Integrated Safety Management System Program Description
Revision 14
November 2014

Approval

Prepared by:
Associate Director
ESH&Q

Concurrence:
Chief Operating
Officer

Approval:
Laboratory Director
& JSA President

Mary Logue 11/8/14
Signature
Date

Signature
Date

Date

Page 1
# Integrated Safety Management System Program Description

## Revisions

<table>
<thead>
<tr>
<th>Change Number</th>
<th>Posted By</th>
<th>Date</th>
<th>Title/Description</th>
<th>Addition Replacement Deletion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rev 12</td>
<td>JJK</td>
<td>12/2009</td>
<td>Major formatting modifications</td>
<td>A, D, R</td>
</tr>
<tr>
<td>Rev 13</td>
<td></td>
<td>5/2012</td>
<td>Addition of Objectives &amp; Targets</td>
<td>A, D, R</td>
</tr>
<tr>
<td>Rev 14</td>
<td>ML</td>
<td>11/2014</td>
<td>Minor formatting modifications, reflect organizational change (FEL now part of Accelerator operations), revised ESH&amp;Q policy</td>
<td>A, D, R</td>
</tr>
</tbody>
</table>
# Table of Contents

Introduction..................................................................................................................................... 5

Section 2 - Mapping Jefferson Lab’s Operating Framework to DOE's ISMS................................. 8
   2.1 Component 1: Objective ...................................................................................................... 9
   2.2 Component 2: Guiding Principles .................................................................................... 9
   2.3 Component 3: Core Functions .......................................................................................... 11
   2.4 Component 4: ISM Mechanisms ..................................................................................... 14
   2.5 Component 5: Responsibilities for ISM ......................................................................... 14
   2.6 Component 6: Implementation of ISM ......................................................................... 14

Section 3 – Supplemental Safety Culture Elements .................................................................. 15
   3.1 Individual Attitude and Responsibility for Safety ........................................................ 15
   3.2 Operational Excellence .................................................................................................. 16
   3.3 Oversight for Performance Assurance .......................................................................... 16
   3.4 Organizational Learning for Performance Improvement ............................................ 16

Section 4 – Integration of other Jefferson Lab ESH&Q Programs with ISM ............................. 17
   4.1 Worker Safety & Health Program (WSHP) .................................................................... 18
   4.2 Radiological Protection Program (RPP) ......................................................................... 18
   4.3 Environmental Management System (EMS) .................................................................. 18
   4.4 Quality Assurance (QA) Program .................................................................................. 18

Section 5 - ISM Performance Measurement, System Description Maintenance, and Continuous Improvement ........................................................................................................ 19
   5.1 ISM Annual Safety Performance Objectives, Measures, and Commitments Process... 19
   5.2 ISM System Description Maintenance and Continuous Improvement ...................... 19

Section 6 - Conclusion ................................................................................................................. 20

Appendix A - Jefferson Lab Management Systems Comprising the ISMS Program .......... 21
# Acronyms and Abbreviations

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASE</td>
<td>Accelerator Safety Envelope</td>
</tr>
<tr>
<td>AWP</td>
<td>Annual Work Plan</td>
</tr>
<tr>
<td>CAS</td>
<td>Contractor Assurance System</td>
</tr>
<tr>
<td>CFR</td>
<td>Code of Federal Regulations</td>
</tr>
<tr>
<td>DEAR</td>
<td>Department of Energy Acquisition Regulation</td>
</tr>
<tr>
<td>DOE</td>
<td>Department of Energy</td>
</tr>
<tr>
<td>DOE O</td>
<td>Department of Energy Order</td>
</tr>
<tr>
<td>DSC</td>
<td>Director’s Safety Council</td>
</tr>
<tr>
<td>EMS</td>
<td>Environmental Management System</td>
</tr>
<tr>
<td>ES&amp;H</td>
<td>Environment, Safety and Health</td>
</tr>
<tr>
<td>ESH&amp;Q</td>
<td>Environment, Safety, Health and Quality</td>
</tr>
<tr>
<td>FSAD</td>
<td>Final Safety Assessment Document</td>
</tr>
<tr>
<td>ISM</td>
<td>Integrated Safety Management</td>
</tr>
<tr>
<td>ISMS</td>
<td>Integrated Safety Management System</td>
</tr>
<tr>
<td>JSA</td>
<td>Jefferson Science Associates</td>
</tr>
<tr>
<td>OHSAS</td>
<td>Occupational Health and Safety Assessment Series</td>
</tr>
<tr>
<td>OSP</td>
<td>Operational Safety Procedures</td>
</tr>
<tr>
<td>PEMP</td>
<td>Performance Evaluation Measurement Program</td>
</tr>
<tr>
<td>QA</td>
<td>Quality Assurance</td>
</tr>
<tr>
<td>RPP</td>
<td>Radiation Protection Program</td>
</tr>
<tr>
<td>Jefferson Lab</td>
<td>Thomas Jefferson National Accelerator Facility</td>
</tr>
<tr>
<td>TJSO</td>
<td>Thomas Jefferson Site Office</td>
</tr>
<tr>
<td>WSHP</td>
<td>Worker Safety &amp; Health Program</td>
</tr>
</tbody>
</table>
Introduction

As stated in the Thomas Jefferson National Accelerator Facility (Jefferson Lab) Environment, Safety, Health & Quality (ESH&Q) Policy, “Jefferson Lab considers no activity to be so urgent or important that we will compromise our standards for safety and health of individuals or environmental protection”. (Figure 1). This belief is translated into actions through Jefferson Lab’s Integrated Safety Management System (ISMS).

