

**U.S. Department of Energy**

**Office of Science**

**Fiscal Year 2011**

**Performance Evaluation Report of the**

**Stanford University for**

**Management and Operations of Science and Technology at the**

**SLAC National Accelerator Laboratory**

**For the period October 1, 2010, to September 30, 2011**

## I. OVERALL SUMMARY RATING

### **Performance-Based Score and Adjectival Rating:**

The basis for the evaluation of Stanford University (the Contractor) management and operations of the SLAC National Accelerator Laboratory (the Laboratory) during FY 2011 centered on the Objectives found within the following Performance Goals:

1.0 Provide for Efficient and Effective Mission Accomplishment

2.0 Provide for Efficient and Effective Design, Fabrication, Construction and Operations of Research Facilities

3.0 Provide Effective and Efficient Science and Technology Program Management

4.0 Provide Sound and Competent Leadership and Stewardship of the Laboratory

5.0 Sustain Excellence and Enhance Effectiveness of Integrated Safety, Health, and Environmental Protection

6.0 Deliver Efficient, Effective, and Responsive Business Systems and Resources that Enable the Successful Achievement of the Laboratory Mission(s)

7.0 Sustain Excellence in Operating, Maintaining, and Renewing the Facility and Infrastructure Portfolio to Meet Laboratory Needs

8.0 Sustain and Enhance the Effectiveness of Integrated Safeguards and Security Management (ISSM) and Emergency Management Systems

### **Calculating Individual Goal Scores and Letter Grades:**

Each Performance Goal was composed of two or more weighted Objectives and most Objectives had a set of performance measures, which assisted in determining the Contractor's overall performance in meeting that Objective. Each of the performance measures identified significant activities, requirements, and/or milestones important to the success of the corresponding Objective. The following describes the methodology utilized in determining the Contractor performance rating.

Each Objective is assigned the earned numerical score by the evaluating office as stated above. The Goal rating is then computed by multiplying the numerical score by the weight of each Objective within a Goal. These values are then added together to develop an overall numerical score for each Goal. For the purpose of determining the final Goal grade, the raw numerical score for each Goal will be rounded to the nearest tenth of a point using the standard rounding convention discussed below and then compare to Figure 1. A set of tables is provided at the end of each Performance Goal section of this document to assist in the calculation of Objective numerical scores to the Goal grade. No overall rollup grade shall be provided. The raw numerical score for S&T and M&O will be rounded to the nearest tenth of a point. A standard rounding convention of x.44 and less rounds down to the nearest tenth (here, x.4), while x.45 and greater rounds up to the nearest tenth (here, x.5).

Based on the evaluation of SLAC National Accelerator Laboratory performance against the Goals and Objectives contained within the FY 2011 Performance Evaluation and Measurement Plan (PEMP) the scores and corresponding initial grades awarded for each are provided within Table A, and final scores are provided within Table B. Specific information regarding the Contractor's performance in meeting each of the Goals and their corresponding Objectives is provided within Section II of this report.

Final Grade	A+	A	A-	B+	B	B-	C+	C	C-	D	F
<b>Total Score</b>	<b>4.3-4.1</b>	<b>4.0-3.8</b>	<b>3.7-3.5</b>	<b>3.4-3.1</b>	<b>3.0-2.8</b>	<b>2.7-2.5</b>	<b>2.4-2.1</b>	<b>2.0-1.8</b>	<b>1.7-1.1</b>	<b>1.0-0.8</b>	<b>0.7-0</b>

**Figure 1. FY 2011 Contractor Letter Grade Scale**

The eight performance Goal grades shall be used to create a report card for the laboratory (see Figure 2, below).

<b>Performance Goal</b>	<b>Grade</b>
1.0 Mission Accomplishment	A-
2.0 Design, Fabrication, Const	A
3.0 S&T Program Management	B+
4.0 Leadership/Stewardship	A
5.0 ES&H	B+
6.0 Business Systems	B+
7.0 Infrastructure	A-
8.0 Safeguards/Security	B+

**Figure 2. Laboratory Report Card**

<b>S&amp;T Performance Goal</b>				<b>Numerical Score</b>	<b>Letter Grade</b>	<b>Weight</b>	
1.0	Mission Accomplishment			3.6	A-		
2.0	Construction and Operations of User Research Facilities and Equipment			3.8	A		
3.0	Science and Technology Research Project/Program Management			3.4	B+		
<b>Initial S&amp;T Score</b>							3.7
4.0	Leadership and Stewardship of the Laboratory			3.9	A	100%	3.9
<b>M&amp;O Performance Goal</b>				<b>Numerical Score</b>	<b>Letter Grade</b>	<b>Weight</b>	
5.0	Integrated Safety, Health, and Environmental Protection			3.3	B+	20%	
6.0	Business Systems			3.3	B+	40%	
7.0	Operating, Maintaining, and Renewing Facility and Infrastructure Portfolio			3.5	A-	30%	
8.0	Integrated Safeguards and Security Management and Emergency Management Systems			3.2	B+	10%	
<b>Initial M&amp;O Score</b>							3.4

**Table A. Contractor Evaluation Score Calculation**

These initial scores will then be adjusted based on the numerical score for Goal 4.0 (See Table B, below).

	<b>Numerical Score</b>	<b>Weight</b>	
Initial S&T Score	3.7	75%	
Goal 4.0	3.9	25%	
<b>Final S&amp;T Score</b>			3.8
Initial M&O Score	3.4	75%	
Goal 4.0	3.9	25%	
<b>Final M&amp;O Score</b>			3.5

**Table B. Fiscal Year Final S&T and M&O Score Calculation**

## II. PERFORMANCE GOALS, OBJECTIVES, AND MEASURES/TARGETS

### Goal 1.0: Provide for Efficient and Effective Mission Accomplishment

**The Contractor produces high-quality, original, and creative results that advance science and technology; demonstrates sustained scientific progress and impact; receives appropriate external recognition of accomplishments; and contributes to overall research and development goals of the Department and its customers.**

#### Objectives

##### 1.1: Provide Science and Technology Results with Meaningful Impact on the Field

##### 1.2: Provide Quality Leadership in Science and Technology that Advances Community Goals and DOE Mission Goals

*SC assessments of the Goal and related Objectives are summarized below. See Appendix 1 for the Program Offices detailed evaluations.*

#### **Basic Energy Sciences (BES)**

Overall, the BES Materials Sciences and Engineering (MSE) Division-funded research at SLAC have been highly impactful on the field. The Stanford Institute for Energy and Materials Sciences (SIMES) programs continue to demonstrate outstanding scientific excellence in the areas of nanomagnetism, high temperature superconductors, materials synthesis and strongly correlated electron systems.

SLAC management is advised to be diligent in the development and prioritization of strategic white papers and proposals as several did not review well in FY 2011.

CSGB-supported programs through PULSE and SUNCAT continue to be of high scientific merit and mission relevance. However SLAC needs to more effectively develop and communicate a strategic vision for both of these programs.

#### **Biological and Environmental Research (BER)**

SLAC provides endstations and technical expertise for the structural biology and subsurface biogeochemistry research communities. The resources and expertise provided are best-in-class and contribute substantially to progress in these scientific fields, advancing BER scientific goals and they are:

End user stations for structural biology and subsurface biogeochemistry are fully subscribed. Users and staff publish a large number of high quality papers in high profile journals. Staff are active participants in planning for BER and the scientific community.

#### **High Energy Physics (HEP)**

SLAC has been a premier laboratory devoted to doing particle physics with electron beams. The lab is now transitioning to one that leads with a non-accelerator based physics program. While the lab leads the effort to complete the analysis of the Babar  $e^+e^-$  data, the Fermi/GLAST mission is making new discoveries in gamma-ray astronomy and the lab is developing a major dark energy experiment, the Large Synoptic Sky Survey.

