MINOS Operations Notes Oct-Nov-Dec Quarter 4 2006

Contents – use PDF Bookmarks to navigate

MINOS Operations, Oct 2, 2006

Accelerator Operations

The weekend was pretty good for NuMI, less so for the colliders.

For NuMI, the Booster output has improved, and Main Injector has been stacking 12 turns since Friday. We have had occasional 'clusters' of permit trips, which are quickly reset. The actual cause is not part of NuMI, but is in the beamline which transfers protons from the Main Injector to the TeV. When this beamline trips, a small amount of protons end up in the NuMI Kicker gap, which is an empty spot in the beam circulating in the Main Injector which allows time interval for our NuMI Kicker to turn on. If there is beam present inside the NuMI Kicker when it turns on, that beam gets sprayed into the wrong places, and causes a trip of the NuMI Beam permits. Many NuMI permit trips during the past week are actually due to trips in this TeV transfer line. The causes of those trips is mainly understood and solutions are being worked on.

A problem with part of the Linac RF is being monitored, and will cause some down-time later today.

There are various problems which affect the colliders, causing lower intensity stores of shorter duration, but for the most part these do not affect NuMI.

Tuesday update

The Linac RF problem mentioned above was repaired Monday afternoon. No beam between 2-8pm. Beam returned briefly, then a thunderstorm at about 10pm shut down most of the machines. TeV quenched due to a power outage at one of the service buildings; recovery will take much of the day because part of the cryo system warmed up to 40K. What first appeared as a problem in the Kautz road sub-station was actually a flash-over arcing in a Main Injector power supply located elsewhere. This is the main problem keeping NuMI off; it will take much of today to repair/replace this power supply.

More strong storms expected this evening.

Wednesday update

The Main Injector was down about 24hrs after the Monday evening storms. This was mostly due to repair of the MI-10 supply which got zapped. But there were also other problems. A different supply, which had a splice repair last week, produced ground faults when they tried to turn back on around 6pm Tuesday. Later in the evening there were problems with a kicker. These contributed to the slow start-up last night. Beam returned to NuMI about 1am Wed. The Booster RF developed a minor problem during the night - they ran beam to NuMI at reduced intensity until a scheduled access about 7am, completed before 9am.

The worst storms last night ended up some distance north of FNAL. However, there is a line of storms approaching, expected at FNAL by noon. Just after everything got put back together ..... although on the weather radar this bunch

doesn't look as large or as intense as what came through on Monday. The accelerator folks will of course try to keep everything running, particularly anti-proton stacking so the colliders can get back to taking data.

Friday Update

The Wednesday evening storms were not nearly as strong as the Monday storm; the accelerator complex kept running through it, and has continued running. Early Thursday the Booster went up to 13 turns for Batches headed for NuMI, and we reached the highest POT and power, at at level not seen since last January (but not the highest ever).

Machine Operations will work towards keeping up this level of running through the weekend. They will work on getting another Turn out of the Booster. The MI group has been doing 11-batch slip-stacking studies - studies only, not yet ready for prime time.

NuMI Operations

The POT per pulse for the last few days is now back to what it was last year. The cycle time, however, is 10% longer than last year - most cycles at 2.4s versus 2.2s, and about 10% of cycles are 2.4s or 2.6s. Every 0.2s increase in cycle time results in a 10% "hit" to the beam power delivered to NuMI. The longer cycles are due to the way PBar is being operated so far this running period, and it will continue to be operated this way for the forseeable future.

Analysis and examination of our Near Detector energy spectrum plots continues. These were discussed in the Wed (10/04) Near Detector Physics meeting - slides posted in DocDB. The spectrum from the past month is slightly lower in the peak than LE running from last year, but the tails are about the same. Jim attributes this more to a beam effect than to target position, i.e. the beam is not centered on the Horn. However he also knows that the target is not exactly centered on the horn. He is developing a plan for adjustments, but no schedule yet for when this will occur.