The ISMS is integrated into and is a key component of Jefferson Lab’s Contractor Assurance System (CAS). Implementation of ISMS is through the Worker Health and Safety Program (WSHP), the Radiological Protection Program (RPP), the Environmental Management System (EMS), and the Quality Assurance (QA) Program. Each of these programs is described generally in this document, and in more detail within the individual program descriptions.

This ISMS program description describes the formal, organized process to plan, perform, assess, and improve the safe and environmentally aware conduct of work as required by the Jefferson Lab operating contract with the Department of Energy (DOE) DE-AC05-06OR23177, clause I-100. This clause implements the DOE Acquisition Regulation (DEAR) Clause 970.5223-1, “Integration of Environment, Safety and Health Into Work Planning and Execution (DEC 2000)”. This program also satisfies other safety management system requirements identified in Table 1.

<table>
<thead>
<tr>
<th>Document Number</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEAR 970.5204-2</td>
<td>Laws, Regulations, and DOE Directives</td>
</tr>
<tr>
<td>DEAR 970.5223-1</td>
<td>Integration of Environment, Safety and Health into Work Planning &amp; Execution</td>
</tr>
<tr>
<td>10 CFR 851</td>
<td>Worker Safety and Health Program</td>
</tr>
<tr>
<td>10 CFR 835</td>
<td>Radiation Protection Program</td>
</tr>
<tr>
<td>H Clause</td>
<td>Contractor Assurance System</td>
</tr>
<tr>
<td>DOE O 414.1</td>
<td>Quality Assurance</td>
</tr>
<tr>
<td>DOE O 436.1</td>
<td>Departmental Sustainability</td>
</tr>
<tr>
<td>DOE O 458.1</td>
<td>Radiation Protection of the Public and the Environment</td>
</tr>
<tr>
<td>OHSAS 18001</td>
<td>Occupational Health and Safety Assessment Series</td>
</tr>
</tbody>
</table>

The ISMS Program description is reviewed annually and updated as needed when program elements or the operating environment of the laboratory change. Editorial changes will be made when necessary, and an updated copy of the document will be transmitted to the signatories. The revision will be maintained on the Jefferson Lab website.
Approval of this document by DOE Thomas Jefferson Site Office (TJSO) indicates that the DOE agrees with Jefferson Lab’s institutional methods and processes to meet the requirements of DEAR 970.5223-1. Where Jefferson Lab states that it directs, runs, controls, coordinates, supports, or otherwise participates in an activity, it is understood that the participation is in accordance with and at the level authorized by the operating contract.
Jefferson Lab is committed to conducting operations in a manner that provides our employees, users, subcontractors, vendors, and visitors safe and healthy working conditions. To this end, Jefferson Lab considers no activity to be so urgent or important that we compromise our standards for the safety and health of individuals or environmental protection.

For this policy to be effective full cooperation and collaboration of all stakeholders is paramount and comes with a personal responsibility for health and safety at work.

Jefferson Lab executes this policy by:

- Implementing a Worker Safety and Health Protection Program that ensures the safety and health of employees, users, and subcontractors by providing a place of employment that plans for and mitigates recognized hazards using a hierarchy of controls.

- Empowering Jefferson Lab employees, users, and subcontractors with the responsibility and expectation to:
  - Report concerns and/or injuries and to
  - Stop work that endangers people, environment, or property

- Integrating Environment, Safety, & Health (ES&H) Management principles in the planning and execution of all work including:
  - Defining the scope of work;
  - Analyzing the hazards to workers, public, and environment;
  - Developing and implementing hazard controls;
  - Performing work within controls and
  - Providing feedback and continuous improvement.

- Involving all levels of the organization in establishing ES&H objectives and targets.

- Complying with all applicable ES&H laws, regulations, standards, other identified requirements, and contractual commitments to the Department of Energy.

- Protecting the environment and applying sound pollution prevention and waste minimization practices.

- Integrating quality and self-assessment into activities for continuous improvement.

Figure 1 - Jefferson Lab ESH&Q Policy
Section 1 - Jefferson Lab Operating Framework

The Jefferson Lab Operating Contract establishes the expectations that Jefferson Science Associates (JSA) will provide the leadership necessary to safely conduct world class science and technological innovation in support of the research program of the DOE-Office of Science-Office of Nuclear Physics and other research programs and missions authorized by DOE.