Science Program Office	Letter Grade	Numerical Score	Objective Weight	Overall Score
<b>Basic Energy Sciences</b>				
1.1 Impact	A-	3.6	50.0%	
1.2 Leadership	A-	3.7	50.0%	
<b>Overall BES Total</b>				3.7
<b>Biological and Environmental Research</b>				
1.1 Impact	A-	3.6	60.0%	
1.2 Leadership	A-	3.5	40.0%	
<b>Overall BER Total</b>				3.6
<b>High Energy Physics</b>				
1.1 Impact	A-	3.5	50.0%	
1.2 Leadership	A-	3.5	50.0%	
<b>Overall HEP Total</b>				3.5

Table 1.1 -- Program Performance Goal 1.0 Score Development

Program Office	Letter Grade	Numerical Score	Weight	Overall Weighted Score
<b>Basic Energy Sciences</b>	A-	3.7	55.4%	
<b>Biological and Environmental Research</b>	A-	3.6	1.3%	
<b>High Energy Physics</b>	A-	3.5	43.3%	
<b>Performance Goal 1.0 Total</b>				3.6

Table 1.2 -- Overall Performance Goal 1.0 Score Development

<b>Score</b>	<b>0-0.7</b>	<b>0.8-1.0</b>	<b>1.1-1.7</b>	<b>1.8-2.0</b>	<b>2.1-2.4</b>	<b>2.5-2.7</b>	<b>2.8-3.0</b>	<b>3.1-3.4</b>	<b>3.5-3.7</b>	<b>3.8-4.0</b>	<b>4.1-4.3</b>
<b>Grade</b>	<b>F</b>	<b>D</b>	<b>C-</b>	<b>C</b>	<b>C+</b>	<b>B-</b>	<b>B</b>	<b>B+</b>	<b>A-</b>	<b>A</b>	<b>A+</b>

Table 1.3 -- Goal 1.0 Final Letter Grade

**Goal 2.0: Provide for Efficient and Effective Design, Fabrication, Construction and Operations of Research Facilities**

**The Contractor provides effective and efficient strategic planning; fabrication, construction and/or operations of Laboratory research facilities; and are responsive to the user community.**

**Objectives**

**2.1: Provide Effective Facility Design(s) as Required to Support Laboratory Programs (i.e., activities leading up to CD-2)**

**2.2: Provide for the Effective and Efficient Construction of Facilities and/or Fabrication of Components (execution phase, post CD-2 to CD-4)**

**2.3: Provide Efficient and Effective Operation of Facilities**

**2.4: Utilization of Facility(ies) to Provide Impactful S&T Results and Benefits to External User Communities**

*SC assessments of the Goal and related Objectives are summarized below. See Appendix 1 for the Program Offices detailed evaluations.*

**Basic Energy Sciences (BES)**

SLAC successfully executed a conceptual design for the LCLS-II project, passed an Office of Project Assessment CD-1 Readiness Review for LCLS-II and received the ESAAB recommendation for CD-1, and met its Notable Outcome Goal.

**Biological and Environmental Research (BER)**

SLAC leverages its synchrotron light source to provide research resources for the structural biology and subsurface biogeochemistry research communities. The high quality and number of publications and the uniqueness of the research are a testament to the quality and value of the research resources.

**Fusion Energy Sciences (FES)**

SLAC has been very effective in all aspects of the Matter in Extreme Conditions Instrument (MECI) project. MECI is a Major Item of Equipment (MIE) project funded through the American Recovery and Reinvestment Act (ARRA) of 2009. Total funding is \$19.973M.

SLAC has started to lay the groundwork for developing the community to utilize the new instrument when it is fully available for phased commissioning in about a year. The proposal evaluation for FY 2012 user-assisted phased commissioning demonstrates SLAC's commitment to early science discovery and maximum utilization.

SLAC was proactive in obtaining advanced procurement authority at CD-1 (March 1, 2010), which allowed them to begin long-lead procurements prior to CD-2/3 and execute major procurements quickly after the December 8, 2010 CD-2/3 approval.

Throughout FY2011, the highly qualified and motivated project team has effectively established the key project documentation and management systems and executed those plans. It is also urged that the Lab and program leadership vigorously explore the potential of scientific alignment of Warm Dense Matter physics research with LBNL and LLNL.

**High Energy Physics (HEP)**

SLAC has good processes in place to manage projects. Communication from the lab on project status is good. FACET is nearly complete and LSST is off to a good start.

Science Program Office	Letter Grade	Numerical Score	Objective Weight	Overall Score
<b>Basic Energy Sciences</b>				
2.1 Support Laboratory Programs	A	4.0	25.0%	
2.2 Construction of Facilities	B+	3.4	15.0%	
2.3 Operation of Facilities	A	4.0	50.0%	
2.4 S&T Results and Benefits to External User Communities	A	3.8	10.0%	
<b>Overall BES Total</b>				3.9
<b>Biological and Environmental Research</b>				
2.3 Operation of Facilities	A-	3.5	90.0%	
2.4 S&T Results and Benefits to External User Communities	A-	3.5	10.0%	
<b>Overall BER Total</b>				3.5
<b>Fusion Energy Sciences</b>				
2.1 Support Laboratory Programs	B+	3.4	20.0%	
2.2 Construction of Facilities	A	4.0	80.0%	
<b>Overall FES Total</b>				3.9
<b>High Energy Physics</b>				
2.1 Support Laboratory Programs	B+	3.4	50.0%	
2.2 Construction of Facilities	B+	3.4	50.0%	
<b>Overall HEP Total</b>				3.4

Table 2.1 -- Program Performance Goal 2.0 Score Development

Program Office	Letter Grade	Numerical Score	Weight	Overall Weighted Score
<b>Basic Energy Sciences</b>	A	3.9	70.3%	
<b>Biological and Environmental Research</b>	A-	3.5	1.6%	
<b>Fusion Energy Sciences</b>	A	3.9	7.4%	
<b>High Energy Physics</b>	B+	3.4	20.6%	
<b>Performance Goal 2.0 Total</b>				3.8

Table 2.2 -- Overall Performance Goal 2.0 Score Development

Score	0-0.7	0.8-1.0	1.1-1.7	1.8-2.0	2.1-2.4	2.5-2.7	2.8-3.0	3.1-3.4	3.5-3.7	3.8-4.0	4.1-4.3
Grade	F	D	C-	C	C+	B-	B	B+	A-	A	A+

Table 2.3 -- Goal 2.0 Final Letter Grade

### **Goal 3.0: Provide Effective and Efficient Science and Technology Program Management**

**The Contractor provides effective program vision and leadership; strategic planning and development of initiatives; recruits and retains a quality scientific workforce; and provides outstanding research processes, which improve research productivity.**

#### **Objectives**

**3.1: Provide Effective and Efficient Strategic Planning and Stewardship of Scientific Capabilities and Program Vision**

**3.2: Provide Effective and Efficient Science and Technology Project/Program/Facilities Management**

**3.3: Provide Efficient and Effective Communications and Responsiveness to Headquarters Needs**

*SC assessments of the Goal and related Objectives are summarized below. See Appendix 1 for the Program Offices detailed evaluations.*

#### **Basic Energy Sciences (BES)**

Communication between the BES and SLAC management was proactive, timely, and excellent in FY 2011.

The appointment of a Chief Scientist along with the selection of other key leadership slots will aid in integrating and optimizing across SLAC's science portfolio.

The excellent leadership provided by the LCLS management team has resulted in operations at a level exceeding expectations since it started operating.

SLAC successfully accomplished the Notable Outcome Goals, "Implement strong, coordinated programs within SLAC's new division structure," and "Develop a strategic vision to fully utilize LCLS and to expand the Laboratory's photon science program."

#### **Biological and Environmental Research (BER)**

SLAC continues maintain and excellent scientific staff who support excellent, world-leading technology for researchers from the structural biology and subsurface biogeochemistry communities and they are:

High quality technology development and user support.  
Excellent staffing from senior scientists to post doctoral fellows.  
World leading instrumentation.  
Excellent and timely communication.

#### **High Energy Physics (HEP)**

SLAC continues its transition from a lab with a program built around a user facility to one that carries out most of its research off-site. Management is well engaged in the process with regular consultations with HEP. However, the final shape of the program is not yet determined.

