

### General (Stefan/Kin)

- From 9 o'clock meeting
  - Tune change (bump) reduced helped reduce the blow-up of the yellow beam
  - Yellow vertical stochastic cooling repaired
  - Not much beam lately
- Wednesday's access 7am-4pm, magnet will be off, need to take zero field run before turning magnet back on

### Current Priority Items (PC)

- TPC operation with HV
- MVTX operation
- DAQ speed increase

### Work Control Coordinators (Chris/Joel)

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

- Mo morning - We: TPC/TPOT cooling off; to be restored We during maintenance day
  - Also FEEs off during that time
  - This is for TPC thermal test
- We: TPC diffuse laser test with field off
- We night (or Th morning if no beam We night): zero field run for INTT
- Th: TPC magnet ramping test for diffuse laser
- Independent: Tu: spark protection card test
- MVTX background test with collisions
  - Collimate three hours into store
  - Do this today if beam comes back and Angelika is available
  - Postpone until after Angelika comes back from travel (otherwise waste of time since Angelika is collimator expert)
- MVTX background test with tune change
  - At Monday's 9 o'clock meeting I will propose a tune change to increase beta\* in order to decrease the beam in the triplets (Q1,Q2,Q3) (John Haggerty's idea)
  - The cost will be decreased luminosity, but we don't care about that for now, since this is just a test for now.
  - The idea is that this will give us a lever arm to distinguish background created in the triplets from background created in our IR
- Switch to 12 samples for calorimeters

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### Evening (Nathan)

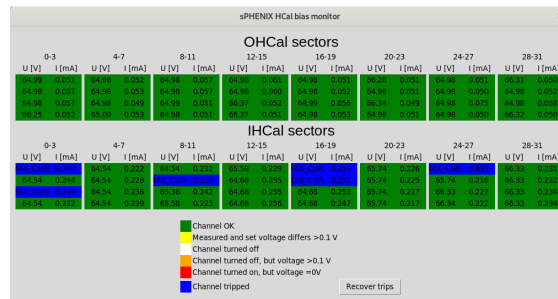
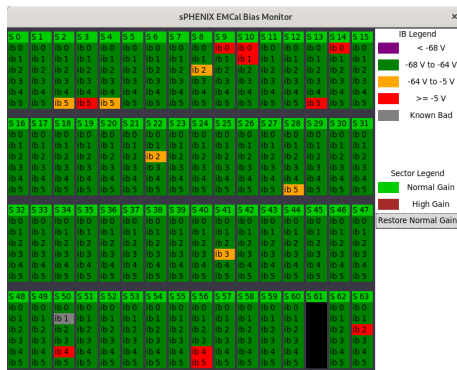
- Began the shift with inheriting no beam from the day shift. CAD was working on the LHe line. Martin added the MBD trigger to GTM1 and added that to several elogs.
- Jaebeom worked from the beginning of the shift until about 9 PM on the DAQ. HCAL communication issue means no cosmics and no HCAL LED can be run. Should be out of the big partition until further debugging can be done.

- 16:30 There was a short 10-minute access by Stefan and Dan to grab the faulty iHCAL clockmaster.
- 17:10 Sean and Xuan cycled power on the EMCal rack 3A5. But that didn't appear to solve the communication issue. Access may be needed.
- Per Charles, since no beam by 18:00 running TPC with HV, which requires someone to monitor, can wait until tomorrow.
- About 18:15 MCR called to say they were preparing to inject. Blue beam injection started about ten minutes later. But quickly aborted after flat top due to an unclear reason.
- As we were preparing for physics, I was monitoring the INTT LAD1 cooling rate and watched it fluctuate from 5.01 down to 4.88 and then back to 5.00 in three refreshes. There is no alarm or indication, we simply have to watch and guess into the future if the rate will stay above 4.9 (l/min?).
- At 19:07 MCR called to inform us that they need to replace a power supply and it will be "a little while" before they put beam in the machine.
- An INTT expert worked in the rack room and asked that we not power on the INTT but let him know when beam was coming so he could complete his work.
- Without beam and running cosmics yet again, we decided to exercise the DAQ on random triggers. Running GL1, LL1, MBD, ZDC/sEPD, and EMCal we could read the random triggers at about 900 Hz (scaled) out of 11 kHz raw. Practiced starting and stopping runs as well as changing trigger configurations. Tried to keep the DAQ on as long as we could to mimic consistent data taking and practice debugging situations.
- At about 22:45 we had a TPC N and S cooling interlock alarm. The TPC and TPOT LV immediately went down. We acknowledged the alarm. We decided to call Tom since he was soon coming in. We checked the temperatures on grafana and they appeared stable over the last hour. While the CDU flow was still reading below 50, it was possible that it was a false alarm. Tom suggested we bring the LV back up, which requires resetting the coolant interlocks. There is a button on TPC GUI that turns red that you can click to reset the cooling interlocks. Once the low voltage ramped back we checked the temperatures again and they appear to have changed by less than one degree compared to earlier in the shift.
- At 23:02 the humidity alarm sounded. It was hovering around 58% all evening but spiked and caused the alarm.
- At 23:15 I called MCR per Eric's advice to check to see what was happening. They reported a large power dip and gave no firm estimate when the beam would return but it was clear it was going to be a while.
- At 23:50 a pair of INTT chiller low flow rate alarms went off. The chillers reported 0 flow briefly before recovering to read 7.40 and finally falling to around 4.50. The alarm was acknowledged. The INTT was currently off so no further actions were taken.
- At the very last moments of the shift Martin called and asked us to take HCAL cosmics. He had thought he got a handle on the seb16 connection issues. That was commencing while we handed the shift to the night crew.