There are higher readings from some NuMI Total Loss Monitors, and it is not clear why, as the beam spot seems to be the same as it has been in the past. Higher losses imply beam scrapping, which can occur if the transverse size of the beam increases. But this doesn't seem to be the case. NuMI experts are investigating.

Detector Operations

In general the detectors are running well.

For the Near, the temperature of the air-cooled racks has been creeping up, and the capacity of the water cooling has been gradually diminishing. There does not seem to be any single specific item causing this, leading to speculation of a general warming of the underground areas due to the amount of heat dumped into it over time due to operations (not just from beam, but also from operation of magnets and machinery....

all create heat). We consider making a request for a review of the underground environmental and cooling system by the engineers involved in the initial design.

Wed update

More CAPIDs popped up during the night. Have to swap soon.

For the Far, network outages continue at some rate, with a couple of longer downtimes which broke communications for over an hour, one with a source at FNAL and the other with the source somewhere between FNAL and Soudan. While it is worth understanding why these occur, and what can be done about them, we should also remind ourselves that 100% constant network connectivity between FNAL and Soudan is impossible. We did not demand 100% connectivity in our inital MOU's, and if we asked for it now we would be told to recind the request, because it is impossible to fulfill.

MINOS Operations, Oct 9, 2006

Accelerator Operations

The weekend was pretty good for NuMI.

The Machine Operations plans were to continue a high level of intensity through the weekend, working on 12-13 Turns out of the Booster. The Booster RF, however, developed a problem on Saturday which reduced intensities not just to NuMI but also affected the luminosity of the collider store. 2hrs of downtime fixed part but not all of the problem. Another problem surfaced later in a Booster kicker which also caused about 2hrs of downtime. Sunday running was pretty steady.

The Operations plan is to keep running.

Tuesday Update

About 3am Tuesday morning an electrical feeder failed. The particular feeder supplied power to Tevatron areas: C0, D0, F0. This caused an immediate power outage in the TeV and at both collider experiments, and caused a ripple in the power grid all over the FNAL site. Around 6am the cause of the feeder failure was found - a little mouse had chewed through the feeder cables where they entered a switch box at a transformer station. There is a photo in the MCR elog. Not much left of the mouse, as one might guess. (an example of evolution in action)

For NuMI-MINOS, the power ripple tripped off the other machines, so no beam. The pumps in the Near Hall which supply cooling water to the coil and electronics tripped off, so the coil turned off and as racks warmed up most electronics PS tripped off. HV also tripped off. All this was back on by 5am. The NuMI beamline checks out OK, as does the Main Injector. There are problems turning the Linac and Booster back on. There are big problems in the Tevatron (it quenched and partly warmed up when power was lost) but that doesn't affect NuMI beam.

Except that it might, in an indirect way. There is a busted magnet in the TeV. Replacement will take 7-10 days. Since the TeV has this downtime they are thinking of making this a complex-wide downtime and fix other pending things. Notable among these is a NuMI beamline magnet, located in the Main Injector enclosures, which is known to have a slow leak and which will also require about 5 days to replace, if it needs replacing. This particular magnet's location means if they wait, and it busts later, everyone, including the colliders, entail another 5 days of down-time. So the thinking is, why not fix it now, when the colliders are down anyway.

Later Tuesday - yes, the NuMI magnet with the water leak, HV101-2, is now "on the list" of jobs for an extended downtime. It might not need replacement - the leak might be fixable in-place. But they won't know until they get the shield plates off of it. These plates keep the B-field from this magnet from interfering with the B-field in the Recycler magnet above it.... recycler magnets are permament magnets and so cannot have their field adjusted to compensate. The shield plating makes for time-

consuming labor in a tight work-space. A spare for this magnet is being prepped in case it is required.

We would not have had beam until late Wednesday in any case - a ground fault in the Proton Source means the source needs to be replaced, and this job will not be completed until sometime tomorrow.

Wednesday Update

The water leak in the NuMI magnet turned out to be relatively easy to fix with the magnet in place. No replacement necessary. The replacement of the Proton Source is also proceeding. Work is expected to complete later this afternoon, and they will work on restoring beam to NuMI and mini-Boone this evening.

