DOE F 1325.8
(08-93)

United States Government **Department of Energy**

# memorandum

DATE: MAR - 3 2009

REPLY TO ATTN OF: Office of Basic Energy Sciences, SC-22

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

TO: Daniel R. Lehman, Director, SC-28

This memorandum slightly revises the content of the previous request for this review that was dated February 10, 2009. I request that your office organize and conduct an Office of Science status review of the LUSI Major Item of Equipment (MIE) project at the Stanford Linear Accelerator Center (SLAC) National Accelerator Laboratory in Menlo Park, California, during April 20-22, 2009. The purpose of this review is to evaluate the project's status in all aspects - technical, cost, schedule, management, and environment, safety and health (ES&H).

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 Critical Decision-2 (CD-2) milestone, Approve Performance Baseline, on October 22, 2008. The milestones represented in the Project Execution Plan (PEP) 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 an Independent Project Review on August 19-21, 2008.

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 accomplishments to date and planned future activities adequate to meet baseline objectives? Is it reasonably likely that the instruments will meet the CD-4 criteria (e.g., Key Performance Parameters and required hardware) that are specified in the PEP? Have appropriate plans been made for each instrument's procurements, integrated assembly, and transition to operations?

2. Project Management: Is the LUSI project being properly managed for its successful execution? Is the management approach, including interactions among the project team,

Instrument Team members, and other stakeholders, effective? Are issues identified and resolved in a timely manner? Are there opportunities for improvement?

3. Resources and Risks: Are adequate resources being applied to effectively execute the remaining LUSI project scope? Have the most major risks been identified and addressed? How well are remaining risks and uncertainties being managed? Is the contingency (cost and schedule) being managed well to address the remaining risks? Have the American Recovery and Reinvestment Act funds been properly integrated into the project cost and schedule baselines?

4. ES&H: Are ES&H aspects being properly addressed? Are Integrated Safety Management Principles being followed?

5. Prior Reviews: Has the project responded appropriately to previous reviews?

Thomas E. Kiess, the LUSI Program Manager, will serve as the 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 the Office of Basic Energy Sciences

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