Primary System Managers' Concerns & Recommendations for Instrumentation

S. Childress, C. Moore

2003 Priority Tasks

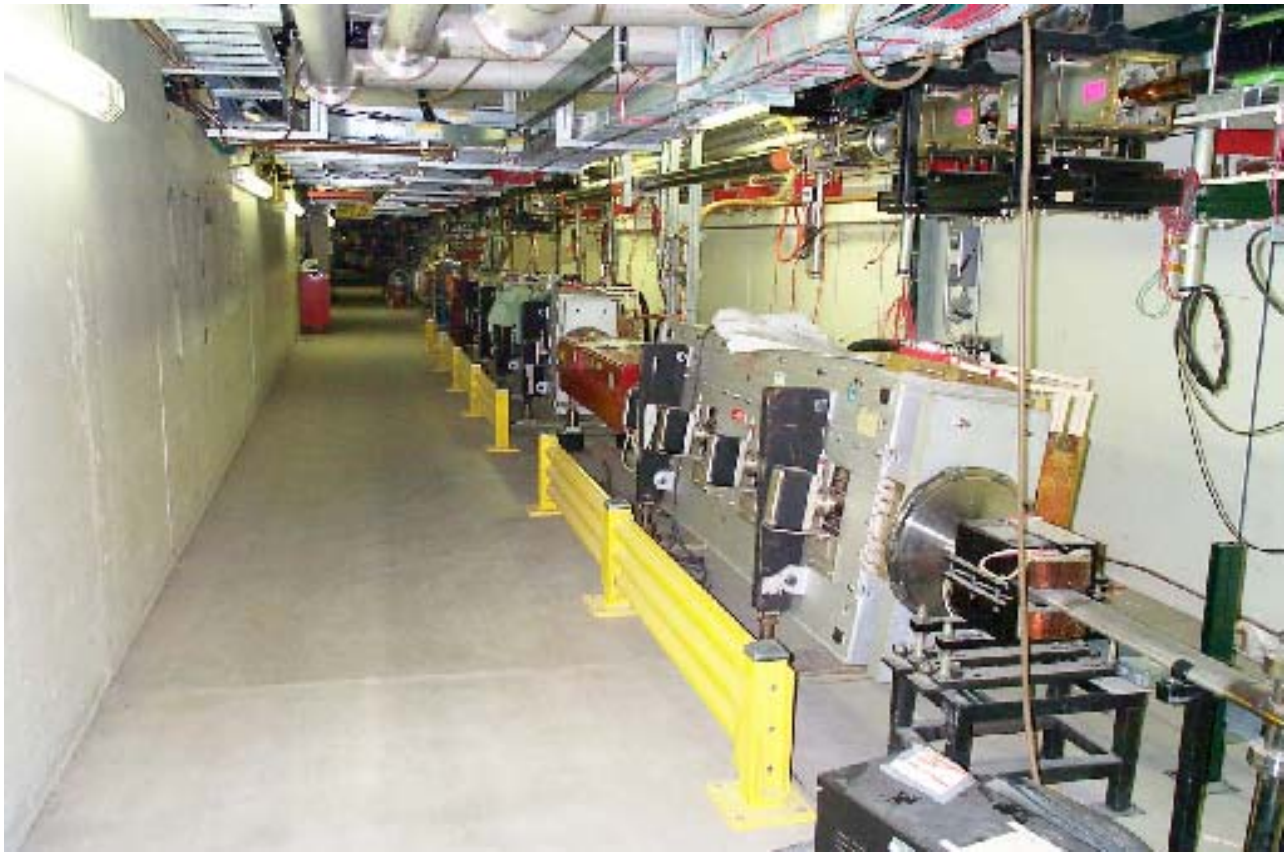
Our top (critical path) priorities for this year to date have been to accomplish:

- Readiness for the ongoing 2003 accelerator system shutdown (magnets, magnet stands, installation preparations, installation of 28 magnets, MI area cabling and LCW)

- Beneficial occupancy of MI-65, target hall and pretarget enclosures. Initiation of pretarget magnet installation.

