

**Corrective Action Plan
For
FALL PROTECTION SURVEILLANCE AT THOMAS JEFFERSON NATIONAL ACCELERATOR FACILITY**

FINDING ID #	FINDING	Corrective Action	Person Responsible	Expected Completion Date
FINDP2-001	<p>Installation of chains for protection of openings in standard guardrail systems, including ladder ways, needs to be evaluated. OSHA 29 Code of Federal Regulation (CFR) 1910.23(a)(2) requires that ladder way openings be protected by a swinging gate or be offset to prevent a person from walking into the opening. An OSHA interpretation does allow the use of chains for top and intermediate rails of a ladder way opening, provided they afford employees protection "at least as effective as" the swinging gate. The chain used for the protection of a ladder way on the mezzanine level of the Test Lab does not meet these requirements. The installed chain is lightweight material and is installed with significant slack which would not provide support to an individual falling against the chain, and there is no intermediate level protection. In addition, the upper grab installed in the floor as part of the original ladder presents a significant trip hazard to personnel accessing the ladder from the mezzanine level.</p>	<ol style="list-style-type: none"> 1) A gate will be placed at the 2 cases identified in this review. (IA-2008-77-02) 2) Schedule a meeting to determine requirements for safety chains versus gates. The meeting outcome will be documented and attached to this CATS entry. (IA-2008-77-03) 3) Develop Lesson Learned for ladder safety and ownership and communicate to JLab personnel. (IA-2008-77-04) 4) Evaluate any other instances for replacement. (IA-2008-77-05) 	<p>Debra Brand</p> <p>Debra Brand</p> <p>Debra Brand</p> <p>Debra Brand</p>	<p>4/30/09 for the two cases noted</p> <p>Meeting by 4/30/09</p> <p>4/30/09</p> <p>9/30/09</p>

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FIND P2-002	Chain was also used as part of a guardrail system to allow access to piping on the second level walkway of the Test Lab. This chain does not meet the requirements for standard guardrails or of alternative acceptable arrangements as defined by 29 CFR 191 0.23(e). The chain was draped loosely across the opening, and the hook attaching the chain to the guardrail did not have a closing mechanism. Besides not providing stable support, it is likely that this chain would release if an individual fell against it.	Addressed under item FINDP2-001	N/A	N/A
FIND P2-003	Near the Test Cave area of the Test Lab, a mobile ladder stand was permanently installed in lieu of a fixed industrial stair (Figures 3 and 4). This installation required modification of the ladder stand handrail, as well as resulting in a configuration that prevented the ladder stand from functioning as designed. The ladder mechanism is designed to lower the front legs for stability, and the lowering mechanism also levels the bottom step, As installed, the levelling mechanism could not be actuated, resulting in the bottom <i>step</i> being sloped from front to back resulting in a trip hazard for anyone using the ladder. Use of a mobile ladder stand as a fixed industrial stair does not meet the requirements of 29 CFR 1910.24 for fixed industrial stairs.	1) Remove mobile ladder and replace with a fixed stair. (IA-2008-77-06)	Debra Brand	6/30/09

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FIND P2-004	<p>One stepladder was identified in the Test Lab that had been modified by the addition of a spreader bar. Ladders should not be modified without approval of the manufacturer or without a documented evaluation by a professional engineer to determine that the structure of the ladder has not been compromised. (Reference: Environment, Safety & Health Manual section 6132, paragraph 3.1)</p> <p>Numerous mobile ladder stands were observed in several facilities that had been modified by removal of sections of handrail. A mobile ladder stand was also observed in experimental Hall C where the handrail had been repaired by the addition of a metal sleeve over the existing handrail section. Mobile ladder stands should not be modified without specific written authorization from the manufacturer or a written evaluation by a professional engineer, as modification of ladder stands may result in equipment that may no longer conform to standard specifications of strength to safely support the design working load. (29 CFR 191 029(a)(2)(iii))</p>	<ol style="list-style-type: none"> 1) Review all portable ladders in halls, tunnel, EEL, and Test Lab to determine which has been modified. Review will have to be coordinated with OPS schedule. (IA-2008-77-07) 2) Obtain documentation from JLab structural engineer and/or manufacturer for modifications or dispose of ladders. (IA-2008-77-08) 	<p>Suresh Chandra</p> <p>Suresh Chandra</p>	<p>12/31/09</p> <p>12/31/09</p>