Thursday Update

Beam returned about 11pm Wed night, but was unstable for some hours. The new proton Source had to be installed quickly, and did not have the usual offline "burn-in" conditioning period. So it is being conditioned online, and this makes for variances in the beam coming out of the Linac and into the Booster. This in turn causes losses in the Booster. All of this together means that our cycle time remains at 2.4s rather than being dropped to the usual 2.2s used in NuMI-Only mode. (2.4s rep rate during Mixed Mode is set there because of the way PBar is operated)

Once beam becomes more stable, the MI folks hope to get us to 7 Booster batches, with one of those batches slip-stacked onto one of the other 6. This is how they usually run beam to PBar, and will now try to make this the normal mode for NuMI-Only.

Friday Update

Beam down to NuMI about 6am due to a ground fault in the power supply for one of the beamline magnets. It will take about 6hrs to repair, so beam returns about noon.

The new Proton Source has been stabilizing, but at a lower output current than desired. Another Source is being prepared, and not rushed through this process as the current one had to be. Limp along with the present one for about 24hrs and then switch over to the next new one.

Accelerator Schedule shows no beam to NuMI or Mini-Boone next Tuesday, so that required safety system tests can be done in the Main Injector.

NuMI Operations

Jim Hylen is working out a plan for adjusting the target position. It may involve adjusting the position of the entire baffle/target module, which means a downtime and Target Hall access.... no schedule developed as yet.

Thursday Update

Jim presented his current state of knowledge of the relative positions of the beam-horn-baffle-target, and the evidence from scans which support the current

"picture". (are his slides in DocDB? I don't know, but I try today to get them there). There is a general consensus on what the evidence shows and what moves need to be done, however the plan is to repeat some scans to verify the data before moving anything. At present, with the TeV off, we expect higher-than-usual intensity. Target scans get done at lower intensity, so we decide to delay scans, and any moving of things, until after the TeV comes back up. No detailed step-by-step plan was discussed.

Detector Operations

In general the detectors are running well.

For the Near, the underground environment and water temperatures investigation continues. Mostly waiting for equipment at present. A request for a review of the underground environmental and cooling system by the engineers involved in the initial design is in progress.

A perception that Minder boards require more frequent swapping is not borne out by the data. The rate is the same now as it was last winter. The temperature of the water cooling system HAS increased since last winter, however.

The Far detector is running well.

Tuesday Update

As mentioned above, most FE rack Minder PS tripped off because the cooling water was lost. Four of the racks had tripped off their AC to the entire rack.... this is likely due to the power ripple rather than loss of cooling. The HV mainframes tripped off. But everything came right back when we went underground to turn it all back on.

Later Tuesday - the power ripple seems to have caused a couple of halogen lights alongside the Near Detector to arc, making a localized EM-pulse which caused noise bursts in the readout, which initially showed up as DAQ crashes. Peter S. tracked this down. The offending lights are turned off until they can be replaced.

MINOS Operations, Oct 16, 2006

Accelerator Operations

The weekend was pretty good for NuMI.

The "new" proton source installed last week turned out to not be in as good shape as was thought. The other source was rehabbed, and was ready to swap in on Saturday. As generally occurs, the newly installed source did not deliver the maximum output immediately, however it's ramp-up since Saturday as not been as good as expected, and the experts are investigating.

The Linac, Booster, and Main Injector all had various problems each of which caused a few hours of downtime during the weekend, nearly all involving the RF in these machines. The Linac and Booster problems were relatively common issues which did not take long to work around, and both will be attended to during the next maintenance period offering a shift or so of time. The Main Injector has a major leak in one of it's RF stations; 7 gph, but the RF cavity still runs, so they know the leak is in the external piping, and they are dealing with it by refilling at a matching rate. They decided shortly after the 9am meeting to repair this leak - est 2hrs. The power supply for the NuMI magnet HV101 developed problems during the weekend. This same supply was worked on a few months back, and the experts are not sure that it is operating correctly - might be breaking again. They need some downtime to be able to investigate.