Science Program Office	Letter Grade	Numerical Score	Objective Weight	Overall Score
<b>Basic Energy Sciences</b>				
3.1 Efficient Strategic Planning and Stewardship	B+	3.4	40.0%	
3.2 Project/Program/Facilities Management	A-	3.6	30.0%	
3.3 Effective Communications and Responsiveness	A-	3.5	30.0%	
<b>Overall BES Total</b>				3.5
<b>Biological and Environmental Research</b>				
3.1 Efficient Strategic Planning and Stewardship	A-	3.6	20.0%	
3.2 Project/Program/Facilities Management	A-	3.5	30.0%	
3.3 Effective Communications and Responsiveness	A-	3.6	50.0%	
<b>Overall BER Total</b>				3.6
<b>High Energy Physics</b>				
3.1 Efficient Strategic Planning and Stewardship	B+	3.1	40.0%	
3.2 Project/Program/Facilities Management	B+	3.1	40.0%	
3.3 Effective Communications and Responsiveness	A-	3.5	20.0%	
<b>Overall HEP Total</b>				3.2

Table 3.1 -- Program Performance Goal 3.0 Score Development

Program Office	Letter Grade	Numerical Score	Weight	Overall Weighted Score
Basic Energy Sciences	A-	3.5	62.1%	
Biological and Environmental Research	A-	3.6	1.4%	
High Energy Physics	B+	3.2	36.4%	
<b>Performance Goal 3.0 Total</b>				3.4

Table 3.2 -- Overall Performance Goal 3.0 Score Development

<b>Score</b>	0-0.7	0.8-1.0	1.1-1.7	1.8-2.0	2.1-2.4	2.5-2.7	2.8-3.0	3.1-3.4	3.5-3.7	3.8-4.0	4.1-4.3
<b>Grade</b>	F	D	C-	C	C+	B-	B	B+	A-	A	A+

Table 3.3 -- Goal 3.0 Final Letter Grade

#### **Goal 4.0: Provide Sound and Competent Leadership and Stewardship of the Laboratory**

**This Goal evaluates the Contractor Leadership capabilities in leading the direction of the overall Laboratory, the responsiveness of the Contractor to issues and opportunities for continuous improvement, and corporate office involvement/commitment to the overall success of the Laboratory.**

**The weight of this Goal is 100.0%**

This Goal evaluates the Contractor's capabilities and performance in leading the direction of the overall Laboratory, the responsiveness of the Contractor to issues and opportunities for continuous improvement, and corporate office involvement/commitment to the overall success of the Laboratory.

The overall grade assigned for this Goal is A. SC's assessment of this Goal is provided with respect to each of the three Performance Objectives.

#### **4.1: Leadership and Stewardship of the Laboratory**

The SLAC leadership team continued to develop and execute an outstanding, exciting scientific vision for the future of the Laboratory. The LCLS and SSRL leadership have worked closely to establish SLAC as a world leader in photon science. The recent success in the LCLS facility operations and early science accomplishments speak to the strengths of the Laboratory leadership and the paramount dedication of the SLAC management team.

LCLS continues to provide excellent x-ray beams for users which continue to be over-subscribed by a factor of four. Over 4,000 hours were delivered with excellent availability to users. Experiments have demonstrated the feasibility of determining complex biological structures from single large virus structures for the first time which were published in *Nature*.

The Fermi Gamma Ray Telescope continues to provide important data for the international collaboration, which published 47 papers in 2011. In September, the FERMI telescope observed positrons in cosmic rays, which may be a possible sign of dark matter.

SSRL has impacted the biomedical research when x-ray studies performed at SLAC help create an FDA approved drug for the treatment of advanced melanoma. Recent research at SSRL could lead to new medical imaging methods and to improve diagnosis and guide treatments.

Researchers at SLAC are studying the atomic and molecular processes that occur in photosynthesis that may eventually allow artificially reproducing the mechanisms of converting sunlight into energy on a larger scale.

The Large Synoptic Survey Telescope (LSST) received CD-0 to start conceptual design of the camera for a ground based telescope that will survey the universe for dark matter and dark energy.

#### **4.2: Management and Operation of the Laboratory**

SLAC is an exceptionally well-run Laboratory. This is a testament to the excellence and diligence of the SLAC management team.

The SLAC management team is commended for the concerted effort to effect changes in the Laboratory's strategic planning process, infrastructure, and management practices to ensure efficient operations of the Laboratory. SLAC senior management was communicative with BES and cognizant of BES

programmatic priorities and goals. SLAC management continues to exercise prudent oversight and leadership in program and project management.

SLAC's safety performance continues to be excellent. Senior leadership has successfully changed the culture at the Laboratory into one of accountability, as evidenced by SLAC, implementing rigorous causal analysis of near misses to identify root causes and corrective actions. Although the safety metrics (DART and TRC) have increased over the past year, the severity of incidents has not risen at the same rate. The majority of incidents have been related to ergonomic problems or strains.

Project management continues to improve for smaller projects. ARRA projects are on track and several were completed under budget and ahead of schedule. The IG found no material findings after its audit of the ARRA process.

SLAC is leading the SC complex in developing radiological release criteria and protocols for off-site disposition of concrete blocks and metal recycling.

#### **Notable Outcome Performance**

**Demonstrate the use of the full suite of resources at their disposal (including the expertise of laboratory scientists and engineers) to develop innovative, crosscutting strategies for meeting the Executive Order 13514 Goals (Objectives 4.2, 4.3)** This notable outcome was successfully achieved. SLAC has played a key role in developing the portfolio approach to meet the sustainability goals of the department. They have been a key leader in developing the SC sustainability approach regarding high energy mission-specific facilities. SLAC has also partnered with the site office in identifying projects with positive return on investment as well as staff behavioral changes that will reduce generation of green house gases.

**Fill critical management positions in mission and mission-support areas (Objective 4.2)** This notable outcome was successfully achieved with the recruitment and hiring of the ALD for the Accelerator Directorate, ALD for Photon Science Directorate, Chief Financial Officer, a Communications Director, and an ES&H Director.

**Implement a Contractor Assurance System (CAS) in accordance with Clause H.42 of the prime contract. (Objective 4.2)** This notable outcome was successfully achieved. Contractor assurance started over four years ago with the signing of the Partnership Agreement between Stanford University, SLAC and SLAC Site Office. As part of the Partnership Agreement, an Operating Model was institutionalized that clearly defined each party's roles and responsibilities. Each organization has continued to operate within the Partnering framework. The formal CAS description was approved in August 2011 and the Peer Review is scheduled for January 2012.

#### **4.3: Contractor Value-Added**

Stanford has successfully partnered with the Laboratory to affect strategic hires for the BES programs.

Stanford University continues to excel in implementing an effective Contractor Assurance System which was approved in August 2011. The partnership has matured in the past four years such that roles and responsibilities are clear and allows transparent discussion of issues to foster collaborative resolution.

Stanford University was able to solicit a sizable private donation to construct an Athletic Facility on the SLAC site which provides recreational facilities and fields for SLAC staff use.

Stanford University has started fund raising to construct an office building at SLAC in anticipation of growth in the photon science program.

The Board of Overseers provides an effective oversight and assurance role to the Department and has provided SLAC with critical strategies for developing their scientific vision and upgrading their business systems.

Element	Letter Grade	Numerical Score	Weight	Overall Score
Goal 4.0: Provide Sound and Competent Leadership and Stewardship of the Laboratory				
4.1: Leadership and Stewardship of the Laboratory	A	3.9	33.0%	
4.2: Management and Operation of the Laboratory	A	3.9	33.0%	
4.3: Contractor Value-added	A	3.9	34.0%	
			<b>Total</b>	3.9

**Table 4.1 - 4.0 SC Program Office Performance Goal Score Development**

<b>Score</b>	<b>0-0.7</b>	<b>0.8-1.0</b>	<b>1.1-1.7</b>	<b>1.8-2.0</b>	<b>2.1-2.4</b>	<b>2.5-2.7</b>	<b>2.8-3.0</b>	<b>3.1-3.4</b>	<b>3.5-3.7</b>	<b>3.8-4.0</b>	<b>4.1-4.3</b>
<b>Grade</b>	<b>F</b>	<b>D</b>	<b>C-</b>	<b>C</b>	<b>C+</b>	<b>B-</b>	<b>B</b>	<b>B+</b>	<b>A-</b>	<b>A</b>	<b>A+</b>

**Table 4.2 -- Goal 4.0 Final Letter Grade**

## **Goal 5.0: Sustain Excellence and Enhance Effectiveness of Integrated Safety, Health, and Environmental Protection**

**This Goal evaluates the Contractor overall success in deploying, implementing, and improving integrated ES&H systems that efficiently and effectively support the mission(s) of the Laboratory.**

**The weight of this Goal is 20.0%**

In general, the laboratory is providing an efficient and effective health and safety program that supports the mission; however, SLAC saw an uptick in the Total Recordable Case (TRC) and Days Away Restricted and Transferred (DART) case rate in FY2011. SLAC has reduced DART recovery days by approximately 38% since 2008 and the actual number of day away due to an on-the-job injury continues to trend down. SSO staff has found fewer negative observations at construction sites this past FY during routine walkthroughs. Safety Systems & Infrastructure Reliability inspection, testing, maintenance and repair program has improved. SLAC completed and received DOE approval of radiological survey procedures, measurement protocols, and technical basis leading to the successful off-site disposition of approximately 367 concrete storage blocks. SLAC received approval from DOE leading to the off-site recycling of approximately 29 cubic yards of cables and wires from the PEP-II and BaBar projects; material previously covered by the metals moratorium. SLAC took an important lead role in supporting SC and other SC sites on developing radiological release criteria and technical protocols and procedures for activated materials.

