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REPLY TO
ATTN OF: SE-32:Allen

SUBJECT: FINAL REPORT—VALIDATION AUDIT REPORT OF THE THOMAS JEFFERSON NATIONAL ACCELERATOR FACILITY ENVIRONMENTAL MANAGEMENT SYSTEM

TO: James Turi, Manager, Thomas Jefferson Site Office, SC-TJSO

Attached is the Final Report for the Validation Audit Report of the Thomas Jefferson National Accelerator Facility Environmental Management System conducted from April 28-30, 2009. Prior to finalizing this document, it has undergone factual accuracy reviews and has been discussed with members of your staff.

If there are any questions, please contact me at (865) 576-0411.


David R. Allen, Director
Environmental and Quality
Management Division

Attachment

cc w/attachment:
Scott Mallette, SC-TJSO
Steve Neilson, SC-TJSO
Patty Hunt, SC-TJSO
Robert Brown, M-2, ORO
Larry Kelly, SE-30, ORO
Richard Martin, SE-32, ORO

**U.S. Department of Energy
Thomas Jefferson Site Office**



**Validation Audit Report of
the Thomas Jefferson National Accelerator
Facility Environmental Management System**

April 2009

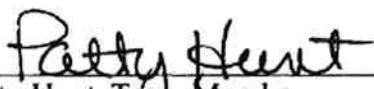
Report Approval



Richard Martin, Team Lead
Oak Ridge Office

May 20, 2009

Date



Patty Hunt, Team Member
Thomas Jefferson Site Office

May 20, 2009

Date

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Acronyms

CATS	Corrective Action Tracking System
CRD	Contractor Requirements Document
DOD	Department of Defense
DOE	U.S. Department of Energy
EMP	Environmental Management Procedure
EMS	Environmental Management System
EO	Executive Order
EPEAT	Electronic Product Environmental Assessment Tool
ESH	Environment, Safety, and Health
ESH&Q	Environment, Safety, Health, and Quality
FIND	Finding
HSS	Health, Safety, and Security
ISMS	Integrated Safety Management System
ISO	International Organization for Standardization
JSA	Jefferson Science Associates
O&Ts	Objectives and Targets
ODS	Ozone-Depleting Substances
P	Priority
PD	Program Description
PFE	Portable Fire Extinguishers
PRO	Proficiency
SOP	Standard Operating Procedure
TIP	Target Implementation Plan
TJNAF or JLab or Jefferson Lab	Thomas Jefferson National Accelerator Facility
TJSO	Thomas Jefferson Site Office

Definitions

Findings (FIND) – There are three levels of negative performance observations, based on the respective priority (P).

- P1 Finding – Findings of major significance (examples included imminent threats to worker protection, public safety, or environmental quality or the presence of a major risk or vulnerability). Such findings can be a systematic breakdown in, or a failure to implement, a major work control element necessary for safety, quality, or the environment or a significant noncompliance with requirements.
- P2 Finding – Findings that represent non-conformances, deviations, deficiencies in the implementation of requirements, procedures, standards, and/or regulatory requirements
- P3 Finding – Observations that the assessor deems to be an isolated, minor, quick fix or non-adherence to best practices/internal procedures/accepted standards.

Proficiency (PRO) – A performance item that exhibits a level of performance deemed worthy of communicating to other organizations because it is innovative or may be indicative of the highest level of excellence. Formerly used terms that meant essentially the same thing were noteworthy practice and strength.

Top management – An International Organization for Standardization (ISO) 14001 term that indicates a person or group of people who direct and control an organization at the highest level.

**Validation Audit Report of
the Thomas Jefferson National Accelerator Facility
Environmental Management System**

1.0 PURPOSE

The purpose of this audit was to validate the Environmental Management System (EMS) implemented at the Thomas Jefferson National Accelerator Facility (TJNAF or JLab or Jefferson Lab). The EMS is implemented at JLab by the contractor, Jefferson Science Associates (JSA). A successful audit satisfies, in part, the requirement of Section 4.d.(1)(a) of U.S. Department of Energy (DOE) Order 450.1A, *Environmental Protection Programs*—the EMS must be the subject of a formal independent validation audit. The follow-on requirements of the order must be completed by June 30, 2009.