Meeting the responsibilities and accountabilities assigned to management based on the organizational hierarchy of Jefferson Lab assures the health and safety of workers, the public, the environment, and protection and proper maintenance of research and information assets. (Current versions of organization charts at various management levels can be found on the Jefferson Lab website.) This strategy begins with the annual budget process that assures that these priorities are balanced. Line organizations, support organizations, and employees are responsible and accountable for focusing Jefferson Lab resources to safely achieve strategic goals and providing objective evidence of performance and continual improvement as work is executed.

Jefferson Lab’s approach to ISMS is to integrate key concepts and requirements into the programmatic infrastructure and then to reinforce these concepts and requirements with site personnel during the conduct of day-to-day activities until it becomes a transparent part of the operating culture. This in turn will provide a day-to-day safety, health, and environmental awareness into the working environment and provide for the continuous input to improve the conduct of work activities. This strategy involves key management systems translating the full set of relevant external requirements into policies, procedures, and plans for staff to follow to perform their work combined with consistent reinforcement by management.

Section 2 - Mapping Jefferson Lab’s Operating Framework to DOE's ISMS

Jefferson Lab’s ISMS establishes a hierarchy of components to facilitate the orderly development and implementation of safety management. The safety management system consists of six components:

1) Objective
2) Guiding principles
3) Core functions
4) Mechanisms
5) Responsibilities
6) Implementation

The mechanisms, responsibilities, and implementation components are established for all work and will vary based on the nature and hazard of the work being performed. This section discusses each component and provides roadmaps and examples of how each component is built into how work is planned and executed at Jefferson Lab.
2.1 Component 1: Objective

DEAR 970.5223-1 provides the overall objective of an Integrated Safety Management System:

“In performing work under this contract, the contractor shall perform work safely, in a manner that ensures adequate protection for employees, the public, and the environment, and shall be accountable for the safe performance of work. The contractor shall exercise a degree of care commensurate with the work and the associated hazards. The contractor shall ensure that management of environment, safety and health (ES&H) functions and activities becomes an integral but visible part of the contractor's work planning and execution processes.”

Jefferson Lab fully endorses the components of the DEAR 970.5223-1 as a sound methodology for effectively attaining integrated safety management. The goal of the Jefferson Lab ES&H program is to fully satisfy this objective.

2.2 Component 2: Guiding Principles

In order to accomplish the ISMS Objective as stated in Component 1, there are seven principles to be followed as the components of the system are designed and implemented. These guiding principles are reflected in the laboratory’s programmatic infrastructure that workers utilize in fulfilling ES&H responsibilities.

Table 2 summarizes these “Guiding Principles” and provides examples of how they are translated throughout Jefferson Lab’s policies and activities. This table is not intended to show every link between ISM Guiding Principles and our activities, only to demonstrate that the Guiding Principles are reflected in various ways.
Table 2 - Summarizes the guiding principles that guide ISMS activities and examples of how these principles are reflected in Jefferson Lab programmatic infrastructure.

<table>
<thead>
<tr>
<th>Guiding Principles</th>
<th>Example of Implementation Methods</th>
</tr>
</thead>
</table>
| (1) Line Management Is Responsible For The Protection Of Employees, The Public, And The Environment | Responsibilities are articulated in ES&H Manual Section 2210, Overarching Responsibilities to Ensure Compliance of ES&H Requirements.  
Expectations for safety program implementation are incorporated into all Line Management’s individual performance objectives.  
Objectives and targets aimed at improving the lab’s performance in the areas of safety and environment are established annually, monitored by senior management and tracked to completion. |
| (2) Clear Roles and Responsibilities                                                | Roles and responsibilities are articulated in the ES&H Manual Section 2210, Overarching Responsibilities to Ensure Compliance of ES&H Requirements.  
Roles and responsibilities for scope of work development, hazard analysis, and control implementation and work authorization are outlined in various work planning and execution tools such as the electronic work authorization protocols (ATLis, Hall lists TATLs, etc.) and the Experiment Readiness Review Process. |
| (3) Competence is Commensurate with Responsibilities                               | Minimum competence is identified in position descriptions and additional competence is determined as responsibilities are assigned.  
Job Task Analysis (JTA) identifies each individual’s training requirements, based upon the work the person will be performing, and the associated hazards.  
Individual training records are centrally located.  
Automatic reminders are provided to line management when assigned personnel’s training has elapsed.  
Operational Safety Procedures (OSPis), ES&H Manual Chapters, and other operational control documents require specific training prior to work initiation. |
| (4) Balanced Priorities                                                            | The Environment, Safety, Health and Quality (ESH&Q) and the Facilities Management & Logistics (FM&L) Divisions budget installation-wide activities based on contractual requirements, lessons learned, and industry best-practices.  
Line organizations develop an independent safety budget reflecting their activities, including maintaining the credited controls found in the Accelerator Safety Envelope (ASE).  
Annual work planning process ensures proper resources will be available.  
The lab's ES&H performance is routinely reported to senior management with authority to make funding decisions. |
| (5) Identification of Safety Standards and Requirements                             | All safety standards and requirements are identified in Contract DE-AC05-06OR23177, and clarified in the ES&H Manual and Radiation Protection Plan (RPP).  
"Flow Down" of all contractual requirements occurs during all procurement activities.  
All work planning and authorization processes include a safety requirements identification step.  
New projects, experiments and other major activities are reviewed for potential environmental impact. |
| (6) Hazard Controls Tailored to Work Being Performed                                | The Final Safety Assessment Document (FSAD) analyzes hazards and establishes safety envelopes for the CEBAF and FEL/REFLEx accelerators, and associated research. This document informs all lower level operational procedures.  
Jefferson Lab work planning and execution processes and tools governing activities of Jefferson Lab employees, subcontractors, and the user community (ATLis, TATLs, Hall lists, Experiment Readiness Review Process, subcontract specifications) all require appropriate hazard prevention and mitigation measures be designed into all work activities.  
The Environmental Management System (EMS) annual planning process includes a review of the adequacy of operational controls designed to protect the environment and assure compliance. |
| (7) Operations Authorization                                                         | Authorization documents such as the ASE and the FSAD outline conditions for safe operations of our major systems. Other activities, governed by work planning and execution mechanisms, such as ATLis, also require that hazard controls have been designed and placed prior to initiation of activities. |
2.3 Component 3: Core Functions

