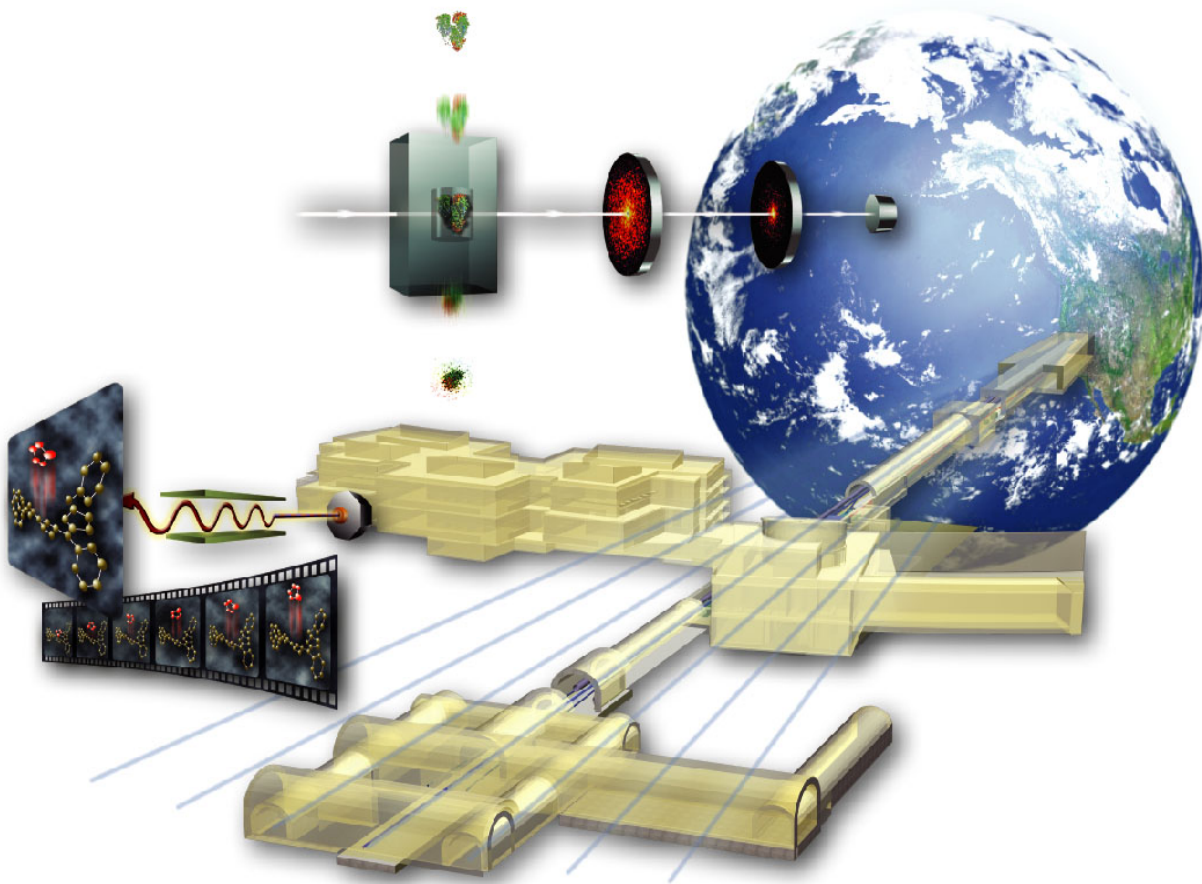


Response to Recommendations
of the Aug10-12, 2004 DOE Review Committee
for the LCLS Project
Updated April 30, 2005



Action Items

1. ***Re-evaluate the project's proposed baseline cost and schedule, and submit a revision to DOE/SC by October 15, 2004***

A revised cost and schedule estimate including contingencies was prepared and presented to the DOE Office of Science BES. The revised cost and schedule estimate was presented at the CD-2b "Delta" Review on November 12, 2004. The Committee found "that LCLS has responded adequately to the August IPR recommendations. The revised cost (TPC = \$379M) and schedule (Project Completion March 2009) baseline is reasonable and the implementation of the project organization changes will ensure successful execution of the project." In addition, the proposed changes in the baseline were examined in a "limited" external independent review conducted by the Office of Engineering and Construction Management. The revised baseline was reviewed and accepted in an ESAAB review on 8 April 2005.

