

### General (Stefan/Kin)

- Message from BNL Energy and Sustainability Manager: *“In response to extreme temperatures and an almost 5x increase in electricity cost this afternoon we are planning to operate in Tier 1 demand response (+1F setpoint above normal in offices) after 12:00pm and Tier 3 demand response (+3F setpoint above normal in offices) from 3:00pm until COB. Operations will return to normal after the pricing peak.”*
  - Please help if you can find a way to save electricity (turning off unnecessary lights...) 😊

### Current Priority Items (PC)

- TPC: turn on and run as much as possible (expert operation for now)
- MVTX: turn on and run as much as possible (expert operation for now); background studies
- Calorimeter: increase read-out speed with goal to move closer to taking a physics data set

### Work Control Coordinators (Chris/Joel)

- 

### Plan of the Day (Stefan/PC/all—to be revisited at end of meeting)

- Data taking with EMCAL, HCal, MBD, ZDC, GL1, LL1, sEPD, maybe INTT
- HCal cosmics when no beam

=====

### Evening (Nathan)

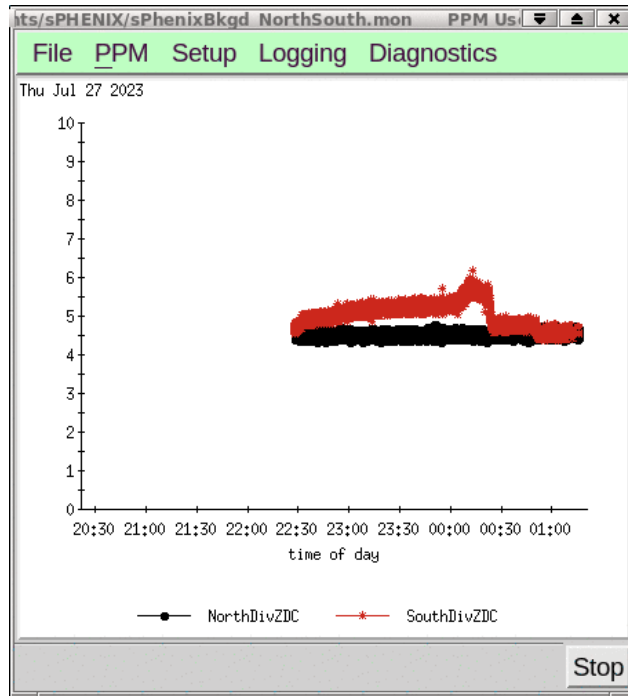
- 16:30 TPC access to swap some electronics. They continued to work until approximately 18:30. They did not see their laser signal but seemed to do as much as they could. I am sure they will report below.
- 17:30 After additional quenches and a failed hysteresis ramp, APEX canceled.
- 20:15 beam injection with physics declared at 20:39.
- INTT group was contacted so they could complete their threshold scan. That work started about 21:30. There were problems with triggering on beam data that significantly delayed their progress. That work will continue into the next shift.

### Night (Tom)

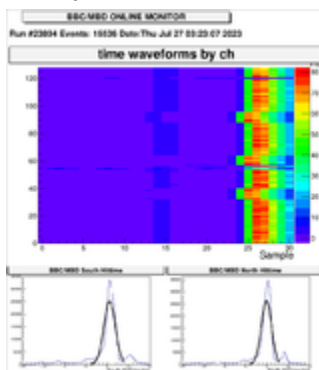
- Inherited fill 34040 @ 5kHz ZDC rate with INTT crew still awaiting triggers.
- Jaebom arrived and re-initialized the DCM at which point the DAQ seems to be working.
  - In principle, the big partition could run in parallel to INTT in local mode, however, after a long dearth of data it seems most wise to take the INTT data without additional changes or delay.
- TPC crew reports having seen laser data but at higher than anticipated voltage.
  - Presently attempting to get beam triggers to GTM1 via lemo cable input to allow DAQ cycling from beam triggers.
  - Jin cannot stay awake and effective for more than 30 more minutes. Having the shift leader as the only person watching the TPC high voltage at this beam rate is unwise. Jin and Evgeny will therefore continue tomorrow to run the TPC with

high voltage on and will also switch TPC operation onto GTM0 to make possible the inclusion of TPC data into the big partition.

