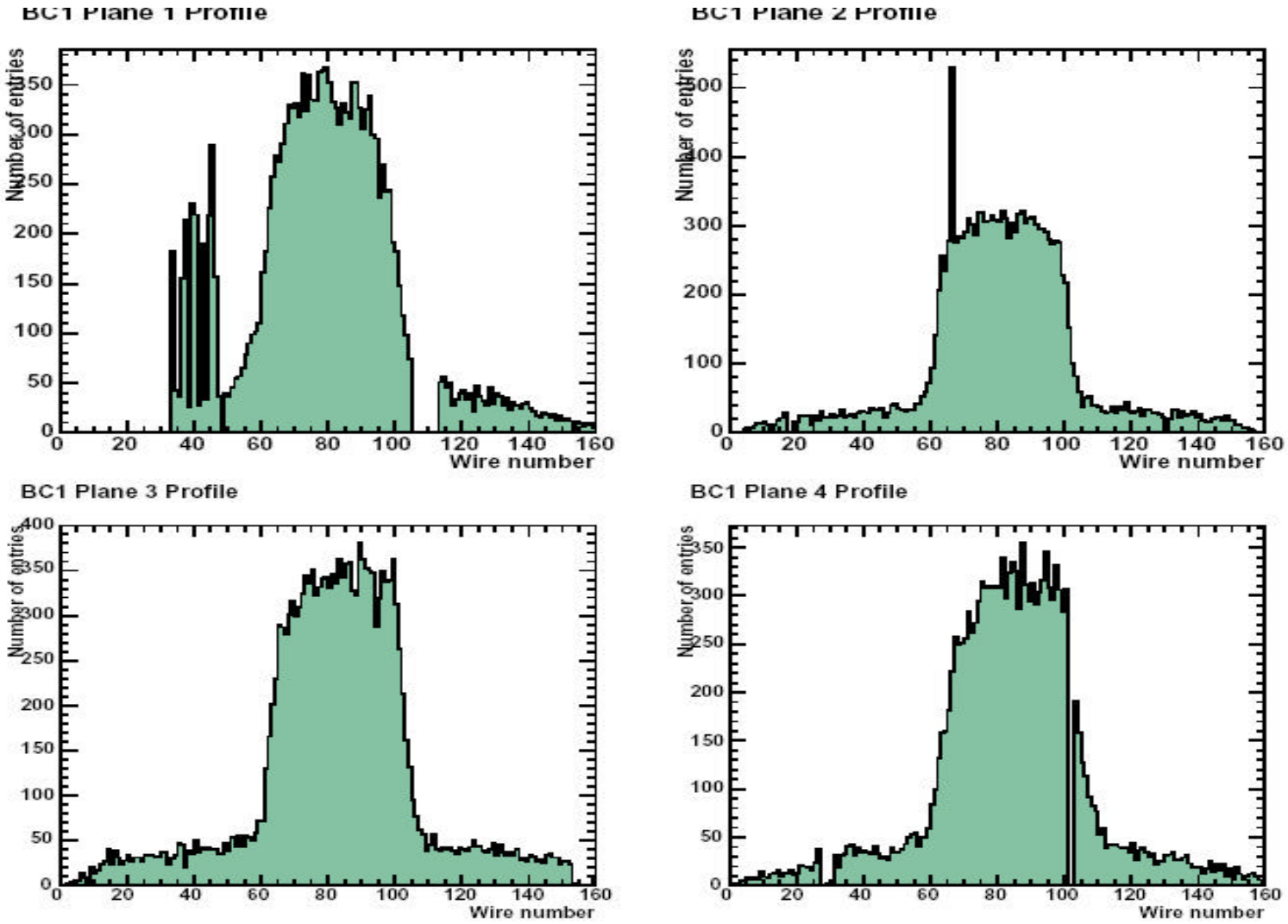
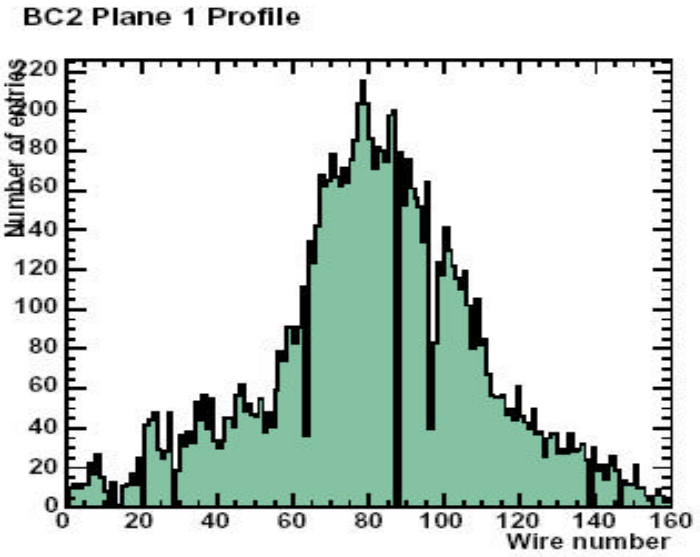
MIPP Status

