

AD/TD Joint Projects Meeting
Thursday, 18 March 2004, 9:00 AM
Club 157

Present: Pushpa Bhat, Paul Czarapata, Hank Glass, Keith Gollwitzer, Dave Harding (scribe), Gregg Kobliska, Eric Prebys, Jeff Spalding, Steve Werkema, Victor Yarba

AGENDA

Reports of notable achievements, problems, and issues
NuMI magnetic shielding - first two magnet sets shipped
Ceramic beam tube vendors
Electrostatic separator conditioning
Slim chance of getting ORBUMP magnets for 2004 shutdown
March 2005 along with one WQB

M&S task numbers, funds - now what?

New jobs
Proton Source Improvements Plan - RF, trim magnets, ...

Continued refinement of project list
Any changes in priority, urgency?

Notable Achievements or Problems

NuMI magnetic shielding

The first two sets of magnetic shielding for NuMI dipoles shipped for installation in the tunnel during the current shutdown. That was a NuMI milestone.

Ceramic beam tubes

Gregg Kobliska and Chris Jensen were visited by the two potential vendors of long ceramic beam tubes last week. One vendor is interested, but leery of being able to hold the tolerances. The other would propose to make the tube in three sections and braze them end to end. TD proposes to order appropriate tooling and six tubes from the first vendor, at a total cost of about \$36K. This would be on a "best effort" basis, with Fermilab accepting whatever they are able to produce. We will work with them closely, trying to get the best possible product. We do not think that the second vendor's pieced together solution will work, but need to double check with Chris. The joints at the end are made by brazing on a flange, with the work done by another vendor.

We would also buy the short tubes for the Booster and Debuncher from the same vendor, though those would be separate orders. Keith Gollwitzer confirmed that the Debuncher beam tubes are in three pieces, one for each kicker module. Both Booster and Debuncher tubes are sufficiently straightforward, with their shorter lengths, that Gregg foresees no difficulty in getting those in time for this year's shutdown and at a modest price.

Electrostatic separators

Jeff Spalding reported from yesterday's Tevatron electrostatic separator meeting. The Tevatron electrostatic separator work has two components, and there seems to have been

some confusion about the focus and the relative priorities. The immediate need is that AD wants to install five or four additional separators during this year's big shutdown, plus move an existing separator. The other need is R&D work to push the operating voltage to higher levels for future improvements. The former effort is in trouble, while the R&D is progressing well, perhaps at the expense of the R&D. The current operation is housed at NWA, while a new facility is being prepared at MP9.

The plan for this year's installation was to draw from the four old spares and the four spare devices built about two years ago. The old ones were conditioned twelve years ago and kept under vacuum since then, but they have been moved around and never retested. The newer ones were not conditioned at the time they were built. One of the new ones has been opened up for R&D. A second new one did not reach anywhere near the desired 150 kV operating voltage and proved to be very dirty inside. A third new one reached 150 kV, but failed when they tried to push it to 180 kV, and now won't hold 150 kV. The other five devices have not been tested. The success rate suggests that finding five, or even four, good devices for this summer will be difficult. It might even be difficult to find a single good device if one of the operational devices fails in service.

It will be about two months before the MP9 facility is ready. A new clean room is being procured. Shielding blocks must be cleaned up and a cave built. Interlocks need to be designed and installed. This is clearly needed for the R&D work, but we must make do with NWA until then. TD will be hiring two term technicians to help with the R&D work.

A significant amount of work must be done at NWA to provide a modestly clean work area, including replacing torn HEPA filters, addressing flaking rust from an assembly table, and so forth. Work is inhibited by the lack of a functioning crane, forcing reliance on a forklift to move heavy objects. AD will put on a push to get that cleaned up. A preliminary test on each of the remaining separators needs to be done at about a week each to assess their status. This will be some combination of AD technicians and, perhaps, a cleaning contractor. TD can provide some additional intellectual effort if it would be useful. AD will be reviewing whether there are any helix solutions that use even fewer additional separators.

ORBUMP schedule

From a draft schedule, it has become clear that the chance is slim of finishing the new ORBUMP system in time for this year's shutdown. Finishing the magnets by the end of the calendar year may be possible, but they will then still need extensive testing time. A new power supply is also being built, and it is hoped that it will be installed during the shutdown. The plan is to build a whole new girder that can just be swapped in for the old one fairly quickly. Dave Harding suggested that March 2005 might see both the ORBUMP and one WQB wide aperture quad ready for installation in support of the NuMI program and justify a one-week shutdown then.

M&S Task Numbers

Jeff Spalding had received a long lecture on the Laboratory accounting needs, but still finds the requirements confusing. The rest of us have no hope. However, he thinks that the situation is workable, especially since an AD signature can be required on a TD task number, answering one of the major concerns. Dave Harding will start the wheels

turning to get the appropriate task numbers set up in TD. The first trial will be the M&S for the spare Booster extraction C magnet. Once the TD number is in place, Eric Prebys will work with Harlan Dick to get the appropriate budget authority transferred.

New jobs

The Proton Source Improvement Plan will almost certainly include a new trim magnet system. This will include horizontal and vertical trim dipoles, as well as normal and skew quadrupoles, all able to control the beam up the ramp rather than just at injection. New power supplies and controls will be needed along with the magnets.

One possibility is a complete new RF system. Rather than replicating the two prototypes, which are scaled up versions of the current cavities, Dave McGinnis wants to see a brand new design employing more modern technology. The cost of such a system would use the entire project budget, precluding even new trim magnets, so its choice is unlikely, but a design is needed to allow a sound decision. (One option is to just build new power amplifiers.) TD will design the new cavities. Bill Pellico will provide the specifications.

Priorities

No issues at this time.

**Next Meeting: Wednesday, 31 March 2004, 10:30 AM
Hermitage, Industrial Center 2 East Video Conference Room**