Many of these things could be looked after during one working day. Tuesday (tomorrow) the SciBoone construction is scheduled to perform trenching connections with utility conduits which run between Booster and MiniBoone. The work will turn off MiniBoone and Booster, and so this would be a good day to declare as maintenance time. However by the end of the 9am meeting there was some dispute as to whether the trenching would really require an all day downtime for MiniBoone, or just a couple of hours. We'll hear more during today.

The lower intensity out of the Source-Linac-Booster was, for NuMI, compensated by slip-stacking. Starting Friday, NuMI-only mode performs 2-5 stacking, which means that the 1st of the six batches in the Main Injector is made from 2 Booster batches..... double the intensity in that one compared to the others.

Tuesday Update

MiniBoone trenching is today. This has turned off MiniBoone but not the Booster. The spare Booster RF cavity was not ready for today, so it will go in tomorrow. Since that work will take down Booster and all machines downstream of it, then other work is being scheduled, and Wednesday declared a maintenence day.

Schedule for Wednesday

- 6:00 am - Booster turns off for it's safety system tests, 6-8am. No access to tunnels during testing.
- 8:30 am - Booster RF replacement proceeds -- 8hrs (through 5pm or so)

- 8:00 am - Main Injector safety system tests - until 3pm.
- During the workday - Linac works on it's rep-rate problems. NuMI works on HV101 power supply problems
- 3-5 pm - short duration maintenence tasks in the Main Injector tunnels
- 5:30 pm - start to bring Linac-Booster-MI-NuMI back up.

If the Booster RF cavity is not ready by this afternoon, then this entire schedule gets moved to Thursday.

Linac is currently having problems with it's rep-rate. It should be able to go faster. They suspect a particular component is failing and request a 15-min or so downtime today to investigate, so they know better what to do tomorrow.

Friday Update

The Wednesday downtime occurred as scheduled. Beam returned to NuMI about 8:30pm. On Tuesday we set a record for number of protons delivered to NuMI in a single 24hrs - 10.69 e17. And on Thursday we broke that - 11.09 e17.

It's just us and mini-Boone, plus we have the 1st batch slip-stacked which doubles it's intensity - called 2+5 mode. But the TeV repair is nearly complete, and the repaired section, near D-Zero, will start cooling down early Saturday morning - expected to take about 48hrs. PBar, which had to replace one magnet, has a different problem now with another magnet, which may in turn delay the startup of collider operations.

NuMI Operations

At the last NuMI Beam meeting (10/12) Jim presented his current state of knowledge of the relative positions of the beam-horn-baffle-target, and the evidence from scans which support the current "picture". (are his slides in DocDB? I don't know). There is a general consensus on what the evidence shows and what moves need to be done, however the plan is to repeat some scans to verify the data before moving anything. At present, with the TeV off, we expect higher-than-usual intensity. Target scans get done at lower intensity, so we decide to delay scans, and any moving of things, until after the TeV comes back up. No detailed step-by-step plan was discussed.

Detector Operations

In general the detectors are running well. Uptime during beam last week was above 99% for both detectors. There are Data Quality Monitoring plots being posted (link on Run Coor page) which show various Near Detector reconstructed parameters. The process of running jobs, creating plots, and checking is still coming up to speed.

For the Near, the underground environment and water temperatures investigation continues. A request for a review of the underground environmental and cooling

system by the engineers involved in the initial design is in progress. Minder boards have required more frequent swapping in the past 2-3 weeks. The temperature of the water cooling system has increased over the last year. Gary Drake is aware of the increase in board maintenence but has no comment at present.

Last week's power ripple caused a couple of halogen lights alongside the Near Detector to arc, making a localized EM-pulse which caused noise bursts in the readout, which initially showed up as DAQ crashes. Peter S. tracked this down. The offending lights are turned off until they can be replaced, which will occur this week.