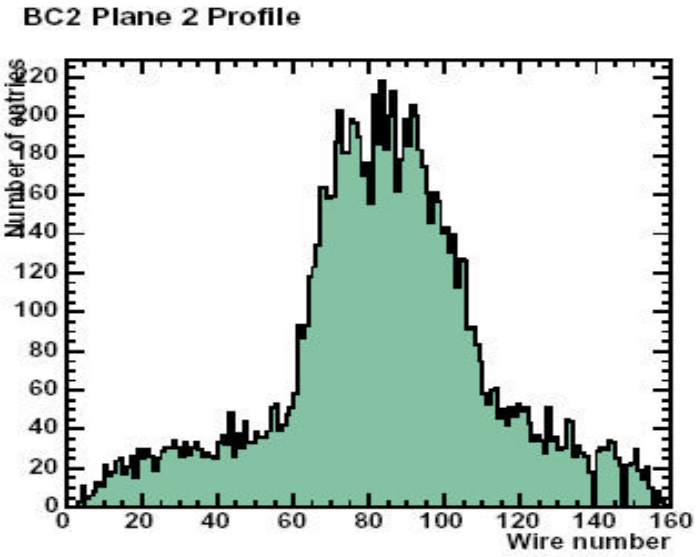
- Beam tuning started in earnest- MC7WC1,2 made to work. Beam not focused vertically. Dispersion issue.
- Beam chambers working. They have correct magic gas. Some bad channels fixed
- Drift chamber electronics cannot be turned on because of A/C not fully installed. In April, there was a hot day-Things got too hot.
- TPC DAQ in good shape- Gating grid driver not fully integrated-One broken anode wire- Will be repaired this week
- CKOV- In read out. Not yet flowing C4F10(Expensive gas)
- ToF in readout. Needs some HV cards replaced
- EMCal , Hcal - Working

