DIRC Status Report

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on behalf of the DIRC Collaboration

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Outline

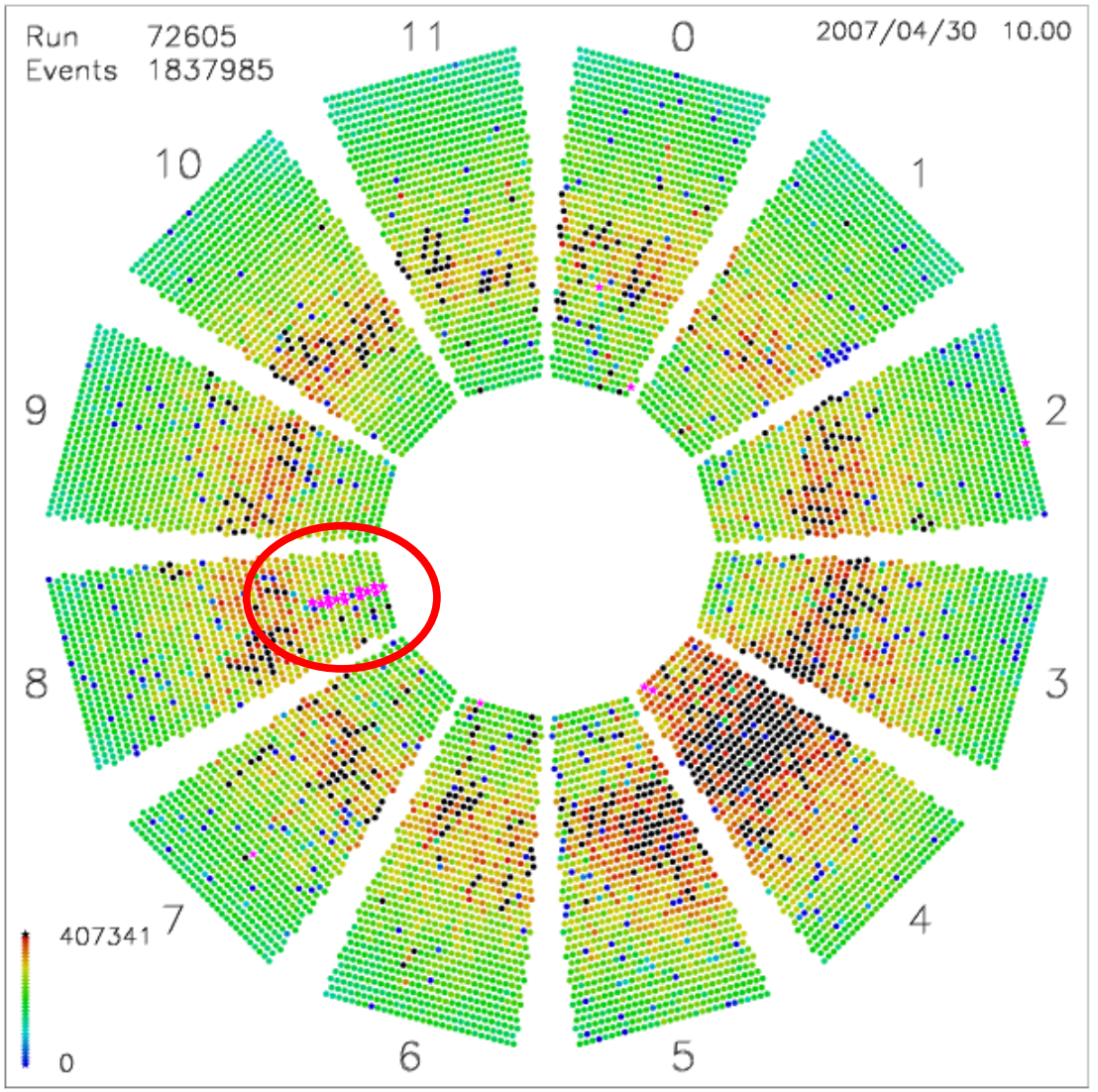
- Operations
- Background
- Online
- Spares
- Manpower
- Summary

Operations

- DIRC has been running very smoothly since the start of run 6.
  - No trouble with corrosion.
  - Minor repair work done opportunistically.
  - May water leak didn't cause major problems for the DIRC.
- The DIRC is fine.