- Because of the earlier SEU in one TPC HV card, a “scrubbing routine” will be written to regularly re-assert “static” parameters into non-volatile memory of all channels in the TPC HV system.
- South ZDC background rates have been improving over time. MCR says:
  - Small changes related to dropping the setting on the yellow vertical tune.
  - Large changes are related to moving collimators.



- Unexpected beam loss at 01:48....sPHENIX → standby in anticipation of next fill.
- 02:24 Routine shift checklist discovered a drop in TPC/TPOT coolant flow (88 lpm --> 48 lpm). Temperature log indicates 1-2 degree-C increase in both detectors. Leave this alone for now.
- 02:59 Beam restored, ZDC=10 kHz, fill 34041, expected dump 10:54. sPHENIX→operating. Resume INTT work.
- Oddity noticed in the MBD timing and rate:



Also the MBD rate is ~8X lower than the ZDC rate (possibly related)?

INTT says that since this is a threshold scan they can still complete their work successfully under these conditions. We suspect that the timing shift will likely be addressed by an initialization script and may be related to the firmware update.

- 05:07 Out of an abundance of caution, we had withheld running global while INTT was getting their data. In principle, there should be no need for this, so we have instituted running both at this time to further exercise/challenge the DAQ.
  - 05:16 Some interference was observed and a discussion of the distinction between rc\_begin/end vs daq\_begin/end was had. Although the problem might have been resolved with some experimentation, we chose to continue to leave the big partition off until an expert is able to resolve our questions.
- 05:54 INTT declares success.
- 06:00 Mickey logged in to update the MBD firmware, fixing the timing and rate issues.
- 06:32 Attempting to bring up the big partition, had the same hang behavior as when we inherited the shift (no live triggers). Hugo documented how to apply the fix (same as Jaebom did) in the DAQ elog.

#### Day (Caroline)

- Inherited fill # 34041, ZDC rate 14kHz, taking data with INTT, EMCAL, MBD. Dumped at 11:00
  - Z-vertex distribution has two extra smaller peaks around main peak, which disappears when the L1 delay is changed. ?? need confirmation of cause and action. The side peaks sometimes appear again in later runs, without any changes to the MBD. See overnext bullet
  - Tim - Adjusted timing window for EMCAL. There's been updates since then (communication between Jaebom, Tim, Silas et al)
  - **Cold start of DAQ** around 10:15 set back systems to nominal, likely also the z-vertex
- 9:24 **IR humidity too high** (~61% with upward trend) → keep monitoring, Joel informed. At 10:40: 63%. In the afternoon, mild downward trend. 3pm: ~61%
- 12:26 **INTT LAD1 flow low at 4.7 l/min** - 2x acoustical alarm which we acknowledge. INTT voltages are off at this point. Monitored ladder temperatures seem not affected. Called Itaru. Do not turn on LV until it reached 4.9 l/min minimum (which it does already at 12:35). LAD1 & LAD2 flows were well above 5 until then.
- TPC cooling flow: low (after last night's drop) but stable around 46-47 l/min.
- 11:00 minimum 1 hour CA for MCR. 12:20 update: issue found, expect another 30 min CA
- 12:58-1:12 access for HCal (clockmaster moving)
- 14:00 delay in injection due to water fault for 56 MHz
- 14:44 further delay in injection due to tandem foil & temp issues in building 8b
- 14:55 further delay in injection due to empty LHe in 56 MHz (failed pressure transducer)
- 15:24 Cameron turns on MVTX (still @ no beam)

=====

#### Magnet (Kin)

- Nothing new to report.