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FIND P2-005	A mobile ladder stand that had significant rust and deformation of the support caster was also available for use (is, not tagged out of service) in the outside storage yard south of the Experimental Equipment Lab (Building 90) machine shop. This concern was immediately brought to the attention of a machine shop representative. This ladder should be removed from service as required by ES&H Manual Section 6132, paragraph 3.1, "Withdraw ladders from service that have developed defects. Destroy any defective ladder or tag it "Do Not Use" and send it to Facilities Management for repair...'	<ol style="list-style-type: none"> 1) Confirm ladder has been removed and tagged out of service or has been excessed. (IA-2008-09) 2) Lesson Learned referenced in Corrective Action to FIND P2-001 to include equipment physical condition expectations. (IA-2008-77-10) 	Doane Debra Brand	4/17/09 4/30/09
FIND P2-006	While the evaluation of fixed ladders following the 2006 accident and the continuing action to replace those requiring frequent access was positive, no definitive program has been established to implement a continuing program to ensure all fixed ladders are inspected regularly, with the intervals between inspections determined by use and exposure as required by 29 CFR 1910.27(f).	<ol style="list-style-type: none"> 1) Evaluate installed units against 1910.24 and 1910.27. Develop a program to comply with 1910 requirements. (IA-2008-77-11) 	Debra Brand	6/30/09

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FIND P2-007	There is no identifiable means to verify that the scaffold system components acquired by Facilities Management are traceable to a given manufacturer or matched product line, or that it had been designed and constructed in accordance with a recognized standard.	<ol style="list-style-type: none"> 1) Dispose of Scaffold system. (IA-2008-77-12) 2) Disallow use of P-Card for purchase of safety equipment. (IA-2008-77-13) 3) Provide ANSI rated scaffolding. (IA-2008-77-14) 	Dave Kausch	4/30/09
FIND P2-008	The training program discusses the criteria for fall-arrest system anchor points; and In practice, employees use this information to select the anchor point they will use. There was a concern expressed by one employee that he was not comfortable identifying an anchor point he was using for a routine work assignment that involved a significant fall protection (Hall C heating, ventilation and air conditioning HVAC] unit). No engineering review had been conducted in this area to verify that the anchor point being used meets the minimum requirements as specified in 29 CFR 1926 502(d)(15).	<ol style="list-style-type: none"> 1) Engineer anchor points for Hall A and C units. (IA-2008-77-15) 2) Schedule installation of anchor points during Hall down periods. (IA-2008-77-16) <p>Note: Mechanical work will continue meeting the following conditions:</p> <ul style="list-style-type: none"> • Mechanics will not leave the basket. • A TOSP will be in place if the mechanics leave the basket. 	Suresh Chandra Suresh Chandra	9/30/09 9/30/09

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OBSERVATIONS				
FIND P3-001	The Laboratory should evaluate work practices associated with raising and lowering tools and equipment from elevated locations to ensure adequate fall protection exists.	1) Evaluate and develop a procedure for raising and lowering tools. (IA-2008-77-17)	Carroll Jones	6/30/2009

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FIND P3-002	<p>From field observations, there were at least four different types of scaffolding either in use, or available for use, on site. Several Laboratory and subcontractor personnel that were identified as scaffold users were interviewed to obtain information on the scaffolds they have used on site and their general scaffold system familiarity. In every case, the workers were able to convey comprehension on safe scaffold use and understanding of the hazards associated with scaffolding erection and disassembly; furthermore, all of the scaffold users interviewed reported that they had received training on the scaffolds they had used. However, upon inquiry with these users, the training they had received on any given scaffold system was highly variable. In some instances, the training received was dependent upon the equipment supplier's training content, as opposed to being dictated by a Laboratory approved curriculum. Discussion with the Lab's Training Coordinator indicated that the Lab's written instruction on training encourages the use of lesson plans but does not make this a requirement for training to be recognized as "official training."</p>	<p>1) Identify all types of scaffolding on site. (IA-2008-77-18)</p> <p>See FIND P3-003 for corrective actions related to training</p>	Manny Nevarez	Complete