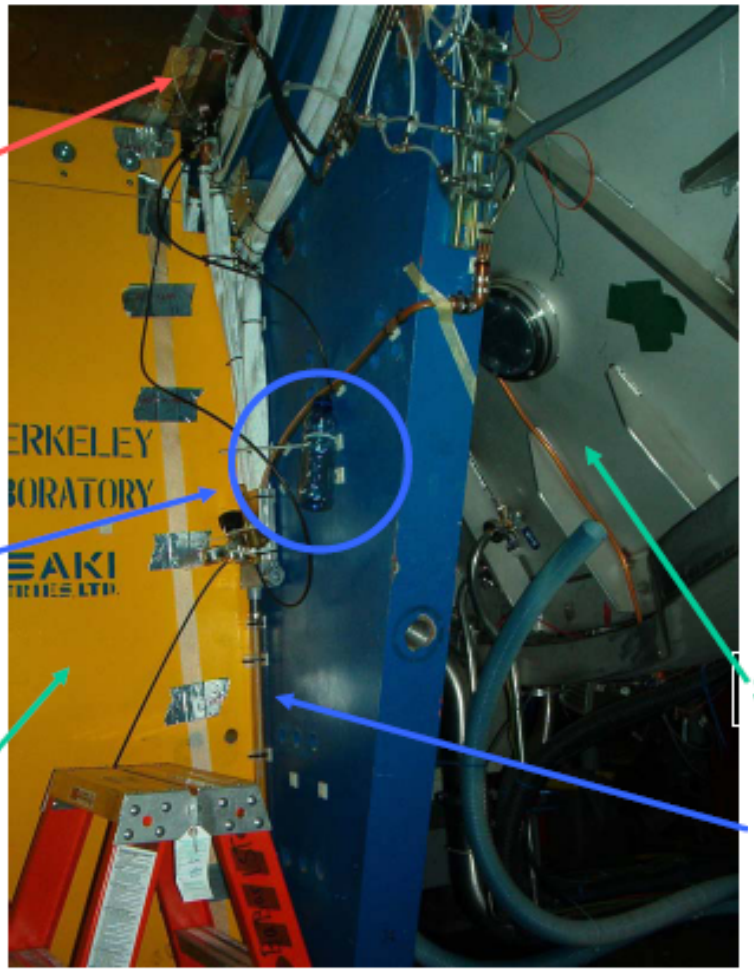
Operations

- March 26 ROD: Replaced DFB in sector 8 with 8 dead channels. A day later the new DFB had 15 dead channels. Also replaced DFB in sector 5 with an overly large timing window.
- May 1 ROD: Replaced DFB in sector 8. This third replacement works fine most of the time, but occasionally this slot still causes trouble .



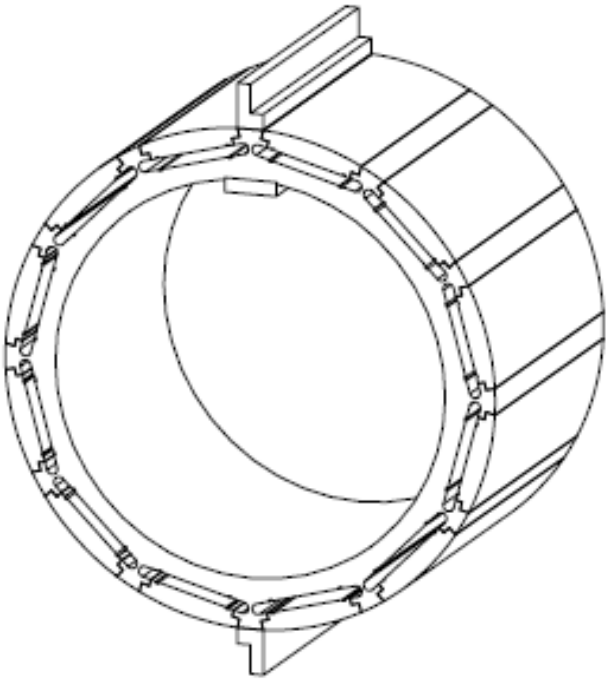
Q2 Leak

- Q2 accident leaked water into the DIRC, mostly traveling through the tunnel to the backward end.
- Water dripping from the DIRC barbox slot 6, but none in the barbox itself.
- SOB dump valve disabled, saving us from a dump when the humidity sensors latched.
- Higher humidity in sectors 5, 6, 7 so Nitrogen flow increased.
- Wiener crates did not get wet, nor did the PMTs.



