ENGINEERING DIVISION

PY2003 Self Assessment Report &
PY2004 ES&H Self-Assessment Implementation Plan

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PY2003 Self-Assessment Report & PY 2004 Self Assessment Plan

Table of Contents

I. Introduction ……..…….…… 3

Goals and Objectives…...…….…… 3 & 4

PY2003 Accomplishments and Noteworthy Achievements……. 4

Summary and Conclusions…….……..……. 5

II. Engineering PY2003 Self-Assessment Performance…….……... 6 to 13

III. PY2004 SELF-ASSESSMENT PLAN…….…… 14

I. Engineering Division FY2003 Self Assessment Report

Introduction

The Engineering Division's Environmental, Safety and Health (ES&H) Self-Assessment Program is an essential business process to ensure the workplace is safe, hazards are controlled, and the environment is protected. Designed to ensure regulatory compliance and promote good safety practices and continuous improvement, the program is a means for the Division to monitor and identify its strengths and weaknesses in the areas of ES&H and follow up with corrective actions of deficiencies in a timely manner. The Engineering Division evaluates its operations against institutionally established ES&H performance criteria and conducts inspections to identify the presence of inadequately controlled or uncontrolled hazards.

Goals and Objectives

The Engineering Division's ES&H goal is to establish an effective and efficient safety structure with proper procedures, gather reliable data for regular evaluation, and ensure prompt correction of identified deficiencies. The overall goal is to develop a high level of ES&H consciousness among all employees. This will enable the employees to fulfill their responsibility safely by knowing and understanding the applicable ES&H requirements, being aware of unsafe or unhealthy workplace conditions, recognizing practices that have potential environmental impact, and initiating appropriate corrective actions. Engineering has developed an Integrated Safety Management Plan (originally approved in 1998 and revised in 2003) that provides overall guidance for how each of the Laboratory's Seven ES&H Guiding Principles, Five Core Functions, and Validation Measures will be incorporated, implemented and accomplished. Self-Assessment is a subset of this Plan and supports the Laboratory's Environment, Safety and Health (ES&H) goals and related policies. The health and safety of employees, guests, and the protection of the environment are integrated into the elements of all Engineering Division activities.
The intent of the Self-Assessment program is to eliminate or mitigate ES&H hazards to LBNL employees in the workplace, to the general public, and to the environment. Engineering's Self-Assessment program encompasses not only the customary occupational safety inspections, but also reviews areas such as planning, training, waste management, waste minimization, chemical safety, environmental protection, and quality assurance/conduct of operations. Engineering Division management provides the necessary resources to create and maintain a high level of awareness and interest at all levels in the safety and health of all employees and in the protection of the environment. While the Division conducts safety appraisals at regularly scheduled intervals to ensure proper performance, unscheduled and random inspections, as well as management walk-throughs are also conducted. The Division Safety Coordinator ensures that Self-Assessment team members and managers are appropriately prepared to accomplish this process. Safety is important and will continue to be the responsibility of all Engineering personnel in all aspects of their work.

PY2003 Accomplishments and Noteworthy Achievements

- Implementation of the Engineering Division's own enhanced version of the Supervisor Accident Analysis Report (SAAR) process to include the attendance and participation of the department head in joining the line supervisor, the affected worker, Division Coordinator and Division Liaison now also includes the invitation of partnering Division Safety Coordinators for our matrixed staff during the accident/injury investigation. The model seeks to further elevate awareness and identification of corrective measures to prevent reoccurrences. This modified and implemented program has been well received by the staff and has the interest and praise of the EH&S Safety Engineering Group lead.
- During the year, Engineering maintained a 99% to 100% JHQ completion rate for career, guests, and contract labor staff. This represents a high JHQ completion rate at the Laboratory for large divisions (400 or more personnel).
- As the Laboratory prepared to move towards the annual formal performance review period, the Engineering Division Director specified that there would be a validation within the document that JHQ's be reviewed and updated between the supervisor and employee
- At least 95% of all "required" ES&H training courses were completed for our staff during PY2003. This is one of the highest completion rates at the Laboratory.
- Our Division Integrated Safety Management (ISM) Plan has been reviewed and revised for PY2004 to include specific clarification and guidance for student safety and the safety of workers off site.
- The division had zero DOE Occurrence Reports for the performance year.
- The division had zero NCAR's.
- Satellite Accumulation Area (SAA) inspections for this year show that Engineering's compliance rate is 92%.
- Waste Accumulation Area (WAA) inspections for this year show that Engineering's compliance rate remains consistently at 100%.
- Safety is a standing opening agenda item in the biweekly Engineering senior staff meeting.
- The ES&H section of the Engineering Division's web site continues to be enhanced with new and updated information and resources; such as the injury follow-up process guidance, machine shop safety, chemical safety, the current shoemobile schedule.
- The Engineering Division director has identified the completion of EHS0020 - "ES&H for supervisors and managers" a requirement for HEERA identified supervisors.
- Several regular meetings of the combined Division Safety Committee/Accident Review Board occurred throughout the performance year.
- <u>These noteworthy achievements were accomplished with the outstanding support from all areas of the EH&S Division.</u>

