Stanford Linear Accelerator Center

Operated for the U.S. Department of Energy by Stanford University

2002 ES&H Self-Assessment Report

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Year 2002 Environment, Safety & Health Self-Assessment Report

I. Purpose of this Document

This document summarizes the SLAC efforts to assess and improve the health of the laboratory's Integrated Safety Management Systems. Included are a detailed record of the self-assessment process, a summary of the outcome and conclusions from each self-assessment tool, and a summary of the SLAC environment, safety, and health performance. This information is used to draw conclusions about the overall health of Safety Management Systems at SLAC (in Department of Energy terminology "Safety" includes environment, safety, and health issues), effectiveness of the environment, safety, and health program at SLAC, and identify areas requiring attention in the future.

II. Executive Summary

The 2002 self-assessment process uses the following tools:

- DOE/SLAC Integrated Safety Management System (ISMS) Reviews
- Talk, Walk, Clean (TWC) Program
- Line Management /Building Management Assessment Program
- Worker Initiated Assessments/Behavior Based Safety (BBS) Process
- Independent Assessments
- ES&H Briefing Event
- Performance Measures

These tools were used to determine the health of the Safety Management Systems and environment, safety, and health performance at the laboratory. This process suggested that the safety management systems at the laboratory are effective and achieving desired results.

III. Overview of the 2002 Self-Assessment Process

The SLAC self-assessment (SA) programs are designed to evaluate the effectiveness of the ISMS systems and environment, safety, and health programs at SLAC. The SA process has been designed to integrate with, and support the SLAC ISMS, that is required under the University's contract with the DOE. This report reviews the following tools that were used in the 2002 self-assessment process:

- DOE/SLAC ISMS Reviews (DOE with SLAC)
- Talk, Walk, Clean (TWC) Program (SLAC Only)
- Line Management /Building Management Assessment Program (SLAC Only)
- Worker Initiated Assessments/Behavior Based Safety (BBS) Process (SLAC Only)
- Independent Assessments (third Party with SLAC)
- ES&H Briefing Event (SLAC Only)
- Performance Measures (primarily DOE)

Evaluating the overall integration of environment, safety, and health into SLAC management and work practices at all levels is a fundamental part of the self-assessment process. The parts of the institution involved in each of the self-assessment tools are summarized below:

Level within Institution	Self-Assessment Tool
Major Department or Project Within Institution	DOE/SLAC ISMS Reviews
Division, Department, Groups, or Employees	Talk, Walk, Clean Program
Division, Departments, Groups, or Employees	Line Management/Building Management Assessment Program
Employees	Worker Initiated Assessments/Behavior Based Safety (BBS) Process
Divisions, Departments, Groups, or Projects	Independent Assessment of compliance by third party
Institution-wide	DOE Performance Measures
	ES&H Briefing Event

This is the second year that a joint DOE/SLAC ISMS review has been included as an element of the overall self-assessment process. DOE and SLAC partner to examine the effectiveness of safety management systems within a selected area or activity within the laboratory. This self-assessment tool is specifically designed to determine how well the ISMS process is being implemented at the facility.

This is the seventh year that SLAC has conducted Safety and Environmental standdowns. This annual event was significantly revised (beginning in 2000) into the Talk, Walk, Clean (TWC) program, which was designed to identify and correct behavioral, procedural, managerial, and facility-related safety and environmental concerns. The TWC program allows groups to choose one of three options: the traditional safety and environmental discussion ("Talk"), a walk-through inspection of a predetermined area ("Walk"), or a clean-up activity for a pre-designated area ("Clean"). This year, the laboratory held a second standdown process titled the "ES&H Briefing Event." This special activity involved Division Associate Directors providing a briefing to their staff to help improve ES&H performance, and providing an opportunity for feedback from the staff to line management.

In addition to the TWC program, Associate Directors, Managers, and Building Managers continue to perform inspections and walk-throughs of SLAC areas and buildings through the Line Manager and Building Manager assessment process. These reviews provide information on the environment, safety, and health of line facilities and programs.

The worker initiated assessment process, Behavior Based Safety (BBS), continued with the Mechanical Fabrication Department *Prevent Accidents Work Safe (P.A.W.S.)* team, and the *Safety Towards Avoiding Risk Today (S.T.A.R.T.)* group. Both teams have completed the three stages of BBS, which include data collection, data analysis, and creation of an action plan. BBS is a process that uses peer-to-peer observation of safetyrelated behavior followed by positive verbal feedback, data collection, and problemsolving to improve, identify, and correct at-risk behaviors and the management systems that produce those at-risk behaviors.

Over the past four years, URS Corporation (a private consulting firm, formerly known as Dames and Moore) has conducted two independent assessments per year of environment, safety, and health compliance at the SLAC facility. Each assessment was conducted over a four-day period and included site visits, compliance document reviews, and interviews with facility personnel. Findings were sorted into several categories and four levels, with level one as the most serious and level four as the least serious. These assessments verified that existing management systems yield compliance assurance. The assessments also provided a mechanism to promote continuous improvement in the areas of safety, health, and environmental protection.

The Performance Measures section of this report summarizes *outcome measures* that provide results, such as rates of injuries, and *process measures* that show the progress toward completion of milestones in the management programs. DOE and SLAC collaborate to define the performance measures used to evaluate the effectiveness of environment, safety, and health programs at SLAC. Generally, the performance measures fall into one of the following categories:

- Anticipate, identify, evaluate, and control personnel hazards.
- Perform work in a way that does not present a threat of harm to employees, the public, or the environment; and identify, control, and respond to environmental hazards.
- Minimize or manage hazardous and radioactive waste generated and restore the site where appropriate.
- Integrate ISMS into the management and work practices at the institutional, site, and activities levels to protect employees, the public, and the environment.

The DOE Performance Measures process is described in the *Overview of 2002 Self-Assessment Results* section, below.

IV. Overview of 2002 Self-Assessment Results

Self-assessment results of the environment, safety, and health management systems and the ES&H Division suggest that the laboratory management systems are effective in meeting the seven Guiding Principles and five Core Functions of ISMS requirements. The detail level of ISMS requirements identifies gaps to provide opportunity for improvement. The results are summarized below.

A. DOE/SLAC ISMS Reviews

During Fiscal Year 2002 (10/1/01 - 9/30/02), the Hazardous Waste and Hazardous Materials Management Program and the Klystron Test Laboratory were evaluated. At the time of this writing, the Klystron Test Laboratory report was being completed. With the Hazardous Waste and Materials assessment, the number of noteworthy

practices (2) and strengths (13) outnumbered the opportunities for improvements (5) by three to one. The report concluded that all eight review criteria were met for non-radiological hazardous waste and hazardous materials management.

B. Talk, Walk, Clean (TWC) Program

The results of the TWC program can be gauged by the degree of staff involvement and the scale of information and materials associated with the program. As in previous years, the Director, Associate Directors, and the majority of staff participated directly in the program. In the *Talk* effort, 39 environment, safety, and health issues were identified and reviewed for the appropriate corrective action plans. In the *Walk* program, 13 walk-through inspections were performed, identifying and removing hundreds of environment, safety, and health deficiencies from the lab facilities. Included in this year's *Walk* program were five evacuation drills. The *Clean* program contributed to making the work areas more safe and orderly by removing about 2 tons of recyclable paper and cardboard and 54 pallets of salvageable materials and equipment (including office furniture). These efforts contributed to the health of management systems and the facility's operations as a whole.

C. Line Management/Building Management Assessment Program

Line Management assessments were conducted on a regular basis. These include, but are not limited to those reported to the ES&H Coordinating Council (ES&HCC). The ES&HCC minutes provide a record of assessed activities. In addition, the Building Manager Program includes an annual safety walk-through, coordinated by Building Managers.

D. Worker Initiated Assessments/Behavior Based Safety (BBS)

A traditional measure of the progress of BBS activities is the number of worker observations that are occurring in the workplace. With a combined effort of both teams (S.T.A.R.T. and P.A.W.S.), the total number of observation visits associated with this process currently stands at 1,701 with 19,523 individual behaviors observed. This is a 161% increase in the total number of observation visits as compared to 2001.

A second measure of success is the "percent safe," which is defined as the percentage of behaviors observed where the safe behavior is demonstrated (behavior in which the worker is **not** placing him/herself at-risk of sustaining an injury or illness). The average percent safe for both teams is 95%. This result exceeds our objective of attaining an average of 90% safe.

E. Independent Assessments

The first independent assessment by URS was held November 12 - 16, 2001. This assessment addressed: 1) General Health and Safety; 2) Electrical Safety; 3) Emergency Response; and 4) Groundwater/Soils programs. During this assessment, 81 findings were reported; all at hazard level three (recall that URS uses a range of four levels with level one as the most serious and level four as the least serious). As of October 17, 2002, 73 of 81 (90%) of these findings had been corrected.

The second assessment, focused on the Environmental and Radiation programs, was held May 20 – 24, 2002 and addressed: 1) Hazardous Waste Programs/Waste Accumulation Areas; 2) Radioactive Material (Packaging and Transportation); 3) Radiation Protection Program per DOE requirements; 4) Radiation Dosimetry Sweep/Department Of Energy Lab Accreditation Program (DOE/LAP); 5) Hazardous Materials (Storage, Packaging, and Transportation); and 6) Storm Water/Surface Water. URS identified 46 hazard level three findings for these areas. As of October 17, 2002, 40 of 46 of these findings (87%) had been corrected.

F. ES&H Briefing Event

As a result of the Directorate's concern with the number of Occurrence Reporting and Processing System (ORPS) reportable safety and environmental incidents and near misses at SLAC in 2002, all employees were requested to attend a 30-minute safety standdown on August 29 to heighten employee awareness of environment, safety, and health issues. The Associate Directors from each Division at SLAC conducted the meetings using a "Safety Standdown Briefing" prepared by the Directorate. All users on site were also strongly encouraged to attend. The Director's concern for employees' health and the health of the environment were communicated. In addition, details were provided of the role of employees and managers in helping to maintain the laboratory's history of excellence in safety and environmental performance.

G. Performance Measures

DOE assesses performance and assigns points associated with the results. Performance information developed by SLAC provides a preliminary assessment of overall performance for the DOE to use in developing their evaluation of the SLAC program. The status of performance measures is provided based on the latest information which is available, some were determined as of the later part of September, some the early part of October for this report. As of the date of this writing, data is still being collected for some criteria. The data will help the DOE and SLAC determine how the laboratory performed in the performance period that is formally associated with each performance criteria.

H. Conclusion

Self-assessment of the overall Safety Management Systems, as well as the components of those management systems, suggest that the SLAC ISMS process was effective. Moreover, the SLAC environment, safety, and health performance supported this conclusion.

V. Relationship of Self-Assessment to the ISMS Process

This is the second year of a joint DOE/SLAC review program for the level of implementation of the ISMS program. This process has been incorporated into the overall self-assessment effort, and is provided as Appendix A. Two reviews were conducted since last year's 2001 SA report. They covered Hazardous Waste and Hazardous Materials Management, and Klystron Test Lab activities. At the time of this writing, the Klystron Test Lab review was completed and the draft report was being circulated for approval. These reports provide a review of noteworthy practices, strengths, and opportunities for improvement.

In addition to the ISMS review process, the other elements of self-assessment served an important role in assuring that the Guiding Principles and Core Functions as defined in the SLAC Integrated Safety Management System document were carried out at the working level.

VI. Detailed Discussion of 2002 Self-Assessment Activities/Results

A. DOE/SLAC ISMS Reviews

The available ISMS review report is provided in Appendix A.

B. Talk, Walk, Clean (TWC) Program

A detailed description of the methods and results from the TWC Program is provided in Appendix B, the TWC Program Report.

C. Line Management/Building Manager Assessments

A program of structured Line Management and Building Manager assessments continue to be a part of the overall self-assessment effort. These activities were summarized routinely through a quarterly report from each Division to the ES&HCC. These reports included but were not limited to activities such as walk-throughs of buildings and projects, updates of the status of administrative concerns such as training, identification of emerging environment, safety, and health issues, and lessons learned as identified by the Divisions. Divisional Safety Coordinators routinely query key individuals within their divisions to prepare information for these reports. The line supervisors, Building Managers, and Division Safety Coordinators maintained detailed records of these line inspections. The Secretary for the ES&HCC maintains records of the Divisional Quarterly Reports to the ES&HCC.

D. Worker Initiated Assessments/Behavior Based Safety

As previously described, the worker-initiated assessments are a behavior based safety process. This peer-review process is designed to allow workers to initiate an assessment of both safe and at-risk behaviors and to generate recommendations to improve workplace safety. The objective of BBS is to reduce the probability of an employee sustaining a work-related injury or illness.

1. BBS Process

The key teams for identifying and analyzing safe and at-risk behaviors are called S.T.A.R.T. and P.A.W.S. S.T.A.R.T. consists of employees from the Site Engineering and Maintenance (SEM) and the Operational Health Physics (OHP) departments. The S.T.A.R.T. Team participated in the BBS Pilot study, which is considered Phase I of BBS. P.A.W.S. consists of employees from the Mechanical Fabrication Department (MFD) and represents the second implementation (or Phase II) of BBS at SLAC.

The teams were divided into two functional sections: the *Steering Committee* and *Observers*. Observers worked with peers to identify and provide feedback on atrisk and safe behaviors. The Steering Committee analyzed at-risk behaviors within their respective work groups. The Steering Committee provided team suggestions to the appropriate Citizen Committees and SLAC departments to effect changes in work environments, safety policies, or procedures. A management sponsor, a member of the ES&H Coordinating Council, is a direct management contact for the teams to provide guidance and resources needed to effect changes in work environments or safety policies and procedures. The management sponsor also helps keep team suggestions and the BBS visible to upper management.

Prior to initiating the BBS process, the SLAC Union Steward and members of the SLAC Bargaining Unit participated in a meeting to discuss the BBS process. Bargaining Unit members now participate as Steering Committee members and Observers.

The BBS process consists of five major steps shown in Figure 1 below:

- 1. Team peers and workers identify safe and at-risk behaviors.
- 2. Team provides analysis of worker-initiated feedback.
- 3. Team analyzes behaviors and barriers to safety.
- 4. Team identifies barriers and communicates suggestions toward improving safety.
- 5. Changes are made in work environments, policies, procedures, or guidelines with the goal of improving safety.

The teams may bring recommendations for addressing at-risk behaviors to the Safety, Health and Assurance (SHA) Department, Operating Safety Committee,

SLAC Citizen Committees or to department heads, project managers, safety coordinators, or others who could provide changes to the work environment. These changes might impact a single work area or be implemented across the SLAC site (a feedback mechanism as shown in Step 5 above, and in ISMS Core Function 5).

2. Management Participation

SLAC management has been indirectly involved in the BBS process in tasks ranging from ES&HCC approval of funding for BBS, to supporting an employee who needed time for observations. On-going meetings were scheduled to inform the ES&HCC of BBS successes. Managers and supervisors within OHP, SEM, and MFD actively worked with the Steering Committee and Observers to participate in observations, attend ownership meetings, and avert scheduling and budgetary constraints.

3. Milestones

- 3.1 On-going Action Items for S.T.A.R.T.:
 - Identify Critical Behaviors,
 - Observe (Data Collection and Feedback),
 - Reduce/Eliminate Barriers,
 - Plan Action
- 3.2 Action Items for P.A.W.S. within MFD:
 - Identify Critical Behaviors,
 - Observe (Data Collection and Feedback),
 - Reduce/Eliminate Barriers,
 - Plan Action

4. Observations, Data Generation, and Action Planning

Appendix H provides a summary of observation results from the BBS. Since initiation of the BBS process, more than 1,701 observations have been conducted. During the observation and feedback process, data and information were collected. The data were then entered into a software database from which reports were generated about at-risk behavior trends. These data were used by the Steering Committees (P.A.W.S. and S.T.A.R.T.) to generate action plans. To produce quantifiable data, the reports were reviewed by the Steering Committee of each group. This review process served as a method of quality control by ensuring that the barriers to safety were correctly identified by consensus and then entered into the database. In addition to the topic of barriers to safety, the detail level of observations, appropriateness of the categories, and feedback levels were reviewed to ensure that data entry personnel correctly interpreted these items. The database was modified to reflect changes advised by the review process. The barrier reports were generated from the database to aid in the Action Planning phase.

The Action Planning phase required quantifiable data to develop the steps needed to address an at-risk behavior trend. After a trend was identified, an action plan was created by each Steering Committee to inform at-risk work group(s). The Steering Committees sought assistance from employees who may or may not have worked within the targeted population for BBS. To create the last action plan, the Steering Committee collaborated with individuals in the following departments: SHA, Training, OHP, and SEM.

E. Independent Assessments

The Quality Assurance and Compliance (QAC) Group in the Safety, Health and Assurance Department (SHA) coordinated the program of independent assessments. This program included three major elements: 1) a multi-disciplinary assessment of projects for environment, safety and health and building code requirements by ES&H Division professionals, 2) safety and environmental field surveillance by QAC personnel, and 3) subcontracted multi-disciplinary semi-annual audits provided by URS. These activities provided assurance that applicable regulations, ISMS, and other requirements were implemented. Multi-disciplinary assessments for SLAC projects continued to be numerous during the year, and are on record in QAC. Safety and environmental field surveillance is also an ongoing activity and any unresolved issues are tracked by the ES&H Division.

Results from the November 2001 URS assessment indicated that all programs were generally in place. The details about implementing programs for SLAC and subcontractor employees were highlighted as possible improvement areas. All findings were hazard level 3 (recall that URS uses a range of four levels with level one as the most serious and level four as the least serious). The following type and number of findings resulted from this activity

Assessment Topic - Number of Findings	
General Health & Safety- Industrial Safety- 30	
General Health & Safety- Fire Protection- 23	
General Health & Safety- Hazardous Materials- 11	
Electrical Safety- 10	
Emergency Preparedness- 7	
Groundwater soils- 0	

During the second assessment by URS in May of 2002, a mixture of programmatic and program implementation details were reported. Most programmatic issues involved technical interpretations for the wastewater treatment program. The findings were distributed as follows:

Assessment Topic - Number of Findings	
Hazardous Materials Management- 24	
Hazardous Waste Management- 13	
Protection of Water Quality- 9	
Radiation Protection/Dosimetry- 0	

F. ES&H Briefing Event

The August 29, 2002 safety standdown was called by the Director in response to an unusually high number of environment, safety, and health incidents that had recently occurred. The number of significant incidences through August 27, 2002 was nine, as compared to eight, six, and four for calendar years 1999, 2000, and 2001, respectively. A meeting was conducted for each division by the division's Associate Director (AD). Each AD reviewed the recent incidents and discussed how these and other such incidents are categorized and investigated, and how resulting corrective actions are tracked to capture lessons learned with the goal of preventing future incidents. The ADs then reviewed the actions that all personnel should take to work safely (including identifying the hazards and controls for each task; signing up for needed training; asking questions and requesting help when necessary; and stopping unsafe activities) and to protect the environment. Each AD stressed that all personnel need to continue to follow procedures, balance job urgency and safety, and only perform authorized tasks. The formal presentation concluded with the ADs reminding managers to lead by example and to find and fix conditions that may contribute to accidents or incidents.

A safety dialog occurred in these meetings and resulted in some constructive suggestions, on which management is following-up.

G. Performance Measures

The laboratory uses performance measures to track environment, safety and health progress each quarter. The performance measures consist of: 1) outcome measures, which provide results such as injury rate (known as lagging indicators), and 2) process measures, which show progress toward completion of management programs such as BBS (known as leading indicators).

Overall good progress has been made in environment, safety and health performance as demonstrated by the specific information provided in Appendix I.

VII Self-Assessment Program Lessons Learned

At the end of each year's Self-Assessment process, an analysis is made by SEDAC of how well the program performed in advancing the state of ES&H programs and results. Traditionally, SEDAC has been willing to propose to management evolutionary or revolutionary change to the program to help continually improve results. Changes in the SA approach are helpful as problems are identified and permanent fixes are completed over the course of the years. Also, as new requirements and expectations emerge the program should keep pace with the new requirements. In this spirit this year's Lessons Learned analysis is provided below, for each of the self-assessment tools. These Lessons Learned will influence the SEDAC proposal to senior management for next years' program. Next year's SA program proposal is scheduled to be developed and delivered to the ES&HCC in the fall of 2002.

A. DOE/SLAC Integrated Safety Management System (ISMS) Reviews.

Currently SLAC and the Site Office are reviewing the joint ISMS Review process. A new process is expected for FY 2003. Since the negotiations on this topic continue, additional details are not provided in this report.

B. Talk, Walk, Clean (TWC) Program.

Over the seven years of the SLAC standdown program, this activity has contributed to safety performance results, and instilled cultural and programmatic changes far exceeding even the most optimistic of initial assessments. The effectiveness of engaging the intellectual capacity and collective experience of the laboratory staff in a positive lab wide activity, toward a set of well defined yet flexible coordinated objectives seems to be clearly established from our experience. Hundreds of safety issues have been identified by staff and resolved with the financial support of management. We believe that some of these issues might not have been identified and permanently resolved without this process. The level of awareness of staff to the technical requirements and reasonableness of expectations of management has evolved tremendously over this seven-year process. As programs have matured, and objectives have been met however, SEDAC will consider significant changes in the standdown process in the coming year. Even the most effective programs reach a point of diminishing returns with repetition of a similar process. While no decisions have been made by SEDAC regarding next year's program, the following considerations may influence the final proposal:

- Plans should be consistent with the possibility of external regulation. If SLAC is subject to external regulation, a standdown or other activity that is consistent with attaining an OSHA Voluntary Protection Program (VPP) status may be appropriate.
- The degree of completion of important leading indicators such as training, corrective action status, and other variables may be helpful to advance the state of safety. An existing internal report generated by the ES&H Division will be evaluated to determine to what extent the leading indicators might be helpful to the self-assessment process.

C. Line Management/Building Management Assessment Program

While these programs have been valuable, an enhancement might include collecting statistics on the degree to which these programs are being completed within each area or organization.

D. Worker Initiated Assessments/Behavior Based Safety

These teams seem to be performing well, with no changes anticipated.

E. Independent Assessments

The possibility of external regulation may also impact this element of the Self-Assessment. Assessments consistent with Fed OSHA protocols may be helpful to assess the readiness of the laboratory under external regulation.

F. ES&H Briefing Event

The 2002 ES&H Briefing Event was intended as a one-time only activity. No plans are in place to repeat this activity in 2003. SEDAC believes that is was highly successful in reminding laboratory staff regarding the Directorate's commitment to environment, safety and health performance.

G. Performance Measures

Currently the FY 2003 performance measures are being reviewed by SLAC and the DOE. Since the negotiations on this topic continue, additional details are not provided in this report.

APPENDICES

APPENDIX A ISMS Review Report

SLAC Integrated Safety Management (ISM) System Implementation Quarterly Review Final Report

FY02 ISM Review #1: Hazardous Waste and Hazardous Materials Management

ISM Review Team:G. Lavagnino (OAK-Team Lead); D. Rheinheimer (OAK); D. Osugi
(SSO); M. Hug (SLAC)Performance Objective:SLAC effectively integrates ISM into all management and work
practices at institutional, site, and activity levels so that missions are
accomplished while protecting the worker, the public, and the
environment.

Performance Criteria: SLAC systematically integrates the Integrated Safety Management System's (ISMS) seven Guiding Principles and five Core Functions into all management systems and work practices at the institutional, site, and activity levels.

Introduction/Purpose

In accordance with Article 42 of the contract between the U.S. Department of Energy (DOE) and Stanford University, Stanford Linear Accelerator Center (SLAC) is required to ensure that management of environment, safety and health (ES&H) is an integral part of the Laboratory's work planning and execution processes.

This review is the first of four quarterly ISMS implementation reviews scheduled for FY02 and is a joint review between DOE and SLAC. Four ISMS reviews were conducted in FY01. The collective results of the individual reviews during the fiscal year will be used as one factor for evaluating how effectively the Laboratory achieves its ES&H performance objectives and criteria on ISMS implementation (i.e. the vertical and horizontal integration of a safety management system). Other factors include ongoing operational awareness activities such as walkthroughs and field observations, self-assessments, and external audits and reviews. For each review conducted in FY02, a review team will determine how many of the eight ISMS review criteria were successfully achieved.

The SLAC line organizations, with support from the SLAC Environment, Safety, and Health (ES&H) Division are responsible for identifying hazards and determining the administrative and engineering requirements needed to protect the workers, the public, and the environment. This report documents the results of the joint review of the Laboratory's performance in the areas of non-radiological hazardous material use, handling, and storage practices, and non-radiological hazardous waste management using the Integrated Safety Management System as a framework.

Hazardous materials are used and hazardous wastes are generated in a wide range of research, operations, and maintenance activities at SLAC. This area is also one of the functional areas of environmental protection at SLAC. The management of non-radiological hazardous wastes and materials is subject to the requirements found in Titles 29, 40, and 49 of the Code of Federal Regulations, Titles 19 and 22 of the California Code of Regulations, Uniform Fire Code, and the National Fire Protection Association Codes and Standards. SLAC requirements for managing non-radiological hazardous waste and materials are also identified in existing site policies and procedures (e.g., ES&H Manual).

Scope

The scope of the review included ES&H Division and line management's programmatic and nonprogrammatic hazardous material and hazardous waste management activities. The review included an evaluation of hazardous material and hazardous waste management practices at the Hazardous Waste Storage Area (HWSA), Waste Accumulation Areas (WAAs), Satellite Waste Accumulation Areas (SWAAs), generic hazardous waste collection areas, authorized waste treatment facilities (i.e., Permit-By-Rule and Conditional Authorization), and waste generating locations. The review used SLAC's Safety Management System as a basis upon which to assess the effectiveness of the Laboratory's implementation of ISMS. The review consisted of interviews with line managers and workers, reviews of documented site policies, procedures, records, and other documentation (e.g., contingency plans, inspection records, training records, etc.), and selected field observations. The Review Team used current knowledge about site activities to select a representative sample of hazardous material use and waste generating locations, five of the eight WAAs, and each of the three treatment facilities.

The activities reviewed were evaluated at the worker and line management levels including an assessment of the extent of integration with all site-wide waste management and hazardous material functions and activities. The conclusions of the Review Team related to implementation at the activity, site, and institutional level were based on field observations, document reviews, and interviews of workers and line managers representing a cross section of site-wide activities. The evaluation is based on the criteria identified in the SLAC Safety Management System description document, approved by the SSO on December 6, 2000, which describes how SLAC implements and fully integrates the ISMS seven Guiding Principles and five Core Functions into all management systems and work practices at the institutional, site and activity levels.

The criteria, lines of inquiry, and approach used to determine whether or not the Laboratory has successfully achieved the performance criteria are provided in the FY02 1st Quarter "SLAC Integrated Safety Management (ISM) System Implementation Quarterly Review Objective, Criteria and Approach". The results of the review are provided below. A list of groups interviewed, facilities observed, and documents reviewed are included at the end of the report.

Definitions

Noteworthy Practice: A practice that significantly enhances the objectives of ISMS.

Strength: Sound or strong attribute or asset.

<u>Opportunity for Improvement</u>: Represents an isolated or non-critical discrepancy or weakness that may require corrective action (Agreement between SLAC and SSO).

Finding: Represents a significant discrepancy or weakness that requires corrective action.

Observation: Miscellaneous item that does not fall into any other category.

<u>Guiding Principle 1: Line Management Responsibility for Safety</u> <u>**Guiding Principle 2: Clear Roles and Responsibilities**</u>

- Criteria: Line management is directly responsible for the protection of the public, the workers, and the environment.
- Criteria: Clear and unambiguous lines of authority and responsibility for ensuring safety shall be established and maintained at all organizational levels within the Department and its contractors.

Strengths:

- Although not required by the SLAC Safety Management System (SMS), in most cases safety is addressed in regularly conducted meetings (daily, weekly, biweekly, or monthly).
- Line managers routinely walk through their work areas and observe activities as often as needed and practicable, although not specifically required by the SLAC SMS.

Opportunities for Improvement:

- Although clear roles and responsibilities are present, the process for evaluating personal accountability for performing work safely is not consistently applied.
- Line management responsibility for safety in the Klystron Test Lab is unclear.

Observations:

• Engineering & Technical Services Vacuum Shop workers' ongoing responsibilities, including hazardous waste-related responsibilities, are clear and are posted in the work area. This results in a better understanding of individual responsibility.

Discussion of Results:

Based on interviews and observations by the Review Team, hazardous waste and material management safety responsibilities are well understood by both management and workers. Safety is addressed routinely in many groups and as needed in others, as indicated during interviews. In cases where there are no explicit safety meetings, safety is addressed during other regular meetings (e.g. pre-work meetings), either as a separate agenda item during the meeting or as needed, depending on the level of hazards associated with the work. SLAC Safety Management System does not explicitly require safety to be addressed during regular meetings. In nearly all cases, employees understand their stop activity authority. During some interviews, it was unclear how line managers were assessing individual performance and ensuring accountability for safety as part of the annual performance evaluation mandated by the SLAC SMS. The consistent application by SLAC of a process for evaluating individual performance in safety and environmental protection would result in a higher degree of accountability at both the worker and line management levels.

The Klystron Test Lab line managers do not appear to be communicating safety issues or training requirements directly with their employees and their responsibility for safety is unclear—currently a significant portion of ES&H responsibilities have been assigned to the Safety Manager of the Test Lab.

Based on the results of the interviews and certain documents reviewed, the Lab has successfully demonstrated direct line management responsibility for safety and clear lines of authority and responsibility and has met these criteria for hazardous waste and hazardous material management. Of the Departments the Review Team evaluated, only the Klystron Test Lab did not adequately meet this criteria. (Note: Klystron Test Lab will be reviewed in more detail during the next FY02 Quarterly ISMS Implementation Review.)

Guiding Principle 3, Competence Commensurate with Responsibilities

Criteria: Personnel shall possess the experience, knowledge, skills, and abilities that are necessary to discharge their responsibilities.

Strengths:

- The Employee Training Assessment (ETA) system is a good management tool for identifying and documenting ES&H training requirements.
- Sufficient resources are available for safety and hazardous waste and hazardous materials training.

Opportunities for Improvement:

- Employee Training Assessments should be accurate and up-to-date to improve their usefulness.
- On-the-job training for work duties including related hazardous waste and hazardous materials management activities should be documented.

Discussion of Results:

The ETA is used SLAC-wide to identify and document completion of required ES&H training. Although the ETA effectively identifies required hazardous waste and hazardous materials management training (e.g., SLAC Course 105: Introduction to Hazardous Waste/Materials Management and SLAC Course 298: Stormwater Awareness Training), several line managers use customized internal training tracking and documentation systems for their respective groups. For example, the Experimental Group C and ASD Engineering & Technical Services use internal databases for tracking training. Implementation problems associated with the ETAs have diminished its effectiveness as a training tool. Completed training, for example, is not always up-to-date. The Power Conversion Electronic & Software Engineering Department Head also indicated that implementation of the ETA process can use improvement.

Sufficient resources and time exist for ES&H training; safety training is always available if required or needed, as practicable. While safety training is sometimes not practicable (e.g. when a visitor is at SLAC for only a short duration and required training is not offered during the visitor's stay), in no case will a worker be allowed to violate regulations. For example, nobody is allowed to do work in a confined space unless they have the proper training. The Review Team did not observe training classes or evaluate the content of the classes as part of the review.

On-the-job training (OJT) is routinely used throughout the Lab. However, it is not routinely formally tracked or documented. The Lab would benefit by routinely documenting OJT, such as that identified in the Hazard Communication Program (SLAC ES&H Manual, Part 4, Hazard Communication, Chapter 6). Waste Management Department does routinely document OJT, as required by RCRA and OSHA. Training evaluations and documenting OJT may be part of a future audit.

Interviewed Departments also indicated assurance of necessary experience, knowledge, skills, and abilities among personnel through their hiring practices. As an example, Power Conversion limits new hires to those with military training or with an Associates degree and two years of relevant experience.

SLAC has successfully achieved this criteria in the area of hazardous waste and hazardous materials management, as indicated by its commitment to ensure that proper ES&H training is identified and received through the use of the ETAs. However, SLAC should consider improving the ETA training tracking and documentation. The criteria for determining whether or not a hazard analysis is needed should be a required element of any supervisor training.

Guiding Principle 4, Balanced Priorities; Core Function 1, Define the Scope of Work

Criteria: Resources shall be effectively allocated to address safety, programmatic, and operational considerations. Protecting the public, workers, and the environment shall be a priority whenever activities are planned and performed.

Strengths:

- Safe management of hazardous waste and hazardous materials is not compromised due to lack of resources.
- Almost all interviewees stated that safety, especially with hazardous materials and hazardous waste, is not compromised by production or work pressures.
- Workers understand their scope of work, and that hazardous material and hazardous waste safety is part of their normal work planning process.

Discussion of Results:

Safety does not appear to be compromised because of lack of resources. Funding is generally available for hazardous waste and hazardous material safety equipment and training. For example, Power Systems Operations recently purchased a state-of-the-art flammable storage cabinet and secondary containment for a mineral oil reserve tank to protect the stormwater drain in case of spill. Resources available to the Waste Management Department clearly demonstrates the Lab's commitment to efficient allocation of resources and prioritization of safety in managing the hazards associated with the hazardous waste generated. For larger site-wide hazardous material safety system upgrades, such as full implementation of

the SLAC double-chaining requirement for gas cylinders, funding is not readily available and must be requested explicitly through the Activity Data Sheet (ADS) development process. (Note: The Review Team did not review the budget process, including the ADSs.)

Priorities are balanced during regular safety meetings (e.g. Waste Management Department daily prework meetings) or during pre-work reviews (e.g. Site Engineering and Maintenance Department ISMS Pre-Work Safety Checklist). Almost all managers and workers interviewed stated that although workers might occasionally forget a safety requirement, they do not believe safety is compromised by pressures to complete their work on schedule. Most workers indicated that their supervisors routinely emphasize the importance of safety and the Review Team did not observe any examples of workers compromising safety.

Scope of work is defined through regular operational meetings and documentation such as the Engineering & Technical Services Vacuum Shop Responsibilities list, which defines ongoing responsibilities for each worker.

The Review Team concludes that SLAC has met this criteria in the area of hazardous waste and hazardous materials management and commends the Laboratory for prioritizing the safe management of hazardous waste and hazardous materials.

Guiding Principle 5, Identification of Safety Standards and Requirements

Criteria: Before work is performed, the associated hazards shall be evaluated. An agreed-upon set of safety standards and requirements shall be established which, if properly implemented, will provide adequate assurance that the public, the workers, and the environment are protected from adverse consequences.

Noteworthy Practice:

• Engineering & Technical Services personnel routinely initial and sign ES&H Bulletins and Updates to indicate that they are familiar with the latest relevant standards that are communicated from ES&H Division.

Strengths:

• Almost all interviewees indicated that the ES&H Division provided sufficient guidance on regulations, requirements, and safety standards.

Observations:

• Workers in general are not familiar with the Work Smart Standards process. This is not an opportunity for improvement and requires no action, but was noted by the Review Team.

Discussion of Results:

SLAC uses the Work Smart Standards (WSS) Set as a tool to identify safety standards, which provide adequate assurance that the public, workers, and environment are protected from adverse consequences of Laboratory work. The WSS Set in the DOE/Stanford University contract is reviewed and updated annually and represents the mutually agreed upon ES&H standards and requirements applicable to work activities.

Although the workers interviewed were not very familiar with the WSS Set or the annual revision process, many (with the major exception of supervisors and workers at the Klystron Manufacturing Department Machine Shop) indicated that the ES&H Division provides sufficient guidance to the line organization on applicable regulations, standards, and requirements in the form of the ES&H Manual and ES&H Bulletins and Updates. The Review Team reviewed applicable ES&H Manual sections, and Bulletins and Updates, which are used to document interim requirements until the appropriate sections of the ES&H Manual are revised. Employees find the Bulletins and Updates to be relevant and useful. The Engineering & Technical Services Department Head requires his workers to read and initial relevant new Bulletins and Updates. Other Departments would benefit by implementing this noteworthy practice.

SLAC has achieved this criteria in the area of hazardous waste and hazardous materials management through the WSS on a Laboratory-wide level and through the ES&H Manual and Bulletins/Updates on the supervisory and worker level. (Refer to next section for review of hazard analyses before work is performed.)

<u>Guiding Principle 6: Hazard Controls Tailored to Work Being Performed</u> <u>Core Function 2: Analyze the Hazards</u> <u>Core Function 3: Develop and Implement Hazard Controls</u>

Criteria: Administrative and engineering controls to prevent and mitigate hazards shall be tailored to the work being performed and associated hazards.

Noteworthy Practice:

• The Engineering & Technical Services Vacuum Shop group (SSRL) systematically and proactively communicates the hazards associated with the use of a new hazardous material.

Strengths:

- Hazards are routinely analyzed and controlled for major activities.
- For operations that use procedures, safety—including safety associated with the use of hazardous materials—is integrated into the procedures, instead of addressed on the side.

Opportunities for Improvement:

• The criteria for determining when a hazard analysis is needed should be formalized for *all* work and incorporated into supervisor training.

Discussion of Results:

Hazards are analyzed and controlled for startup and operation of the Rinse Water Treatment Facility (startup procedures), Site Engineering & Maintenance activities (ISMS Pre-Work Checklist), and startup and operation of experimental equipment such as the prototype BaBar drift chamber (certifications/permits), welding (welding permits), and Engineering & Technical Services Vacuum Shop and Klystron Test Lab work involving hazardous chemicals/materials. The Review Team did not evaluate the adequacy of the analyses, due to limited scope of the review. Although hazard analyses are conducted for activities with major hazards, there is currently no guidance or mechanism for a supervisor to determine if a hazard analysis needs to be conducted for a particular activity or operation or how that analysis should be conducted, as indicated through interviews with line managers. The DOE Stanford Site Office will provide SLAC with follow-up information on this opportunity for improvement including examples of current practices at other DOE labs.

The Engineering & Technical Services Vacuum Shop employees routinely communicate hazards associated with new hazardous materials. When a Shop employee brings a new hazardous material into the Shop, that employee reviews the Material Safety Data Sheet with the rest of the group during their weekly meeting. This is a proactive way of helping line management ensure that all personnel are familiar with the MSDS of hazardous materials in their work area, as is required by the SLAC Hazard Communication Program. Other Departments might also benefit from such a practice, which could include either a briefing by an Industrial Hygienist (IH) or another employee on the safety and environmental implications of using this new hazardous material.

Controls (engineered, administrative, or personal protective equipment) tailored to the work for protecting the workers, the public, and the environment from hazardous waste and hazardous materials are used extensively at SLAC. Examples of engineered controls of hazardous waste and hazardous materials include access controls (locks) in the WAAs and secondary containment at the Hazardous Waste Storage Area. Examples of administrative controls include: daily emptying of waste rags from work areas, regular inspections of WAAs, waste container tracking by Waste Management Department, procedures, and so on. These controls may be specified and implemented at the discretion of the managers, based on his/her experience, per the SLAC SMS (Section 5.5.3.2). For those operations with formal procedures, safety is integrated into the procedures. Examples include procedures for the Plating Shop, the Rinse Water Treatment Facility, Power Systems Operations activities, and the Engineering & Technical Services Vacuum Shop activities.

Although there is opportunity for improvement in the hazard analysis process at SLAC as noted, SLAC has successfully achieved this criteria for hazardous waste and hazardous material management through the development of appropriately tailored hazard controls.

<u>Guiding Principle 7: Operations Authorization</u> <u>Core Function 4: Perform Work Within Controls</u></u>

Criteria: The conditions and requirements to be satisfied for operations to be initiated and conducted shall be clearly established and agreed-upon.

Strengths:

- Formal work authorizations or written procedures exist for major industrial hazards.
- The Plating Shop and the Rinse Water Treatment Facility have written procedures for daily start-up and shut-down.

Observations:

- The review teams did not observe anyone, generators or Hazardous Waste Department, working outside of established hazard controls.
- Waste Accumulation Areas have adequate access controls (locks) and oversight responsibilities (e.g. inspection checklist and designated person).

Discussion of Results:

Formal work authorizations are required for various activities at SLAC, such as welding, working in confined space, excavations, experimental equipment operations, preventative maintenance, hazardous waste pick-up, and power systems maintenance. SLAC operations requiring formal authorization are identified in the SLAC Safety Management System document. Most workers interviewed are aware of existing procedures and those activities requiring formal work authorizations.

Observations by the Review Team of work activities did not indicate that anyone was working outside of established controls. In the Power Conversion building (B15), when workers found themselves to be working outside their own controls by not emptying oily rag containers daily, they revised their controls by removing the containers and requiring themselves to take their oily rags directly to the WAA after use. Adequate access controls and oversight responsibilities at the Waste Accumulation Areas include locks, inspection checklists, and one designated person responsible for the respective WAAs at any given time. Team inspections of checklists indicated that WAAs are routinely checked and problems are noted and corrected promptly. Additionally, SLAC-wide only WMD-supplied containers with appropriate labels and accumulation start dates were used.

The Review Team concludes that, for hazardous waste and hazardous material management, SLAC has successfully achieved this criteria by identifying the formality of authorization required for various operations and by routinely working within established hazard controls.

Core Function 5, Provide Feedback and Continuous Improvement

Criteria: SLAC management provides several avenues for communicating concerns about hazards in the workplace to the appropriate authorities for action.

Strengths:

• Feedback information (Lessons Learned) is regularly communicated to workers.

Observations:

- SLAC experiences (Lessons Learned) are generally not shared with other DOE labs.
- The Klystron Manufacturing Department was the most aware group of external Lessons Learned.

Discussion of Results:

The Review Team found that most interviewees were able to describe various mechanisms for communicating safety and environmental issues including safety meetings, other pre-work meetings, the annual talk-walk-clean stand down, and through ES&H Bulletins and Updates. The minutes from the Operating Safety Committee, which meets monthly and is composed of representatives from all SLAC divisions, are also widely shared. These minutes often address hazardous waste and hazardous materials issues. Most interviewees were able to identify the Lessons Learned point-of-contact for SLAC.

By providing various avenues available for employees to communicate concerns about hazards in the workplace, including hazardous waste and hazardous materials, SLAC has successfully achieved this criteria.

CONCLUSION

The Review Team concludes, based on interviews, observations, and document reviews for a representative sampling of Departments and associated facilities managing hazardous waste and hazardous materials, that SLAC has met all of the eight (8) review criteria for non-radiological hazardous waste and hazardous materials management. Although there are several opportunities for improvement directed towards site-wide implementation, the Team commends the Waste Management Department and the Laboratory as a whole for their commitment to safely managing non-radiological hazardous waste and hazardous materials, consistent with the objectives of an Integrated Safety Management System.

ISMS Implementation at the Klystron Test Lab will be reviewed during the second quarter of FY2002.

Interviewed Groups and Facilities Observed:

- *Hazardous Waste Storage Area (B447): Waste Management Department* ES&H Division Director
 - Department Head
 - Technician Supervisor Technician
 - Hazardous Waste Technicians (2)
- Authorized Treatment Facilities
- Plating Shop Rinse Water Treatment Facility (B38)
- Batch Treatment Facility (B460)
 - MFD Safety Officer
 - Principal Science and Engineering Technician
 - Plating Shop Supervisor
- Waste Accumulation Areas (WAAs)
- WAA #1 (B81)
 - Facility Support Group Leader
 - Auto Equipment Mechanics (2)
- WAA #3 (B25)
 - MFD Department Head
- WAA #8 (B44)
 - Klystron Testing Group Lead
 - Building & Safety Manager/Hazardous Waste & Materials Coordinator
- WAA #6 (B26)
- WAA #13 (B18)
- Generating Locations
- Power Conversion (B15): Power Systems Operations (Electronic & Software Engineering Department)
 - Department Head
 - Deputy Department Head
 - Maintenance Supervisor
 - Principal Technician
- *Heavy Fabrication (B26): Sheet Metal/Weld Shop (Mechanical Fabrication Department)*

Dept Head Mechanical Fabrication Department

Sheet Metal/Weld Shop Supervisor / Building Manager

Lab Welder 3

- Plant Maintenance & Utilities (B35): Paint Shop (Engineering & Maintenance)
- Klystron Test Lab (B44): Machine Shop (Klystron Manufacturing Department)
 - Group Leader
 - Lab Mechanitian Supervisor
 - Lab Mechanitian Lead
- General Services (B81): Auto Repair Shop (Site Engineering & Maintenance)
 - Department Head
 - Auto Equipment Specialists (2)
- Central Lab Annex (B84): Drift Chamber Area (Experimental Group C)
 - Group C Leader
 - Associate Engineer & Safety Officer
- Laboratory Shops (B137): Vacuum Shop (ASD Engineering & Technical Services)
 - Department Head
 - Vacuum Shop Technical Supervisor
 - Principal Science and Engineering Technician
- Cooling Towers (B1201C & B1202C): (Site Engineering & Maintenance)

SEM Operations Group Leader

Documents

Support References

- DOE Safety Management System Policy P450.4
- SLAC Safety Management System, ES&H Division, October 31, 2000
- SLAC ES&H Manual, especially Chapter 17, Hazardous Waste
- Work Smart Standards (WSS)
- Hazardous Waste Generator Audit Checklist (Unidocs), AC-HW-LQG, April 24, 2000
- Hazardous Waste Generator Audit Checklist (Unidocs), AC-HW-SAT, April 25, 2000
- Hazardous Waste Tiered Permit Audit Checklist, (Unidocs) AC-TP-PBR, july 10, 2000

Documents

- ES&H Bulletins/Updates (Bulletins #10A, #35, #51, Updates Volume 3, No. 6)
- Introduction to Pollution Prevention, Hazardous Material and Waste Management (A Hazardous Material Management Handbook), ES&H Division, March 18, 1999 Revision
- Hazardous Waste Contingency Plan, SLAC-I-800-0A14L-001, December 13, 1999
- ES&H Manual, Chapter 4, "Hazard Communication", SLAC-I-720-0A29Z-011-R012, February 1, 1996
- ES&H Manual, Chapter 16, "Spills", SLAC-I-720-0A29Z-001-R015, March 21, 1997
- ES&H Manual, Chapter 17, "Hazardous Waste", SLAC-I-720-0A29Z-001-R019, November 13, 1998
- ES&H Manual, Chapter 21, "Secondary Containment of Hazardous Material and Waste", SLAC-I-720-0A29Z-001-R016, August 18, 1997
- 2001 Individual ES&H Training Plan Form (Non-Office Workers)
- Job Description, Waste Management Department, Technician Supervisor
- Job Description, Waste Management Department, Environmental Compliance Coordinator
- 8/24/99 WMD Memo: Waste Management Safety Management System Verification

- Facility Emergency Plan: B245, B436, B447, B478, B481 (Centralized Waste Management Area)
- Project/Process Safety Review Checklist
- Facility Inspection Checklist (From SLAC Building Manager Program Manual)
- Klystron/Microwave WAA Check List
- ES&H Training at SLAC: Engineering & Technical Services Vacuum Group Training Report
- ETS Vac Shop Responsibilities list
- SLAC Memorandum, "Waste Management Safety Management System Verification", August 24, 1999
- Site Engineering & Maintenance Dept. ISMS Pre-Work Safety Checklist, Version 4, 11/01

ISM Review Team Concurrences:

Gary Lavagnino, Team Lead DOE Oakland Operations Office

Dave Osugi DOE Stanford Site Office (SSO)

Michael Hug Stanford Linear Accelerator Center (SLAC)

David Rheinheimer DOE Oakland Operations Office Date

Date

Date

Date

APPENDIX B - Year 2002 TWC Program Report

Year 2002 TWC Program Report

1. TWC Process

The continuation of the Talk, Walk, Clean Programs (see Appendix B, C, D, E) demonstrated management's continuing commitment to protecting human health and the environment. Groups wishing to discuss, report, and provide corrective actions for environment, safety, and health issues via the *Talk* activity had the opportunity to do so. The *Walk* activity provided the option to perform a detailed facility walk-through, and the *Clean* choice allowed for a team cleanup activity.

Two enhancements were provided to the TWC process this year. A building evacuation exercise was added as a part of the *Walk* program. Also added was a Hazardous Work/Specialized Work tool, which enabled groups to assess the degree of compliance of their areas/work to technical specifications and requirements.

Processes used to identify teams, collect data, and report hazardous conditions or safety and environmental issues remained similar to those used in previous years. A clear set of focus topics and objectives allowed groups to be prepared for their *Talk* activity. In addition, SEDAC provided checklists for groups performing *Walk*, and extra recycling containers and garbage bins for groups performing *Clean*. Forklift drivers were on-call from various divisions to help transport items discarded during *Clean* efforts

On February 22, 2002, the Director issued an "All Hands Memo" (Appendix F) announcing the TWC event to be held April 19, 2002. TWC team leaders were given reference material at the kick-off meeting and referred to the Web for additional support. The following is the location of the TWC Web:

http://www.slac.stanford.edu/esh/standdown/standdown.html

It provides full details of this year's process. SEDAC members were available to assist anyone without easy computer access.

In keeping with the SLAC ISMS philosophy, the Talk, Walk, Clean program produced an effective way to address environment, safety, and health issues by:

- Pre-planning to ensure that the scope of work through the TWC Program was well defined and that the proper resources were applied.
- Identifying and analyzing the hazards by group activity (through discussion or inspection or as personnel cleaned their work areas).
- Identifying controls that were available to mitigate or remove hazards.

• Providing feedback regarding TWC program accomplishments, through the SEDAC website, division staff meetings, and SEDAC representatives.

2. TWC Benefits

SEDAC believes the choice of a modified *Talk*, *Walk* or *Clean* activity was a successful and popular format for the 2002 self-assessment standdown. The TWC process provided a means of addressing emerging safety and health priorities as the conditions changed and the laboratory evolved. For example, with the laboratory's focus on building evacuation in a post 9-11 environment, the program was altered to allow for this activity as part of the program

The *Talk* program resulted in 39 issues total, with 12 site wide concerns being identified.

The *Walk* Program resulted in numerous observations such as:

- Unsecured objects or cabinets requiring earthquake bracing.
- Housekeeping issues of floor and work space clutter.
- Loose or unknown cables hanging from ceilings.
- Lack of exit signs in corridors.
- Improperly inspected fire extinguishers.
- Hazardous material containers that were not properly labeled.
- Fluorescent lamps without safety barriers.
- Lights and computer monitors left on.
- Need for additional electrical outlets.

Identification of these issues by line personnel helped address specific concerns and maintained awareness about environment, safety, and health issues at the working level.

Clean Program activities included cleaning up cluttered offices, laboratory space, storage cabinets, and bookshelves; removing trip hazards; recycling cardboard and paper materials; and transporting usable property to Salvage. The *Clean* effort resulted in a significant improvement in the state of housekeeping and safety at the laboratory

3. 2002 TWC Results

Results for 20 Talk, 13 Walk, and more than 50 Clean teams are provided below.

3a. Talk Program

The *Talk* Program resulted in the identification of 39 issues (see Appendix G). The distribution of issues is represented in the four tables below.

Table I -- Distribution of Issues by Division

•	
Director's Office	0
Business Services Division	0
ES&H Division	0
Research Division	9
SSRL	4
Technical Division	26
TOTAL	39

Table II -- Distribution of Issues by Problem Type

Slips, Trips, and Falls	12
Resource Conservation	5
Other	5
Abrasions, Contusions, Lacerations	3
Struck by Object	3
Electrical Safety	3
Transportation Safety	3
Sprains, Strains, Tendonitis	2
Emergency Preparedness	1
Industrial Safety	1
Personal Protective Equipment	1
TOTAL	39

Table III -- Distribution of Causes

Procedure/Policy Implementation	9
Improper Tools or Equipment	5
Maintenance	5
Lack of Procedures	5
General Housekeeping	4
None given	4
Qualifications/Training not Adequate	2
Lack of Documentation	2
Management Attitude/Pressure	1
Obsolete Components/Equipment	1
Communications of Hazards	
TOTAL	39

Below are examples of *Talk* issues from the 2002 *Talk* teams:

- Pedestrian crosswalk safety between the Central Lab and the SCS building
- Grounding concerns along the Linac for Sectors 13-30
- Pedestrian safety in the crosswalk near building 229
- Reports of "bad brakes" on electrical carts
- Traffic pattern concerns near the Fire Station and Test Lab parking lots
- Over-watering of lawns causing difficulty with wet and muddy paths
- Hoisting and rigging program concerns
- A perception that procedures developed for processes and safety are not always followed.

3b. Walk Program

Thirteen teams chose to do walk-through inspections of rooms, buildings, labs, or outside areas or conduct evacuation drills. Each team filled out a "Walk Report," which was submitted to the ES&H Division. Any corrective actions required were submitted to Division/Department safety coordinators for tracking.

3c. Clean Program

More than fifty teams chose to clean offices, labs, or outside areas around the site. Each team filled out a "Clean Report," which was submitted to the ES&H Division. The magnitude of this effort can be quantified by considering the amounts of material collected:

- Approximately two tons of corrugated cardboard, mixed paper, and white paper.
- 54 pallets of salvageable materials and equipment including office furniture.
- Many dumpsters of refuse material.

4. **TWC Corrective Actions**

For the *Talk* program, the ADs assigned responsibility for issues (see Appendix G) within control of their divisions and referred the site-wide issues to SEDAC. SEDAC coordinated site-wide corrective action determination through the ES&HCC.

This year the focus of SEDAC included a special effort to resolve difficult site-wide problems that may have been raised in prior years but remained unresolved. Resource problems or ineffective prior solutions were found with some of these issues. Photos of two example problems and a description of the corrective actions are provided below:

Example Issue #1 - Central Lab Annex - SCS Crosswalk: This pedestrian crossing had been a concern raised over several of the annual standdown programs. Near misses at this crosswalk continued to be reported, even though a traffic enforcement program was focused on those who might run the stop sign when proceeding west on the Loop Road. Photo #1 below shows two pedestrians in the vicinity of this crosswalk from a westbound driver's perspective.



PHOTO A- Central Lab Annex – SCS Crosswalk, Westbound Driver View. Two pedestrians preparing to cross - *Before Corrective Actions*

Photo A demonstrates the difficulty a driver may have in seeing the two pedestrians as they prepare to cross the street. This is especially true of the person of shorter stature (approximately 5ft 6in,) whose head is barely visible behind the Central Lab Annex sign. The taller (approximately 6ft 2in) pedestrian's shoulders and head are only slightly visible above the sign. Study of this area suggested that the bushes and sign impacted the line-of-sight from vehicle to pedestrians and pedestrians to vehicle. The situation was exacerbated by a sweeping right hand curve (not shown in the photo) that delays the view for westbound drivers approaching the crosswalk. This area was especially dangerous for children, because of their generally shorter height.



PHOTO B- Central Lab Annex – SCS Crosswalk, Westbound Driver View. Two pedestrians preparing to cross street - *After Corrective Actions*.

Photo B shows the view of the same crosswalk after two corrective actions were implemented: 1) the bush in the foreground was trimmed back approximately six feet to the right to provide a full body view of pedestrians at the curb, and 2) the Central Lab Annex sign was moved approximately six feet to the right so it no longer interferes with a clear view of pedestrians approaching the curb. As a third corrective action step, the stop sign for the westbound driver approaching this intersection was also raised from it's 4 foot height to a standard 7 foot height, because the stop sign itself was providing an additional delay to a westbound driver's view of pedestrians at the curb.

Example Issue #2 - Linac Grounding: Inadequate grounding of Linac cable trays and cabinets has been an issue that has been raised in more than one TWC program.

Photo C, below, shows the large copper grounding cable that has been recently installed in an area of the Linac as a result of this year's corrective actions.



PHOTO C- New copper Linac grounding wire installed - *After Corrective Actions*.
APPENDIX C - Talk Pamphlet

4/19/2002

TALK, WALK, CLEAN (TWC 2002) Program

"TALK"

Team Leader Instruction Pamphlet

Kick-Off:	Monday,	4/08/02 1:30 to 2:30 pm
Event:	Friday,	4/19/02 8:00 to 10:00 am
Reports Due:	Monday,	4/22/02 - End of Day



Purpose of this Pamphlet

This instructional pamphlet is for Team Leaders who have chosen the "TALK" choice in the TWC Program. Those interested in a "WALK" or "CLEAN" choice should see the instructions for these items.

All instructions are accessible from the Web at: http://www.slac.stanford.edu/esh/standdown.html

For Team Leaders who do not have Web access, hard copy materials are available from your Divisional SEDAC representative:

ES&H/DO - Ellen Moore TD - Janice Dabney SSRL - Ian Evans BSD - Gail Gudahl RD - Frank O' Neill Waste Minimization Specialist, Rich Cellamare

Objectives of the Team "TALK":

With reference to the Focus Topics listed below,

- *Discover* two <u>significant</u> deficiencies in our work habits, or our work or general site areas that, left uncorrected, may adversely affect the environment, safety or health conditions at SLAC.
- Develop a statement of cause.
- Suggest a brief corrective action plan.

Ideally, the team will uncover at least one issue that can be corrected by the team and a new issue previously unreported.

Focus Topics and "TALK" Program Tools:

Focus Topics are based on the most common injuries, illnesses, and environmental issues as reported in FY01. The Focus Topics are:

- Hazardous Work (accidents occurred during) or Specialized Work (work with asbestos, cryogens, lasers, etc.) Use related SLAC guidance documents to determine how your group may still be taking risks in one of these areas.
- **Potentially High Impact Events** (Serious injury, death, chemical explosion, fire, etc.)
- Most Common Injuries, Illnesses and Environmental Issues (Strains & sprains from lifting, abrasions/contusions/lacerations, slips/trips/falls, repetitive motion injuries, hazardous materials and waste handling)
- Resource Conservation/Environmental Performance

(Avoiding nonproductive use of energy, water, chemicals, avoiding citations, etc.)

· Items defined by the Team

Related to the Focus Topics are the "TALK" Tools, which are a detailed listing of what individuals can do to prevent the accidents and environmental issues suggested by the Focus Topics. These Tools are posted on the website.

Pre-"TALK" Checklist for the Discussion Leader:

- Arrange meeting place and notify your team of the place and time.
- Encourage your team to review:
 - the Director's All Hands, of 2/22/02,
 - \cdot "TALK" Tools on the Web site,
 - "TWC and S&E Discussion Information from previous years.
- The Team Leader should review the TWC "TALK" Phase One form on the Web to determine the information that he/she will collect during the "TALK" meeting.

Conducting the "TALK" and Discovery of Issues/Concerns:

- 1. Conduct "TALK" activity on Friday, 4/19 from 8 to 10 a.m.
- 2. In a brainstorming fashion, have the team think about, reported/unreported accidents, near misses, incidents or unsafe behaviors, related to the Focus Topics that have been experienced by your work group.
- 3. One at a time, allow each team member an opportunity to offer their issues of concern for a team vote. Continue until each member has had the opportunity to suggest three issues.
- 4. Record all suggestions on a whiteboard or paper.
- 5. Allow each member, in turn, to vote for their issue of most concern. Each member has three votes only. The issue with the most votes is issue #1; the issue with the

next most votes is issue #2. Only two issues are to be reported.

- 6. One of these issues should be able to be corrected by the team.
- Openness and candor are key to the discovery of dangerous or unsafe conditions. Respect for each person's suggestion is critical. Discussions on the merit of a suggestion should be avoided. Discussions clarifying a suggested issue should be brief.

Develop a Statement of Cause and a Suggested Corrective Action:

- Members volunteer ideas describing the condition or activity they feel resulted in the dangerous, unsafe or environmental issue.
- By polling the team members, determine which of the causes suggested is the single circumstance most likely to result in the issue being discussed. Each member has up to three votes toward the discovery of a single cause for each of the two issues under discussion.
- With the cause for each issue in mind, the team develops a suggested corrective action for each. The majority rules in the case of disagreements.
- The team assesses if "there is danger of immediate death or serious physical harm, or there is a clear and present danger of contamination of the environment" requiring immediate action.

Steps After the "TALK" Activity:

- If the team decided that immediate action is required as defined above, the Team Leader alerts their Division Associate Director and Jack Hahn, ES&H, ext. 3295, <u>immediately</u> by phone.
- By close of business Monday, April 22nd, the Team Leader is to report information via the "TALK" Phase One form on the TWC Program Web site.

If the Team Leader does not have Web access, mail the "TALK" Phase One form to Jack Hahn, ES&H, MS 84, and send a copy to your division Associate Director (both by April 22nd).

APPENDIX D - Walk Pamphlet

TALK, WALK, CLEAN (TWC) 2002 Program

"WALK-Through" or "WALK-Out"

Team Leader Instruction Pamphlet

Kick-Off:	Monday,	4/08/02 1:30 to 2:30 pm
Event:	Friday,	4/19/02 8:00 to 10:00 am
Reports Due:	Monday,	4/22/02 – End of Day



nttp://www.slac.stanford.edu/esh/standdown/standdown.html

Purpose of this Pamphlet:

This instructional pamphlet is for Team Leaders who have chosen the "WALK" choice in the TWC Program. The "WALK-Through" process is similar to the annual Building Manager walkthrough assessments; the "WALK-Out" is a building evacuation. Those interested in a "TALK" or "CLEAN" choice should see the instructions for these items.

All instructions are accessible from the Web at: http://www.slac.stanford.edu/esh/standdown/standdown.html

For Team Leaders who do not have Web access, hard copy materials are available from your Divisional SEDAC representative:

ES&H/DO - Ellen Moore, TD - Janice Dabney, SSRL - Ian Evans, BSD - Gail Gudahl, RD - Frank O' Neill, Waste Minimization Specialist – Rich Cellamare.

Objectives of the Team "WALK-Through" and "WALK-Out":

WALK-THROUGH:

To conduct a walk-through inspection of pre-defined indoor and/or outdoor areas for environment, safety and health concerns. This walk-through, if applied to the entire building, may also fulfill the annual Building Manager walk-throughs.

WALK-OUT:

If the Evacuation Drill topic is chosen, this may fulfill the annually required building emergency evacuation drill if the entire building participates.

The output from either WALK activity will be a list of facility or drill related issues requiring attention, with corrective actions to be coordinated by the group involved in the "Walk".

"WALK-Through" Focus Topics are intended to suggest general items that may be worth considering in walking through the facility or outside areas. They have been developed in part based on known problems that have been discovered on previous walk-throughs

The "WALK-Through"Focus Topics are:

- Hazardous Work/Specialized Work (work with Asbestos, Cryogens, Lasers, etc.) Use related SLAC guidance documents to determine how your group may still be taking risks in one of these areas:
- Building/Outdoor Area (generally applicable topics) (Earthquake readiness, electrical safety, fire safety, general workplace environment, ventilation, noise, eating areas /food storage, warning and hazard signs)
- **Resource Conservation/Environmental Performance** Avoiding nonproductive use of energy, water, chemicals, avoiding citations, etc.
- Hazards Unique to Your Building/Outdoor Area (team defined)

A detailed listing of suggestions of what to look for related to these Focus Topics can be found under "WALK" Tools on the TWC Program Web site.

Pre-"WALK-Through" Checklist for the Team Leader:

- Conduct the "WALK" activity on Friday, 4/19 from 8 to 10 a.m.
- Define an area that the "WALK" activity will cover. Consider including an outside

problems are anticipated. Notify your Building Manager of your plans.

- It is not likely that this option will satisfy the normal Building Manager inspection. However, if you plan to inspect the entire building, this may serve as the required annual Building Manager inspections. The following requirements must be met:
 - The effort is coordinated and approved by the Building Manager,
 - A two-hour "WALK" period does not compromise the quality of the building inspection,
 - The "WALK" Tools/Checklist is utilized.
- Encourage your team to review
 - The Director's All Hands of February 22^{nd} , and the attached Focus Topics.
 - Review the "WALK" Tools /Checklist found on the web.
- Determine in advance what items from this Tools/Checklist might apply to your circumstances. Define any unique hazards that you may want to look for.
- Consider your safety. Entering confined spaces, inspecting items at height, entering electrical substations, and the like should be avoided. Consider inspection risks against rewards and err on the side of safety. If work includes inspecting grassy outdoor areas take precautions against ticks.

Conducting the "<u>WALK-Through</u>":

- Walk the pre-defined areas using the Focus Topics and the detailed "WALK" Tools/Checklist as a guide.
- ✤ Record your findings.
- The team assesses if "there is danger of immediate death or serious physical harm, or there is a clear and present danger of contamination of the environment" requiring immediate action.

Steps After the "<u>WALK-Through</u>" Activity:

- If the team decided that immediate action is required as defined above, the Team Leader immediately alerts their Division Associate Director and Jack Hahn, ES&H, ext. 3295.
- Determine which team member will be responsible for addressing the corrective actions recorded on the Tools checklist.
- By close of business Monday, April 22nd, the Team Leader is to summarize the scope of the "WALK" using the "WALK or CLEAN" Report Submittal form found on the TWC Program Web site

(If the Team Leader does not have web access, by April 22nd mail the Report Submittal form to Jack Hahn, ES&H, MS 84, and send a copy to your divisional Associate Director.)

"WALK-Out" Focus Topic:

Building Evacuation Drill (Especially if the annual evacuation is overdue)

Use the Facility Emergency Plan written for you building.

Conducting the "<u>WALK-Out</u>" (evacuation):

The "WALK-Out" scheduled anytime between 4/8 and 4/19 must be coordinated with the building manager and scheduled with PETER GALLEGO via the SEM service desk, ext. 8901, or the SEM website for service requests at http://www.group.slac.stanford.edu/sem/Sem-Main.htt An observation by safety professionals is required.

Building occupants should review the building Facility Emergency Plan prior to the scheduled drill in order to later define areas of improvement. A debriefing should occur immediately afterwards to establish an action plan necessary to address noted deficiencies.

Steps After the "WALK-Out" Activity:

- The building manager will be responsible for addressing the corrective actions recorded during the debriefing.
- By close of business Monday, April 22nd, the Team Leader is to summarize the scope of the "WALK-Out" using the "WALK or CLEAN" Report Submittal form found on the TWC Program Web site

(If the Team Leader does not have Web access, mail the Report Submittal form to Jack Hahn, ES&H, MS 84, and send a copy to your divisional Associate Director (both by April 22nd).

APPENDIX E - Clean Pamphlet

Purpose of this Pamphlet:

This instructional pamphlet is for Team Leaders who have chosen the "CLEAN" choice in the TWC Program. The "CLEAN" choice is a site wide team clean up activity. Those interested in a "TALK" or "WALK" choice should see the instructions for these items.

All instructions are accessible from the Web at: http://www.slac.stanford.edu/esh/standdown/standdown.html

For Team Leaders who do not have Web access, hard copy materials are available from your Divisional SEDAC representative:

ES&H/DO - Ellen Moore, TD - Janice Dabney, SSRL - Ian Evans, BSD - Gail Gudahl, RD - Frank O' Neill, Waste Minimization Specialist – Rich Cellamare.

Objectives of the Team "CLEAN":

With reference to the Focus Topics listed below,

- *Perform* hands-on team clean ups of predesignated indoor and/or outdoor areas at SLAC.
- *Summarize* briefly, and *document* the scope of the "CLEAN" activity.
- *Generate* before and after photos of areas (optional), for sharing with SLAC staff.

"CLEAN" Focus Topics:

Focus Topics have been developed to offer suggestions for the "CLEAN" program activity. These Focus Topics are:

• Improve Safety

Clear walkways, trip hazards and remove potentially falling objects.

• Improve Workspace Utilization and Productivity in Work or Office Area

• Improve the Environment

Organize for recycling, allow clear aisles to inspect for potentially leaking or overdue hazardous material/waste containers, etc., and eliminate potential storm water contaminants.

• Improve Appearance of Facility

Maintain pride in the lab and good image to visitors.

• Areas of Interest to the Team

Pre-"CLEAN" Checklist for the Team Leader:

- Encourage your team to review the Director's All Hands of February ^{22nd} and the attached Focus Topics.
- Define an area inside and/or outside the building that will be the focus of your team's "CLEAN" effort.

Select a staging area for collection of:

- Solid wastes (not hazardous or radioactive wastes).
- Recyclable materials
- Salvage and property controlled materials (PC# or Gov't Property stickers)
- Scrap metal
- Determine your need for extra recycle containers, dumpsters and/or pallets.
- Locate your staging area for collected materials so that normal operations are not disrupted during storage or pick up and removal.
- For consulting information, consult the Web page <u>http://www-group.slac.stanford.edu/</u> <u>sem/recycling/recycle.html</u> to develop plans to

TALK, WALK, CLEAN (TWC) 2002 Program

4/19/2002



Team Leader Instruction Pamphlet

Kick-Off:	Monday,	4/08/01 1:30 to 2:30 pm
Event:	Friday,	4/19/01 8:00 to 10:00 am
Reports Due:	Monday,	4/22/01 - End of Day



ttp://www.slac.stanford.edu/esh/standdown/standdown.html

properly segregate and dispose of recyclables (cardboard, papers, cans/bottles, etc.)

- Arrange with Site Engineering & Maintenance (SEM), ext 8901, for delivery and pick up containers for recyclables and trash.
- Arrange with Property Control, Ext. 2329, for delivery and pick up of containers or pallets for collected scrap metal and property controlled equipment.
- Arrange for any brooms, gloves, eyewear and other protective equipment as appropriate. Contact Industrial Hygiene (IH) at ext. 4105 if you have questions regarding protective equipment.
- Work must be safe and must not require respiratory protection, involve confined spaces, working at heights, or hand carrying heavy loads.
- Arrange for a camera to take before and after photographs if acceptable to the team. These photos may be shared with SLAC. (optional)
- As a result of a DOE moratorium, all salvageable materials must be documented with a *Material Request Transfer Form* (aka *Salvage Form*). The form is available on the TWC Program Web site.
- If planning to clean an area, to prevent storm water pollution and storm drain plugging, check Storm Water Best Management Practices on the Web at <u>http://www.slac.stanford.edu/esh/reference/</u> Stormwater/stormwaterBMP.html.
- Due to regulatory constraints, <u>do not plan to</u> clean up any hazardous or radioactive wastes

or materials during the "CLEAN" period. Do not plan on removing materials from Radioactive Material Management Areas during the "CLEAN" period.

(This may be done before or after, but not during the "CLEAN" activity. Contact the Waste Management Department, ext. 2399 for hazardous waste disposal or Operational Health Physics (OHP), ext. 4299 for radioactive waste disposal

Steps for Conducting the "CLEAN" Activity:

- Conduct the "CLEAN" activity of predefined areas on Friday, 4/19 from 8 to 10 a.m.
- Have members put on any appropriate personal protective equipment.
- Take "before" photograph(s) of the area(s) to be cleaned. (optional)
- Have the team clean the area, using the preplanned staging area to segregate:
 - Solid wastes (not hazardous or radioactive wastes).
 - Recyclable materials (cardboard/paper/cans and bottles)
 - Salvage and property controlled materials (PC# or Gov't Property stickers).
 - Complete the *Material Request Transfer Form* (aka *Salvage Form*) for salvageable materials. One form is sufficient for palletized equipment or clusters of staged materials.
- Take an "after' photo (optional).

After The "CLEAN" Activity:

 By close of business Monday, April 22nd, the Team Leader is to summarize the scope of the "CLEAN" activity using the TWC "WALK or CLEAN" Report Submittal Form found on the TWC Program Web site.

(If the Team Leader does not have Web access, by April 23rd, mail the Report Submittal form to Jack Hahn, ES&H, MS 84, and send a copy to your divisional Associate Director.

Also mail any photos to the Program Planning Office at MS 84. Digital photo's can be sent to emoore@slac.stanford.edu. **APPENDIX F - Director's All Hands C Memo**



SUBJECT:	Site-Wide Safety and Environmental Talks, Walks & Cleanups, 19 April 2002
DATE:	February 22, 2002
FROM:	Jonathan Dorfan, Director
TO:	All Hands

Though the face of SLAC is changing with new buildings and exciting project advances, our annual safety and environmental standdown continues to heighten safety awareness and provide a worthwhile touchstone for the rest of the year. I'm pleased to announce that we will hold this year's "Talk, Walk, Clean" (TWC) on Friday, April 19, from 8:00AM to 10:00AM.

Operations will cease for that period, and the accelerator and critical processes in other areas will go into an appropriate stand-by condition. Though the same format will be followed, the TWC process has evolved into an even more innovative tool for your groups to assess themselves. Division groups will again have a choice of three methods of action:

- ✓ Talk: in which the suggested focus topics are used to generate discussion that leads to two documented concerns;
- ✓ Walk: in which small groups will use checklists to determine possible hazards in areas pre-defined by the group; or use the Facility Emergency Plan to evaluate evacuation effectiveness; or,
- ✓ **Cleanup**: a two-hour housekeeping effort in areas pre-defined by the group.

This year one of the Walk choices will be a building evacuation, which is an especially useful choice if the annual evacuation is overdue or if your group could benefit from some fine-tuning in this important area of emergency preparedness. Another change is the addition of hazardous or specialized work in the Talk and/or Walk focus topics. This choice enables you to take a proactive stance and evaluate risks in your area in conjunction with directives or tools that address those risks.

You can obtain more information on these and other options by reviewing the attached list of Focus Topics. As in the past, additional materials to assist TWC Leaders have been developed by the Safety and Environmental Discussion Assistance Committee (SEDAC) and are viewable on the ES&H Division TWC 2002 Web site at http://www.slac.stanford.edu/esh/standdown/standdown.html

An orientation for TWC Leaders is scheduled for Monday, April 8, from 1:30 PM to 2:30 PM in the Auditorium to assist both new and previous leaders. The associate directors will be asked to confirm their TWC group leaders and their activity preference for this year shortly.

Just as SEDAC tries to keep this process fresh each year, I encourage all of you to challenge yourselves by choosing a different approach than in the past. Though safety is a part of our daily lives at SLAC, I value your extra efforts each year during this period of focused attention. The resulting energy and fresh ideas have become an important part of our SLAC culture.

Attachment

APPENDIX G - Talk Issues List

Talk, Walk, Clean 2002 Issues List (Talk Program)

Issue ID Description

- <u>TWC02-001</u> Flying chips from machining operations in klystron machine shop, partly due to lack of shields and also inadequate space in an over crowded area.
- <u>TWC02-002</u> Speeding of cross traffic at driveway going into and out of the test lab by the fire station. Traffic coming from HVAC parking area is at times subject to dangers from traffic turning in the Test Lab parking lot off the Loop Road. Likewise traffic leaving from the Test Lab, it's kind of a blind corner because of the storage container there. Entering traffic also tends to cut corners further exasperating the dangers. At times cross traffic from the HVAC area have had to break hard because of speeding entering traffic and because of blind corner from the Test Lab area.
- TWC02-003LINAC Gallery Bonding (Grounding)Only one third of the LINAC Gallery has cable tray and rack chassis properly
grounded to a common ground. The grounding (bonding) of racks, modulators
and cable trays in the LINAC klystron gallery needs to be brought up to
standard in sectors 13 through 30. Contributing cause of existing condition is
funding to complete the job.
- <u>TWC02-004</u> Energy resources are used by automobile travel on the SLAC site when alternatives could be used. Bicycles could be made available for general use to reduce pollution caused by automobiles and to minimize fuel usage. Alternative travel methods should be available.
- <u>TWC02-005</u> Stairway from Main Control to End Station B is poorly lit. Stairway from Main Control to top of BSY berm is poorly lit.
- <u>TWC02-006</u> Overhead bolts on fire sprinkler pipe in BSY cableway #3 are exposed. Someone could possibly cut his or her head on the bolts.
- <u>TWC02-007</u> Electric mail carts parked on the South side of the A & E building (near medical dept parking). When the carts are in use, the extension cords used to charge the carts are left laying on the ground, while still being plugged into the AC receptacle.
- <u>TWC02-008</u> Light fixtures in PEP regions 4, 8 and 12 are located above the RF stations making replacement of failed lamps impossible. There is no room to place a ladder to reach the fixtures. Also, radiation hazard from operating klystrons makes lamp replacement impossible when klystrons are operating. As more lamps fail, poor lighting is becoming a safety issue.
- <u>TWC02-009</u> Safety Training By not mandating training and then following up regularly, the lack of updated training becomes a liability issue at SLAC. Regular safety

training is the key to site wide safety.

- TWC02-010 Facilities preventative maintenance lack of consistency
- <u>TWC02-011</u> The common practice of staging empty boxes and other discarded shipping materials for janitorial pickup. Usual practice is to locate the items in plain sight, outside of the offices upstairs in B015. This practice sometimes involves collection in the isle ways, outside office doors, or in a common area near the upstairs conference room.
- **TWC02-012** Earthquake Bracing in Offices. It has been noticed that newly occupied or reconfigured offices usually require some kind of attention in this area. With turnover in personnel, the re-furnishing of the office spaces with new shelving systems, file cabinets, and storage lockers for new or current occupants, revisiting the issue becomes important. SLAC publication "Building Manager Program Manual" section 2.1.2.5 makes a yearly assessment a requirement.
- TWC02-013 Traffic safety issue. The intersection in question is near the southwest corner of building 229 (in view of the sector 30 gate). Traffic from the parking lot and several buildings to the east drive down a small grade before coming to a marked stop. At the stop sign (and actually obscured by the stop sign) is the high use pedestrian walkway between the campus area and into the accelerator area (including MCC).

Group members are concerned about the possibility of a pedestrian being seriously injured.

The observation is that westbound traffic is unable to adequately see the pedestrians, and that the effectiveness of the stop sign is marginal. This is exasperated by:

- High traffic and distractions from the Sector 30 Gate entrance.
- The downward grade of the westbound traffic.
- Electric carts (which tend to have poorer brakes) seem to slide through the intersection
- <u>TWC02-014</u> Traffic safety issue. The intersection in question is between the Computer Center (B050) and the Central Lab complex. This stop sign is the high use pedestrian walkway between the computer center and NLC and the rest of the laboratory.

Group members are concerned about the possibility of a pedestrian being seriously injured.

Traffic on the ring road generally fails to respect the stop sign. The more serious problem is in westbound traffic where oncoming parking lot traffic, late afternoon sunlight, and shrubs distract drivers.

- <u>TWC02-015</u> Improve access to recycle bins.
- TWC02-016 Update evacuation plan and do an evacuation drill.
- <u>TWC02-017</u> Lights going out automatically at night could present a hazard to people working late. For example, someone could trip or bump into something trying to get out of his office and down the hall to the reset button.
- <u>TWC02-018</u> Drinking water quality and safety does or can vary, and lack of a convenient 24 hour supply of hot water for coffee or tea adversely affects the quality of life.
- **TWC02-020** Inadequate Hoist/Rigging to Move Equipment to 2nd Floor of Test Lab. The existing hoist is used roughly weekly to move heavy equipment to/from the second floor. We have two labs that require large, heavy items to be moved somewhat regularly plus a computer maintenance lab that services the entire building (80+ computers). Large, heavy equipment is sometimes tricky to orient such that it can be lifted and maneuvered safely. Items that are light but bulky or borderline heavy are often muscled up the stairs (like often carrying 21 inch monitors up and down the stairs) and present a potential hazard for trips/falls. Some minor equipment drops have been witnessed as well as difficulty in roping the stairwell off since it is the major pedestrian access to the 2nd floor.
- TWC02-021Path and Parking Lot Hazards. Several people had remarks about the grounds
keeping maintenance. The sloping path from the Klystron parking lot to the
upper lot (Eng Phy) is rough, uneven, and poorly lit in winter hours especially.
Bicyclists have had spills or close calls on the main quad entrance path near the
road (between the guard shack and the cafeteria) due to mud across the path.
The Klystron parking lot has a large shallow depression in the far corner
towards the fire house which fills with mud and water after rains and makes
people do acrobatic escapes from their cars when parking there.
- <u>TWC02-022</u> Personnel are forced to walk in roadways to enter and exit the SSRL main gate during working hours and to get to the hotel and parking areas or cross the ring road by the most direct route. The nearest crosswalk to the gate is on the opposite side of the entrance to the marked path.
- <u>TWC02-023</u> Access to equipment on top of hutches is difficult. It is often difficult to find appropriate ladders; there are trip hazards and restricted headroom.

We believe that this issue should be resolved by the SSRL groups operating these beamlines.

- <u>TWC02-024</u> The circuit breaker panels in the klystron assembly and bake areas are not labeled clearly (even though we recently had electricians trace the lines). In an emergency, it may be difficult to locate circuit breakers in a hurry. Due to the complexity of the wiring, it is easy to shut down the wrong equipment.
- <u>TWC02-025</u> After repeated service on our orange electric cart, the brakes are marginal and

the cart is very slow. In addition, it is very difficult to see using the rear view mirrors. This makes the cart unsafe to drive.

- <u>TWC02-026</u> No sidewalks, poor parking leading to danger to pedestrians.
- <u>TWC02-027</u> Traffic doesn't stop at stop sign in front of Computer Center.
- TWC02-028 Excessive watering of lawns around the Central Lab and A&E.
- <u>TWC02-029</u> General housekeeping needs to be improved around the High Bay area. This is a continuing struggle compounded by the increase in experiments on the floor.
- <u>TWC02-030</u> There is a perception that the procedures developed for both processes and safety are not always followed. It was further suggested that the procedures are just for show. The group felt that this was both a peer and management problem.
- <u>TWC02-031</u> A new test stand in the magnetic measurements lab of bldg 26 needs to be attached to the floor to prevent it moving in an earthquake.
- <u>TWC02-032</u> The bell on the crane in bldg 26 is so loud that we need to wear earplugs when the crane is in use.
- <u>TWC02-033</u> Not enough parking spaces near Central Lab. Causes parking on sidewalks creating hazard for pedestrians.
- TWC02-034 Update SLD employee ES&H training for 2002 (make sure everyone is current).
- <u>TWC02-035</u> Halls and breezeways cluttered with items that should be put in long-term storage or sent to salvage.
- TWC02-036 Earth in islands in the parking lot is uneven or rutted.
- TWC02-037 Rail missing on stairs of building 133 to facilitate moving equipment.
- TWC02-038 Improper use of chairs.
- <u>TWC02-039</u> Poor wheel chair and cart access to the trailers and other buildings, such as building 137.

Computer support staff often transport heavy equipment, such as 21-inch monitors to these buildings. Lifting this type of equipment up several sets of stairs represents a significant, tripping or strain hazard. The elevator in building 137 has been broken for several months, resulting in staff having to carry heavy equipment up at least one flight of stairs. In addition, these areas would be extremely difficult if not impossible for a disabled person to access.

<u>TWC02-040</u> A large number of documents are still distributed to staff as paper copies. These

include, but are not limited to, timesheets, The SLAC Bulletin, The SLAC Interaction Point publication and events committee notices. This represents a terrible waste of materials and resources, not just in terms of paper but also in terms of employees who copy, deliver and otherwise handle these papers. Many of these publications are already available on line.

In the case of timesheets the distribution of paper copies is further compounded by supervisors keeping copies for themselves. **APPENDIX H - BBS Observation Results**

START Data Reports = CBI® TABULAR REPORT [all records]

From 10/01/1999 to 09/30/2002

Total number of sheets used in this report Average number of items marked per sheet

1,181 11.2

		В	EHAVIORS		SHE	ETS
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1 2	Treat Evec/Face	653	91	87	724	61
1 2	Ly corr acc Forc	242	43	84	295	24
1.5	Hands	532	-0	88	505	50
1 5	Fall Drotection	112	20	00	422	11
1.5	Body	226	20	97	260	22
1.0	Boginton	442	25	76	1/22	12
1.8	Foot	1,024	54	94	1,076	91
		3,267	405	88		
Body Positio	n					
		Safe	At Kisks	% Safe	Sheets	% Sheets
2.1	Ascending/Descending	276	13	95	289	24
2.2	Extension/Cramping	328	21	93	349	29
2.3	Line of Fire	202	20	90	222	18
2.4	Pinch Point	199	3	98	202	17
2.5	Posture	1,008	45	95	1,049	88
		2,013	102	95		
Body Use						
		Safe	At Risks	% Safe	Sheets	% Sheets
3.1	Eyes on Hands/Task	1,045	11	98	1,056	89
3.2	Lifting/Lowering	341	20	94	361	30
3.3	Pushing/Pulling	320	19	94	339	28
3.4	Eyes on Path	567	12	97	579	49
3.5	World Pace	1,050	18	98	1,068	90
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Printed: October 17, 2002

START Data Reports # CBI® TABULAR REPORT [all records]

From 10/01/1999 to 09/30/2002

Total number of sheets used in this report1,181Average number of items marked per sheet11.2

			B	EHAVIORS		SHE	ETS
5.1	Condition		845	23	97	867	73
5.2	Lockout-Tagout		123	1	99	124	10
5.3	Selection		770	25	96	792	67
5.4	Use	_	675	20	97	692	58
			2,413	69	97		
Other							
			Safe	At Risks	% Safe	Sheets	% Sheets
20.1	Other		6	1	85	7	0
			6	1	85		
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	G	RAND TOTALS	12,550	738	94		

Printed: October 17, 2002

P.A.W.S. # CBI® TABULAR REPORT [all records]

From 04/01/2001 to 09/30/2002

12.0

Total number of sheets used in this report Average number of items marked per sheet

BEHAVIORS SHEETS PPE. % Sheets Safe At Risks % Safe Sheets 1.1 Head 1.2 Eyes / Face 1.3 Hand 1.4 Foot 1.5 Ears Protective Clothing 1.6 1,539 Tools / Equipment Safe At Risks % Safe Sheets % Sheets 2.1 Selection - Condition 2.2 Use 2.3 Vehicle 2.4 Assistance 2.5 Lockout - Tagout / Energy Isolation 1,103 Work Environment Safe At Risks % Sheets %) Safe Sheets 3.1 Housekeeping 3.2 Industrial Hygiene 3.3 Lighting 3.4 Communication of Hazards 1,421 Body Use / Position Safe At Risks % Safe Sheets % Sheets 4.1 Line of Fire 4.2 Eyes on Path 4.3 Eyes on Task 4.4 Ascending / Decending Turning (Ergonomics) 4.5 4.6 Lifting / Lowering 4.7 Pinch Point 4.8 Pushing / Pulling Body Alignment (Ergonomics) 4.9 1,937

Printed: October 17, 2002

P.A.W.S. # CBI® TABULAR REPORT [all records]

From 04/01/2001 to 09/30/2002

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		BE	HAVIORS		SHE	TS
New Categor	y Items					
		Safe	At Risks	% Safe	Sheets	% Sheets
10.1	New Category Items	0	0	0	D	0
10.2	New Category Rems	0	D	0	0	0
		D	D	D		
Other						
		Safe	At Risks	% Safe	Sheets	% Sheets
20.1	Other	6	12	33	18	3
		6	12	33		
World Notes						
		Safe	At Risks	% Safe	Sheets	% Sheets
25.25	Work Notes	0	0	0	0	0
		0	0	0		
	GRAND TO	TALS 6.006	220	96		

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APPENDIX I - ES&H Performance Measures

FY02 ES&H Outcome Performance Measures

Total Available Points: 110

Note: 40 points have been reserved for the FY02 ISMS Process Performance Measure.

1.0 Performance Objective:

SLAC will perform its work so that personnel hazards are anticipated, identified, evaluated and controlled.

1.1 Performance Criteria:

Exposures of personnel to chemical, physical, and biological hazards will be adequately controlled.

1.1. a Performance Measure: Available Points: 8

An Industrial Hygiene exposure prevention program is in place such that:

- Potential exposures greater than 1/4 of an Occupational Exposure Limit (or heat stress exposure greater than the ACGIH "heavy continuous work" TLV) are anticipated and monitored yearly.
- OSHA-required substance-specific sampling is planned and conducted yearly as required.
- Vulnerable systems are evaluated yearly.



Performance Summary: To be determined at the end of the fourth quarter of FY 2002.

1.2 Performance Criteria:

Accident and injury rates lost workday rates, and the DOE injury cost index are adequately controlled.

1.2.a Performance Measure: Available Points: 8

The period for comparison with the current performance period will be the average of the five previous years (baseline). The lab's frequency (Total Recordable Cases) and severity (Lost Work Days) rates for the Research/Services

composite and Construction functions will be compared to the SLAC baseline average. A downward trend is expected.

Performance Gradient:

The frequency (Total Recordable Cases) and severity (Lost Work Days) rates for the Research/Services composite and Construction functions are greater than 20% below the baseline five-year SLAC Average.

Performance Summary: All outstanding as detailed below.

Outstanding

When the Performance Period Frequency Rate for the Research/Services composite and Subcontractor function is compared to their Baseline rate, a 58.5% decrease is shown.

Outstanding

When the Performance Period Severity Rate for the Research/Services composite and Subcontractor function is compared to their Baseline rate, an 83.4% decrease is shown.







Performance Summaries for Research/Services:

Total Days Away (Severity) Rate for Research/Services:

Outstanding

The Total Days Away (Severity) rate for the Research /Services performance period shows an 82.8% decrease when compared to the SLAC baseline average.

Total Recordable Case (Frequency) Rate for Research/Services:

Outstanding







Performance Summaries for Subcontractors:

Total Days Away (Severity) Rate for Subcontractors:

Outstanding

The Total Days Away (Severity) rate for the Subcontractors performance period shows an 88.3% decrease when compared to the SLAC baseline average.

Total Recordable Case (Frequency) Rate for Subcontractors:

Outstanding

The Total Recordable Case (Frequency) rate for the Subcontractors performance period shows a 33.4% decrease when compared to the SLAC baseline average.

1.3 Performance Criteria:

Exposures of personnel to ionizing radiation will be adequately controlled.

1.3a Performance Measure: Available Points: 5

Unplanned radiation exposures (both internal and external) and ORPS reportable occurrences of skin or personal clothing contamination are managed and minimized.

Performance Assumption:

1. For FY02, the performance period is January 1, 2001 to December 31, 2001; that is, calendar year 2001 (CY01).

- 2. Radiation doses to non-radiological workers in excess of 100 mrem/yr are considered as unplanned exposures.
- 3. The number of occurrences is considered to be the number of individuals who experience ORPS-reportable radiation doses or contamination, plus unplanned doses as defined in the above performance assumption.
- 4. The current projection of the number of radiation doses to non-radiological workers in excess of 100 mrem in CY01, based on best available information, is two (2).
- 5. In any event, the most recent three (3) calendar year running average will be calculated for application to the latest Performance Gradients at such time that appropriate information is available.

Performance Summary: Outstanding There were no ORPS-reportable exposures in CY01. Of the only other type of occurrence defined for this performance measure, there were no non-radiological workers with an occupational dose exceeding 100 mrem in CY01, which is less than 50% of the most recent three (3)-calendar-year running average of two (2).

1.3b Performance Measure: Available Points: 5

Occupational radiation doses to individuals (excluding accidental exposures) from DOE activities will be managed to assure that applicable 10 CFR 835 limits are not exceeded.

Performance Assumptions:

- 1. For FY02, the performance period is January 1, 2001 to December 31, 2001; that is, calendar year 2001 (CY01).
- 2. Any actual or anticipated significant changes in workloads; that is, collective dose will be brought to the attention of SLAC management and DOE so that appropriate adjustments will be made. Significant change in collective radiation dose is defined to be an increase or decrease of 20% or more.

Performance Summary: Outstanding

No radiological worker at SLAC received a dose in excess of 500 mrem and the highest individual non-radiological worker dose was 48 mrem. As of this report, the number of individuals who exceeded the following dose range interval did not exceed the previous 3-year running average in two or more of the intervals (in fact, none of these intervals were exceeded),

	CY98-00	CY01
Dose Interval	Combined RWT & GERT Average	Combined RWT & GERT Average
100-250 mrem	14.3	2
251-500 mrem	6.0	0

501-1,000 mrem	1.0	0
Greater than 1,000 mrem	0	0

and the total collective dose was less than 90% of the previous three (3) calendar-year running average; that is, 1.237 person-rem in CY01 versus the previous 3-year running average of {(CY98 [13.1 person rem] + CY99 [10.2 person-rem] + CY00 [5.8 person rem] = 29.1 person-rem over the three previous years)/3=} 9.7 person rem. The exact CY01 total collective dose percentage of the previous 3 year running average percentage is (1.237 person rem/9.7 person rem x 100%), or 16%.

CY01 Radiation Worker-Only Dose Summary

	1 st	2^{nd}	3 rd Quarter	4 th Quarter	CY01
	Quarter	Quarter			Totals
Number Monitored	575	575	585	657	575
Number having > 0 mrem	1	7	6	3	8
Collective Dose (Person-rem)	0.026	0.313	0.207	0.691	1.237
Maximum Individual dose (mrem)	26	105	46	105	105
Number 100-250 mrem	0	1	0	1	2
Number 251-500 mrem	0	0	0	0	0
Number 501-1,000 mrem	0	0	0	0	0
Number > 1,000 mrem	0	0	0	0	0
		1	1		

1.3c Performance Measure: Available Points: 2

Lost or unreturned dosimeter investigations and dose assignments are carried out in a timely manner (within 90 days of the monitoring period).

Performance Summary: Outstanding.

No investigation and dose assignment from a given monitoring period is more than ninety days old.

Note: All Second Quarter CY0 Radiological Worker Training (RWT) individual dose investigations were completed on time.

1.4 Performance Criteria:

Radioactive material will be adequately controlled.

1.4a Performance Measure: Available Points: 3

Radioactive materials, including contaminated and/or activated materials, are controlled at all times so that the number of reportable occurrences as defined in SLAC *Workbook for Occurrence Reporting* does not exceed the current three (3) year-running average by more than three (3). The current three-year-running average is one (1).

Performance Summary: Outstanding.

No occurrences resulted. The corresponding weighted number of occurrences is equal to zero.

1.5 Performance Criteria:

Fire Department response time and the rate of completion of required fire protection will be adequately controlled and accomplished.

1.5.a Performance Measure: Available Points: 1

Fire Department will record all fire apparatus response time. All response time will be measured against the pre-fire plan response time.



Note: Various conditions exist which will cause a delay in response times. Some examples are: weather conditions, distance of travel, responding from inside tunnel areas, and equipment deployed during a drill. Comment: Performance goal to be established based on new computerized data collection system that measures results per the "pre-fire plan response time" metric as required. Measuring performance per the fixed "four minute criteria" is not appropriate, in that some remote locations at SLAC are not reachable in four minutes at the speed limit. The 75% under four minute result for 2002-2 was influenced by four calls to remote locations. Performance Summary: TBD.

1.5.b Performance Measure: Available Points: 3

SLAC conducts fire protection surveys per the SLAC Fire Protection Program list to ensure their facilities meet DOE fire protection goals and requirements.

Period: 04/01/02 – 06/30/02	
# Surveys conducted:	277
# Surveys scheduled in quarter:	80

Performance Period (04/01/02-06/30/02) Year to Date Progress

Performance Summary: 80% completion rate, through 50% of performance period. Rating will be determined at end of year.

1.5.c Performance Measure: Available Points: 3

A documented design review program shall be in place to ensure all designs for new construction and modification projects are reviewed and approved by SLAC's Fire Protection Engineer in a timely manner with adequate records and documentation.

Performance Summary: 100% of the design reviews were completed for quarter, and calendar year-to-date. Rating will be determined at end of year.

1.5.d Performance Measure: Available Points: 1

SLAC shall inspect, test and maintain its fire protection systems in accordance with the SLAC Fire Protection Maintenance Testing and Inspection schedules and procedures. Tracking and trending is done on the SLAC maintenance computer system.

Performance Summary: 91% (3439/3749) of annual total of Sprinkler systems & Fire Alarms have been completed during the period October 1, 2000 through June 30, 2001. Annual performance period is defined as October 1, 2000 through September 30, 2001.

2.0 **Performance Objective:**

SLAC will perform its work in a manner that does not present a threat of harm to the public or the environment and will identify, control, and respond to environmental hazards.

2.1 **Performance Criteria:**

Exposures to members of the public to ionizing radiation and radiological emissions to the environment will be adequately controlled.

2.1a Performance Measure: Available Points: 10

Public ionizing radiation exposure monitoring and calculations are accomplished to assure that the dose to the maximally exposed individual in the public from DOE operations will be controlled and will not exceed Federal limits. Radiological emissions to the environment are monitored or calculated and controlled such that applicable limits are not exceeded.

Performance Summary: Excellent. The computed total effective dose equivalent to the maximally exposed individual (MEI) of the public in CY01 was 5.28 mrem, of which direct radiation dose contributed was 5.20 mrem and airborne radiation dose contributed was 0.08 mrem.

2.2 **Performance Criteria**:

Environmental violations and releases will be adequately controlled.

2.2.a Performance Measure: Available Points: 8

Environmental incidents will be tracked and measured. These will include:

- Formal violations noted by regulatory inspections, regulatory reports or noncompliance with agreements made with regulatory agencies.
- Spills, which exceed established local, state, or federal reporting requirements.

- Releases, which exceed regulatory, permit limits.

Performance Summary: There have been four releases that required notification to regulators during the first three quarters of FY02.

3.0 Performance Objective:

SLAC demonstrates sound stewardship of its site through safe and effective hazardous and radioactive waste minimization and management and through restoration of the site where degradation has occurred.

3.1 **Performance Criteria**:

SLAC has a program in place to reduce both the amounts of waste generated and pollutant emissions. The program will reduce as much as is practical the volume of municipal solid waste and hazardous waste generated in accordance with SLAC's Waste Minimization Plan. In addition, as long as benefits exceed costs, SLAC will plan and perform its work in a manner that prevents pollution into the environment.

3.1.a Performance Measure: Available Points: 5

SLAC completes tasks identified in the Annual Performance Objective Plan. Progress continues towards meeting the DOE pollution prevention goals for the FY02.

Performance Summary: (To be updated at the end of FY02) The Performance Measurement period for FY02 is October 1, 2001 through September 30, 2002.

3.2 Performance Criteria:

SLAC will manage hazardous and radioactive wastes in a manner that meets regulatory requirements and is cost effective.

3.2.a Performance Measure: Available Points: 4

Hazardous waste generated will be managed in compliance with regulations of CCR, Title 22, Division 4.5, applicable parts, and the budget expended cost effectively.

Performance Summary: (To be updated at the end of FY02) The Performance Measurement period for FY02 is October 1, 2001 through September 30, 2002.

3.2.b Performance Measure: Available Points: 5

Low-level waste generated will be managed in compliance with applicable DOE Orders and regulatory requirements and the budget expended cost effectively.

Performance Summary: The Performance Measurement period for FY01 is October 1, 2001 through September 30, 2002. The overall rating for FY02 to date is Outstanding.

3.3 **Performance Criteria**:

SLAC will maintain the scheduled rate of progress toward completion of the Remedial Investigation/Feasibility Study and source mitigation activities designed to achieve a level of restoration acceptable to cognizant regulatory agencies by September 30, 2002.

3.3.a Performance Measure: Available Points: 5

Performance will be determined based on points earned in three categories. The successful completion of selected major tasks/milestones in the Environmental Restoration Program Current Year Work Plan, the efficient management of the budget, and project management effectiveness will be evaluated and awarded points. There will be a maximum of 60 points possible.

Performance Summary: (To be updated at the end of FY02) The Performance Measurement period for FY01 is October 1, 2000 through September 30, 2001. The overall rating for FY00 was Outstanding.

FY02 ES&H Process Performance Measure

The following Performance Objective, Criteria and Measure is linked to the seven Guiding Principles and five Core Functions of Integrated Safety Management Systems (ISMS). The Annual Review process for evaluating the overall effectiveness of ISMS implementation at SLAC is described below.

4.0 **Performance Objective**

SLAC effectively integrates ISMS into all management and work practices at institutional, site, and activity levels so that missions are accomplished while protecting the worker, the public and the environment.

4.1 **Performance Criteria:**

SLAC systematically integrates the Integrated Safety Management System's (ISMS) seven Guiding Principles and five Core Functions into all management systems and work practices at the institutional, site, and activity levels.

4.1.a Performance Measure: Total Available Points: 40

SLAC effectively implements Integrated Safety Management (ISM) in its management systems and work practices at the institutional, site, and activity levels.

The DOE Annual Review process for demonstrating accomplishment of the performance objective will be based on a jointly conducted review by DOE and SLAC of contractor management systems or work elements falling into the following categories: 1) research projects and associated support operations, 2) infrastructure projects and associated support operations and activities, and 3) other routine support operations and maintenance activities. DOE and SLAC will identify for review each quarter one activity from the three categories identified above.

The activity identified by DOE and SLAC will be subject to review by a team composed of no less than two representatives each from DOE and SLAC. At a minimum, the review team will include a representative from the Stanford Site Office (SSO), an OAK subject-matter expert, as needed, a representative from the SLAC ES&H Division, and a cognizant SLAC line manager. Other DOE or SLAC subject-matter experts or line organization representatives may also be included on the review team to provide technical support if appropriate based on the scope and complexity of the reviews. Review team members are expected to have demonstrated knowledge about ISM.

Although the Annual Review Process will be conducted jointly, the results of the quarterly review will be used by DOE to independently document completion of the DOE Annual Review requirement for determining the overall effectiveness of ISMS Implementation at SLAC. SLAC may also choose to independently use the data generated from the quarterly reviews for the SLAC annual self-assessment report on SLAC's performance against the measure.

The scope of the Annual Review may include, but is not limited to, review of site policies and procedures and their implementation, interviews of line managers,
workers and subcontractors, data generated from SLAC's internal tracking systems and other documented work process products.

A number of other factors may be considered to determine the extent of success against the measure gradient independent of the specific quarterly review process. This includes results of program/project reviews, SLAC self-assessments (including results of internal independent assessments), ongoing DOE Operational Awareness activities conducted throughout the year, 'For Cause Reviews' by DOE, and any external reviews.

The intent of this performance measure is to evaluate how effectively the ISMS guiding principles and core functions are integrated into management systems and work practices at the institutional, site and activity levels; and to determine to what extent SLAC is fostering continuous improvement in ISM implementation through integration of the guiding principles and core functions in line organization activities, implementation of line organization self-assessments, integration of ISM in program/project reviews, implementation of an effective lessons learned program, development of safety performance objectives and key ISM performance indicators and implementation of appropriate corrective actions. The degree of success in meeting the process measure gradients will be based on the collective results of the DOE and SLAC reviews conducted during the DOE fiscal year.

The review will consider the following when documenting the site's performance against the measure:

- Vertical and horizontal integration of safety management systems.
- Flow-down of ISM requirements into SLAC contracts and other documentation.
- Implementation of line organization self-assessments.
- In place processes that ensure feedback and continuous improvement.
- Establishment and tracking/trending of key safety indicators and metrics.

Performance Assumptions:

- 1. Rating period is October 1, 2001 to September 30, 2002.
- 2. DOE and SLAC will meet during the annual ES&H performance- assessment process to discuss the evaluations from each of the ISM quarterly reviews and assign an overall performance rating for this performance measure.
- 3. SLAC will independently incorporate the results from the ISM quarterly reviews into the laboratory's annual self-assessment report on all performance measures.
- 4. The final overall rating for this measure will be based on the aggregate results from the quarterly ISM reviews, program/project reviews, SLAC self-assessments, ongoing DOE Operational Awareness activities, 'For Cause Reviews' by DOE, and any external reviews.

Performance Gradients:

The gradients will be based on an assessment of the effectiveness of performance against the seven elements described in Section 5 of the SLAC Safety

Management System (SLAC-I-720-0A00B-001). These elements are used for implementation of ISMS:

- 1. Guiding Principles 1 and 2
- 2. Guiding Principle 3
- 3. Guiding Principle 4 and Core Function 1
- 4. Guiding Principle 5
- 5. Guiding Principle 6 and Core Functions 2 and 3
- 6. Guiding Principle 7 and Core Function 4
- 7. Core Function 5

Each activity reviewed will be scored on its effectiveness in implementing each element (that is, effective or not effective). Each activity will then be given a gradient evaluation according to the following:

Outstanding: At least 6 of 7 ISM elements demonstrated to be effectively implemented

Excellent: At least 5 of 7 ISM elements demonstrated to be effectively implemented

Good: At least 4 of 7 ISM elements demonstrated to be effectively implemented

Marginal: At least 3 of 7 ISM elements demonstrated to be effectively implemented

Unsatisfactory: Less than 3 of 7 ISM elements demonstrated to be effectively implemented

The final overall rating for this performance measure will be determined as the average of the ratings of each individual activity are assessed.

Performance Summary: To be completed after publication of the second ISMS review report.