

August 6, 2010

Mr. Scott Mallette, Acting Site Manager
Thomas Jefferson Site Office
12000 Jefferson Avenue, Suite 14
Newport News, Virginia 23606

Dear Mr. Mallette:

Subject: Annual Integrated Safety Management (ISM) Expectations and Declaration

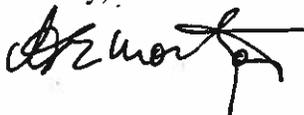
Section I.100 (e) of the contract between DOE and Jefferson Science Associates for the operations of Thomas Jefferson National Accelerator Facility (TJNAF) requires an annual effectiveness review of TJNAF's Integrated Safety Management System (ISMS). The review is attached for your information. The review was based upon the numerous assessments conducted throughout the past 12 months.

Based upon our past and continued success in meeting the safety and health measures established in the PEMP, the FY2009 ES&H score JSA received from you, and the results of this effectiveness review, we have concluded that the TJNAF ISM system is effective and no changes to the TJNAF ISM Program Description are needed at this time.

We continue to monitor and measure our ISM implementation through a variety of means including PEMP measures, issues management, and work observation tracking and trending. JLab remains committed to ISM implementation and in FY11 we expect to:

- o complete our implementation of the actions in response to the June 2008 DOE-HSS review;
- o continue reinforcement of ISM principles and core functions with our employees and management; and
- o continued monitoring of the performance of our construction safety program.

Sincerely,



Hugh Montgomery
JSA President and Laboratory Director

Enclosures:

(A) Jefferson Laboratory 2010 Integrated Safety Management System Effectiveness Review
(MSA-2010-15)

cc w/ enclosure:

Michael Dallas
Mary Logue ✓

 <small>Thomas Jefferson National Accelerator Facility</small>	TITLE:	MANAGEMENT SELF-ASSESSMENT REPORT FORM	
	ASSESSMENT #	MSA-2010-15	Page 1 of 2
ASSESSMENT TITLE	FY 10 ISMS Effectiveness Review		DATE: 7/29/2010

I. Purpose & Scope:

The purpose of the assessment was to examine the effectiveness of Jefferson Lab's Integrated Safety Management System (ISMS). This was accomplished by reviewing all available data streams (Notable Events, Assessment Results, Safety Concerns, training database, Corrective Action Tracking System (CATS), Safety Observation database, Safety Warden database, etc.) looking for trends that point to any weaknesses in the ISMS.

II. Summary of Assessment:

Members of the ESH&Q management team reviewed all available data streams (Notable Events, Assessment Results, Safety Concerns, training database, Corrective Action Tracking System (CATS), Safety Observation database, Safety Warden database, etc.) looking for trends that point to any weaknesses in the ISMS.

III. Results:

The Integrated Safety Management System (ISMS) including the Environmental Management System is well in hand and working effectively. Since the Integrated Safety Management System (ISMS) incorporates feedback and continuous improvement, opportunities for improvement are continuously being evaluated and adjustments made to various elements of the ESH program. No substantive changes to the system are required. Five Opportunities for Improvement (OFIs) have been identified and will be addressed through our issues management process.

IV. Effectiveness Evaluation:

Jefferson Lab's ISMS is operating effectively.

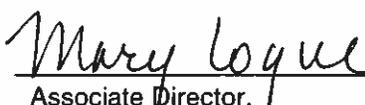
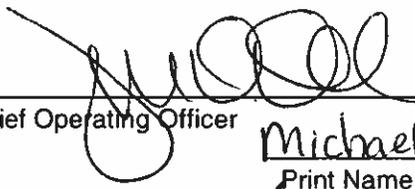
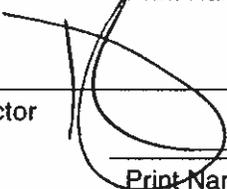
Signatures:

Performed by: Mary Logue Date: 8/4/10
Lead Assessor _____
Print Name

Reviewed by: N/A Date: _____

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Jefferson Lab <small>Thomas Jefferson National Accelerator Facility</small>	TITLE:	MANAGEMENT SELF-ASSESSMENT REPORT FORM	
	ASSESSMENT #	MSA-2010-15	Page 2 of 2
ASSESSMENT TITLE	FY 10 ISMS Effectiveness Review		DATE: 7/29/2010

Reviewed by:	Division Associate Director/Manager		Print Name	Date: 8-5-10
	Manager, QA/CI		SJ SMITH	
Reviewed by:			Print Name	Date: 8/5/10
	Associate Director, ESH&Q		Mary Logue	
Approved by:			Print Name	Date: 8/6/10
	Chief Operating Officer		Michael Dallas	
Approved by:			Print Name	Date:
	Laboratory Director			

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Executive Summary

The ES&H programs at Jefferson Lab are integrated within all the organizations and operating effectively. Everyone from the individual employee up through the Associate Directors and Division Managers, and on to the Laboratory Director, is responsible for implementing the Laboratory's program, and complying with the requirements of the Jefferson Lab ES&H Manual. Support to the divisions/sections, and oversight of the ES&H program is provided by the ESH&Q Division. The members of the Directors' Safety Council, together with the various ES&H Committees, serve as experts in the provision of additional guidance including recommendations regarding policy.

