

Fourth Meeting of the NSLS-II Accelerator Systems Advisory Committee

July 16-17, 2008

Brookhaven National Laboratory

Charge

In the nine months since the last ASAC meeting, the NSLS-II Project has made much progress, including the approval of CD-2. The Accelerator Systems Division, in particular, has made good progress in several critical areas. The high precision alignment of magnets and support systems has been demonstrated. The lattice design has reached a high level of maturity, and only minor lattice changes have been needed since the last ASAC meeting. After a thorough revision of the specification of magnet strengths and field quality, the reference design of the storage ring magnets was completed. Magnet prototypes are now being produced by several vendors and are scheduled to arrive this year. The vacuum chamber design is well advanced. A prototype vacuum chamber is in production. There is considerable progress on other systems such as power supplies, RF low level control, electrical and mechanical utilities.

The start of construction of the NSLS-II building and the production of major subsystems of the accelerator (injectors, magnets, vacuum chambers) is scheduled to begin in 2009. Reviews for approval of CD-3 "Approve Start of Construction" are scheduled for Sep 30 – Oct 3 and Oct 20-24. According to the NSLS-II Final Design Plan, we expect, at CD-3: to be ready to proceed with the bidding for the construction of the ring building; that the overall design for the Accelerator Systems will be roughly seventy percent complete; and that the overall design for the Experimental Facilities will be about twenty five percent complete. The main purpose of this ASAC meeting is to assess the readiness of accelerator systems to enter this next phase of the project. We ask in particular that the committee assess and comment on the following questions and issues:

- Is the NSLS-II Accelerator Systems R&D program sufficiently advanced to support the remaining design work?
- Is the maturity of the design and development of the accelerator system consistent with the Final Design Plan and are the interfaces with the NSLS-II building and other conventional facilities sufficiently well defined for start of construction of the ring building?
- Is the storage ring magnet system, including the planned linear and non-linear correction systems, adequate to achieve the required accelerator performance?
- Do the design choices of the injector system support the anticipated storage ring performance parameters and is the preliminary layout sufficiently well defined to start the turn-key procurement process in 2009?
- Alignment and stability R&D will be completed soon. Are the proposed procedures sufficient to guarantee that the tight alignment tolerances will be routinely achieved during the installation process?
- Are the planned diagnostic systems sufficient and adequate to allow for efficient commissioning and accelerator tune-up?
- Comment on the status of cryogenics system, electrical and mechanical utilities.

The committee's input into these questions will be very useful in optimizing and focusing our efforts during the next six months. The committee is kindly requested to formulate its response in a written report to the Project Director, Steve Dierker, no later than August 31, 2008.