2. ***Initiate weekly project conference calls between LCLS, the DOE Stanford Site Office, and the Office of Science in August 2004;***

Weekly teleconferences have been held weekly since the August review.

3. ***Conduct the next DOE Review in February/March 2005.***

The date for the next DOE Integrated Project Review (IPR) has been scheduled for May 10-12, 2005.

Recommendations for Project Management

PROCUREMENT

- ***Review and revise the procurement process lead times for the Long Lead procurements and Civil Construction procurements. Complete by 15 Sept 04.***

Lead times for Long Lead Procurements have been reviewed and modified by the LCLS Procurement Group, and the schedule now reflects their input. Modifications included reevaluating lead times for Long-Lead Procurements in light of the possibility of a 3-month Continuing Resolution and adding additional time for the procurement of the CM/GC contract.

- ***Review, revise and approve all required Advance Procurement Plans for Long Lead Procurements scheduled for FY05. Complete by 1 Oct 04.***

LCLS has revised and approved all APP's for its Long-Lead Procurements. See recommendation below on the status of LLP's.

- ***Coordinate the reassignment of the Laboratory procurement staff by the Laboratory procurement management directly to the project. Complete by 15 Sept 04.***

LCLS will continue to utilize a decentralized procurement strategy using each partner labs' procurement staff to manage and award their respective deliverables.

The LCLS Procurement Group (4 staff members) has been assembled with David McGiven hired to fill the Procurement Manager position. Bruce Patten has accepted the LCLS Conventional Facility Procurement Lead position and co-located with the technical team, along with Beverly Freeman and Vince Villanueva as Senior Technical Buyers. All are co-located with the LCLS technical team. In addition, LCLS will use the SLAC Purchasing Group for many of its commodity purchases, thereby freeing up a dedicated LCLS Procurement Group for the more critical procurements.

The LCLS Procurement Manager, David McGiven, has been delegated signature authority up to \$2M to enter into agreements and approve transactions relating to subcontracts, purchase orders, consulting agreements, and work for others agreements which enable the operations of SLAC for the LCLS project. Additional authority above \$2M rests with SLAC's Associate Director of Business Services.

In addition, LCLS management has acquired specialized consulting services with experience in dedicated procurement cells and construction contracts for large DOE-funded projects. The Procurement Consultant, Gene Desaulniers, has been assisting and will continue to assist the LCLS procurement team to ensure that high-quality and timely procurements packages are developed for LCLS.

- ***Expedite the completion of Long Lead procurement items designs and issuing of procurement bid packages. Complete by 1 Oct 04.***

The status for the major LCLS LLP's is as follows;

- Project Management PMCS Award (Awarded February 2005)
- Injector Drive Laser (Vendor selected, award on schedule – May 2005)
- Linac BC1, BC2 Magnets (Plan a MOU strategy, no schedule risk)
- Linac RF X-Band ("Make at SLAC" strategy, ahead of schedule)
- Undulator Magnet Blocks (Awarded April 2005)

- Undulator Magnet Poles (Awarded March 2005)
 - Undulator Titanium Strongbacks (Awarded March 2005)
 - CF Magnetic Meas Facility (Out for bid, ahead of project milestone)
 - CF Sector 20 Laser Bay (Bid on Schedule, may re-bid)
- ***Expedite the development, review and approval of the project Construction Manager Statement of Work and procurement bid package to meet project need date. Complete by 1 Nov 04.***

The Construction Manager Statement of Work (SOW) was complete in early December 2004. The CM/GC procurement bid package is now under review at the DOE-SSO. The status of the procurement is;