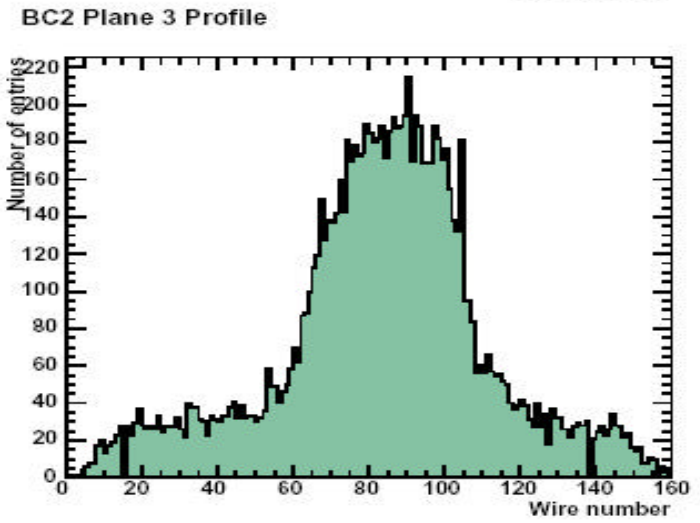
Beam chamber 1

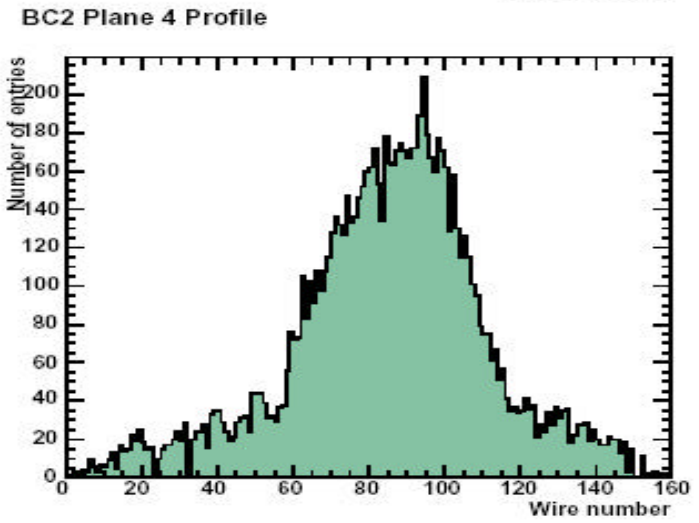


Beam chamber 2

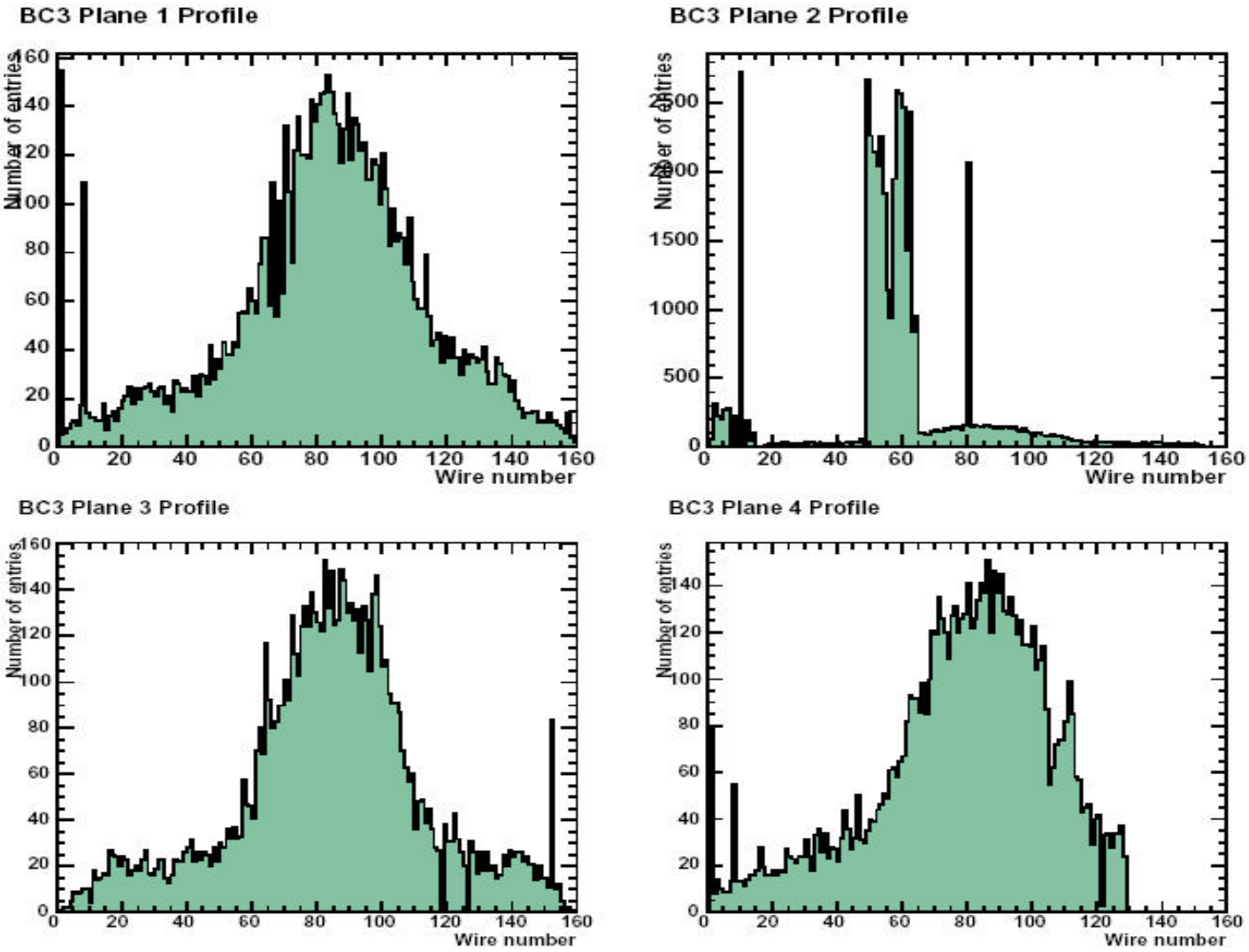




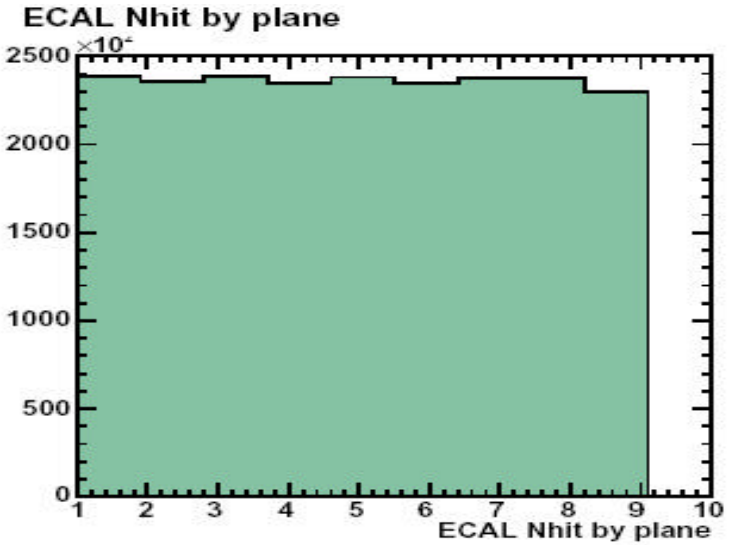


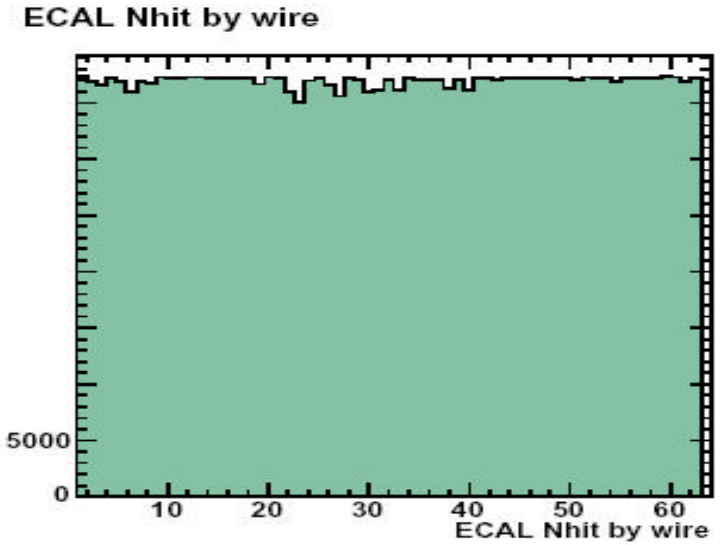


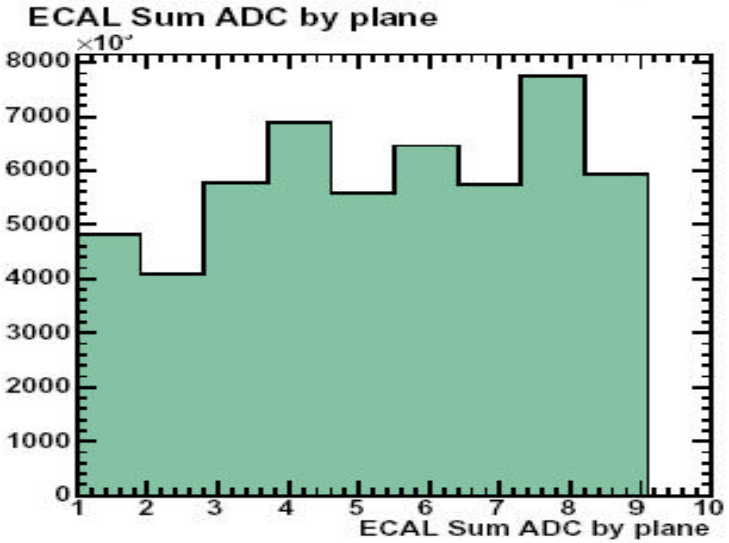
Beam chamber 3

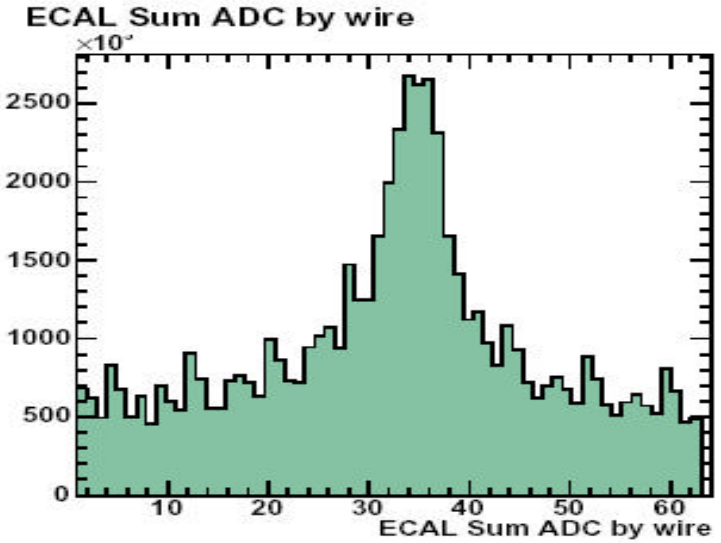