#### MBD (Mickey, Abdul)

- Martin noticed that when running without the central run control, the MBD generates run numbers in the 7250000 range. The MBD maintains its own runnumber file in  
/home/phnxrc/operations/mbd/rcdaq\_setup\_mbd.sh : rcdaq\_client daq\_setrunnumberfile  
"\$HOME/.rcdaqrunnumber-mbd.txt" with \$ cat "\$HOME/.rcdaqrunnumber-mbd.txt" 7250118
- This is used only when the MBD runs without run control and without runcontrol mode set, but we have plenty of runs with those runnumbers.
- Yesterday, the phase 0 was not within the window gate and to fix that Mickey update the fine delay ( the GTM firmware update might be the cause )
- We are investigating the funny double peaks in the online monitor but we don't have a conclusion why that happened yet.

#### Trigger (Dan)

- JaeBeom: after GTM reboot trigger delay wasn't set to accommodate ZDC trigger (24 ticks); this is why this morning everyone saw the timing shift; Dan put it back by hand.

#### GTM/GL1 (Martin/Dan/John K)

- Moved up to version 46 that fixes the FAs being a no-show. Works, see <https://sphenix-intra.sdcc.bnl.gov/WWW/elog/DAQ/355> an LED run 23977
- Found that we left a delay setting out of the GL1/GTM boot procedure. I put this in before the v46 reboot, good now. See <https://sphenix-intra.sdcc.bnl.gov/WWW/elog/DAQ/354>
- Meeting with Joe this afternoon to address the last big missing component (the input switchyard). RSN.

#### DAQ (Martin/John H)

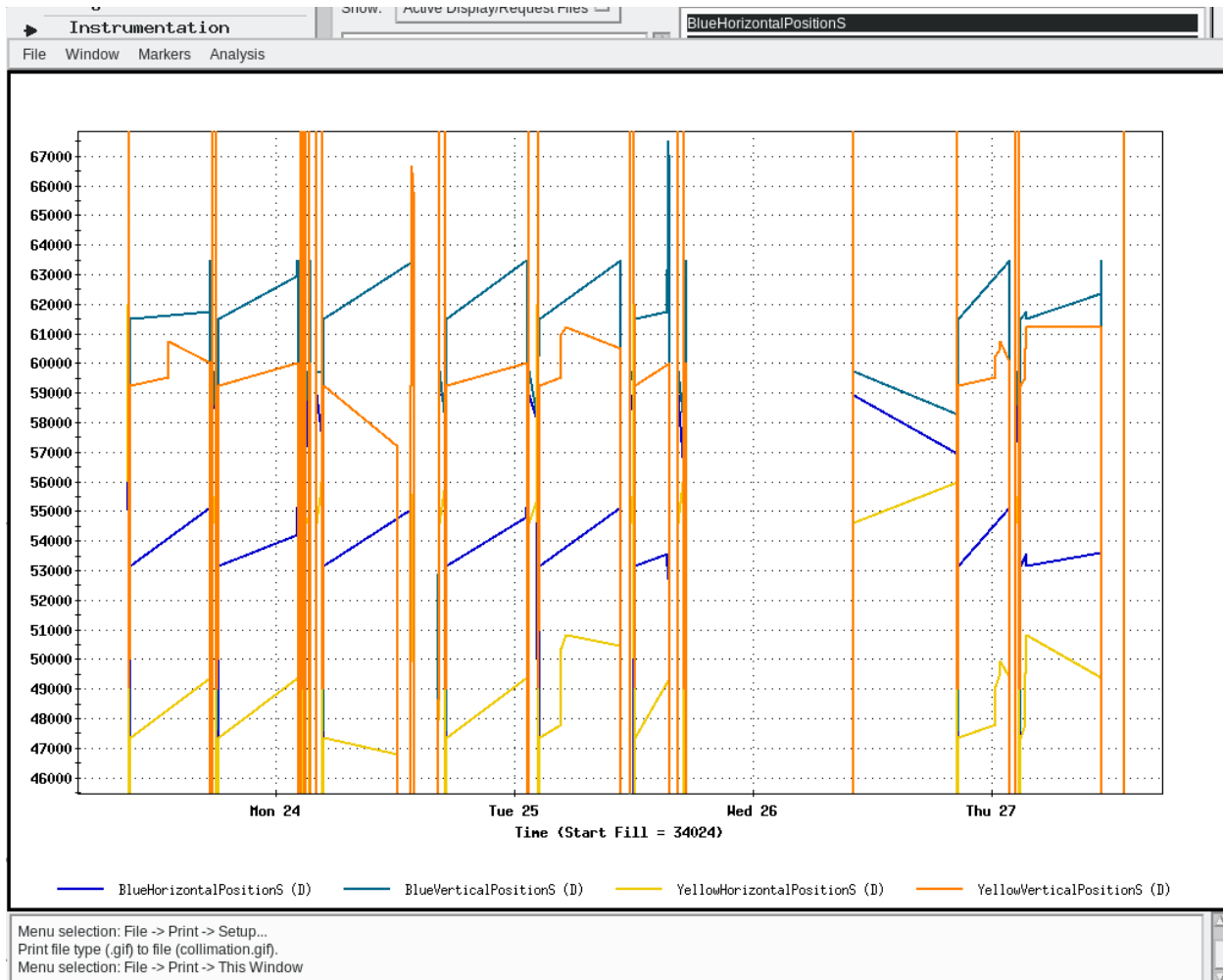
- Both rcdaq and Run Control picked up a new feature x (rc\_setrunnumberApp) <executable> so they automatically consult that executable to dispense a unique and ever-increasing runnumber. I deployed that "dispenser" as "generate\_runnumber" that uses our database to make a unique run number. I hope that resolves the issue of conflicting/jumping/recycled runnumbers. This is used in lieu of (and takes precedence over) the existing runnumber file mechanism.  
*Please don't try the app too often to not unnecessarily "burn" run numbers.*
- I sent a long mail to the DAQ list with a summary of our need to switch back to the original digitizer\_Remote readout plugin.