Jefferson Lab applies its ISMS starting at its broad mission into specific items of work conducted throughout the laboratory. Five areas of emphasis, termed “core functions,” have been developed as the building blocks of a successful ISMS. The activities described in each core function are integrated into the planning and execution of work activity that could potentially adversely affect the workers, the public, or the environment.

Individual organizations within Jefferson Lab have developed mission translation, work planning and work execution practices and tools that are tailored to their activities and structure. Despite the differences in tools and terminology, the five core functions are represented in each specific process. These are summarized in Figure 2.

CORE FUNCTION 1: DEFINE SCOPE OF WORK

Each work planning and execution tool, regardless of the implementing organization, has a well-defined process to identify the nature of the required work, the schedule, and the costs of the activities. The level of detail of the scope of work varies in relation to its complexity and potential risks. Depending upon the hazards and complexity of the work, multi-disciplined teams are used to create, or review, the scope of work documents and workers are involved in the planning processes.

CORE FUNCTION 2: ANALYZE THE HAZARDS

The second grouping of activities depicted in Figure 2 is the mechanisms used within each process to identify and categorize work-related hazards and develop an understanding of the potential for the hazard to adversely affect the health and safety of the worker, public, or the environment. This hazard analysis process can vary in complexity based on activity type, hazard type, and hazard parameters; and builds upon previous analyses conducted on tasks ranging from routine facility maintenance to accelerator and laser operations. Multi-disciplined teams are used with emphasis on identifying subject matter experts with significant Jefferson Lab experience.

CORE FUNCTION 3: DEVELOP AND IMPLEMENT HAZARD CONTROLS

During this next step of each process, parameters of the identified hazards are used to select or design engineering, administrative, and personal protective equipment controls and pollution prevention/waste minimization options to be integrated with the work activity. The type of control to be specified is tailored to the work activity and the associated hazards. In most cases, the controls are based on best practices and lessons learned gained from previous, similar activities as captured in Jefferson Lab’s ES&H Manual. Some work activities may require unique controls, which are typically documented in Operational Safety Procedures (OSPs), activity-specific safety plans, and/or delivered to workers through specific training activities. Site-wide ES&H requirements and industry standards are identified; mechanisms are put in place to satisfy the requirements; and the controls are documented in work authorization documents.
CORE FUNCTION 4: PERFORM WORK WITHIN CONTROLS

Each work process has a defined authorization protocol for concluding that Core Functions 1-3 have been satisfied, and establishes defined roles and responsibilities for authorizing work to proceed in accordance with identified controls. Additionally, each work planning and execution tool assures that the hazards and controls are discussed with workers prior to commencing work; that the controls will remain in place for the duration of the activity; and that workers are qualified to participate in the activity.

CORE FUNCTION 5: PROVIDE FEEDBACK AND CONTINUOUS IMPROVEMENT

Lessons learned are collected and shared to improve the performance of the ISMS. Jefferson Lab has established lessons learned collection, evaluation, and communication tools that are available to all site organizations and employees. Jefferson Lab’s Corporate Operating Experience system is designed to identify appropriate lessons learned from within and outside Jefferson Lab, consider this information for action, and share the information throughout the lab. Organizations or groups within organizations have additional tools and meetings that best support their activities and work tempo. Jefferson Lab’s Issues and Action Management program provides a consistent, lab-wide approach to managing findings and opportunities for improvement.
Figure 2 - Summarizes the work initiation/planning/execution process used by the various work initiators at Jefferson Lab. Each individual step is correlated to an ISMS Core Function.
2.4 Component 4: ISM Mechanisms

Safety management mechanisms define how the core safety management functions are applied at Jefferson Lab based on the specific activities being performed, the associated hazards and work, and performance expectations. Program descriptions, policies, procedures and other documents in the programmatic infrastructure contain the expectations for how site personnel are to implement the ISM core functions and principles, fulfill commitments made to DOE, and meet DOE expectations.