EM Calorimeter

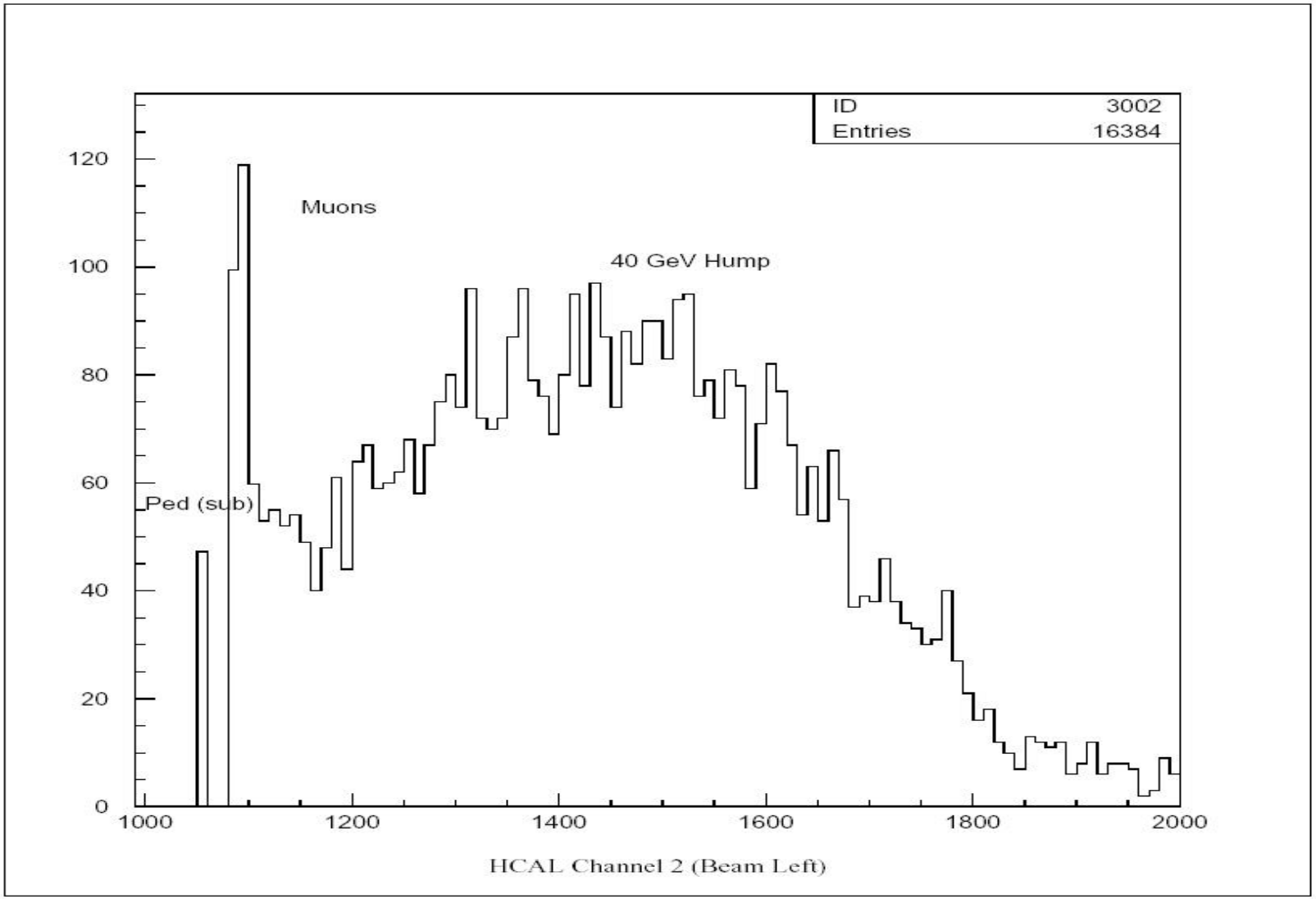








Hadron Calorimeter - No calibration yet



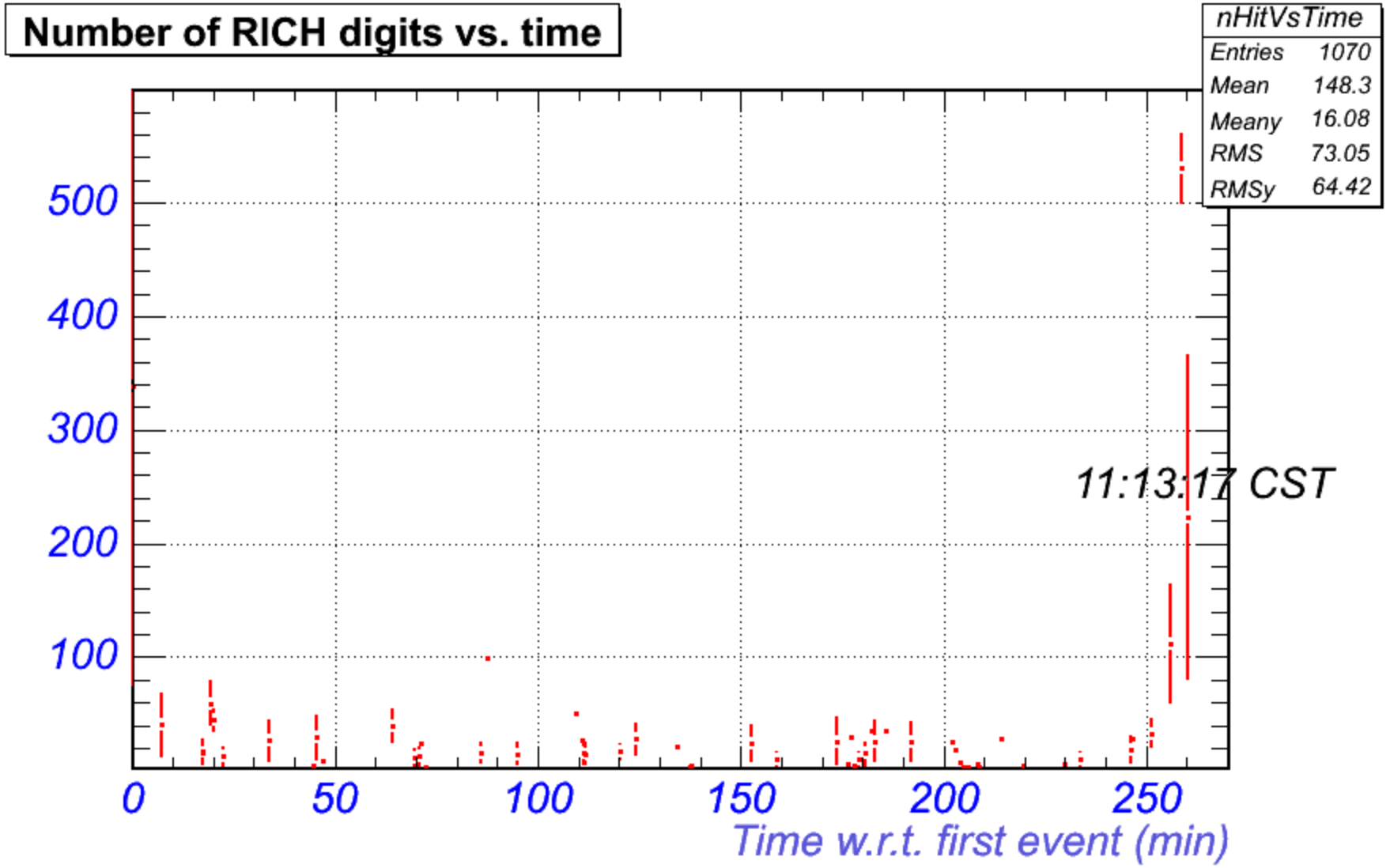
Status of MIPP RICH

- On Sunday March 14,2004 MIPP had a smoke alarm. Three smoke detectors had tripped. The one the RICH, Relay Rack 18 and Relay Rack 20.
- Upon further investigation, it was found that the cause of the smoke was in the RICH PMT box.
- We have established that inadequate cooling did not cause the accident per se.
- RICH interlock with HV functional. Temperature klixons recovered did function.
- Highest temperatures in box exceeded 266 degrees C.
- There was a source of ignition in the PMT box
- RICH readout system is OK.

