Jefferson Lab
Thomas Jefferson National Accelerator Facility
Exploring the Nature of Matter

October 8, 2008
JS08-46

Mr. James A. Turi
Manager
Thomas Jefferson Site Office
12000 Jefferson Avenue, Suite 14
Newport News, Virginia 23606

Subject: Corrective Action Plan for 2008 DOE Fire Protection Assessment – March 17-20, 2008

Dear Mr. Turi:

Attached, please find the revised Corrective Action Plan, as referenced in your letter dated May 15, 2008. This document addresses the findings from your office's Final Report – Fire Protection Program Assessment of the Thomas Jefferson National Accelerator Facility, dated March 17-20, 2008. There were no Observations to be disposed. Please note that Jefferson Lab will enter the corrective actions for findings into its Corrective Action Tracking System by October 15, 2008.

As requested, a brief description of the cause for the findings (separate from those associated with implementation of 420.1B) has been noted on the Corrective Action Plan. The overriding cause of these findings is that in the past, the management systems at Jefferson Lab were not robust enough to assure cognition of, and compliance with, requirements. The systems that have been put in place since the start of the contract between JSA and DOE, including our Contractor Assurance System, along with implementation of DOE O 420.1B addresses this cause.

If you have any questions, please do not hesitate to call me at X7027 or Rusty Sprouse at X7589.

Sincerely,

Joseph L. Scarcello
Chief Financial Officer and
Business Operations Manager

Attachments: Fire Protection Program Assessment CAP

cc: Robert Doane
Dave Kausch
Bruce Lenzer
Mary Logue
John Sprouse

Corrective Action Plan
For The Final Report
Fire Protection Program Assessment of the Thomas Jefferson National Accelerator Facility
ALL CATS ISSUES/ACTIONS: IA-2008-39

FINDING ID #	Observation	Cause	Corrective Action	Person Responsible	Expected Completion Date
FIND-001	Contrary to the requirements of Section J, Appendix E of Contract DE-AC-05-06OR23177, JLab has not been providing an Annual Summary of Fire Damage. Discussion: DOE Order 231.1A, paragraph 5a(8), requires that an Annual Fire Protection Summary for the previous year's fire damage be submitted to the DOE fire protection AHJ on April 30 each year. DOE Manual 231.1-1, Appendix F, identifies the specific fire protection program elements that are to be covered in the report.	The Management system to assure report was submitted was Less Than Adequate (LTA). There was no administrative system in place to assure the routine report was submitted as required.	1) Submit calendar year '07 report. 2) Set up FM&L's facility work control and management system, "Maximo" to send a reminder for annual report submittal (Apr. 30 notice).	D. Kausch R. Sprouse	09/15/08 (Complete) 6/30/08 (Complete)

FINDING ID #	Observation	Cause	Corrective Action	Person Responsible	Expected Completion Date
FIND-002	Contrary to the requirements of Section J, Appendix E of Contract DE-AC-05-06OR23177, JLab has not implemented the DOE compensatory controls required in an approved exemption to DOE Order 5480.7. (NOTE: Considerable discussion is included in the report, but is too large for this space.	The Management system to assure compliance with exemption was submitted was LTA. There were no controls in place to assure that as the construction project transitioned to an operational entity supported by engineering and facilities maintenance staff the commitments made with the approved exemption were implemented. Furthermore, oversight of the fire protection program, in terms of the depth and frequency of assessments were LTA, and therefore did not identify this failure	1) Conduct gap analysis of the proposed compensatory fire protection measures contained within the 1991 exemption request.	D. Kausch	8/30/08 (Complete)
			2) Begin implementation of other compensatory fire protection measures. *-Installation of sprinkler heads under structures in Halls – Complete* *-Train experimental hall staff and accelerator operations machine operators in the use of wheeled halon fire extinguishers* *-Conduct regular drills for fire response in hall (10/year)* *-Conduct regular (4/ year) on-site interactions with the Fire Department to ensure optimal response* *-Revise Hot Work Permit to require Fire Protection Engineer signature*	D. Kausch	09/10/08 (complete)
			3) Submit draft exemption request to TJSO for review.	D.Kausch	12/30/2008
			4) Submit exemption request to TJSO for approval (will require completion of corrective actions associated with a number of findings, especially, FIND-009)	D. Kausch	07/31/2010