Jefferson Lab has developed a worker safety and health program that protects Jefferson Lab employees, visitors, the public, property, and the environment from injury, damage, or loss. The program is designed based upon the hazard of the operations. The program is based on the principle and core functions of integrated safety management and is in compliance with the requirements of 10 CFR 851.

The Integrated Safety Management System (ISMS) including the Environmental Management System (EMS) is fully implemented and working effectively. Since the ISMS incorporates feedback and continuous improvement, opportunities for improvement are continuously being evaluated and adjustments made to various elements of the ESH program. No substantive changes to the system are required. Five Opportunities for Improvement (OFIs) have been identified and will be addressed through our issues management process.

Note: All data accurate as of June 30, 2010

1.0 Guiding Principle #1: Line Management is Responsible for Safety

Jefferson Lab continues to emphasize line management responsibility for ES&H. The Laboratory Director emphasizes good work planning and accepting personal responsibility for working safely. He uses the weekly Priorities Meeting, which is the Director's forum for sharing information with his direct reports, as a vehicle for emphasizing line management responsibility for ESH. Occupational injuries and illnesses and other Notable Events are discussed at each meeting. The line manager is expected to understand the cause of the accident and share lessons learned with the others in the meeting. Established Key Performance Indicators are reviewed and discussed at the quarterly Director's Safety Council meeting. The Laboratory Director and the Chief Operating Officer and senior laboratory leadership conduct workplace walkthroughs/observations in order to emphasize their responsibility for providing a safe and healthful working environment.

A new Deputy Director for Science began his tenure at Jefferson Lab on May 1, 2010. Although familiar with ISM, a briefing on the Lab's ISMS is scheduled to continue his integration into Jefferson Lab's culture.

Jefferson Lab's ESH&Q policy clearly establishes that there is no activity so urgent or important that we will compromise our standards for environmental protection, safety, or health. A review of the policy does not reveal any need to revise the document.

Line management demonstrates its responsibility for safety through a number of means, including integrating ES&H risks in the budgeting process, assuring employees receives their required training, and participating in numerous reviews, meetings, critiques, etc. The principle tool used to demonstrate commitment to safety is the Jefferson Lab safety observation program. In FY10, supervisors and managers made 162 safety observations, using the opportunity to discuss safety with employees and subcontractors. Subcontracting Officer Technical Representatives (SOTRs) made 268 observations of subcontractors, using the opportunity to emphasize working safely at Jefferson lab.

In the past year, line management has reacted appropriately to challenges presented by increased construction and subcontracted activities. They have identified and sought solutions for integrating the expected increase in the contract labor force into the Jefferson lab ISMS, and developed a small business subcontractor safety evaluation process.

Based upon identified results indicating a need for improved configuration management was identified. A team was established to study the issue and provide recommendations. Laboratory line management accepted their responsibility in this area by charging the Deputy Engineering Manager with developing a path forward in response to the recommendations.

FY 2010 efforts have also focused on overhauling and fully integrating the Environmental Management Systems (EMS) into our ISMS. The Environmental Protection Committee, which is overseeing the development and implementation of EMS at Jefferson Lab, considered over 500 activities that routinely

occur at Jefferson Lab that potentially impact the environment. This analysis led to the identification of 5 Significant Aspects: electricity and water usage, hazardous material usage, water discharges, ionizing radiation, and petroleum product usage. These Significant Aspects served as input to the determination of the Lab's EMS Objectives, which informed the 22 EMS Targets. This process will be repeated annually to assure no additional aspects or impacts have arisen and assure Jefferson Lab continually improves its environmental posture.

The establishment of measurable EMS Objectives and Targets, as well as the programs needed to achieve these, is documented in the EMS Program Description. This document which was revised in December 2009 is an improved description of EMS at Jefferson Lab. The Program Description serves as a roadmap for execution of all system elements including planning, implementation and operation, issue identification, corrective action, and management review.

A review of events and assessment that occurred in FY10 indicated that there were no issues related to line management not accepting their responsibility for safety.

Conclusion: This aspect of Jefferson Lab's ISMS is operating effectively.

2.0 Guiding Principle #2: Clear Roles and Responsibilities

ES&H Manual Chapter 2210, "ES&H Responsibilities of Individual" identifies the responsibilities of the line and support organizations, as well as those of the Laboratory's safety committees and the Safety Wardens. The Associate Directors and Division Managers are well aware of their responsibility for ES&H. They in turn share their expectations with their employees through a variety of means. Examples include meeting with injured employees and supervisors to discuss causes of accidents, corrective actions, and lessons learned. In September 2009 a post-SAD meeting, hosted by the Associate Director (AS)-Physics was held with employees to discuss lessons learned from the summer shutdown period. Line management also emphasized the importance of working safely in preparation of the accelerator down during December/January. Although there was one DART injury associated with the work activity during the down, line management quickly investigated it, determined causes, and are taking action to prevent recurrences, especially in light of the long downs expected in FY11 and 12, which will involve a large number of contract employees. The Engineering Manager put a team together to map the process for bringing in temporary employees in a manner that assures they are appropriately trained in topical ES&H areas required for the work they will perform, and are appropriately prepared to work within the Jefferson Lab culture.

Jefferson Lab has a number of committees consisting of subject matter experts and line workers that advise the Director on ESH&Q topics. In FY10 the charters of all the committees were revised to clarify the role of the committee, establish terms of service, frequency of meetings, as well as a sunset clause.