Figure 2 summarizes many of the ISMS mechanisms that are relied upon to ensure that work is properly described, hazards are identified and controlled, and feedback is collected. Each individual step of the various work-planning and authorization tracks (depicted in Figure 2) represent a prescribed action, process, or activity that supports the overall system. For example, the Physics Experiment Readiness Review Process ensures that work hazards are identified by correctly utilizing the Experiment Design Requirements List (the mechanism).

Other mechanisms (that do not appear in Figure 2) are routinely relied upon to support the ISMS. Examples of these include:

- Each employee’s Job Task Analysis and Skills Requirements List specifies and tracks completion of required training-related skills, site access, and work authority.
- The annual work planning process ensures proper resources are assigned to ISMS implementation functions.
- Many other management systems integrate into both CAS and ISMS. Appendix A summarizes those systems.

Together, this inter-related set of mechanisms work to ensure the core functions are applied to all work activities.

2.5 Component 5: Responsibilities for ISM

In order to be successful, the ISMS must have clear and unambiguous lines of authority and responsibility for ensuring that safety, environmental, and health protection shall be established and maintained at all organizational levels. These roles and responsibilities are defined in several ways:

- Jefferson Lab roles and responsibilities for the overall ISMS are defined in our contract, regulations, and Jefferson Lab programmatic infrastructure documents.
- Work planning and authorization protocols are established from the Lab Director down to the most basic work activities. These protocols are established in Jefferson Lab policies and procedures, applying a risk-based graded approach.

2.6 Component 6: Implementation of ISM

The ISMS mechanisms are implemented at Jefferson Lab, beginning with the Annual Work Plan (AWP) and ending with individual work activities through existing procedures, plans, and
policies on a risk-based graded approach. Just like CAS, implementation of ISMS at Jefferson Lab begins at the lab-wide level by:

- Identifying the governing requirements, customer expectations, and responsibilities that must be fulfilled in the management and operation of laboratory activities. This step results in the “umbrella” of standards encompassing Jefferson Lab activities that include applicable DOE Directives, laws, regulations, contractual requirements, and industry standards.
- Developing Jefferson Lab programmatic infrastructure based on this “umbrella” of governing requirements and expectations in order to guide work activities, responsibilities, and commitments.

These two steps, performed on a continuous cycle, form the foundation of the ISMS at the institutional, facility, and activity level.

**Section 3 – Supplemental Safety Culture Elements**

Jefferson Lab has incorporated into its ISMS the following four supplemental safety culture elements to be used, along with the existing ISM guiding principles, to help develop the appropriate context or environment for effective implementation of ISM.

- Individual Attitude and Responsibility for Safety
- Operational Excellence
- Oversight for Performance Assurance
- Organizational Learning for Performance Improvement

### 3.1 Individual Attitude and Responsibility for Safety

Each Jefferson Lab employee is expected to accept personal responsibility and accountability for safe operations. Individuals are encouraged to demonstrate a questioning attitude by challenging assumptions, finding the facts for themselves, and considering potential adverse consequences of planned activities. The ISMS is enhanced by employees at all levels actively participating in the decisions that affect personnel health, safety, and impacts on the environment.

As is described in more detail within this document, and as specifically discussed in the Jefferson Lab Worker Safety and Health Program Description and the Jefferson Lab ES&H Manual, strong worker involvement is a key element in the implementation of the Jefferson Lab ES&H program. The Jefferson Lab ES&H Manual defines the processes and establishes the management support systems necessary to incorporate significant worker involvement.

Other areas where worker involvement and individual attitude and responsibility for safety are key aspects of the Jefferson Lab ISMS are in the identification of hazards associated with work activities and during the performance of basic and applied research. Jefferson Lab processes for work planning and control rely on active worker involvement (including pre-job walk downs, hazard identification and assessment of work, and identification of mitigation measures). This ensures that staff involved with the activities understand the hazards, the specified controls, and
management expectations for working safely. By recognizing worker involvement, employees are mindful of work conditions that may affect safety and are encouraged to assist fellow workers in preventing unsafe behavior.

3.2 Operational Excellence

Jefferson Lab sustains high levels of operational performance in science and technology, safety, quality, and environmental protection. This performance posture is achieved through open communication, deference to expertise, and a systematic approach to eliminating or mitigating unsafe conditions, accidents, injuries, and errors.

Typical tools used to support this performance include tool box meetings, electronic log books (maintained for ES&H issues and accelerator operational issues), the Machine Control Center Scheduling Whiteboard, Run Coordinators Weekly Summary, run plans, Interlock Inhibit Log, Program Deputy Shift Plans, and the Hall A/B/C and Accelerator Operability report.