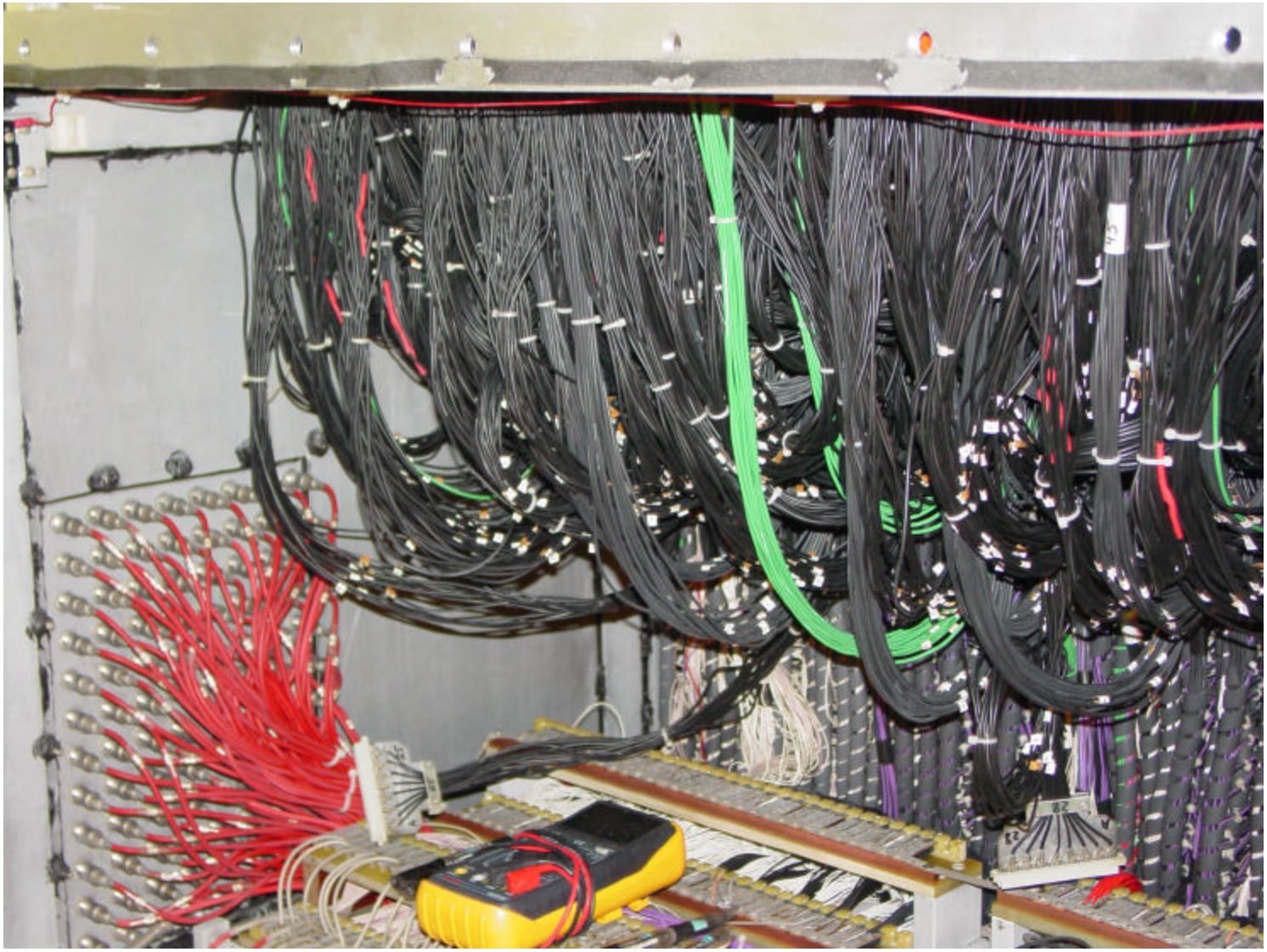
RICH history

- The HV was turned on March 2, 2004. All HV was set at 1400 V to begin with. This was 50-500 V below nominal.
- There was some sort of power glitch a week later. May be unconnected.

- Last event taken on March 14, 2003 at 11:13:11 AM.


Number of RICH digits vs. time
nHitVsTime
Entries 1070
Mean 148.3
Meany 16.08
RMS 73.05
RMSy 64.42
11:13:17 CST
500
400
300
200
100
0
50
100
150
200
250
Time w.r.t. first event (min)

MIPP RICH



RICH Pictures

Rich Panel Report

[1] The panel was jointly appointed by the heads of the Fermilab Particle Physics Division PPD and the MIPP experiment. Its membership is as follows W. Baker (MIPP/SAFETY/FNAL) P. D. Barnes,Jr. (MIPP/LLNL), P. Cooper (SELEX/FNAL), G. Feldman (MIPP/Harvard) N. Graf (MIPP/Indiana) J. Kilmer (SELEX/MIPP/FNAL) A. Lebedev (MIPP/Harvard) M. Messier (MIPP/Indiana) S. Orr (SAFETY/FNAL) J. Priest (SAFETY/FNAL) R. Raja (MIPP/FNAL) E. Ramberg (SELEX/FNAL) K. Schuh (SAFETY/FNAL) S. Seun (MIPP/Harvard)

- Findings- Fire not related to air getting hot by itself(klixon evidence). One of the bases caught fire.
- Two kind of tubes being used-
  - » FEU-60 (made in Russia) 70 columns
  - » R-760 Hamamtsu (Japan) 19 columns
  - » Each column has 32 tubes
- Both bases were tested for flammability

Fire tests

- 3 tests on both bases
- 1 with flame, 1 with piezoelectric spark
- Third with only Hamamatsu
  - » Picture shows 25 seconds into burn

Fire tests

- Enough energy was present in some form to ignite the FEU-60 base
- FEU-60 base burned rapidly to consumption in 2-3 mins.
- FEU-60 base dripped its burning material enough to spread the fire
- Hamamtsu R-760 base does not burn by itself
- Fire duration was most likely 3-10 mins

Panel Recommendations

A. Fire Prevention

- Reconstitute the klixon interlock. Replace the burnt-out klixon. This will prevent accidents due to overheated air.
- Inert the atmosphere in the pmt box by replacing the air with nitrogen. Monitor the oxygen content and report it to APACS.
- Detect current surges in the HV due to sparks and abort the HV supply output if sparks occur.
- Replace the flammable shrink-wrap around the FEU-60 tubes by a flame-retarded variety . In the process, reduce the risk of sparking and shorting in the base by applying a layer of insulating coating to the base (such as an acrylic conformal coating that can be sprayed on).

