

HAWC Shift Wizard Questions:

- Are the main (TDC) and scalar DAQs running? (check at least twice daily)
 - Shift Link: <http://hawcmon.umd.edu/hawcmon/dashboard/dashboard>
 - Recent TDC history:
http://hawcmon.umd.edu/hawcmon/dashboard/exp_status_plot_page/exp_status_plot_page

- What is the current status of the HV?
 - Shift Link: http://hawcmon.umd.edu/hawcmon/dashboard/ems_hv_page
~no data currently available

- What is the current status of the LV?
 - Shift Link: http://hawcmon.umd.edu/hawcmon/dashboard/ems_lv_page

- What is the crate status?
 - Shift Link: http://hawcmon.umd.edu/hawcmon/dashboard/ems_crate_page
~no data currently available

- Are the Scalar/PMT rates reasonable? (check at least twice daily)
 - Shift Link: http://hawcmon.umd.edu/hawcmon/dashboard/multi_scaler
~Typical rate for 8" PMT: ~30kHz (A, B, or D tubes)
~Typical rate for 10" PMT: ~60kHz (C tubes)

- What are the average PMT rates? How many active PMTs? (for 8" and 10")
 - Shift Link: <http://private.hawc-observatory.org/hawc.umd.edu/site/run-monitor/online-plots/>
 - Don't have **average tube rates** on HAWCmon yet, maybe this info to the top of the scalar summary page, as well as **list of bad tubes**

- What is the disk space status?
 - Shift Link: http://hawcmon.umd.edu/hawcmon/dashboard/ems_disk_page
 - Information that we would like to see:**
 - ~Trigger rate in MB/sec (usually ~4 MB/sec, typical 24-hour run ~300 GB)
 - ~Trigger rate in Hz (usually 20-30 kHz, but 40-50 kHz is okay; check twice daily)
 - > UMD's site has two trigger rates.....why two?

- What is the status of the doors?
 - Shift Link: http://hawcmon.umd.edu/hawcmon/dashboard/ems_door_page

- What is the local weather and temperature status?
 - Shift Link: http://hawcmon.umd.edu/hawcmon/dashboard/ems_weather_page
 - ~Battery voltage should not be the first plot, but rather internal/external temperatures plots
 - ~We need the proper limits/scales for the solar radiation plots
 - Specific humidity plots: http://hawcmon.umd.edu/hawcmon/dashboard/ems_humidity_page
 - Specific pressure plots: http://hawcmon.umd.edu/hawcmon/dashboard/ems_pressure_page

- What is the HVAC temperature/status?
 - Shift Link: http://hawcmon.umd.edu/hawcmon/ems_plot_page?type_id=19
~no data currently available
 - For AC Voltages: http://hawcmon.umd.edu/hawcmon/dashboard/ems_vac_page
- What are the temperature and input/output voltages status of the UPS?
 - no data currently available
- What is the status of the GTC?
 - Shift Link: http://hawcmon.umd.edu/hawcmon/dashboard/ems_gtc_page
~no data currently available
- Make a log entry letting the universe know your name, that you are now on shift, and that you are reporting the current status of the HAWC detector and instruments.
- Add any comments regarding anomalies, recent rate/temp/etc. spikes or drops, and general info.

External Links:

- Water Levels:
http://private.hawc-observatory.org/hawc.umd.edu/internal/water_level/
- Local Weather Site:
<http://www.wunderground.com/personal-weather-station/dashboard?ID=IPUEBLAA3>

Things to add/change for the Dashboard and HAWCmon in general:

- UPS status, when was it last triggered, input/output voltages ***
- HVAC status (on/off) ***
- Line Voltage ***
- List of bad tubes ***
- GTC monitoring ***
- Weather conditions (rainy/sunny/lightning/temp/pressure/humidity etc.)
- Average rates of 8" and 10" PMTs (numbers and plots of average rates vs. time) ***
- Reorganize links at the bottom (sort into group, make more readable)
- Add more info to the "help" button
- Alert system ***
 - ~system detects problems while there is the shifter is currently not monitoring the data/readings and will alert the shifter and/or an expert
- Suggestions from Brenda Dingus that have not already been mentioned:**
 - ~add water level data somewhere in HAWCmon, not just on external link
 - ~comparison of GTC to computer clock "every so often" at least, to ensure accuracy
 - ~make scalar rate plots that have all 4 PMTs in the same tank on one plot instead (i.e. there are too many scalar rate plots to look through)
 - ~on RA and Dec plot (on UMD website): have angle fitter check for events that are 180 degrees off and correct them