- The CM/GC procurement calls for an AIA A121/CMc contractor/subcontractor relationship where, upon Project approval, the CM transitions into the GC role to manage the subcontracts. This model has been used successfully on LBL's Molecular Foundry and has the ability to attract high-quality, safety-focused Construction Management firms.
 - This bid package has been selected for review by DOE-HQ prior to issuance of a request for proposals. SLAC Purchasing has prepared the CM/GC RFP package and submitted it to the DOE Site Office for review. The package is being modified in response to SSO comments, after which it will be submitted to DOE-HQ. The original Advance Procurement Plan did not take into account the time necessary for additional review stages.
 - The CM/GC APP has been revised to reflect these changes and a mitigation strategy (see Risk Registry) to bring on interim construction and constructability management at the 30% Title II complete has been put in place.
- ***Revise Advance Procurement Management Plan to make Project Procurement Lead responsible for the maintenance of the Project Procurement Tracking System. Complete by 1 Oct 04.***

The Advance Procurement Management Plan (APMP) has been revised to make the LCLS Procurement Manager responsible for tracking LCLS procurements. The APMP is now being further revised to reflect separate authority levels. A final version of the APMP is due June 30, 2005.

- ***Re-evaluate the overall project costs and schedule by October 15, 2004, based on the Review Committee concerns associated with the limited project staff on-board now and early in FY-05 and due to the aggressive schedule for the project.***

A revised cost and schedule estimate including contingencies was prepared and presented to the DOE Office of Science-BES. The revised cost and schedule estimate was presented at the CD-2b “Delta” Review on November 12, 2004. The Committee found “that LCLS has responded adequately to the August IPR recommendations. The revised cost (TPC = \$379M) and schedule (Project Completion March 2009) baseline is reasonable and the implementation of the project organization changes will ensure successful execution of the project.”

The revised baseline assumed that the appropriations bill would pass in January 2005, which was the case. Staffing ramp-up and long-lead procurements were scheduled and have been executed consistent with this scenario.

- ***Develop a comprehensive project management staffing plan and work with the SLAC management to implement this plan within the first quarter of FY-05.***

A comprehensive project management staffing plan has been prepared. and presented to the DOE Office of Science BES. The staffing plan was presented at the CD-2b “Delta” Review on November 12, 2004, and found to be “good, and if implemented in a timely manner, the management organization would be able to successfully manage the project to completion.” All of the major positions in the LCLS have now been filled.

Within SLAC, Memoranda of Understanding (MOU’s) have been written between LCLS and the relevant SLAC Departments (Klystron and Controls), identifying assigned individuals and FTE level of matrix support for the LCLS. Additional MOU’s are in development between LCLS and the Conventional & Experimental Facilities Department (CEF) as well as with Metrology. In some cases where direct line management is desirable, key personnel have been transferred into the LCLS Division.

- ***Reconsider the risks associated with implementing the OPC activities and the need for an OPC management reserve by October 15, 2004.***

The OPC Management Reserve was revised with the November cost and schedule estimate from its original \$500K to \$5,461K for month-ending March 2005. This revision is now part of the Project Baseline.

- ***Implement a uniform level of project controls for SLAC and the partner laboratories by the next SC Review.***

LCLS has established an integrated cost and schedule system with a critical path. The LCLS Earned-Value Management System (EVMS) and Change Management is in and operating uniformly across the project. Technical Addenda to the ANL and LLNL Memoranda of Understanding are based upon the approved scope of work as captured in the LCLS cost and schedule database.

- ***By October 15, 2004, based on concerns associated with attracting key personnel and developing new areas of needed expertise for the LCLS Project, the SLAC Director should communicate the long term importance of the LCLS Project and its scientific program to the SLAC staff as part of the future vision of SLAC. This information will support the LCLS Project staffing plan and the need to encourage the necessary talent to participate in the construction and operation of the LCLS.***

The heightened visibility of the LCLS Project at SLAC is evident in the very satisfactory staffing of the controls/computing group by SLAC personnel. Support is improving in the area of low-level RF and mechanical engineering, although power/electrical distribution engineering support may need to be brought in from outside SLAC.