Summary and Conclusion

The Self-Assessment inspection program continues to be effective. The Engineering Division program has been in place for 10 years. Despite its maturity, there has been a slight decrease in overall accuracy of the data and efficiency in implementation of the safety program due to the departure/retirement of a key person that managed significant components of the program, especially with Laboratory Corrective Action Tracking System (LCATS) and Hazards, Equipment, Authorizations Review (HEAR). New database access and training for the LCATS and HEAR has been successfully reestablished. Engineering has demonstrated a high rate of compliance with requirements for Satellite Accumulation Areas (SAA's) and Waste Accumulation Areas (WAA's). The Engineering Division received no (zero) NCAR's nor any Occurrence Reports during PY2003. Line management (specifically the division director) emphasized reviewing and updating job hazards and the scheduling of required ES&H training to the extent that completion rates for JHQ's and ES&H training are both presently between 95% and 100%. For a relatively large division staff population, these rates are among the highest at the Laboratory. The Division experienced a slight decrease in accidents/injuries 11 DOE reportable cases for the year (July 1, 2002 through June 30, 2003). Line management, the Division Safety Coordinator, and EH&S Division Liaison will continue implementing prevention programs while simultaneously monitoring and validating that SAAR corrective actions are appropriate and brought to completion. Injury prevention will continue to be a high priority area to be improved in PY2004. Continuous improvement in the safety program is the Division's goal.

II PY2003 Self-Assessment Performance

CRITERIA	EXPECTATION	RESPONSE
	DEFINE WORK	
C1. Work planning adequately identifies and prioritizes resources to address programmatic needs and work safety.	**E1.** Resources are effectively allocated to balance programmatic, operational and ES&H considerations.	**R1.** The Engineering Division's Integrated Safety Plan identifies the allocation of safety resources (staff and funding) to accomplish its operational considerations in its central facilities and locations. The plan also provides guidance regarding resource allocations for matrixed staff and the partnered support of programmatic divisions to provide appropriate resources to Engineering staff on assignment in their programs.
C2. The division integrates ES&H into work and activities. Line management is responsible for the protection of the public, the workers, and the environment.	**E2.** Line management regularly communicates ES&H policy, procedures, and lessons learned to all staff. Division staff has clear lines of communication to convey ES&H issues to Lab and Division management, including evidence of clear policy for all staff to communicate safety concerns. Examples of appropriate communication/policy include: • Annual all-hands division meeting • Research procedures and protocols include safety notes, PPE requirements • Division-wide emails • Active Division Safety Committee • Group safety meetings • Division ES&H web site • Roles and responsibilities detailed in ISM plan	**R2.** The Engineering Division utilizes a number of tools to facilitate safety communication including: • The Division's news bulletins (Significant Events report) http://engineering.lbl.gov/significantevents/serindex.asp • The Division ES&H web site http://engineering.lbl.gov/esh/esh.asp that includes the ISM plan (with identified roles and responsibilities), ES&H committee minutes, safety training reports, safety resources and etc. • Bi-weekly division managers meetings where safety is always discussed. • Division ES&H Committee/Accident Review Board meetings • Department / group safety meetings • Shop / unit safety meetings • Engineering ES&H performance indicator postings at buildings 25, 46A, 50A, 62, 70A & 77 complexes

CRITERIA	EXPECTATION	RESPONSE
IDENTIFY HAZARDS		
C3. Line management systematically evaluates hazards to mitigate risk posed by work in their area.	**E3.** Workspaces are inspected and evaluated on a regular basis**.**	**R3.** The Engineering Division inspects all (100%) of its workspaces regularly. The Division Self-Assessment Team conducts formal inspections on an annual basis. Informal walkthroughs by the division director, department heads, group leaders and supervisors occur on an occasional basis. Information on the division's self assessment activities can be readily found via the web at http://engineering.lbl.gov/esh/teammembers.htm and at http://engineering.lbl.gov/esh/documents/SA%20Schedule.pdf
C4. Line management evaluates work (new and modifications) to identify hazards before work is performed and to establish authorization for performing work safely.	**E4.** Divisions have a process to identify, analyze, and categorize hazards associated with work. Examples of hazard inventory include: • HEAR database • project safety review • workspace safety review	**R4.** Prior to commencement of any new projects or continuation of existing projects, principal investigators, project managers, and supervisors assess the ES&H impact(s) of the activity. During PY2003 the Division continued to emphasize the evaluation of all technical shop/laboratory environments using the following references and resources: • Appendices A through K of Chapter 6, PUB-3000, and other user documentation required by PUB-3000 (AHD) • Hazards, Equipment, Authorizations and Review (HEAR) System • Electrical and Mechanical committees safety reviews • Subject experts reviews (i.e. Laser Safety, Radiation Safety, and etc.) The Hazards, Equipment and Authorizations Review (HEAR) System is utilized in the Division for its space. During this performance year, there has been significant movement and loss of personnel and respective changes in the movement of associated hazards and the curtailment of others. Updating the hazards inventory information for all Engineering space is ongoing.

