Summary of recent DAQ activities (January 31st 2010)

TOF and Trigger Cabling

1) Confirm the problem with TOF counters observed after the CAMAC crate failure came from a mistake in the cabling of the TOF discriminators. Every second cable was plugged in with the wrong polarity. Problem fixed.
2) Simplify the cabling to avoid most of the single twisted pair connections that made the after CAMAC crate replacement so cumbersome. The problem is only partially solved. Final solution requires some hardware (one special board and 3 special cables) that will be produced in Geneva and installed after the current user run. There was a CAMAC NIM-ECL board used for the distribution of the Particle trigger signal to all TOF TDCs and also for the ECL conversion needed by the DAQ scalar (VME V830). The latter has been moved to another NIM-ECL converter located in the trigger NIM crate and is now connected to the VME board with a standard 16 ch flat cable instead of individual twisted pairs. That operation was also required for the integration of the new Luminosity Monitor Counters.
3) Integrated the Luminosity Monitor Counters (LMC) to the DAQ. The three signals (LMC-12, LMC-23 and LMC-1234) have been connected to the DAQ scalar (channel 09, 10 and 11 respectively). LMC-1234 has also be connected to the TV monitor scalar (channel 11)
4) Optimize trigger NIM crate Layout for cleaner cabling.
5) Correct a cabling error introducing a large jitter on the particle trigger signal sent to ch0 in the TOF TDCs.
6) Label signal cables, the NIM boards in the Trigger NIM crate and the TOF discriminators in the CAMAC crate. A detailed rack layout drawing is under construction.
7) Reshuffle the connections to the DAQ scalar, the TV monitor scalar, TDC0 and TDC5 in order to have the same channel mapping wherever possible. The following convention now applies for all these boards

    Ch 0 Particle Trigger
    Ch 1 Particle Trigger Request
    Ch 2 GVA_1
    Ch 3 TOF_0
    Ch 4 TOF_1
    Ch 5 reserved for TOF_2

   The full channel mapping of the each unit can be found at the end of this document.

DAQ

1) Backup miceacq04, miceacq06 and miceraid1 system disks with the valuable help of James and Henry. A full disk image has been backed up for each machine. They are saved on miceraid1 RAID array for miceacq04 and miceacq06 and on micestrore for miceraid1 sdb disk.
2) Installation of CentOS 5.4 on 3 new PCs: miceraid2, miceacq07 and miceacq08. Installation of DATE v6.49 and development of an automatic installation script. Installation of the CAEN VME-Pci interface on miceacq07 and miceacq08. This is the first step towards the upgrade of the DAQ

PCs with the standard MICE OS installation and of the DATE release. The next step is to run a copy of the current DAQ system on the new PCs, validate it and then upgrade the PCs presently in use but using 3 different OS (miceacq04 for TOF, miceacq06 for KL and miceraid1 for the Event builder). If all goes well, the new deployment will happen at the end of this user run.

3) The network configuration of all the DAQ pcs have been updated according to the recent network modifications: New DNS server (miceeecserv), new domain path (micenet.rl.ac.uk) and new Network Time Protocol server (miceserv1)
4) Rehearsal of the DAQ in preparation of the next run. The DAQ is operational. The Spill Gate Timing and length will have to be adjusted when the beam is available.

Documentation

1) A keypassX encrypted file containing the users and root passwords for all the DAQ machines has been made available on google Docs for all the Mice Online Group members. A detailed instruction document for CentOS installation and configuration is also available together with the installation scripts for DATE and CAEN VME-PCi Interface.

Miscelaneous

1) Repair faulty fan tray with the valuable help of Willie and Craig. The fan tray is now available as spare.

TV Monitor Scalar Channel mapping

Ch 1 Particle Trigger
Ch 2 Particle Trigger Request
Ch 3 GVA_1
Ch 4 TOF_0
Ch 5 TOF_1
Ch 6 reserved for TOF_2
Ch 7-10 N/C
Ch 11 LMC-1234
Ch 12 100 kHz Clock (This allows displaying the duration of the DAQ Spill Gate (100 counts = 1 ms)

DAQ Scalar Channel mapping (VME V830)

--- First Cable (bottom) --- (Connected to the new NIM-ECL board in the Trigger NIM crate)

Ch 0 Particle Trigger
Ch 1 Particle Trigger Request
Ch 2 GVA_1
Ch 3 TOF_0
Ch 4 TOF_1
Ch 5 reserved for TOF_2
Ch 6 Fermilab BPM 1 (Logical OR of the coincidence of the 2 layers)
Ch 7 Fermilab BPM 2 (Logical OR of the coincidence of the 2 layers)
Ch 8 LMC-12
Ch 9 LMC 3-4
Ch 10 LMC-1234
Ch 11 N/C
Ch 12 1 MHz Clock (This allows measuring the duration of the DAQ Spill Gate (1 count = 1 μs)
Ch 13 N/C
Ch 14 N/C
Ch 15 N/C

--- Second Cable (top) --- (this should be cross checked, left unchanged since last run)

Ch 16 TOF0 Coincidence S1xB1
Ch 17 TOF0 Coincidence S2xB2
Ch 18 TOF0 Coincidence S3xB3
Ch 19 TOF0 Coincidence S4xB4
Ch 20 TOF0 Coincidence S5xB5
Ch 21 TOF0 Coincidence S6xB6
Ch 22 TOF0 Coincidence S7xB7
Ch 23 TOF0 Coincidence S8xB8
Ch 24 TOF0 Coincidence N1xT1
Ch 25 TOF0 Coincidence N2xT2
Ch 26 TOF0 Coincidence N3xT3
Ch 27 TOF0 Coincidence N4xT4
Ch 28 TOF0 Coincidence N5xT5
Ch 29 TOF0 Coincidence N6xT6
Ch 30 TOF0 Coincidence N7xT7
Ch 31 TOF0 Coincidence N8xT8

TDC0 Channel mapping (VME V1290A) (this should be cross checked)

Ch 0 Particle Trigger
Ch 1 Particle Trigger Request
Ch 2 GVA_1
Ch 3 TOF_0
Ch 4 TOF_1
Ch 5 reserved for TOF_2
Ch 6 N/C
Ch 7 N/C
Ch 8 N/C
Ch 9 N/C
Ch 10 N/C
Ch 11 10 MHz Clock (This allows measuring both the TDC active window width and the TDC resolution)
Ch 12 N/C
Ch 13 N/C
Ch 14 N/C
Ch 15 N/C

TDC5 Channel mapping (VME V1290A) (this should be cross checked)

Ch 0 Particle Trigger
Ch 1 Particle Trigger Request
Ch 2 GVA_1
Ch 3 TOF_0
Ch 4 TOF_1
Ch 5 reserved for TOF_2
Ch 6 N/C
Ch 7 N/C
Ch 8 Fermilab BPM 1 Horizontal
Ch 9 Fermilab BPM 1 Vertical
Ch 10 Fermilab BPM 2 Horizontal
Ch 11 Fermilab BPM 2 Vertical
Ch 12 N/C
Ch 13 N/C
Ch 14 N/C
Ch 15 N/C