#### Night (Tom)

- The beam has been down since the prior shift without an estimate from MCR for the beam restore time.

- 01:30 INTT chiller alarm acknowledge (below 4.7 lpm). INTT had been and remains off.
- DAQ test of independent running of the big partition alongside of a local mode system (TPOT) is successful.
- TPOT studies with ever-decreasing ENDAT times are being used to study the limits of readout under the present FEE (non-zero suppressed hardware).
- 03:37 INTT Lad1 alarm again. Feedback says 0.00 lpm (unlikely), after acknowledge 4.34 Lpm. INTT remains off from earlier.
- 04:38 MCR calls to announce impending injection test,
- 05:21 MCR calls, trouble with storage cavities...next attempt in 30 minutes.
- 06:20 tried injection. Uncontrolled beam loss near flattop...several EMCAL HV and IHCAL HV channels tripped.



- 07:15 MCR called. After the unexpected abort, there is a power supply problem preventing injection. Minimum 1 hour before next beam attempt.

Day (Caroline)

- Waiting for RHIC, taking HCal cosmic data (1/2 with SEB17 only; SEB16 is stuck)
- **No beam** until the end of the shift. Multiple RHIC issues (in historical order): power supply; rq4 work; atr supplies off with cooling faults; cfe-7b-ps1 has no heartbeat; BLIP raster magnet is down; work on xtv10; Vacuum group is making access to 10z1. From Stefan: "booster qtrim supply died"; AMMPS tripped.
- IR **humidity** 58%; INTT **LAD1** 4.66 l/min; INTT LAD2 5.43 l/min; **TPC / TPOT** 47.6 l/min. At 10am, the TPC/TPOT flow is at 89 l/min and it stays that high. 1:14pm humidity alarm caused by spike, returns to around 59%. Another spike & alarm at 1:31pm
- Incident with **TPC cooling flow off at 10:42pm** last night: Joel came in to help reconstruct the event. There was likely a power glitch at that time (experienced also by the day shifter in the apartment - the light went off for a fraction of a second, thunderstorms), causing "major power fault" and "rack room UPS in battery operation" (see Annunciator). Since the TPC cooling (CDU 300) is not on emergency power, the switch over to battery caused the flow to stop and the LV to be turned off automatically. Should we *consider putting the TPC flow on emergency power to avoid this type of incidents for the future operation*? Current status: as logged by the evening shift, the cooling interlocks were reset soon after 10:42pm, and the TPC LV was turned back on.
- 10:27am Takao calls to let us know that he'll now power cycle the TPC LV. Done at 11:14am.

- Jaebom is working on getting the other half of the **HCal readout** back. Jaebom, Joey, Martin would like to try an access (~45-60min) to check HCal connections but MCR says they are currently optimistic to inject soon... more news in 30-45min. RHIC quenches and Jaebom / Joey get in CA for HCal readout 1:25pm - 1:55pm.

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Magnet (Kin)

- Nothing new to report.

MBD (Abdul )

- Nothing new to report ;)

Trigger (Dan)

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GTM/GL1 (Martin/Dan/John K)

- Exploring the new v46 features -
  - We seem to have verified that the GL1 number of events is correct, and others are actually wrong
  - The new packet format appears to have everything we need for now
  - Trying to ascertain that we do get the right bunch number. Easy to get *one* datapoint with beam, but there hasn't been any. Using the fiducial tick itself as a trigger. so any trigger is (should be) in sync with the rotation. That's in progress.

DAQ (Martin/John H)

I enabled the new Run Number Generation Scheme, works.

- Lots of wrestling with seb16. I was able to fix an apparent jSEB2 lockup last night ( <https://sphenix-intra.sdcc.bnl.gov/WWW/elog/DAQ/361> ) but we didn't get any data. This morning Joey and Jaebeom made an access and re-seated the CHISB cables, and 2W2 came back to life (remember that in yesterday's access, the cables were moved to one clockmaster for both i+oHCal). We also seem to confirm that the new GTM regime with register 15 works just great. (We played Run Control giving the commands manually, all fine). RunControl will do this for you, of course.