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FIND-003	Contrary to the requirements of Section J, Appendix E of Contract DE-AC-05-06OR23177, JLab has not established an inspection testing and maintenance program for facility fire barriers. Discussion: Fire barriers are required to be installed per minimum national codes such as the NFPA 101 Life Safety Code to provide separation of egress pathways to general occupancy hazards. In addition, other minimum national standards require separation of various occupancies based on the hazards that they present. Numerous fire barriers exist within JLab facilities that are not being inspected at the minimum required frequencies. The team noted field deficiencies during the facility walk downs and a review of previously conducted assessment reports.	The Management systems to assure compliance with this requirement was submitted were LTA. Oversight of the fire protection program, in terms of the depth and frequency of assessments were LTA and therefore did not identify this failure	1) Identify all firewalls on floor plan for inclusion in fire alarm project graphics. This will be performed in conjunction with the updating of the fire alarm system • Exit stairs • Boiler rooms • kitchens	D. Kausch	10/30/08
			2) Modify the Fire Protection Program Manual to describe a formalized inspection and testing program for building fire barriers. The Fire Protection Manual is undergoing complete revision to reflect all the changes to the program required by DOE Order 420.1B	D. Kausch	3/30/09
			3) Implement program and process and complete initial inspections.	D. Kausch	6/28/09

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FIND-004	Contrary to the requirements of the May 1993 DOE memorandum regarding the managed phaseout of Halon fixed-fire suppression systems, JLab has not established alternate fire protection configurations for the existing Halon fire suppression systems. Discussion: DOE issued a Memorandum in May 1993 regarding the managed phaseout of Halon fixed fire suppression systems. This was based on the concerns over environmental deterioration caused by the proliferation of chlorofluorocarbons and Halon compounds in the atmosphere. As part of the memorandum, it was stated that alternate fire protection configurations should be pursued in lieu of Halon fire protection systems. During the review, the team found no indications that funding requests were being considered to replace the existing Halon units. Two of the wheeled units were found to have exceeded their required hydrostatic test date and should be immediately removed from service.	No causal analysis required. There is no regulatory requirement regarding the phasing out of portable Halon fire suppression systems.	1) Obtain regulatory documentation stating requirement to phase out portable Halon fire suppression equipment. If requirement exists, then new action is required for phase out plan. Otherwise provide justification for maintaining Halon portable equipment in place. (This action is complete. See below response). No regulatory requirement could be found regarding the phasing out of portable Halon fire suppression equipment. March 5, 1998 final rule [Federal Register: March 5, 1998 (Volume 63, Number 43)], [Page 11083-11097]: Prohibitions do not apply to the emergency release of halons for the legitimate purpose of fire extinguishing, explosion inertion, or other emergency applications for which the equipment or systems were designed. No specific DOE prohibition for portable Halon fire extinguishers on site. Requirement is to maintain portable extinguishers in place where there is no site policy for their removal. Inspect and maintain periodically as required by industry standards and return them to service. See http://hss.energy.gov/NuclearSafety/NSEA/fire/guidance/halon_phaseout.html. As the halon equipment is in service, and there is no acceptable alternative at this time, JLab will continue to maintain the portable Halon extinguishers. On 13 June 2008 the existing 12 portable Halon extinguishers were inspected and found to be within hydrostatic dates.	B. May	6/30/08 (Complete)

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FIND-005	JLab has not maintained a safety management program element identified in the current FSAD. The statements in the FSAD are not correct. Discussion: The FSAD states that independent highly-protected risk reviews are conducted biennially. According to the facility Fire Protection Engineer, the assessments were last performed in 2002. The FSAD states that the halls are fully protected by automatic fire sprinklers. The halls have been provided with partial sprinkler protection. There is no technical basis in the FSAD or FHA for the assigned consequence and probability ratings. A fire in the halls should be expected within the life of the facility based on its use of combustible components, high energy sources, and the nature of the operations. The consequences of a fire could be conservatively calculated as high, based on the known effects of the products of combustion on electronic equipment.	The Management systems to assure compliance with this requirement was submitted were LTA. Oversight of the fire protection program, in terms of the depth and frequency of assessments were LTA and therefore did not identify this failure	1) Verify that references to FHAs have been removed from the FSAD revision.	D. Kausch (Coordinated with Phil Mutton)	09/10/08 (Complete)

