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United States Government **Department of Energy**

memorandum

DATE: May 29, 2009

REPLY TO
ATTN OF: TBrown:SC-22.3:3-6827

SUBJECT: DEPARTMENT OF ENERGY (DOE) REVIEW OF THE LINAC COHERENT LIGHT SOURCE (LCLS) ULTRAFAST SCIENCE INSTRUMENTS (LUSI) PROJECT

TO: Daniel R. Lehman, Director, Office of Project Assessment

I request that your office organize and conduct an Office of Science (SC) Independent Project Review of the LUSI Major Item of Equipment (MIE) Project to be conducted at the Hilton Washington DC/Rockville Executive Meeting Center, 1750 Rockville Pike, Rockville, Maryland 20852 on July 15, 2009. The Scientific User Facility Division will manage the meeting site logistics. Based on the favorable assessments from the review in April 2009, the purpose of this tailored review is to evaluate the project's readiness for Critical Decision 3 (CD-3), "Approve Start of Fabrication."

The LUSI Project expands upon the initial scientific capability of the LCLS by building three instruments that will use the LCLS X-ray beam for research. The LUSI instruments are the X-ray Pump Probe Diffraction (XPP), Coherent X-ray Imaging (CXI), and X-ray Photon Correlation Spectroscopy (XCS) stations whose capabilities, technical performance parameters, and fuller descriptions are contained in project documents to be available prior to the review.

The project achieved its CD-2 milestone, "Approve Performance Baseline," on October 22, 2008. Also, since CD-2 the project has received approvals for advance procurement of long-lead components for the CXI and XPP instruments including the related diagnostics. An advance procurement package for XCS diffractometer system and large offset monochromator is also pending DOE approval. The milestones represented in the Project Execution Plan show the LUSI instruments to be designed and built in a phased approach with completion of some capability for early science in Fiscal Year (FY) 2011, and all instruments completed by FY 2012. The project has a total project cost of $60 million projected through FY 2012. The most recent SC review of this project was a status review on April 20-22, 2009. During the April 2009 review, among other topics, management and environmental safety and health (ES&H) were assessed in detail and no issues were identified; therefore, limited discussions on these topics will occur.

The LUSI Project has been the recipient of funds from the American Recovery and Reinvestment Act of 2009. These funds provide sufficient funding to fully complete the LUSI Project and should allow the project team to accelerate much of the design, procurement, and integrated assembly activities.

In carrying out its charge, the committee is requested to consider the following questions:

1. Technical Scope: Are XPP, CXI, and XCS integrated instruments designs (including diagnostics and common optics, controls/data acquisition systems and detectors) ready to proceed to CD-3? Are the procurement plans and related specifications for the remaining components adequate? Is it reasonably likely that the instruments will meet the CD-4 criteria?

2. Project Management: Is the management team ready to proceed to CD-3? Have the responses to the April 2009 review been adequate to ensure a successful execution of the project?

3. Resources and Risks: Is the revised performance baseline appropriate given the advanced funding made possible by the American Recovery and Reinvestment Act of 2009? Are the procurement specific risks identified and effectively addressed? Have contingencies (scope/cost/schedule) been revised to address the remaining risks?

4. ES&H: Are ES&H aspects being properly addressed? Are integrated safety management principles being followed?

Thomas M. Brown, LUSI Program Manager, will serve as the Office of Basic Energy Sciences point of contact for this review. I would appreciate receiving your committee's report within 60 days of the review's conclusion.

/Harriet Kung

Harriet Kung
Associate Director of Science
for Basic Energy Sciences

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