

11/13/13: Critical things to monitor while on shift:

Phone:

- Make sure you answer ALL MCR calls on your shift phone. Check for missed calls, and return the call if necessary. You can also check the MCR log to see if they could not contact the MB shifter. Remember, the MCR has orders to stop beam to MB if they cannot establish contact with a shifter after a reasonable (~15-30 minutes) amount of time.

Beam:

- Closely monitor the beam position on the "Bull's Eye" or Synoptic beam display ("BNB Beam Monitor Page") page. During normal running the Vertical and Horizontal positions are close to zero. During beam off target running the Verticals are at 8.25mm and Horizontals near zero. If you suspect problems, confirm with Autotune if onsite. If the beam remains off its designate position for more than 15 minutes during normal running, then call the MCR and let them know. They might tell you they know about the problem and are fixing it, or will thank you for the heads up.
- Monitor Autotune (onsite only) to ensure that the beam is properly steered. All elements should be green, if any stay red for some time (~15 minutes), follow the procedure in the bullet above. If offsite, Autotune status and positions can be monitored (green/red buttons) from the Synoptic beam page "BNB Beam Monitor Page".
- Monitor the "Beam ACNET DAQ Monitor Page". Ensure that both the detector DAQ and ACNET DAQ are running (live) and in sync, i.e. they are both on the same run number. Also make sure the DAQ beam trigger rate is consistent with the Booster 1D trigger rate. If not current or out of sync, and we are running beam, the ACBET expert needs to be contacted immediately. Running with missing ACNET beam data is useless!

- Closely monitor the horn current. It should always be above -173 kA (it bounces between -173.1 to -173.8). If it drops below -173, or bounces erratically for more than 15 minutes, and the beam appears normal/stable, then call the MCR and inquire. For beam off target running the horn current should be zero, unless otherwise specified.

Detector:

- The most critical system to monitor is the detector temperature; see the web link "Electronic Rack Temperatures (offsite readable, updated by the minute)". Always have this link displayed in a browser tab, should the temperature of any rack go above 35C, the display will go red and a audible alarm will sound. The shift cell and then experts will be automatically called. If no action is taken, the rack power will automatically be tripped when the temperature reaches 40C.
- Ensure that both the detector DAQ and ACNET DAQ are running (live) and in sync, i.e. they are both on the same run number. Also make sure the DAQ beam trigger rate is consistent with the Booster 1D trigger rate. If not current or out of sync, and we are running beam, the ACNET expert needs to be contacted immediately. Running with missing ACNET beam data is useless!
- Use the "Open current 2hr checklist" link to look at the 2hr checklist that is automatically filled by a script that gathers various critical numbers and status flags. All yes/no questions should be answered "yes". Numbers are shown with ranges or mean values. If a problem persist, i.e. "no" or value out of range, then email (or phone call if you suspect an urgent problem) should be sent to the appropriate expert.

- Check that the number of active PMT's has not suddenly changed. This can be checked with the "Standard Monitoring Histograms" where the first and second plot on the top row show the main and veto PMT rates. Make sure there are no big gaps in the distribution. Also, the "Run Summary Plots", third page shows the number of dead PMT's. This should always be less than 30 for "Unknown/problematic channels" for Main PMT's and less than 5 for Veto PMT's. If there are problems suspected, email a detector expert. If you also see a problem concurrently with the crate timeseries (next bullet), then a phone call is warranted.
- Use the "Hits per crate timeseries" link to monitor the summed PMT hits per crate over time. There are differences between crates, e.g. crate 1 is ~two times larger than crates 2-10, and crate 11 twice 12. However, they should all be flat lined. If there are sudden variations, note the time and crate and email the detector experts. If some number of crates goes to zero, check the crate temperatures and or autodialer for a message. The environmental monitor will trip off a crate at higher temperature, or a power supply voltage going bad will trigger the autodialer. In this case the detector expert needs to be called immediately.
- Use the "TimeSeries Monitoring" link to monitor the various detector quantities over time, and compared to older runs. There are many things changing on these plots, which contain many low level quantities, and are mostly for experts. However, feel free to become an expert and learn the various nuances of the plots. IF you have a question, or you suspect a problem, do not hesitate to contact a detector expert.
- Check that the "Nealine and UberDAQ" link to make sure both are running (current time stamps) and no errors are reported. If there are errors, email the detector expert.
- "RWM Timing Monitor" should be inspected to determine if both RWM fiber channels are operating, and that the individual channels and difference

is stable over time (Fiber1 mean ~ 5621 nsec and Fiber2 mean 5620 nsec, and within ± 2 nsec). There is no RWM signal when the beam is not running. If the RWM signal drifts or disappears for a significant part of a run when the beam has been running, email a detector expert.