#### MVTX (Cameron)

- Tried to take data during collisions but didn't see any incrementing triggers on GTM1
  - We worked with Martin and Jaebeom on this issue. Our old daq\_begin commands weren't successful either. We'll retry the original commands during the next physics fill in case it was stuck settings from earlier
- I did see less auto-recoveries on our monitoring though. The auto-recovery only works when we are taking data and should be independent of the DAQ stuff. Caroline called

MCR to ask if there were any different beam conditions for the last fill (the collimators were tightened in the fill before that, maybe they used this different value for this fill?)

- Kin : Not really:



TPC (Tom Hemmick, Jin, Takao, Evgeny, Charles, Nick, Bob, Ross, John K.)

- Shift crew: TPC operation under expert control. Shift crew do not need to worry about it
  - Operations still require someone to monitor HV (especially during ramp up, even when ramping only to 4200 V)
  - Will make arrangements to do during the day when we can have dedicated watcher
- July-26 Diffuse laser test summary
  - Opportunistic beam-off time for diffuse laser debug
  - Few channels pushed to 4.7kV in HV as planned. Observed laser load pattern on GEM, but photo-electron \* gain was 1/10 of the June-15 first laser data. Timing scan performed.



- Definitely Ruled out trigger/electronics chain as cause of disappearance of laser
- Bottom line: The change in diffuse laser behavior stems from either GEM GAIN VARIATION, MAGNET, or LASER/FIBER/DIFFUSER DAMAGE (with specific requests to debug each of these possibilities below)
- REQUEST: TPC would like to put a spare laser diffuser in IR for radiation damage test - either at platform or possibly near bkgd counters
  - Investigating if laser diffuser has suffered radiation damage under realistic heavy ion background
  - Would need to put it here for 1 week, then take it back out
- 24hr TPC diffuse laser standby, one of six laser drives enabled
- 24hr TPC monitoring run with automatic stuck FEE masking, restarted after laser test