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FIND-006	Contrary to the requirements of applicable NFPA codes and standards, JLab has numerous noncompliant field conditions related to fire protection and life safety requirements. The deficiencies noted by the team were as follows: • Sprinkler protection is obstructed in the tunnel in several locations. • Ceiling panels are missing to the point of invalidating the safety function of sprinkler due to its ability to maintain the heat generated in a fire condition. • No as-built fire suppression system drawings exist for the automatic fire sprinkler systems; therefore, the sprinkler system design basis cannot be validated. • The access stairwells to the tunnel are used as part of the smoke removal system without an exemption of equivalency from the NFPA Life Safety Code. • Sticky notes are posted in various locations to identify emergency lights that failed to function during a previous power outage.	The Management systems to assure compliance were LTA. Oversight of the fire protection program, in terms of the depth and frequency of assessments were LTA and therefore did not identify this failure	*The Action Plan for FIND-008 discusses the programmatic approach to conducting facility assessments. This action plan only addresses the specific observations identified by the assessors.* 1) Move sprinkler heads to clear obstructions. 2) Replace or repair ceiling panels (This action is complete). 3) Update "as builts" as required and system design basis document to reflect current system. 4) Procure contractor to document technical basis that demonstrates the Life safety function of the means of egress is not significantly compromised with the existing situation. This procurement process has begun, but it will take to complete action. 5) 5) Enter all non-functional safety lights into FM&L Maximo for correction.	D. Kausch D. Kausch D. Kausch D. Kausch D. Kausch	09/10/08 (Complete) 06/30/08 (Complete) 6/30/09 03/30/09 06/30/08 (Complete)

FINDING ID #	Observation	Cause	Corrective Action	Person Responsible	Expected Completion Date
FIND-006 (cont.)	• A number of sprinkler risers in tunnel exit stairways are not provided with sleeves, causing the concrete to be poured tight to the pipe and increasing the probability of pipe failure during a seismic event. • Sprinkler piping is encased in the concrete in truck ramps' roofs, eliminating its access and increasing its failure potential in a seismic event. • Nonrated fire doors are installed in rated fire walls in the Continuous Electron Beam Accelerator Facility (CEBAF) Center.		6) Procure contractor to obtain professional review/evaluation & recommended action. If evaluation requires, action will be entered in CATS, otherwise submit exemption request to DOE. This procurement process has begun, but it will take to complete action. 6.1) Research code of record to confirm requirement.	D. Kausch	03/30/09
			7) As this is not a seismic sensitive area, no immediate action will be taken. Rather, when the pipe fails, the entire ramp will be replaced.	D. Kausch	06/30/2008 (Complete)
			8) Replace existing unlabeled doors around the CEBAF Center atrium with doors that display the appropriate fire resistance rating (as required by code). The proposed completion date is dependent upon the budget cycle and available funding.	D. Kausch	7/30/09

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FIND-007	Contrary to the requirements of DOE Order 420.1B, Attachment 2, "Contractor Requirements Document" (CRD), Chapter II, paragraph 3b(13), a documented, comprehensive fire protection program self-assessment has not been performed every three years. Discussion: JLab was unable to provide evidence that a comprehensive self-assessment has previously been performed for the JLab Fire Protection Program. Fire protection program self-assessments are required to be performed to validate that DOE-owned and leased facilities/activities are being provided with a level of protection that meets the "highly protected risk" elements used by general industry. DOE has chosen to meet the highly protected risk requirements based on the fact that DOE facilities are not insured against loss and because of their unique nature.	No Causal Analysis Required.	1) Add self-assessment to Assessment Topic Spreadsheet. 2) Set up work order in Maximo as planned maintenance activity 3) Modify the Fire Protection Program Manual to describe the fire protection self assessment. The Fire Protection Manual is undergoing complete revision to reflect all the changes to the program required by DOE Order 420.1B 4) Conduct assessment.	B. Doane D. Kausch D. Kausch D. Kausch	6/30/08 (Complete) 09/10/08 (Complete) 3/30/09 6/30/2010

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FIND-008	Contrary to the requirements of DOE Order 420.1B, Attachment 2, CRD, Chapter II, paragraph 3b(14), facility fire protection appraisals are not being performed every three years or on a schedule determined by DOE. Discussion: The TJSO has not established a frequency schedule for the facility assessments. The JLab Environment, Safety, and Health (ES&H) Manual, Chapter 6910, Appendix T4, requires facility fire protection appraisals to be performed every one, two, or three years based on the dollar value of the facility. The JLab current facility assessment process is generic in nature and does not address the DOE Order requirements. DOE requires that individual facilities of importance be reviewed against identified criteria to ascertain that the appropriate level of protection is being applied to the facility based on its importance to DOE.	No Causal Analysis Required.	1) Add appraisal requirement to the Assessment Topic Worksheet. 2) Set up the schedule for conducting facility fire protection appraisals as work orders in Maximo as a Planned Maintenance activity. Appraisals to being in FY09. 3) Establish Docushare mechanism to maintain records of appraisal.	B. Doane D. Kausch D. Kausch	6/30/08 (Complete) 09/10/08 (Complete) 09/10/08 (Complete)

