trig-TCC

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This computer is 3 1/2 years old. If it fails then: within 5 seconds we loose monitoring of the Trigger Towers and of the TAB/GAB. Within 2 minutes we loose the active control of the L1 Cal Trig Pedestals. We also loose our ability to setup any special L1 Cal Triggers or to initialize or cold start the system after a power outage.

There is no written plan for what to do if this computer fails at 4AM. I *\*assume\** that something like the following would happen:

- Bill would come in and identify an online unix box that can be taken over and used as the replacement L1\_Cal\_Trig-TCC.
- I assume that Bill (root pw) will need to setup the basic directory on the disk on this box into which Philippe's software can be installed. I think that Bill (root pw) will need to install the Bit-3 driver software.
- Philippe will then need to install all of his stuff. Philippe has good backup of all of his stuff so that is not a problem. Will there be a problem if Philippe is not around ? I certainly do not at this time know what all needs to be done to make a replacement machine ready to use.
- I *\*think\** that Mike's stuff is no longer on the disk on the

L1\_Cal\_Trig-TCC machine but is on normal online cluster disk. Is that correct ? If not were do we find a copy of Mike's stuff at 4AM ? We can not initialize or cold start the L1 Cal Trig without it.

Should we get together a real plan for how to replace the L1\_Cal\_Trig-TCC machine if the current one fails ? Should we identify what box will be used and go ahead now and install the software and drivers on it ?

The answer to some of the questions above may depend on how long D-Zero will run. I think that Philippe and I would basically like to let you folks decide what if anything you want done and then we are happy to take care of doing our part of the work to implement your decisions.

Thanks, Dan