-Suggestions from Gus Sinnis that have not already been mentioned:

- ~track and view DAQ errors
- ~monitor buffer overflows
- ~easily see if memory is full (may have already been taken care of since disk space percentage used is on HAWCmon dashboard)
- ~more granularity than gross numbers (which channels and TDCs are affected)
- ~channel hits with no attached PMTs
- ~Nchannel distribution plot (UMD page): add arrow pointing to no. of working PMTs

-Suggestions from Ty DeYoung that have not already been mentioned:

- ~ "The system only covers part of the detector, so that for many tubes one is forced to rely on the "online plots" pages. This is a problem of coordination, not one intrinsic to HAWCMon, but it is a serious issue for the shifters"

- ~ "The data provided even by the local instance is apparently coming from off-site, so that during the 15- to 20-minute network outages that happen once or twice an hour, we can't see the current state of the detector. This makes debugging any misbehaving tube at the site quite time-consuming and rather frustrating, since one needs to wait 20 to 30 minutes to see the effect of any action. If I am correct in assuming that the main information is created/stored offsite and periodically pulled to the site by the local instance, it might be better to reverse the set-up and do the processing at the site and then pull it down the mountain periodically to the remote sites. (If I am not correct in that assumption, then I do not understand the lag before data is available in the local HAWCMon.)"

*** = higher priority items

Other Questions to address:

- Someone should be tracking the reconstructed data (in addition to triggered data)
- Which plots/info from UMD's monitoring site do shifters specifically need to look at?
- Solar power system?

Relevant Milagro Shift Questions:

- HV Status (on/off)
- HV and Current History (past 24 hours)
- Counting House Temperature
- Local Weather
- Scalar Data:
 - AS & MU High and Low Thresh Rates
 - Dead Time Corrected Rate
 - VME Trigger Total
 - VME Trigger Individual Rates
 - VME Trigger Dead Time
- Bad Tubes:
 - Dead tubes (for known and unknown reasons), active tubes, and hot/recently hot tubes

- Pond/Water Status:
 - Temperature
 - Water Levels
- Door Positions:
 - Open vs. Closed
- Weather Data:
 - Inside and Outside Temperatures
 - Pressure
 - Wind Speed
 - Humidity
 - Rain/Lightning
- Crate Temperatures
- Building Temperatures
- Line Voltages
- Low Voltage Power Status
- High Voltage and Current Status
- Plots (Monthly and Yearly):
 - Water Status, Weather Status, Crate & Building Temperatures, HV Currents, Scalar Data, Power System (Line Voltage), Low Voltage

University of Maryland Shift Questions:

- Most Recent Run Number
- TDC Scalar Data
- Most Recent Subrun Number
- Active Tanks
- Active HQE PMTs
- Active 8in PMTs
- HQE Rates (Total, Average, Standard Deviation)
- 8in Rates (Total, Average, Standard Deviation)
- Trigger Rate
- Plots:
 - TDC-Scalar Monitor plots (Rate vs. Channel Number)
 - Channel Rates
 - Difference between Historic and Current Counting Rate (2 days)
 - Difference between Historic and Current Counting Rate (2 weeks)
 - Coincidence Rates
 - Subrun Monitor Plots:
 - Trigger Rate Distribution, Trigger Rate vs. Time, Time Between Triggers (s, ms, and μ s), Number of Hits, Two-Edge Hit Time, Four-Edge Hit Time
 - Reconstruction Monitor Plots:
 - nTanks, nChannels, nHits, Reconstructed Core, Dec vs. Ra), Zenith Angle, Azimuth Angle, CxPE40, nFit, windowHits, logNPE, logMaxPE, TDCerrorRatio