3.3 Oversight for Performance Assurance

Competent and independent oversight is an essential source of feedback to management and is defined more fully in the CAS and QA Program Descriptions. This oversight verifies that expectations are being met and the resultant feedback identifies opportunities for improvement. Some examples of how Jefferson Lab meets this expectation include:

- Self-assessment plans are risk-based and prepared to ensure that a base level of relevant management processes is reviewed.
- Line managers throughout Jefferson Lab participate in oversight activities and associated performance improvement through the self-assessment process, work activity safety observations, and workplace inspections.
- Senior management personnel participate in Director’s Safety Council (DSC) meetings during which oversight activities are addressed to gain insight into organizational performance and to determine needed corrective action.
- Internal and independent assessments of the ISMS are used to identify opportunities for improvement.

3.4 Organizational Learning for Performance Improvement

Jefferson Lab seeks to achieve excellence in performance monitoring, problem analysis, and solution implementation. Management personnel encourage openness and trust and cultivate a continuous learning environment. Jefferson Lab organizations actively and systematically monitor performance and identify opportunities for improvement through:
- Management safety observations
- Management and Safety Warden inspections
- Event reporting and investigation
- Issue and action management process
- Performance indicators, metrics, objectives & targets
- Trend analysis
- Self-assessments
- Lessons Learned process

An issues and action management process is in place to assure ES&H issues identified during performance monitoring and problem analyses are addressed. The Corrective Action Tracking System is used to track action items that result from the performance of inspections, assessments, and audits.

Section 4 – Integration of other Jefferson Lab ESH&Q Programs with ISM

Jefferson Lab’s ISMS integrates four core programs to protect human health and the environment: Worker Safety & Health Program; Radiological Program; Environmental Management System and the Quality Assurance Program.

![Diagram showing the integration of ESH&Q programs with ISM]

Figure 3 - Summarizes Jefferson Lab’s integration of ESH&Q elements into the ISMS
4.1 Worker Safety & Health Program (WSHP)

Worker safety and health, as described in the WSHP Description is a core element of the ISMS and integrates through lab policies, procedures, and processes, a strong health and safety program that allows employees, subcontractors, and visiting scientists to work safely at Jefferson Lab.

4.2 Radiological Protection Program (RPP)

Just as the WSHP is concerned with protecting employees, users, and subcontractors from classical occupational safety and health hazards, the RPP is used to protect employees, users, subcontractors, the public, and the environment from radiological hazards. The RPP Plan is integrated into the ISMS through the use of operational controls during the planning and execution of work activities including training, workplace monitoring, work controls, material controls, and environmental monitoring.

4.3 Environmental Management System (EMS)

The purpose of the Jefferson Lab EMS is to achieve, maintain, and demonstrate environmental excellence by assessing and controlling the impact of Jefferson Lab experiments, facilities, and operations on the environment. The Jefferson Lab EMS described in the EMS Plan defines the management process used to assure compliance with environmental requirements, preventing pollution, minimizing waste, and continually improving environmental performance through all facets of laboratory operations. The EMS manages risk to the environment in a similar fashion as risk to the workers and public. This has been achieved by incorporating EMS planning and operational controls into existing site programs.

4.4 Quality Assurance (QA) Program

The Jefferson Lab QA Program is implemented through the same management systems that support the ISMS Program deployment. Therefore, quality applicable aspects and requirements are seamlessly integrated into Jefferson Lab’s work practices common to both the quality and ISMS programmatic expectations. Risk is the fundamental consideration in determining to what extent the QA Program will apply to mission and financial management. Through metrics and targets, and planned and periodic risk-based and/or performance-based assessments, Jefferson Lab can identify problems, conduct objective evaluations of adequacy and effectiveness, and recommend solutions. The integration of QA programs is described in the QA Program Description.
Section 5 - ISM Performance Measurement, System Description Maintenance, and Continuous Improvement

5.1 ISM Annual Safety Performance Objectives, Measures, and Commitments Process

Performance measures are established through the performance evaluation measurement program (PEMP). PEMP metrics are established for eight broad areas:

- Mission accomplishment
- Construction/operation of user research facilities
- Science and technology research project/program management
- Leadership and stewardship of laboratory
- Integrated safety, health, environmental protection
- Business systems
- Facility and infrastructure
- Integrated safeguards/security/emergency management

The PEMP is monitored regularly and formal reports are provided to DOE-TJSA quarterly, including an annual review. PEMP metrics are monitored through electronic mechanisms, where available, and results and progress posted to the lab’s “Insight” webpage. Results are also summarized on the CAS Corporate Dashboard. Both the Insight and the CAS webpages use a “stoplight” of color-coded indicators to denote levels of ESH&Q performance.

In addition, objectives and targets in environment, safety, and health performance are established each year. In addition, objectives and targets in environment, safety, and health performance are established each year, per the requirements of 10 CFR 851. The combination of the annual PEMP process and the Laboratory's 10 CFR 851 WSHP Description satisfy the annual safety objectives and performance measures requirement. These measures are reviewed quarterly by the DSC.