On January 18th and April 6th, 2005, in “All Hands” presentations (and memos), the SLAC Director communicated to the Laboratory the future of SLAC and the long-range DOE investment and commitment to SLAC in the form of the LCLS. These announcements had a discernable positive effect on staffing the LCLS

- ***For the next SC Review there needs to be an agenda item on the role of the LCLS at SLAC and the operation of the LCLS in 2010 and beyond.***

The role of LCLS at SLAC and the operation of LCLS in 2009 and beyond will be presented at the May 10-12 SC Review. The 2006 President’s Budget allocates \$30M to BES for the operation of the SLAC linac, and predicted that PEP-II B-Factory operations will cease by 2008 at the latest. SLAC management has begun planning the transition of the Laboratory to a multi-program organization.

Risk Assessment

- ***Continue to enhance the risk assessment process and utilize the risk assessments when evaluating available contingency. Consider reviewing and updating the Risk Registry monthly, instead of semi-annually.***

Risk assessments are reviewed/updated monthly during the regular LCLS Risk Management Meeting. Identified risks of sufficient magnitude (identified in the LCLS Risk Management Plan) are captured in the Risk Registry.

SCHEDULE

- ***Reevaluate the schedule and schedule contingency based on the recommendations and findings in this report and provide an updated schedule to DOE by October 15, 2004.***

A revised schedule including sufficient float (schedule contingency) has been prepared and presented at part of the CD-2b "Delta" Review conducted on November 12, 2004. Float was increased from 16% to 24% with respect to CD-4.

- ***Reevaluate near term critical procurement plans to reflect realistic procurement start dates and durations.***

Lead times for Long Lead Procurements have been reviewed and modified by the LCLS Procurement Group, and the schedule now reflects their input. Modifications included reevaluated lead times for Long-Lead Procurements in light of the possibility of a 3-month Continuing Resolution and adding additional time for the procurement of the CM/GC contract.

- ***Analyze conventional construction contracting durations to accommodate potential complexity of the work.***

The pre-construction activities (i.e. pre-selection, RFP, bid phase, Proposal Review by the Evaluation and Advisory Boards, DOE review/approval, and subcontract award, etc), have been revised by the LCLS Procurement Group to reflect a more realistic duration for these activities.

Recommendations for Injector / Linac

- ***Proceed with long lead procurements as per the baseline plan for the linac and injector acceleration hardware. (Q3 FY05). However, SLAC should assign a specific procurement person to carry out these key long lead procurements. (Q1 FY05)***

Prior to the hiring of the LCLS Procurement Manager, a senior SLAC Procurement Manager had been assigned the responsibility of ensuring that the key long lead procurements are awarded in accordance with the schedule as identified in the APP for all critical LCLS procurements, as follows;

<u>Procurement</u>	<u>APP#</u>	<u>\$ Value</u>	<u>Senior POC</u>	<u>Buyer</u>
Drive Laser	IN-0001	\$1.5M	R. Todaro	C. Jamison
S20 Laser Fac	CF-0001	\$1.1M	R. Todaro	B. Patten
MMF	CF-0002	\$1.4M	R. Todaro	B. Patten
CM/GC	CF-0003	\$65.0M	R. Todaro	B. Patten
Und Test Bench	UN-0004	\$535K	J. Adams	C. Jamison
CMM	UN-0005	\$468K	J. Adams	C. Jamison
S-Band Wvgd	LN-0001	\$130K	J. Adams	C. Jamison

- ***Conduct a detailed review of the photo-gun drive laser design with a panel of laser experts. (Q3 FY05) Perform a complete set of risk reduction experiments on pulse frequency conversion with shaped pulses using the capabilities at BNL. (Q1 FY05) Both actions should be performed prior to awarding of the contract for the drive laser. (Q3 FY05)***

The above dates have been changed. The Q3 FY05 date should be Q1 FY05, and the drive laser contract will be awarded in Q3 FY05 (May 2005).

A Technical Design Review of the Injector Drive Laser was conducted on July 21, 2004 at SLAC. The committee members were Chris Barty (LLNL, Chair), Marcus Babzien (BNL), Roger Falcone (Berkeley) and Yeulin Li (ANL/APS). The written report has been prepared and is available for review; the committee's advice was fully incorporated into the request for proposals. A subgroup of the committee provided considerable input to the bid evaluation committee prior to vendor selection.