CRITERIA	EXPECTATION	RESPONSE
CONTROL HAZARDS		
C5. Engineering controls tailored to the hazards have been implemented.	**E5.** Divisions ensure engineering and other safety controls are in place and maintained. Examples include, but are not limited to: • guards • fume hoods • interlocks • personal protective equipment • gas monitors	**R5.** Required guarding and interlocks are installed and maintained. Requirements of personal protective equipment use are posted. Supplemental equipment (hearing protection, eye protection, head protection, hand protection, and etc. are readily available. EH&S Division Industrial Hygiene (IH) personnel certify/check fume hoods, air ventilation systems, bio-cabinets, and glove boxes as required. Monitors (toxic and flammable gas, stack emission, ventilators, oxygen deficiency, and etc.) are being calibrated and serviced per the current EH&S schedule. These items are routinely inspected during the Self-Assessment to verify updated inspection tags/stickers.
C6. Administrative controls tailored to the hazards have been implemented.	**E6.** Divisions ensure administrative safety controls are in place and maintained. Examples of administrative controls of self authorizing work include, but are not limited to: • work procedures • project safety reviews • assurance letters	**R6.** All Engineering Division authorizations (AHD's, SSA's, RWA's) are reviewed at least annually or earlier when there are new hazards or changes to the work. This year the division has deactivated a significant number of its formal authorizations. Two active RWA's are held jointly with AFRD and ALS respectively where Engineering Division principal investigators hold primary responsibility for matrixed project work and conducting the same in a safe manner. One RWP is in place to identify an Engineering staff person who is identified as the lead person in staging the clean up, the control and release of items from an accelerator facility. Working copies of formal authorizations are kept at the site location and the master copies are retained with the division safety coordinator. Self Authorizations for Engineering Projects are evaluated using the HEAR system.

CRITERIA	EXPECTATION	RESPONSE
	CONTROL HAZARDS continued	
C7. Ergonomic conditions and practices are reviewed.	**E7.** Divisions ensure that ergonomic issues are effectively addressed for work processes and staff workstations.	**R7.** Engineering ensures that ergonomic issues are effectively addressed for its staff as well as support staff matrixed to its division. Observations and reviews are made of ergonomic work conditions with the occupants as we conduct our Division self-assessment walkthroughs of our space. New computer workstation users (4 hours + per day), by virtue of the JHQ are required to complete the ergonomics course (EHS0060) and recommended to request an ergonomics evaluation (EHS0068). With some new personal and the greater number staff and support staff physical location moves taking place this year, a fair number of ergonomic evaluations were conducted as a proactive measure to help prevent or reduce ergonomic-related injuries. Consequently the Engineering Division has replaced, modified and supplemented ergonomic setups to correct identified deficiencies. The newly instituted online request for EH&S Ergonomic Evaluation and the implementation of the immediate feedback evaluation questionnaire has been well received. MoveSmart (EHS0062) and MoveSmart refresher courses continue to be follow-up recommendations to some accident investigations as well as being promoted when the courses become available.

CRITERIA	EXPECTATION	RESPONSE
PERFORM WORK		
C8. Work is consistently performed within authorization.	**E8.** Work is performed within the ES&H conditions and requirements specified by Lab policies and procedures.	**R8.** Engineering has three (3) active AHD's that are current and up to date. The UHV Cleaning Facility in building 77, the TV Holography Laser System in building 77 and the Photo Fabrication Facility in building 25A. The UHV Cleaning Facility and the Photo Fabrication Facility are also permitted through the East Bay Municipal Utility District for industrial discharge to the sewer system. Engineering achieved: • 93% Satellite Accumulation Area (SAA) compliance • 100% compliance QA waste sampling • 0 (zero) NCAR's during PY2003 • 0 (zero) ORPS during PY2003. [Last ORPS was July 1998] Injuries and accidents for this measurement period included eleven (11) DOE recordables. Lost Work Cases (LWC) for the division totaled five (5).