Finally, performance is measured and evaluated by periodic trend analysis using data and information from the assessments, event investigation, inspections, Jefferson Lab’s Issues and Action Management system, work observations, and monitoring of lessons learned. Trends and performance status are shared with the senior lab organization as part of the DSC and senior leadership meetings. All of these safety performance objectives and measures are updated periodically to reflect changing DOE direction, mission changes, or trending results.

5.2 ISM System Description Maintenance and Continuous Improvement

Jefferson Lab’s Associate Director for ESH&Q has been assigned the responsibility for providing leadership for implementation and continually seeking opportunities improvement of Jefferson Lab's ISMS. This responsibility is considered when developing the organization’s mission, goals, and budget during the AWP process.

The laboratory conducts an annual effectiveness review on the ISMS. During this review, ISMS and ESH&Q subject matter experts review and consider the following:
• Mission or operational changes – any changes to our mission(s), operations or special research activities are evaluated with respect to impacts on the ISMS.
• Organizational changes – changes are evaluated with respect to ISM roles and responsibilities.
• ES&H trends – our performance with respect to protecting the public, workers, and environment is analyzed and improvements are identified.
• Internal and external assessment results – Jefferson Lab conducts numerous assessments, including hundreds of work observations throughout the year and uses these assessments to identify improvements to how we do work.
• Internal and external lessons learned – lessons learned and best practices, collected internally through our various feedback mechanisms, as well as lessons learned and best practices collected from numerous sources outside the laboratory.
• ES&H objectives and targets – a review of our performance against internal measures and goals and industry standards and best practices is conducted.
• Best practices – we review other ISM systems to identify improvements to ours and collect information at industry and DOE conferences.

This information is then used to improve Jefferson Lab’s ISMS, and the Program Description is revised to address identified weaknesses and reflect changes. The Program Description revision (draft) is then distributed to the DSC and various committees comprised of lab employees (e.g., the Workers Safety Committee and the Sustainability & Environmental Management Committee). This information is also used to support a formal declaration that ISM is fully implemented at Jefferson Lab.

Section 6 - Conclusion

Jefferson Lab has developed and implemented an ISMS that effectively weaves environment, safety and health into the fabric of daily operations; thereby ensuring the safety and health of all employees as well as the user community, and protection of the public and environment.

In our quest for continuous improvement in all aspects of work, Jefferson Lab will continue to identify safer and more efficient ways to conduct business. Consequently, changes in work processes, equipment, and training will continue to emerge; and modifications to this document will reflect those methods that evolve to improve the Jefferson Lab ESH&Q Program.
Appendix A - Jefferson Lab Management Systems Comprising the ISMS Program