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FIND P3-003	<p>The Lab's Training Coordinator also indicated it is the responsibility of the supervisor that initiated or sponsored a training class to provide the Training Coordinator with the roster of trained staff, the date the training occurred, and a description of the training course subject. If the information received by the Training Coordinator is limited to "scaffold training," that is the way it is entered into the central training records system'. Upon request, the Lab's Training Coordinator provided a roster of all qualified scaffold users. The printout provided from the central electronic training records system failed to identify some scaffold training completed in June 2008. The explanation provided was that these records had either not yet been entered into the system or the electronic records failed to migrate as expected from one database into the central training records system.</p>	<ol style="list-style-type: none"> 1) Develop a Lab scaffold training program. (IA-2008-77-19) 2) Training will be tracked in Lab training records. (IA-2008-77-20) 	<p>Ned Walker</p> <p>Bruce Ullman</p>	<p>6/30/09</p> <p>6/30/09</p>

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FIND P3-004	The lack of information provided by supervisors on the specific type of scaffold training received has created a condition such that any scaffold training is indistinguishable from another; consequently, any staff member that has training on more than one scaffold system will have had historical scaffold training dates overwritten and no means to identify how many types of scaffold systems a given worker has been trained on. The training records system does not allow an employee or their supervisor to distinguish between the different types of scaffolding that they may have been trained on.	1) Training records will distinguish between training on specific scaffold. (IA-2008-77-21)	Bruce Ullman	6/30/09
FIND P3-005	From interviews conducted in the field, it was identified that other groups have had occasion to borrow scaffolding from the Cryogenics group. The system-specific training received by these other groups was not the same as the training initially received by the Cryogenics group and was administered by a member of the Lab's Environmental, Safety, Health and Quality (ESH&Q) Division. The ESH&Q staff member is recognized by the Laboratory as an OSHA competent person through prior work experience, but has no scaffold training records within the Laboratory's central training records system. The rigor of scaffold training administered to scaffold users has been highly variable, potentially impacting a student's ability to use these systems safely.	1) Document scaffold training of OSHA competent person in training system. (IA-2008-77-22)	Ned Walker	5/1/09

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FIND P3-006	There is a lack of quality assurance consideration in the Lab's current procurement of scaffolding systems and attachments, as is warranted for these safety-dependant systems.	1) Review and ensure Policies and Procedures for procured devices are acceptable. If not, revise documentation as necessary. (IA-2008-77-23)	Manny Nevarez	Complete
FIND P3-007	During the field walk downs, no self-propelled elevating platforms were observed in use; however, several were inspected, and all were in good condition and had current inspection stickers. One elevated platform was identified that had a bent handrail with a snap hook connected (Figure 18). There was no evidence to suggest what had been connected to the handrail; however, employees must be aware that these devices are not designed to support a connected load.	1) An e-mail will be sent to all qualified personnel indicating mobile platform handrails are not designed to support loads. (IA-2008-77-24)	Manny Nevarez	3/13/09

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FIND P3-009	<p>In Building 72, multiple web-type retractable lanyards are attached to I-beams on the upper level for use as fall assist when the standard handrails are removed from the platform. If the fall-arrest system was engaged as a result of an employee falling from the platform, the web would strike the edge of the I-beam with the full force of the suspended employees fall. In at least one instance, the beam <i>edge</i> was extremely sharp resulting in a high potential to cut the webbing. Softening should be added to the beam edges or the retractable lanyards should be replaced with wire-type lanyards.</p>	<p>1) Procure and install wire-type lanyards for use in Building 72. (IA-2008-77-28)</p>	Manny Nevarez	4/30/09
FIND P3-010	<p>All fall-arrest harnesses and lanyards must be approved and procured by the Material Handling Safety Representative; however, other components potentially used in a fall-arrest system such as cross-arm straps and retractable lanyards may be procured by the individual divisions. All equipment potentially used as a component of fall-arrest systems should be specified and procurement approved by a single subject matter expert to ensure that appropriate equipment is purchased and to establish consistency throughout the site.</p>	<p>1) Review and confirm Policies and Procedures are adequate and revise as necessary if not. (IA-2008-77-29)</p>	Manny Nevarez	Complete