CRITERIA	EXPECTATION	RESPONSE
	PERFORM WORK	**continued**
C9. Work is conducted in manner that protects the worker, the public and the environment. Line management ensures that staff possesses the proficiency and knowledge commensurate with conducting their assigned work safely.	**E9.** Staff is proficient in performing work safely.	**R9.** Engineering's JHQ completion rate is 100%. Based on JHQ's or training profiles, % completion rate for required courses is 93%. Authorized users have also completed required training as identified in Engineering Division formal authorizations.
C10. Waste minimization opportunities are sought through a review of division waste streams	**E10.** Divisions review at least one research or operations process. Reviews are documented and if possible, waste reduction strategies implemented.	**R10.** Engineering reviewed and documented the status of last years waste minimization strategies as well as to study and review one new waste minimization opportunity for a new Engineering capability/process. • Review of strategy #1 from last year to convert the building 77 waste treatment unit to closed-loop configuration to not discharge down the sewer reaping non-discharge operation, more environmental sound, less water usage, and etc. did not receive funding support but this opportunity is still being pursued. • Review of strategy #2 from last year to study machining coolants with greater longevity, reaping less frequency of procurement, handling, processing and disposal did not not yield acceptable results. The pursuit of this opportunity is being discontinued. • Review of strategy #3 from last year to evaluate the continued success of the reduction of disposable paper oil absorbent and wiping products shows sustained results. • Review of new strategy #1 for this year is to insure waste minimization controls on the new water jet cutting machine in building 77. With appropriate process controls the waste water is eligible for discharge down the storm sewer system. With the similar appropriate process controls the waste abrasive garnet and the waste from materials cut can be disposed as non hazardous waste.

CRITERIA	EXPECTATION	RESPONSE
FEEDBACK AND IMPROVEMENT		
C11. Line management participates in the safety program.	**E11.** Managers and staff are regularly involved in ES&H feedback and improvement activities.	**R11.** The Division Director walks most of the Engineering space and encourages the managers to do the same. Department heads, senior managers, PI's and supervisors are routinely out in the field; reviewing work, work activities and general safety. The inclusion of department heads during accident investigations of their staff is an opportunity for them, the affected employee and the supervisor to engage in feedback and improvement opportunities. The continuing Accident Review Board process has increased the awareness of staff and managers to their safety responsibilities and follow up actions. Opportunities for feedback are encouraged during these sessions. Some form of safety meeting takes place with all work units where lessons learned are shared and safety discussions often occur.
C12. ES&H deficiencies are detected and corrective action planning and ensures that plans are effectively executed.	**E12.** ES&H deficiencies identified from workspace inspections, self-assessment activities, and external appraisals are corrected in a timely manner. A downward trend of Level 1 and 2 LCATS repeat deficiencies is established.	**R12.** 100% of Division workspace was inspected with the findings entered into the Laboratory Corrective Action Tracking System (LCATS). No level 1 or level 2 deficiencies were identified. The completion rate on level 3 deficiencies was 82.4 %. All findings are distributed to individuals determined responsible for the space or operation as well as automatic system reminders and personal follow-up by the division safety coordinator. During the performance year, Engineering experienced lost of self assessment team members, lost of building responsible personnel and a key person who focused their time to insure accurate data entry and pursue the timely completion of corrective actions. Opportunities for improvement include better program management, scheduling, data accuracy, input and monitoring of the self assessment process to insure more timely correction of findings and deficiencies.

CRITERIA	EXPECTATION	RESPONSE
FEEDBACK AND IMPROVEMENT continued		
C13. An injury and accident follow-up process exists.	**E13.** Division performs thorough review of all staff injuries and accidents, including analysis of conditions that led to injury and implementation of corrective actions.	**R13.** The division director and safety committee (department heads) actively engage in reviewing ES&H data and reports, such as injury and accident rates, occurrence reports, safety performance results, JHQ completions, required safety training and lessons learned. • To mitigate hazards and improve the state of ES&H, the division reviews every accident/injury (first aids as well as recordables). The mechanism is the Engineering Division's accident review board. This forum allows us to fully discover and appropriately correct all deficiencies effectively. • Lessons learned are distributed, as they are applicable to work groups. The Division Safety Committee meeting /Accident Review Board minutes are posted on the Engineering Division ES&H location at http://engineering.lbl.gov/esh/esh.asp Meeting business, recommendations and action items are noted as part of the continuous improvement process to reduce accidents and injuries.

III. PY2004 Self-Assessment Plan

- With the information and awareness gained from the division's Accident Review Board, continue to focus on mitigating the accident injury causes
- Improve Self-Assessment Program LCATS accuracy, corrections of findings/deficiencies to be completed in a more timely manner.
- Continue conducting ergonomic evaluations for computer workstation users.
- Continue line managers ES&H walk-arounds.
- JHQ's and ES&H training completions will be maintained above the 90% level.
- Continue to complete having JHQ review dates be no older than 12 months for all staff.
- Continue monitoring and looking for waste minimization opportunities.
- Continue soliciting safety feedback and improvement.