### **5.1: Provide an Efficient and Effective Health and Safety Program**

In general, the laboratory is providing an efficient and effective health and safety program that supports the mission. SLAC has reduced DART recovery days by approximately 38% since 2008 and the actual number of day away due to an on-the-job injury continues to trend down. SSO staff has found fewer negative safety observations at construction sites this past FY during routine walkthroughs. This is primarily due to two actions the Laboratory has taken. The Laboratory has increased its own oversight of construction and has been bringing better performing construction subcontractors on site. Safety Systems & Infrastructure Reliability inspection, testing, maintenance and repair program has seen an improvement and now has become the nucleus to make it an effective program. There is a clear sense of mission and ownership by all stakeholders, particularly the Facilities Group. The program needs maturity and funding priority for proper implementation. TRC rates indicate a recent increase, up from 0.51 for all of FY2010 to 1.7 for FY2011 (through Q3). The ergonomic and lifting related injuries are the primary category of injuries that have increased. This trend has been discussed with SLAC senior safety management and plans have been put in place to address ergonomic issues. This is important since a large number of SLAC employees will be moving offices over the next couple of years. There has been a recent uptick in the number of incidents at SLAC that have been categorized as near misses (Laser Incident in PULSE Laser Laboratory, Hoisting Incident in Klystron Test Laboratory, subcontractor Dumpster incident, energizing a 12kV Fault in Unoccupied Underground Vault) that could have resulted in injury. A fully effective fire protection program has not yet been achieved sufficiently for best-protected-class or Highly Protective Risk level as required by DOE Order 420.1B. Positive progress has been made in this area, but further sustained improvement is required. SLAC's Hot Work program improved significantly but the required periodic technical assurance/verification by SME/PAI (Subject Matter Expert/Permit Authorizing Individual) has been deferred until next fiscal year. SLAC produced a tri-fold brochure that is proving to be an innovative way of providing an overview of the Hot Work program to workers.

### **5.2: Provide an Efficient and Effective Environmental Management System**

SLAC commenced disposition of excess materials using protocols formerly covered by the moratorium. SLAC completed and received DOE approval of radiological survey procedures, measurement protocols, and technical basis documents leading to the successful off-site disposition of approximately 367 concrete storage blocks that were relocated from the Bone Yard to the north side of the Linac Klystron

Gallery. SLAC received approval from DOE leading to the off-site recycling of approximately 29 cubic yards of cables and wires from the PEP-II and BaBar projects; material previously covered by the metals moratorium. SLAC took an important lead role in supporting SC and other SC sites on developing radiological release criteria and technical protocols and procedures for activated materials. The successful completion of the physical construction phase of the EM soil and groundwater remediation project and the approval of regulatory agency deliverables was the result of effective ongoing communication and interfaces between SLAC, EM Oakland Project Office (OPO), SSO, EM ID/IQ contractor, and the Water Board to resolve complex environmental cleanup issues at the site.

Element	Letter Grade	Numerical Score	Weight	Overall Score
Goal 5.0: Sustain Excellence and Enhance Effectiveness of Integrated Safety, Health, and Environmental Protection				
5.1: Provide an Efficient and Effective Health and Safety Program	B	2.8	50.0%	
5.2: Provide an Efficient and Effective Environmental Management System	A	3.8	50.0%	
			<b>Total</b>	3.3

**Table 5.1 - 5.0 SC Program Office Performance Goal Score Development**

<b>Score</b>	<b>0-0.7</b>	<b>0.8-1.0</b>	<b>1.1-1.7</b>	<b>1.8-2.0</b>	<b>2.1-2.4</b>	<b>2.5-2.7</b>	<b>2.8-3.0</b>	<b>3.1-3.4</b>	<b>3.5-3.7</b>	<b>3.8-4.0</b>	<b>4.1-4.3</b>
<b>Grade</b>	<b>F</b>	<b>D</b>	<b>C-</b>	<b>C</b>	<b>C+</b>	<b>B-</b>	<b>B</b>	<b>B+</b>	<b>A-</b>	<b>A</b>	<b>A+</b>

**Table 5.2 -- Goal 5.0 Final Letter Grade**

**Goal 6.0: Deliver Efficient, Effective, and Responsive Business Systems and Resources that Enable the Successful Achievement of the Laboratory Mission(s)**

**This Goal evaluates the Contractor overall success in deploying, implementing, and improving integrated business systems that efficiently and effectively support the mission(s) of the Laboratory.**

**The weight of this Goal is 40.0%**

SLAC has made progress improving business system and has met expectations of performance in this Goal. SLAC CFO successfully addressed all of the outstanding audit/review corrective actions. SLAC completed the Enterprise Resource Planning (ERP) assessment and formulated a desired future state vision. SSO raised the subcontractor approval thresholds due to improvements in FY2010. In the third quarter, a DOE directed Procurement Evaluation & Re-engineering Team (PERT) review was conducted and reported no findings. A complete review of SLAC's compensation program was conducted by an independent third party. SLAC managed the ARRA projects well as the IG audit resulted in no findings.

**6.1: Provide an Efficient, Effective, and Responsive Financial Management System(s)**

SLAC CFO successfully addressed all of the outstanding audit/review corrective actions. SLAC CFO implemented nine initiatives in FY2011 to improve financial management systems. SLAC completed the ERP system assessment and formulated a desired future state vision.

**6.2: Provide an Efficient, Effective, and Responsive Acquisition Management System(s)**

SSO raised the subcontractor approval thresholds due to the improvements in the FY2010 Balanced Score Card Assessment (e.g., competitive fixed price subcontract award from \$2M to \$4M and ARRA funded subcontract award from \$200K to \$500K) and the improvements in the subcontract packages reviewed by SSO. Thirty four subcontract packages, including ARRA funded were reviewed by SSO and of these, 91% were approved. This validates the management structure and the programs that SLAC Procurement put in place have been successfully implemented. In the third quarter, a DOE directed Procurement Evaluation & Re-engineering Team (PERT) review was conducted to evaluate the efficiency and effectiveness of SLAC's procurement system. The PERT Independent Team reported zero findings which resulted in no corrective actions required and only a few general improvement recommendations pertaining to administrative file practices and specialized customer training. SLAC's revised/proposed Procurement Description and the revised Terms and Conditions were submitted and approved by SSO. Based on the SLAC's latest Balanced Score Card (BSC) results, SLAC has met the target metrics. In the fourth quarter, SSO conducted a review of subcontract files, focused mainly on the small dollar actions conducted by SLAC, which resulted in 50% of the files with some findings. SLAC needs to pay closer attention to these actions in FY2012.

**6.3: Provide an Efficient, Effective, and Responsive Property Management System(s)**

SLAC achieved 96% score on the balanced score card metrics. SLAC's fleet vehicle accident rate was lower than the target goal.

**6.4: Provide an Efficient, Effective, and Responsive Human Resources Management System and Diversity Program**

SLAC HR summarized the wage and salary practices into a single document. SLAC HR proposed an incentive pay plan for the senior executives. A review of SLAC's compensation program was conducted by an independent third party.

**6.5: Provide Efficient, Effective, and Responsive Management Systems for Internal Audit and Oversight; Quality; Information Management; Assurance System and Other Administrative Support Services as Appropriate**

Stanford University Internal Audit Department conducted all audits as scheduled and verified the SLAC corrective actions. SLAC managed the ARRA projects well as the IG audit resulted in no findings. SLAC Computing Department worked with Stanford University (SU) to develop a comprehensive research and computing facility on the SLAC campus to support SLAC and SU data storage needs.

**6.6: Demonstrate Effective Transfer of Technology and Commercialization of Intellectual Assets**

SLAC continues to establish new collaborative agreements and reviewed ten inventions; six were ready for consideration for possible patenting and commercialization, and four remain in development by the inventors for later consideration.