Friday Update Two guys from FESS spent several hours in the Near Hall Wed and Thur, and replaced essentially all the halogen bulbs. Bill Leubke noted that after the lights were turned off a few days ago, the occasional fan failure warnings, which are usually false alarms, ceased entirely. This would indicate that the Bi-Ra boxes are also sensitive to this EM noise..... maybe more sensitive than the readout electronics.

The Far detector is generally running well. The Detector has stalled due to ROP4 4 times in the past week. This same device caused problems last July, and they are not sure if fixes made then didn't work or if some other problem has occurred. Bill has emailed DAQ experts (no response yet) and will ding them again.

Friday Update This happened again Tuesday evening - Geoff was called as all manner of resets via RC menus did not clear the problem; Geoff had to reset it "by hand". But he doesn't understand the cause.

The Far DCS environment monitoring program stopped running, which means Shifters had no means of knowing the status of the environment. Should this require an emergency call to experts? The particular shifter on duty at the time felt an emergency call was not required. Environmental data for some hours is lost as a result. Consensus at the meeting was to keep action consistent for all DCS monitoring. Certainly if the coil monitoring process stopped, that would require immediate intervention. Experts can restart the program remotely.

MINOS Operations, Oct 23, 2006

Accelerator Operations

Pbar came back up over the weekend - they had some problems but managed to get a couple of stacks of pbars to the recycler. They ran at a 4 second rep rate, so their running did not affect NuMI intensity as much as normal operations do. The effort over the weekend was to prepare for a collider store in parallel with the TeV cooldown and checkout. TeV did indeed cool down and ran protons Sunday evening to check orbits, etc, and all looks OK. They will set up for sending a Store into the TeV and colliders later this morning. After that they consider the machines back in normal operations. Pbar is expected to return to a 2.4s rep rate when we run mixed mode. Numi will continue with the 2+5 batch structure but only during NuMI-only mode, not during mixed mode.

NuMI Operations

On Tuesday we set a record for number of protons delivered to NuMI in a single 24hrs - 10.69 e17. And on Thursday we broke that - 11.09 e17.

But now that all the machines are back up and normal operations returned, we probably won't get quite that much in a single day again, until more slip-stacking is set up. Since we expect intensity delivered to NuMI to drop a bit, now it is time to return to adjusting the target position. Target scans are performed at reduced intensity, and we did not want to reduce our intensity while we were the only place to send the protons to. Sam and Jim will schedule a 1-2 hr time period, sometime during this week, for a target scan, target move, and rescan. The amount of moving is expected to be 1/2mm or so - small enough that we may simply keep the detectors in data-taking mode while doing the scans.

Wednesday Update

The target scan will be performed over 2-4 hours on Thursday, precise time to-be-determined, as MCR wants to schedule this where it won't interfere with shot-setup for the colliders. They will be able to set a time window after tomorrow's 9am meeting.

Detector Operations

Far Det

Some network issues from last week. One 1hr downtime and many little short outages. Rop4 is acting up. Went down last Tuesday and again this morning, both times requiring expert intervention, as "soft resets" executed from the RC GUI would not work. The problem might be the PVIC card, which is what was changed some months back when similar symptoms appeared. Geoff recommends they try a PVIC swap again but this might not be the problem. A Swap would take 1/2hr or so…. Needs some beam down time. The failure is so infrequent the true problem is difficult to diagnose.

Near Det

7 CAPIDs this week. Averaging 6-7 per week for the past few weeks. Peter is looking at possible correlations between failure rate and rack temperatures - no obvious links yet. Gary Drake is aware of the increase in MENU failures - after all it is his group that repair the boards - but has no wisdom to impart. We do notice that all of the failed boards are MENUs with older fuses - none of the boards with newer fuses have failed yet; however these are only 5% or so of the total however so probability is against them in any case.