The risk reduction experiments on pulse frequency conversion with shaped pulses at BNL/NSLS began in August, 2004 and were completed Feb 1, 2005. The Dazzler pulse shaper was installed after the oscillator and the shaped beam was amplified and converted from the IR to UV. The experiments showed the difficulty of obtaining the required square pulses with good conversion efficiency. However the Dazzler does seem to be the appropriate technology for shaping the beam and will be included in the laser design. Additional studies will be carried out at LLNL and ANL prior to delivery of

the injector laser. The LCLS-funded effort at LLNL will cover three basic areas of research: laser shaping, diagnostics and IR-to-UV conversion. Developments in these areas will be incorporated into the drive laser system.

- ***Identify target individuals in the RF technology area and controls area within SLAC and obtain explicit management support to retask these individuals for injector/linac development. (Q1 FY05)***

An LCLS Controls group has been established at SLAC. The group has been populated with personnel from the LCLS Division (direct) as well as other SLAC Division (matrixed). Currently, the Controls group has identified personnel to support; SLC Integration, Timing, Power Supplies, Low-Level RF, Diagnostics, Cabling and High-Level and Low-Level Software Applications. Additional support is still needed in Low-Level RF and Protection Control Systems (MPS, PPS, and BCS).

For the matrix support within SLAC, Memoranda of Understanding (MOU) have been written between LCLS and the relevant SLAC Departments (Klystron and Controls), identifying assigned individuals and FTE level of matrix support for the LCLS. In some cases where direct line management is desirable, key personnel have been transferred into the LCLS Division.

- ***Aggressively seek to hire a laser technology team to oversee all laser activities, both in the injector project but also in the endstation area lasers. Greater involvement by laser scientists from LLNL should be sought to augment further any in-house expertise which is developed at SLAC. (Q2 FY05)***

LCLS has hired Bill White as the LCLS Laser Group Leader. Bill's background includes research on ultrafast laser systems at LLNL, management of the very successful company Positive Light, and most recently a senior management position with Coherent, Inc. Bill will be responsible for coordinating all laser activity within the LCLS project, and will also be involved with the PIXEL project and the Ultrafast Center. And as described above, we have involved LLNL in the drive laser's R&D effort. The LLNL scientist leading this effort is Brent Stuart who is also participating in the vendor selection and laser integration.

Recommendations for Undulator

- ***Expedite acquisition of article 1. This will allow for early contact with assembly vendors, the opportunity to incorporate corrections in assembly based upon magnetic measurements, and early commissioning of the magnetic measurement facility at SLAC. This should occur early in FY05 to allow delivery by end of FY05.***

Agreed. As stated during the review, by going forward with the acquisition of the 1st article undulator during FY05 we can significantly reduce the risk to the delivery of the undulator. Through the use of a BCR the LCLS Undulator team has incorporated this revised plan into the project schedule.

- ***Expedite system integration design/plan of a full module over the next year. The system integration plan currently assumes that the undulator design is essentially frozen. Other components must accommodate fit around it. The vacuum chamber is the most significant component affecting system integration. A complete module should be assembled before procurement of the vacuum system is initiated. This needs to occur within FY05 to accommodate the planned FY06 production.***

Agreed. A plan for testing prototype undulator systems has been integrated into this WBS. Due to the continuing resolution the dates for the initial single undulator integration test will occur in early FY06 and not FY05 as originally planned.

- ***Finalize choice of quadrupole type. This needs to occur by the end of FY04, or very early in FY05, in order to accommodate required facilities changes.***

Electromagnetic quadrupoles have been chosen as the baseline design for the undulator system. The exact performance specifications for the electromagnetic quads are defined and documented in the revised PRD 1.4-001 "General Undulator System Requirements".

- ***Incorporate stretched wire based field integral measurements for each article in magnetic measurement plan.***

Following the recommendation of the committee, stretched-wire-like field integral measurement capability will be available in the magnet measurement facility.

- ***Make sure that experience in magnetic measurements of first articles is incorporated into necessary modifications of assembly procedures.***

Agreed.