- TPC priority: When we have stable beams, we would like to turn HV on (4350V/below-MIP-gain on GEMs)
  - Don't need low rate collisions immediately, which is likely best done after spark-protection installation (08/02)
  - It will be useful to distribute MBD trigger to GTM1, so later TPC low-gain HV-on monitoring runs can take collision events on GTM1 (and not interfere with GTM/big partition operation).
  - IF NO FIELD for any reason (magnet quench/crash) - please let TPC take some measurements before ramping back up (investigate field-dependent photo-electron yield for diffuse laser)

#### HCal ()

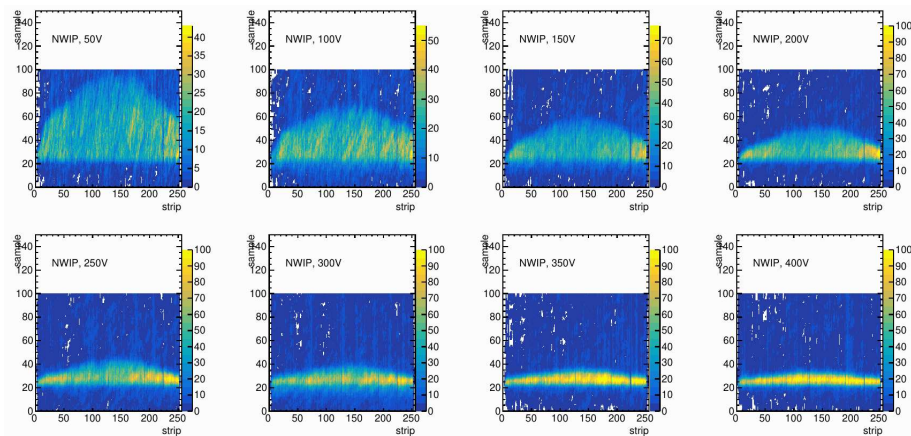
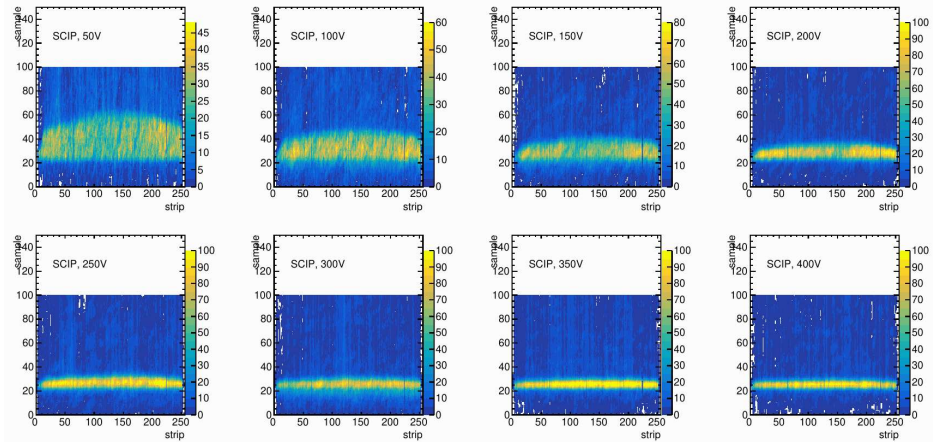
- Hugo noted that seb16 was unable to get past 1 event last night, Jaeboem had temporarily fixed, however it returned within 2 hours
- On further testing, it was determined to be an issue of the clockmaster for inner hcal west not distributing triggers properly, used last few minutes of CA to move the inner hcal over to the outer hcal clockmaster, this fixed it
- Need to pull the malfunctioning one out at next opportunity
- Shift crews: please take LED runs again (forced accept issue is fixed)

## EMCal ( )

- Lost communication with sector 61 - will try to recover by cycling rack (3A5) power
- Rob lowered the setpoint of the NE and NW SiPM chillers by 0.3 degC to attempt to balance the N & S ends of the EMCal

## TPOT (Hugo)

- Could get some small amount of data in big partition right at the end of owl shift without problem
- Finished analyzing HV drift from earlier this month. Will try to increase drift HV and might need another scan.