MINOS Operations, Oct 30, 2006

Accelerator Operations

Some tuning in Booster on Friday gave us increased intensity over the weekend. Some pulses in NuMI-Only running periods (a small % of total running) were above 3e13 POT. The TeV, on the other hand, had some rocky running, with 3 quenches during the weekend. These are controlled quenches, so getting things cool again takes just a few hours. The frequent quenches are due in part to having a lot of beam in the machine. The most recent quench was caused by a problem in the E-4 fridge and vacuum, and by 10am Monday they determined it required a tunnel access to fix. The timing for the access dove-tailed nicely with DAQ problems at the Far Detector (see below).

Tuesday Update

The 1.5hr access turned into an all-day access (never a good sign). Beam came back for about 6hrs during the evening then went down again around midnight. Again, vacuum problems in the TeV, in the same area where it meets the Main Injector. Between 1am and 8am they tried to do what they could, and indeed isolated the location of a liquid nitrogen to a particular magnet (the leak is what's causing the vacuum problems). However, having isolated the location, they also determined that it could not be repaired without warming up the magnet to room temperature. This means a multi-day repair period, in an area where and access means turning off most of the accelerator complex.

They are initiating the warm-up process. While warming up, they can't do any work on the bad magnet, so they are locking up and will allow the Main Injector, and therefore us, to run today and tomorrow. Once the E-F problem area magnets are up to room temperature, then we get turned off for about 3 days. After that they can restore beam to NuMI but the TeV will be in a cool-down state for another 3-4 days.... which means NuMI-only running for us.

Schedule: Tuesday ~noon through Wednesday 11:59pm - beam to NuMI
Thursday 00:00am through Saturday 11:59pm - NO BEAM
Sunday 00:00am Beam returns to NuMI

NuMI Operations

The target scan was done, and the target was moved about 1mm, vertically. Jim is giving today's All Exp Mtg and will show a cartoon and plots of the before and after.

Detector Operations

Far Det

ROP7 had only 1 glitch during the week, but on Saturday ROP4 starting causing DAQ halts. In general, resets and reboots executed from the RC were sufficient, but Geoff had to be called a couple of times. Just minutes before our Monday 10am

meeting, ROP4 went into error again - This time Geoff could see that the cause was the ROP re-booting itself. This can have a few causes. At about the same time, MCR determined that the F-sector access was needed, so beam went off, leaving time for the Soudan folks, with Geoff, to try hardware swaps.

Tuesday Update

ROP4 was found to be bent (!), like it was pushed to hard when last seated. Things running again, but the upcoming down times will be used for continued diagnostics and hardware swaps where needed.

Near Det

Only 3 CAPID errors last week. There is a bad PMT which is showing more noise, and thus coming to greater attention in the CheckLists. But in truth this bad PMT has been in place a long time.... it's just started to get worse. Staging for the replacement will take longer than the downtime which started Monday 10am, but a time period will be scheduled sometime this week to replace it.

Time Change - the FNAL and Soudan time zone went from Savings to Standard at 2am Sunday, repeating the 2am-3am hour. We knew that this was going to cause problems in the DCS data logging, and Brian Bock and Alec were both on-line at the time to keep an eye on stuff - everything in the DCS settled back down after 2am rolled around the 2nd time. ACNET did not behave so well. Last year at this time it caused a loss of data, and the same thing happened this year. All beam data, for everyone, was lost for that repeated hour.

Tuesday Update

Since our beam data logging records the data outside of ACNET as it becomes available on every spill, we may have that missing hour within our database. In that case, The NuMI folks are interested in restoring the POT data within their records from our beam data logging for that lost hour.

MINOS Operations, Nov 6, 2006

Accelerator Operations

Beam was turned off to NuMI last Wednesday about 10pm. While they tried to keep to the posted turn-on schedule of Sunday 00:00, a variety of glitches in Linac, Booster and Main Injector prevented any beam to NuMI until 2am Monday morning. Beam has been relatively steady since then.

The TeV cool-down and ckeck-out continues. If all goes well they will not need to access the F-sector again during this period. They expect to be able to run beam in the TeV by Tuesday morning, and so they are stacking up p-bars in preparation for that.