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FIND-009	Contrary to the requirements of DOE Order 420.1B, Attachment 2, CRD, Chapter II, paragraph 3b(5), FHAs are not being performed/reviewed at a frequency defined by the DOE Order. Discussion: Contrary to the requirements of DOE Order 420.1B, Attachment 2, CRD, Chapter II, paragraph 3b(5), FHAs have not been performed/reviewed at the frequency required by the Order. While JLab has several FHAs, they have not been revised at the required frequencies required by the Order, and they no longer reflect the actual facility configurations (hose stations removed in the tunnel and acid stations have been added to the test laboratories). A review of the Experimental Hall B found the FHA to be fairly comprehensive in nature, although numerous elements of the information were found to be out of date. In general, the documents do not reflect the current facility dollar values or the facility point hazards, and they do not address the effects of combustion products on the electronic equipment in the various facilities.	No Causal Analysis Required.	Internal discussions have identified 4 facilities that will need FHAs. 1) Obtain Physics experimental equipment list with values to confirm the facilities requiring FHAs. 2) Unless otherwise determined by action 1) above, conduct FHA for: a) Accel. Tunnel b) Hall A c) Hall B d) Hall C	 D. Kausch D. Kausch	 11/30/08 01/30/2010 (Note: Tunnel and Halls to coincide with the next accelerator down in 2009) Based on obtaining FY09 funding

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FIND-010	Contrary to the requirements of DOE Order 420.1B, Attachment 2, CRD, Chapter II, paragraph 3b(8), a Fire Department baseline needs assessment has not been completed and approved by TJSO. Discussion: The purpose of a baseline needs assessment is to validate that the fire, emergency medical, and rescue response capabilities of the responding fire department provide an adequate level of service based on the importance and hazards of the facility. JLab receives these services from the City of Newport News. Three fire stations are in close proximity to the facility. The stations are 1.2, 1.8, and 3.8 miles away. During this assessment, it was reported that the Fire Department would not make an aggressive fire attack within any of the Experimental Halls. As such, due to the lack of automatic fire suppression and manual suppression capabilities, DOE can expect a high dollar loss potential. It should be noted that the exemption approved in 1993 by DOE Headquarters expected manual suppression activities to be conducted to minimize the fire loss potential.	No Causal Analysis Required.	1) Contact & discuss FD baseline analysis needs with NNFD. 2) Develop & Document baseline needs.	J. Kelly J. Kelly	1/30/09 3/30/09

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FIND-011	Contrary to the requirements of DOE Order 420.1B, Attachment 2, CRD, Chapter II, paragraph 3b(2)(g), a comprehensive hot work program has not been established. Discussion: The assessment team determined that the JLab Hot Work Program lacks sufficient structure and controls to meet the highly protected risk requirements for protection against fire. The team identified the following issues and discussed them with JLab personnel: • The JLab Hot Work Program procedure allows a Facility Manager to appoint anyone as a recognized "primary authorizing official" without any formal training requirements or required detailed hazard analysis capabilities. • Fire watch personnel are not required to be assigned for the protection of the worker; only property protection concerns are addressed.	No Causal Analysis Required.	Revise ES&H Manual to detail contacts & approval authority for hot work. Changes have been drafted and are in the revision/review process.	D. Kausch	12/30/2008

FINDING ID #	Observation	Cause	Corrective Action	Person Responsible	Expected Completion Date
FIND-012	Contrary to the requirements of DOE Order 420.1B, Attachment 2, CRD, Chapter II, paragraph 3b(2)(d), the contractor has not established comprehensive fire protection criteria and procedures regarding the operability, inspection, maintenance, and testing of the fire protection systems and features. Discussion: During the assessment, the team noted that the identification, inspection, maintenance, and testing of fire barriers (walls, doors, dampers) are not being performed. Fire barriers are required to be installed to separate various occupancy hazards for both property protection and life safety.	No Causal Analysis Required.	See corrective action for Finding 3.	D. Kausch	3/30/09