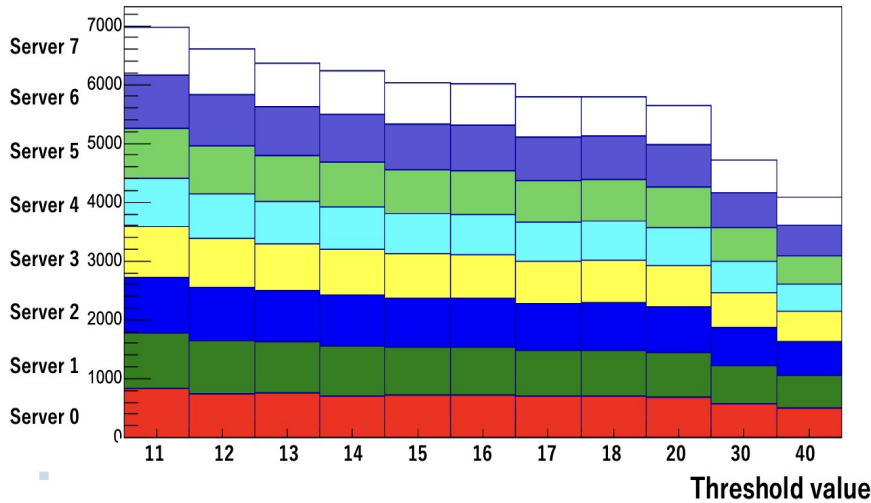


- Signal time vs strip number vs Drift HV, with magnet ON. Spread at low Drift HV due to Lorentz Angle. Right now operating at 300V. Consider 400V. Might scan up to 500V
- We had an abnormally high number of trips overnight (5 effectively 3, while you usually have at most 1 per shift). Possibly due to beam background ? weather ? Nothing alarming. Will monitor closely.

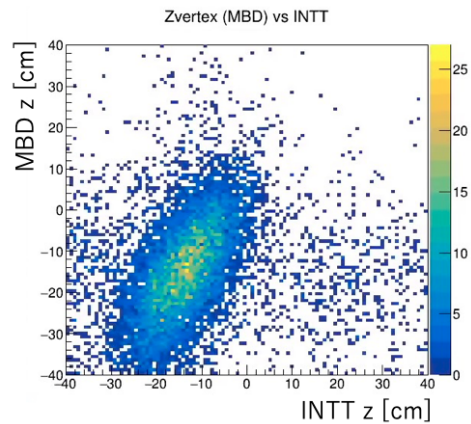
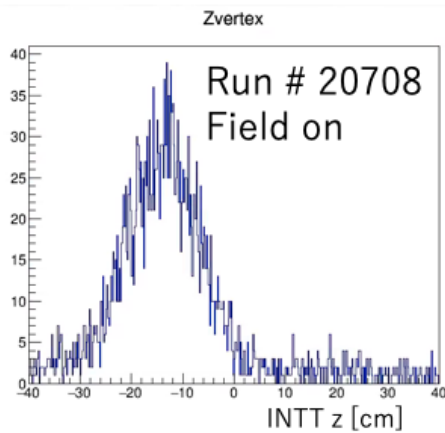
## INTT (Cheng-Wei/Rachid)

- Detector and cooling chillers are running properly, there is some fluctuation in the cooling flow due to hot weather, but we are keeping close monitor of the situation. The operation conditions have not changed: the alarm threshold for the cooling is set to 4.7 LPM, and the detector operation is 4.9 LPM.
- Finish the DAC0 Scan. Following shows the quick glance of the data we took. Detailed analysis ongoing. Plot made by Ryota Shishikura
- 

**DAC0\_value vs Nhit per Event (average)**



- 
- The first correlation plot between MBDz and INTTz vertex with field on data (Run #20708 plotted by Takashi)
- This run was taken before asking CAD to move the collision points to z



=0.

sEPD(Tristan/Rosi)

- South side box complete, waiting for Wednesday install. North Side in process.
- Nothing else to report



Gas/Cooling ()



ZDC ()



Background Counters ()



Online Monitoring (Chris)