Recommendations for X-Ray TOD and Endstations

- *Undertake a set of experiments to test the simulation codes against experimental data. This reviewer speculates that opportunities for experiments may exist at the DESY FEL, the Z-pinch Source, and the National Short Pulse Laser Facility. Tests of the codes at wavelengths longer than 1.5 nm should still be useful since it appears likely that the physical processes that should be simulated will still be important. These experiments should be done before the procurement of the major optics like the flipper mirror. A suggested schedule is to make the plans in calendar year 2004 and conduct experiments in 2005.*

LLNL has scheduled time on the TTF II VUVFEL for the purpose of conducting damage tests on sample materials relevant to the LCLS in October 2005. The 40eV TTF II VUVFEL beam is the closest match to the LCLS as far as pulse-length and fluence although the x-ray attenuation lengths are still at least one order of magnitude different.

LLNL is participating in this experiment as a collaborator in a collaboration headed by Jacek Krzywinski. Krzywinski's group has extensive experience in this field. Richard London, LLNL's LCLS lead for damage issues, attended a collaboration meeting in August 2004 where experimental plans were formulated and a formal beam-time request was submitted. The collaboration was granted 1 week of beam time in October 2005.

LLNL investigated several sample options and designs compatible with the collaboration's sample holder. We considered Si, SiC, Be, B4C, as well as multilayers envisioned for use in the LCLS. (Si for the flipper mirror, SiC for the offset mirror, Be and B4C for the solid attenuators and slits.) For each sample we designated 1 x 1 mm areas and developed a matrix of intensities and shot numbers for each area that would provide data for code verification. Each area will be pre-documented with SEM, optical, or AFM. We obtained samples of SiC and have vendor quotes for the polishing.

Richard Bionta met with Jacek Krzywinski's group on April 27, 2005 to finalize the sample selection. LLNL will provide the SiC and B4C samples for the experiment. Krzywinski's group will supply a Si sample. A beryllium sample will not be tested during this first run because of potential safety issues. The samples will be pre-documented at LLNL then sent to Krzywinski's group for further characterization before being mounted into the sample holder. After the exposure, Krzywinski's group will post-document the samples and send them back to LLNL for final analysis.

- *Schedule regular meetings between LCLS management and LLNL management. These should be at a higher management level than Arthur and Bionta.*

Regular meetings have been initiated between PAT I-Division Leader Jim Brase and LCLS Project Director John Galayda and/or LCLS Chief Engineer Mark Reichenadter.

- ***Formalize and document the relationship with CHESS and set milestones with them for the 2-D detector.***

A four-year R&D program for the design, development and fabrication of a 2-D x-ray detector has been formalized with an MOU between SLAC and Cornell University, under the leadership of Professor Sol Gruner. This effort will commence in 2005 with the final detector development product scheduled for January 2009. The final detector specifications and a detailed development plan are described in a Technical Addendum to this MOU. Accordingly, at least one progress review is scheduled each year. The LCLS Detector Advisory Committee will assist during these reviews. A major review is scheduled after the end of the second year and a decision will be made about whether to proceed with a final development stage resulting in a prototype detector for LCLS, or instead to procure a prototype detector with another technology from a different source.

Recommendations for Conventional Facilities

- ***Task, specify, and procure a Construction Manager for the LCLS project as soon as possible. The Construction Manager should hold the contract for the execution of the major civil construction contract that includes the underground tunnel extension, the underground experimental areas, and the above grade tunnels and buildings. The Title 3 cost estimate for the Construction Manager should be increased.***

The Statement of Work (SOW) for the Construction Manager (CM) for LCLS is underway and the highest priority for the LCLS Conventional Facilities group. The Title 3 cost estimate has been increased and is in agreement with CM costs for similar scientific research projects. A procurement strategy for the CM has also been developed and documents are prepared. Currently, LCLS plans to award the CM in September 2005 with the start of construction scheduled for March 2006.

A revised cost and schedule estimate including revisions to the LCLS CM function have been prepared and presented to the DOE Office of Science BES. These revisions will be presented at the CD-2b “Delta” Review scheduled for November 12, 2004.