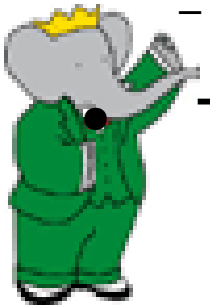
Q2 Leak Recovery

- May 1: Q2 water leak
- May 2: Draining of DIRC continues with close monitoring by commissioners and pilot.
- May 3: No more water dripping from DIRC and humidity going down in barboxes 5, 6, 7. Wiener crates powered back up and cosmic run successfully taken.
- May 4: Sensors in barbox 6 tested okay and put back. Backward doors closed.
- May 14: Dump valve re-enabled.



Chiller SIAM Glitches

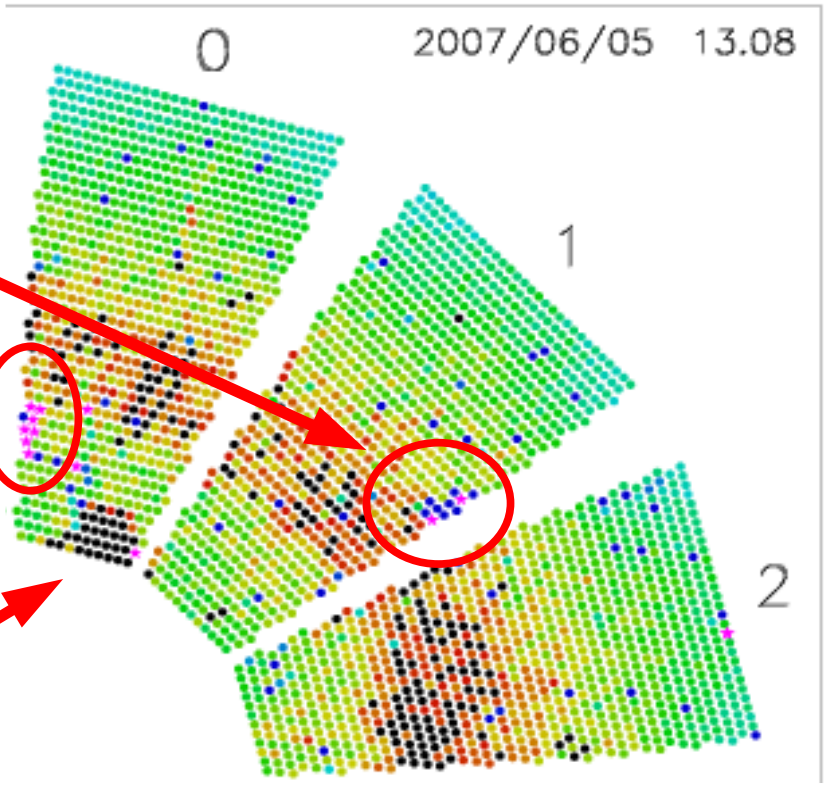
- May 2: Scope attached the Chiller power to monitor for glitches.
- May 24: Chiller SIAM glitches observed while Ray's scope confirms no trouble with chiller's power.
- May 27: Many chiller power alarms from the SIAM. The wrong SIAM was inhibited which exposed a hole in the monitoring of our HV. Triply redundant software checks have been added to plug this hole:
  - ALH alarm for SIAM state/ runnable flag mismatch
  - ALH alarm for HV mismatch with runnable voltages on more than 6 channels
  - State machine runnable state responds to SIAM state



This is the second SIAM to fail in this slot in 2007.