Panel Recommendations

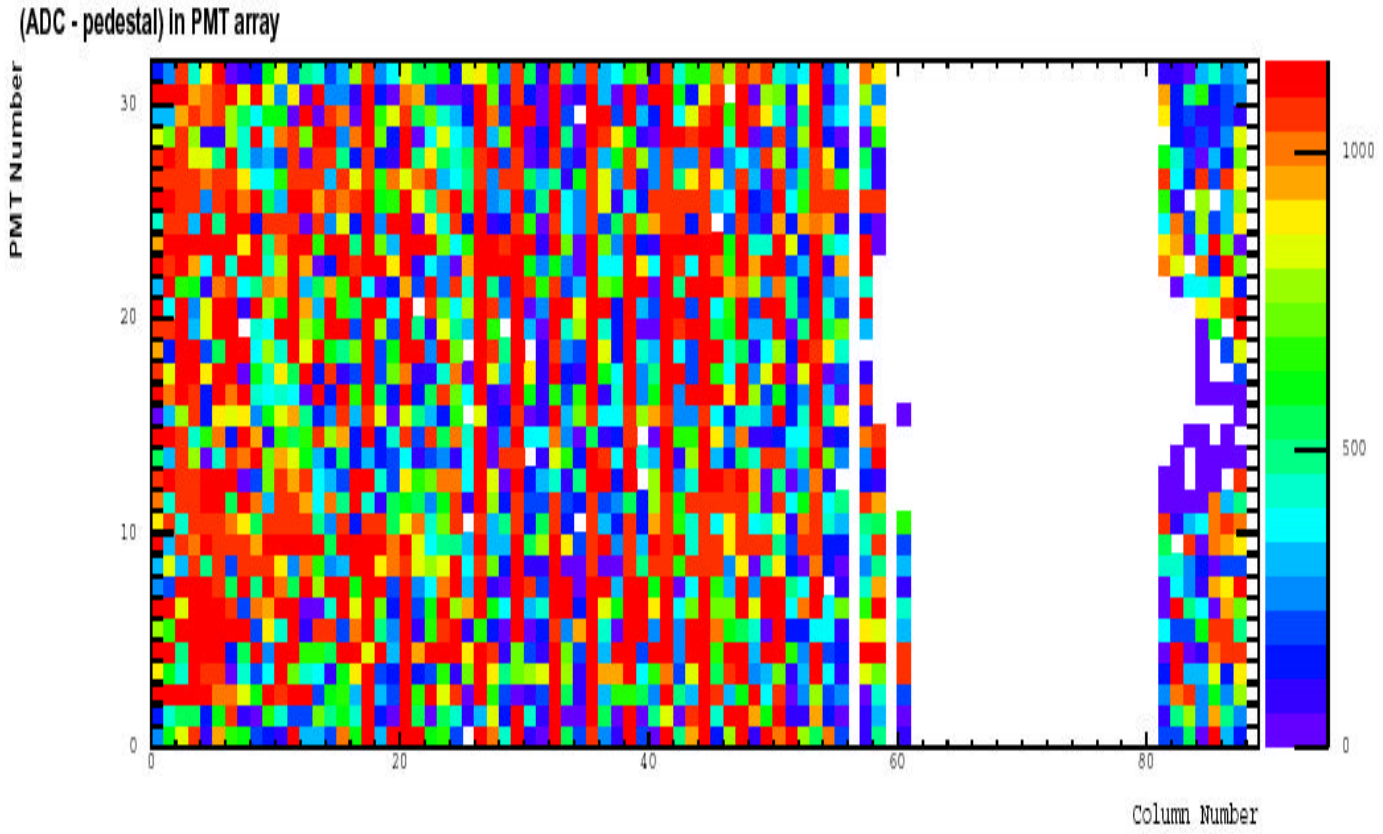
B. Monitor and abort

- Monitor the temperature in the pmt box at various locations as well as in the zener box and report it to APACS.
- Install a compact Very Early Smoke Detection and Alarm (VESDA) system in the pmt box. Feed its output to APACS.
- Have APACS abort power to the HV if either the temperature, or the VESDA system or the oxygen monitor is off limits.

Actions

- PPD has given us green light to implement panel recommendations
- RICH front end moved to Lab6
- Clean up of burnt tubes proceeding. Should be completed today. ES&H analysis indicates some HCl in the soot. None of it affects any circuitry. Protective geer being worn.
- Tube testing completed-Good news. Tubes not in the immediate fire have survived. Tube bases in the fire were burnt. Tubes in the fire (without bases) need testing. We can run with the chains that have survived.

Tube testing results



RICH plan of action

- Phase 1- With surviving tubes, deploy as soon as the panel recommendations are in place 3-4 weeks.
- Phase 1.5 –Recover good tubes (with good bases whose cables have been damaged and make new columns). Insert these as they become available.
- Phase 2- Build new bases for good tubes (with bad bases) and buy new tubes. (Longer term).

Possible causes of fire

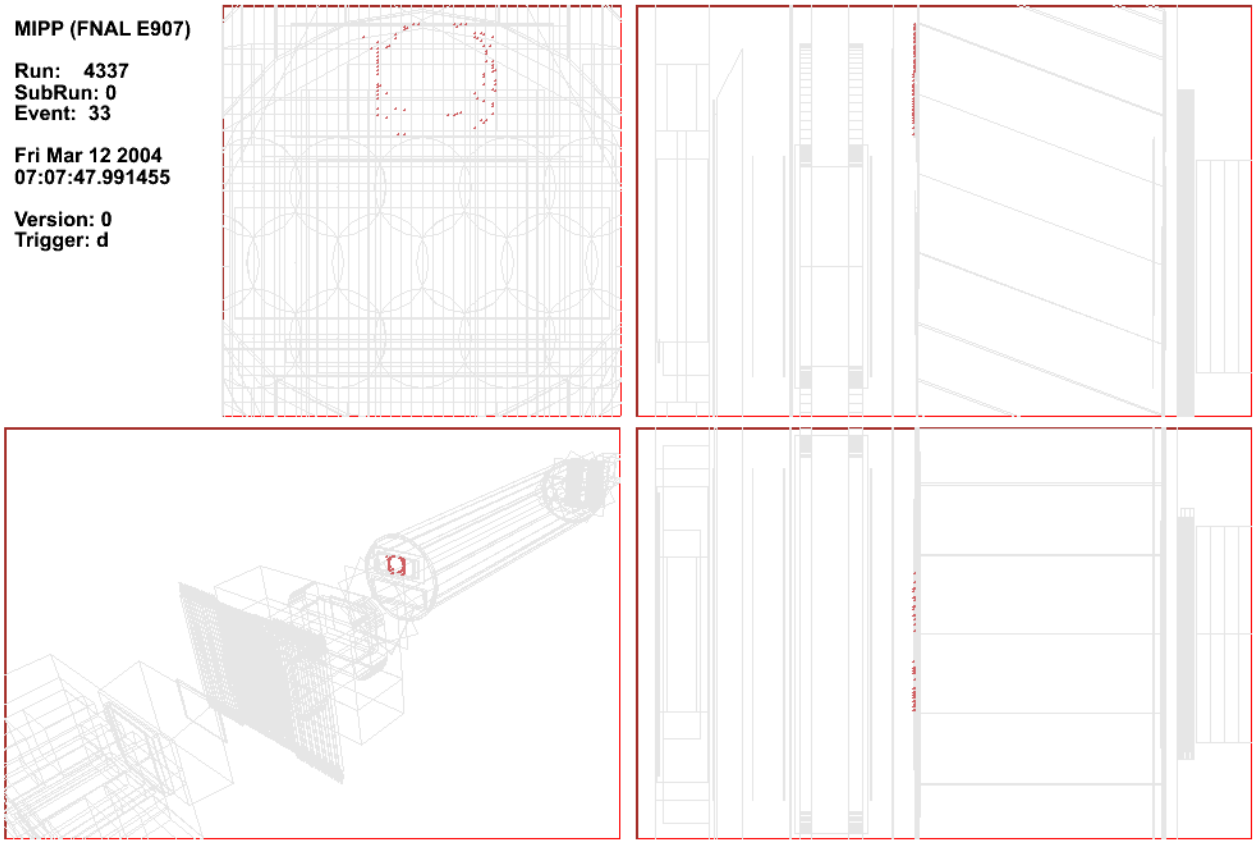
- phototube sparking– Experimented with a sparking tube. Sparking happens in the tube. Started off in pink and rapidly, as more air got in went into blue. Not in contact with flammable tube covering