- ***Add time to the overall project schedule to increase the float to completion.***

Additional float has been added to the construction schedule. The original schedule of 24-27 months has been increased to 30 months.

- ***Re-evaluate the estimate for the civil contingency.***

Contingency on the LCLS Conventional Facilities has been increased from 20.5% to 46.3%. This additional contingency reflects risks associated with the underground tunneling and cavern construction as well as uncertainties in commodity prices such as concrete and steel.

A revised cost and schedule estimate including revisions to the LCLS CF contingency assessment has been prepared and presented to the DOE Office of Science BES. These revisions will be presented at the CD-2b “Delta” Review scheduled for November 12, 2004.

- ***Consider merging the proposed two small contracts named “S20” and “MMF” into a single construction task.***

LCLS plans to bid S20 and the MMF concurrently, but separately. Bidders will be encouraged to bid on either project, or both. Selection will be made

based on best overall value. The details of this strategy are laid out in the Advanced Procurement Plans for both the S20 and the MMF.

- ***Check that the ES&H flow down clauses to be inserted in Construction Management, general contractor, and subcontractor contracts are consistent with the expectations of the DOE as found at other recent major DOE Office of Science construction projects.***

SLAC's Construction Terms and Conditions were revised and approved by DOE in October of 2003. At the time of this revision, additional requirements were added to the Safety, Environmental Protection and Health Article in order to remain current with applicable regulations. When compared, the language in SLAC's ES&H Safety Article, as stated in our Construction General Terms and Conditions, is consistent with clauses incorporated into Construction Terms and Conditions used by other Department of Science National Laboratories.

- ***Continue Title 2 work as rapidly as possible after funding and approvals are obtained.***

Title II is funding restrained, and will commence as soon as the FY05 funding is approved.

- ***Conduct technical reviews by the Project technical staff of the Title 2 work at both the 40% complete and 65% complete points. Any delay beyond the 65% point will be impractical to affect the final Title 2 design.***

The LCLS CF office will continue to maintain a close relationship with the project technical staff. Two reviews (30% and 60%) with the project technical staff (excluding 100% review) are planned, and it is agreed that reviews beyond the 65% maturity have diminished value. In addition, a second value engineering session (including the project technical staff) will be conducted.

- ***Define the contractor lay down areas required and their locations. This should be included as an amendment to the Title 1 drawings. Also receiving and warehouse locations should be noted.***

The location of the lay down area and receiving facilities will be evaluated by the CM firm during Title II. On an interim basis, the contractor lay down area will be reviewed by the CF office and on-site facilities will be evaluated for warehouse and receiving capacities and availabilities.

- ***Consider construction of a full scale test mock-up of the undulator hall to test the constructability and performance of the undulator hall floor stability design. The length (say 30 feet?) should be chosen to be sufficient to check constructability issues and evaluate the design performance.***

Due to the anticipated schedule for start of construction and timing of funding, it does not appear that a 30' full scale mock-up of the Undulator Hall is feasible. Additionally, there is a concern that end effects would introduce uncertainties into the mockup that would not be present in the full design. The CF group will review other accelerator and light source projects to review floor designs where critical components require similar conditions as the LCLS project.

Recommendations for ES&H

- ***Bring on board a full time dedicated ES&H professional with a construction background. This individual should be in place by October 31, 2004. This will allow ES&H integration and support for the Title 2 phase of the project.***

A full-time LCLS ES&H coordinator, Michael Scharfenstein, has been hired who reports directly to the Project Director. In addition, LCLS has retained Richard Hislop, an ANL construction safety expert, to develop the project construction safety program and to participate in the Title II phase of the project design. Richard will also assist in developing the ES&H program for the technical systems.

- ***Execute a plan, which allows LCLS management to take a more active role in developing the safety plan, and execution of the safety program after construction begins.***

LCLS is establishing processes that integrate ISM into the LCLS work scope, and is working closely with the SLAC ES&H organization to integrate LCLS into the overall SLAC ISM system.