<table>
<thead>
<tr>
<th>Management System Activity</th>
<th>Organizational Participant (* Lead)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Acquisition and Property</strong>&lt;br&gt;Maintains the processes for the purchase and delivery of services, materials, equipment, and supplies as well as lifecycle property management for Jefferson Lab operation.</td>
<td>Facilities Management and Logistics*&lt;br&gt;Chief Operating Office&lt;br&gt;- Contracts&lt;br&gt;- Procurement</td>
</tr>
<tr>
<td><strong>Environmental</strong>&lt;br&gt;Maintains and supports an EMS to demonstrate environmental excellence by assessing, minimizing, and controlling the impact of laboratory activities; research and development (R&amp;D) projects; and facility operations on the environment, public, and employee health and safety.</td>
<td>ESH&amp;Q Division&lt;br&gt;- Environmental Program Department*&lt;br&gt;Facilities Management &amp; Logistics</td>
</tr>
<tr>
<td><strong>Facility Management</strong>&lt;br&gt;Supports the work of the laboratory by: planning and forecasting facility needs; acquiring and constructing new facilities to meet emerging needs; operating, maintaining, and renewing the facility portfolio; disposing of facility and land assets that are excess to need; and providing a set of core and purchased staff services.</td>
<td>Facilities and Logistics*</td>
</tr>
<tr>
<td><strong>Facility Safety</strong>&lt;br&gt;Management systems and technical support services that are provided to technical group, technical resource, facility, and project managers, as well as research and support staff of the laboratory. Facility safety encompasses the development, maintenance, and operation of systems designed to support the effective and efficient implementation of facility safety requirements. The technical support service is executed by a staff of fire protection, mechanical, electrical, and chemical engineers who provide assistance to the organizations they support.</td>
<td>Facility and Logistics*&lt;br&gt;Engineering Division*&lt;br&gt;Accelerator Division</td>
</tr>
<tr>
<td><strong>Financial Management</strong>&lt;br&gt;Supports the life cycle of a project and the business management process while meeting external requirements of DOE, and taxing and regulatory entities.</td>
<td>*Chief Operating Office</td>
</tr>
<tr>
<td><strong>Human Resources</strong>&lt;br&gt;Supports the lab by developing and implementing programs, processes, and policies that enable the lab to attract, hire, develop, compensate, and reward highly qualified human assets within the guidelines of applicable labor agreements and federal and state laws and/or guidelines.</td>
<td>Chief Operating Office&lt;br&gt;- Human Resources*</td>
</tr>
<tr>
<td><strong>Quality</strong>&lt;br&gt;Maintains the Jefferson Lab Quality Assurance Program, identifies processes and tools for self-assessment evaluations (e.g., critiques, peer reviews, staff concerns, independent oversight, internal audit), and supports effective and efficient continuous improvement (e.g., Issue and Action Management, Lessons Learned and Best Practices).</td>
<td>ESH&amp;Q Division&lt;br&gt;- Quality Assurance and Continuous Improvement Department*</td>
</tr>
<tr>
<td>Management System Activity</td>
<td>Organizational Participant (* Lead)</td>
</tr>
<tr>
<td>----------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| **Project Management**                                         | Chief Financial Officer  
- Project Management and Integration*                                                                                     |
| Supports the laboratory’s project management requirements by providing applicable processes and tools for meeting established project goals in terms of technical scope, schedule, and budget. The Project Management System provides staff with the tools needed to plan, organize, manage, and control projects to meet schedule and budgetary constraints. |
| **Radiological Control**                                       | ESH&Q Division  
- Radiological Control*                                                                                                         |
| Maintains a Radiological Protection Program to protect staff from unnecessary exposure to ionizing radiation, protect facilities and equipment from contamination with radioactive materials, and promote compliance with applicable regulatory and contractual requirements. |
| **Safeguards, Security and Emergency Preparedness**             | ESH&Q Division  
Chief Information Office  
Facilities Management and Logistics                                                                                      |
| Maintains preparedness and serves as a resource to line management for emergency and security preparedness activities. |
| **Training and Qualification**                                 | Chief Operating Office  
- Human Resources*  
ESH&Q Division*  
Theoretical Computational Physics  
Accelerator Division                                                                                                              |
| Maintains an integrated and effective training system that supports laboratory managers and management system owners with training and qualification activities needed for staff, visitors, and contractors to perform their assigned work. |
| **Worker Safety and Health**                                  | ESH&Q Division  
- Health and Safety Programs*  
- Occupational Medicine*                                                                                                          |
| Supports line and operations management in providing a safe and healthful workplace for all employees, visitors, vendors, and subcontractors. The management system addresses the identification, evaluation, and control of hazards in the workplace by providing direct technical assistance to those conducting work. This includes line, facility, and project managers as well as all staff. |
| **Science and Technology**                                     | Experimental Nuclear Physics  
Theoretical Computational Physics  
Accelerator Division                                                                                                               |
| Researchers performing research at Jefferson Lab carry out basic and applied research, develop advanced technologies, and disseminate technical knowledge. |
November 13, 2014

Dr. Hugh E. Montgomery
President and Laboratory Director
Jefferson Science Associates, LLC
Thomas Jefferson National Accelerator Facility
12000 Jefferson Avenue
Newport News, VA 23606

Dear Dr. Montgomery:

INTEGRATED SAFETY MANAGEMENT SYSTEM PROGRAM DESCRIPTION,
REVISION 14, NOVEMBER 2014

The Thomas Jefferson Site Office (TJSO) has reviewed the Laboratory’s revised Integrated Safety Management System (ISMS) Program Description, submitted November 3, 2014. The ISMS Program Description revision is considered satisfactory to meet the contract requirements in DEAR Clause 970.5223-1. As such, the revised ISMS Program Description is approved. Future revisions to the ISMS Program Description that are minor or editorial in nature need not be submitted to TJSO for approval. This approach is consistent with expectations established on the approvals of the Laboratory’s Quality Assurance Program Description, and 10 CFR 851 Worker Safety and Health Program Description. If at any time JSA determines that ISMS is not fully effective, such as through the conduct of its annual ISMS effectiveness reviews, formal notification to the Site Office is warranted.

Sincerely,

[Signature]

Joseph Arango, Manager
Thomas Jefferson Site Office

cc:
M. Dallas
M. Logue
B. May
S. Neilson
November 3, 2014

Mr. Joseph Arango
Manager, Thomas Jefferson Site Office
12000 Jefferson Avenue, Suite 14
Newport News, VA 23606

Subject: Integrated Safety Management System Program Description, Revision 14

Dear Mr. Arango:

In accordance with DEAR 970.5223-1, Integration of Environment, Safety, and Health into Work Planning and Execution, Revision 14 of the Jefferson Lab Integrated Safety Management System (ISMS) Program Description is attached for your approval.

The most significant change from the previously approved Revision 13 was to remove reference to the Free Electron Laser as a separate Division, and to update the Lab’s Environment, Safety, and Health Policy. Steve Neilson, of your staff, has reviewed the document and his comments have been incorporated.

If you have any questions, please contact Mary Logue, at ext.7447.

Sincerely,

Hugh Montgomery
JSA President and Laboratory Director

Enclosure

(1) Integrated Safety Management System Program Description, Revision 14

cc:
M. Dallas
M. Logue
B. May
S. Neilson