MVTX (Cameron)

- Jo and Cameron tested telescope against new GTM FW and found we can no longer lock to our special 160 MHz clock
  - We do lock on our other GTM with the same FW and setup
  - Martin looked into this and sent commands to Jo and myself. Jo is currently in Poland so is either out or traveling back so I ran the lock test again but wasn't able to lock again.

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

- Yesterday 07/27:
  - MBD trigger in GTM1 for TPC test runs, thanks to Martin: <https://sphenix-intra.sdcc.bnl.gov/WWW/elog/DAQ/357>

- Today 07/28:
  - TPC trying to ramp up HV: planned for 3 PM to spread out expertise
  - Indeterminate state of beam making it difficult
  - Plans to run it over weekend being discussed - might depend on status of thermal test
- TPC proposed tests:
  - Thermal test: FEE OFF & COOLING WATER OFF (yes, it has to be off)
    - Could turn off rack
    - OR turn off CDU300
    - Either way, need TPOT to be on board
  - Magnet test: Take advantage of magnet shutdown for maintenance day
    - Wish to take diffuse laser data with "NO MAGNET + NO BEAM"
    - Then bring magnet up in steps
- Next week:
  - Tuesday 08/01:
    - Test cards for Spark Monitor (1 day)
  - Access day 08/02
    - Place diffuser at platform
    - Install Spark Monitor
    - Start magnet test
    - Possibly have Rob restore cooling (depends on thermal test coordination)

#### HCal ()

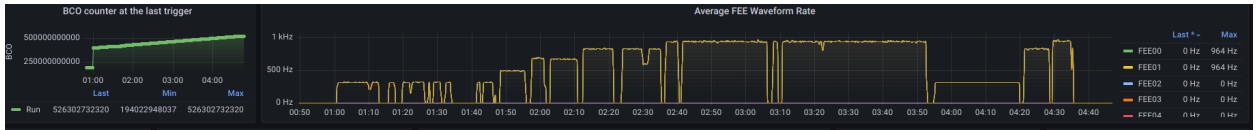
- (Jaebeom & Joey) Went to 2W2 in CA to debug seb16
  - Clock master seemed to be ok (looking at the scope) no particular change
  - After small tests seb16 came back

#### EMCal ()

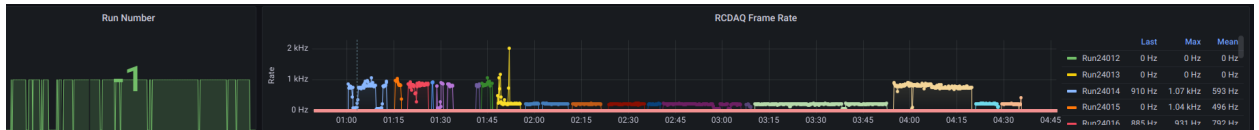
- Tried cycling rack 3A5 power to recover communication with sector 61 - not successful. Need access to swap in new controller board
- Evening shift crew recovered trips after beam loss.

#### TPOT (Hugo)

- Took some cosmics data in local mode in parallel with running big partition global. Worked like a charm
- Scanned endat and convert time to see how high we could push the live rate of TPOT: could reach ~ 1kHz.
  - Checked masking "stuck" FEE:
  - Stuck FEE were properly identified with Jin's grafana alert. Unfortunately a false positive because threshold is too low (at the same level as the one for which we were running) <- Jin will increase the threshold
  - Second: due to software version mismatch the stuck detection was not propagated to masking said FEE <- John will fix software version (?) on ebdc39



- Noted that when live rate increased, the rcdq event rate dropped by a factor 5 (resulting in much larger frame size, which I don't know yet how to handle offline)



- If there is beam tonight I would like to run some HV scan in local mode parallel to big partition data taking
- If there is no beam I would like to redo the Endat test above

INTT (Cheng-Wei/Rachid)

- We keep watching cooling closely, and we are monitoring cooling flow as function of time. We reduced the threshold to 4.7 lpm for the alarm (instead 4.9 lpm). If you get an alarm in INTT Lad1 (or lad2), please turn OFF INTT LV/BV (if INTT is ON) and call the expert. Otherwise wait for the alarm (red blinking) to go away it will happen when cooling reach 4.7 lpm automatically.

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sEPD(Tristan/Rosi)

- Box install on Wednesday - nothing more in addition

Gas/Cooling ()

- 2 dehumidifiers have arrived.

ZDC (John H.)

- I'm going to swap in a tested SE-DIFF converter for SMD this afternoon

Background Counters ()

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Online Monitoring (Chris)

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