Operations

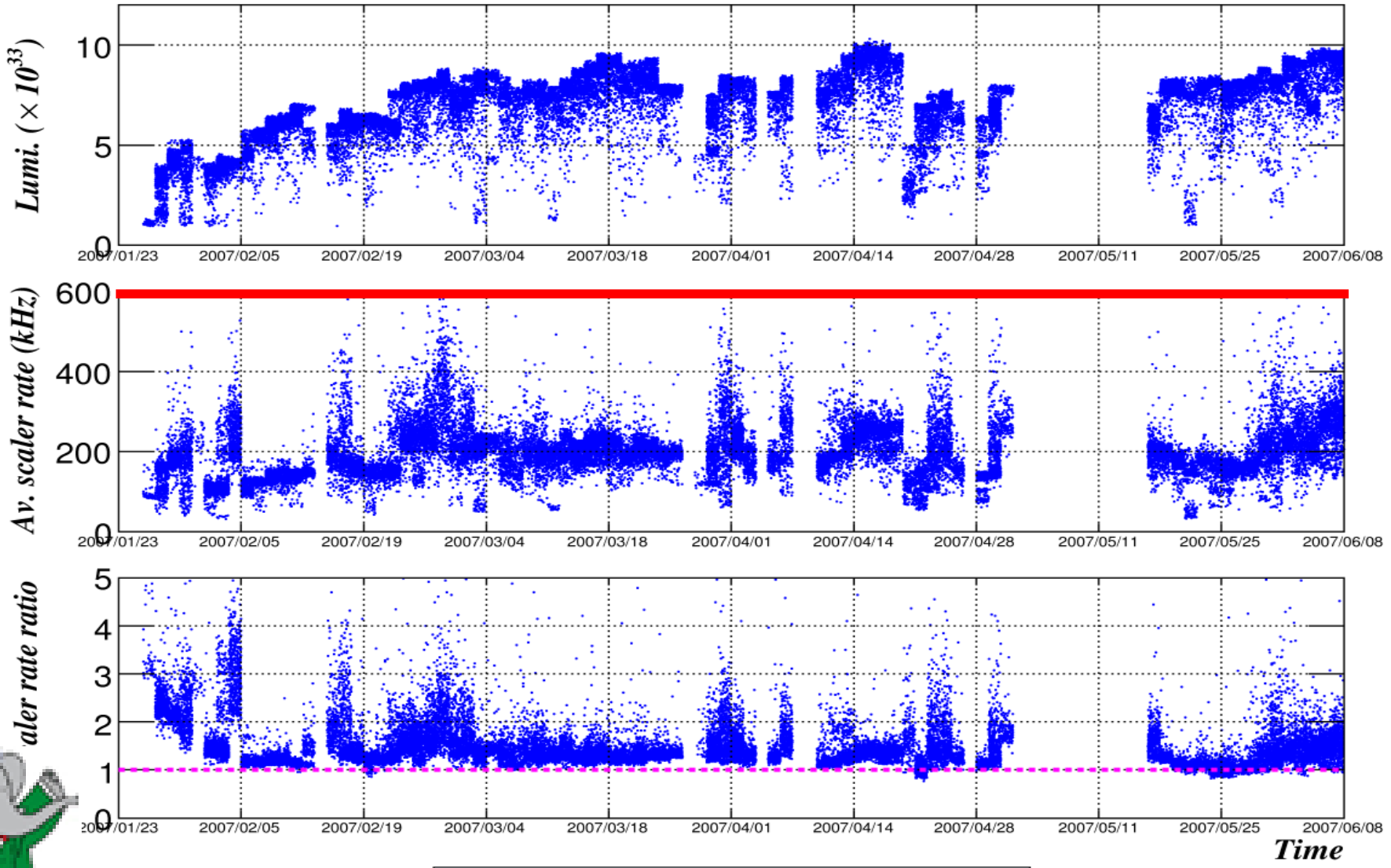
- Todo List (minor problems)
  - 3 DFBs with 8 dead channels each in sectors 0 & 1 (requires bridge to replace).
  - 2 DFBs with 8 flaky channels in sectors 6 & 8
  - PMT causing X-mas tree in sector 0 needs to be unplugged
  - Faulty chiller power SIAM needs further investigation (long down).