NuMI Operations

Some of the startup glitches on Sunday were due to the NuMI HV101 power supply. Repairs were done and it appears to be OK now. The missing hour of POT and other data from last Sunday's time-change was retrieved from the ACNET data loggers by Doug Jensen and has been installed into Gordon's master spreadsheet.

Detector Operations

Far Det

ROP7 had another glitch, but will reset following the "standard" procedure (purple post-it on RC monitor in MINOS Control Room outlines the standard steps). A couple of electronics glitches Monday morning were taken care of by wiggling a cable and swapping a board.... performed during some beam-time but beam was intermittant at the time.

Near Det

The bad PMT in the last plane in the detector was swapped on Friday, but we cannot find any information on what the new tube's HV should be.... it is not listed in any of the usual files. The local experts are contacting other experts.

MINOS Operations, Nov 13, 2006

Accelerator Operations

Some erratic beam during the weekend - both in intensity and in position stability - due to RF problems in the Main Injector.

Friday Update

Power glitch Thursday evening.... the source is a ground fault in a water pumping station near the FNAL stockrooms although the cause of that was not known at the time of this writing. The glitch took down nearly all the accelerators, but no significant damage was done. Most machines were back up by 5am Friday morning. The startup has been a bit rocky, however, and there have been many little items that have to get fixed as they appear.

NuMI Operations

The compressor for the Target Hall chiller started to fail last week. A spare was ordered and we limped along with the unit running about half-capacity until the new one arrived Monday. Beam off Tuesday 6am through "sometime" Thursday evening for replacement of the compressor.

Thursday Update

The new compressor is in but not running properly. There is a flaw in the design of the system which replacing the compressor has exposed..... the flaw is likely what led to the breakdown of the previous compressor. Some relatively easy-to-install modifications are being done.

Friday Update

By Thursday evening the new compressor was running, and the modifications to fix the system's problems were being checked out. But they decided to quit for the evening and not try to be ready for beam Thursday night. Which was just as well as the power glitch would have taken us down again anyway.

The Target Hall is being made ready for beam Friday morning. By the time the Main Control Room is ready to try and turn NuMI back on again, the Target Hall will be ready for beam.

Detector Operations

Far Det

ROP4 hangs become more frequent. Plan to swap it out ---> DONE on Tuesday morning

Friday Update

A few more ROP4 hangs helps the experts narrow down (via prior swaps) the piece of hardware which is making the trouble. A PVIC optical bridge was changed out this morning..... see if that does it.

Near Det - no current issues

Friday Update

The power glitch Thursday evening trips off the cooling water pumps in the Near Hall, which in turn tripped off the coil and water-cooled racks. Everything came back up OK.

MINOS Operations, Nov 20, 2006

Accelerator Operations

Small maintenance tasks which don't require tunnel access are scheduled, but nothing more major than that before the holidays here - Thurs-Fri are work holidays, and few people will be around on Wed. There are also a few studies scheduled, during work hours, in most of the machines, but these will generally be done in dedicated cycles. The effect on NuMI will be a somewhat decreased average intensity because of protons removed for the study cycles but no effect on the NuMI beam tune.

NuMI Operations

The Target Hall is being made ready for beam Friday morning. By the time the Main Control Room is ready to try and turn NuMI back on again, the Target Hall will be ready for beam.

Detector Operations

Far Det

No further ROP4 hangs (yet) since the optical bridge swap. There were Network problems on Saturday, fixed after a couple of hours by the ISP. Some low-level connection problems on Sunday, which seemed to make the GUI report sub-run numbers > 24 in the run sequence, and the % complete bar was not at all accurate. At FNAL a re-boot of the the minos-rc machine, and restart of the GUIs, seems to fix the problem. A real noise burst causes more-than-usual problem channels to show up in Rogue plots, but these all go away on a re-start of a 24-hr sequence.

Near Det

The Master crate which was tripped off by the power glitch on Thursday evening turned out to have a bad Master board, which was swapped out Friday. On Saturday afternoon a Minder crate trips off on over-temp. There is nothing we can do at present to make it cooler, so we raise the over-temp threshold. And pursue an engineering review of the underground environment.