The audit was conducted from April 28 through April 30, 2009, by Richard Martin, Oak Ridge Office, and Patty Hunt, Thomas Jefferson Site Office (TJSO). The audit was conducted to assess performance of the activities required by the EMS and to validate that the EMS continues to be implemented/integrated as required by International Organization for Standardization (ISO) *Environmental Management System Requirements*, Executive Order (EO) 13423, *Strengthening Federal Environmental, Energy, and Transportation Management*, and the EO requirements that are flowed down to DOE Order 450.1A, *Environmental Protection Programs*, and DOE Order 430.2 B, *Departmental Energy, Renewable Energy and Transportation Management Implementation Plan*.

The audit was conducted in accordance with the assessment plan submitted to JLab management in March 2009.

2.0 SUMMARY OF RESULTS

Personnel interviewed are provided in Appendix A, and a list of records reviewed are provided in Appendix B. No site activities were observed, but site staff members were interviewed at work locations. During the course of this review, two Priority (P) 2 findings (FIND), and one P3 finding were identified. These findings are provided in Section 4.0 of this report.

Based on the discussions and records evaluated during the audit, the EMS audit found no major non-conformances, which satisfies the requirements of DOE Order 450.1A, Section 4.d. (1)(a).

3.0 DISCUSSION OF RESULTS

Requirements were developed prior to beginning the audit to ensure that the scope of the review was adequately addressed, and the results are documented on the criteria checklist in Appendix C.

A Priority 2 finding was noted regarding overall implementation of the EMS. Based on interviews with staff and review of documents, a general reluctance to participate in the EMS was noted. Staff appeared competent and generally embraced environmental improvement. However, contrary to the contractual implementation requirements and the stated intent of EO 13423, the EMS, while documented, is not routinely being used as the primary system for accomplishing and documenting the goals of ISO 14001, EO 13423, and DOE orders at JLab. For example, several environmental improvements are being implemented, but they are not being documented within the framework of the EMS. (**P2-001**)

Another Priority 2 finding was identified regarding failure to meet the Contract Implementation Action Plan for DOE Order 450.1A, pursuant to contract modification A069. A commitment for full compliance by April 1, 2009, was not met. The EMS Plan was not in place as of the self-imposed implementation date (April 1, 2009). The plan was not signed until April 23, 2009, and the approved plan was not provided to the audit team until the last day of the audit (April 30). There is limited evidence that the plan had appropriate JLab management attention. (P2-002)

A Priority 3 finding was identified regarding inconsistencies in development of EMS documentation. The Environmental Management Procedure (EMP) that addresses environmental and significant environmental aspects resulted in the identification of a disproportionate number of significant aspects for this low-hazard, non-nuclear facility. Improvements are necessary to the methodology used to determine an aspect and its significance level. Significant aspects and aspect categories defined in the JLab EMS are also inconsistent with the terminology used in the ISO 14001 standard. This may also have contributed to the high number of significant aspects. The EMP that addresses targets and objectives did not result in the establishment of a reasonable number of targets and objectives that would be expected of a program compliant with DOE Order 450.1A, DOE Order 430.2B, and ISO 14001. This EMP documentation must ensure that JLab and the EMS Committee members, in particular, are better informed of the need for, and status of, objectives and targets to best accomplish DOE's EMS-related goals. This EMP should also provide a mechanism to ensure and document the screening process of significant aspects for opportunities to develop objectives and targets. Standard operating procedures that implement EMS documents in the field have three-year expiration dates. This documentation requirement was inconsistent with a field visit observation, as a vacuum technician produced a standard operating procedure for the use of vacuum pump oil that was dated 1992. (P3-001)

No proficiencies were noted during the audit; however, accomplishments were identified. Acknowledged accomplishments included the completion of the Target Implementation Plan for the use of the Electronic Product Environmental Assessment Tool (EPEAT) for purchase of personal computers and the pollution prevention efforts and associated awards and award nominations.

4.0

4. _____

4. . _____

None identified.

4. . _____

00 EMS, while documented, is not routinely being used as the primary system for accomplishing ISO 14001, EO 13423, and associated DOE goals.

00 JLab failed to meet the requirements of its Implementation Plan for DOE Order 450.1 A.

4. . _____

00 Improvements are needed to establish consistency of EMS documentation.

4. _____

None identified.