Element	Letter Grade	Numerical Score	Weight	Overall Score
Goal 6.0: Deliver Efficient, Effective, and Responsive Business Systems and Resources that Enable the Successful Achievement of the Laboratory Mission(s)				
6.1: Provide an Efficient, Effective, and Responsive Financial Management System(s)	B+	3.3	35.0%	
6.2: Provide an Efficient, Effective, and Responsive Acquisition Management System(s)	B+	3.3	20.0%	
6.3: Provide an Efficient, Effective, and Responsive Property Management System(s)	A-	3.6	10.0%	
6.4: Provide an Efficient, Effective, and Responsive Human Resources Management System and Diversity Program	B+	3.3	20.0%	
6.5: Provide Efficient, Effective, and Responsive Management Systems for Internal Audit and Oversight; Quality; Information Management; Assurance System and Other Administrative Support Services as Appropriate	B+	3.3	10.0%	
6.6: Demonstrate Effective Transfer of Technology and Commercialization of Intellectual Assets	B+	3.3	5.0%	
			<b>Total</b>	3.3

**Table 6.1 - 6.0 SC Program Office Performance Goal Score Development**

<b>Score</b>	<b>0-0.7</b>	<b>0.8-1.0</b>	<b>1.1-1.7</b>	<b>1.8-2.0</b>	<b>2.1-2.4</b>	<b>2.5-2.7</b>	<b>2.8-3.0</b>	<b>3.1-3.4</b>	<b>3.5-3.7</b>	<b>3.8-4.0</b>	<b>4.1-4.3</b>
<b>Grade</b>	<b>F</b>	<b>D</b>	<b>C-</b>	<b>C</b>	<b>C+</b>	<b>B-</b>	<b>B</b>	<b>B+</b>	<b>A-</b>	<b>A</b>	<b>A+</b>

**Table 6.2 -- Goal 6.0 Final Letter Grade**

**Goal 7.0: Sustain Excellence in Operating, Maintaining, and Renewing the Facility and Infrastructure Portfolio to Meet Laboratory Needs**

**This Goal evaluates the overall effectiveness and performance of the Contractor in planning for, delivering, and operations of Laboratory facilities and equipment needed to ensure required capabilities are present to meet today and tomorrow mission(s) and complex challenges.**

**The weight of this Goal is 30.0%**

Project management/small projects significantly improved. All projects met/exceeded expectations. Facility maintenance significantly improved due to SLAC institution predictive maintenance program. Maintenance backlog worked done very smartly by focusing on high risk activities. SLAC's response to abnormal/upset conditions was exceptional; and, all casualty responses were very professional, conservative and safe while restoring the site quickly.

**7.1: Manage Facilities and Infrastructure in an Efficient and Effective Manner that Optimizes Usage, Minimizes Life Cycle Costs, and Ensures Site Capability to Meet Mission Needs**

SLAC has taken significant steps to improve the facilities management systems and processes. Facilities' processes are transitioning from preventive to predictive maintenance under the leadership and guidance of SLAC's newly hired Maintenance Manager. SLAC hired two new energy managers to focus on site sustainability, LEED for new and existing buildings, and energy goals. SLAC is developing partnerships with SU and other SC laboratories to address sustainability legacy gaps. The SLAC Facilities Director and the management team have taken the lead on laboratory Mission Readiness (MR). The internal SLAC team participated as reviewers and observers at other laboratories. SLAC successfully performed their MR SC review and was praised by other laboratories for vision, policies, and management techniques. Although deferred maintenance had gone up primarily because of legacy equipment failures, the laboratory completed many infrastructure projects (i.e., electrical, mechanical, underground utilities, new construction, and building renovations) that helped support the mission. SLAC's feedback regarding timing conflicts for budget reporting and no-value added for some templates in Appendix-E was well received by DOE-SC.

**7.2: Provide Planning for and Acquire the Facilities and Infrastructure Required to Support the Continuation and Growth of Laboratory Missions and Programs**

SLAC has taken significant steps to improve the overall site infrastructure. SLAC Facilities and the Project Management Office (PMO) have partnered closely with the SSO to develop a project prioritization process which is the overall umbrella to determine criteria, committee reviews, and forecasting. Natural Phenomena Hazard (NPH) Assessment was conducted by Oak Ridge SME's, SLAC facilities and SSO. Only two recommendations for improvement were identified. Both the SSO and SLAC have completed the recommendations. SLAC's seismic study of buildings and infrastructure was completed late by an outside engineering firm. SLAC is leveraging the results of this study to address current needs, and more importantly, to plan for future seismic safety improvements to support the Science mission at SLAC. There were key legacy management gaps that were identified and corrective actions have been implemented to accomplish the scientific mission needed at SLAC. For example, more collaboration with the scientific community at SLAC for project infrastructure input, increased infrastructure investments by 50%, updated as built drawings, facilities transition management from projects to operations and more in depth project management training. Execution of capital infrastructure projects have been excellent. The Research Support Building (RSB) project has performed very well against the baseline. SLAC was able to secure CD-0 approval for the Photon Science building.

Element	Letter Grade	Numerical Score	Weight	Overall Score
Goal 7.0: Sustain Excellence in Operating, Maintaining, and Renewing the Facility and Infrastructure Portfolio to Meet Laboratory Needs				
7.1: Manage Facilities and Infrastructure in an Efficient and Effective Manner that Optimizes Usage, Minimizes Life Cycle Costs, and Ensures Site Capability to Meet Mission Needs	B+	3.4	50.0%	
7.2: Provide Planning for and Acquire the Facilities and Infrastructure Required to Support the Continuation and Growth of Laboratory Missions and Programs	A-	3.6	50.0%	
			<b>Total</b>	3.5

**Table 7.1 - 7.0 SC Program Office Performance Goal Score Development**

<b>Score</b>	<b>0-0.7</b>	<b>0.8-1.0</b>	<b>1.1-1.7</b>	<b>1.8-2.0</b>	<b>2.1-2.4</b>	<b>2.5-2.7</b>	<b>2.8-3.0</b>	<b>3.1-3.4</b>	<b>3.5-3.7</b>	<b>3.8-4.0</b>	<b>4.1-4.3</b>
<b>Grade</b>	<b>F</b>	<b>D</b>	<b>C-</b>	<b>C</b>	<b>C+</b>	<b>B-</b>	<b>B</b>	<b>B+</b>	<b>A-</b>	<b>A</b>	<b>A+</b>

**Table 7.2 -- Goal 7.0 Final Letter Grade**

**Goal 8.0: Sustain and Enhance the Effectiveness of Integrated Safeguards and Security Management (ISSM) and Emergency Management Systems**

**This Goal evaluates the Contractor's overall success in safeguarding and securing Laboratory assets that supports the mission(s) of the Laboratory in an efficient and effective manner and provides an effective emergency management program.**

**The weight of this Goal is 10.0%**

SLAC's physical security system is fully supporting the mission and is leading the way in SC for transparent security technologies. SLAC has completed installation of the night owl operational awareness system. A new security building has been constructed and is fully functional. SLAC is on schedule to complete the security upgrades to the main gate, alpine gate, and building 50. SLAC is the first SC site to meet the Baseline Level of Protection (BLP) security posture. SLAC continues to successfully ship legacy and excess sources off site from the nuclear material control program.

**8.1: Provide an Efficient and Effective Emergency Management System**

A site-wide emergency exercise, coordinated with the No Notice Exercise (NNX) was conducted jointly by SLAC working closely with SSO and NA-40 staff. Observations and recommendations from this exercise were provided to aid in future program improvements. Effective and Verifiable Emergency Management Program has not yet been fully developed and implemented per DOE O 151.1C (Comprehensive Emergency Management System). Work is in progress to re-structure the emergency management program and services.

**8.2: Provide an Efficient and Effective System for Cyber-Security and National Security Systems (NSS)**

SLAC is making good progress against the findings and recommendations issued in the DOE FY2010 Financial Statement Audit, which includes cyber security. The completed actions will improve the efficiency and effectiveness of SLAC's Cyber Security.

**8.3: Provide an Efficient and Effective System for the Physical Security and Protection of Special Nuclear Materials, Classified Matter, and Property**

SLAC's physical security system is fully supporting the mission and is leading the way in SC for transparent security technologies. SLAC has completed installation of the night owl operational awareness system. A new security building has been constructed and is fully functional. SLAC is on schedule to complete the security upgrades to the main gate, alpine gate, and building 50. Upgrades will be more transparent and cost less to operate than the existing systems. SLAC is the first SC site to meet the Baseline Level of Protection (BLP) security posture. SLAC continues to successfully ship legacy and excess sources off site from the nuclear material control program.

**8.4: Provide an Efficient and Effective System for the Protection of Classified and Sensitive Information**

SLAC is fully supporting the Mission in this area and continues to enhance the HR information system.

