

**Committee Report**  
**NSLS-II Conventional Facilities Advisory Committee**  
**May 8-9, 2007**

**Members Present:**

J. Harkins, LBNL  
K. Hellman, ANL  
M. Kirshenbaum, ANL  
J. Sanford, BNL (Ret) Consultant  
J. Stellern, ORNL

**Member Absent:**

Jerry Hands, LANL (Ret) Consultant

The following is the report from the Conventional Facilities Advisory Committee Meeting on May 8-9, 2007, for the NSLS II Project. Please congratulate your staff for their cooperation and hospitality during the review. We have listed below specific observations and comments from the committee.

*General:*

- The committee suggests that the committee chairman and the project CF division director agree in advance on a charge letter for the meeting and the project documents needed in advance. This will help maximize the effectiveness of the committee meeting. More interactive discussions may be the most productive way to take advantage of the CF Advisory Committee.
- It would be helpful for the committee to see the project responses to the previous committee report comments at the beginning of the next meeting.
- The tailoring approach to DOE CD approval is important to maintaining schedule. CD-3 approvals should be delegated to the Office of Science.
- The cost and schedule presented at this meeting will change due to project response to changes in the DOE funding schedule. The affects could be significant in changing the construction sequence.

*Scope:*

The scope for conventional facilities is appropriate but the project should focus on clear definition in some critical areas:

- A comprehensive programming document should be completed prior to proceeding with the major Title I design effort.

- The project will need to provide a comprehensive list of major equipment types, pumps, fans, etc. limiting the selection to specific grades of industrial grade products that will meet the vibration design criteria. Emphasis should be placed on large rotating equipment, such as fans and pumps, with a clearly defined list of acceptable manufacturers. Design criteria should be established to minimize the vibration affects of the high pressure systems.
- A provision for the accommodation and placement of user support equipment should be clearly defined. This equipment can be a major contributor to localized noise and vibration that can affect the beam line and those of neighboring users. The design should accommodate the placement of larger air compressors, vacuum pumps, water pumps, and fans. User exhaust fans should be placed outside the building envelope, they are typically roof mounted. Consideration should be given to the curved experiment hall roof. The future exhaust fans on the roof will require frequent access for maintenance.
- The location of the experiment hall mechanical rooms in the infield should be given additional consideration with regard to vibration. It was noted that some consideration is being given to moving this equipment into the Lab Office Buildings (LOB) located on the outfield wall which may provide better isolation of rotating equipment. This change may result in a construction cost savings. The consolidation of the LOB and the experiment hall air handling equipment could reduce costs.
- The responsibility for the design philosophy for areas like temperature control and vibration mitigation is being pursued aggressively by the BNL conventional facility staff. It is not clear how this effort will be applied to the design work by the A/E firm. Past experience has shown that the A/E will always proceed with the most conservative approach usually resulting in increased costs to the project. Resolving these costs can result in project delays due to extended negotiations and costly redesign efforts. The design philosophy should be established early on in the Title I effort and the decision process clearly defined.

#### *The CF and Project Team*

- The general structure for the CF team should be adequate to manage the work. Co-location of the team will be helpful to the project.
- There have been some good additions to the team like Ove Dyling from the CFN as CF Assistant Director for Design. The CFN team has good experience on a major line item that can be transferred to this project.
- The next major acquisition needed is the CF Assistant Director for Construction Management; this position should be filled in the near future with an experienced construction manager.
- The project team has a good relationship with the design AE, who also designed the BNL CFN project.

- The experimental facilities interface manager should be hired as soon as possible and both interface managers should part of the design review team.

### *Procurement Approach*

- The award of the AE Title I is awaiting CD-1 approval and a resubmitted proposal by HDR. The revised proposal and negotiation should be expedited to maintain the CD-2 schedule. The contract award is on the critical path so it should be awarded as soon as possible after CD-1.
- Currently there are no partial early design packages identified for the AE design, except site preparation. The project should determine if there are schedule advantages to issuing early concrete foundation/slab or structural steel design packages for construction. Structural steel delivery times at some recent projects have had excessive (up to 10 months from NTP to site delivery) durations for delivery.
- The success of using in house construction management with staff augmentation by a construction management subcontractor is dependent on the quality of the Assistant Director CF Construction Manager that is hired. The CM group should be on board in time to have a meaningful input on the constructability, construction sequence and schedule developed during Title I.
- Multiple contracts issued by BNL could complicate the procurement process, but if experienced procurement specialists are dedicated to the CF procurements it will aid in mitigating this risk. The project indicated that three experienced procurement specialists will be dedicated to CF contracts, this should be adequate. It is also possible that scope can be missed at the interfaces between contracts.
- It is suggested that the Ring Building contractors be prequalified.
- The project should detail and integrate the procurement schedule into the total project schedule.

### *Cost and Schedule Contingency*

- Specific contingency should be spread across the schedule based on the risks identified in the risk registry.
- The contingency appears adequate for the stage of the project, but the committee did not review the detailed specific risks and associated contingencies.

### *Cost Estimate and Schedule*

- Title I schedule is already aggressive so the team should consider reducing the number of Title I reviews that are scheduled.

- The CF team may want to review the durations for Title I and Title II design activities based on the actual design start date and negotiations with the AE. The construction schedule durations seem reasonable but recommend getting CM input as to whether this represents the most efficient execution of the construction.
- It is important to set up a procedural method of configuration control due to the serious impact that project changes can have on the CF cost and schedule.
- The schedule and estimate are well organized and are structured using the project WBS.
- The AE CF estimate should be traceable when brought into the BNL cost estimate and scheduling system.
- The CF group has set a fast pace effort with the AE in the preparation of the Title I and II designs and reports. When put into the context of the overall schedule the design supports the start of construction in Oct. 2009. With respect to the physical main ring features the initial task is Pentant 1. According to the schedule this is followed by Pentant 5, and the other three pendants to follow. The sequence and duration of construction of the other Pentants offer some flexibility that may be needed based upon the availability of funds. The first priority should be given to maintaining the schedule for Pentant 1 followed by Pentant 5. This preserves the objective of the installation of accelerator components in the booster/main ring injection region. There is some schedule flexibility in the construction activities of the remaining pentants (2, 3, and 4).