- Chief Information Officer/Chief Technology Officer
- Procurement Department Administrator
- Procurement Manager
- Associate Director, Environment, Safety, Health, and Quality (ESH&Q)
- Environmental Department Manager, ESH&Q
- Head, Computing and Networking Infrastructure
- Chief Financial Officer/Business Operations Manager
- Manager, Radiation Control Group
- Deputy Manager, Radiation Control Group
- Director, Facilities Management and Logistics
- Facilities Management Engineer
- Industrial Hygiene Assessment Manager
- Manager, Facilities Mechanical Engineering
- Mechanical Controls Inspector
- Vacuum Technologist

-
- Environmental Management System Plan, Rev 5, April 2009
 - TJNAF Executable Plan
 - Corrective Action Tracking System (various entries)
 - Public Affairs Weekly Briefs, January 21 and 28, 2009
 - Jefferson Lab Computing Notice, Buying and Installing Personal Computers at Jefferson Lab
 - Jefferson Lab Computing Notice Approved Systems
 - EMS 2008-001, Institute use of EPEAT
 - EMS 2007-T6Ca, Accelerator Pump Water Management
 - EMS 2007 T6B, Improve Oil Handling and Storage Practices
 - Draft EMS Target Implementation Plans (TIPs):
 - Management of Motor Vehicles, EMS-2009-002
 - Water Use Reduction, EMS-2009-004
 - Sustainable Practices in Guiding Principles for Existing Building Inventory, EMS-2009-003
 - Energy Stewardship, EMS-2009-001
 - Environment, Safety and Health (ESH) Manual Chapters:
 - 6730, App. R2, Best Management Practices under Permit No. VAR040079
 - 6650, Engineered Nanoparticle Policy
 - 6650, T1, Minimum Mitigation Requirements for Engineered Nanoparticles
 - 6650, T2, Emergency Procedures for Engineered Nanoparticles
 - 6940, Portable Fire Extinguishers (PFE)
 - 6940, T1, PFE Procedure
 - 6850, Regulated Medical Waste Management
 - 6850-T1, Regulated Medical Waste Handling Procedure
 - EPS 60-T3, Radioactive Waste Collection, Storage, and Disposal
 - 3510-T3, Specific Emergency Response Procedures
 - Environmental Management Procedures 01 through 15
 - Integrated Safety Management System (ISMS) Program Description (PD)

Appendix C – Requirements Checklist

ISO 14001 Requirement	Comments
4.1 General requirements An EMS has been established, documented, implemented, maintained, and continually improved in accordance with the requirements of this ISO 14001.	JLab culture does not appear to fully embrace EMS. Some staff indicated a reluctance to communicate environmental improvement ideas to the EMS staff. Reasons provided by staff included: EMS is an unnecessary burden; improvements are tracked in the Corrective Action Tracking System (CATS) and, therefore, perceived as corrections to deficiencies; and lack of clarity when it would be appropriate to contact the EMS group to establish stewardship and sustainability goals.
The scope of the EMS is defined.	Additionally, some staff appeared unaware of any requirements or benefits of using the EMS. (P2-001) Scope is clearly defined in the Plan, Section 2.0- Scope.
Other Related General Requirements DOE Order 450.1A Contractor Requirements Document (CRD) 1, 1.2 (1-2) and 1.b	ISMS PD 4.2 describes EMS.
Develop and implement an environmental management system. This system must be integrated into the site's ISMS. (See the CRD in DOE M 450.4-1, <i>Integrated Safety Management System Manual</i> , dated 11-1-06.)	The EMS Plan is based on the elements of the Standard. Full implementation is questionable, as numerous environmental activities are not captured by the EMS. (P2-001)
The EMS must reflect the environmental management system elements and framework found in ISO 14001:2004 (E) International Standard or equivalent	1

<p>Include environmental, energy, and transportation objectives and measurable targets that are reviewed annually, updated as appropriate, and contribute to achieving the DOE Sustainable Environment Stewardship goals found in Attachment 2 of DOE Order 450.1A, <i>Environmental Protection Program</i>, dated 6-4-08, and</p>	<p>JLab has implemented several improvements related to the Stewardship Goal for Procurement, which is noteworthy, but objectives and targets (O&Ts) were not established to track them, with the exception of two sets of objectives and targets that address the goals of DOE Order 450.1 A, Attachment 2: one related to the use of oil and the other related to EPEAT. There are no objectives or targets for ozone-depleting substances (ODS) stewardship goals.</p> <p>Although there are improvements that have been made to control the purchase of chemicals through the procurement system, there has been no integration of the improvements into a target and implementation plan.</p> <p>Although there are plans to address the monitoring of Energy Star features on personal computers, there has been no integration of the improvements in a target and implementation plan. (P2-001)</p>
<p>Include the energy and transportation goals in the CRD in DOE Order 430.2B, <i>Departmental Energy, Renewable Energy and Transportation Management</i>, dated 2-27-08.</p>	<p>The Executable Plan identifies 16 categories of site goals toward DOE Order 430.2B goals and certain DOE Order 450.1A goals; does not identify responsible person or targets for each; draft TIPs (O&Ts) have been developed for most of the goals. Other stewardship goals, without O&Ts, are addressed by procedure only; e.g., changes in the procurement system that disallowed Purchase Card purchases of chemicals and automated screening of chemical purchases to minimize acquisition of toxic chemicals were not developed using O&Ts. The decisions concerning phase out of ozone depleting substances have also not been planned or implemented using O&Ts. (P3-001)</p> <p>EMS Plan, Appendix 2, lists DOE Order 450.1A requirements and DOE Order 430.2B goals.</p>
	<p>The EMS must promote the long-term stewardship of a site's natural and cultural resources throughout its design and construction, operation, closure, and post-closure life cycle.</p>