Element	Letter Grade	Numerical Score	Weight	Overall Score
Goal 8.0: Sustain and Enhance the Effectiveness of Integrated Safeguards and Security Management (ISSM) and Emergency Management Systems				
8.1: Provide an Efficient and Effective Emergency Management System	B	2.9	25.0%	
8.2: Provide an Efficient and Effective System for Cyber-Security and National Security Systems (NSS)	B+	3.3	25.0%	
8.3: Provide an Efficient and Effective System for the Physical Security and Protection of Special Nuclear Materials, Classified Matter, and Property	B+	3.4	25.0%	
8.4: Provide an Efficient and Effective System for the Protection of Classified and Sensitive Information	B+	3.3	25.0%	
			<b>Total</b>	3.2

**Table 8.1 - 8.0 SC Program Office Performance Goal Score Development**

<b>Score</b>	<b>0-0.7</b>	<b>0.8-1.0</b>	<b>1.1-1.7</b>	<b>1.8-2.0</b>	<b>2.1-2.4</b>	<b>2.5-2.7</b>	<b>2.8-3.0</b>	<b>3.1-3.4</b>	<b>3.5-3.7</b>	<b>3.8-4.0</b>	<b>4.1-4.3</b>
<b>Grade</b>	<b>F</b>	<b>D</b>	<b>C-</b>	<b>C</b>	<b>C+</b>	<b>B-</b>	<b>B</b>	<b>B+</b>	<b>A-</b>	<b>A</b>	<b>A+</b>

**Table 8.2 -- Goal 8.0 Final Letter Grade**

## **APPENDIX 1**

### **List of programs:**

High Energy Physics (HEP)  
Basic Energy Sciences (BES)  
Biological and Environmental Research (BER)  
Fusion Energy Sciences (FES)

**High Energy Physics  
SLAC National Accelerator Laboratory  
FY 2011 Performance Evaluation  
Office of Science**

**Goal 1.0: Provide for Efficient and Effective Mission Accomplishment****Weight:** 40.00%**Score:** 3.5                    **Grade:** A-**Goal Evaluation:**

SLAC has been a premier laboratory devoted to doing particle physics with electron beams. The lab is now transitioning to one that leads with a non-accelerator based physics program. While the lab leads the effort to complete the analysis of the Babar e+e- data, the Fermi/GLAST mission is making new discoveries in gamma-ray astronomy and the lab is developing a major dark energy experiment, the Large Synoptic Sky Survey.

**Objective 1.1: Provide Science and Technology Results with Meaningful Impact on the Field****Weight:** 50.00%**Score:** 3.5                    **Grade:** A-**Objective Evaluation:**

SLAC is heavily involved in several major areas of high energy physics research. For many years, the SLAC linear accelerator led the world in e+e- research. SLAC is now engaged in the final stages in the analysis of the Babar data and has taken a strong role in the planning for a Super-B factory proposed for Italy. SLAC also has a strong non-accelerator research program with involvement in several cutting edge experiments. Among these are the Cryogenic Dark Matter Search (CDMS), the Dark Energy Survey (DES), and the Enriched Xenon Observatory (EXO) (for neutrinoless double beta decay). EXO has reported an important result: the observation of two-neutrino double beta decay in its detector. This observation demonstrates the capability of the detector to observe double beta decay and is a necessary first step for the observation of neutrinoless double beta decay should that process exist. The Fermi Gamma-ray Large Area Space Telescope is now delivering important results. On the accelerator science research front, SLAC has completed the FACET facility to develop beam-induced wakefield acceleration. This is a user facility, and the lab has already reviewed its first set of proposals. The facility is currently being commissioned, with the first experiment planned for early 2012. Work on direct laser acceleration, high gradient accelerating structures, beam physics, and the ILC all continue. SLAC is meeting expectations in all areas of endeavor.

**Objective 1.2: Provide Quality Leadership in Science and Technology that Advances Community Goals and DOE Mission Goals****Weight:** 50.00%**Score:** 3.5                    **Grade:** A-**Objective Evaluation:**

SLAC plays leadership roles in a number of areas. For ATLAS, SLAC has a lead on jet reconstruction and search analyses for unconventional physics (i.e physics beyond the standard model). As the Babar completes its final analysis of the the Babar data, SLAC has the lead on precision measurements, computing, and the search for lepton flavor violations. On the cosmic

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SLAC National Accelerator Laboratory

frontier, SLAC has the lead in the Large Area Telescope for the Fermi Gamma Ray Space Telescope and the lead on the camera design for the LSST. The lab currently is commissioning FACET, which will be a unique facility in the world for beam driven plasma wakefield experiments. This effort has been lead by SLAC. SLAC also plays major roles in detector development, for example, for EXO, an experiment to directly observe neutrinoless double beta decay, and in other areas such as direct laser acceleration, ILC and muon acceleration. SLAC meets expectations.

**Goal 2.0: Provide for Efficient and Effective Design, Fabrication, Construction and Operations of Research Facilities**

**Weight:** 30.00%

**Score:** 3.4                      **Grade:** B+

**Goal Evaluation:**

SLAC has good processes in place to manage projects. Communication from the lab on project status is good. FACET is nearly complete and LSST is off to a good start.

**Objective 2.1: Provide Effective Facility Design(s) as Required to Support Laboratory Programs (i.e., activities leading up to CD-2)**

**Weight:** 50.00%

**Score:** 3.4                      **Grade:** B+

**Objective Evaluation:**

The laboratory supported the development of the CD-0 for LSST and has made good progress on the conceptual design of the LSST camera. The laboratory has conducted internal reviews of the LSST project and communicated the results to headquarters. The LSST camera schedule needs to be aligned with NSF's schedule for the rest of the project.

**Objective 2.2: Provide for the Effective and Efficient Construction of Facilities and/or Fabrication of Components (execution phase, post CD-2 to CD-4)**

**Weight:** 50.00%

**Score:** 3.4                      **Grade:** B+

**Objective Evaluation:**

The FACET project is near its completion and a CD-4 review is being planned. The project is maintaining good cost and schedule performance indices. HEP looks forward to completion of the project and turning it over to operations.

**Goal 3.0: Provide Effective and Efficient Science and Technology Program Management**

**Weight:** 30.00%

**Score:** 3.2                      **Grade:** B+

**Goal Evaluation:**

SLAC continues its transition from a lab with a program built around a user facility to one that carries out

most of its research off-site. Management is well engaged in the process with regular consultations with HEP. However, the final shape of the program is not yet determined.

**Objective 3.1: Provide Effective and Efficient Strategic Planning and Stewardship of Scientific Capabilities and Program Vision**

**Weight:** 40.00%

**Score:** 3.1                      **Grade:** B+

**Objective Evaluation:**

Management has recognized that the SLAC's vision has not been well aligned with the national HEP program and has taken steps to correct that. It is not yet clear that a truly coherent vision can emerge from the initiatives that have been put forward. They have not yet identified a strong role on the Intensity Frontier. The proposal to open FACET as a user facility is a good match to the planned HEP accelerator stewardship program, but the plans to adapt their considerable accelerator technical infrastructure to meet future SC needs are not clear.

**Objective 3.2: Provide Effective and Efficient Science and Technology Project/Program/Facilities Management**

**Weight:** 40.00%

**Score:** 3.1                      **Grade:** B+

**Objective Evaluation:**

The lab is carrying out its HEP program efficiently and effectively. They are directly addressing declining budgets in a responsible way.

**Objective 3.3: Provide Efficient and Effective Communications and Responsiveness to Headquarters Needs**

**Weight:** 20.00%

**Score:** 3.5                      **Grade:** A-

**Objective Evaluation:**

Communications are excellent. From the lab director down through the Associate Lab Directors, we are regularly informed of the lab's success and problems in frank and open discussions.

**Basic Energy Sciences  
SLAC National Accelerator Laboratory  
FY 2011 Performance Evaluation  
Office of Science**

**Goal 1.0: Provide for Efficient and Effective Mission Accomplishment****Weight:** 25.00%**Score:** 3.7                    **Grade:** A-**Goal Evaluation:**

- Overall, the BES Materials Sciences and Engineering (MSE) Division-funded research at SLAC have been highly impactful on the field. The Stanford Institute for Energy and Materials Sciences (SIMES) programs continue to demonstrate outstanding scientific excellence in the areas of nanomagnetism, high temperature superconductors, materials synthesis and strongly correlated electron systems.
- SLAC management is advised to be diligent in the development and prioritization of strategic white papers and proposals as several did not review well in FY 2011.
- CSGB-supported programs through PULSE and SUNCAT continue to be of high scientific merit and mission relevance. However SLAC needs to more effectively develop and communicate a strategic vision for both of these programs.

**Objective 1.1: Provide Science and Technology Results with Meaningful Impact on the Field****Weight:** 50.00%**Score:** 3.6                    **Grade:** A-**Objective Evaluation:**

Ongoing supported programs in ultrafast science (PULSE) and catalysis science (SUNCAT) were not reviewed in FY 2011; they continue to be successfully executed, of high scientific merit and quality, and are advancing the DOE mission. An AMO investigator received an SC Early Career award that has been initiated as an important new addition to the BES AMO Sciences program at SLAC.