Shutdown Planning

- Next long shutdown is Sept 4 – Dec 3.
- We want to avoid the contamination problems of last Fall.
  - Backward doors to remain CLOSED.
  - DIRC FEE crates will remain on to keep the fans blowing.
  - DIRC HV crates will remain on.
- We will coordinate a repair session with EMC to do the work requiring the bridge.

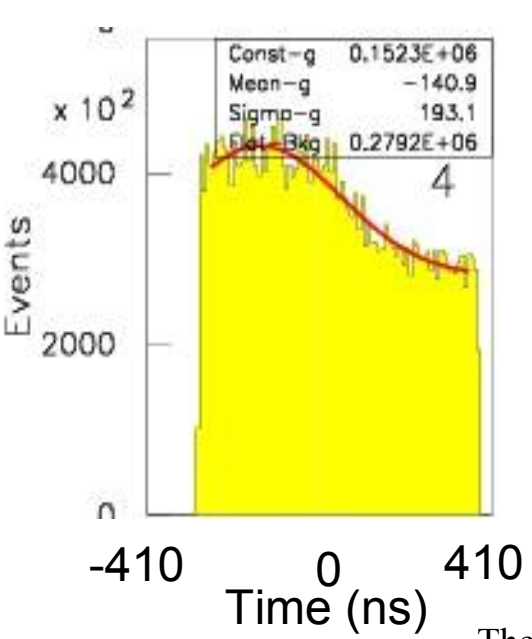
Background

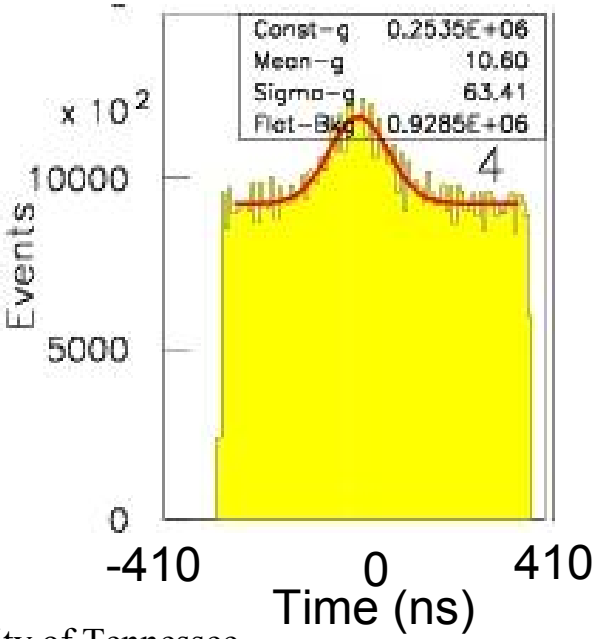


2007-Jan-23 → 2007-Jun-08

Background

- Bad LER trickle injection distorting DIRC timing distributions
  - New problem visible only in raw data
  - Reconstructed data look fine

