

## **Operations Notes Aug-Sep Quarter 3 2005**

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## **Minos Operations Meeting, August 22, 2005**

### **Beam (Sam Childress)**

Excellent running ( $2.15e12$ /cycle, short cycles) most of the week. There were two ~12 hr downtimes:

- Tue/Wed - mistake after pbar studies - beam dumped into a critical device
- Fri/Sat - lightning, MI safety system, leak in the magnet cooling

Record POT/week for the second week in a row -  $4.0e18$ . Now getting  $6.5e17$  on a good day with pbar running. No scheduled beam downtimes for the upcoming week, but Booster RF problems are "expected" every two weeks - could be down for one shift this week.

### **Near Detector (Niki, Peter, Brian, Alysia)**

(Niki) Tue - one master+one minder swapped. One persistently noisy channel in crate 1 - does not go away after calibration - need expert input (D. Reyna?). Observing low rate of electronics swaps during the last ~3 weeks.

(Alysia+Peter) Talk about the run sequence length and its effect on the number of capid errors (need help here)

(Tass) The MCC problem errors continue to occur at the same rate of ~once/week. It is a timing system error (Master Clock) it will be debugged during the long shutdown. For now DAQ can be brought back to the normal state after such error by clicking "Reset" twice.

### **Far Detector (Alec)**

One VA chip swapped during beam downtime. DAQ crashed once - lost ~5 minutes of beam. Need more often updates of OM - (eg Crate Monitoring plots are only updated once in 24 hrs). Possible flakiness of HV MF4 - observed disappearing singles rates in the crates powered by MF4 but no HV monitor alarms. Problem is under investigation. One VA chip appears intermittent - is being watched.

### **Computing (Art)**

Minos cluster at FNAL is going to be moved into a larger rack to accommodate newly added nodes at 8am on Thursday. It is expected to take ~4 hours (conservative). Minos AFS space is not going to be affected. The only critical machine is minos13 aka minos-db1 which is the main database server. The database shutdown will affect -

- beam monitoring (Brett says ok - the data can be put in the db later)
- SAM (not critical)

- running on the farms (but they are already using a clone db server)
- CRL - cml is going to be down during the outage
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### **Java Servlet to make various beam plots (Dan Cherdack)**

Wrote a servlet (currently installed at Tufts -

<http://minos.phy.tufts.edu:8080/PowerPlotter/index.html> ) and is looking for a server running apache/tomcat to install it at FNAL. (Cat) Suggested to look if the main FNAL web server also runs tomcat.

## **MINOS Operations Meeting 8/29/05**

### **Beam Operations**

Beam operation was steady throughout the week with delivery of  $4E18$  protons on target. Total delivered protons are now  $4.7 E19$ .

There was a two-minute period of beam excursion by 0.8 mm vertically on Friday 8/26 at 20:00. This was caused by autotune trying to control a trim magnet that was not responding, and then suddenly came back on at a large value. Only low intensity beam ( $3 E12$ ) hit the baffle, because higher intensities tripped the permit system. No damage seems to have been caused. The intensity limit for tripping the permit system on excessive beam position has been lowered.

The target continues to take the same helium flow as measured by the difference of input and output flowmeters. After the beam excursion the total flow rate did increase, adding to our confidence that there is an external helium leak which being heated by beam spray, worsened.

There will be an access to MI spaces on Weds., 31 August which means no beam for the morning. We will work on the detectors at this time.

### **Near Detector**

Near detector downtime was insignificant. 2 MINDER boards were replaced continuing the "low" rate of repairs recently observed. A power glitch caused us to have to reset several rack monitors and power up the associated racks. This was accomplished from the control room.

One ACNET problem occurred, which caused vanishing and bogus readout of the DCS web page. The repair is to reboot one of the ACNET computers which has to be done from the MCR. The problem is documented in JIRA. It was also possible to find in the cRL but there is a request for a better search mechanism for this product.

It was decided to post the bad and "flakey" channel lists (this one new) on the web.

### **Far Detector**

FD achieved uptime that rounds to 100% this week - congratulations! The only problem really at present is one HV readout board that seems to turn off, then on again after about a minute. HV is logged every 10 minutes so this was discovered by studying singles rates, and then correlated with the raw data. This board will be replaced but it's an unpleasant failure mode to say the least.

There are some minor front-end problems that affect a few channels and will be looked at during repair time.

**Computing**

The CRL was down most of Thursday, 8/25 because of relocation of its database computer at Feynman.

## **MINOS Operations, Sep 12, 2005**

### **Beam (Peter Lucas)**

New target ready in one-two weeks. Things were going very well this week, the intensity limit has been raised to 24.5E12 (from 21-22E12). Increasing intensity might cause some trips initially, so might have some short beam downtimes this week.

Work to add a sixth batch to numi only cycles is ongoing - might happen next week.

### **FarDet (Alec + Jerry)**

MF4 is finally behaving well - no HV drop offs since Sept 4 (it appears that during many attempts to fix it the serial cable has been damaged and started causing communication problems with the MF - this has been fixed too by replacing the cable). Bob Webb looked at the HV dropoff points and concluded that the HV ramp up/down rate has been ~1kV/s - which is safe for the PMTs.

Another 100% ontime week.

A tape drive was replaced on the farweb server. Prep was contacted concerning a spare LeCroy controller(??) because there is only one left in the mine.

### **NearDet (Niki + Peter + Nathaniel)**

Two minders swapped, one channel recalibrated. Crate 5 has "bursts" of high singles rates, not LI. SGATE was shortened from 18us to 13us.

There is one cold PMT - Nathaniel thinks it's a trigger problem, as the PMT itself is fine. Discussion between Peter/Niki/Nath on how to fix it - decided to try to swap the aux card first, then open the Alner box.

### **DAQ (Geoff)**

Geoff tried to update daq and li binaries early morning Sept 12<sup>th</sup> during the beam downtime, but it didn't work out so he backed out all the changes. Geoff is requesting DAQ time when the beam is down for more than 1.5 hours (anything shorter is not enough time).

### **Computing (Liz)**

Fermilab sitewide network outage is scheduled on Thursday, Sep 15, 6am. Will not last more than one hour. (**Sergei**) CRL is being very slow, making for many complaints from the shifters. (**Liz**) New CRL pc is ready, but Suzanne wants to install it along with the new version of CRL, and that is not finished. Liz will talk to Suzanne about the possibility of installing the new crl PC asap and upgrading the CRL later.

## **MINOS Operations Meeting 9/19/2005**

### **Beam**

Record day on 9/15 - 7.3 E17 in 24 hours. The new target expected to be ready by 9/30. In expectation limits on intensity were increased to 2.8 E13 per pulse. We also are now receiving 6 bunches during NuMI only cycles.

There will be a possible access Wednesday (this access ended up happening because of problems with the NuMI kicker, which is not the reasons initially put forward).

### **Latest shutdown update**

The shutdown will not occur before 1 February and as late as 1 March, 2006. The first few weeks should be with only the Tevatron shut down, good running conditions for NuMI.

### **Far Detector**

"Ticking right along" - normal operations. There is a surface computer now available so we can monitor down below stuff if WAN goes. This PC was added because of network failure in Minnesota for 3 hours on Tues. Not yet tested - hope it works! Will test if multiday shutdown.

HV Main Frame not failing anymore - control card was changed.

Job list:

- VFB's for Nathaniel - to see if PIN non-linearity follows card. 1/2 hour to an hour.
- DAQ work better in beginning of week. Expect duration of 2 hours - only during some beam access. Not during nights.

### **Near Detector**

We now share the hall with another experiment, an OPERA prototype called Peanut. The detector has been in the hall for 2 weeks. During this time people have been installing emulsion bricks. There is a box + relay rack. Readout commissioned. As of Monday there was no Partial Operational Readiness Clearance which is required for unattended running. The equipment is to be moved downstream and raised on an aluminum stand later this week. 48 emulsion bricks at a time will be exposed. It is expected that physicist activity will diminish.

FEelectronics: Low rate PMT problem was its threshold not set correctly. Threshold is set in the Keeper. They thought this was fixed before but it might have been confused with a light leak when rack opened.

2 CAPID Minders swapped, and a board with a bad calibrating channel. There is currently a transient CAPID error we should probably change.

Calibrations - 12 bad calibrations, redid 11, 10 worked. The last one requires the HV to be off and causes a bad SGATE distribution.

Work list:

- Recalibrate bad channel with HV problem
- Change bad calibrator.
- Change transient CAPID guy.
- Look at bad threshold one . a) look for light leak, b) swap cable. Needs 1.5 hours - save for shutdown.
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Work that is currently scheduled for beam shutdown

- 1) Add clock diagnostics. Look for access.
- 2) Data type 7 - change firmware in all minders.

### **Computing**

New minos-CRL computer is in use, with a much improved response time. New ACNET computer is getting ready.

## **MINOS Operations Meeting 9/26/05**

Peanut (OPERA test) support platform is underground. Detector will be placed on it in front of MINOS. No Ops Readiness Clearance yet.

There was a ceiling leak which dripped onto the power supply - fixed by blowing out drain pipe from catch-pan. Looking for a different leak in the ICW outside the Surface building.

### **Beam**

Week of records due to 6-bunch operation. Friday:  $7.7e17$  Sunday  $7.6e17$  For the Week  $4.62 E18$  270 kW per pulse at peak

Had to reboot BPM Acnet 2 times

### **Far Detector**

Mainframe 4 HV dropout came back. 2 second dropouts. Want to change its 35 V PS. Trigger PMT drops out possibly causing LI dropout. 20 min required to change the power supply.

Job list

- Change PS. - do when beam goes down.
- WAN service at noon - expect spill server down 10 minutes (actually this took 2 hours)
- PMT gain resetting - exploring that. Shutdown work.
- Crack in ceiling - request into CNA to see if we need mesh and bolts. Would require removing 4 shield wall panels. Consult Laughton.

### **Near Detector**

Frontend electronics: 2 capid. 3-11-4 had low singles with high threshold. A Wednesday inspection fixed everything through "Voodoo electronics". 1-18-5 was on all the time. Swapped PMT harness, and it is good now. Still one or two minor problems. Need census of cable harness (Alner to AUX cables). Fans failed in Master crate M2, ROP7. Filter was installed upside down and got sucked into fan. Need to dust off the ROP? Checked one other rack it was also upside down. Dirty anyway - replace. 8 total, 7 left.

Jobs list

- Fix filters (This was done but required most of afternoon to get the detector running again. Mystery swap of two keeper cards finally did it. In course of this discovered we don't have a functioning spare Keeper).
- PMT test LI on an anode. Needs a few hours - do in downtime.

## **Computing**

Liz returns this week. Thursday Enstore access by series of 5 minutes accesses. Farming will be affected. pnfs overload causing dcache to have high retry rate. Not yet understood.