- Base shorting- 10 one-Megaohm resistors in base chain. If we short it so that HV is across 1 Megaohm only, It emits a huge spark. Resistor dies only after 3 such assaults.
- Panel recommendations will handle both these contingencies.

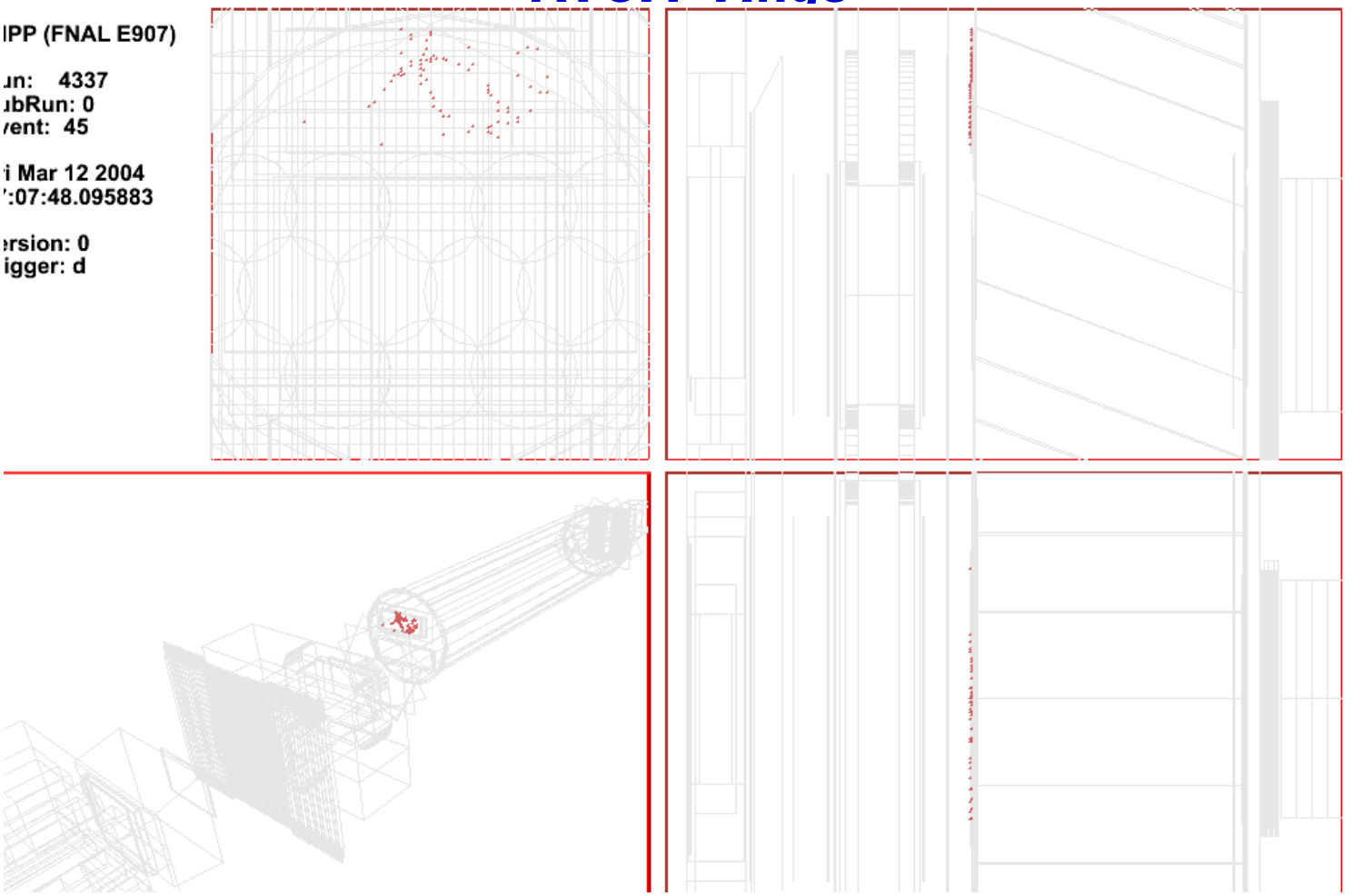
RICH HV supplies

- Current trip limits 3x100mA,2x140 mA. Trips work.
- Interlocked with RICH
- Interlocks work
- Put out 900Watts for ~3000 phototubes

RICH was being read out successfully. We see rings.



RICH rings


IPP (FNAL E907)
un: 4337
ubRun: 0
vent: 45
i Mar 12 2004
':07:48.095883
ersion: 0
igger: d