

FERMILAB ACCELERATOR TEST FACILITIES REVIEW

MARCH 17, 2015

The review was called by Timothy Meyer, Fermilab COO, to explore and advise on Fermilab's accelerator test facilities including the validation of its budget plan. These facilities are located in both the Technical Division and the Accelerator Division. The Charge to the Committee, the Agenda, and the Committee Membership are below.

REPORT OF THE COMMITTEE

- We were impressed with the large variety and high quality of work that is carried out under this B&R code. It covers a large range of accelerator science and technology from the very fundamental to the most practical.
- There were many examples of the reuse or repurposing of equipment to save cost and add capabilities.
- The Fermilab test facilities contain many unique capabilities that are valuable to the Office of Science in general and to the Office of High Energy Physics in particular.

Addressing the Charge Questions:

1. Comment on the budget and cost estimates presented for the primary activities. Do they seem fair and reasonable?

The cost estimates were reasonable. They were detailed and, within our experience, underestimated in some areas such as the cost of cavity processing and beam facilities. Estimates were based on previous year actuals and took into account escalation and added scope.

The ATFP B&R code has been underfunded such that the facilities in the Accelerator Division are short about \$700k in a planned budget of \$5.1M and the Technical Division is short about \$4M in a planned budget of about \$12M. (Budgets are fully loaded.) We believe that this shortfall as presented will have serious consequences for the Program, affecting items of national priority.

2. Suggest relative priorities and/or trade-offs within the ATFP, taking into account the cross-cutting nature of the facilities and operational activities.

It is difficult to rank with any precision the large variety of ATFP programs. We noted many compelling R&D items. However, we conclude that three areas were presented as having very high priority: LCLS II for being an on-going, billion dollar project of considerable significance to the Office of Science; PIP II, and LARP/US-HiLumi are projects at FNAL (in collaboration with other laboratories) which are highly ranked by

the P5 report. These three projects will be severely impacted by the funding shortfall noted above.

3. Advise on strategies for supporting the program including considerations for engaging DOE.

The lab management may consider austerity measures in order to minimize the damaging consequences of the budget shortfall. For example, consider delaying work on programs of a lower priority other than the three high priority areas mentioned above.

The consequences of such austerity measures should be communicated to DOE to underscore the seriousness of this situation.

RECOMMENDATIONS

1. Compare estimates in areas mentioned above as actual accrue.
2. Prioritize planned M&S expenses for the rest of the year over the whole ATFP program.
3. We recommend that the lab management consider austerity measures across the laboratory in order to minimize the damaging consequences. At the same time, the lab management should communicate to DOE the seriousness of this shortfall.
4. Revisit use of CHL for Mu2e testing in the near term and use as PIP II refrigerator in the long term.
5. Revisit rehabilitation of space for assembly of PIP II spoke cryomodules.
6. Where possible, group upgrades of control systems and software to take advantage of commonalities.
7. Consider development for a formal process for evaluating the obligations incurred by the addition of new facilities.