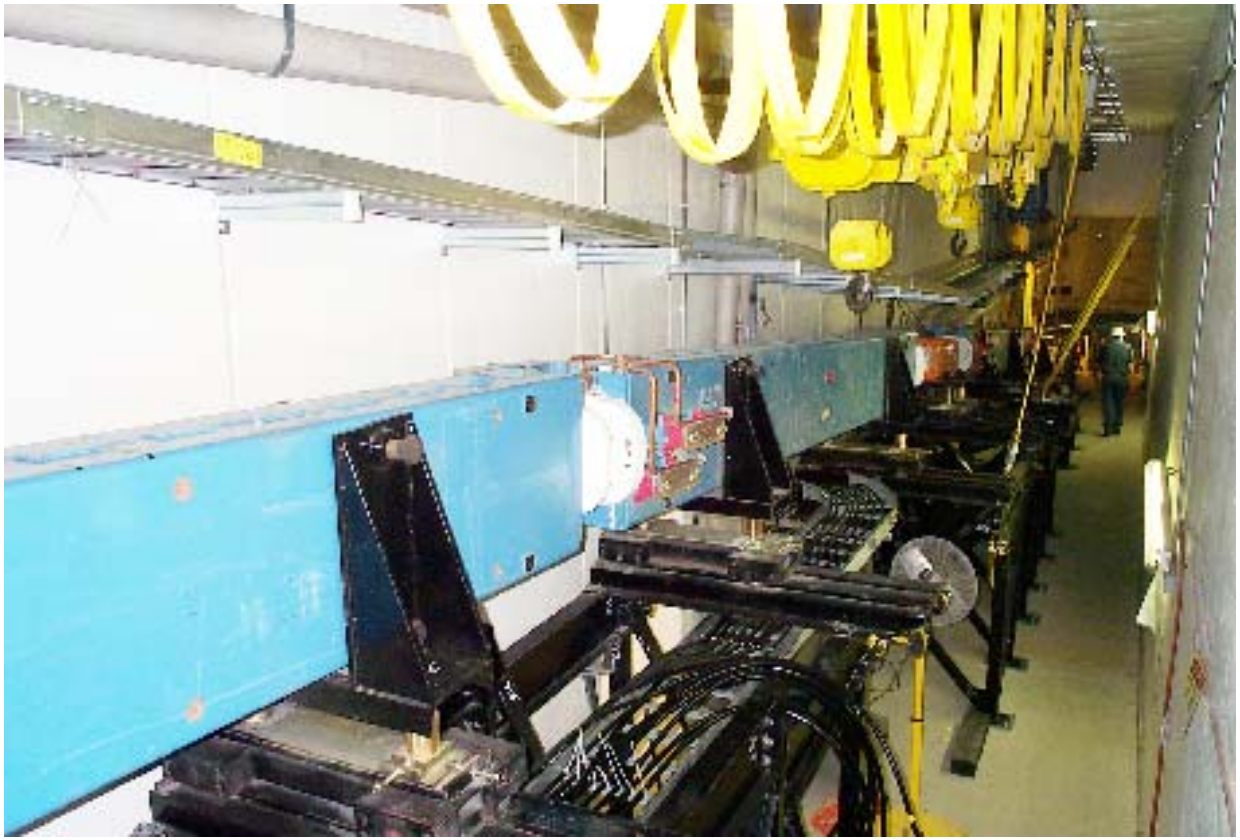
- **THESE HAVE BEEN LARGELY ACCOMPLISHED** & remaining '03 Shutdown tasks are well on track.

NuMI MI-608 Region



- **NuMI Extraction Lambertsons & Transport Magnets**

NuMI Extraction Enclosure



- V108 Down-bend Dipoles

Summer 2004 Shutdown

- **For the upstream half of the NuMI primary beam: MI-60 and Extraction Enclosures, our ONLY work access is through the Main Injector / Recycler tunnel – with severe restrictions on access options.**
- **Magnets are in – but we still must install correctors, all instrumentation, vacuum system, LCW hookup, much cabling, alignment network and extensive testing.**
- **In these Enclosures, we must be fully beam ready at the end of the Summer 2004 Shutdown! Failure to accomplish this puts in serious jeopardy the NuMI DOE project schedule**

Instrumentation is now Critical Path

- For the primary beam system, instrumentation has now become the critical path
- Progress is good for loss monitors, beam toroids, BPM detectors, profile monitor scanners
- BPM electronics procurements are underway. A significant effort is needed by BD/Instrumentation staff to construct the NuMI system. We are looking to benefit greatly from solid experience with the recent Recycler BPM electronics
- Our major concern – is profile monitor readiness. We have great reservations regarding timely convergence of the current effort to meet the schedule we have to meet

Profile Monitor Options

- The UT-Austin effort began in summer 2002, with schedule milestones:
  - Development of prototype SEM - Feb. 2003
  - Begin production chamber construction – June 2003
  - Installation in NuMI tunnel – July 2004
- Current status is still with development of the first complete prototype. July 2004 is now less than 9 months away. Work is being done by a very good group – but as with many development efforts learning paths are often steep. Many efforts have taken x 2-3 longer than anticipated
- The profile monitors are truly essential, both for initial NuMI commissioning and sustained operation

Profile Monitor Options (cont)

- For monitors in the upstream half of the NuMI line, where we MUST be ready this summer, with robust profile monitors, we believe we must now use FNAL built devices (R. Webber presentation)

- For the downstream half of the NuMI line the constraints are somewhat different:
  - We have continuous access option, impacting only NuMI
  - Ti foils are clearly the better choice for targeting profile monitors, where a much higher duty cycle of use is desirable (ideal is 100%, achievable is ??)
  - A few months – but only a few – of schedule float is possible here
- The initial Ti foil prototype has not yet been beam tested, due to vacuum chamber problems. It is currently being installed in the Mini-BooNE beam for November beam tests

Profile Monitor Options (cont)

- **Some other concerns:**
  - **there is currently not compatibility in SEM wire/foil mounting between FNAL and UT-Austin devices. This makes more difficult the adaptation of Ti foils to more general BD usage, including the upstream half of NuMI line – at 2005 shutdown opportunity after significant beam experience is obtained**
  - **Also, vacuum chamber stand mounts are very different. (We currently have engineering design on hold here for all of the beam-line). The best technical choice would be to maintain vacuum chamber compatibility**