DOE Order 450.1 A CRD (2)	Progress toward meeting the requirements of paragraph 1a, 1b, and 1c of the CRD is monitored and reported annually through the DOE Operations /field/site office to the Senior Agency Officer and the Office of Health, Safety and Security (HSS).	DOE Order 450.1A Implementation Plan, 12/11/08, states full compliance by April 1, 2009. However, several key documents, including the EMS Plan and a few procedures, were not in place by April 1. The EMS Plan was signed on April 23, 2009. This represents a failure to maintain control over day-to-day management of the EMS. Failure to determine and address the cause may adversely affect future EMS validation efforts. (P2-002)	“Scorecard” quarterly and annual reports were sent to HSS as required.
4.2 Environmental policy			
Policy defined by top management.	Policy appropriate to nature/scale/environmental impacts of its activities/products/services.	The Policy is found in Appendix 1 of the EMS Plan. The Policy was developed by direct reports to the Director; revision/update recommended during last management review; revision approved by Director.	
Policy includes a commitment to continual improvement.	Policy includes a commitment to prevention of pollution.		
Policy includes a commitment to comply with environmental legislation/regulations/organization requirements.	Policy provides framework for setting/reviewing environmental objectives/targets.	Included in annual EMS awareness training.	
Policy documented, implemented, maintained, and communicated to all employees.	Policy is communicated to all persons working for or on behalf of the organization.	All subs are required to complete EMS awareness training.	
Policy is available to the public.	Policy is available to the public.	Electronic Public Reading Room section of website maintained by public affairs.	
4.3 Planning			
4.3.1 Environmental aspects:			
Procedure exists which identifies/maintains controllable activities/products/services and related aspects and impacts.	Ninety-three Significant Aspects identified.		

Procedure exists which determines those aspects which can significantly impact environment (i.e., significant aspects).	Significance determination was questionable in some cases; e.g., kitchen grease trap listed as significant. (P3-001)
Environmental aspects/objectives/impacts information kept up to date.	Current list was dated 4/2009. Triennial review in early 2008. EMS Committee minutes, January 23, 2008, provide evidence of review.
Significant aspects and impacts considered when setting environmental objectives.	Most significant aspects are not “covered” by O&Ts. Some are draft; some to be written. JLab does not document when the decision is made to not establish O&Ts for an aspect or aspect category. (P2-001)
4.3.2 Legal and other requirements.	
Procedure exists to identify and have access to legal/other requirements applicable to environmental aspects of activities/products/services.	EMP-02. Corrective action from TJSO/JSA Joint Assessment, December 2008, regarding tracking regulations for changes has been completed.
Other Requirements related to 4.3.2 Legal Requirements	
DOE Order 450.1A CRD 1.b (1)-(7) The environmental management system must address	
Sustainable practices for enhancing environmental, energy, and transportation management performance, as stipulated in Section 3(a) of EO 13423 and its Implementing Instructions.	Executable Plan identifies 16 categories of site goals toward DOE Order 430.2B goals and certain DOE Order 450.1A goals; does not identify responsible person or targets for each; draft TIPs (O&Ts) developed for most of the site goals. Other goals, without O&Ts, are addressed by procedure, e.g., screening of chemical purchases to address elimination of acquisition of toxic chemicals.
Protection of public health and the environment, including but not limited to – Conformity with State Implementation Plans, to attain and maintain national ambient air quality standards. Implementation of a watershed approach for surface water protection. Implementation of a site-wide approach for groundwater protection.	EMS Plan, Appendix 2, references these CRD requirements, indicating that they have been considered in the EMS. No O&Ts are established for them.
Protection of other natural resources, including biota. Assessment of the hazard of engineered nanomaterials and implementation of appropriate environment, safety, and health controls.	

Protection of site resources from wildland fires consistent with site wildland and operation fire management plans.	
Identification and protection of cultural resources.	No cultural resources identified.
The conduct of environmental and effluent monitoring, as appropriate, to characterize pre-operational conditions, and to detect, characterize, and respond to releases from site operations and activities; assess impacts; estimate dispersal patterns in the environment; characterize the pathways of exposure to members of the public; characterize the exposures and doses to individuals and the population; and evaluate the potential impacts to the biota in the vicinity of the release. Where appropriate, conduct an integrated monitoring and sampling approach to avoid duplicative data collection.	Environmental Monitoring Plan and Annual Site Environmental Report.
Quality assurance procedures exist for analytical work for environmental and effluent monitoring, using a documented approach for collecting, assessing, and reporting environmental data.	Analytical work is sent offsite.
The conduct of appropriate operational assessments, such as pollution prevention opportunity assessments, of site operations and activities to identify opportunities to implement sustainable practices as part of achieving DOE's Sustainable Environmental Stewardship goals.	ESH Manual 6770, <i>Waste Minimization and Pollution Prevention Program</i> ; assessment scheduled May 2009.
DOE Order 450.1A CRD 1. a (3) Address tenant or concessionaire activities wherever such activities affect DOE's environmental, energy, and transportation management.	NA
DOE Order 450.1 A CRD (3) (a) through (c)	ODS reduction program is in place, but not captured in EMS documents (e.g., TIPs). (P2-001)
Practices to maximize the use of safe alternatives to ozone-depleting substances (ODS) are included in the EMS.	The use of ODS in new equipment and facilities is eliminated.

The use of ODS in existing equipment is phased out as the existing equipment reaches its expected service life, and the maintenance of equipment is conducted to prevent or fix leaks.	The replacement of leaking equipment is carried out when leak repair is no longer cost-effective or where it is life-cycle cost-effective to replace the equipment. Coordination is conducted within DOE and with the Department of Defense's (DOD) Defense Supply Center Richmond, before disposal of ODS removed or reclaimed from equipment (including disposal as part of a contract, trade, or donation). For situations in which the recovered ODS is a critical requirement for DOD missions, the DOE facility transfers the ODS to DOD.	See comments above related to the Executable Plan.
Other requirements related to 4.3.2 DOE Order 430.2B: The contractor shall assist the Department through direct participation and other support in achieving the Department's energy efficiency goals and objectives in electricity, water, and thermal consumption, conservation, and savings, including goals and objectives listed below:	The contractor shall assist the Department through direct participation and other support in achieving the Department's energy efficiency goals and objectives in electricity, water, and thermal consumption, conservation, and savings, including goals and objectives listed below:	TIP in draft.
1. By FY 2015, reduce energy intensity by no less than 30 percent on average across the entire Department, relative to the Department's energy use in FY 2003. Energy intensity means energy consumption per gross square foot of building space, including industrial and laboratory facilities. 2. By FY 2015, reduce potable water use by no less than 16 percent, relative to the Department's potable water use in FY 2007.		TIP in draft.

<p>3. The installation of advanced electric metering systems at all Department sites in accordance with the DOE metering plan for site monitoring of electric energy. Standard metering systems for steam, natural gas, and water must also be installed and centrally monitored at all Department sites for steam, natural gas, and water consumption. Advanced meters are defined as having the capability to measure and record interval data (at least hourly for electricity) and communicate the data to a remote location in a format that can be easily integrated into an advanced metering system.</p> <p>4. The installation of on-site renewable energy (electric and thermal) generation at all Department sites.</p> <p>5. The installation of sustainable building materials and practices throughout the Department's existing building assets and the attainment of the U.S. Green Building Council's Leadership in Energy and Environmental Design Gold certification for all new construction and major building renovations in excess of \$5 million. All buildings falling below this threshold are required to comply with the Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings (Guiding Principles).</p>	<p>TIP in draft.</p> <p>TIP in draft</p>
<p>6. The meeting of the 15 percent goal in EO 13423 dated January 24, 2007 (EO 13423 Section 2(f)(ii)) for incorporating the sustainable practices of the Guiding Principles for energy and water and related principles into the Department's capital asset building inventory.</p> <p>7. The utilization of standardized operations and maintenance and measurement and verification protocols coupled with real-time information collection and centralized reporting capabilities.</p>	<p>See P3-001 TIP in draft</p>

8. The commissioning of new equipment or retrofit construction to be performed to ensure that systems are designed, installed, functionally tested, and capable of being operated and maintained to perform in conformity with the project intent.	
9. The retro-commissioning (Retro-Cx) to review the condition of building systems to be performed and return equipment that has fallen out of desired operating parameters back into appropriate tolerances. Retro-Cx is the process of optimizing an existing building's operation and maintenance through the implementation of low-cost and no-cost improvements and does not involve equipment replacement. Retro-Cx focuses on energy-using equipment such as mechanical systems, controls, and sometimes lighting.	
10. The provision of access to alternative fuel infrastructure throughout the Department to ensure that all alternative fuel vehicles will operate on alternative fuels to the greatest extent practicable, and the replacement of DOE conventional-fuel vehicles with alternative fuel and hybrid technology vehicles, including plug-in hybrid electric vehicles as they become available.	TIP in draft.
11. The increase in development, generation and consumption of electric and steam, natural gas from renewable energy sources, and combined heat and power sources.	See P3-001.
12. The increase in the use of non-potable water sources such as reclaimed, recycled, and grey water for appropriate applications.	
13. The expedited improvement in the quality, consistency, and centralization of data collected and reported through the use of commercially available software.	

4.3.3 Objectives, targets and program(s)	<p>Objectives established/maintained and documented at each relevant function/level of the organization.</p> <p>Objectives consistent with the environmental policy.</p> <p>Programs flexible to ensure environmental management also apply to new activities/products/services.</p> <p>Program(s) established/maintained for achieving objectives.</p> <p>Program designates responsibility for achieving objectives and targets.</p> <p>Objectives consider significant environmental aspects.</p> <p>Objectives and targets are measurable.</p> <p>Objectives consider technological options.</p> <p>Objectives consider financial/operational/business requirements.</p> <p>Objectives consider the views of interested parties.</p> <p>Legal and other requirements used to establish objectives and targets.</p>	<p>Not clear how decision is made to develop O&Ts for particular aspect or aspect category. Few O&Ts are in place; some are draft or planned.</p> <p>Tracking mechanisms for O&Ts are inconsistent. Many EMS-type opportunities are entered into CATS without EMS involvement. Several O&Ts are documented as best management practices for stormwater, but not tracked as TIPS. Some opportunities not tracked as O&Ts. EMS Committee is fairly high level, may not have adequate representation by those directly managing work that impacts significant aspects, or work that keeps aspects from becoming significant. (P3-001)</p>
4.4 Implementation and operation		
4.4.1 Resources, roles, responsibility, and authority	<p>Roles/responsibilities/authorities defined/document/communicated for effective environmental management.</p> <p>Management provides resources to implement/control EMS.</p> <p>Roles, responsibilities, and authorities are defined, documented, and communicated.</p> <p>Top management has appointed representative to ensure EMS standard maintained.</p> <p>Top management appointed representative to reporting on EMS performance.</p>	<p>Corrective action completed for finding from 12/2008 Joint Assessment related to lack of clarity in EMS Plan Section 4.4.1.</p> <p>Staff indicated that QA aspects (documentation, formality) may be lacking due to funding/resource constraints. (P2-002)</p> <p>Representative assigned, but questionable whether ensuring EMS implementation. EMS is viewed as an unnecessary burden. Staff expressed resistance to working within EMS to improve environmental performance. (P2-001)</p>

4.4.2 Competence, Training, and Awareness	
Organization has identified training needs.	EMP -05, <i>Training Needs Matrix</i> ; EMP-13 (for records).
Organization requires all appropriate personnel relating to significant aspects and impacts receive appropriate training.	Matrix lists appropriate standard operating procedures (SOPs) to be trained on.
Procedures exist so relevant staff is aware of the importance to conform to environmental policy and procedures and requirements of EMS.	EMS Awareness Training is provided to all staff and subs.
Procedures exist so staff is aware of significant environmental impacts associated with their work activities and aware of environmental benefits of improved personal performance.	Matrix identifies SOPs.
Procedures exist so staff is aware of role/responsibility to conform to environmental policy and procedures and requirements of EMS, including emergency preparedness and response.	
Procedures exist so staff is aware of potential consequences of departure from specified operating procedures.	
Competent staff performing tasks which can cause significant environmental impacts.	
4.4.3 Communication	
Communication Procedure	EMP-06, <i>Communication Related to Environmental Management</i> : ESH Manual 6710-T1.
Established procedures exist for internal communication between various functions/levels.	Corrective action from Joint Assessment completed.
Established procedures exist to receive/document/respond to relevant external interested party communications.	EMP-06
Process considered for external communication on environmental aspects and to record decision.	Public Affairs maintains the electronic reading room.

4.4.4 Documentation	
Information established/maintained to describe core elements of the EMS and their interaction.	Plan, EMP-03, TIPS. Plan, some other documents/SOPs provided in draft. JLab did not meet April 1 deadline in Implementation Plan. (P2-002)
Information established/maintained to provide direction to related documentation.	Website; Plan
4.4.5 Control of documents	
Documents required by the environmental management system and by this International Standard shall be controlled. Records are a special type of document and shall be controlled in accordance with the requirements given in 4.5.4.	EMP-07, Sections 5.5 and 5.6 address these requirements.
Procedures established/maintained so documents are periodically reviewed/revised/approved by authorized personnel.	Procedures established/maintained so current documents/current versions available to essential operations.
Procedures established/maintained so obsolete documents removed/guarded against unintended use.	Procedures established/maintained so obsolete documents removed/guarded against unintended use.
Procedures established/maintained so obsolete documents retained for legal or recording purposes are suitably identified.	Procedures established/maintained so obsolete documents retained for legal or recording purposes are suitably identified.
Documents legible.	Documents legible.
Documents dated.	Documents dated.
Documents readily identifiable.	Documents readily identifiable.
Documents maintained in an orderly manner.	Documents maintained in an orderly manner.
Documents retained for a specified period.	Documents retained for a specified period.
Procedures established/maintained concerning creation/modification of documents.	Procedures established/maintained concerning creation/modification of documents.
Procedures established/maintained to control required documents so they can be located.	Procedures established/maintained to control required documents so they can be located.

4.4.6 Operational control	<p>Operations and activities identified associated with significant environmental aspects within scope of policy/objectives and targets.</p> <p>Procedures established/maintained to cover situations which could lead to deviations from environmental Policy and objectives and targets.</p> <p>Stipulated operating criteria identified in procedures.</p> <p>Procedures established/maintained related to the identifiable environmental aspects of goods/services used by the organization.</p> <p>Procedures established/maintained to communicate procedures/requirements to suppliers/contractors.</p>	<p>EMS-2007-T6B: Oil Storage and Handling, controlled by SOP FM-05-07, Oil Management (example SOP);</p> <p>EMP-04, ESH Manual 3120, describes Experimental Review process that ensures potential environmental impacts are considered.</p> <p>Staff in the maintenance shop was aware of TIP for used oil; was unable to locate a current procedure for shop-specific management of used oil. A 1992 procedure was provided to auditor.</p> <p>Subcontracting Officer's Technical Representative conveys requirements in contract; subs must take EMS awareness training.</p>
4.4.7 Emergency preparedness and response.	<p>Procedures established/maintained to identify potential for/respond to accidents/emergencies.</p> <p>Procedures established/maintained to prevent/mitigate environmental impacts associated with accidents/emergencies.</p> <p>Organization reviews/revises emergency preparedness/response procedures after accidents/emergencies.</p> <p>Organization periodically tests such procedures, where practical.</p>	<p>Addressed by EMP-09; compliance with DOE orders; and ESH Manual 3510, Emergency Management Plan.</p>
DOE Order 450.1A CRD (4)	Additional Requirement associated with Emergency Management	<p>Tier II submitted February 24, 2009; no 313 report due. Documented in June 19, 2008, letter to Turi.</p> <p>The reporting requirements of Emergency Planning and Community Right to Know Act and the Pollution Prevention Act of 1990 are met.</p>

4.5 Checking	
4.5.1 Monitoring and Measurement	<p>Procedures established/maintained and documented to regularly monitor/measure key characteristics of operations/activities that can have significant impact on environment.</p> <p>Procedures include recording information to track performance.</p> <p>Procedures include recording relevant operational controls.</p> <p>Procedures include recording conformance with organization's objectives/targets.</p> <p>Equipment calibrated and maintained.</p> <p>Records of calibration process retained according to organization's procedures.</p> <p>Procedure maintained/established and documented for periodic evaluation of compliance with relevant environmental legislation and regulation.</p>
4.5.2 Evaluation of Compliance	<p>EMP-11, <i>Evaluation of Compliance</i></p> <p>Annual compliance audit and triennial comprehensive compliance audit required. December 2008 Joint Assessment covered some compliance areas; corrective action plan issued April 15, 2009. Integrated Assessment Schedule identifies all assessments; agreed to by Site Office.</p> <p>4.5.2.2 The organization shall evaluate compliance with other requirements to which it subscribes. The organization may wish to combine this evaluation with the evaluation of legal compliance referred to in 4.5.2.1 or to establish a separate procedure(s).</p> <p>The organization shall keep records of the results of the periodic evaluations.</p>

Other Requirements Associated with 4.5.2	DOE Order 450.1A CRD 1.a(4)	EMP-11
	<p>The EMS contains the elements of an Environmental Compliance Management Plan pursuant to the Council on Environmental Quality's <i>Instructions for Implementing Executive Order 13423</i>, page 9, Section B, including—</p> <ul style="list-style-type: none"> (a) A clear statement by senior leadership committing to achieve and maintain compliance with applicable environmental protection requirements. (b) Clearly articulated roles and responsibilities related to environmental performance at all appropriate levels to ensure accountability for less than desired environmental performance. (c) An environmental compliance audit and review program that identifies compliance deficiencies and root causes of non-compliance. (d) Integration of compliance management information and resource allocation procedures to ensure that audit findings and root causes of non-compliance are tracked and addressed, including allocation of funding. 	
	DOE Order 450.1 A CRD (5)	<p>No historic property on this site.</p> <p>Assist the Department in meeting obligations imposed on it by EO 13327, Federal Real Property Asset Management, Section 3b(vi), by ensuring incorporation of planning and management requirements for historic property.</p>

4.5.3 Nonconformity, corrective action, and preventive action	<p>Procedures established/maintained for defining responsibility/authority to investigate nonconformance.</p> <p>Causes of nonconformities and mitigations recorded.</p> <p>Results of corrective and preventive actions recorded.</p> <p>Procedure exists for effectiveness review of corrective and preventive actions.</p> <p>Feedback loop to EMS exists from conformity prevention and mitigation.</p>	EMP-12, <i>Deficiencies, Corrective Action and Preventive Action</i> , describes the process.
4.5.4 Control of Records	<p>Procedures established/maintained to identify/maintain/dispose of environmental records.</p> <p>Records include training records and results of audits and reviews.</p> <p>Records legible/identifiable/traceable to the activity/product/service involved.</p> <p>Records retrievable/protected against damage, deterioration, or loss.</p> <p>Record retention times established and recorded.</p> <p>Records maintained to demonstrate conformance to requirements of standard.</p>	EMP-13. Each SOP or EMP includes a Section 6, Records.
4.5.5 Internal Audit	<p>Programs and procedures established/maintained for periodic EMS audits to be carried out.</p> <p>Procedures established/maintained to determine if EMS conforms to planned environmental management, including requirements of ISO 14001.</p> <p>Procedures established/maintained to determine EMS properly implemented/maintained.</p> <p>Procedures established/maintained to provide results of audit to management for its review.</p>	<p>EMP-14, <i>EMS Internal Audit</i>.</p> <p>Some criteria and review approach documents related to EMS were included in the December 2008 Joint Assessment. Three findings related to the need to revise the EMS Plan have been addressed.</p> <p>Annual review required under ISMS, not mentioned in EMP-14. Triennial review is described in EMP-14. (P3-001)</p>

Audit schedule based on environmental importance of activity and results of previous audits.	
Audit procedures cover scope/frequent method/responsibilities for conducting audits/reporting results.	
Audit procedures specify criteria for auditor selection.	
Other requirements associated with 4.5	
DOE Order 450.1 A CRD 1.c (1)(a)-(c)(3)	EMP-14
Note this audit fulfills requirements with the exception of (c) (3):	
At least every three years (the environmental management system has been audited by a qualified party outside the control or scope of the organization implementing the environmental management system, and the conformance declaration is renewed.	
4.6 Management Review	
Top management reviews EMS to ensure suitability/adequacy/effectiveness.	November 14, 2008, review presented to Director's Safety Council, met requirements.
Review process ensures necessary information collected for top management to do this evaluation.	
Review addresses needs for changes to policy, objectives, and other elements of EMS based on audit results/changing circumstances/commitment to continual improvement.	