The Director's Safety Council (DSC) is one of these committees whose role was clarified in FY10. The Council monitors ESH&Q performance, discusses the results of the quarterly trend analysis, contractual performance measures, significant ISMS issues, and status of corrective actions taken in response to significant events or assessments. Necessary actions, such as conducting area personal protective equipment (PPE) assessments are identified, tracked in Jefferson Lab's Corrective Action Tracking System (CATS), and monitored by the DSC.

Jefferson Lab relies on its Safety Wardens across the Laboratory to support the ISMS. Safety Wardens are assigned to specific areas to assist workers and to facilitate resolution of safety issues. The program also provides for data collection to enable continuous improvement. Safety Wardens responsibilities are detailed in ES&H Manual Chapter 2500, "Safety Warden Program". Safety Wardens perform a number of workplace inspections to assure safety systems such as eye wash and shower stations and fire extinguishers are working properly. In FY2010, 684 inspections were conducted. The data collected is entered into the Safety Warden database, which is integrated into the quarterly trend analysis.

When issues arise that point to a lack of clarity of roles and responsibilities, senior management has provided leadership to determine a solution. Examples include:

- Responding to the recommendations of a High Performance Work Team, the roles and responsibilities were clarified for SOTRs and their training was updated in FY10.

- Ownership of the beam dumps and machine protection systems (ionization chambers) is being addressed through the creation of a performance integration position.
- The move from the Test Lab to the new addition, which is slated to begin construction 4th quarter FY10 with one individual appointed to lead this endeavor.

The Radiation Control (RadCon) Assessment performed by DOE in February 2010 pointed to a number of concerns regarding radiological postings. As a result, one individual was appointed to oversee quality assurance within the RadCon organization. Similarly a Joint Transportation Assessment conducted in April 2010 suggested that one individual clearly assigned responsibility for transportation management would be of benefit of the lab. These are viewed as improvement actions and not as a trend pointing lack of clarity of roles and responsibilities.

Conclusion: This aspect of Jefferson Lab's ISMS is operating effectively.

3.0 Guiding Principle #3: Competence Commensurate with Responsibilities

Competence commensurate with responsibilities is assured through a number of processes. To begin with, minimum competence is identified in position descriptions. Additional training is identified and provided as necessary. For example, Operational Safety Procedures (OSPs), ES&H Manual Chapters, and other operational control documents may require specific training prior to work initiation.

To assure all employees receive training commensurate with the job responsibilities, Jefferson Lab has developed an extensive web-based ES&H training program. In FY 2010, Jefferson Lab launched a web-based tool entitled "Employee Job Task Analysis (EJTA)". The EJTA prompts the employee and supervisor to identify the hazards in which each employee may be exposed and/or specific job assignments (safety warden, SOTR, etc.). Once the supervisor has completed this assessment, a Skills Requirement List (SRL) is developed. This not only tells the supervisor and employee what training is required, but also allows for scheduling of training or a link to complete the training on-line. At the end of the third quarter FY2010, the percentage of employees that had completed an EJTA was 97.8%. The completion rate for ES&H training for employees was 88%. As the EJTA is a new process, it was expected that new training requirements would be identified, which could account for current completion rate. Additionally classes such as Experimental Hall or Accelerator Tunnel training is only available during times when the accelerator is not running; which limits the training to "just-in-time". Confirming the accuracy of that data will be an area of emphasis in FY2011.

Examples of activities occurring in FY10 which reflect competence commensurate with responsibilities include:

- Training is provided to give managers and supervisors the tools they need to implement this responsibility. Safety Observation Training includes the DuPont STOP Class, as well as "felt leadership" where participants examine and evaluate their roles in ES&H leadership, contractor ES&H, investigating incidents, and observing and encouraging employees to work safely. To date over 100 current managers and supervisors have received this training. In FY2010, this training was revised and new supervisors and selected employees are being trained. Revised training began in the Engineering Division in June 2010 and will continue with the rest of the laboratory through FY 2011. A refresher course for those already trained is planned for development in FY11 as well.
- Jefferson Lab's work planning process was developed by employees in FY2008. In FY2010, the EH&S Manual Chapters for work planning, assigning and mitigating risk and stopping work (3210, "Work Planning, Control, and Authorization Process", 3310, "Operational Safety Procedure Program", and -3330, "Stop Work and Re-Start for Safety Program") were revised to reflect this process, as well as lessons learned over the past 2 years of implementation. Training is being tailored for each organization. Training on these changes began in June 2010 with FEL leading the way. Accelerator Division departments are to receive the training in July 2010; with Physics Division to follow in August 2010.

- In an effort to improve the investigation of Notable Events, orientation on Jefferson Lab's process was conducted in June 2010. 37 employees, including Division Safety Officers, ES&H Liaisons, and other key individuals at the lab received this training. In addition, 15 employees were trained in the TapRoot™ Causal Analysis technique in June 2010. Since that time, these trained individuals have been involved with analyzing a number of events.
- SOTR training, which is required for employees who will be overseeing subcontractor activities, was revised in FY2010. To date, 47 current SOTRs have received training in topics such as contract requirements, monitoring of subcontractors, and ESH&Q responsibilities. Additionally, a monthly meeting is held with the SOTRs overseeing construction, led by the FM&L Manager to provide continuing education in ES&H areas.
- Similarly Safety Wardens are provided initial training and on-going education on ES&H hazards and changes in requirements and procedures. Safety Wardens meet quarterly to discuss issues. A portion of those meetings are devoted to continuing education. Topics covered in FY10 included ladder inspections, nonconforming material, suspect counterfeit parts, and PPE.
- Jefferson Lab has reached out to its emergency responders to assure that they are prepared to respond to an incident at Jefferson Lab. Orientation/Tour of the accelerator Tunnel for the Newport News Fire Department was provided January 19, 20, and 21, 2010.

As part of the assessment process, Jefferson lab has examined whether the ES&H training provided was effective. Most of the assessments (Industrial Hygiene Peer Review, DOE-HSS C-1 Effectiveness Review, and DOE-HSS D-3 Effectiveness Review) did not identify any training concerns. However, the Accelerator Safety assessment did identify a concern regarding the effectiveness of some of the training selected employees were provided. In FY11 this aspect of ES&H training will be evaluated to determine if this is a trend.

As part of this review, the ISMS and EMS training modules were reviewed. In FY11 they will be merged into SAF100 so as to provide an updated, integrated training module.

Conclusion: This aspect of Jefferson Lab's ISMS is operating effectively. There are three Opportunities for Improvement.

2010-ISMS-OFI-1: Investigate the causes for overdue ES&H training and determine path forward.

2010-ISMS-OFI-2: Assess the effectiveness of the ES&H training provided to employees and identify any areas for improvement.

2010-ISMS-OFI-3: Review/revise as appropriate SAF100 to integrate the separate ISMS and EMS training modules.

4.0 Guiding Principle #4: Balanced Priorities

ISMS is fully supported at Jefferson Lab. The Annual Work Planning (AWP) process defines the work to be done, and necessary resources are allocated. The funding levels are determined by the Directorate based upon identified needs. AD/Division Managers (DMs) are provided a budget with which they are expected to complete their assigned work safely. Funding is available to address ES&H issues at all levels of the organization. The Laboratory Director and the AD-ESH&Q retain a contingency fund, to assure that unplanned, but necessary ES&H requirements are addressed and executed promptly.

A number of examples exists which demonstrate how laboratory management made changes to address unbalanced priorities.

- The 12 GeV Upgrade Project and FM&L recognized the need for additional field-level ES&H support for the construction activities that took place in FY10. Additional staff was hired and trained (2 inspectors and a DSO within FM&L, and 1 additional inspector planned within 12 GeV).
- The Engineering Manager hired a deputy whose first assignments are to lead the Configuration Control improvement efforts and to create a Conduct of Engineering Manual for the Engineering Division.
- The AD-ESH&Q assigned liaisons to provide support to the divisions as they implement ISMS. This required a reprioritization of work assignments to assure the appropriate level of support is provided.
- The AD-ESH&Q increased the number of hours/week for the Site Occupational Medicine Director (SOMD) by 20%, to assure that hazard-based occupational medicine services are provided to the Scientific Users community and identified for the subcontractors working on-site, and injury-case management is provided for both Users and subcontractors.

A review of events and assessments that occurred in FY10 indicated that there were no issues related to the priority placed upon working safely.

Conclusion: This aspect of Jefferson Lab's ISMS is operating effectively.

5.0 Guiding Principle #5: Identification of Safety Standards and Requirements

Core Function #1: Define the Scope of the Work

Core Function #2: Analyze the Hazards

The ES&H standards and requirements JSA follows are found in the contract between DOE and JSA. To assure appropriate flow down and application by employees, ES&H Manual Chapter 2410, "Hazard Issues and Contractual Commitments" identifies the hazards encountered in the work at Jefferson Lab, along with the laws, regulations, and DOE Orders or directives that are in the contract to mitigate the hazard. The subject matter experts, along with relevant ES&H Manual Chapters and Appendices are identified as well. The hazard list and accompanying information is reviewed annually, and updated as appropriate. The list was last reviewed in June 2010. A number of minor changes were made to update references, but no new hazards were added to the list. One potential improvement being explored is to tie this chapter to the automated work lists used to plan work.

There are over 80 ES&H Manual chapters with associated technical appendices. To assure the best use of available resources, responsibility for managing the ES&H Manual was reassigned to the Environmental Protection Manager. The EP Manager worked with the ES&H Manual Editor and developed a priority ranking scheme, similar to the risk code assignments in ES&H Manual Chapter 3210. Each chapter was categorized as "high", "medium", "low", and "extra low" priority. Six chapters identified as "high" priority that were more than three years overdue were revised and reissued in FY10. In addition, 13 other chapters were revised and a "writers' guide" was developed for chapter authors. The content of this writers guide was heavily informed by the 2008 ES&H Communications Benchmark Study. ESH&Q resources are being used to "write" the new/revised chapters with the assigned Subject Matter Expert. This ensures consistent formatting and language usage, as well as freeing up the SMEs time to focus on the technical topic and not the actual writing.

While the ES&H Manual Chapter 2410 address the entire scope of hazards, documentation establishing the Accelerator Safety Envelope (ASE) is contained in the Facility Safety Assessment Document (FSAD). This was developed in accordance with the DOE Order 420.2b. Approval of the document was received in April 2009. A process for identifying, reporting, and dispositioning Unreviewed Safety Issues was developed and documented in May 2009. In FY10 this process was very active. Sixteen potential USIs, including potential ASE violations were identified and addressed. One ASE violation was identified, that being an accelerator tunnel sweep within full ODH Alarm coverage. The event was treated as a Notable Event; it was investigated, causes identified, and corrective actions put into place. In late FY09, it became apparent that a number of ASE violations were due to the ambiguity in the wording of some of the controls described in the ASE. A scrub of the ASE was made and a revision to the ASE is planned for completion in FY10. The FSAD will be updated by the line organization when the configuration of the accelerator or experimental areas changes as the result of improvement projects. These documents are also updated if new hazards are introduced or removed or the risk from a hazard increases/decreases beyond those previously analyzed and documented necessitating new controls. These documents are

subsequently reviewed and approved by the Associate Director for ESH&Q and Laboratory Director and, as appropriate, by DOE-TJSO. The FSAD is required to be reviewed on a 3-year cycle. A schedule with milestones has been established and placed in CATS to assure timely completion of this task in 2012.

When planning specific work tasks, the use of electronic work lists such as ATIs, FEList, and the various Hall Task Lists are used to identify the work to be performed, the hazards associated with the work, and the safety standards and requirements to work safely. A Hazard identification Worksheet must be completed, along with an assigned risk category before the task is approved. The ESH&Q Division reviews tasks that have identified ES&H issues

Examples of activities in FY10 involving the ability to define the work, analyze the hazards, and identify safety standards and requirements that occurred this year include:

- Ergonomic Evaluations – The SOMD conducts ergonomic evaluations of workstations upon request or if someone present evidence of cumulative trauma potentially due to the work environment. Twenty-four such evaluations were conducted in FY10. Corrections were made as appropriate, allowing the employee to work in a safer and more healthful environment.
- When analysis of Safety Observation data and injury trends pointed to a proportionately large number of concerns regarding Personal Protective Equipment (PPE), the DSC agreed to conduct workplace evaluations to identify areas requiring PPE. Posting proper signage and providing PPE will also take place as necessary. CATS are being used to track this issue.
- In preparation for the planned increased construction, the Division 1 Master Specification was revised to assure appropriate identification of ES&H requirements. In addition, configuration control was established to assure consistency amongst requirements for subcontractors.
- A proposed 12 GeV experiment involving the use of a tritium target was subject to a preliminary safety evaluation. Although not scheduled to run until 2016, analyzing the hazards at the initial planning stage allows for embedded, flexible, and effective identification of ES&H requirements.
- The Accelerator Division-Superconducting RadioFrequency (SRF) Institute has developed a Temporary Operating Safety Procedure (TOSP) for material handling and chemistry of large SRF cavities.
- Planning for the injector test stand to increase electron current and an additional high power supply resulted in the creation of a standard operating procedure and an OSP. They define the hazards and the standards and requirements necessary to work safely.

A review of events and assessments that occurred in FY10 indicated that there were instances where identifying the safety standards and analyzing the hazards was a contributing cause. However, there were no trends indicating a need to change Jefferson Lab's ISMS.

Conclusion: This aspect of Jefferson Lab's ISMS is operating effectively.

6.0 Guiding Principles #6 – Hazard Controls Tailored to the Work Being Performed

Core Function #3: Develop and Implement Hazard Controls

The work activities at Jefferson Lab continue to reflect effective implementation of the function of ISMS. Jefferson Lab views the work authorization process as established in ES&H Manual Chapter 3210, "Work Planning, Control, and Authorization", which incorporates the hazard analysis process, as a key work planning process, especially at the field level. Similarly, for planning experiments, ES&H Manual Chapters 3120, "CEBAF Experiment Review Process" and 3130 "FEL Experiment Review Process" identifies expectations that ES&H hazards be integrated into the planning and conduct of each experiment. All three chapters were revised in FY10 to reflect Jefferson Lab's approach to planning work, including implementing tailored hazard controls.

Employees continue to plan their work and identify the hazards. Reduction of radiation exposures and material substitutions are planned and executed as well.

Examples of activities in which appropriate controls have been developed and implemented include:

- Although already posted as requiring hearing protection, when upgrades were made in the CHL Compressor Room, the ESH&Q Industrial Hygiene staff re-analyzed the presence of the noise hazard. Dual hearing protection was enforced during the time the condition existed.
- When an excavation struck a previously unidentified fiber-optic cable, the FM&L Manager halted excavations until such time that the process was revised to allow review from knowledgeable system owners. This will help address a long-standing issue of unreliable "as-built" drawings and technology limitations on utility locating equipment.
- When the opportunity arose to run the APEX experiment in Hall A in June 2010, the Jefferson Lab Radiation Review Panel quickly assembled to discuss the planned work with key people from physics, accelerator, and RadCon. The committee came to consensus approving the plan both from an ALARA point of view and from a beam dump safety point of view. In addition, the scope of the discussions extended beyond the radiological safety issues; all concerns were addressed while the planners and reviewers were together.
- The Jefferson Lab Open House was a prime example of planning work and tailoring controls to the hazards of the work. Multiple planning meetings were conducted. Hazards were identified that could affect the public and the volunteers. The amount of construction on site posed a challenge, but walking and bus routes were identified, including shaded rest stops. A walking tour of the accelerator tunnel was set up, along with the ability for the public to visit Hall C from a vantage point that provided for their safety.
- With the increase in construction activities, there has been a great deal of focus on Subcontractor Activity Hazard Analyses. As our subcontractors have become more familiar with Jefferson Lab expectations, the quality of their submittals has improved.

A review of events and assessment that occurred in FY10 indicated that there were no issues related to hazard controls not being tailored to the work being performed.

Conclusion: This aspect of Jefferson Lab's ISMS is operating effectively.

7.0 Guiding Principle #7 Operations Authorization

Core Function #4: Perform Work within Controls

To assure that certain hazardous work is well planned and adequate preparations are made before it begins, the Lab has a system of operations (work) authorizations, including Operational Safety Procedures as required in ES&H Manual Chapter 3310, as well as ES&H Manual Chapters 3120 and 3130, used by Physics and FEL to authorize the start of experiments. All of these chapters were reviewed and revised in FY2010. Because of the magnitude of changes in ES&H Manual Chapters 3210, 3310, and 3330, training was developed to walk employees through the changes and the work authorization/hazard analysis process. The training is tailored to each organization, using examples of the work performed by the employees. See Section 5.0 for a more detailed discussion.

Jefferson Lab's work planning and execution processes and tools governing activities of Jefferson Lab's employees, subcontractors, and the user community (ATLis, TATLs, FEList, Experiment Review Process, subcontract specifications) all require appropriate hazard prevention and mitigation measures be designed into all work activities. Work is approved by authorized personnel and is reviewed by ESH&Q.

For Construction subcontractor work activities, work does not begin until the subcontractor receives a Notice To Proceed. This does not occur until the subcontractor's safety plan has been submitted, reviewed, and accepted by line management (with input from ESH&Q) and an initial AHA is submitted and accepted by the SOTR.

Jefferson Lab monitors whether work is performed within control through its Safety Observation Program. In FY10 to date, 1,195 observations of employees, users, and subcontractors' work activities have been conducted. In 980 (82%) instances, work was being performed safely. This data is reviewed quarterly with the DSC to identify further action to be taken. For example, number of unsafe observations involving PPE coupled with injury data resulted in a site-wide PPE assessment. The unsafe acts include:

- Wearing appropriate PPE: 59 instances (5%)
- Body Position: 52 instances (4%)
- Tools & Equipment: 41 instances (3%)
- Procedures: 30 instances (3%)
- Reactions: 21 instances (2%)
- Orderliness: 12 instances (1%)

One improvement to the Safety Observation database in FY10 was allowing the identification of observation of subcontractors. To date in FY10, 268 of the 1,195 observations involved subcontractor work activities. In 191 (71%) instances, work was being performed safely. In 26 instances (10%), PPE was not being worn (safety glasses, hard hats).

There were 3 Notable Events that occurred in FY10 that involved employees not working within controls. In one case, the subcontractor employee violated the Activity Hazard Analysis and used a backhoe, rather than hand dig around a temporary 480-volt electrical line. In another case, subcontractor employees exited through an emergency exit in the tunnel while the tunnel was in Controlled Access. This was not a deliberate violation, but a lapse in attentiveness on the part of the employees. The third event involved an unplanned discharge of water to the storm water channel. A wrong fitting had been placed on the hose. All three events involved subcontractor employees. There is not sufficient data to identify a trend; however, it does confirm the need for constant vigilance over subcontractor employees.

Conclusion: This aspect of Jefferson Lab's ISMS is operating effectively.

8.0 Core Function #5: Provide Feedback and Continuous Improvement

The ESH&Q Division has identified several Key Performance indicators that it monitors to determine the effectiveness of the lab's ISMS. These indicators are reviewed monthly by the AD-ESH&Q and her direct reports, and rolled up quarterly as part of the trend analysis performed for the DSC. Taken as a whole, these indicators do not reveal any needed changes of the Jefferson lab ISMS. Indicators include:

- Injuries Reported
- Injury Rates
- Notable Events
- Potential USIs
- Work Observations
- Assessments
- Construction Safety
- Category 3 & 4 CATS Issues
- CATS Completion Rates
- EMS activity
- Lessons Learned Usage
- Continuous Improvement Activities
- Emergency Management Critiques

The Laboratory measures the effectiveness of its ISMS through multi-level assessments and measurement activities including line self-assessments and feedback mechanisms, independent ESH&Q Division and ESH committee oversight, partnering oversight by the DOE, and inclusion of ES&H performance measures in the contract between JSA and DOE. The DOT, EPA, and Virginia DEQ provide external regulatory oversight for transportation and environmental aspects of Jefferson Lab.

To date in FY10, Jefferson Lab conducted 22 ESH&Q assessments. These assessments were a variety of management self-assessments (MSAs), independent assessments (IA), joint Jefferson Lab/TJSO assessments, and less formal reviews. Teams were composed of ESH&Q Division professionals, line technical personnel, outside subject matter experts, and the ES&H personnel from the TJSO. These assessments provided formal reports, on a range of ES&H activities and performance. Findings from these assessments and findings from all other sources are tracked to closure in a computer database, CATS. The assessments and reports can be found at http://www.ilab.org/div_dept/dir_off/oa/assess.html. Viewed as a whole, the assessments did not identify any programmatic weaknesses of Jefferson lab's ISMS.

There were 12 Noteworthy Practices, 8 Findings, and 83 Opportunities for Improvement that arose from these assessments. Analysis of the assessment results do not indicate any negative trends that need to be addressed. There was however a significant finding with respect to the Lab's issues management program. An Effectiveness Review to determine whether the actions taken in response to the 2008 DOE-HSS Finding effectively addressed the identified causes was conducted March 2010. Although recognizing improvements in the Laboratory's issues management program, the reviewers found that they were not yet fully effective in addressing the causes of the original finding. In response, a team was put together to determine why the actions were not completely effective, determine further actions, and to disposition the Finding and Opportunities for Improvement. A corrective action plan was developed and progress is being monitored by the AD-ESH&Q.

When reviewing the assessment reports, it appears that a number of Jefferson Lab internal MSAs took a long time to finalize the report (2-3 months). There is no timeline established in the MSA procedure, however receiving the information in a timely fashion would be beneficial to the ISMS. This will be reviewed in FY11.

One area of improvement this year has been the development of a risk-based assessment scheduling process. This will help assure that the assessment resources are devoted to the areas of the greatest risk to the Laboratory. Those ESH&Q topics identified as "High" risk are placed on a 3-year assessment cycle. "High" risk topics that received some form of assessment this year include: chemical safety, electrical safety, material handling, and pressure systems. The list was reviewed again in June 2010 in preparation of developing the FY2011 assessment schedule.

Another avenue of feedback and improvement is the Safety Observation process discussed in Sections 1.0 and 7.0. Based upon these results, there is no needed change to Jefferson Lab's ISMS.

Events that occur at Jefferson Lab present an opportunity to provide feedback to the line management and system owners regarding ISMS. To date in FY10, there were 14 events that met the criteria of a Notable Event and were subjected to a formal investigation and causal analysis, with a report posted. In each instance one of the ISMS guiding principles or core functions were identified as a means to categorize and trend the events. Of the 14 events: 3 were associated with work within controls, and 2 were associated with identifying standards. This is not sufficient data to determine any trends; nor was there anything indicating a need for change to the Jefferson lab ISMS.

Other activities performed in the past twelve months that allow the Laboratory to measure the "health" of the program is the trending that is performed on a quarterly basis to determine if any patterns exist. This analysis exercise collates the data found in CATS, Notable Events, injuries report to the Medical Department, Safety Observations, and Safety Warden Inspections. This data is shared with the Director's Safety Council, who in turn identify and monitor corrective actions. The data is then shared with the rest of the Laboratory. None of the results of these analyses indicated a need to change Jefferson lab's ISMS. Examples of trends identified and acted upon include:

- Identifying the need for and conducting area PPE assessments.
- Injuries causes (situational awareness and work planning) which resulted in a toolbox meeting discussion paper.
- Utility strikes which resulted in the revision of the dig permitting process
- When analysis of injury trends pointed to a proportionately large number of hand injuries, the Directors' Safety Council (DSC) agreed to raise awareness within their organizations. The Engineering Manager requested that the SOMD conduct hand safety training for his staff. In preparation of that training, the SOMD evaluated the specific work areas, analyzed the hazards, and tailored the training accordingly.

Jefferson lab has a very active Lessons Learned program. These are collected internally through our various feedback mechanisms, as well as lessons learned and best practices collected from numerous sources outside the Lab. In FY10 30 lessons learned were generated, including 7 entered into the DOE Lessons Learned database. Based upon those entries, there is no indicated need to change Jefferson Lab's ISMS.

Another form of feedback is the Employees Concern program as outlined in ES&H Manual Chapter 2310, "ES&H Concern Resolution". Employees may raise concerns to their supervisors, Division Safety Officer, ESH&Q, or the Directorate. They can also use the Ethicspoint website, which is managed by Human Resources. This allows for anonymous reporting of concerns. In FY10, there were 2 concerns reported through Ethicspoint. One concerned a question regarding construction safety that was satisfactorily answered by the FM&L Manager. The second concerned the results of the pressure vessel inspections. In this case, the concern was satisfactorily answered by the AD-ESH&Q, with input from the FM&L Manager.

Annual personnel appraisals are tied to ES&H performance and work activities. There is a specific section of the performance evaluation form that allows for discussion of the employee's ES&H commitment and performance.

JSA has established a Risk Committee of the Board of Directors. This committee meets with representatives of the Directorate and the AD-ESH&Q to review current ES&H performance. The results of subcommittee deliberations are reported to the full assembly of the Board. In FY10 a new chair was appointed. He toured the site in December 2009, speaking to 12 GeV staff regarding the lab's ES&H program. He has monitored the Lab's ISMS program and provides input and support through the ESH&Q Director of CSC-Applied Physics Division.

Jefferson Lab seeks to improve its ISMS performance through benchmarking with other entities. This activity is conducted primarily through monthly teleconferences with other DOE-SC contractor ES&H Managers, and by bringing in external peer reviewers as part of our assessment program. Although good ideas/practices from other labs/organizations have been identified, none indicate a need to change Jefferson Lab's ISMS.

A review of events and assessment that occurred in FY10 indicated that there were no issues related to feedback and improvement, although there were OFIs identified that, when implemented will improve the process.

Conclusion: This aspect of Jefferson Lab's ISMS is operating effectively.

2010-ISM-OFI-4: Closely monitor actions taken to address findings resulting from 2010 Issues Management Effectiveness Review.

2010-ISM-OFI-5: Examine the need for establishing a timeline for conducting and completing MSAs, including signatures. Consider benchmarking with other laboratories.

Appendix A

Status on 2009 ISMS Effectiveness Review Opportunities for Improvement

1. **The value of ISMS should be a constant communication stream.**

Status: See ISMS-2010-OFI-1.

2. **Presentation by QA/CI staff revealed numerous executed and planned reviews, perhaps too many.**

Status: The development of the risk-based assessment process is the first step in focusing resources on the ES&H hazards that present the highest risk to Jefferson Lab employees. The next step is to seek concurrence from TJSO on the elimination of some of the assessments required by DOE Orders for lower risk topics.

3. **Interviews with employees regarding proper incident/event reporting processes indicated confusion.**

Status: This was addressed through the Corrective Action Plan to the 2008 DOE-HSS Inspection Finding D-4. The corrective actions have been completed and an effectiveness review is scheduled for August 2010.

4. **Continued focus to attaining more consistency between the tools and methods used to plan the work, assess the potential hazards, and communicate with affected workers and organizations should occur.**

Status: ES&H Manual Chapters concerning work planning and control were revised and training is ongoing.

5. **Opportunity exists to raise awareness on typical industrial hazards (slips, trips, congestion).**

Status: This is an on-going effort using a variety of communication methods, including planning meetings, ISM posters, INSIGHT, the ES&H Website, and Safety Warden and Worker Safety Committee meetings.

6. **Given the ramp-up in construction activities, an area for attention appears to be the clarification of the ESH standards and requirements as they apply to construction subs specifically where those standards and requirements differ from normal lab procedure.**

Status: FM&L revised the Division 1 master Specifications to clarify ES&H requirements. Monthly meetings are held with the FM&L SOTRs to provide continuing education on

construction safety topics, discuss issues, trends, and lessons learned, with an aim towards promoting consistency in enforcement of requirements.

Appendix B

Response of 2009 DOE-TJSO ISMS Comments

1. Transparency of Operations and Contractor Assurance System

Response: The AD, ESH&Q and the TJSO Deputy Manager have been meeting to discuss this concern since December 2009. A vision statement was developed and a collaboration meeting held March 8th to review it with TJSO ES&H staff and the ESH&Q staff that routinely interact with TJSO. The AD, ESH&Q and the TJSO Deputy Manager have agreed to meet monthly to monitor conformance with the vision statement.

2. Material Handling Program* (Carry over from HSS assessment)

Response: All planned actions were completed as scheduled. An Effectiveness Review to determine whether the actions effectively addressed the identified causes was conducted November 2009. The actions were found to be effective. One finding was identified regarding the scope of the required triennial forklift training. The forklift training lesson plan has been modified to include a practical demonstration of operator's skills at the time of triennial retraining.

3. Accelerator Safety

a. Non-conservative determinations concerning ASE violations and USIs

Response: A process for identifying, reporting, and dispositioning Unreviewed Safety Issues was developed and documented in May 2009. In FY10 this process was very active. Sixteen potential USIs, including potential ASE violations were identified and addressed. One ASE violation was identified, that being an accelerator tunnel sweep within full ODH Alarm coverage. The event was treated as a Notable Event; it was investigated, causes identified, and corrective actions put into place. In late FY09, it became apparent that a number of ASE violations were due to the ambiguity in the wording of some of the controls described in the ASE. A scrub of the ASE was made and a revision to the ASE is planned for completion in FY10.

b. Reliability of Personnel Safety System (PSS)

Response: This has been rolled up into Jefferson Lab's Configuration Management Program, currently under development.

c. Progress on actions required from TJSO SAD-ASE approval letter

Response: An issue was created and placed into CATS for tracking. A schedule was developed to assure submittal of FSAD Revision 7 to TJSO by February 2012.

d. Verification of implementation of ASE

Response: A joint Jefferson lab/TJSO assessment was conducted in February 2010 to verify implementation of ASE. There were 0 findings, 31 Opportunities for Improvement, and 3 Noteworthy practices.

4. Management of Pressure Vessel Inspection Records

Response: All pressure vessels, including the vessels specifically identified during the TJSO walkthrough were inspected November 2009. All of the vessels have been captured on an excel spreadsheet to allow for better oversight.

5. Fire Protection

Response: Corrective actions in response to the 2008 TJSO assessment are being implemented and monitored through the PEMP process.

6. Event Investigation and Reporting *(Carry over from HSS assessment)

Response: All planned actions were completed as scheduled (See Section 3.0). An Effectiveness Review to determine whether the actions effectively addressed the identified causes is scheduled for August 2010.

7. Assessment Program* (Carry over from HSS assessment)

Response: All planned actions were completed as scheduled. An Effectiveness Review to determine whether the actions effectively addressed the identified causes is scheduled for October 2010.

8. Issues Management Program* (Carry over from HSS assessment)

Response: All planned actions were completed as scheduled. An Effectiveness Review to determine whether the actions effectively addressed the identified causes was conducted March 2010. Although recognizing improvements in the Laboratory's issues management program, the reviewers found that they were not yet fully effective in addressing the causes of the original finding. In response, a team was put together to determine why the actions were not completely effective, determine further actions, and to disposition the Finding and Opportunities for Improvement. A corrective action plan was developed and progress is being monitored by the AD-ESH&Q