For construction safety, LCLS has begun defining its project safety program needs with SLAC and has agreed to an approach that will have a program in place by the start of work of the first contract. LCLS has also begun the development of a construction safety program suitable for the scope of work to be performed by the General Contractor for the main construction initiative

- ***Develop a LCLS specific Construction Safety Plan (CSP) with Integrated Safety Management (ISM) at its core, incorporating SLAC ES&H work smart standards, OSHA standards, DOE standards as well as specific construction best practices. A document should be in place prior to letting the first contract bid package.***

LCLS has developed a draft Construction Safety Program that specifies work practices on the construction site consistent with ISM principles.

- ***Review SLAC's contract/procurement packages to assure that all LCLS ES&H requirements are included in the bid documents.***

The contractor selection criteria and ES&H requirements are included in the construction procurement packages.

- ***Develop a contractor pre-bid and pre-construction LCLS ES&H orientation. December 2004.***

The criteria for pre-bid and pre-construction meetings have been defined. An outline for a contractor ES&H orientation has been developed and is currently being reviewed by the laboratory for completeness.

- ***Develop an ES&H procedure to be included in the Construction Safety Plan (CSP), as well as a QA/QC process for the partner laboratory's equipment and their employees (coming to SLAC) to assure compliance with LCLS' requirements.***

Agreed. Establishment of ES&H and QA requirements for acceptance of partner labs' deliverables will be completed before the end of FY2005.

- ***Review the need for dedicated Laser Safety Officer (LSO) to support the LCLS' safety team.***

As of April 2004, LCLS assigned Sasha Gilevich as the Laser Safety Office for the LCLS Injector Drive Laser. SLAC has designated a site Laser Safety Officer, who reviews implementation of laser security systems. The Laboratory ES&H Coordinating Council is developing a charter for a Laser Safety Citizens' Committee in response to the increased laser research activity on site. Project Management expects that the new Laser Group Leader will take an active role in management of laser safety in the LCLS Project.

- ***Review LCLS' future safety requirements, Industrial Hygiene, Environmental, and the expected support from SLAC's ES&H team.***

In consultation with the SLAC ES&H Division and SLAC management, LCLS has a go-forward plan for safety management. This plan provides for two safety professionals dedicated to the LCLS and contract support for fire safety hazard analysis. These functions, supplemented by SLAC and ES&H Division support, will meet the needs of the LCLS.

- ***Explore using an Owner Controlled Insurance Program (OCIP) instead of contractors supplying Workers Compensation insurance. This is a potential saving for the owner who would normally higher pay costs, which is passed on by the contractor in their bid. By December 2004***

The estimated value of the conventional facilities contract is lower than that which generally warrants a stand-alone OCIP. However, the selected General Contractor will be approached to determine if their total volume of work would enable them to include the LCLS project in a rolling Contractor Controlled Insurance Program. The project is continuing to explore similar options that will motivate the GC to implement program elements common to those found in OCIPs.

Recommendations for Controls

- ***Complete the transfer of Global Controls elements to WBS 1.1.3.1 and WBS 1.1.3.5 in both the WBS Dictionary and the detailed cost estimate spreadsheets by October 1, 2004.***

The WBS transfer of Global Controls is complete. The modification of the WBS dictionary has been completed.

- ***Identify and hire the controls liaison people for WBS 1.5.2 and WBS 1.6.2, and work with them to complete the scrubbing of those WBS elements, assuring standardized approaches where appropriate.***

Richard Bionta, John Arthur and Bob Dalesio have met and agreed to collaborate on the hiring of the 1.5.2 and 1.6.2 controls system liaisons. Steve Lewis, a LLNL EPICS expert, has joined the LCLS-LLNL effort. Controls personnel for WBS 1.5 will be provided through the LCLS Controls Group.

- ***Establish an approach to the integration (or not) of conventional facilities controls; and identify a controls liaison person for WBS 1.9 if integration is to be pursued.***

The Architect/Engineer (Jacobs Engineering) and CF System Manager (David Saenz) have made plans to incorporate EPICS controls into the Title-II architectural design. Jacobs has staff experienced in implementing EPICS in SNS conventional facilities, who will be assigned to LCLS.