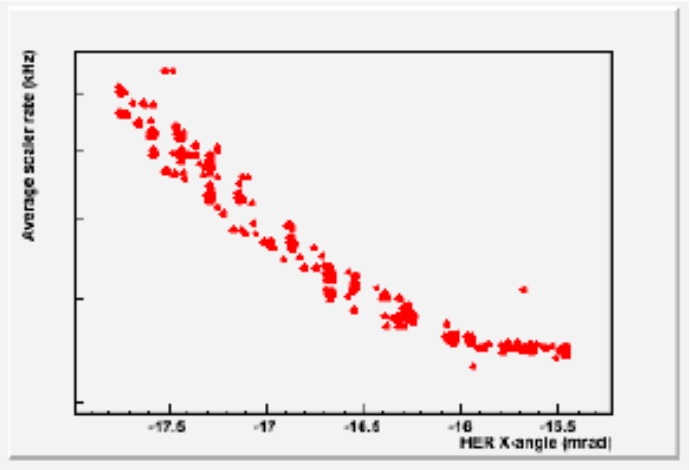




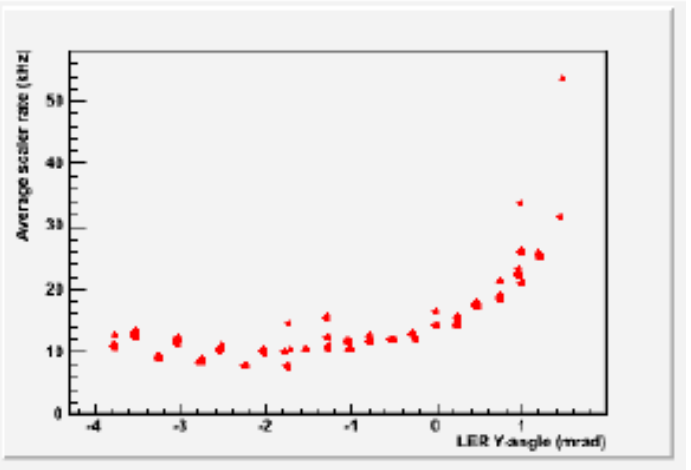
Background

- March 5 Aperture Angle Scan
  - Quantified background dependence on IP x and y angles
  - Looked at average DIRC scaler and neutron counter rates
  - Several 2004 parameterizations were off, but most were close to their nominal values

DIRC scalers



DIRC scalers



Data Quality & Online

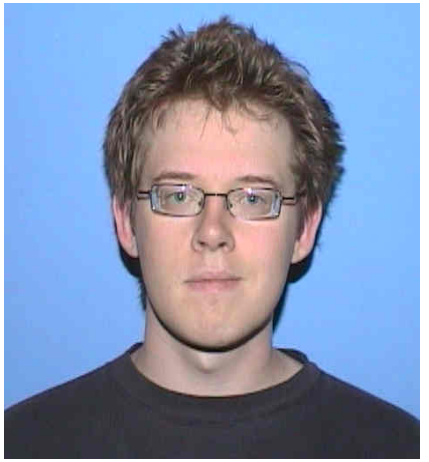
- Data Quality looks good (100%).
- Feature Extraction code update in progress (O'Grady & Kaminski)
  - Current DIRC code takes 200 μs per event with bad background.
  - This limits us to 5kHz datataking which causes a highly nonlinear response of deadtime, exacerbated by the higher L1 trigger rate in run 6.
  - Streamlined DIRC code will take 100 μs at most per event with bad background.
  - Should be ready for implementation soon.
- Modified Fastmonitoring so we can now see which ROMs are hitting the feature extraction limits which allows us to better disentangle background and noise problems since there are some noisy channels in sector 6.

Status of Spares

- DFBs: 168 in the detector, 9 good spares, 8 under repair in France
- DCCs: 12 in the detector, 4 good spares, 1 under repair in France
- FEE Crates: 12 in the detector, 2 good spares
- FEE Fantrays: 12 in the detector, 2 good spares
- FEE Pss: 12 in the detector, 3 good spares
- HV Crate: 6 in the detector, 1 good spare (shared with DCH)
- HV Boards: 12 in the detector, 10 good spares, 1 under repair by Paul Stiles

Manpower

- DIRC Operations Manager
  - Emmanuele → Jose
- DIRC System Manager
  - Georges → Nicolas
- DIRC Commissioners
  - Brad → Justine
  - Alejandro → Rolf returns (for July - September)
- Thanks to the outgoing Operations Crew for their hard work!



Summary & Conclusions

- Current DFB problems are very minor and present no problems for datataking.
- Recovery from the May 1 water leak was successful.
- New Feature Extraction code should be ready to eliminate DIRC deadtime in a few weeks.
- Manpower situation good through the end of datataking in 2008.

The DIRC is fine!

Operations Minutiae

- April 20: Synch request error in ROM crate 0x40000 necessitated replacement by Chris O'Grady
- May 16: Three noisy electronics channels masked.
- High background measured by the DIRC scalers required intervention from the commissioners on
  - March 7, 13, 17, 21, 31,
  - April 23,
  - May 18, 31.
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Q2 Leak Recovery

Dew point history: