3
Findings, Concerns, and Planned Actions

3.1 Root Causes Underlying Individual Findings and Concerns

The Tiger Team identified ten causal factors as contributing to the Environmental subteam findings. Of these, the following four were identified as key causal factors:

- Federal, state, and local laws and regulations or DOE Orders were not implemented or fully implemented.
- SLAC has not developed and implemented procedures to ensure environmental compliance.
- SLAC has not instituted a formal and comprehensive program of audits, surveillance, and work product review for environmental activities.
- SLAC does not have an adequate personnel training program.

The Safety and Health subteam identified the following probable root causes that contributed to their concerns:

- There has been insufficient management attention to compliance with DOE Orders and mandatory standards.
- There is a lack of management direction to ensure that policies are documented, and that programs and procedures derive from these policies and incorporate the requirements.
- There is a lack of document control to ensure that the appropriate documents exist and are up to date.
- There is a lack of formality of operations.

These causal factors form the basis for the two root causes identified by the Management subteam:

- To a large extent, the present condition of ES&H activities at SLAC and SSRL is the carryover from a past era, a period when many of the ES&H requirements did not exist or were not deemed applicable, and any SLAC/SSRL priorities for ES&H compliance were dwarfed by the programmatic activities.
- DOE-ER has not held its program line managers fully accountable for their direct line responsibility for implementation of the Secretary's initiatives, and these line managers have not, in turn, held their respective subordinates fully accountable.

The individual tasks described in the balance of this chapter comprise SLAC's plan for addressing the individual findings and concerns identified by the Tiger Team in a manner that addresses these causal factors and root causes.

3.2 Environment

3.2.1 Overview

The Environmental Assessment was conducted in accordance with the Department of Energy's *Tiger Team Guidance Manual* (February 1990) and the *Environmental Audit Manual* (January 1990). It covered a comprehensive range of topics, including air; surface water and drinking water; groundwater; soils, sediments and biota; waste management; toxic and chemical materials; quality assurance; radiation; inactive waste sites; and the National Environmental Policy Act (NEPA). A total of 41 compliance findings and 11 best management practices findings were identified. The Tiger Team observed that most of the compliance findings relate to areas where the requirements of DOE Orders are not met. Only 20% of the compliance findings relate to noncompliance with federal, state, or local regulatory requirements.

3.2.2 Root Causes and Responses

The Tiger Team summarized the Environmental findings into the following key findings:

- Responsibility and accountability for ES&H management and compliance are not clearly defined, communicated, and understood between organizational units at SLAC.
- SLAC lacks a basic overall understanding of quality assurance oversight as a fundamental management tool to ensure that all environmental activities are in compliance with laws, codes, and DOE requirements.
- SLAC lacks a formalized environmental management program with policies, procedures, and training sufficient to ensure compliance with laws, codes, and DOE requirements

These key findings correspond to, and are addressed by tasks related to, the following strategic elements of this *Corrective Action Plan*:

- Roles, Responsibilities, and Authorities
- Self Assessment and Independent Internal Oversight
- Formality of Operations

The tasks developed in response to each of the specific environmental findings are pursued in the context of these overall strategies (as described in Section 2.3) to ensure that corrective actions address not only the specific findings, but the institutional root causes as well. For example,

- Definition and communication of roles, responsibilities and authorities will assure appropriate actions by individuals responsible for handling of hazardous materials and wastes, improved surveillance by operational units to identify potential and real environmental hazards, and enhanced information gathering processes to meet reporting requirements,
- Development and implementation of quality assurance and internal independent audit plans and procedures will proceed in a manner that captures requirements for environmental compliance. An ongoing, institutionalized self-assessment program will assure that deficiencies are promptly identified and corrected,
- Increased formality of environmental operations, through use of controlled procedures and ongoing training, will provide the basis for comprehensive progress aimed at continued compliance.

Taken together, these strategies for integrating environmental corrective actions within themselves, and with other corrective actions described in this *Plan*, will serve to focus SLAC's resources devoted to environmental protection.

3.2.3 Findings and Action Plans

The Environmental subteam findings and corrective action plans are presented in the following pages. They are grouped by discipline in the order presented in the Tiger Team report.

Finding A/CF-1

SLAC does not have an ambient air quality surveillance program. The baseline of air quality in the vicinity of SLAC has not been formally established, and the potential impacts of the SLAC emissions on ambient air quality have not been quantified, as required by DOE 5400.1, Chapter IV, Section 5.b.(1).

DOE Priority 2

Codes Compliance

Compliance Protocol DOE Order 5400.1, Chapter IV, Section 5.b.(1)

Response DOE Order 5400.1 requires that environmental surveillance be performed to monitor the effects, if any, of site activities on onsite and offsite environmental and natural resources. The baseline of air quality in the vicinity of SLAC has not been formally established, and the potential impacts of SLAC emissions (primarily from solvents) on ambient air quality have not been quantified. An environmental surveillance screening program will be undertaken to determine the need for a permanent surveillance program. An evaluation of the results of the environmental surveillance screening program will be the basis for determining the need and scope of a permanent monitoring/surveillance program.

Related Finding A/BMPF-3 A/CF-2

Related Tasks T1254 Develop Air Quality Surveillance Program

TASK T1254 *DEVELOP AIR QUALITY SURVEILLANCE PROGRAM*
(A/CF-1)

Scheduled Completion	06/01/94
Projected Cost	$35,000
Responsible Department	EPWM

DOE Order 5400.1 will be reviewed to determine the requirements for an ambient air quality surveillance program. The level of effort required for an ambient air quality surveillance program will be determined in consultation with the DOE Field Office, San Francisco. An environmental surveillance screening program will be conducted to establish the baseline air quality in the vicinity of SLAC and to quantify the potential impacts of SLAC emissions on ambient air quality. From this screening program, an evaluation will be made to determine the need for/scope of a permanent ambient air quality surveillance program. Based on this evaluation, a SLAC ambient air quality surveillance program will be developed.

DOE requirements determined	11/01/93
Screening program completed	02/01/94
Screening program evaluated	04/01/94
Surveillance program developed	06/01/94

Detailed Costs ($K)						
	92	93	94	95	96	Total
Existing ES&H Support			20			20
New ES&H Activities			15			15
GPP						
ERWM						
Ongoing Cost $15,000						

Finding A/CF-2

SLAC does not have a documented meteorological monitoring program. Meteorological data currently used by SLAC in the AIRDOS modeling are not representative of local conditions.

DOE Priority 3

Codes Compliance

Compliance Protocol DOE Order 5400.1; DOE/EH-0173T

Response SLAC will develop a documented meteorological monitoring program to ensure that meteorological data used at the site is representative of local conditions. This program will identify the types of meteorological information required to support all routine and nonroutine environmental protection activities. The meteorological information will include topographical characteristics and distances to critical receptors. Data from offsite sources will be used if the data are well-maintained and the data are readily available and representative of conditions at the site.

Related Finding A/CF-1 RAD/CF-1

Related Tasks T1105 Develop Meteorological Monitoring Program

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TASK T1105 *DEVELOP METEOROLOGICAL MONITORING PROGRAM*
(A/CF-2)

Scheduled Completion	02/01/96
Projected Cost	$140,000
Responsible Department	EPWM

The required elements of the Meteorological Monitoring Program (such as data acquisition, data analysis, and data management) will be specified. The purpose of these elements is to obtain specific meteorological information in order to characterize the atmospheric transport and diffusion conditions in the vicinity of SLAC and to assess the impacts of airborne releases from the facility. Meteorological site locations for data acquisition will be identified and evaluated for quality, availability, and representativeness. Procedures will be developed to define how meteorological data will be obtained and used at the facility. Organizational responsibilities for managing and executing the program will be defined.

Program elements specified	09/01/94
Meteorological data sources evaluated	09/01/95
Program developed and documented	02/01/96

	Detailed Costs ($K)					
	92	93	94	95	96	Total
Existing ES&H Support						
New ES&H Activities			70	70		140
GPP						
ERWM						
Ongoing Cost $10,000						

Finding A/CF-3

An asbestos abatement project conducted during the Tiger Team Assessment did not meet the requirements of BAAQMD, Regulation 11, Rule 2 and 40 CFR 61 145-146.

DOE Priority 2

Codes Compliance

Compliance Protocol BAAQMD, Regulation 11, Rule 2; 40 CFR 61, Subpart M

Response The removal of asbestos pipe insulation during routine maintenance activities performed during the Tiger Team Assessment was not performed in accordance with regulatory requirements. The activity was stopped and completed by an asbestos contractor. SLAC has procedures in place requiring all projects involving asbestos to be performed by a licensed asbestos contractor. SLAC will develop a program to assure implementation of these procedures to comply with regulatory requirements, and will train the appropriate staff in asbestos management.

Related Finding A/BMPF-4

Related Tasks T1355 Develop Asbestos Management Program

TASK T1355 *DEVELOP ASBESTOS MANAGEMENT PROGRAM*
(A/CF-3)

Scheduled Completion	04/01/93
Projected Cost	$10,000
Responsible Department	DO

The existing procedures for asbestos abatement (modifications and demolition activities) will be reviewed and upgraded to assure that applicable regulatory requirements will be met. Management will instruct maintenance workers on the importance of adhering to these new procedures. Employee training will be provided to all new workers as required by the asbestos management program.

Procedures review completed	12/01/92
New procedures issued	04/01/93

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support		7				7
New ES&H Activities		3				3
GPP						
ERWM						
Ongoing Cost $3,000						

Finding A/BMPF-1

There are no formal procedures at SLAC to ensure that existing sources of air emissions have the necessary permits and to guarantee that air permits are obtained, where required, for all new projects and/or construction activities.

DOE Priority 3

Codes BMP

Response SLAC has an informal program for evaluating the need for air permits for new equipment. SLAC will develop procedures that formalize how the need for air permits is to be evaluated with respect to new and existing equipment, changes in processes and contractor activities, and that delineate specific responsibilities and accountability for such activities to ensure that existing air permits are current and reflect current facility operating conditions, and that sources of air emissions that may require permits are identified and permitted.

Related Finding A/BMPF-3

Related Tasks T1338 Develop Procedures for Air Permits

TASK T1338 *DEVELOP PROCEDURES FOR AIR PERMITS*
(A/BMPF-1)

Scheduled Completion	04/01/94
Projected Cost	$5,000
Responsible Department	EPWM

Formal procedures will be developed to determine the need for air permits associated with new and existing projects and/or equipment, construction activities, and changes in regulations promulgated by the BAAQMD, California Air Resources Board (CARB) and the EPA. These procedures will also identify who is responsible for determining the need for air permits.

Air permit procedures developed 04/01/94

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support			5			5
New ES&H Activities						
GPP						
ERWM						

Finding A/BMPF-2

The procedures used in the air effluent control program at the SLAC are not sufficient and are not effectively enforced to ensure that air emissions are minimized.

DOE Priority 3

Codes BMP

Response SLAC will revise the air effluent control program to ensure that emissions are minimized. The BAAQMD Rules and Regulations and the air emission permit conditions will provide the basis for developing adequate procedures, appraisals, and quality controls to effectively operate air pollution control equipment.

Related Finding QA/CF-4

Related Tasks T1252 Revise Air Effluent Control Program Procedures

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TASK T1252 *REVISE AIR EFFLUENT CONTROL PROGRAM PROCEDURES*
(A/BMPF-2)

Scheduled Completion	09/30/94
Projected Cost	$18,000
Responsible Department	EPWM

The air effluent controls will be re-examined. Since the principal sources of emissions are solvents, the solvent tracking procedures will be revised to ensure accurate solvent use records are kept and that it is possible to establish with certainty where checked-out solvents are being used. Operating practices will be revised to ensure compliance with the permit conditions. Particulate control device operating procedures will be kept in close proximity to the equipment. Inspection and maintenance procedures for the abatement equipment and associated control devices will be revised and quality assurance checks will be made to confirm inspections.

Solvent tracking program revised	05/01/94
Air effluent controls program revised	09/30/94

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support			18			18
New ES&H Activities						
GPP						
ERWM						

Finding A/BMPF-3

SLAC does not have a complete inventory of air emissions that is updated annually, and not all sources in the existing inventory are adequately quantified.

DOE Priority 3

Codes BMP

Response SLAC will complete an air emissions inventory and will update it annually to effectively manage the air emissions program and to ensure that current compliance information is accurate. This will include annual total emissions and peak hourly emissions. All sources in the complete inventory will be adequately quantified.

Related Finding A/BMPF-1

Related Tasks T1127 Develop Air Emissions Inventory Procedures

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TASK T1127 *DEVELOP AIR EMISSIONS INVENTORY PROCEDURES*
(A/BMPF-3)

Scheduled Completion	01/01/95
Projected Cost	$35,000
Responsible Department	EPWM

The current air emissions inventory will be updated and revised to include sources of air pollutants, and peak 1-hour emissions. These sources will include those associated with automobile refueling and vehicle-related emissions from the use of onsite vehicles and from commuter travel. The chloro-fluorocarbons usage inventory will be updated and revised to indicate the quantity of air emissions, and greenhouse gas emissions will be estimated due to current concerns over global change issues. Procedures will be developed to define how the air emissions inventory is to be compiled and updated. The emissions inventory will be used when performing new source reviews for future permits.

Air emissions inventory procedures developed	06/01/94
Air emissions inventory initiated	07/01/94
Air emissions inventory complete	01/01/95

Detailed Costs ($K)						
	92	93	94	95	96	Total
Existing ES&H Support			25	5		30
New ES&H Activities			5			5
GPP						
ERWM						
Ongoing Cost $25,000						

Finding A/BMPF-4

SLAC does not have a comprehensive formal program to manage asbestos and to ensure compliance with federal, state, and local asbestos regulations.

DOE Priority 2

Codes BMP

Compliance Protocol 40 CFR 61, Subpart M; BAAQMD Regulation 11, Rule 2

Response SLAC's asbestos program has been informal and not sitewide. In order to comply with federal, state, and local regulations on asbestos abatement, SLAC will develop a formal, sitewide asbestos management program which meets all applicable regulations.

Related Finding A/CF-3

Related Tasks T1355 Develop Asbestos Management Program

TASK T1355 *DEVELOP ASBESTOS MANAGEMENT PROGRAM*
(A/BMPF-4)

Scheduled Completion	04/01/93
Projected Cost	$10,000
Responsible Department	DO

The existing procedures for asbestos abatement (modifications and demolition activities) will be reviewed and upgraded to assure that applicable regulatory requirements will be met. Management will instruct maintenance workers on the importance of adhering to these new procedures. Employee training will be provided to all new workers as required by the asbestos management program.

Procedures review completed	12/01/92
New procedures issued	04/01/93

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support		7				7
New ES&H Activities		3				3
GPP						
ERWM						
Ongoing Cost $3,000						

Finding SW/CF-1

Secondary containment sufficient to prevent a release to the environment has not been provided for all oil-filled equipment and hazardous chemicals.

DOE Priority 2

Codes Compliance

Compliance Protocol 40 CFR 112 Oil Pollution Prevention; DOE Order 6430.1A General Design Criteria; National Pollutant Discharge Elimination Permit; PL 101-508 Title 6, 104 Stat 1388 (1990); DOE Orders 5400.1, 5400.3, and 5280.2A

Response In order to meet the secondary containment requirements of 40 CFR 112, SLAC will review the regulations, modify policies and procedures for design and management of secondary containment, conduct a survey of all PCB and oil-filled equipment and hazardous chemicals locations, and develop plans to correct the deficiencies. The policies and procedures will specify the roles, responsibilities, and authorities of the various departments involved in correcting deficiencies and design and construction of future equipment.

Related Finding TCM/BMPF-3 TCM/CF-2 WM/CF-4

Related Tasks
T1246 Provide Safe Storage for Cooling Tower Chemicals
T1298 Develop Secondary Containment Program

TASK T1246 (SW/CF-1) *PROVIDE SAFE STORAGE FOR COOLING TOWER CHEMICALS*

Scheduled Completion	08/01/93
Projected Cost	$211,000
Responsible Department	PE

The engineering and safety staff of the Plant Engineering Department will review proper handling procedures for chemicals in cooling tower maintenance. The chemical storage areas will be designed to satisfy these requirements (coolness, dryness, etc.) and provide containment in the case of a spill. These designs will include concrete pads and shelters for the chemicals. The storage and treatment areas will include all necessary facilities for safe operation.

These designs will be implemented by constructing five chemical storage areas.

The old chemical storage areas will be properly demolished and disposed of.

Storage designs completed	09/01/92
New storage areas constructed	05/01/93
Old facilities demolished	08/01/93

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support						
New ES&H Activities						
GPP	40	171				211
ERWM						

TASK T1298 *DEVELOP SECONDARY CONTAINMENT PROGRAM*
(SW/CF-1)

Scheduled Completion 12/01/92
Projected Cost $130,000
Responsible Department EPWM

Based on a comprehensive site survey and review of applicable regulations, the need for secondary containment of oil-filled equipment and hazardous chemicals will be evaluated and prioritized. Appropriate laboratory policy(ies) will be developed to achieve compliance with those requirements. Roles, responsibilities, and authorities for design and management of secondary containment systems will be developed and communicated. Procedures and action plans will be developed and implemented by the responsible parties. The procuedures will assure that new problems are identified and addressed as they arise. Resulting action plans will be integrated in the laboratory's ES&H Corrective Action Management System where they will be assigned a risk-based priority for funding.

Policy developed and issued	08/01/92
Containment installations initiated	10/01/92
Procedures developed	12/01/92

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support	35					35
New ES&H Activities	35	60				95
GPP						
ERWM						
Ongoing Cost $60,000						

Finding SW/CF-2

The potential for releases of non-radiological liquid effluents, including petroleum products or other hazardous chemicals, to the storm drains at SLAC have not been fully characterized.

DOE Priority 2

Codes Compliance

Compliance Protocol DOE Order 5400.1; 40 CFR 122.1 (NPDES)

Response SLAC will characterize the potential for releases of non-radiological liquid effluents, including petroleum products and other hazardous chemicals, to the storm drains at the facility. This will be achieved by conducting a thorough inventory of all drains to determine specific discharge points and release pathways, and by instituting an integrated Environmental Monitoring Program to identify, quantify and address new or existing, on-site and off-site environmental problems related to facility operations.

Related Finding SW/BMPF-1 SW/CF-1 SW/CF-6

Related Tasks T1109 Characterize Potential Storm Drain Releases

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TASK T1109 (SW/CF-2) *CHARACTERIZE POTENTIAL STORM DRAIN RELEASES*

Scheduled Completion	10/01/94
Projected Cost	$55,000
Responsible Department	EPWM

Drains at the facility will be inventoried and examined to determine if they discharge to the sanitary sewer system or the storm drain system. Facility drawings and maps will be updated to accurately reflect current conditions. Sources of pollutants which could potententially enter the storm drain system will be identified and minimized. Adequacy of barriers and secondary containment controls to limit contaminant migration will be evaluated and upgraded as necessary.

Inventory completed	10/01/93
Drawings and maps updated	02/01/94
Pollutants evaluated	10/01/94

Detailed Costs ($K)						
	92	93	94	95	96	Total
Existing ES&H Support		10	5			15
New ES&H Activities		20	20			40
GPP						
ERWM						
Ongoing Cost $20,000						

Finding SW/CF-3

The SPCC Plan does not incorporate all of the information as required in 40 CFR 112.

DOE Priority 2

Codes Compliance

Compliance Protocol 40 CFR 112; 40 CFR 112.5 (c); 40 CFR 112.7 (e)(2); 112.7 (e)(4); 112.7 (e)(8); 112.7 (e)(10)

Response In order to correct the deficiencies of SLAC's SPCC plan, a review of 40 CFR 112 will be conducted to determine all the requirements and information needed. The SPCC plan will then be revised and re-issued. Responsible personnel will be trained in the provisions of the plan, including required procedures, audits, and reviews.

Related Finding TCM/CF-2

Related Tasks
T1346 Revise Spill Preven. Counter. & Control Plan
T1109 Characterize Potential Storm Drain Releases

TASK T1346 *REVISE SPILL PREVEN. COUNTER. & CONTROL PLAN*
(SW/CF-3)

Scheduled Completion	03/01/93
Projected Cost	$40,000
Responsible Department	EPWM

The SPCC plan will be revised to incorporate all of the information as required in 40 CFR 112. This will include recertification by a Professional Engineer, fuel truck loading and unloading procedures, drainage provisions, procedures and record keeping requirements for diked areas, listing of all oil-filled equipment, and written procedures for inspections and record keeping. Employee training will be revised based on these changes and all personnel with responsibility for spill control and containment will be retrained.

SPCC Plan revised	01/01/93
Spill control personnel training initiated	03/01/93

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support	20	20				40
New ES&H Activities						
GPP						
ERWM						
Ongoing Cost $10,000						

TASK T1109 *CHARACTERIZE POTENTIAL STORM DRAIN RELEASES*
(SW/CF-3)

Scheduled Completion	10/01/94
Projected Cost	$55,000
Responsible Department	EPWM

Drains at the facility will be inventoried and examined to determine if they discharge to the sanitary sewer system or the storm drain system. Facility drawings and maps will be updated to accurately reflect current conditions. Sources of pollutants which could potententially enter the storm drain system will be identified and minimized. Adequacy of barriers and secondary containment controls to limit contaminant migration will be evaluated and upgraded as necessary.

Inventory completed	10/01/93
Drawings and maps updated	02/01/94
Pollutants evaluated	10/01/94

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support		10	5			15
New ES&H Activities		20	20			40
GPP						
ERWM						

Ongoing Cost $20,000

Finding SW/CF-4

SLAC does not have adequate backflow prevention to protect potable water at some locations as required by 29 CFR 1910.141, and does not maintain a comprehensive inventory of backflow prevention devices.

DOE Priority 2

Codes Compliance

Compliance Protocol DOE Order 6430.1S, 0266-2; 29 CFR 1910.141

Response SLAC does not have adequate backflow prevention at some sinks and irrigation connections, and does not have an inventory of backflow prevention devices at these locations. SLAC will inspect the site-wide water distribution systems, install backflow devices where required by regulations, add these devices to the existing inventory records, and develop a program to assure that all future connections to the potable water system are equipped with backflow prevention where required.

Related Tasks T1078 Install Backflow Prev. Devices/Update Inventory

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TASK T1078 (SW/CF-4) *INSTALL BACKFLOW PREV. DEVICES/UPDATE INVENTORY*

Scheduled Completion	10/01/93
Projected Cost	$78,000
Responsible Department	FAC

The site-wide water distribution system will be inspected to identify any process and irrigation connections subject to backflow that are not protected with backflow prevention devices. The appropriate backflow device, vacuum breaker, or backflow preventor will be selected and installed for each location.

All newly installed backflow preventors will be added to the existing inventory records for regularly scheduled testing and maintenance. Procedures will be developed to ensure that new installations are equipped with backflow prevention devices as appropriate.

Site-wide inspection completed	02/01/92
Procedures issued	09/01/92
Corrective actions completed	10/01/93
Inventory updated	10/01/93

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support	73	5				78
New ES&H Activities						
GPP						
ERWM						
Ongoing Cost $5,000						

Finding SW/CF-5

SLAC has never submitted ODIS Reports for effluent and onsite liquid and air radioactive waste discharges as required by DOE 5400.1, Chapter II, Section 5.a.

DOE Priority 2

Codes Compliance

Compliance Protocol DOE Order 5400.1, Chapter II, Section 5.a; Effluent Information System and Onsite Discharge Information System Users Manual; DOE Form F-5821.1

Response SLAC will prepare and submit annual Radioactive Effluent and On-site Discharge Information System Reports to the Waste Information Systems Branch in accordance with DOE 5400.1. Individual pollutants for each onsite discharge or effluent stream will be identified.

Related Finding SW/CF-6

Related Tasks T1206 Prepare ODIS Reports

TASK T1206 (SW/CF-5) *PREPARE ODIS REPORTS*

Scheduled Completion	10/01/92
Projected Cost	$15,000
Responsible Department	OHP

SLAC will clarify requirements for ODIS reporting with DOE/SF. Based on that guidance SLAC will identify and record required On-Site Discharge Information System (ODIS) data, such as all emission points, onsite radioactive waste discharge points, and unplanned releases. ODIS data for the previous calendar year will be used to generate the annual ODIS report. Emission points will include radioactive gaseous effluents from vents at the linac housing, SLC, SPEAR, and PEP. Radioactive waste discharge points will include discharged water from various areas of the linac housing, PEP, SPEAR, and SLC.

DOE/SF guidance requested	04/01/92
First ODIS Report submitted	10/01/92

Detailed Costs ($K)						
	92	93	94	95	96	Total
Existing ES&H Support	15					15
New ES&H Activities						
GPP						
ERWM						
Ongoing Cost $15,000						

Finding SW/CF-6

SLAC does not have a fully developed program for monitoring and controlling batch discharges of liquid radiological effluents to ensure that all releases meet the requirements of DOE Orders.

DOE Priority 2

Codes Compliance

Compliance Protocol DOE Orders 5400.1, 5400.5, and 5700.6B; DOE/EH-0173T

Response SLAC will revise existing monitoring activities to include a program for monitoring and controlling batch discharges of liquid radiological effluents to the sanitary sewer to ensure that all discharges meet the regulatory requirements. The handling of radiological liquids will be evaluated to identify potential environmental problems.

Related Finding QA/CF-1 QA/CF-3 RAD/CF-1 SW/CF-2

Related Tasks

T1341 Liquid Radiological Effluent Monitoring Program
T1122 Develop Integrated Environmental Monitoring Plan
T1441 Modify LINAC & SLC Sump Modification

TASK T1341 (SW/CF-6) *LIQUID RADIOLOGICAL EFFLUENT MONITORING PROGRAM*

Scheduled Completion	10/01/93
Projected Cost	$20,000
Responsible Department	OHP

Procedures establishing the monitoring and control requirements for discharges of liquid radiological effluents to the sanitary sewer have been developed and are being formalized. Site-wide guidance for these types of discharges will be developed. This will include specific requirements for obtaining representative samples, types of analysis, concentration limits, and lower limits of detection. Also, action levels will be specified, there will be provisions for trending or tracking release concentrations, and an effluent release Quality Assurance Plan will be developed. A single authorized organization will be identified to ensure that effluent monitoring properly evaluates the risks associated with releases, and that effluent monitoring policy is implemented.

QA plan developed	07/01/93
Guidance issued	10/01/93

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support		10	10			20
New ES&H Activities						
GPP						
ERWM						

TASK T1122 *DEVELOP INTEGRATED ENVIRONMENTAL MONITORING PLAN*
(SW/CF-6)

Scheduled Completion 10/01/93
Projected Cost $60,000
Responsible Department EPWM

SLAC will develop a comprehensive and integrated Environmental Monitoring Plan which will include the rationale and design criteria for monitoring programs, the extent and frequency of monitoring and measurements, the procedures for laboratory analysis, quality assurance requirements, program implementation procedures, and direction for the preparation and disposition of the Annual Site Environmental Report (ASER). The Environmental Monitoring Plan will include the groundwater and surface water monitoring plans and the meterological information/monitoring program. The ASER will summarize environmental data so as to characterize site environmental management performance, confirm compliance with environmental standards and requirements, and highlight significant programs and efforts.

Procedures developed 07/01/93
Environmental monitoring plan completed 10/01/93

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support	20	40				60
New ES&H Activities						
GPP						
ERWM						

TASK T1441 *MODIFY LINAC & SLC SUMP MODIFICATION*
(SW/CF-6)

Scheduled Completion 01/01/93
Projected Cost $180,000
Responsible Department PE

In order to allow for the controlled discharge of low conductivity water, modications will be made to the sump locations in the Linear Accelerator housing, the SLC ARCS and the CEH. Tanks will be installed to hold water for testing and analyses before discharge.

Design completed 07/01/92
Procurement begun 08/01/92
Sump modification completed 01/01/93

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support						
New ES&H Activities						
GPP	100	80				180
ERWM						

Finding SW/BMPF-1

SLAC has no formalized program to update facility plans and layout maps to ensure that they reflect current facility conditions.

DOE Priority 3

Codes BMP

Response Physical changes to the facility that could affect discharges to the storm drains need to be incorporated in the facility plan. Existing drawings of the facilities have been updated to reflect past changes. SLAC will develop a program to ensure that facility plans reflect the current facility conditions to the underground utilities/storm drains.

Related Tasks T1087 Establish Procedure and Update Facility Plans

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TASK T1087 *ESTABLISH PROCEDURE AND UPDATE FACILITY PLANS*
(SW/BMPF-1)

Scheduled Completion	10/01/96
Projected Cost	$50,000
Responsible Department	FAC

Existing facility plans and maps will be reviewed and updated to reflect current conditions. Updated and new drawings will be processed through Document Control. Procedures will be developed to ensure that future changes are reflected in the controlled drawings.

Procedure developed	06/01/95
Plans and maps updates	10/01/96

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support		10	25	15		50
New ES&H Activities						
GPP						
ERWM						

Finding SW/BMPF-2

There are no written maintenance schedules or record keeping procedures for inspecting and cleaning oil/water separators. Additionally, the oil/water separators are not currently designed in a way that maximizes the removal of oil prior to its discharge to the stormwater system.

DOE Priority 3

Codes BMP

Compliance Protocol National Pollution Discharge Elimination Permit, CWA

Response Written maintenance and inspection procedures will be developed for the oil/water separators at IR-6 and IR-8. These procedures will include regular inspections to ensure proper operation, cleaning and maintenance procedures, discharge sampling and verification of proper operation to comply with NPDES permit requirements. New oil/water separators will be designed and installed to comply with new stormwater regulations and estimated flows.

Related Tasks

T1262 Develop Oil/Water Separator Maintenance Procedure
T1266 Replace Old With New Oil/Water Separators

TASK T1262 *DEVELOP OIL/WATER SEPARATOR MAINTENANCE PROCEDURE*
(SW/BMPF-2)

Scheduled Completion	10/01/93
Projected Cost	$8,000
Responsible Department	PE

A responsible engineer will evaluate the oil/water separator operation and develop procedures which will include operating, inspection interval, sampling requirements and maintenance of the separators. Opportunities for further minimizing releases of oil to the storm water system will be evaluated and a program for improvements developed.

Operational/Maintenance procedures developed 10/01/93

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support		8				8
New ES&H Activities						
GPP						
ERWM						

TASK T1266 *REPLACE OLD WITH NEW OIL/WATER SEPARATORS*
(SW/BMPF-2)

Scheduled Completion	10/01/94
Projected Cost	$173,000
Responsible Department	PE

Two new oil/water separators will be designed for IR-6 and IR-8. Discharge regulations for storm drain water will be reviewed and a water flow source diagram will be made. Specific design criteria for each separator at IR-6 and IR-8 will be determined. The new separators will be constructed by outside contractors.

Complete water flow source diagram	06/01/93
Review discharge regulations	06/01/93
Design criteria established	10/01/93
Procurement initiated	01/01/94
Separators installed	10/01/94

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support		40				40
New ES&H Activities			133			133
GPP						
ERWM						

Finding GW/CF-1

SLAC does not have a fully developed Groundwater Protection Management Program or a groundwater monitoring plan as required under DOE 5400.1.

DOE Priority 2

Codes Compliance

Compliance Protocol DOE Order 5400.1; OSWER Directive 9355.30; DWR Bulletin 74-90; EPA National Ambient Water Quality Criteria; Resource Conservation and Recovery Act (RCRA); Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)

Response Since SLAC's Groundwater Protection Management Program does not meet all of the requirements of DOE Order 5400.1, an enhanced Program will be developed. The Program will include long term goals, current effectiveness, strategy and action plans. It will include key elements which coordinate groundwater monitoring, procedural requirements for annual reviews, and assignment of responsibility, as required by DOE Order 5400.1.

Related Finding GW/CF-2 GW/CF-3 QA-3

Related Tasks

T1228 Develop Groundwater Protection Management Program
T1122 Develop Integrated Environmental Monitoring Plan

TASK T1228 *DEVELOP GROUNDWATER PROTECTION MANAGEMENT PROGRAM*
(GW/CF-1)

Scheduled Completion	04/01/93
Projected Cost	$32,000
Responsible Department	EPWM

SLAC's Groundwater Protection Management Program will be revised to meet the applicable requirements of DOE Order 5400.1. This will include strategies to document the groundwater regime and design and implement a groundwater monitoring plan, methadology for identifying areas that may be contaminated with hazardous substances, etc. Existing groundwater management and water monitoring procedures will be revised to reflect the changes to the Program.

Groundwater Management Program revised	10/01/92
Procedures revised and implemented	04/01/93

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support	16	16				32
New ES&H Activities						
GPP						
ERWM						
Ongoing Cost $5,000						

TASK T1122 *DEVELOP INTEGRATED ENVIRONMENTAL MONITORING PLAN*
(GW/CF-1)

Scheduled Completion 10/01/93
Projected Cost $60,000
Responsible Department EPWM

SLAC will develop a comprehensive and integrated Environmental Monitoring Plan which will include the rationale and design criteria for monitoring programs, the extent and frequency of monitoring and measurements, the procedures for laboratory analysis, quality assurance requirements, program implementation procedures, and direction for the preparation and disposition of the Annual Site Environmental Report (ASER). The Environmental Monitoring Plan will include the groundwater and surface water monitoring plans and the meterological information/monitoring program. The ASER will summarize environmental data so as to characterize site environmental management performance, confirm compliance with environmental standards and requirements, and highlight significant programs and efforts.

Procedures developed 07/01/93
Environmental monitoring plan completed 10/01/93

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support	20	40				60
New ES&H Activities						
GPP						
ERWM						

Finding GW/CF-2

The geology and hydrogeology at the SLAC site has not been completely characterized to define aquifer relationships, subsurface stratigraphy, extent of contamination, background conditions, and local flow paths and velocities, in accordance with the DOE, RCRA, and CERCLA guidance and regulations.

DOE Priority 2

Codes Compliance

Compliance Protocol RCRA; CERCLA guidance and regulations; DOE Order 5400.1; OSWER Directive 9355.30; DWR Bulletin 74-90; EPA National Ambient Water Quality Criteria

Response DOE Order 5400.1 requires documentation of site groundwater regime quality and quantity, as well as a summary and identification of areas that may be contaminated with hazardous substances. Groundwater monitoring and characterization should be conducted to RCRA and CERCLA guidelines. Geological and hydrogeological characterization of the SLAC site has not been completed. SLAC will develop a phased plan for site groundwater characterization, that will augment and/or confirm the large body of existing site data with new information obtained through such means as additional groundwater monitoring wells and extrapolation of existing data. Appropriate regulatory agencies will be involved in all phases of the workplans. The characterization plan will include provisions for identification of onsite contamination sources, determination of contaminant floor and areal extent and development of vertical hydraulic gradients and comprehensive geologic maps.

Related Finding GW/CF-1

Related Tasks
T1227 Develop Site Groundwater Characterization Plan
T1228 Develop Groundwater Protection Management Program

TASK T1227 *DEVELOP SITE GROUNDWATER CHARACTERIZATION PLAN*
(GW/CF-2)

Scheduled Completion	06/01/93
Projected Cost	$50,000
Responsible Department	EPWM

Review DOE Order 5400.1, and RCRA and CERCLA requirements and guidelines for applicability to SLAC conditions. Extensive geology and hydrogeology data already exists for the SLAC site; however, the information is fragmented in dozens of reports. All existing geology/hydrogeologic information will be compiled and a report on the site prepared. Areas of the site with inadequate data will be identified, and mean of obtaining the necessary data proposed. A Site Characterization Plan will be developed identifying required resources and milestones/dates for attaining compliance with 5400.1

Groundwater Plan submitted to DOE 05/01/93
Groundwater Plan implementation started 06/01/93

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support						
New ES&H Activities		50				50
GPP						
ERWM						

TASK T1228 (GW/CF-2) *DEVELOP GROUNDWATER PROTECTION MANAGEMENT PROGRAM*

Scheduled Completion 04/01/93
Projected Cost $32,000
Responsible Department EPWM

SLAC's Groundwater Protection Management Program will be revised to meet the applicable requirements of DOE Order 5400.1. This will include strategies to document the groundwater regime and design and implement a groundwater monitoring plan, methadology for identifying areas that may be contaminated with hazardous substances, etc. Existing groundwater management and water monitoring procedures will be revised to reflect the changes to the Program.

Groundwater Management Program revised 10/01/92
Procedures revised and implemented 04/01/93

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support	16	16				32
New ES&H Activities						
GPP						
ERWM						

Ongoing Cost $5,000

Finding GW/CF-3

SLAC does not have a comprehensive formal program to inventory, maintain, and properly abandon groundwater monitoring wells, in a manner that protects groundwater quality in accordance with California Department of Water Resources Bulletin 74-90 and the Groundwater Monitoring Technical Enforcement Guidance Document.

DOE Priority 1

Codes Compliance

Compliance Protocol California Department of Water Resources Bulletin 74-90; Groundwater Monitoring Technical Enforcement Guidance Document

Response SLAC will develop a comprehensive formal program to install, inventory, maintain, and properly abandon groundwater monitoring wells and soil borings in a manner that protects groundwater quality in accordance with California Department of Water Resources Bulletin 74-90 and the Groundwater Monitoring Technical Enforcement Guidance Document. This will include procedures to ensure the integrity of the monitoring system, and identifies locations, logs, and construction information.

Related Tasks T1226 Develop Monitoring Well & Soil Boring Program

1483-10

TASK T1226 *DEVELOP MONITORING WELL & SOIL BORING PROGRAM*
(GW/CF-3)

Scheduled Completion	10/01/94
Projected Cost	$30,000
Responsible Department	EPWM

A formal program to install, inventory, maintain, and properly abandon groundwater wells and soil borings will be developed in a manner to ensure that groundwater quality is protected in accordance with California Department of Water Resources Bulletin 74-90 and the Groundwater Monitoring Technical Enforcement Guidance Document.

Requirements evaluated	06/01/94
Monitoring Well & Soil Boring Program developed	10/01/94

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support						
New ES&H Activities						
GPP						
ERWM			30			30

Finding GW/CF-4

An environmental surveillance program has not been developed to assess the environmental impact of SLAC site activities in accordance with DOE 5400.1.

DOE Priority 2

Codes Compliance

Compliance Protocol DOE Order 5400.1; OSWER

Response SLAC will develop a soils, sediment, and biota environmental surveillance and monitoring program in accordance with DOE Order 5400.1. An environmental surveillance screening program will be undertaken to determine the need for a permanent surveillance program. Information collected will aid in the evaluation of impacts to the environment and identify potential effects with regard to the implementation of remedial actions This will include a general identification of the flora and fauna associated in and around the site with particular emphasis placed on identifying sensitive environments.

Related Finding A/CF-1 IWS/CF-1

Related Tasks T1343 Develop Environmental Surveillance Program

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TASK T1343 *DEVELOP ENVIRONMENTAL SURVEILLANCE PROGRAM*
(GW/CF-4)

Scheduled Completion	10/01/95
Projected Cost	$270,000
Responsible Department	EPWM

SLAC is in the process of preparing a Preliminary Assessment (PA) for the EPA - which is due July, 1993. The PA will identify areas at the site where SLAC operations may have negatively impacted the environment. The PA will be followed by an extensive sampling/analysis effort which will form the basis of the Environmental Surveillance Program. A formal Environmental Serveillance program will be developed to assess the potential impact on ecosystem components and characteristics, critical habitats, and biocontamination resulting from the operation of the facility. This will include sampling, analysis, and evaluation of soils, sediments, and biota.

Environmental surveillance program developed	10/01/94
Report on potential impacts completed	10/01/95

	Detailed Costs ($K)					
	92	93	94	95	96	Total
Existing ES&H Support						
New ES&H Activities			135	135		270
GPP						
ERWM						
Ongoing Cost $50,000						

Finding WM/CF-1

SLAC's hazardous waste management training program has not been fully implemented to ensure that all facility personnel with responsibility for hazardous waste management activites have been trained, and to ensure that hazardous waste is managed in accordance with the State of California regulatory requirements.

DOE Priority 1

Codes Compliance

Compliance Protocol California Code of Regulation Title 22, Article 18; 40 CFR 265.14; DOE Order 5400.1

Response SLAC will fully implement a hazardous waste management training program to ensure that all facility personnel with responsibility for hazardous waste management activities are trained, and hazardous waste is managed in accordance with the State of California regulatory requirements. This will include classroom instruction and/or on-the-job training which will cover a number of topics such as contingency plan implementation and emergency response. Specific training records and documentation will be maintained and annual reviews of initial training will be conducted.

Related Finding A/BMPF-4 A/CF-3 SW/CF-2 TCM/BMPF-1 TCM/BMPF-2 TCM/CF-1 TCM/CF-2 WM/CF-2 WM/CF-3 WM/CF-4 WM/CF-6

Related Tasks

T1095 Expand Hazardous Waste Management Training Prgm.
T1288 Formalize Waste Classification Program
T1116 Develop WAA Management Procedures

TASK T1095 (WM/CF-1) *EXPAND HAZARDOUS WASTE MANAGEMENT TRAINING PRGM.*

Scheduled Completion	02/01/93
Projected Cost	$160,000
Responsible Department	EPWM

SLAC has performed a Job Task/Hazard Survey to identify training needs for all employees. A database will be developed to track employee training needs and training received. Training already received by employees will be verified. Training records will be revised to include complete job descriptions and the type and amount of both introductory and continuing training required for each facility position related to hazardous waste management as required by California Hazardous Waste Regulation, Title 22, Article 18. More specific training will be developed for Hazardous Waste and Materials Coordinators. Mandatory attendance will be required for all employees identified as needing the Chemical and Hazardous Materials training. Hazardous waste management practices will be periodically reviewed to ensure compliance with hazardous waste regulations.

Required initial employee training completed	07/01/92
Training records database established	10/01/92
HWM coordinator training initiated	02/01/93
Refresher training initiated	10/01/92

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support	40	40				80
New ES&H Activities	40	40				80
GPP						
ERWM						

Ongoing Cost $50,000

TASK T1288 *FORMALIZE WASTE CLASSIFICATION PROGRAM*
(WM/CF-1)

Scheduled Completion	01/01/93
Projected Cost	$5,000
Responsible Department	EPWM

Existing waste identification and classification procedures will be formalized to ensure that all waste streams are properly identified as required by State of California Regulations, Title 22. Identification procedures will be incorporated into the Waste Management training program (Task T1095).

Waste classification procedures prepared	12/15/92
Procedures issued	01/01/93

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support	3	2				5
New ES&H Activities						
GPP						
ERWM						

TASK T1116 *DEVELOP WAA MANAGEMENT PROCEDURES*
(WM/CF-1)

Scheduled Completion	10/01/92
Projected Cost	$12,000
Responsible Department	EPWM

SLAC will develop procedures for generators of hazardous waste to manage the waste accumulation area(s)(WAA). Management of WWA(s) will include container management (labeling, storage time, etc.) and area managment (inspections, maintenance, etc.). Training for these procedures will be part of the Hazardous Waste Management Training Program.

Procedures developed	10/01/92

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support	12					12
New ES&H Activities						
GPP						
ERWM						

Finding WM/CF-2

SLAC does not have a formalized waste classification or quality assurance program to ensure that all waste streams are properly identified, as required by State of California Regulations, Title 22.

DOE Priority 2

Codes Compliance

Compliance Protocol California Hazardous Waste Regulations Title 22, Art. 6; Art. 2, Sec. 66471 and 66305; 40 CFR 261 (Subpart C, Subpart D), 262.11

Response SLAC will formalize existing procedures for waste identification classification to ensure that waste streams are properly identified and remain in compliance with environmental regulations. Quality Assurance for waste classification will be an element of the ES&H Audit Plan.

Related Finding WM/CF-1

Related Tasks
T1288 Formalize Waste Classification Program
T1293 Develop Comprehensive Audit Plan for ES&H Act.

TASK T1288 (WM/CF-2) *FORMALIZE WASTE CLASSIFICATION PROGRAM*

Scheduled Completion	01/01/93
Projected Cost	$5,000
Responsible Department	EPWM

Existing waste identification and classification procedures will be formalized to ensure that all waste streams are properly identified as required by State of California Regulations, Title 22. Identification procedures will be incorporated into the Waste Management training program (Task T1095).

Waste classification procedures prepared	12/15/92
Procedures issued	01/01/93

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support	3	2				5
New ES&H Activities						
GPP						
ERWM						

TASK T1293 *DEVELOP COMPREHENSIVE AUDIT PLAN FOR ES&H ACT.*
(WM/CF-2)

Scheduled Completion Completed
Projected Cost $20,000
Responsible Department QA&C

A global plan for auditing will be developed. This plan will include identification of the audit to be undertaken including surveillance, routine audits, and special audits, identification of the appropriate audit staff/teams, training requirements as applicable prior to undertaking auditing, and the appropriate frequency of audits. The appraisals will be undertaken by Quality Assurance and Compliance Department personnel, independent internal experts, outside technical experts from other laboratories, or consulting firms, depending on the technical requirements and nature of the audit activity. The audit program will proceed with audits and activities explicitly called out in DOE Orders such as 5400.1 in advance of the formal plan development.

Requirements reviewed	06/01/92
Staffing needs to support audits identified	09/01/92
Audit plan prepared	11/01/92
SLAC approval of audit plan obtained	12/01/92
Implementation of audit plan begun	12/31/92

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support	10	10				20
New ES&H Activities						
GPP						
ERWM						

Finding WM/CF-3

Waste accumulation and storage management activities have not been uniformly implemented across the site to ensure compliance with federal and state requirements.

DOE Priority 1

Codes Compliance

Compliance Protocol California Hazardous Waste Regulations, Title 22, Art. 6, Sec. 66508(a); Sec. 67244 and Sec. 67120(a); 40 CFR 262.34(a)(2) and (3), 265.174, 265.31; DOE Order 5400.3

Response SLAC has begun to develop an integrated program to better manage waste accumulation and storage activities on site. The program includes continuation of training for staff who generate and/or handle hazardous waste, development of formal procedures for managing waste accumulation areas, and full implementation of the hazardous waste tracking and drum management system.

Development of this program will ensure that waste accumulation and storage activities will be uniformly implemented across the site to ensure compliance with federal, state, and local regulations as well as the applicable DOE orders. Procedures for managing waste accumulation and storage activities will encompass waste accumulation area management and container management across the SLAC site.

Related Finding PT.12-1 WM/CF-1

Related Tasks

T1116 Develop WAA Management Procedures
T1119 Implement Hazardous Waste Tracking System
T1095 Expand Hazardous Waste Management Training Prgm.
T1285 Revise Haz. Waste Packaging & Storage Procedures
T1293 Develop Comprehensive Audit Plan for ES&H Act.

TASK T1116 *DEVELOP WAA MANAGEMENT PROCEDURES*
(WM/CF-3)

Scheduled Completion	10/01/92
Projected Cost	$12,000
Responsible Department	EPWM

SLAC will develop procedures for generators of hazardous waste to manage the waste accumulation area(s)(WAA). Management of WWA(s) will include container management (labeling, storage time, etc.) and area managment (inspections, maintenance, etc.). Training for these procedures will be part of the Hazardous Waste Management Training Program.

Procedures developed 10/01/92

Detailed Costs ($K)	92	93	94	95	96	Total
Existing ES&H Support	12					12
New ES&H Activities						
GPP						
ERWM						

TASK T1119 *IMPLEMENT HAZARDOUS WASTE TRACKING SYSTEM*
(WM/CF-3)

Scheduled Completion 04/01/93
Projected Cost $50,000
Responsible Department EPWM

SLAC will fully implement the hazardous waste tracking and drum management system. The system will be able to track individual waste containers to ensure compliance with container management (storage time, labeling, type, etc.).

System implemented 04/01/93

Detailed Costs ($K)	92	93	94	95	96	Total
Existing ES&H Support	15	10				25
New ES&H Activities	15	10				25
GPP						
ERWM						
Ongoing Cost $15,000						

TASK T1095 *EXPAND HAZARDOUS WASTE MANAGEMENT TRAINING PRGM.*
(WM/CF-3)

Scheduled Completion 02/01/93
Projected Cost $160,000
Responsible Department EPWM

SLAC has performed a Job Task/Hazard Survey to identify training needs for all employees. A database will be developed to track employee training needs and training received. Training already received by employees will be verified. Training records will be revised to include complete job descriptions and the type and amount of both introductory and continuing training required for each facility position related to hazardous waste management as required by California Hazardous Waste Regulation, Title 22, Article 18. More specific training will be developed for Hazardous Waste and Materials Coordinators. Mandatory attendance will be required for all employees identified as needing the Chemical and Hazardous Materials training. Hazardous waste management practices will be periodically reviewed to ensure compliance with hazardous waste regulations.

Required initial employee training completed	07/01/92
Training records database established	10/01/92
HWM coordinator training initiated	02/01/93
Refresher training initiated	10/01/92

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support	40	40				80
New ES&H Activities	40	40				80
GPP						
ERWM						

Ongoing Cost $50,000

TASK T1285 (WM/CF-3) *REVISE HAZ. WASTE PACKAGING & STORAGE PROCEDURES*

Scheduled Completion	01/01/93
Projected Cost	$10,000
Responsible Department	EPWM

The existing procedures for packaging and storage of hazardous waste will be revised to ensure conformance with DOE 5480.3, 49 CFR 177, and 40 CFR. A procedure for waste generators to properly fill drums will be developed, and a more formal inspection of filled drums transported at SLAC to the Chemical Storage Area will be conducted.

Compliance protocols reviewed	07/15/92
Haz. waste packaging & storage procedures revised	01/01/93

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support	8	2				10
New ES&H Activities						
GPP						
ERWM						

TASK T1293 (WM/CF-3) *DEVELOP COMPREHENSIVE AUDIT PLAN FOR ES&H ACT.*

Scheduled Completion	Completed
Projected Cost	$20,000
Responsible Department	QA&C

A global plan for auditing will be developed. This plan will include identification of the audit to be undertaken including surveillance, routine audits, and special audits, identification of the appropriate audit staff/teams, training requirements as applicable prior to undertaking auditing, and the appropriate frequency of audits. The appraisals will be undertaken by Quality Assurance and Compliance Department personnel, independent internal experts, outside technical experts from other laboratories, or consulting firms, depending on the technical requirements and nature of the audit activity. The audit program will proceed with audits and activities explicitly called out in DOE Orders such as 5400.1 in advance of the formal plan development.

Requirements reviewed	06/01/92
Staffing needs to support audits identified	09/01/92
Audit plan prepared	11/01/92
SLAC approval of audit plan obtained	12/01/92
Implementation of audit plan begun	12/31/92

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support	10	10				20
New ES&H Activities						
GPP						
ERWM						

Finding WM/CF-4

SLAC does not have a finalized waste minimization plan that includes all the elements required for an effective waste minimization program by EPA, DOE, and the State of California.

DOE Priority 2

Codes Compliance

Compliance Protocol 40 CFR Part 262.41 and Appendix; PL 101-508 Title 6, 104 Stat 1388 (1990); DOE Orders 5400.1, 5400.3, and 5280.2A; CCR Title 22 Art. 6.1 Sections 66520 through 66525, Division 4, Chap. 30

Response SLAC will revise and finalize the existing Waste Minimization Plan to include all the elements required for an effective waste minimization program by EPA, DOE, and the State of California. This will include minimization of radioactive and mixed wastes, explicit program scope, objectives and quantitative goals, and program evaluation. A Waste Reduction Manager responsible for all waste types, including non-hazardous and radioactive wastes, will be identified.

Related Finding QA/CF-4 TCM/CF-1

Related Tasks T1093 Revise Waste Minimization Plan

TASK T1093 *REVISE WASTE MINIMIZATION PLAN*
(WM/CF-4)

Scheduled Completion	12/01/92
Projected Cost	$45,000
Responsible Department	EPWM

The existing draft waste minimization plan will be revised to include minimization of radioactive and mixed wastes, as required by DOE 5400.1 and 5820.2A. Additionally, the program will contain quantitative goals for specific waste streams, a systematic plan for the assessment of waste minimization activities, approaches for tracking costs back to individual departments and groups that generate wastes, and program evaluation performance objectives. A Waste Reduction Manager with the responsibility for all waste types will be identified.

Waste Reduction Manager identified	10/01/92
Waste Minimization Plan revised	12/01/92

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support	10	35				45
New ES&H Activities						
GPP						
ERWM						

Finding WM/CF-5

Radioactive waste is not fully managed in a manner to ensure (1) that it is properly handled, segregated, characterized, stored, and shipped; (2) that the waste certification program meets the Hanford Site Radioactive Solid Waste Acceptance Criteria (WHC-EP-0063-2); and (3) that the generation of low-level radioactive waste is minimized.

DOE Priority 2

Codes Compliance

Compliance Protocol DOE Order 5820.2A and 5400.5; Title 49 CFR (Department of Transportation); WHC-EP-0063-2 (State of Washington)

Response SLAC will develop a radioactive and mixed waste management program to ensure that waste is properly handled, segregated, characterized, stored, and shipped; that the waste certification program meets the Hanford Site Radioactive Solid Waste Acceptance Criteria (WHC-EP-0063-2); and that the generation of low-level radioactive waste is minimized.

This will include technical and administrative controls to reduce waste generation and disposal, segregate waste, and sufficiently characterize waste.

Related Finding RAD/CF-3 RP.3-3 RP.3-4 SW/CF-5 WM/CF-4

Related Tasks T1277 Revise Radioactive Waste Management Plan

TASK T1277 (WM/CF-5) *REVISE RADIOACTIVE WASTE MANAGEMENT PLAN*

Scheduled Completion	10/01/92
Projected Cost	$130,000
Responsible Department	OHP

SLAC will develop a radioactive waste management program in accordance with DOE 5820.2A. Sufficient technical and administrative controls will be developed to further reduce waste volume and/or the amount of radioactivity and mixed wastes requiring disposal. The radioactive material minimization procedure will be revised in accordance with DOE 5820.2A, Chapter III, Section 3.C.1. The Radioactive Waste Management Plan will be revised to include delineation of responsibilities, implementation, records, and revisions. This plan will be used to ensure proper storage, characterization, and segregation of radioactive waste.

Radioactive Waste Management Plan revised	10/01/92

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support	75					75
New ES&H Activities	55					55
GPP						
ERWM						

Finding WM/CF-6

SLAC does not have an integrated contingency plan that meets all the requirements of Article 20 of the California Hazardous Waste Management Regulations.

DOE Priority 2

Codes Compliance

Compliance Protocol 40 CFR Part 262.34 and 262.52 of Subpart D; CCR Title 22 Sections 66508(a)(4) and 67141 and Article 20

Response SLAC will revise and integrate existing emergency preparedness plans to develop a contengency plan that meets all the requirements of Article 20 of the California Hazardous Waste Management Regulations. This will include detailed operating procedures for various onsite facilities and complete response actions in the event of a spill or release of hazardous waste.

Related Tasks T1289 Develop Hazardous Materials Spill Contingency Plan

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TASK T1289 *DEVELOP HAZARDOUS MATERIALS SPILL CONTINGENCY PLAN*
(WM/CF-6)

Scheduled Completion	01/01/94
Projected Cost	$100,000
Responsible Department	EPWM

Federal and California regulations will be reviewed and incorporated into the existing spill prevention control and countermeasures plan and emergency preparedness plan. This will include a complete description of the actions facility personnel must take in the event of a hazardous spill or release, a complete description of arrangements with local authorities, names and telephone numbers of emergency coordinators, a complete list of emergency equipment and its location, and an evacuation plan.

Compliance protocols reviewed	09/01/92
Emergency preparedness plans reviewed	03/01/93
Integrated contingency plan completed	01/01/94

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support	25	30	15			70
New ES&H Activities		20	10			30
GPP						
ERWM						
Ongoing Cost $10,000						

Finding WM/BMPF-1

SLAC does not have formal procedures in place to formally evaluate or audit commercial TSDFs to which SLAC ships its waste.

DOE Priority 3

Codes BMP

Response In order for SLAC to minimize the potential for future liability to itself or DOE in the disposal of hazardous waste shipped offsite, an audit program will be developed for the commercial TSDFs to which SLAC ships its waste. This will be done in the response to concern QA/CF-4.

Related Finding QA/CF-4 QA/CF-5 QA/CF-6

Related Tasks

T1293 Develop Comprehensive Audit Plan for ES&H Act.
T1294 Define Audit Roles & Responsibilities
T1295 Develop a Detailed Procedure for Audits

TASK T1293 *DEVELOP COMPREHENSIVE AUDIT PLAN FOR ES&H ACT.*
(WM/BMPF-1)

Scheduled Completion	Completed
Projected Cost	$20,000
Responsible Department	QA&C

A global plan for auditing will be developed. This plan will include identification of the audit to be undertaken including surveillance, routine audits, and special audits, identification of the appropriate audit staff/teams, training requirements as applicable prior to undertaking auditing, and the appropriate frequency of audits. The appraisals will be undertaken by Quality Assurance and Compliance Department personnel, independent internal experts, outside technical experts from other laboratories, or consulting firms, depending on the technical requirements and nature of the audit activity. The audit program will proceed with audits and activities explicitly called out in DOE Orders such as 5400.1 in advance of the formal plan development.

Requirements reviewed	06/01/92
Staffing needs to support audits identified	09/01/92
Audit plan prepared	11/01/92
SLAC approval of audit plan obtained	12/01/92
Implementation of audit plan begun	12/31/92

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support	10	10				20
New ES&H Activities						
GPP						
ERWM						

TASK T1294 *DEFINE AUDIT ROLES & RESPONSIBILITIES*
(WM/BMPF-1)

Scheduled Completion 11/15/92
Projected Cost $5,000
Responsible Department QA&C

The roles, responsibilities, and authorities (RRAs) for audit resolution, follow-up, corrective action, implementation, and oversight will be detailed in the audit section of the revised Instituational QA Manual.

Audit RRAs documented 11/15/92

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support	5					5
New ES&H Activities						
GPP						
ERWM						

TASK T1295 *DEVELOP A DETAILED PROCEDURE FOR AUDITS*
(WM/BMPF-1)

Scheduled Completion Completed
Projected Cost $7,000
Responsible Department QA&C

A detailed audit procedure which addresses items such as resolution of audit findings, audit types, audit documentation requirements, and other issues related to auditing will be developed.

Draft procedures developed 05/01/92
Management approval of document obtained 06/01/92

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support	7					7
New ES&H Activities						
GPP						
ERWM						

Finding TCM/CF-1

SLAC has not developed or implemented a Pollution Prevention Awareness Program Plan in accordance with DOE 5400.1, Chapter III.

DOE Priority 2

Codes Compliance

Compliance Protocol DOE Order 5400.1, Chapter III, 5400.3, and 5280.2A; PL 101-508 Title 6, 104 Stat 1388 (1990)

Response SLAC will revise and finalize an existing combined Waste Minimization and Pollution Prevention Awareness Plan (PPAP) in accordance with DOE Order 5400.1, Chapter III. This will include elements for employee awareness through specific training, special awareness campaigns, and incentives and award programs.

Related Finding WM/CF-4

Related Tasks T1089 Finalize Pollution Prevention Awareness Plan

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TASK T1089 (TCM/CF-1) *FINALIZE POLLUTION PREVENTION AWARENESS PLAN*

Scheduled Completion	02/01/94
Projected Cost	$45,000
Responsible Department	EPWM

SLAC is currently developing a combined Waste Minimization and Pollution Prevention Awareness Plan that will be finalized and implemented. SLAC is implementing sitewide policies utilizing the draft plan. Current employee training programs will be revised to adequately address pollution prevention awareness issues and opportunities at the facility. A formalized program for training and awareness campaigns for pollution prevention will be developed and integrated into the Hazardous Materials Training Program.

Pollution Prev. Awareness Train. Program developed	01/01/94
Pollution Prevention Awareness Program finalized	02/01/94

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support						
New ES&H Activities		10	35			45
GPP						
ERWM						
Ongoing Cost $30,000						

Finding TCM/CF-2

SLAC does not have integrated procedures or comprehensive sitewide inventory to manage oil-filled equipment, including PCB equipment, in order to ensure compliance with 40 CFR 761, 40 CFR 112, and DOE 6430.1A.

DOE Priority 1

Codes Compliance

Compliance Protocol 40 CFR 761; 40 CFR 112

Response Responsibilities for management of oil-filled equipment including equipment containing PCBs, are currently informally defined at SLAC.

Current policies and procedures will be reviewed, and a comprehensive, formalized policy governing the managment of oil and PCB-filled equipment will be developed. Staff roles, responsibilities and authorities with regard to labeling, sampling, record keeping, spill control and response, usage, inventory, and disposal of all equipment containing oil or PCBs will be defined. As a part of this process formal training on the proper handling, storing, and managing PCB and oil-filled equipment will be instituted.

Related Finding QA/CF-5 SW/CF-1 SW/CF-4

Related Tasks T1258 Establish Program to Manage Oil Filled Equipment

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TASK T1258 *ESTABLISH PROGRAM TO MANAGE OIL FILLED EQUIPMENT*
(TCM/CF-2)

Scheduled Completion	09/30/93
Projected Cost	$370,000
Responsible Department	PE

All pertinent regulations and DOE Orders will be reviewed along with SLAC policies and procedures. SLAC will produce a comprehensive policy and procedure document for the inventory, handling, storage and disposal of PCB and oil-filled equipment. Finally, a formal program including information distribution and training will be established and implemented. A site-wide inventory of PCB and oil-filled equipment will be conducted.

Requirements reviewed	08/01/92
Procedures issued	01/01/93
Program implementation initiated	01/01/93
Site-wide inventory completed	09/30/93

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support	35	35				70
New ES&H Activities	150	150				300
GPP						
ERWM						
Ongoing Cost $80,000						

Finding TCM/BMPF-1

SLAC has not developed and implemented a comprehensive inspection and hazardous material handling program for equipment stored for reuse, excess, or scrap.

DOE Priority 3

Codes BMP

Response SLAC recognizes the need to minimize the potential release of hazardous materials in its Salvage Yard and Warehouse areas. Initially interim hazardous material handling guidance will be provided to personnel in these areas. Formal procedures will be developed for handling of materials being placed into the Salvage Yard and Warehouse. This will be followed with an evaluation of training for personnel in these areas and providing training as necessary.

Related Tasks

T1016 Develop/Distribute Interim Haz. Mat. Guidance
T1056 Revise Business Services Division Procedure 98-4
T1058 Evaluate Adequacy of Training for Ware/Salv Pers.

TASK T1016 DEVELOP/DISTRIBUTE INTERIM HAZ. MAT. GUIDANCE
(TCM/BMPF-1)

Scheduled Completion 09/01/92
Projected Cost $3,000
Responsible Department PAD

Develop ES&H Bulletin(s) communicating summary level information on requirements for proper identification, use, and disposition of chemicals and hazardous materials. Several Bulletins may be required, for various groups or types of personnel. Distribute the appropriate Bulletin(s) to site personnel.

Hazardous Material Guidance distributed 09/01/92

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support	3					3
New ES&H Activities						
GPP						
ERWM						

TASK T1056 REVISE BUSINESS SERVICES DIVISION PROCEDURE 98-4
(TCM/BMPF-1)

Scheduled Completion Completed
Projected Cost $5,000
Responsible Department BSD

It is the intention that materials containing hazardous, toxic, and controlled substances do not unwittingly enter the storage, excess, and scrap process. Information concerning

this is being prepared. As a final assurance, all material turned over to salvage as scrap is placed in a designated location within the fenced area adjacent to the salvage/warehouse building. Current practice is to request an ES&H technician to inspect material that has an observed potential to contain hazardous, toxic or controlled substances prior to further processing. This practice will be made more formal by including it in a revised issuance of BSD Procedure 98-4 SCRAP.

Revised procedure issued 09/01/92

	Detailed Costs ($K)					
	92	93	94	95	96	Total
Existing ES&H Support	5					5
New ES&H Activities						
GPP						
ERWM						

TASK T1058 EVALUATE ADEQUACY OF TRAINING FOR WARE/SALV PERS.
(TCM/BMPF-1)

Scheduled Completion 03/01/93
Projected Cost $10,000
Responsible Department BSD

An effort will be mounted to better disseminate information on the proper methods of storing and disposing of items that may contain hazardous, toxic, or regulated substances. One of the intentions of this effort is to prevent the unwitting entry of such material into the storage, excess, and scrap process. The level of training necessary for the warehouse/salvage personnel to respond to their responsibilities will be evaluated and training will be provided as necessary.

Adequacy of training evaluated 12/01/92
Training provided as necessary 03/01/93

	Detailed Costs ($K)					
	92	93	94	95	96	Total
Existing ES&H Support		10				10
New ES&H Activities						
GPP						
ERWM						

Finding TCM/BMPF-2

SLAC does not provide adequate oversight of landscaping and pest control contractors.

DOE Priority 3

Codes BMP

Response SLAC will revise present management practices to have a formal, consistent process which will provide adequate oversight to ensure that contractor activities are conducted in an environmentally sound manner and to minimize the potential for release of hazardous materials to the environment. This includes review of the contractor scope of work, choice of materials, methods, licenses, and federal and state requirements pertaining to contractor activities.

Related Finding QA/CF-5

Related Tasks T1435 Revise Contractor Oversight Program

TASK T1435 REVISE CONTRACTOR OVERSIGHT PROGRAM
(TCM/BMPF-2)

Scheduled Completion	09/01/92
Projected Cost	$4,000
Responsible Department	FAC

SLAC will develop oversight for verifying that the applications performed by landscape and pest control contractors are being conducted in an environmentally sound manner. SLAC will review the scope of contract work, the choice of pesticides or herbicides, the method of application, storage, and mixing, and the evaluation of contractor performance. Contractor licenses will be kept on file to verify that the contractor activities meet California standards for pesticide and herbicide application.

Contractor oversight program revised	08/01/92
Contractor oversight program implemented	09/01/92

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support	4					4
New ES&H Activities						
GPP						
ERWM						

Finding TCM/BMPF-3

SLAC lacks a comprehensive program to manage the storage of chemicals used for cooling tower maintenance.

DOE Priority 3

Codes BMP

Response To minimize hazardous chemical handling, increase the efficiency of the cooling tower water treatment program, and abide by all federal, state and local regulations, laws, and procedures, new cooling tower chemical storage and treatment facilities will be constructed at each cooling tower. A procedure manual will be developed and training sessions will be organized.

Related Finding SW/CF-1

Related Tasks
T1246 Provide Safe Storage for Cooling Tower Chemicals
T1248 Develop Cooling Towers Chemical Storage Procedure

TASK T1246 *PROVIDE SAFE STORAGE FOR COOLING TOWER CHEMICALS*
(TCM/BMPF-3)

Scheduled Completion	08/01/93
Projected Cost	$211,000
Responsible Department	PE

The engineering and safety staff of the Plant Engineering Department will review proper handling procedures for chemicals in cooling tower maintenance. The chemical storage areas will be designed to satisfy these requirements (coolness, dryness, etc.) and provide containment in the case of a spill. These designs will include concrete pads and shelters for the chemicals. The storage and treatment areas will include all necessary facilities for safe operation.

These designs will be implemented by constructing five chemical storage areas.

The old chemical storage areas will be properly demolished and disposed of.

Storage designs completed	09/01/92
New storage areas constructed	05/01/93
Old facilities demolished	08/01/93

Detailed Costs ($K)						
	92	93	94	95	96	Total
Existing ES&H Support						
New ES&H Activities						
GPP	40	171				211
ERWM						

TASK T1248 *DEVELOP COOLING TOWERS CHEMICAL STORAGE PROCEDURE*
(TCM/BMPF-3)

Scheduled Completion 06/01/93
Projected Cost $11,000
Responsible Department PE

Write a comprehensive Cooling Tower Water Treatment Chemicals Handling and Storage Policy encompassing all phases of safety, treatment, and training. This policy will become a part of the Plant Engineering Hazardous Materials Management Program. Initiate the training of all involved personnel.

Policy and procedures developed 05/01/93
Staff training initiated 06/01/93

Detailed Costs ($K)						
	92	93	94	95	96	Total
Existing ES&H Support		11				11
New ES&H Activities						
GPP						
ERWM						

Finding TCM/BMPF-4

SLAC does not have a comprehensive, integrated chemical materials management system.

DOE Priority 3

Codes BMP

Compliance Protocol DOE Order 5480.10; 29 CFR 1910.1200

Response Current programs and procedures related to chemical materials management on the SLAC site include the Hazard Communication Program, purchasing controls on hazardous materials, the annual chemical inventory, the SARA Title III reporting program, and the SSRL safety review of chemical materials used by visiting researchers. These components do not comprehensively address all the safety and environmental issues related to chemical materials management. They will be revised and integrated by additional measures to ensure sound managment of chemical materials on site.

Related Finding IWS/BMPF-1 WS.3-4

Related Tasks T1311 Develop Hazardous Materials Management System

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TASK T1311 *DEVELOP HAZARDOUS MATERIALS MANAGEMENT SYSTEM*
(TCM/BMPF-4)

Scheduled Completion	10/01/94
Projected Cost	$190,000
Responsible Department	ESH

Applicable regulatory requirements pertaining to inventory, reporting, and internal management of chemicals and hazardous materials will be evaluated. Input will be sought from the ES&H Division (including IH personnel), Purchasing Office, major end-users, and management. A Chemical & Hazardous Materials Management System (MMS) will be developed, and will include elements concerning hazardous and chemical material acquisition, handling, and disposal; controls for researcher and subcontractor use and storage of such materials (including those not obtained through the SLAC purchasing system); inventory and tracking of materials; and related management responsibilities. The MMS will be developed to be consistent and complementary to the SLAC Hazard Communication Program (HCP). The MMS Plan will consist of written procedures, training, and information systems, including the SLAC database of hazardous materials. Development of the system will be approached in phases, first addressing the compliance issues and later the best management practice issues.

Requirements reviewed	04/01/93
MMS plan developed	04/01/94
MMS implementation initiated	10/01/94

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support		45	45			90
New ES&H Activities		50	50			100
GPP						
ERWM						

Ongoing Cost $40,000

Finding QA/CF-1

SLAC has not prepared a formal integrated Environmental Monitoring Plan which includes descriptions of effluent monitoring and environmental surveillance activity components, as required by DOE 5400.1, Chapter IV, Section 4. Annual Site Environmental Reports do not include all requirements of DOE 5400.11 Chapter II, Section 4.

DOE Priority 2

Codes Compliance

Compliance Protocol DOE Order 5400.1, Chapter IV, Section 4; DOE Order 5400.11, Chapter II, Section 4

Response SLAC will consolidate monitoring activites that exist independently to develop a formal integrated Environmental Monitoring Plan which includes descriptions of effluent monitoring and environmental surveillance activity components, as required by DOE 5400.1, Chapter IV, Section 4. The Annual Site Environmental Report will be revised to include all requirements of DOE 5400.11, Chapter II, Section 4.

Related Finding A/BMPF-1 A/BMPF-2 A/BMPF-3 A/CF-1 A/CF-2 GW/CF-1 GW/CF-2 GW/CF-3 GW/CF-4 IWS/CF-1 QA/CF-3 QA/CF-4 QA/CF-5 SW/CF-2 SW/CF-6

Related Tasks T1122 Develop Integrated Environmental Monitoring Plan

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TASK T1122 *DEVELOP INTEGRATED ENVIRONMENTAL MONITORING PLAN*
(QA/CF-1)

Scheduled Completion	10/01/93
Projected Cost	$60,000
Responsible Department	EPWM

SLAC will develop a comprehensive and integrated Environmental Monitoring Plan which will include the rationale and design criteria for monitoring programs, the extent and frequency of monitoring and measurements, the procedures for laboratory analysis, quality assurance requirements, program implementation procedures, and direction for the preparation and disposition of the Annual Site Environmental Report (ASER). The Environmental Monitoring Plan will include the groundwater and surface water monitoring plans and the meterological information/monitoring program. The ASER will summarize environmental data so as to characterize site environmental management performance, confirm compliance with environmental standards and requirements, and highlight significant programs and efforts.

Procedures developed	07/01/93
Environmental monitoring plan completed	10/01/93

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support	20	40				60
New ES&H Activities						
GPP						
ERWM						

Finding QA/CF-2

SLAC lacks a formal QA program for environmental activities that has been approved by the DOE Field Office, San Francisco DOE (SF), as required by DOE 5400.1 and DOE 5700.6B.

DOE Priority 2

Codes Compliance

Compliance Protocol DOE Order 5400.1 and 5700.6B

Response The current Institutional Quality Assurance Plan will be revised to include ES&H activities, to reflect the current organizational structure, and to comply with the new Quality Assurance Order 5700.6C. The manual will be submitted to the DOE for approval.

Related Finding QA/CF-4 QV.1-1 QV.1-3

Related Tasks
T1044 Revise Existing Institutional QA Manual
T1122 Develop Integrated Environmental Monitoring Plan

TASK T1044 *REVISE EXISTING INSTITUTIONAL QA MANUAL*
(QA/CF-2)

Scheduled Completion	11/11/92
Projected Cost	$30,000
Responsible Department	QA&C

The Institutional Quality Assurance Manual will be revised to document and describe the current emphasis on ES&H matters, describe expanded QA responsibilities, explain the current organization structure for the QA program, integrate the Quality Control activities being performed at the department level into the overall QA program, define critical activities, document the relationship with SSRL, and restructure the program to the requirements of the new Quality Assurance Order 5700.6C. The manual will be submitted to the DOE for approval.

Departmental QC activities inventoried	06/30/92
Schedule for department plans developed	10/15/92
Draft submitted to the Director for approval	10/01/92
Plan submitted to DOE for approval	11/11/92

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support	30					30
New ES&H Activities						
GPP						
ERWM						
Ongoing Cost $100,000						

TASK T1122 *DEVELOP INTEGRATED ENVIRONMENTAL MONITORING PLAN*
(QA/CF-2)

Scheduled Completion 10/01/93
Projected Cost $60,000
Responsible Department EPWM

SLAC will develop a comprehensive and integrated Environmental Monitoring Plan which will include the rationale and design criteria for monitoring programs, the extent and frequency of monitoring and measurements, the procedures for laboratory analysis, quality assurance requirements, program implementation procedures, and direction for the preparation and disposition of the Annual Site Environmental Report (ASER). The Environmental Monitoring Plan will include the groundwater and surface water monitoring plans and the meterological information/monitoring program. The ASER will summarize environmental data so as to characterize site environmental management performance, confirm compliance with environmental standards and requirements, and highlight significant programs and efforts.

Procedures developed 07/01/93
Environmental monitoring plan completed 10/01/93

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support	20	40				60
New ES&H Activities						
GPP						
ERWM						

Finding QA/CF-3

SLAC has not developed or implemented finalized procedures for all of the environmental activities required by DOE 5700.6B and DOE 5400.1.

DOE Priority 2

Codes Compliance

Compliance Protocol DOE Orders 5700.6B, 5400.1, and 5700.6C

Response In order that SLAC/SSRL may provide a quality assurance program for its general environmental protection program, procedures must be developed for all of its environmental activities. To initiate this activitiy, guidelines will be developed to direct the identification of activities requiring formal procedures and QA, and to assure a consistent approach.

Related Finding QA/CF-5 RAD/CF-2

Related Tasks

T1413 Develop Environmental QA/QC Guidelines
T1122 Develop Integrated Environmental Monitoring Plan

TASK T1413 *DEVELOP ENVIRONMENTAL QA/QC GUIDELINES*
(QA/CF-3)

Scheduled Completion	Completed
Projected Cost	$15,000
Responsible Department	QA&C

Guidelines will be developed for SLAC, and SLAC vendors and contractors, to define the requirements for quality assurance and quality control in the environmental area. These guidelines will be developed based on DOE Orders, 5700.6C and 5400.1 regulatory requirements, hazards, and risks. A documentation plan will be developed to guide the preparation of procedures for activities such as inspections, data validation from testing labs, vendor/contractor QA program review, qualification of vendor/contractor analytical laboratories used for environmental monitoring and radiological monitoring.

Requirements reviewed	04/01/92
Guidelines developed	08/01/92
Documentation plan developed	10/01/92

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support	15					15
New ES&H Activities						
GPP						
ERWM						
Ongoing Cost $10,000						

TASK T1122 *DEVELOP INTEGRATED ENVIRONMENTAL MONITORING PLAN*
(QA/CF-3)

Scheduled Completion 10/01/93
Projected Cost $60,000
Responsible Department EPWM

SLAC will develop a comprehensive and integrated Environmental Monitoring Plan which will include the rationale and design criteria for monitoring programs, the extent and frequency of monitoring and measurements, the procedures for laboratory analysis, quality assurance requirements, program implementation procedures, and direction for the preparation and disposition of the Annual Site Environmental Report (ASER). The Environmental Monitoring Plan will include the groundwater and surface water monitoring plans and the meterological information/monitoring program. The ASER will summarize environmental data so as to characterize site environmental management performance, confirm compliance with environmental standards and requirements, and highlight significant programs and efforts.

Procedures developed 07/01/93
Environmental monitoring plan completed 10/01/93

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support	20	40				60
New ES&H Activities						
GPP						
ERWM						

Finding QA/CF-4

SLAC's internal auditing and corrective action program does not address all aspects of environmental performance and is not sufficient to assure the quality of all environmental activities, as required by DOE 5700.6B and NQA-1.

DOE Priority 2

Codes Compliance

Compliance Protocol DOE Order 5700.6C and 5782.1B; NQA-1

Response A plan for auditing including prioritization based on Tiger Team concerns, DOE Orders including 5482.1B, and regulatory requirements will be developed. This plan will also identify sources of additional technical expertise that may be required to implement some internal appraisal activites. The roles, responsibilities, and authorities for audit procedures which address items such as resolution of audit findings, audit types, audit documentation requirements, and other issues related to auditing will be developed.

Related Finding QA/CF-5 WM/BMPF-1

Related Tasks

T1295 Develop a Detailed Procedure for Audits
T1294 Define Audit Roles & Responsibilities
T1293 Develop Comprehensive Audit Plan for ES&H Act.

TASK T1295 (QA/CF-4) *DEVELOP A DETAILED PROCEDURE FOR AUDITS*

Scheduled Completion	Completed
Projected Cost	$7,000
Responsible Department	QA&C

A detailed audit procedure which addresses items such as resolution of audit findings, audit types, audit documentation requirements, and other issues related to auditing will be developed.

Draft procedures developed	05/01/92
Management approval of document obtained	06/01/92

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support	7					7
New ES&H Activities						
GPP						
ERWM						

TASK T1294 *DEFINE AUDIT ROLES & RESPONSIBILITIES*
(QA/CF-4)

Scheduled Completion	11/15/92
Projected Cost	$5,000
Responsible Department	QA&C

The roles, responsibilities, and authorities (RRAs) for audit resolution, follow-up, corrective action, implementation, and oversight will be detailed in the audit section of the revised Institutional QA Manual.

Audit RRAs documented 11/15/92

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support	5					5
New ES&H Activities						
GPP						
ERWM						

TASK T1293 *DEVELOP COMPREHENSIVE AUDIT PLAN FOR ES&H ACT.*
(QA/CF-4)

Scheduled Completion	Completed
Projected Cost	$20,000
Responsible Department	QA&C

A global plan for auditing will be developed. This plan will include identification of the audit to be undertaken including surveillance, routine audits, and special audits, identification of the appropriate audit staff/teams, training requirements as applicable prior to undertaking auditing, and the appropriate frequency of audits. The appraisals will be undertaken by Quality Assurance and Compliance Department personnel, independent internal experts, outside technical experts from other laboratories, or consulting firms, depending on the technical requirements and nature of the audit activity. The audit program will proceed with audits and activities explicitly called out in DOE Orders such as 5400.1 in advance of the formal plan development.

Requirements reviewed	06/01/92
Staffing needs to support audits identified	09/01/92
Audit plan prepared	11/01/92
SLAC approval of audit plan obtained	12/01/92
Implementation of audit plan begun	12/31/92

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support	10	10				20
New ES&H Activities						
GPP						
ERWM						

Finding QA/CF-5

SLAC's oversight of vendors performing environmental services is deficient with respect to surveillance, written procedures, QA program review, data validation, and audits as required by DOE 5700.6B.

DOE Priority 2

Codes Compliance

Compliance Protocol DOE Order 5700.6B

Response SLAC will provide QA of vendors supplying environmental services by developing procedures, including surveillance, QA program review, and data validation. These actions are described in the response to QA/CF-3.

Related Finding A/BMPF-4 MF-9 QA/CF-3 TCM/BMPF-2

Related Tasks T1413 Develop Environmental QA/QC Guidelines

TASK T1413 *DEVELOP ENVIRONMENTAL QA/QC GUIDELINES*
(QA/CF-5)

Scheduled Completion	Completed
Projected Cost	$15,000
Responsible Department	QA&C

Guidelines will be developed for SLAC, and SLAC vendors and contractors, to define the requirements for quality assurance and quality control in the environmental area. These guidelines will be developed based on DOE Orders, 5700.6C and 5400.1 regulatory requirements, hazards, and risks. A documentation plan will be developed to guide the preparation of procedures for activities such as inspections, data validation from testing labs, vendor/contractor QA program review, qualification of vendor/contractor analytical laboratories used for environmental monitoring and radiological monitoring.

Requirements reviewed	04/01/92
Guidelines developed	08/01/92
Documentation plan developed	10/01/92

	Detailed Costs ($K)					
	92	93	94	95	96	Total
Existing ES&H Support	15					15
New ES&H Activities						
GPP						
ERWM						
Ongoing Cost $10,000						

Finding QA/CF-6

Stanford Site Office (SSO) and DOE Field Office, San Francisco DOE (SF) have not provided formal oversight of SLAC to ensure that required QA activities are established and implemented as required by DOE 5700.6B.

DOE Priority 3

Codes Compliance

Compliance Protocol DOE Order 5700.6B; SAN MD 5700.6B;

Response SSO and SF will update the DOE SF QA policy and procedure, and implementation plans for 5700.6C based upon publication of supplemental Guidelines for Order 5700.6C being prepared by ER HQ. This will address oversight of SLAC QA activities.

Related Tasks T1422 SSO & DOE-SF to Improve QA Oversight

TASK T1422 (QA/CF-6) *SSO & DOE-SF TO IMPROVE QA OVERSIGHT*

Scheduled Completion	04/30/93
Projected Cost	$
Responsible Department	DOE

DOE-SF will increase the QA staffing to place greater emphasis on QA.

SSO and DOE-SF will develop and implement a QA program which will include oversight of contractor QA programs. Implementation plans will be formalized and based on guidelines being prepared in DOE HQ to supplement DOE Order 5700.6C. QA for environmental matters will be part of the program.

QA staff hired	10/01/92
Policy revised	01/31/93
SF QA Manual modified	04/30/93

Finding RAD/CF-1

DOE Field Office, San Francisco DOE-(SF) has not developed an ALARA program and has not required SLAC to implement the ALARA process in environmental programs as required by DOE 5400.5, Chapter II, Section 2.

DOE Priority 2

Codes Compliance

Compliance Protocol DOE Order 5400.5, Chapter II, Section 2; DOE Order 5480.11; SAN MD 5480.11; Draft ALARA IG - August 1991

Response The As Low As Reasonably Achievable (ALARA) process in environmental programs required by DOE 5400.5 and the ALARA process for occupational workers required by DOE 5480.11 need to be developed, drafted, published, and implemented by both DOE-SF and SLAC. DOE-SF will prepare, document, and implement an ALARA program consisting of the eleven basic elements described in DOE Draft ALARA IG of August 1991. DOE-SF will provide oversight and guidance to SLAC while SLAC develops and implements their ALARA program. Additionally, DOE-SF will review and audit the SLAC ALARA Program periodically.

Related Tasks

T1426 Prepare & Implement an ALARA Program at DOE-SF
T1427 Provide Oversight to the SLAC ALARA Program

TASK T1426 *PREPARE & IMPLEMENT AN ALARA PROGRAM AT DOE-SF*
(RAD/CF-1)

Scheduled Completion	11/30/92
Projected Cost	$
Responsible Department	DOE

The Environmental and Safety Support (ESS) division will develop and implement the SF Environmental and Occupational ALARA Programs. The available implementation guides and requirements will be analyzed and the programs in place at other field offices will be studied. Draft ALARA Program documents will be prepared and reviewed by SF line management. The revised ALARA Program documentation will be issued by the SF management. All aspects of the approved ALARA Programs will be implemented and reviewed annually. An audit of the ALARA Programs will be performed at least triennially.

Draft ALARA Program document completed	08/30/92
Management approval granted	11/30/92

TASK T1427 *PROVIDE OVERSIGHT TO THE SLAC ALARA PROGRAM*
(RAD/CF-1)

Scheduled Completion	09/30/92
Projected Cost	$
Responsible Department	DOE

The DOE-SF will request SLAC to develop and implement an Environmental ALARA Program as required by DOE 5400.5. The ESS Division will provide support to the SSO in their oversight to the SLAC ALARA Program. During SLAC's implementation activities, DOE-SF will provide necessary guidance and advice to SLAC's ES&H Division. Upon implementation of the SLAC ALARA Program, DOE-SF will assist on required annual reviews, and perform an audit at least triennially.

DOE-SF request to SLAC submitted	09/30/92

Finding RAD/CF-2

SLAC has not developed and documented a Decommissioning Program and Decommissioning Project Plans to provide for the surveillance, maintenance, and decommissioning of facilities containing radioactive materials, as required by DOE 5820.2A, Chapter V, Section 3, and has not documented such activities in the Waste Management Plan, as required in DOE 5820.2A, Chapter VI.

DOE Priority 2

Codes Compliance

Compliance Protocol DOE Order 5820.2A, Chapter V, Section 3 and 5820.2A, Chapter VI

Response In order to assure that, during decommissioning, no contaminated facilities cause a release of radioactivity in excess of federal or state mandated levels, a program for developing facility decommissioning project plans is needed. The program should require that the project plan start with a safety analysis report and a characterization of the physical, chemical, and radiological condition of the facility. The plan should also cover removal and re-use of materials in a manner consistent with federal and state requirements.

This concern will be addressed by developing such a plan, by reviewing past decommissioning practices for compliance with the applicable DOE Orders, and adjusting procedures as necessary to meet the requirements of the Orders.

Related Tasks T1281 Develop a Decommissioning Program

TASK T1281 *DEVELOP A DECOMMISSIONING PROGRAM*
(RAD/CF-2)

Scheduled Completion	01/01/94
Projected Cost	$65,000
Responsible Department	ESH

Pertinent DOE Orders will be reviewed and decommissioning practices at other national laboratories will be investigated. A Decommissioning and Waste Management Policy will be defined, written, and disseminated for future decommissioning activities. Past decommissioning activities will be reviewed for compliance with the applicable Orders and appropriate corrective actions will be initiated where indicated.

Draft Decommissioning Policy developed	03/01/93
Past practices evaluated	06/01/93
Final Decommisioning Policy approved	01/01/94

	Detailed Costs ($K)					
	92	93	94	95	96	Total
Existing ES&H Support						
New ES&H Activities		40	25			65
GPP						
ERWM						

Finding RAD/CF-3

SLAC has not developed finalized plans and procedures specifying requirements for the release of property having residual radioactive material and has not maintained the records of released property as required by DOE 5400.5.

DOE Priority 2

Codes Compliance

Compliance Protocol DOE Order 5400.5

Response SLAC will develop finalized plans and procedures to ensure compliance with requirements for the release of property having residual radioactivity, in accordance with DOE 5400.5. Areas to be addressed include management of released property records, individual qualifications and training, scanning rates, and survey surface areas.

Related Tasks

T1200 Finalize Procedures for Release of Property
T1201 Remove Radioactive Material From Non-RMMAs

TASK T1200 *FINALIZE PROCEDURES FOR RELEASE OF PROPERTY*
(RAD/CF-3)

Scheduled Completion	10/01/92
Projected Cost	$4,000
Responsible Department	OHP

Existing procedures for defining radioactive material will be updated to ensure compliance with DOE 5400.5. The updates will include information pertaining to management of released property records, survey personnel qualifications, training, and survey surface areas.

Procedure and policy issued 10/01/92

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support	4					4
New ES&H Activities						
GPP						
ERWM						

TASK T1201 *REMOVE RADIOACTIVE MATERIAL FROM NON-RMMAS*
(RAD/CF-3)

Scheduled Completion	07/01/92
Projected Cost	$50,000
Responsible Department	OHP

Areas that are not Radioactive Material Management Areas (RMMAs) that could potentially contain radioactive material that should be in a RMMA will be identified. These areas will be surveyed to detect any radioactive material which will then be transported to an RMMA for storage. Survey of potentially radioactive materials will be required prior to storage in a non-RMMA.

Survey areas identified	02/15/92
Radioactive material removed to RMMAs	07/01/92

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support	50					50
New ES&H Activities						
GPP						
ERWM						

Finding IWS/CF-1

SLAC does not have an adequate program to identify, characterize, and manage inactive waste site activities in accordance with the requirements of DOE 5400.4, CERCLA, the NCP, and Executive Order 12850.

DOE Priority 1

Codes Compliance

Compliance Protocol DOE Order 5400.4; CERCLA; 40 CFR 300 (NCP); Executive Order 12850

Response An integrated program for management of remediation activities will be developed through a formalized phased approach to identification of IWS, preparation of an implementation plan for DOE Order 5400.4, and development of an IWS remediation management plan.

Related Finding GW/CF-4 IWS/CF-2 IWS/CF-3 IWS/CF-4 IWS/CF-5

Related Tasks

T1192 Develop Schedule for Preliminary Assessment of IWS
T1179 Prepare Implementation Plan for DOE 5400.4
T1180 Develop IWS Remediation Management Plan

1483-30

TASK T1192 *DEVELOP SCHEDULE FOR PRELIMINARY ASSESSMENT OF IWS*
(IWS/CF-1)

Scheduled Completion	10/01/93
Projected Cost	$150,000
Responsible Department	EPWM

A schedule will be developed to identify and prioritize significant inactive waste sites, in accordance with 40 CFR 300.420. Potential sites to be evaluated in terms of the nature and extent of their contamination and their potential for adverse effects on human health and the environment include the landfill south of the linear accelerator at Sector 20, oil-filled equipment in building 645, a sump in the lowest portion of the A Beam Dump building, and the Bone Yard north of the linear accelerator at Sector 13. Additional sites will be scheduled for preliminary assessment based on information obtained through interviews, historical documents, photographs, and spill response reports. The relative threats associated with actual or potential releases of hazardous substances at the inactive waste sites identified will be assessed using the Hazard Ranking Scoring (HRS) System.

Sitewide PA completed	04/01/93
Sites Prioritized	07/01/93
RI/FS schedule developed	10/01/93

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support	75	75				150
New ES&H Activities						
GPP						
ERWM						

TASK T1179 *PREPARE IMPLEMENTATION PLAN FOR DOE 5400.4*
(IWS/CF-1)

Scheduled Completion	03/01/93
Projected Cost	$34,000
Responsible Department	EPWM

A plan will be developed to implement DOE Order 5400.4, which addresses CERCLA requirements and states DOE policy for remedial actions at federal facilities, whether or not they are listed on the National Priorities List (NPL).

Inactive waste site requirements reviewed	11/01/92
Draft plan prepared	01/01/93
Plan submitted to DOE	03/01/93

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support						
New ES&H Activities						
GPP						
ERWM		25	9			34

TASK T1180 *DEVELOP IWS REMEDIATION MANAGEMENT PLAN*
(IWS/CF-1)

Scheduled Completion	02/01/94
Projected Cost	$28,000
Responsible Department	EPWM

This task will establish a formal, fully documented plan as part of the remedial activity program at SLAC. The plan will cover assessment and prioritization of all actual and potential inactive waste site at SLAC, along with management and tracking of all remedial activities at each site. Specific aspects of the plan will include community relations/public participation, communication with regulatory agencies, and adequate documentation of all pertinent activities.

Regulations reviewed	11/01/92
Waste Site Management Plan developed	02/01/94

Detailed Costs ($K)						
	92	93	94	95	96	Total
Existing ES&H Support						
New ES&H Activities						
GPP						
ERWM		21	7			28

Finding IWS/CF-2

The site has conducted, and is in the process of conducting remedial actions, but does not have a formalized written Community Relations Plan, and has not established an administrative Record available for public inspection.

DOE Priority 1

Codes Compliance

Compliance Protocol DOE Order 5400.4; CERCLA; NCP; Executive Order 12580

Response SLAC will develop a written community relations plan in accordance with CERCLA and the NCP. This will include conducting interviews with local officials, community residents, and public interest groups or other interested parties. An information repository will be established at or near the site which will contain copies of pertinent response action information for public review.

Related Tasks T1209 Develop Community Relations Plan

1483-30

TASK T1209 *DEVELOP COMMUNITY RELATIONS PLAN*
(IWS/CF-2)

Scheduled Completion	01/01/93
Projected Cost	$15,000
Responsible Department	EPWM

The requirements for the compilation of all documents which form the basis of the response action and which are maintained as the Administrative Record will be reviewed. This information will be used to develop a community relations plan and to determine a location for the Administrative Record.

Community relations plan requirements reviewed	10/01/92
Community relations plan developed	01/01/93

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support						
New ES&H Activities						
GPP						
ERWM	10	5				15
Ongoing Cost $15,000						

Finding IWS/CF-3

SLAC has not prepared a comprehensive preliminary assessment of the site to identify all potential inactive waste sites and to rank the SLAC facility using the new Hazard Ranking System model, in accordance with the provisions of DOE 5400.4, CERCLA, and the NCP.

DOE Priority 2

Codes Compliance

Compliance Protocol DOE Order 5400.4; CERCLA; 40 CFR 300 (National Contingency Plan, under CERCLA); 55 FR 241 (New HRS model)

Response SLAC will revise an existing sitewide preliminary assessment to identify and prioritize all potential inactive waste sites, and evaluate the overall risk associated with, and the potential threat posed by, the facility using the new Hazard Ranking System Model, in accordance with the provisions of DOE 5400.4, CERCLA, and the NCP. This will include elimination from further consideration those sites that pose no threat to public health or the environment, determination of any potential need for removal action, priorities for site inspections, and data acquisition to facilitate later evaluation of the release pursuant to the Hazard Ranking System, if warranted.

Related Finding GW/CF-4 IWS/CF-1

Related Tasks T1192 Develop Schedule for Preliminary Assessment of IWS

TASK T1192 *DEVELOP SCHEDULE FOR PRELIMINARY ASSESSMENT OF IWS*
(IWS/CF-3)

Scheduled Completion	10/01/93
Projected Cost	$150,000
Responsible Department	EPWM

A schedule will be developed to identify and prioritize significant inactive waste sites, in accordance with 40 CFR 300.420. Potential sites to be evaluated in terms of the nature and extent of their contamination and their potential for adverse effects on human health and the environment include the landfill south of the linear accelerator at Sector 20, oil-filled equipment in building 645, a sump in the lowest portion of the A Beam Dump building, and the Bone Yard north of the linear accelerator at Sector 13. Additional sites will be scheduled for preliminary assessment based on information obtained through interviews, historical documents, photographs, and spill response reports. The relative threats associated with actual or potential releases of hazardous substances at the inactive waste sites identified will be assessed using the Hazard Ranking Scoring (HRS) System.

Sitewide PA completed	04/01/93
Sites Prioritized	07/01/93
RI/FS schedule developed	10/01/93

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support	75	75				150
New ES&H Activities						
GPP						
ERWM						

Finding IWS/CF-4

The SLAC Site Development Plan does not include maps or descriptions of known and suspected contaminated areas and does not address the impact of siting facilities in these areas as required by DOE 4320.1B.

DOE Priority 2

Codes Compliance

Compliance Protocol DOE Order 4320.1B; SAN 4320.1

Response DOE Order 4320.1B requires that the Site Development Plan include maps of contaminated areas. In the last year, various areas of contamination on the SLAC site have been identified. Maps will be prepared to indicate location of known and suspected contamination. These maps and the related discussion of the potential impacts of siting of facilities will be included in the next and future update of the SLAC Site Development Plan.

Related Finding MF-1

Related Tasks T1387 Generate Maps for Contaminated Areas

TASK T1387 (IWS/CF-4) *GENERATE MAPS FOR CONTAMINATED AREAS*

Scheduled Completion	Completed
Projected Cost	$3,000
Responsible Department	BSD

The Plant Engineering Department will prepare maps identifying areas of known or suspected contamination based on information provided by the ES&H Division. Information related to the type of contamination will also be shown. These maps will be updated at least once a year as new information regarding the SLAC site becomes available and will be included in the Technical Site Development document of the Site Development Plan.

Maps entered into SDP 03/01/92

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support	3					3
New ES&H Activities						
GPP						
ERWM						
Ongoing Cost $2,000						

Finding IWS/CF-5

SLAC has not met all the reporting requirements of the California Hazardous Materials Release Response and Inventory ("Business Plan") Program, and procedures are not in place to ensure expeditious reporting of any release of hazardous materials to the environment.

DOE Priority 2

Codes Compliance

Compliance Protocol SARA Title III; San Mateo County Envionmental Health Division "Business Plan"

Response In order for SLAC to meet all the reporting requirements of the California Hazardous Materials Release Response and Inventory ("Business Plan") Program, information systems and procedures are required for hazardous materials response and notification. The scope of these systems and procedures will be defined on the basis of an assessment of the potential hazards posed by a hazardous materials release.

Related Finding PT.1-1 PT.6-2

Related Tasks

T1210 Revise Hazardous Materials Response Plan
T1376 Conduct Hazards Assessment
T1095 Expand Hazardous Waste Management Training Prgm.

TASK T1210 *REVISE HAZARDOUS MATERIALS RESPONSE PLAN*
(IWS/CF-5)

Scheduled Completion	05/01/93
Projected Cost	$60,000
Responsible Department	EPWM

The reporting requirements for a Business Plan program will be reviewed and used to develop procedures which will ensure accurate inventory information and reporting compliance. The existing hazardous materials inventory will be revised for completeness. This will include those hazardous materials stored at SSRL and all pressurized cylinders. Procedures will be developed to ensure expeditious reporting of any release of hazardous materials to the environment.

Hazardous Material Inventory revised	09/01/92
Release Reporting Procedures developed	01/01/93
Business Plan Program revised	05/01/93

	Detailed Costs ($K)					
	92	93	94	95	96	Total
Existing ES&H Support	30	30				60
New ES&H Activities						
GPP						
ERWM						

TASK T1376 *CONDUCT HAZARDS ASSESSMENT*
(IWS/CF-5)

Scheduled Completion 10/01/93
Projected Cost $400,000
Responsible Department ESH

Before conducting a hazards assessment, DOE guidance, OSHA recommendations for hazards assessment, and other helpful documents will be reviewed. A strategy for developing a common framework or baseline for determining the level of hazards posed by operations at the site will be developed. Particular consideration will be given to facilities for which no safety assessments or SARs exist. Available hazards assessments and SARs will be reviewed. The organization for conducting the survey will be selected and trained in hazards assessment. The survey will be conducted and data collected. An analysis of the hazards data will be prepared and a report issued.

DOE Orders reviewed	04/01/92
Hazard survey plan developed	06/01/92
Organizations selected and trained	09/01/92
Survey data collected	06/01/93
Analysis report completed and distributed	10/01/93

	Detailed Costs ($K)					
	92	93	94	95	96	Total
Existing ES&H Support	100	180				280
New ES&H Activities	70	50				120
GPP						
ERWM						

TASK T1095 *EXPAND HAZARDOUS WASTE MANAGEMENT TRAINING PRGM.*
(IWS/CF-5)

Scheduled Completion 02/01/93
Projected Cost $160,000
Responsible Department EPWM

SLAC has performed a Job Task/Hazard Survey to identify training needs for all employees. A database will be developed to track employee training needs and training received. Training already received by employees will be verified. Training records will be revised to include complete job descriptions and the type and amount of both introductory and continuing training required for each facility position related to hazardous waste management as required by California Hazardous Waste Regulation, Title 22, Article 18. More specific training will be developed for Hazardous Waste and Materials Coordinators. Mandatory attendance will be required for all employees identified as needing the Chemical and Hazardous Materials training. Hazardous

waste management practices will be periodically reviewed to ensure compliance with hazardous waste regulations.

Required initial employee training completed	07/01/92
Training records database established	10/01/92
HWM coordinator training initiated	02/01/93
Refresher training initiated	10/01/92

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support	40	40				80
New ES&H Activities	40	40				80
GPP						
ERWM						
Ongoing Cost $50,000						

Finding IWS/BMPF-1

The methods for tracking the hazardous materials inventory at SLAC do not ensure that all hazardous materials are accounted for and that changes to the inventory are recorded on a regular basis. The inventory information is not maintained in a computerized database program to facilitate inventory management and to ensure regulatory compliance.

DOE Priority 3

Codes BMP

Response At present, inventories of hazardous materials at SLAC are maintained and tracked in a variety of systems. Development of a comprehensive database and related procedures will assure that an accurate inventory is maintained and that information is readily available to meet regulatory and internal management requirements.

Related Finding EA.1-1 TCM/BMPF-4 WS.3-4

Related Tasks T1311 Develop Hazardous Materials Management System

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TASK T1311 *DEVELOP HAZARDOUS MATERIALS MANAGEMENT SYSTEM*
(IWS/BMPF-1)

Scheduled Completion	10/01/94
Projected Cost	$190,000
Responsible Department	ESH

Applicable regulatory requirements pertaining to inventory, reporting, and internal management of chemicals and hazardous materials will be evaluated. Input will be sought from the ES&H Division (including IH personnel), Purchasing Office, major end-users, and management. A Chemical & Hazardous Materials Management System (MMS) will be developed, and will include elements concerning hazardous and chemical material acquisition, handling, and disposal; controls for researcher and subcontractor use and storage of such materials (including those not obtained through the SLAC purchasing system); inventory and tracking of materials; and related management responsibilities. The MMS will be developed to be consistent and complementary to the SLAC Hazard Communication Program (HCP). The MMS Plan will consist of written procedures, training, and information systems, including the SLAC database of hazardous materials. Development of the system will be approached in phases, first addressing the compliance issues and later the best management practice issues.

Requirements reviewed	04/01/93
MMS plan developed	04/01/94
MMS implementation initiated	10/01/94

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support		45	45			90
New ES&H Activities		50	50			100
GPP						
ERWM						

Ongoing Cost $40,000

Finding NEPA/CF-1

SLAC and SSRL have not established and implemented written procedures to integrate the NEPA process into the review of planning documents, budgetary materials, and other project proposals as required by SAN MD No. 5440.1C, SEN-15-90, DOE 5440.1D, and the Interim Procedural Guidance for Implementation of SEN-15-90.

DOE Priority 2

Codes Compliance

Compliance Protocol SAN MD No. 5440.1C ; SEN-15-90; DOE 5440.1D; Interim Procedural Guidance for Implementation of SEN-15-90; 40 CFR 1500-1508

Response The NEPA review process at SLAC and at SSRL has been informal and not well integrated into the planning process. The Business Services Division will be responsible for developing a written guidance and procedures for the NEPA compliance review process based on applicable regulations and DOE Orders and guidelines to integrate the NEPA process into the review of planning documents, budgetary materials and other project proposals. The procedures will help to ensure early consideration of NEPA for planned actions. The appropriate staff will be trained in these procedures and resources made available to implement the procedures.

Related Finding NEPA/CF-2 NEPA/CF-3 NEPA/CF-4 NEPA/CF-5 NEPA/CF-6

Related Tasks
T1350 Develop Procedures for NEPA Compliance Review
T1351 Train Staff for NEPA Compliance

TASK T1350 *DEVELOP PROCEDURES FOR NEPA COMPLIANCE REVIEW*
(NEPA/CF-1)

Scheduled Completion	01/15/93
Projected Cost	$75,000
Responsible Department	BSD

SLAC and SSRL will develop procedures for the NEPA compliance review process based on regulations and DOE Orders and guidelines. The procedure will help to ensure early consideration of NEPA for planned actions. Training related to the procedures will be covered under T1351.

Regulations reviewed	06/01/92
NEPA policy and procedure issued	01/15/93

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support	60	15				75
New ES&H Activities						
GPP						
ERWM						
Ongoing Cost $10,000						

TASK T1351 *TRAIN STAFF FOR NEPA COMPLIANCE*
(NEPA/CF-1)

Scheduled Completion 03/01/93
Projected Cost $80,000
Responsible Department BSD

NEPA compliance training for appropriate SLAC and SSRL staff will be provided. Training will include general overview of NEPA regulations and DOE requirements as well as the specifics of NEPA implementation at SLAC and SSRL in accordance with the to-be-prepared NEPA Compliance Procedures.

First general NEPA training class conducted 10/01/92
Training plan developed 02/01/93
First training class conducted for SLAC spec. NEPA 03/01/93

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support						
New ES&H Activities	38	42				80
GPP						
ERWM						
Ongoing Cost $10,000						

Finding NEPA/CF-2

SLAC and SSRL do not uniformly apply NEPA early in the planning process for proposed DOE actions as required by SAN MD No. 5440.1C, 40 CFR 1501.2, DOE NEPA Guidelines, SEN-15-90, DOE 5440.1D, DOE 4700.1, DOE 5700.7B, and DOE Notice 5100.3. Project planning documents and internal budget review documents for most DOE-sponsored research (field work proposals and field task proposals), capital equipment (not related to construction), and work-for-others (reimbursables) do not indicate NEPA milestones or financial planning as required. Thus, these documents do not ensure valid, early consideration of environmental issues.

DOE Priority 2

Codes Compliance

Compliance Protocol SAN MD No. 5440.1C; 40 CFR 1501.2; DOE NEPA Guidelines; SEN-15-90; DOE Orders 5440.1D, 4700.1, 5700.7B, and DOE Notice 5100.3; SEN-15-90 & Interim Procedural Guidance

Response SLAC and SSRL have not uniformly applied NEPA early in the planning process and planning documents do not indicate NEPA milestones or financial planning as required. The Business Services Division, which is responsible for planning and budgeting, will also be responsible for the implementation of NEPA in the laboratory. Therefore, consideration for NEPA will occur early in the planning process. The NEPA procedures and training developed in response to NEPA/CF-1 will also address the issues under this finding. Future planning documents will ensure valid, early consideration for NEPA.

Related Finding NEPA/CF-1

Related Tasks
T1350 Develop Procedures for NEPA Compliance Review
T1351 Train Staff for NEPA Compliance

TASK T1350 *DEVELOP PROCEDURES FOR NEPA COMPLIANCE REVIEW*
(NEPA/CF-2)

Scheduled Completion	01/15/93
Projected Cost	$75,000
Responsible Department	BSD

SLAC and SSRL will develop procedures for the NEPA compliance review process based on regulations and DOE Orders and guidelines. The procedure will help to ensure early consideration of NEPA for planned actions. Training related to the procedures will be covered under T1351.

Regulations reviewed	06/01/92
NEPA policy and procedure issued	01/15/93

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support	60	15				75
New ES&H Activities						
GPP						
ERWM						
Ongoing Cost $10,000						

TASK T1351 *TRAIN STAFF FOR NEPA COMPLIANCE*
(NEPA/CF-2)

Scheduled Completion	03/01/93
Projected Cost	$80,000
Responsible Department	BSD

NEPA compliance training for appropriate SLAC and SSRL staff will be provided. Training will include general overview of NEPA regulations and DOE requirements as well as the specifics of NEPA implementation at SLAC and SSRL in accordance with the to-be-prepared NEPA Compliance Procedures.

First general NEPA training class conducted	10/01/92
Training plan developed	02/01/93
First training class conducted for SLAC spec. NEPA	03/01/93

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support						
New ES&H Activities	38	42				80
GPP						
ERWM						
Ongoing Cost $10,000						

Finding NEPA/CF-3

Actions are taken at SLAC and SSRL without NEPA review early in the planning phase and before decisions are made. In some cases, the level of NEPA documentation is not appropriate for the proposed action, contrary to SAN MD No. 5440.1C, SEN-15-90, and the Interim Procedural Guidance for SEN-15-90.

DOE Priority 2

Codes Compliance

Compliance Protocol SAN MD No. 5440.1C; SEN-15-90; Interim Procedural Guidance for SEN-15-90; DOE Order 5440.1D

Response SLAC and SSRL staff will be provided with formal guidance, written procedures and training so that site actions will be carried out in a manner consistent with DOE guidance on NEPA. Also SLAC and SSRL will seek guidance from DOE before and during the development of NEPA documents.

Related Finding NEPA/CF-1 NEPA/CF-2

Related Tasks
T1350 Develop Procedures for NEPA Compliance Review
T1351 Train Staff for NEPA Compliance

TASK T1350 *DEVELOP PROCEDURES FOR NEPA COMPLIANCE REVIEW*
(NEPA/CF-3)

Scheduled Completion	01/15/93
Projected Cost	$75,000
Responsible Department	BSD

SLAC and SSRL will develop procedures for the NEPA compliance review process based on regulations and DOE Orders and guidelines. The procedure will help to ensure early consideration of NEPA for planned actions. Training related to the procedures will be covered under T1351.

Regulations reviewed	06/01/92
NEPA policy and procedure issued	01/15/93

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support	60	15				75
New ES&H Activities						
GPP						
ERWM						
Ongoing Cost $10,000						

TASK T1351 *TRAIN STAFF FOR NEPA COMPLIANCE*
(NEPA/CF-3)

Scheduled Completion 03/01/93
Projected Cost $80,000
Responsible Department BSD

NEPA compliance training for appropriate SLAC and SSRL staff will be provided. Training will include general overview of NEPA regulations and DOE requirements as well as the specifics of NEPA implementation at SLAC and SSRL in accordance with the to-be-prepared NEPA Compliance Procedures.

First general NEPA training class conducted 10/01/92
Training plan developed 02/01/93
First training class conducted for SLAC spec. NEPA 03/01/93

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support						
New ES&H Activities	38	42				80
GPP						
ERWM						
Ongoing Cost $10,000						

Finding NEPA/CF-4

The two SLAC environmental assessments and the environmental statement are deficient when judged against the requirements of 40 CFR 1500.2 (e), 1500.2(a), and 1508.9 of the Council on Environmental Quality regulations.

DOE Priority 2

Codes Compliance

Compliance Protocol 40 CFR 1500.2 (e); 1500.2 (a); 1508.9 of the Council on Environmental Quality Regulations; 40 CFR 1500-1508

Response DOE guidance on NEPA implementation has been evolving, in part due to concerns that contractors' NEPA analyses have been inadequate. SLAC's environmental assessments and the environmental statement have been viewed as an inadequate foundation for NEPA determinations of new activities. New or supplemental analyses will have to be developed to support the planning and decision process under today's requirements. SLAC recognizes that greater formality is needed in this area to help ensure that DOE guidance is properly implemented. Procedures for NEPA compliance review will be developed and the appropriate staff will be trained. SLAC will also continue to review requirements and seek DOE requirements on the need for the preparation of any new NEPA documentation for the site as a whole.

Related Finding NEPA/CF-1 NEPA/CF-2

Related Tasks
T1350 Develop Procedures for NEPA Compliance Review
T1351 Train Staff for NEPA Compliance

TASK T1350 *DEVELOP PROCEDURES FOR NEPA COMPLIANCE REVIEW*
(NEPA/CF-4)

Scheduled Completion	01/15/93
Projected Cost	$75,000
Responsible Department	BSD

SLAC and SSRL will develop procedures for the NEPA compliance review process based on regulations and DOE Orders and guidelines. The procedure will help to ensure early consideration of NEPA for planned actions. Training related to the procedures will be covered under T1351.

Regulations reviewed	06/01/92
NEPA policy and procedure issued	01/15/93

Detailed Costs ($K)						
	92	93	94	95	96	Total
Existing ES&H Support	60	15				75
New ES&H Activities						
GPP						
ERWM						
Ongoing Cost $10,000						

TASK T1351 *TRAIN STAFF FOR NEPA COMPLIANCE*
(NEPA/CF-4)

Scheduled Completion	03/01/93
Projected Cost	$80,000
Responsible Department	BSD

NEPA compliance training for appropriate SLAC and SSRL staff will be provided. Training will include general overview of NEPA regulations and DOE requirements as well as the specifics of NEPA implementation at SLAC and SSRL in accordance with the to-be-prepared NEPA Compliance Procedures.

First general NEPA training class conducted	10/01/92
Training plan developed	02/01/93
First training class conducted for SLAC spec. NEPA	03/01/93

Detailed Costs ($K)						
	92	93	94	95	96	Total
Existing ES&H Support						
New ES&H Activities	38	42				80
GPP						
ERWM						
Ongoing Cost $10,000						

Finding NEPA/CF-5

Neither SLAC nor SSRL submit the required NEPA documentation to SSO (i.e., a monthly list of actions that qualify as categorical exclusions not needing documentation, descriptions and recommendations of the level of NEPA documentation for all other actions, and submittal of draft NEPA documents) as required by SAN MD No. 5440.1C, SEN-15-90, the Interim Procedural Guidance for SEN-15-90, and DOE 5440.1D.

DOE Priority 2

Codes Compliance

Compliance Protocol SAN MD No. 5440.1C; SEN-15-90; Interim Procedural Guidance for SEN-15-90; DOE Order 5440.1D

Response Policy guidance will be provided and procedures will be developed by SLAC and SSRL to address this finding and the other NEPA-related findings. This will include specific requirements for information submittals to DOE and periodic audits to assure compliance. SLAC and SSRL will obtain guidance and clarification from DOE/SF/SSO on the requirements for monthly reporting relating to NEPA. The requirements will be incorporated in the procedures to be developed for NEPA compliance review.

Related Finding NEPA/CF-1

Related Tasks
T1350 Develop Procedures for NEPA Compliance Review
T1351 Train Staff for NEPA Compliance

TASK T1350 *DEVELOP PROCEDURES FOR NEPA COMPLIANCE REVIEW*
(NEPA/CF-5)

Scheduled Completion	01/15/93
Projected Cost	$75,000
Responsible Department	BSD

SLAC and SSRL will develop procedures for the NEPA compliance review process based on regulations and DOE Orders and guidelines. The procedure will help to ensure early consideration of NEPA for planned actions. Training related to the procedures will be covered under T1351.

Regulations reviewed	06/01/92
NEPA policy and procedure issued	01/15/93

Detailed Costs ($K)						
	92	93	94	95	96	Total
Existing ES&H Support	60	15				75
New ES&H Activities						
GPP						
ERWM						
Ongoing Cost $10,000						

TASK T1351 *TRAIN STAFF FOR NEPA COMPLIANCE*
(NEPA/CF-5)

Scheduled Completion	03/01/93
Projected Cost	$80,000
Responsible Department	BSD

NEPA compliance training for appropriate SLAC and SSRL staff will be provided. Training will include general overview of NEPA regulations and DOE requirements as well as the specifics of NEPA implementation at SLAC and SSRL in accordance with the to-be-prepared NEPA Compliance Procedures.

First general NEPA training class conducted	10/01/92
Training plan developed	02/01/93
First training class conducted for SLAC spec. NEPA	03/01/93

Detailed Costs ($K)						
	92	93	94	95	96	Total
Existing ES&H Support						
New ES&H Activities	38	42				80
GPP						
ERWM						
Ongoing Cost $10,000						

Finding NEPA/CF-6

SLAC/SSRL and SSO do not have an integrated system for tracking the status of NEPA review and documentation for all actions, and there are no formal procedures for record keeping and tracking of the NEPA process as required by SAN MD No. 5440.1C and DOE 5440.1D.

DOE Priority 2

Codes Compliance

Compliance Protocol SAN MD No. 5440.1C; DOE Order 5440.1D; SEN-15-90

Response SLAC and SSRL will develop a new tracking system for NEPA determinations consistent with the to-be-developed procedures for NEPA compliance review. Appropriate procedures for NEPA recordkeeping will also be developed. These processes will be coordinated with SSO.

Related Finding NEPA/CF-1 NEPA/CF-2

Related Tasks T1352 Develop NEPA Compliance Tracking System

TASK T1352 *DEVELOP NEPA COMPLIANCE TRACKING SYSTEM*
(NEPA/CF-6)

Scheduled Completion	04/01/93
Projected Cost	$10,000
Responsible Department	BSD

SLAC and SSRL will develop a tracking system for NEPA determinations on planned actions.

Tracking requirements identified	02/01/93
Tracking system developed and implemented	04/01/93

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support						
New ES&H Activities		10				10
GPP						
ERWM						
Ongoing Cost $5,000						

3.3 Safety and Health

3.3.1 Overview

The Safety and Health Assessment was conducted largely following the DOE *Technical Safety Appraisal* procedures and criteria. The assessment areas addressed were organization and administration, quality verification, operations, maintenance, auxiliary systems, emergency preparedness, packaging and transportation, experimental activities, facility safety review, radiological protection, personnel protection, worker safety and health (OSHA) compliance, fire protection, and medical services. The Safety and Health subteam originally identified a total of 131 concerns. Ten of these were Category II concerns, denoting significant risks or noncompliances in the areas of maintenance, packaging and transportation, radiological protection, and worker safety and health. One of these was subsequently dropped, reducing the total number of concerns to 130, and the ten Category II concerns to nine.

3.3.2 Root Causes and Responses

Seven concerns were identified by the Tiger Team as key concerns. They are:

- ES&H Division has not taken an aggressive, proactive role in addressing safety and health issues.
- Functions and responsibilities of the ES&H Division are not understood across the SLAC Organization.
- Numerous instances of inadequate training were encountered.
- The self-assessment program has not been institutionalized.
- Hazards assessment has not been documented for some facilities. A site-wide hazards assessment has not been performed to provide the basis for a site emergency plan.
- Necessary industrial hygiene information is not well communicated to SLAC's top management and to all segments of the organization.
- SLAC's policies and management directives do not define the lines of authority and management responsibility for the control of occupational health hazards.

From these key concerns the safety and health subteams derived four causal factors which may be considered the sources of the key concerns. Those causal factors are:

1. Insufficient management attention to compliance with DOE Orders and standards.
2. Lack of management direction to ensure that policies are documented, and that programs and procedures derived from these policies incorporate the requirements.
3. Lack of document control to ensure that documents exist and are up to date.
4. Lack of formality of operations.

While the key concerns relate to all seven strategic elements of this *Plan*, the four causal factors correspond to the following two strategic elements:

- Management Direction and Planning
- Formality of Operations

The tasks developed in response to each of the individual safety and health findings are pursued in the context of these overall strategies (as described in Section 2.3) to ensure that the institutional root causes are addressed in addition to the specific findings. For example, tasks related to increased formality of operations are presented which demonstrate comprehensive approaches undertaken by SLAC to improve training, control of operations through improved procedures, and document control. In addition, SLAC has taken prompt action on the nine Category II concerns and the 259 OSHA noncompliance issues.

3.3.3 Concerns and Action Plans

The safety and health subteam concerns and corrective action plans are presented in the following pages. They are grouped by discipline in the order presented in the Tiger Team report.

Concern OA.1-1

Position authorities are not documented for Stanford Linear Accelerator Center as required by DOE 5480.19, Chapter 1.

DOE Priority 2

Compliance Protocol DOE Order 5480.19, Chapter 1

Response In order for the laboratory's resources and activities to be managed in a manner that assures the necessary attention to safety and health, personnel duties related to safety and health should be integrated with their operational duties and consistently implemented. The Tiger Team observed that many SLAC personnel do not understand their authorities, accountabilities, and interfaces with other groups with respect to safety and health issues. This concern will be addressed through definition and communication of roles, responsibilities, and authorities.

Related Concern PP.2-1

Related Tasks

T1385 Establish Divisional & Departmental ES&H RRA's
T1224 Establish ES&H RRA's for Job Classes
T1223 Clarify Inter-relationships of RRA's

TASK T1385 *ESTABLISH DIVISIONAL & DEPARTMENTAL ES&H RRA'S*
(OA.1-1)

Scheduled Completion	01/01/93
Projected Cost	$100,000
Responsible Department	DO

Each Division and Department will establish specific RRAs to implement overall SLAC ES&H performance expectations. These will be communicated to all employees.

Division & Department specific ES&H RRAs issued 01/01/93

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support	75					75
New ES&H Activities	25					25
GPP						
ERWM						

TASK T1224 *ESTABLISH ES&H RRA'S FOR JOB CLASSES*
(OA.1-1)

Scheduled Completion 02/01/93
Projected Cost $100,000
Responsible Department DO

RRAs will be developed for classes of jobs which share RRAs. These RRAs will be communicated to SLAC employees through written documents and meetings to ensure that individuals understand their ES&H RRAs.

RRAs issued for classes of positions 02/01/93

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support	40	60				100
New ES&H Activities						
GPP						
ERWM						

TASK T1223 *CLARIFY INTER-RELATIONSHIPS OF RRA'S*
(OA.1-1)

Scheduled Completion 03/01/93
Projected Cost $10,000
Responsible Department DO

The final step in assuring that overall RRAs are well understood and integrated subsequent to establishing individual organizational RRAs, is the identification of inter-relationships and interfaces among organizations. Inter-relationships will be defined and clarified through the use of interface diagrams.

Organizational ES&H RRA interface diagrams issued 03/01/93

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support	5	5				10
New ES&H Activities						
GPP						
ERWM						

Concern OA.1-2

Functions and responsibilities of Environmental Safety and Health Division are not understood across the organization.

DOE Priority 3

Response Responsibility for maintaining a safe workplace and for performing operations in a safe and environmentally sensitive manner rests with the line organizations at SLAC. The ES&H Division is responsible for communicating ES&H standards, for providing professional advice and consultation to the line organizations, and for overseeing line activities to ensure compliance. The service and oversight functions of the ES&H Division are under separate departments within the Division. Correction of this concern will require clarification of the missions and roles of the various departments within the ES&H Division, clarification of the relationship between the various elements of the Division with the rest of the laboratory, communication of these roles and relationships, and follow-through to ensure that there is a mutual understanding.

Related Concern MF-2 MF-3 OA.1-1

Related Tasks
T1385 Establish Divisional & Departmental ES&H RRA's
T1223 Clarify Inter-relationships of RRA's

TASK T1385 (OA.1-2) *ESTABLISH DIVISIONAL & DEPARTMENTAL ES&H RRA'S*

Scheduled Completion	01/01/93
Projected Cost	$100,000
Responsible Department	DO

Each Division and Department will establish specific RRAs to implement overall SLAC ES&H performance expectations. These will be communicated to all employees.

Division & Department specific ES&H RRAs issued 01/01/93

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support	75					75
New ES&H Activities	25					25
GPP						
ERWM						

TASK T1223 *CLARIFY INTER-RELATIONSHIPS OF RRA'S*
(OA.1-2)

Scheduled Completion	03/01/93
Projected Cost	$10,000
Responsible Department	DO

The final step in assuring that overall RRAs are well understood and integrated subsequent to establishing individual organizational RRAs, is the identification of inter-relationships and interfaces among organizations. Inter-relationships will be defined and clarified through the use of interface diagrams.

Organizational ES&H RRA interface diagrams issued 03/01/93

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support	5	5				10
New ES&H Activities						
GPP						
ERWM						

Concern OA.2-1

Safety review and oversight functions are not clearly separated from line functions.

DOE Priority 3

Compliance Protocol DOE Order 5480.19

Response

The Tiger Team observed that the Accelerator Department has safety review and oversight officers who do not also have line responsibilities in the department, but that in some other SLAC organizations this clear separation is not always fulfilled.

The relatively low hazard level of many activities on the site cannot justify project-wide resources to provide local, independent safety oversight, in addition to the independent oversight provided by the QA and Compliance Department in the ES&H Division. However, there may be some activities where additional processes/procedures are needed to ensure that policies concerning ES&H are properly administered.

This concern will be addressed through development of criteria to determine which activities require independent safety review and oversight, identification of additional activities which meet those criteria, and development of plans to provide independent oversight functions where required.

Related Concern MA.2-1 OP.1-2 OP.2-1 OP.3-2

Related Tasks T1300 Assess & Implement Approp.Indep.Safety Oversight

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TASK T1300 (OA.2-1) *ASSESS & IMPLEMENT APPROP.INDEP.SAFETY OVERSIGHT*

Scheduled Completion	10/01/93
Projected Cost	$10,000
Responsible Department	DO

The Safety Overview Committee (SOC) will establish criteria for determining which activities at SLAC require additional independent S&H oversight and will provide the ES&HCC a list of activities that meet those criteria. The ES&HCC will consider the recommendations of the SOC and make a recommendation to the Director for establishment of local, independent oversight functions for specified activities. On that basis, independent S&H oversight functions will be established for designated operations and activities.

Criteria established	06/01/93
Activities identified	07/01/93
Oversight plans established	10/01/93

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support		10				10
New ES&H Activities						
GPP						
ERWM						

Concern OA.3-1

Measurable safety objectives have not been established by the Stanford Linear Accelerator Center as required in DOE 5480.19, Chapter 1.

DOE Priority 2

Compliance Protocol DOE Order 5480.19, Chapter 1

Response Establishment of safety-related management objectives and enforcement of work practices and procedures based on such objectives promote commitment to safe operation. These objectives should be related to an overall goal of reducing hazards to a level as low as reasonably achievable (ALARA). Establishment of objectives requires an assessment of current incidents and trends, and estimation of reasonable achievable reductions.

Related Concern PP.1-3 WS.2-1

Related Tasks T1358 Establish Measurable Health and Safety Objectives

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TASK T1358 *ESTABLISH MEASURABLE HEALTH AND SAFETY OBJECTIVES*
(OA.3-1)

Scheduled Completion	10/01/93
Projected Cost	$10,000
Responsible Department	DO

Laboratory management will review the available data on safety-related incidents and trends to determine where improvements can be made. Appropriate objectives will be defined and communicated throughout the laboratory. Surveillance methods will be implemented to measure performance.

Incident data review completed	03/01/93
Objectives established and communicated	07/01/93
Surveillance methods implemented	10/01/93

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support		10				10
New ES&H Activities						
GPP						
ERWM						

Concern OA.5-1

The self-assessment program has not been institutionalized by Stanford Linear Accelerator Center.

DOE Priority 2

Response A major self-assessment was performed prior to the arrival of the Tiger Team in order to assess the status of ES&H at SLAC. To continue this emphasis on problem identification, SLAC will develop an Institutionalized Self-Assessment Program which will provide for appraisals of operations, analysis of the results and a follow-up corrective action program. The Self Assessment Program will emphasize the participation of line management in identifying and correcting deficiencies.

Related Tasks T1366 Institutionalize the Self-Assessment Effort

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TASK T1366 *INSTITUTIONALIZE THE SELF-ASSESSMENT EFFORT*
(OA.5-1)

Scheduled Completion	09/01/92
Projected Cost	$175,000
Responsible Department	PAD

This task will develop the program, establish the organizations, define the scope and schedule of appraisals, train personnel, and produce the self-assessment and corrective action plan. The plan will be developed in accordance with DOE-SF, DOE-ER and Secretarial guidance on self-assessment programs.

Plan approved by Director	04/01/92
Organization established	08/01/92
Self-assessment begun	09/01/92

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support	150					150
New ES&H Activities	25					25
GPP						
ERWM						
Ongoing Cost $400,000						

Concern OA.6-1

The Stanford Linear Accelerator Center has not established a routine job qualification review system.

DOE Priority 3

Compliance Protocol DOE 5480.19. Ch V

Response Employee understanding of duties and responsibilities (including qualification requirements) is a fundamental aspect of good ES&H performance. SLAC's programs are not adequate for ensuring that employees' qualifications and performance are consistent with job requirements. Routine evaluations of performance requirements will be augmented, and more formal procedures for conducting job qualification reviews will be used. Special considerations apply to the appraisals of bargaining unit employees, but a performance evaluation process for such employees is needed.

Related Concern MF-4

Related Tasks T1368 Establish Job Qualifications Review System

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TASK T1368 *ESTABLISH JOB QUALIFICATIONS REVIEW SYSTEM*
(OA.6-1)

Scheduled Completion	06/01/94
Projected Cost	$20,000
Responsible Department	PER

SLAC management will be responsible for updating job description and performance evaluation forms to clarify personnel accountability for ES&H performance. Qualifications necessary for effective performance and the job knowledge section of the annual performance appraisal format will be updated as appropriate. Training on the new process will begin with managers, and include those special measures needed to better define job qualifications (job knowledge) and conduct performance appraisals for bargaining unit employees.

Proc. for accurately defin. job qualif. developed	01/01/94
Job description & perform. eval. forms revised	05/01/94
Initial training for managers conducted	06/01/94

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support			2			2
New ES&H Activities			18			18
GPP						
ERWM						

Concern OA.7-1

Hazards assessments have not been documented for some facilities as required by DOE 5500.3A.

DOE Priority 1

Compliance Protocol DOE Order 5500.3A

Response Although there are a variety of programs at SLAC to identify and communicate hazards in the workplace, there is no standard set of safety assessments that documents such hazards, nor are there site-wide assessments which provide a consistent basis for assessing relative hazards. From the standpoint of safety assessment documentation and emergency preparedness (DOE 5500.3A), additional effort is needed to characterize hazards, particularly at facilities without SARs.

Related Concern EP.1-1 OP.3-1

Related Tasks T1376 Conduct Hazards Assessment

TASK T1376 *CONDUCT HAZARDS ASSESSMENT*
(OA.7-1)

Scheduled Completion	10/01/93
Projected Cost	$400,000
Responsible Department	ESH

Before conducting a hazards assessment, DOE guidance, OSHA recommendations for hazards assessment, and other helpful documents will be reviewed. A strategy for developing a common framework or baseline for determining the level of hazards posed by operations at the site will be developed. Particular consideration will be given to facilities for which no safety assessments or SARs exist. Available hazards assessments and SARs will be reviewed. The organization for conducting the survey will be selected and trained in hazards assessment. The survey will be conducted and data collected. An analysis of the hazards data will be prepared and a report issued.

DOE Orders reviewed	04/01/92
Hazard survey plan developed	06/01/92
Organizations selected and trained	09/01/92
Survey data collected	06/01/93
Analysis report completed and distributed	10/01/93

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support	100	180				280
New ES&H Activities	70	50				120
GPP						
ERWM						

Concern OA.7-2

The Stanford Linear Accelerator Center does not have a centralized document control system.

DOE Priority 3

Response SLAC does not have an effective centralized document control system that ensures that ES&H and operational policies and procedures are communicated to the appropriate individuals and then assessed for specific applicability and implemented as appropriate. A tentative start aimed toward the solution of this problem was undertaken in early 1991 with the establishment of the Documentation Office under the auspices of the Information Services Department and development of a prototype document control system in the Accelerator Department. Formalization of the services provided by the Documentation Office throughout the laboratory based on the model developed in the Accelerator Department will provide the basis for centralized document control at SLAC.

Related Concern RP.3-1

Related Tasks T1203 Develop Centralized Document Control System

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TASK T1203 *DEVELOP CENTRALIZED DOCUMENT CONTROL SYSTEM*
(OA.7-2)

Scheduled Completion	10/01/94
Projected Cost	$40,000
Responsible Department	PAD

Development of a centralized document control system will occur in three phases: information gathering, recommendations, and implementation. A Document Control Committee (DCC) will be formed to guide the development of the system through the analysis and recommendation phases. The DCC will consist of members from each of the relevant units of the laboratory: the Research, Technical, Business Services and ES&H Divisions; SSRL; and the Director's Office. The recommendations of the DCC will be presented to the SLAC Directorate for implementation. Initial emphasis will be on developing process for defining, developing, distributing and updating ES&H directives and procedures.

Document Control Committee report issued	05/01/94
Approved project plan issued	09/01/94
Implementation directive issued	10/01/94

	Detailed Costs ($K)					
	92	93	94	95	96	Total
Existing ES&H Support						
New ES&H Activities			40			40
GPP						
ERWM						

Concern OA.8-1

An effective fitness for duty program has not been implemented.

DOE Priority 3

Response The SLAC fitness-for-duty program provides support for those who are identified as needing assistance and rehabilitation, but is inadequate in identifying people who may be unfit for their assigned duties as a result of drug or alcohol abuse or other physical or psychological conditions.

Formal procedures for handling alcohol and substance abuse problems will be developed. Training on these procedures will be provided to all managers. The availability of the existing Employee Assistance Program will be better communicated. The augmented systems for identifying people with potentially disqualifying problems will include revision to processes used in considering new hires and ensuring that appropriate medical examinations are given before a hiring decision is made.

Related Concern MS.3-1

Related Tasks T1291 Fitness for Duty Program

TASK T1291 *FITNESS FOR DUTY PROGRAM*
(OA.8-1)

Scheduled Completion	08/01/95
Projected Cost	$25,000
Responsible Department	PER

Develop procedures for handling alcohol and substance abuse problems and train managers in these procedures. Publicize Employee Assistance Program better. Augment systems for identifying people including new hires with potentially disqualifying problems.

Formal proc. for handling emp. problems developed	02/01/95
Supervisory training scheduled	03/01/95
New process for qualifying new hires developed	05/01/95
EAP awareness plans developed	08/01/95

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support						
New ES&H Activities				25		25
GPP						
ERWM						

Concern QV.1-1

The institutional Quality Assurance plan at Stanford Linear Accelerator Center has not been consistently implemented by all affected departments, does not reflect current organizational structure, and does not comply with DOE 5700.6B.

DOE Priority 2

Compliance Protocol DOE Order 5700.6B

Response DOE Order 5700.6B was identified as compliance protocol for this concern. The subsequent issuance of the successor to the order, DOE 5700.6C, will require a comparative review to identify changes in order requirements. The corrective actions for this concern will be defined per DOE 5700.6C requirements.

In order to assure that policies on quality are administered for each facility throughout the site the ES&H Coordinating Council will require that the QA Department complete its review of the SLAC and SSRL QA Programs with respect to the applicable requirements of DOE 5700.6C, revise the program and request DOE approval. The Director of the Laboratory will then issue a policy that each Division review its activities and facilities to assess the QA programs needed in order to satisfy the SLAC and SSRL QA Program, write the facility plans and implement them.

Related Tasks T1044 Revise Existing Institutional QA Manual

TASK T1044 *REVISE EXISTING INSTITUTIONAL QA MANUAL*
(QV.1-1)

Scheduled Completion	11/11/92
Projected Cost	$30,000
Responsible Department	QA&C

The Institutional Quality Assurance Manual will be revised to document and describe the current emphasis on ES&H matters, describe expanded QA responsibilities, explain the current organization structure for the QA program, integrate the Quality Control activities being performed at the department level into the overall QA program, define critical activities, document the relationship with SSRL, and restructure the program to the requirements of the new Quality Assurance Order 5700.6C. The manual will be submitted to the DOE for approval.

Departmental QC activities inventoried	06/30/92
Schedule for department plans developed	10/15/92
Draft submitted to the Director for approval	10/01/92
Plan submitted to DOE for approval	11/11/92

Detailed Costs ($K)						
	92	93	94	95	96	Total
Existing ES&H Support	30					30
New ES&H Activities						
GPP						
ERWM						
Ongoing Cost $100,000						

Concern QV.1-2

Stanford Linear Accelerator Center activities and equipment that are important to quality have not been identified or defined to enable application of appropriate quality control measures as required by DOE 5700.6B.

DOE Priority 2

Compliance Protocol DOE Order 5700.6B

Response DOE Order 5700.6B was identified as compliance protocol for this concern. The subsequent issuance of the successor to the order, DOE 5700.6C, will require a comparative review to identify changes in order requirements. The corrective actions for this concern will be defined per DOE 5700.6C requirements.

In order that each responsible organizational unit administer policies on quality, SLAC must determine the activities and equipment for which quality is important. This will be accomplished by identifying the equipment and activities which warrant application of a QA program, and by establishing the level of quality control needed.

Related Concern QV.1-3 QV.2-1 QV.3-1 QV.4-1 QV.7-1

Related Tasks T1236 Identify Activities for QA Importance

TASK T1236 *IDENTIFY ACTIVITIES FOR QA IMPORTANCE*
(QV.1-2)

Scheduled Completion	02/01/93
Projected Cost	$15,000
Responsible Department	QA&C

Following a review of the applicable standards, a series of quality levels will be established and the requirements for each category will be defined. Knowledgeable personnel will be surveyed to develop a list of laboratory facilities and activities critical to ES&H or to operations. A matrix will be developed to assign a quality category to each of the critical facilities or operations.

Quality categories established	12/01/92
Critical operations and facilities determined	01/01/93
Facility quality categories identified	02/01/93

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support		15				15
New ES&H Activities						
GPP						
ERWM						

Concern QV.1-3

Working-level personnel have not received training on principles of quality achievement or the requirements of the quality control program as required by DOE 5700.6B.

DOE Priority 2

Compliance Protocol DOE Order 5700.6C

Response DOE Order 5700.6B was identified as compliance protocol for this concern. The subsequent issuance of the successor to the order, DOE 5700.6C, will require a comparative review to identify changes in order requirements. The corrective actions for this concern will be defined per DOE 5700.6C requirements.

A training program will be developed on the revised SLAC Institutional Quality Assurance Manual. This revised manual will be developed to incorporate the requirements of the new DOE Quality Assurance Order 5700.6C. This program will include training of managers, supervisors, and employees at the working level focusing on employees that deal with activities most important to quality.

Related Concern QV.1-2

Related Tasks T1286 Establish Training Program for QA Activity

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TASK T1286 *ESTABLISH TRAINING PROGRAM FOR QA ACTIVITY*
(QV.1-3)

Scheduled Completion	05/01/93
Projected Cost	$35,000
Responsible Department	QA&C

The Quality Assurance training program will include the requirements of a rewritten SLAC Quality Assurance Manual and the requirements of the recently released DOE Quality Assurance Order 5700.6C.

Personnel for classes identified	04/01/93
Training materials developed	04/01/93
Training activities initiated	05/01/93

Detailed Costs ($K)						
	92	93	94	95	96	Total
Existing ES&H Support		25				25
New ES&H Activities		10				10
GPP						
ERWM						
Ongoing Cost $25,000						

Concern QV.2-1

The Stanford Linear Accelerator Center's procedures for procurement do not define requirements or give guidance to requestors with respect to quality assurance program controls, codes and standards, or technical requirements as required by DOE 5700.6B.

DOE Priority 2

Compliance Protocol DOE 5700.6C

Response DOE Order 5700.6B was identified as compliance protocol for this concern. The subsequent issuance of the successor to the order, DOE 5700.6C, will require a comparative review to identify changes in order requirements. The corrective actions for this concern will be defined per DOE 5700.6C requirements.

Provisions should be established for the quality control of purchased material, equipment, and services. The SLAC Quality Assurance Manual gives only broad guidance with respect to quality assurance controls. The Purchasing Department will establish specific procedures to assure that proposed purchases are reviewed for applicable technical specifications/requirements and drawing and quality assurance provisions.

Related Concern QV.1-1 QV.3-1 QV.6-1

Related Tasks T1007 Develop/Implement Procedure for Purchasing QA

TASK T1007 *DEVELOP/IMPLEMENT PROCEDURE FOR PURCHASING QA*
(QV.2-1)

Scheduled Completion	10/01/94
Projected Cost	$20,000
Responsible Department	PUR

The Purchasing Department will write a procedure to address quality assurance for materials procurement. This will include review of requisitions to determine that applicable quality assurance provisions have been adequately addressed by the requestor. The SLAC Quality Assurance Manual will be revised by ES&H to address the issue of purchased materials controls. Any modifications to the purchase requisition process will be incorporated into the applicable forms, and communicated to all potential users.

DOE Orders reviewed	12/01/93
Procedure written	02/01/94
Guidance provided to requestors	10/01/94

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support			20			20
New ES&H Activities						
GPP						
ERWM						

Concern QV.3-1

The Stanford Linear Accelerator Center has not ensured that procured materials are properly inspected on receipt for conformance to design requirements as required by DOE 5700.6B.

DOE Priority 2

Compliance Protocol DOE Order 5700.6C

Response

DOE Order 5700.6B was identified as compliance protocol for this concern. The subsequent issuance of the successor to the order, DOE 5700.6C, will require a comparative review to identify changes in order requirements. The corrective actions for this concern will be defined per DOE 5700.6C requirements.

SLAC should ensure that inspection of procured material, equipment and services is performed by trained personnel according to documented procedures. However, proper receipt inspection of materials to the requirements of DOE 5700.6C does not always occur at SLAC. To address this concern, new procedural guidance for receipt inspection will be developed and appropriate personnel will be trained on the procedure.

Training of personnel based on the Institutional Quality Assurance Manual and elements of the Quality Assurance Order 5700.6C is addressed in QV.1-3. This training will include the requirements for material traceability, inspection, and other items important to quality.

Related Concern QV.1-3 QV.6-1

Related Tasks T1045 Develop Procedures for Insp. of Received Materials

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TASK T1045 (QV.3-1) *DEVELOP PROCEDURES FOR INSP. OF RECEIVED MATERIALS*

Scheduled Completion	07/01/93
Projected Cost	$10,000
Responsible Department	QA&C

DOE Order 5700.6C requirements for materials inspection and traceability will be reviewed for applicability to items procured by SLAC. Guidelines for inspection of incoming materials will be developed, and incorporated into existing or new procurement and/or QA procedures. Training associated with the procedures will be a part of the Quality Assurance training program (Task T1044).

Procurement inspection procedures developed 07/01/93

Detailed Costs ($K)						
	92	93	94	95	96	Total
Existing ES&H Support		10				10
New ES&H Activities						
GPP						
ERWM						

Concern QV.4-1

There is no sitewide standard defining the scope and requirements for calibration of measuring and test equipment, process instrumentation, and radiation monitoring instrumentation as required by DOE 5700.6B.

DOE Priority 2

Compliance Protocol DOE Order 5700.6B

Response

DOE Order 5700.6B was identified as compliance protocol for this concern. The subsequent issuance of the successor to the order, DOE 5700.6C, will require a comparative review to identify changes in order requirements. The corrective actions for this concern will be defined per DOE 5700.6C requirements.

Mechanical and electronic measuring and testing devices such as tools, gauges and instruments should be controlled and calibrated at specified intervals. SLAC has no site-wide standard for calibration of such equipment. To address this concern, SLAC will develop definitions of the devices requiring calibration and perform a site-wide survey to identify and locate all such devices per appropriate requirements of DOE 5700.6C. Appropriate procedure(s) will then be developed or modified to control the calibration and record keeping functions, and implementation will begin.

Related Concern OP.3-1 QV.4-2 QV.4-3 RP.8-1

Related Tasks

T1328 Develop Calibration Program Inclusion Criteria
T1331 Survey Devices to be Calibrated
T1332 Revise Calibration Procedures
T1333 Implement Calibration Program

TASK T1328 (QV.4-1) *DEVELOP CALIBRATION PROGRAM INCLUSION CRITERIA*

Scheduled Completion	01/01/93
Projected Cost	$12,000
Responsible Department	CD

Criteria will be established which will define devices to be included in the calibration program. The "SLAC Institutional Quality Assurance Manual" will be revised to include these criteria. The criteria will address issues such as safety, risk to equipment, and impact of device miscalibration on the missions of the Laboratory. Test equipment used to calibrate other devices must be part of the calibration program (see Concern QV.4-2).

Calibration criteria established 01/01/93

Detailed Costs ($K)						
	92	93	94	95	96	Total
Existing ES&H Support	6	6				12
New ES&H Activities						
GPP						
ERWM						

TASK T1331 *SURVEY DEVICES TO BE CALIBRATED*
(QV.4-1)

Scheduled Completion 07/01/93
Projected Cost $35,000
Responsible Department CD

A site-wide survey will identify devices (including secondary standards) which must be part of the calibration program. This survey will be based on the criteria established in the previous task (T1328). The individual divisions or departments of SLAC and SSRL will be charged with carrying out the identification process.

Survey procedures distributed to div./departments 03/01/93
Survey completed 07/01/93

Detailed Costs ($K)						
	92	93	94	95	96	Total
Existing ES&H Support		35				35
New ES&H Activities						
GPP						
ERWM						

TASK T1332 *REVISE CALIBRATION PROCEDURES*
(QV.4-1)

Scheduled Completion 01/01/94
Projected Cost $50,000
Responsible Department CD

Departmental Procedures Manuals (see "SLAC Guidelines for Operations," Chapter 4, Operations Procedures, page 1) will be modified where needed to implement device calibration policies. These manuals should list the devices which are in the calibration program, the acceptable tolerance bands for these devices, the appropriate calibration and record keeping procedures, the calibration frequency, and procedures for reporting device miscalibrations to the device user.

Documentation completed 01/01/94

Detailed Costs ($K)						
	92	93	94	95	96	Total
Existing ES&H Support		5	5			10
New ES&H Activities		20	20			40
GPP						
ERWM						

TASK T1333 *IMPLEMENT CALIBRATION PROGRAM*
(QV.4-1)

Scheduled Completion 07/01/94
Projected Cost $100,000
Responsible Department CD

SLAC and SSRL will take appropriate steps required to begin implementation of the calibration program laid out in tasks T1328, T1331, and T1332. This consists of remedial actions as well as ongoing activities. Remedial actions include making calibration of secondary standards traceable to NIST and calibrating devices whose calibration interval has expired. Ongoing activities include the routine calibration of devices at prescribed intervals and periodic reviews of which items should be included in the calibration program.

Calibration of secondary standards begun 02/01/94
Calibration program implemented 07/01/94

Detailed Costs ($K)						
	92	93	94	95	96	Total
Existing ES&H Support			25			25
New ES&H Activities			75			75
GPP						
ERWM						
Ongoing Cost $50,000						

Concern QV.4-2

Several secondary standards used for calibration are not traceable to nationally recognized standards and/or are not maintained in a current state of calibration themselves as required by DOE 5700.6B.

DOE Priority 2

Compliance Protocol DOE Order 5700.6B

Response DOE Order 5700.6B was identified as compliance protocol for this concern. The subsequent issuance of the successor to the order, DOE 5700.6C, will require a comparative review to identify changes in order requirements. The corrective actions for this concern will be defined per DOE 5700.6C requirements.

Mechanical and electronic measuring and testing devices such as tools, gauges, and instruments should be controlled and calibrated at specified intervals. Secondary device calibration standards are not traceable and their calibration is not maintained adequately. To address this concern, SLAC will develop definitions of the devices requiring calibration and perform a site-wide survey to identify and locate all such devices per appropriate requirements of DOE 5700.6C. Appropriate procedure(s) will then be developed or modified to control the calibration and record keeping functions, and implementation begun.

Related Concern OP.3-1 QV.4-1 QV.4-3 RP.8-1

Related Tasks

T1328 Develop Calibration Program Inclusion Criteria
T1331 Survey Devices to be Calibrated
T1332 Revise Calibration Procedures
T1333 Implement Calibration Program

TASK T1328 *DEVELOP CALIBRATION PROGRAM INCLUSION CRITERIA*
(QV.4-2)

Scheduled Completion	01/01/93
Projected Cost	$12,000
Responsible Department	CD

Criteria will be established which will define devices to be included in the calibration program. The "SLAC Institutional Quality Assurance Manual" will be revised to include these criteria. The criteria will address issues such as safety, risk to equipment, and impact of device miscalibration on the missions of the Laboratory. Test equipment used to calibrate other devices must be part of the calibration program (see Concern QV.4-2).

Calibration criteria established 01/01/93

	Detailed Costs ($K)					
	92	93	94	95	96	Total
Existing ES&H Support	6	6				12
New ES&H Activities						
GPP						
ERWM						

TASK T1331 *SURVEY DEVICES TO BE CALIBRATED*
(QV.4-2)

Scheduled Completion 07/01/93
Projected Cost $35,000
Responsible Department CD

A site-wide survey will identify devices (including secondary standards) which must be part of the calibration program. This survey will be based on the criteria established in the previous task (T1328). The individual divisions or departments of SLAC and SSRL will be charged with carrying out the identification process.

Survey procedures distributed to div./departments 03/01/93
Survey completed 07/01/93

	Detailed Costs ($K)					
	92	93	94	95	96	Total
Existing ES&H Support		35				35
New ES&H Activities						
GPP						
ERWM						

TASK T1332 *REVISE CALIBRATION PROCEDURES*
(QV.4-2)

Scheduled Completion 01/01/94
Projected Cost $50,000
Responsible Department CD

Departmental Procedures Manuals (see "SLAC Guidelines for Operations," Chapter 4, Operations Procedures, page 1) will be modified where needed to implement device calibration policies. These manuals should list the devices which are in the calibration program, the acceptable tolerance bands for these devices, the appropriate calibration and record keeping procedures, the calibration frequency, and procedures for reporting device miscalibrations to the device user.

Documentation completed 01/01/94

Detailed Costs ($K)						
	92	93	94	95	96	Total
Existing ES&H Support		5	5			10
New ES&H Activities		20	20			40
GPP						
ERWM						

TASK T1333 *IMPLEMENT CALIBRATION PROGRAM*
(QV.4-2)

Scheduled Completion	07/01/94
Projected Cost	$100,000
Responsible Department	CD

SLAC and SSRL will take appropriate steps required to begin implementation of the calibration program laid out in tasks T1328, T1331, and T1332. This consists of remedial actions as well as ongoing activities. Remedial actions include making calibration of secondary standards traceable to NIST and calibrating devices whose calibration interval has expired. Ongoing activities include the routine calibration of devices at prescribed intervals and periodic reviews of which items should be included in the calibration program.

Calibration of secondary standards begun	02/01/94
Calibration program implemented	07/01/94

Detailed Costs ($K)						
	92	93	94	95	96	Total
Existing ES&H Support			25			25
New ES&H Activities			75			75
GPP						
ERWM						
Ongoing Cost $50,000						

Concern QV.4-3

As-found and as-left data are not recorded and maintained for equipment that is calibrated.

DOE Priority 4

Compliance Protocol DOE Order 5700.6C

Response DOE Order 5700.6B was identified as compliance protocol for this concern. The subsequent issuance of the successor to the order, DOE 5700.6C, will require a comparative review to identify changes in order requirements. The corrective actions for this concern will be defined per DOE 5700.6C requirements.

The program developed in response to Concern QV.4-2 will address record keeping of as-found and as-left data.

Related Concern OP.3-1 QV.4-1 QV.4-2 RP.8-1

Related Tasks
T1332 Revise Calibration Procedures
T1333 Implement Calibration Program

TASK T1332 *REVISE CALIBRATION PROCEDURES*
(QV.4-3)

Scheduled Completion	01/01/94
Projected Cost	$50,000
Responsible Department	CD

Departmental Procedures Manuals (see "SLAC Guidelines for Operations," Chapter 4, Operations Procedures, page 1) will be modified where needed to implement device calibration policies. These manuals should list the devices which are in the calibration program, the acceptable tolerance bands for these devices, the appropriate calibration and record keeping procedures, the calibration frequency, and procedures for reporting device miscalibrations to the device user.

Documentation completed 01/01/94

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support		5	5			10
New ES&H Activities		20	20			40
GPP						
ERWM						

TASK T1333 *IMPLEMENT CALIBRATION PROGRAM*
(QV.4-3)

Scheduled Completion	07/01/94
Projected Cost	$100,000
Responsible Department	CD

SLAC and SSRL will take appropriate steps required to begin implementation of the calibration program laid out in tasks T1328, T1331, and T1332. This consists of remedial actions as well as ongoing activities. Remedial actions include making calibration of secondary standards traceable to NIST and calibrating devices whose calibration interval has expired. Ongoing activities include the routine calibration of devices at prescribed intervals and periodic reviews of which items should be included in the calibration program.

Calibration of secondary standards begun	02/01/94
Calibration program implemented	07/01/94

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support			25			25
New ES&H Activities			75			75
GPP						
ERWM						

Ongoing Cost $50,000

Concern QV.6-1

The programs for ensuring that pressure vessels are properly fabricated, installed, tested, operated, and reinspected are not effectively implemented as required by DOE 5700.6B and generally accepted industry standards.

DOE Priority 2

Compliance Protocol DOE Order 5700.6B

Response DOE Order 5700.6B was identified as compliance protocol for this concern. The subsequent issuance of the successor to the order, DOE 5700.6C, will require a comparative review to identify changes in order requirements. The corrective actions for this concern will be defined per DOE 5700.6C requirements.

To ensure that pressure vessels meet requirements for documentation and inspection , SLAC will review procedures for dealing with purchased and SLAC-built vessels. The organizational roles, responsibilities, and authorities of staff dealing with the purchase, design, or operation of pressure vessels will be reviewed and modified as needed. The policies and procedures will be reviewed and revised using DOE Order 5700.6C to ensure compliance where applicable.

A site-wide pressure vessels survey will be conducted to determine line responsibility for their operation and inspection. Administrative interim measures will be taken for the operation of vessels which have not been recently inspected. A pressure vessel re-inspection program will be written according to applicable requirements, and provided to responsible managers (as determined in the survey) for their implementation of periodic re-inspections.

Personnel who are involved in pressure vessel purchase, design, inspection, and/or operation will be identified and trained in the revised policies and procedures.

Related Concern QV.3-1

Related Tasks T1218 Revise Pressure Vessel Procedures

TASK T1218 *REVISE PRESSURE VESSEL PROCEDURES*
(QV.6-1)

Scheduled Completion	10/01/94
Projected Cost	$115,000
Responsible Department	ME

Mechanical Engineering Department personnel familiar with requirements of DOE Order 5700. 6C, and pressure vessels, will conduct a survey of all pressure vessels to determine who is responsible for their operation and what procedures are in place for operation and periodic inspection. During the survey, judgements will be made as to

whether the vessels are safe to operate until such time as formal inspections can be completed. The vessels will be appropriately tagged as to their need for inspection.

Roles, responsibilities, and authorities (RRAs) for persons and departments involved in pressure vessel documentation and inspection will be reviewed. The policies and procedures for dealing with pressure vessels will be revised to comply with those RRAs and DOE Order 5700.6C where applicable.

Personnel with responsibility for pressure vessel design, operation, procurement, and inspection will be identified and appropriately trained in the revised policies and procedures.

Policies and procedures will be implemented on an ongoing basis to assure that pressure vessels will continue to be documented and inspected as required.

Survey of pressure vessels completed	06/01/93
Pressure vessel policies and procedures revised	08/01/93
Pressure vessel RRAs reviewed/revised	08/01/93
Personnel trained in revised procedures	11/01/93
Pressure vessels insp. per procedures completed	10/01/94

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support						
New ES&H Activities		70	45			115
GPP						
ERWM						

Ongoing Cost $20,000

Concern QV.7-1

Programs are not established to ensure that structural, pressure-vessel, and other important-to-quality welding activities are accomplished in accordance with appropriate codes and standards as required by DOE 5700.6B.

DOE Priority 2

Compliance Protocol DOE Order 5700.6B

Response DOE Order 5700.6B was identified as compliance protocol for this concern. The subsequent issuance of the successor to the order, DOE 5700.6C, will require a comparative review to identify changes in order requirements. The corrective actions for this concern will be defined per DOE 5700.6C requirements.

In order to ensure that welding activities at SLAC are performed by qualified personnel using proper procedures and equipment, SLAC welding standards will be reviewed using DOE Order 5700.6C and revised as needed. Pressure vessel quality programs which involve welding (such as MESI) will be revised and strengthened. A welding engineer/inspector will administer the program. Training will be provided to welders, designers, and engineers. Procurement of welding by outside vendors and contractors will be required to meet the SLAC welding standard.

Related Concern QV.6-1

Related Tasks
T1309 Review and Revise Welding Standards
T1218 Revise Pressure Vessel Procedures

TASK T1309 *REVIEW AND REVISE WELDING STANDARDS*
(QV.7-1)

Scheduled Completion	05/01/93
Projected Cost	$36,000
Responsible Department	MFD

The nine SLAC welding standards which cover design, workmanship, certification and inspection will be reviewed and revised to be compliant with applicable parts of DOE 5700.6C. Training will be provided to welders and designers on the revised standards. Outside vendors and subcontractors will be required to submit their welding procedures and welder qualifications which must meet SLAC welding standards. The MESI program will be revised and a welder inspector will be assigned to administer the program.

Review of welding requirements completed	01/01/93
Welding standards revised	08/01/92
Trainees identified	05/01/93
Vendor requirements documented	01/01/93
MESI program revised	01/01/93
MESI welding inspector identified	01/01/93
Training completed	04/01/93

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support	15	21				36
New ES&H Activities						
GPP						
ERWM						

TASK T1218 *REVISE PRESSURE VESSEL PROCEDURES*
(QV.7-1)

Scheduled Completion	10/01/94
Projected Cost	$115,000
Responsible Department	ME

Mechanical Engineering Department personnel familiar with requirements of DOE Order 5700. 6C, and pressure vessels, will conduct a survey of all pressure vessels to determine who is responsible for their operation and what procedures are in place for operation and periodic inspection. During the survey, judgements will be made as to whether the vessels are safe to operate until such time as formal inspections can be completed. The vessels will be appropriately tagged as to their need for inspection.

Roles, responsibilities, and authorities (RRAs) for persons and departments involved in pressure vessel documentation and inspection will be reviewed. The policies and procedures for dealing with pressure vessels will be revised to comply with those RRAs and DOE Order 5700.6C where applicable.

Personnel with responsibility for pressure vessel design, operation, procurement, and inspection will be identified and appropriately trained in the revised policies and procedures.

Policies and procedures will be implemented on an ongoing basis to assure that pressure vessels will continue to be documented and inspected as required.

Survey of pressure vessels completed	06/01/93
Pressure vessel policies and procedures revised	08/01/93
Pressure vessel RRAs reviewed/revised	08/01/93
Personnel trained in revised procedures	11/01/93
Pressure vessels insp. per procedures completed	10/01/94

Detailed Costs ($K)						
	92	93	94	95	96	Total
Existing ES&H Support						
New ES&H Activities		70	45			115
GPP						
ERWM						
Ongoing Cost $20,000						

Concern QV.8-1

A program has not been established to provide training to personnel who perform nondestructive examinations.

DOE Priority 3

Compliance Protocol ASNT-TC-1A

Response SLAC will ensure that inspectors who perform nondestructive examinations are trained. A survey of all groups performing nondestructive examinations will be conducted to determine what NDE processes are being performed. If an ANSI Level III program is appropriate, a written program will be established and Level III inspectors will be certified by SLAC. This program will detail the training requirements called out in ASNT-TC-1A for Level I and Level II inspectors. Training for NDE procedures that are not addressed by ASNT-TC-1A and are unique to individual departments, will be addressed in the department's QA Manual under "Training," as specified in the SLAC Institutional QA Manual.

Related Tasks T1315 Establish Nondestructive Test Training

TASK T1315 *ESTABLISH NONDESTRUCTIVE TEST TRAINING*
(QV.8-1)

Scheduled Completion	10/01/96
Projected Cost	$25,000
Responsible Department	MFD

A survey will be conducted of all groups performing nondestructive examinations to determine what NDE processes are being performed, and by whom. The survey will also request information about the training required of these inspectors, and will record this training. Based on the results of the survey the following actions will be taken:

1. If the NDE processes are covered by ASNT-TC-1A and ANSI Level III program for SLAC will be written and Level III inspectors will be certified. As required by ASNT-TC-1A, this program will detail the training requirement for Level I and II inspectors.

2. NDE procedures that are not covered by ASNT-TC-1A, and are unique to individual departments, will be addressed in that department's QA Manual under "Training" as specified in the SLAC Institutional QA Manual.

NDE survey completed	02/01/96
ASNT written program completed	08/01/96
Departmental QA Manuals completed	10/01/96

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support						
New ES&H Activities					25	25
GPP						
ERWM						

Concern OP.1-1

Qualification requirements and documented training programs are not in place for all operations positions.

DOE Priority 3

Response Not all operations positions at SLAC have defined qualifications or documented training programs. SLAC will identify the relevant operations positions, review and update their functional job descriptions, develop qualifications requirements based on these descriptions and carry out a documented training program based on the qualifications requirements for personnel in these positions.

Related Concern OP.1-2

Related Tasks T1292 Identify & Develop Qualification Req'ts & Training

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TASK T1292 *IDENTIFY & DEVELOP QUALIFICATION REQ'TS & TRAINING*
(OP.1-1)

Scheduled Completion	09/01/94
Projected Cost	$440,000
Responsible Department	AD

Identify relevant personnel, review and update functional job descriptions, develop qualifications requirements, and develop training program(s) based on qualification requirements as necessary.

Operations positions identified	08/01/92
Job descriptions reviewed and updated	01/15/93
Qualification requirements developed	11/01/93
Training programs development completed	09/01/94

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support	125	125	125			375
New ES&H Activities	15	25	25			65
GPP						
ERWM						

Concern OP.1-2

Official lists of personnel currently qualified as Engineering Operator in Charge and Operator are not maintained in Control Rooms as required by DOE 5480.19.

DOE Priority 2

Compliance Protocol DOE Order 5480.19

Response Official lists of personnel currently qualified as Engineering Operator-in-Charge and Operator are not maintained in the SLAC control rooms. Lists of certified operators (SPEAR Injector Operators, Main Control Center Engineering Operators-In-Charge and MCC Operators) will be posted in the control rooms. A procedure for assuring that these lists are current will be put in place.

Related Concern OP.1-1

Related Tasks T1049 Post Qualified Operations Personnel

TASK T1049 *POST QUALIFIED OPERATIONS PERSONNEL*
(OP.1-2)

Scheduled Completion	07/01/92
Projected Cost	$7,000
Responsible Department	AD

The lists of SLAC and SSRL qualified operations personnel will be placed in the control rooms. An individual will be assigned to maintain the posted list.

Qualified operations staff lists completed	06/01/92
Lists placed in the control rooms	06/01/92
System for maintaining lists established	07/01/92

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support	7					7
New ES&H Activities						
GPP						
ERWM						

Concern OP.2-1

Access to Control Rooms at the Stanford Linear Accelerator Center is not effectively limited to persons with official business as required by DOE 5480.19.

DOE Priority 2

Compliance Protocol DOE Order 5480.19

Response The SLAC "Guidelines for Operations" imposes basic obligations on workers to monitor activities and conduct operations in a manner that achieves safe and reliable operation. The nature of SLAC's operations is such that routine access to areas is needed when motor and electronic control operations are performed. However, there are no clear procedures for monitoring or controlling access to areas that are routinely unlocked. Requirements in this area will be reviewed, new procedures developed as required, and signs posted.

Related Tasks T1047 Procedures for Limiting Control Room Access

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TASK T1047 *PROCEDURES FOR LIMITING CONTROL ROOM ACCESS*
(OP.2-1)

Scheduled Completion	10/01/93
Projected Cost	$7,000
Responsible Department	AD

Control rooms and control room areas to which access should be limited will be identified. Policies and procedures will be developed to enable controlled access. Staff will be trained in new access policies and procedures.

Control areas identified	05/01/93
Policies and procedures developed	08/01/93
Signs posted	09/01/93
Control staff training initiated	10/01/93

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support		7				7
New ES&H Activities						
GPP						
ERWM						

Concern OP.3-1

Operational Safety Requirements are not employed along with the associated surveillance and maintenance requirements at the Stanford Linear Accelerator Center.

DOE Priority 3

Response The extent of formal controls over operations at SLAC varies depending upon the nature of the activity and the experience of the workforce. In response to this concern, SLAC will review its current approach to adopting and implementing safety standards and formalize existing operating controls as appropriate.

Related Tasks T1359 Formalize Safe Operating Parameters

TASK T1359 *FORMALIZE SAFE OPERATING PARAMETERS*
(OP.3-1)

Scheduled Completion	10/01/95
Projected Cost	$25,000
Responsible Department	TD

All operational units will assess their safe operating parameters against a set of common criteria to determine whether the parameters are sufficiently formalized to assure continued compliance and regular review and updating. The scope of this review will include associated surveillance and maintenance systems. Improvements in the manner by which safe operating parameters are defined and employed will be made in response to shortcomings identified by this review.

Review of safe operating parameters completed	12/01/94
Parameters formalized as appropriate	07/01/95
Implementation plan for improvements developed	10/01/95

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support			9	16		25
New ES&H Activities						
GPP						
ERWM						

Concern OP.3-2

Operating Procedures at the Stanford Linear Accelerator Center do not conform to a standard format, approval system, revision system, temporary change system, or review frequency as required by DOE 5480.19.

DOE Priority 2

Compliance Protocol DOE Order 5480.19

Response Operations at SLAC are to be conducted in accordance with the requirements of the "SLAC Guidelines for Operations." However, that document is incomplete with respect to requirements for management reviews and approval of operating procedures. Thus, Operating procedures vary in both format and depth. The "SLAC Guidelines for Operations" will be enhanced with respect to requirements for developing and maintaining documentation.

Related Concern OA.7-2

Related Tasks T1205 Update "Guidelines for Operations" Procedures

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TASK T1205 (OP.3-2) *UPDATE "GUIDELINES FOR OPERATIONS" PROCEDURES*

Scheduled Completion	10/01/94
Projected Cost	$30,000
Responsible Department	TD

As an interim measure, SLAC managers will conduct reviews with operating staff regarding the requirements for developing and maintaining operating procedures, as defined by the "SLAC Guidelines for Operations," and other applicable standards. In the longer term, the requirements in the "SLAC Guidelines for Operations" will be enhanced and clarified to promote greater standardization, including clear requirements for management reviews and approvals.

Interim reviews conducted	06/01/94
"SLAC Guidelines for Operations" revised	10/01/94

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support			30			30
New ES&H Activities						
GPP						
ERWM						
Ongoing Cost $140,000						

Concern OP.3-3

Posted operator aids throughout the Stanford Linear Accelerator Center are not standardized, approved, dated, or logged as required by DOE 5480.19.

DOE Priority 2

Compliance Protocol DOE Order 5480.19

Response There is a lack of standardization and control of posted operator aids throughout SLAC. A uniform policy for operator aids will be developed including approval, dating, and logging procedures. A management directive regarding the use of operator aids will be issued and departments will develop procedures to ensure conformity. The procedure will be incorporated into the "SLAC Guidelines for Operations."

Related Tasks T1268 Develop Uniform Procedures for Operator Aids

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TASK T1268 *DEVELOP UNIFORM PROCEDURES FOR OPERATOR AIDS*
(OP.3-3)

Scheduled Completion	04/01/94
Projected Cost	$10,000
Responsible Department	TD

Review practices at similar facilities, develop a uniform policy for operator aids, issue policy and develop departmental procedures for implementing policy. Incorporate new policy in the SLAC Guidelines for Operations.

Guidelines for operator aids developed	12/01/93
Departmental procedures developed	03/01/94
Policy incorporated in Guidelines for Operations	04/01/94
Management directive issued	04/01/94

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support						
New ES&H Activities			10			10
GPP						
ERWM						

Concern OP.8-1

No coding convention is employed in Stanford Linear Accelerator Center Control Areas to indicate the meaning of alarm signals, light colors, or whether lights are steady or flashing.

DOE Priority 3

Response

The design of SLAC equipment should incorporate human factor considerations to facilitate adequate operator recognition of alarms and warnings in its control systems. There have been inadequate standards for control panel displays and color conventions. Initial corrective actions include the appointment of an Alarms and Warnings Systems Analyst who is developing an alarms/display convention for the Main Control Center (MCC) to separate alarms and warnings into levels of importance, and to physically separate them from non-safety related equipment status information. This program is underway.

SLAC will perform a similar review of existing coding conventions for each operating area and modify and document into operating and training procedures existing coding conventions as applicable. The managers of operating areas will develop or modify procedures for specifying or designing new equipment or control systems in a self consistent manner which examines human factors in the design and procurement stages.

Related Concern OP.1-1 OP.8-2

Related Tasks

T1155 Review Control/Alarms Displays
T1148 Revise Procedures for Color/Unit Conventions
T1153 Implement Supplementary Operator Training

TASK T1155 *REVIEW CONTROL/ALARMS DISPLAYS*
(OP.8-1)

Scheduled Completion	02/01/94
Projected Cost	$26,000
Responsible Department	TD

The operating groups will review and update their alarms and warnings displays for consistency with proceduralized conventions for colors and units of measure. Particular attention will be given to the separation of Alarms and Warnings from non safety related equipment status information.

Alarms and warnings displays review completed 02/01/94

Detailed Costs ($K)						
	92	93	94	95	96	Total
Existing ES&H Support						
New ES&H Activities			26			26
GPP						
ERWM						

TASK T1148 *REVISE PROCEDURES FOR COLOR/UNIT CONVENTIONS*
(OP.8-1)

Scheduled Completion 10/01/94
Projected Cost $50,000
Responsible Department TD

The operating groups for accelerators and detectors will review their control equipment and revise their operating and operator training procedures to include the colors used in Alarms and Warnings and the units of measure used on critical equipment. Procedures, which will examine human factors in the design and procurement stages, will be developed for specifying or designing new equipment or control systems in a self consistent manner.

New equipment design/procurement procs. published 10/01/94
Revised Op./training procedures published 10/01/94

Detailed Costs ($K)						
	92	93	94	95	96	Total
Existing ES&H Support						
New ES&H Activities			50			50
GPP						
ERWM						

TASK T1153 *IMPLEMENT SUPPLEMENTARY OPERATOR TRAINING*
(OP.8-1)

Scheduled Completion 01/01/95
Projected Cost $2,000
Responsible Department TD

The operating groups for accelerators and detectors will give supplementary documented training to their equipment operators on the colors and units of measure used in the alarms and warnings systems, using the revised operating and training procedures.

Supplementary training completed 01/01/95

Detailed Costs ($K)						
	92	93	94	95	96	Total
Existing ES&H Support						
New ES&H Activities				2		2
GPP						
ERWM						

Concern OP.8-2

Appropriate measurement units such as psia and celsius degrees are not placed on or by many instruments nor are they always used in operations communications.

DOE Priority 3

Response The design of SLAC equipment should incorporate human factor considerations to facilitate operator control and information processing. Not all instruments used to display information to operators have the units of measure labelled on or next to the instrument. SLAC will provide interim guidance on units labelling, revise units labelling information in operating and procurement procedures, provide training on these procedures, and appropriately revise or update units labelling on existing display equipment.

Related Concern OP.1-1 OP.8-1

Related Tasks

T1155 Review Control/Alarms Displays
T1148 Revise Procedures for Color/Unit Conventions
T1153 Implement Supplementary Operator Training

TASK T1155 *REVIEW CONTROL/ALARMS DISPLAYS*
(OP.8-2)

Scheduled Completion 02/01/94
Projected Cost $26,000
Responsible Department TD

The operating groups will review and update their alarms and warnings displays for consistency with proceduralized conventions for colors and units of measure. Particular attention will be given to the separation of Alarms and Warnings from non safety related equipment status information.

Alarms and warnings displays review completed 02/01/94

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support						
New ES&H Activities			26			26
GPP						
ERWM						

TASK T1148 *REVISE PROCEDURES FOR COLOR/UNIT CONVENTIONS*
(OP.8-2)

Scheduled Completion	10/01/94
Projected Cost	$50,000
Responsible Department	TD

The operating groups for accelerators and detectors will review their control equipment and revise their operating and operator training procedures to include the colors used in Alarms and Warnings and the units of measure used on critical equipment. Procedures, which will examine human factors in the design and procurement stages, will be developed for specifying or designing new equipment or control systems in a self consistent manner.

New equipment design/procurement procs. published	10/01/94
Revised Op./training procedures published	10/01/94

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support						
New ES&H Activities			50			50
GPP						
ERWM						

TASK T1153 *IMPLEMENT SUPPLEMENTARY OPERATOR TRAINING*
(OP.8-2)

Scheduled Completion	01/01/95
Projected Cost	$2,000
Responsible Department	TD

The operating groups for accelerators and detectors will give supplementary documented training to their equipment operators on the colors and units of measure used in the alarms and warnings systems, using the revised operating and training procedures.

Supplementary training completed	01/01/95

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support						
New ES&H Activities				2		2
GPP						
ERWM						

Concern MA.1-1

There are no integrated maintenance procedures or organization governing maintenance activities at the Stanford Linear Accelerator Center that will meet the requirements of DOE 4330.4A

DOE Priority 2

Compliance Protocol DOE Order 4330.4A

Response SLAC recognizes the importance of effective management of maintenance activities to safe operations of critical facilities and systems. The planned integration of SSRL and SLAC will provide an impetus to merge all related activities, eliminate inconsistencies, and promote greater coordination among the operations. In view of this planned change SLAC will undertake an overall reassessment of maintenance organization and administration. This assessment will be the basis for a determination of the level of integration and centralization that should be undertaken with respect to SLAC's maintenance activities.

Related Concern MA.4-1 MA.5-1 MA.6-1 MA.7-1

Related Tasks T1327 Establish Maintenance Management Programs

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TASK T1327 *ESTABLISH MAINTENANCE MANAGEMENT PROGRAMS*
(MA.1-1)

Scheduled Completion	10/01/95
Projected Cost	$50,000
Responsible Department	AD

Maintenance activities at SLAC and SSRL will be evaluated, particularly in view of the unification of the two labs. The evaluation will include input from all organizational units with maintenance responsibilities and will result in recommendations for levels of formal integration and centralization of maintenance management appropriate to various categories of operations at SLAC.

The evaluation will consider the need for work control processes, such as a safe work permit system, work order authorization requirements for component modifications, requirements for work packages, formal authorization requirements for remedial maintenance, planning and safety procedures for preventive maintenance, and criteria for prioritizing maintenance activities. The evaluation will also assess the need for standardized recordkeeping and will consider opportunities for utilizing trend analysis and other programs for predictive maintenance.

As a result of this evaluation, SLAC will determine how elements of DOE Order 4330.4A should best be applied to identified systems, and will further determine the degree of detail and formality with which those elements are to be applied.

Responsibility for drafting maint. policy assigned	10/01/93
Maintenance Management Policy adopted	11/01/93
Appropriate elements DOE 4330.4A identified	09/01/92
Site maintenance activities inventoried	01/01/93
Maintenance Management Program defined	08/01/95
Improvement Program initiated	10/01/95

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support	10	15	25			50
New ES&H Activities						
GPP						
ERWM						

Concern MA.2-1

The lock and tag procedures as implemented at Stanford Linear Accelerator Center do not provide for the safe and effective conduct of maintenance and are not in compliance with DOE 5480.19 and 29 CFR 1910.147.

DOE Priority 1

Compliance Protocol DOE 5480.19 Chapter IX; 29 CFR 1910.147

Response Although SLAC has developed and implemented Lock and Tag procedures as required by 29 CFR 1910.147 and DOE Order 5480.19 Chapter IX, the Lock and Tag Program does not explicitly address all the requirements of these regulations. Also, the existing procedures have some deficiencies due to contradictory statements and lack of auditing requirements. To address this concern, SLAC will review the existing procedures and will update them to ensure that any contradictions are eliminated and that auditing requirements are included. Also, SLAC will broaden the Lock & Tag Program to cover all regulatory requirements.

Related Concern WS.4-1

Related Tasks

T1389 Discard and/or Replace Improper Tags
T1391 Review and Modify Lock and Tag Procedures
T1392 Develop Non-Electrical Lock & Tag Procedures

TASK T1389 (MA.2-1) *DISCARD AND/OR REPLACE IMPROPER TAGS*

Scheduled Completion	Completed
Projected Cost	$5,000
Responsible Department	SAF

A directive will be issued for all building and area managers to survey for inappropriately used Danger Tags and make necessary corrections. Line Managers will be directed to oversee this activity.

Directives Issued 12/21/91

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support	5					5
New ES&H Activities						
GPP						
ERWM						

TASK T1391 *REVIEW AND MODIFY LOCK AND TAG PROCEDURES*
(MA.2-1)

Scheduled Completion	09/01/92
Projected Cost	$3,000
Responsible Department	SAF

SLAC has established a new Lock and Tag procedure for electrical circuits dated September 30, 1991. This procedure was found to be contradictory in two places. SLAC will modify the existing Electrical Lock and Tag Procedure to eliminate the contradiction in GLP (General Lockout Procedure) and ELP (Equipment Lockout Procedure) in section 7.2 step 3 and step 5 regarding multiple energy sources and stored energy. SLAC will also review and revise the procedure as necessary to assure compliance with all regulatory requirements, including auditing and proper use of Caution Tags.

Draft Revisions Prepared	01/15/92
Revised procedure issued	09/01/92

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support	3					3
New ES&H Activities						
GPP						
ERWM						

TASK T1392 *DEVELOP NON-ELECTRICAL LOCK & TAG PROCEDURES*
(MA.2-1)

Scheduled Completion	06/01/93
Projected Cost	$25,000
Responsible Department	SAF

As an interim measure, awareness training will be conducted. Procedures for Lock and Tag of non-electrical energy sources will be developed and issued, and training to the procedures will be provided to relevant employees.

Awareness training conducted	07/01/92
Procedures issued	01/01/93
Procedures training initiated	06/01/93

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support	12	13				25
New ES&H Activities						
GPP						
ERWM						

Concern MA.3-1

Storage of maintenance records in an energized Control Panel is not compliance with the electrical safety practice required by DOE 4330.4A. and 29 CFR 1910.333.

DOE Priority 1

Compliance Protocol DOE 4330.4A ; 29 CFR 1910.333

Response In order to comply with electrical safety practices required by DOE 4330.4A and 29 CFR 1910.333, the identified maintenance records should not be stored in an energized control panel. SLAC will remove these records to a new location.

Related Concern WS.4-4

Related Tasks T1001 Provide Safe Storage Location for CHF Maint. Book.

TASK T1001 *PROVIDE SAFE STORAGE LOCATION FOR CHF MAINT. BOOK.*
(MA.3-1)

Scheduled Completion	Completed
Projected Cost	$
Responsible Department	EFD

The supervisor of the Central Helium Facility will relocate the CHF Maintenance Record Book to a safe, readily accessible location, for permanent storage. The appropriate operations personnel will be counseled by the supervisor about this change. The supervisor or other responsible individual will verify that the change has remained in effect after a reasonable period. An ES&H Bulletin will be issued illustrating this as an unsafe work practice.

Maintenance book relocated	11/22/91
All existing operators counseled on book location	12/02/91
Book verified in new location	12/13/91
ES&H Bulletin issued	02/01/92

Concern MA.4-1

Planning, scheduling, and control of maintenance at the Stanford Linear Accelerator Center do not meet the requirements of DOE 4330.4A.

DOE Priority 2

Compliance Protocol DOE 4330.4A

Response SLAC has an ongoing process of operations scheduling, and expends considerable effort on planning scheduling and control of maintenance outages. However, this process does not have either the formality nor include all the specific elements of DOE Order 4330.4A. Therefore, we will review the DOE Order 4330.4A to determine where improvement in the planning, scheduling and control of maintenance in various operations, facilities and systems can and should be made.

Related Concern MA.1-1 MA.5-1 MA.6-1 MA.7-1

Related Tasks T1327 Establish Maintenance Management Programs

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TASK T1327 *ESTABLISH MAINTENANCE MANAGEMENT PROGRAMS*
(MA.4-1)

Scheduled Completion	10/01/95
Projected Cost	$50,000
Responsible Department	AD

Maintenance activities at SLAC and SSRL will be evaluated, particularly in view of the unification of the two labs. The evaluation will include input from all organizational units with maintenance responsibilities and will result in recommendations for levels of formal integration and centralization of maintenance management appropriate to various categories of operations at SLAC.

The evaluation will consider the need for work control processes, such as a safe work permit system, work order authorization requirements for component modifications, requirements for work packages, formal authorization requirements for remedial maintenance, planning and safety procedures for preventive maintenance, and criteria for prioritizing maintenance activities. The evaluation will also assess the need for standardized recordkeeping and will consider opportunities for utilizing trend analysis and other programs for predictive maintenance.

As a result of this evaluation, SLAC will determine how elements of DOE Order 4330.4A should best be applied to identified systems, and will further determine the degree of detail and formality with which those elements are to be applied.

Responsibility for drafting maint. policy assigned	10/01/93
Maintenance Management Policy adopted	11/01/93
Appropriate elements DOE 4330.4A identified	09/01/92
Site maintenance activities inventoried	01/01/93
Maintenance Management Program defined	08/01/95
Improvement Program initiated	10/01/95

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support	10	15	25			50
New ES&H Activities						
GPP						
ERWM						

Concern MA.5-1

The corrective maintenance activities at Stanford Linear Accelerator Center do not support safe and effective operation of equipment and facilities as required by DOE 4330.4A, Section 9.

DOE Priority 2

Compliance Protocol DOE 4330.4A, Section 9

Response Formal criteria for prioritizing corrective action maintenance have not been developed, as noted in the Tiger Team assessment. Nor is there a formalized program to identify maintenance needs. Greater formality, at least in the areas involving accelerator maintenance, may promote safer and more effective operations. A review of such areas will be undertaken.

Related Concern MA.1-1 MA.3-1 MA.4-1 MA.6-1

Related Tasks
T1327 Establish Maintenance Management Programs
T1242 Develop & Implement Maint. Safety Procedure(s)

TASK T1327 *ESTABLISH MAINTENANCE MANAGEMENT PROGRAMS*
(MA.5-1)

Scheduled Completion	10/01/95
Projected Cost	$50,000
Responsible Department	AD

Maintenance activities at SLAC and SSRL will be evaluated, particularly in view of the unification of the two labs. The evaluation will include input from all organizational units with maintenance responsibilities and will result in recommendations for levels of formal integration and centralization of maintenance management appropriate to various categories of operations at SLAC.

The evaluation will consider the need for work control processes, such as a safe work permit system, work order authorization requirements for component modifications, requirements for work packages, formal authorization requirements for remedial maintenance, planning and safety procedures for preventive maintenance, and criteria for prioritizing maintenance activities. The evaluation will also assess the need for standardized recordkeeping and will consider opportunities for utilizing trend analysis and other programs for predictive maintenance.

As a result of this evaluation, SLAC will determine how elements of DOE Order 4330.4A should best be applied to identified systems, and will further determine the degree of detail and formality with which those elements are to be applied.

Responsibility for drafting maint. policy assigned	10/01/93
Maintenance Management Policy adopted	11/01/93
Appropriate elements DOE 4330.4A identified	09/01/92
Site maintenance activities inventoried	01/01/93
Maintenance Management Program defined	08/01/95
Improvement Program initiated	10/01/95

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support	10	15	25			50
New ES&H Activities						
GPP						
ERWM						

TASK T1242 *DEVELOP & IMPLEMENT MAINT. SAFETY PROCEDURE(S)*
(MA.5-1)

Scheduled Completion	06/01/93
Projected Cost	$235,000
Responsible Department	PAD

Review DOE Order 5480.19 requirements for maintenance safety and existing SLAC Guidelines for Operations. Perform a baseline safety audit of all maintenance groups. Modify SLAC Guidelines for Operations as required for compliance with 5480.19, and develop appropriate supporting procedure(s). Develop training program(s) for these procedures, identify applicable recipients for this training and schedule training on a prioritized basis. Training shall be developed for both SLAC employees as well as non-SLAC (contract) workers. Staffing needs for this task will be evaluated.

Maintenance groups audited for baseline status	08/01/92
Maintenance safety procedures developed	12/01/92
Guidelines for Operations revised	03/01/93
Maintenance safety training initiated	06/01/93

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support	30	30				60
New ES&H Activities		175				175
GPP						
ERWM						

Ongoing Cost $250,000

Concern MA.6-1

Preventive maintenance is not conducted at the Stanford Linear Accelerator Center in the manner required by DOE 4330.4A.

DOE Priority 2

Compliance Protocol DOE 4330.4A.

Response Maintenance workers need to be aware of potential hazards that may be encountered during the course of preventive maintenance safety precautions may be well understood, but in many instances, workers will benefit if preventive maintenance procedures identify those measures. SLAC's programs for preventive maintenance will be reevaluated as part of the overall improvements planned for this area.

Related Concern MA.1-1 MA.4-1 MA.5-1 MA.7-1

Related Tasks T1327 Establish Maintenance Management Programs

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TASK T1327 *ESTABLISH MAINTENANCE MANAGEMENT PROGRAMS*
(MA.6-1)

Scheduled Completion	10/01/95
Projected Cost	$50,000
Responsible Department	AD

Maintenance activities at SLAC and SSRL will be evaluated, particularly in view of the unification of the two labs. The evaluation will include input from all organizational units with maintenance responsibilities and will result in recommendations for levels of formal integration and centralization of maintenance management appropriate to various categories of operations at SLAC.

The evaluation will consider the need for work control processes, such as a safe work permit system, work order authorization requirements for component modifications, requirements for work packages, formal authorization requirements for remedial maintenance, planning and safety procedures for preventive maintenance, and criteria for prioritizing maintenance activities. The evaluation will also assess the need for standardized recordkeeping and will consider opportunities for utilizing trend analysis and other programs for predictive maintenance.

As a result of this evaluation, SLAC will determine how elements of DOE Order 4330.4A should best be applied to identified systems, and will further determine the degree of detail and formality with which those elements are to be applied.

Responsibility for drafting maint. policy assigned	10/01/93
Maintenance Management Policy adopted	11/01/93
Appropriate elements DOE 4330.4A identified	09/01/92
Site maintenance activities inventoried	01/01/93
Maintenance Management Program defined	08/01/95
Improvement Program initiated	10/01/95

Detailed Costs ($K)

	92	93	94	95	96	Total
Existing ES&H Support	10	15	25			50
New ES&H Activities						
GPP						
ERWM						