Overall, the BES Materials Sciences and Engineering (MSE) Division-funded research at SLAC has been highly impactful on the field. The Stanford Institute for Energy and Materials Sciences (SIMES) programs continue to possess outstanding scientific excellence in the areas of nanomagnetism, high temperature superconductors, materials synthesis and strongly correlated electron systems. The unified and interconnected PULSE and SIMES programs have resulted in a distinct MSE program with clear science goals that serve the overarching SLAC mission. These world-leading programs continue to thrive in the newly formed Division of Materials Sciences at SLAC.

**Objective 1.2: Provide Quality Leadership in Science and Technology that Advances Community Goals and DOE Mission Goals****Weight:** 50.00%**Score:** 3.7                    **Grade:** A-

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**Objective Evaluation:**

PULSE researchers were prominent in conceiving, orchestrating, and conducting many high-profile experiments at the LCLS in FY 2011. While these experiments are all multi-institutional and several are multi-national, PULSE investigators were important contributors and the presence of their expertise locally at SLAC was critical to their success. SUNCAT is poised to assume a leadership position in computational catalysis science and strongly enhance the BES catalysis science portfolio.

The research projects supported at SLAC by the MSE Division that are deemed world leading are those in correlated electron systems, nanomagnetism, ultrafast science and materials discovery as evidenced by the latest program and mail reviews and results published in the scientific literature. The laboratory successfully recruited Harold Hwang in the area of materials synthesis which will ensure the leadership in the programs in the aforementioned fields and in other energy relevant areas. His presence at SLAC has already resulted in high profile publications. One SLAC staff member was awarded the 2011 Oliver E. Buckley Prize from the APS for innovations in ARPES that helped advance our understanding of cuprate superconductors and correlated electronic systems.

**Goal 2.0: Provide for Efficient and Effective Design, Fabrication, Construction and Operations of Research Facilities****Weight:** 50.00%**Score:** 3.9                      **Grade:** A**Goal Evaluation:**

- SLAC successfully executed a conceptual design for the LCLS-II project, passed an Office of Project Assessment CD-1 Readiness Review for LCLS-II and received the ESAAB recommendation for CD-1, and met its Notable Outcome Goal.

**Objective 2.1: Provide Effective Facility Design(s) as Required to Support Laboratory Programs (i.e., activities leading up to CD-2)****Weight:** 25.00%**Score:** 4.0                      **Grade:** A**Objective Evaluation:**

SLAC successfully executed a conceptual design for the LCLS-II project, passed an Office of Project Assessment CD-1 Readiness Review for LCLS-II and received the ESAAB recommendation for CD-1.

**Objective 2.2: Provide for the Effective and Efficient Construction of Facilities and/or Fabrication of Components (execution phase, post CD-2 to CD-4)****Weight:** 15.00%**Score:** 3.4                      **Grade:** B+**Objective Evaluation:**

The LUSI project has been making excellent progress and is expected to finish early in 2Q FY12, ahead of schedule.

The project has struggled with the state-of-the-art photon detectors but has successfully mitigated

the most of the issues.

**Objective 2.3: Provide Efficient and Effective Operation of Facilities**

**Weight:** 50.00%

**Score:** 4.0                      **Grade:** A

**Objective Evaluation:**

The Linac Coherent Light Source (LCLS) has been operating reliably since it first started on June 2010. The performance of LCLS has continued to improve with shorter pulse length and higher peak power.

The Stanford Synchrotron Radiation Lightsource (SSRL) continued operating reliably and achieved the operation at 350 mA since the implementation of the top-off operation. The FY 2011 triennial operations review showed that SSRL has been performing with excellent output and scientific impacts.

**Objective 2.4: Utilization of Facility(ies) to Provide Impactful S&T Results and Benefits to External User Communities**

**Weight:** 10.00%

**Score:** 3.8                      **Grade:** A

**Objective Evaluation:**

The unique capabilities provided by the Linac Coherent Light Source (LCLS) have generated tremendous excitement and attracted 427 proposals involving 1297 scientists from 28 countries since commissioning began in the Fall of 2009. The early experiments have produced many exiting "first time" high impact science results, such as single shot imaging.

The Stanford Synchrotron Radiation Lightsource (SSRL) has continued to be a steady and reliable synchrotron facility for a wide range of scientific communities and supporting over 1400 unique users each year.

**Goal 3.0: Provide Effective and Efficient Science and Technology Program Management**

**Weight:** 25.00%

**Score:** 3.5                      **Grade:** A-

**Goal Evaluation:**

- Communication between the BES and SLAC management was proactive, timely, and excellent in FY 2011.
- The appointment of a Chief Scientist along with the selection of other key leadership slots will aid in integrating and optimizing across SLAC's science portfolio.
- The excellent leadership provided by the LCLS management team has resulted in operations at a level exceeding expectations since it started operating.
- SLAC successfully accomplished the Notable Outcome Goals, "Implement strong, coordinated programs within SLAC's new division structure," and "Develop a strategic vision to fully utilize LCLS and to expand the Laboratory's photon science program."

**Objective 3.1: Provide Effective and Efficient Strategic Planning and Stewardship of**

**Scientific Capabilities and Program Vision****Weight:** 40.00%**Score:** 3.4**Grade:** B+**Objective Evaluation:**

The initiation of SUNCAT and its world-class scientific leadership have had a demonstrative impact on advancing SLAC's strategic planning in use-inspired basic research with energy relevance in the chemical sciences. This remains a work in progress and SUNCAT, in addition to leading energy-relevant chemical sciences at SLAC, must also find its appropriate niche in the BES chemical sciences portfolio. PULSE, originally organized about the central theme of ultrafast science, must continue to define a clear and coherent scientific vision as SLAC evolves its strategic vision for grand challenge and use-inspired basic research.

The MSE-supported program at SLAC continues to have a strong scientific vision for the future. With the promotion of ZX Shen to Chief Scientist, and the appointment of Tom Devereaux and Harold Hwang as SIMES' acting director and co-director, respectively, the MSE-funded program continues to pursue grand challenge science in energy-related materials. SLAC is actively recruiting scientific talent in key areas which will further aid in building premier multi-disciplinary scientific programs which serve the overall BES mission areas in the laboratory. The participation of MSE-supported PIs in the construction of and first experiments with the LCLS SXR instrument is duly noted. The development of in-situ synthesis and spectroscopy capabilities at the SSRL through the synthesis capability completion is noteworthy.

LCLS has been performing at a level exceeding expectations since its commissioning. The excellent leadership provided by the LCLS management team contributed significantly to its present success. The SSRL management has been providing vision and leadership to improve operations and support a wide range of user communities.

**Objective 3.2: Provide Effective and Efficient Science and Technology  
Project/Program/Facilities Management****Weight:** 30.00%**Score:** 3.6**Grade:** A-**Objective Evaluation:**

SLAC management is to be commended for continuing its successful recruitment of senior scientific and management leadership in the chemical sciences. The new associate laboratory director for photon sciences also provides a significant enhancement to the catalysis science program in SUNCAT. SLAC senior management is working diligently to make a complete transition to a multi-program laboratory with an appropriate organizational and financial structure. It is critical that their vision be successfully communicated early and often to the scientific leadership in BES program centers, such as PULSE and SUNCAT.

In response to recent reviews and in consultation with the new management team at SLAC, the MSE program has been reorganized into five coordinated thematic areas. The SLAC program has demonstrated world-class leadership in some of these areas and is launching a major initiative to grow and recruit in the remaining areas. White papers have been effective in securing funding in new program directions, including a successful proposal in Topological Insulators. SLAC management is advised to be diligent in the development of strategic white papers and prioritization of proposals as several did not review well in FY 2011.

Both LCLS and SSRL have been operating with high efficiency and are effectively managed. Both LCLS-II and LUSI projects have excellent project teams which effectively manage each project. Strong support by senior lab management is clearly evident.

**Objective 3.3: Provide Efficient and Effective Communications and Responsiveness to Headquarters Needs**

**Weight:** 30.00%

**Score:** 3.5

**Grade:** A-

**Objective Evaluation:**

Communication between CSGB and SLAC management was again strong in FY 2011. Through a series of regular phone conferences and in-person briefings, SLAC management kept CSGB fully informed on issues relating to PULSE, SUNCAT, and changes in the laboratory organization and financial systems.

Communication between the MSE Division and SLAC management was proactive and timely. Program highlight submissions have been copious and of the utmost scientific quality and impact. Press releases on MSE topics have been uniformly excellent.

Communications between BES SUF Division and the management of both the LCLS and SSRL were excellent in FY 2011.