Data Quality plots will becomes a weekly reported feature, for tracking any trends that appear.

MINOS Operations, Nov 27, 2006

Accelerator Operations

Very smooth running for NuMI through the holiday week+weekend. A few glitches on the collider side, but they didn't affect us.

NuMI Operations

No problems or issues to report. We had the highest delivered POT last week under conditions of normal collider + FT operations.

Detector Operations

Far Det

No further ROP4 hangs since the optical bridge swap. All other original parts are back in, so the optical bridge would appear to be the culprit. LI crate 6 or 7 seemed to stop flagging it's events as LI during the weekend, which caused some of the OM plots to appear suspicious - plots were copied into the CRL. Shifters had consulted with Alec on Saturday, and decided it could wait until Monday for someone to take a look underground. By Sunday however the problem seemed to have fixed itself.

Near Det

Coil started tripping Sunday 11pm - indicator lights said "DC Over-Current". Reset it ourselves after the 1st instance, but then it tripped again Monday 3am, and we decided to leave it until experts arrived in the morning. But then it was merely reset again Monday 10am and a few hours later tripped again. At that point the experts took a look inside the PS and tried an adjustment. Tripped again within 2 hours - 6pm Monday. Left it off all night. The REAL expert, who designed the current regulation circuit, arrived Tuesday AM, after having been on vacation Monday, and replaced the regulation circuit, with the assistance of the Shifter.

One more crate of Minders with poly-fuses was swapped in. 3 CAPID error boards swapped.

Data Quality plots - nothing to report.

MINOS Operations, Dec 4, 2006

Accelerator Operations

Smooth running for NuMI through the weekend. The POTs delivered for a given number of Turns has dropped slightly, which is an indication of the aging of the Proton Source. The Linac group has asked for a brief down-time "sometime" this week to swap the Source from one dome to the other.

NuMI Operations

The Target Hall Chiller compressor will need another oil-change later this week - after replacing the compressor and re-configuring a part of the system, some "particulate matter" showed up in the oil. There's still a bit present after changing out the oil 2wks ago. This oil change is done from a surface location and does not entail a beam-down time.

The spare Horn1 has begun test-pulsing. There is still some mechanical work left, but this is an important step to reach. The spare is expected to be completed by the end of January.

The Muon Monitors showed an steady increase in gain starting Saturday. It turns out that the He bottles were changed early Saturday although there was no entry in the NuMI eLog, as there usually is (the tech may have been unable to get online on Saturday). While there have been problems with the purity of the gas in the past, the experts do not think that is what caused the weekend problems. They instead think that the bottle swap was not performed quite right, and some air leaked into the system during the bottle change. The system was flushed and appeared to respond favorably.

Detector Operations

Far Det

The detector has been running well. Up >99%

Near Det - Coil started tripping Sunday - indicator lights on the Power Supply said "DC Over-Current". Experts worked Monday through Thursday, trying various changes to settings and swapping out parts, in a process of elimination to determine exactly what the problem was. As it turned out, the problem was not with the power supply, but with the Controller on the cooling water pump. This controller sends signals to the interlocks on the PS, and when it went bad it sent the wrong signals, which told the PS to turn off. A new controller is on order, and the cooling water system was switched to the spare pump and controller.

Many CAPID errors, perhaps due to temperature fluctuations - the FE rack temperatures would drop 10F every time the coil tripped off - an indication of the heat load the coil puts on the water system. One of those CAPIDs was on a Minder which had been updated with poly-fuses, and this one reset itself at the start of the next Run, when all the FE boards get a reset signal. We need to keep pressing on obtaining and installing updated Minders - the track record so far is that they are less prone to CAPID errors.

One RPS unit went belly-up. Fixed by a simple swap, but this occurred on a Saturday and it took some time for the expert (B Luebke) to arrive, determine the problem, and get the new hardware. This one failure was the cause of most of the detector down-time for the week, which was about 95%.

Data Quality plots - things look good.