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**Goal 1.0: Provide for Efficient and Effective Mission Accomplishment****Weight:** 25.00%**Score:** 3.6                    **Grade:** A-**Goal Evaluation:**

SLAC provides endstations and technical expertise for the structural biology and subsurface biogeochemistry research communities. The resources and expertise provided are best-in-class and contribute substantially to progress in these scientific fields, advancing BER scientific goals.

- End user stations for structural biology and subsurface biogeochemistry are fully subscribed.
- Users and staff publish a large number of high quality papers in high profile journals.
- Staff are active participants in planning for BER and the scientific community.

**Objective 1.1: Provide Science and Technology Results with Meaningful Impact on the Field****Weight:** 60.00%**Score:** 3.6                    **Grade:** A-**Objective Evaluation:**

- SSRL manages a Science Focus Area for the Subsurface Biogeochemistry Research (SBR) which reviewed favorably in FY2011 and was accepted without revision for another three years of funding. The SSRL program continues to produce solid contributions to the scientific literature for SBR and maintains extensive collaborations within the SBR program.
- The Structural Biology program continues to achieve outstanding levels of publication in leading scientific journals.

**Objective 1.2: Provide Quality Leadership in Science and Technology that Advances Community Goals and DOE Mission Goals****Weight:** 40.00%**Score:** 3.5                    **Grade:** A-**Objective Evaluation:**

- SSRL researchers continue to maintain a leadership role in advancing environmental molecular scale science and continues to maintain functional collaborations with both external and internal researchers within the Subsurface Biogeochemical Research program.
- SSRL staff members are recognized for their expertise in structural biology. They serve on advisory committees for other light sources worldwide and are consulted by Federal agencies and foundations seeking to develop new or upgraded facilities. As a result of the strong in-house expertise, SSRL provides the highest quality experimental stations for

structural biology and environmental research.

**Goal 2.0: Provide for Efficient and Effective Design, Fabrication, Construction and Operations of Research Facilities**

**Weight:** 50.00%

**Score:** 3.5                      **Grade:** A-

**Goal Evaluation:**

- SLAC leverages its synchrotron light source to provide research resources for the structural biology and subsurface biogeochemistry research communities. The high quality and number of publications and the uniqueness of the research are a testament to the quality and value of the research resources.

**Objective 2.3: Provide Efficient and Effective Operation of Facilities**

**Weight:** 90.00%

**Score:** 3.5                      **Grade:** A-

**Objective Evaluation:**

- SSRL provides the highest quality experimental stations for structural biology and environmental research. The laboratory continues to innovate and to have an outstanding record for implementing the newest technologies. SSRL capabilities impact both the user community and the local research program.

**Objective 2.4: Utilization of Facility(ies) to Provide Impactful S&T Results and Benefits to External User Communities**

**Weight:** 10.00%

**Score:** 3.5                      **Grade:** A-

**Objective Evaluation:**

- SSRL capabilities in structural biology have a large external user base, as indicated by the many research articles published by users and structures deposited in the PDB during FY 2011. These capabilities also support growth of the laboratory's scientific staff, who often are co-authors on the research articles. The subsurface SFA has been strengthened by the proximity to SSRL.
- The Structural Molecular Biology program at SSRL provides a unique mechanism for access for biological scientists to the major techniques of macromolecular crystallography, small-angle x-ray scattering and x-ray spectroscopy. A single user interface enables access to all three techniques, unlike the separated management structures at other DOE synchrotrons. The program supports three stations that each provided 100 or more new structures deposited into the Protein Data Bank during the past year.

**Goal 3.0: Provide Effective and Efficient Science and Technology Program Management**

**Weight:** 25.00%**Score:** 3.6                    **Grade:** A-**Goal Evaluation:**

SLAC continues maintain and excellent scientific staff who support excellent, world-leading technology for researchers from the structural biology and subsurface biogeochemistry communities.

- High quality technology development and user support.
- Excellent staffing from senior scientists to post doctoral fellows.
- World leading instrumentation.
- Excellent and timely communication.

**Objective 3.1: Provide Effective and Efficient Strategic Planning and Stewardship of Scientific Capabilities and Program Vision****Weight:** 20.00%**Score:** 3.6                    **Grade:** A-**Objective Evaluation:**

- SSRL researchers continue to devise new ways to interrogate environmental samples with the analytical capabilities available at SSRL and provide molecular scale understanding of processes impacting the mobility of contaminants in subsurface environments.
- The Structural Biology program at SSRL comprises an outstanding group of scientists. The laboratory demonstrates excellent stewardship of this resource, without which SSRL could not be productive, and is highly successful in retaining these scientists, as well as attracting new staff members in order to continue to provide its high level of technology and user support.
- SLAC scientists and management have been proactive in strategic planning for future alignment with BER programmatic priorities.

**Objective 3.2: Provide Effective and Efficient Science and Technology Project/Program/Facilities Management****Weight:** 30.00%**Score:** 3.5                    **Grade:** A-**Objective Evaluation:**

- The SSRL program continues to strengthen its subsurface science focus by engaging researchers within the Subsurface Biogeochemical Research (SBR) program in new and/or innovative ways. The science plan for the SFA program at SSRL reviewed favorably and was accepted without revision for another three years of funding by the SBR program.

**Objective 3.3: Provide Efficient and Effective Communications and Responsiveness to Headquarters Needs****Weight:** 50.00%

**Score:** 3.6

**Grade:** A-

**Objective Evaluation:**

- SSRL maintains excellent communication with Subsurface Biogeochemistry Research program managers particularly ahead of the SFA review in FY2011.
- Laboratory management and staff communicate effectively with headquarters program staff for the structural biology activities. Formal reports are complete and informative and informal communication from the lab is responsive to headquarters needs.

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**Goal 2.0: Provide for Efficient and Effective Design, Fabrication, Construction and Operations of Research Facilities**

**Weight:** 100.00%

**Score:** 3.9                      **Grade:** A

**Goal Evaluation:**

SLAC has been very effective in all aspects of the Matter in Extreme Conditions Instrument (MECI) project. MECI is a Major Item of Equipment (MIE) project funded through the American Recovery and Reinvestment Act (ARRA) of 2009. Total funding is \$19.973M. SLAC has started to lay the groundwork for developing the community to utilize the new instrument when it is fully available for phased commissioning in about a year. The proposal evaluation for FY 2012 user-assisted phased commissioning demonstrates SLAC's commitment to early science discovery and maximum utilization.

SLAC was proactive in obtaining advanced procurement authority at CD-1 (March 1, 2010), which allowed them to begin long-lead procurements prior to CD-2/3 and execute major procurements quickly after the December 8, 2010 CD-2/3 approval. Throughout FY 2011, the highly qualified and motivated project team has effectively established the key project documentation and management systems and executed those plans. It is also urged that the Lab and program leadership vigorously explore the potential of scientific alignment of Warm Dense Matter physics research with LBNL and LLNL.

**Objective 2.1: Provide Effective Facility Design(s) as Required to Support Laboratory Programs (i.e., activities leading up to CD-2)**

**Weight:** 20.00%

**Score:** 3.4                      **Grade:** B+

**Objective Evaluation:**

SLAC has moved swiftly from CD-0 to CD-1 (March 1, 2010) with permission for advanced procurements. They progressed quickly to CD-2/3 on December 8, 2010 and were able to benefit from advanced planning to let a significant number of procurements prior to the December holiday break.

**Objective 2.2: Provide for the Effective and Efficient Construction of Facilities and/or Fabrication of Components (execution phase, post CD-2 to CD-4)**

**Weight:** 80.00%

**Score:** 4.0                      **Grade:** A

**Objective Evaluation:**

SLAC/MECI has excelled in executing the project per the Project Execution Plan (PEP) using best practices. Proper planning has enabled the team to effectively leverage other SC projects at SLAC, thereby minimizing design and procurement risk, and preserving contingency reserve funds. With the excess contingency funds the team has been able to exercise the increased scope options in the PEP. Additional scope includes: 1. Automation of the motion system to precisely locate the forward scattering X-ray Thompson Spectrometer (XRTS), 2. Provide a ceiling in the

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control room, 3. Add a 2D x-ray detector (diagnostics), 4. Add a second streak camera for the Velocity Interferometer System for Any Reflector (VISAR) system (diagnostics). The management team has been highly qualified and effective in performing all the proper project and program management functions in a timely and transparent manner. The project is doing well in all of its activities. SLAC has been very effective in pulling together a management team capable of planning and executing the project successfully. The original project manager has been recruited away and the deputy project manager has stepped up to the challenge of managing the project without any negative consequences due to the personnel change. Since the project will be transitioning to the program in the next fiscal year, selecting a high-caliber staff scientist for MECI should be a priority. SLAC has started an effective program which will eventually establish an excellent user community.