

**Lesson Learned Title:** Ineffective Laser Lab Personnel Sweep (“Near Miss”)

**Lesson ID:**

**Date:** June 18, 2007

**Contact:** Carter Ficklen, phone 757-269-7007

**Classifier:** Not Applicable

**Reviewer:** Gwyn Williams

**Statement:** During laser operations in the Jefferson Lab Free Electron Laser (FEL) Laboratory #1, control room staff unexpectedly discovered the presence of a worker in the laboratory. This discovery was made after a sweep to remove all workers was performed and laser operations were underway. The laser light was in operation for less than one minute when the worker was discovered and the laser light was immediately stopped. There was no exposure and no injuries to the worker. A DOE “near miss” occurrence report (ORPS #SC--TJSO-JSA-TJNAF-2006-0005) was submitted.

**Discussion:** A persistent problem with safety system administrative controls, particularly in an R&D environment, is that their effectiveness depends on the diligence of the person enforcing the control. Personnel performing safety sensitive tasks such as sweepers must exercise care to recognize when conditions have changed and be alert to recognize new potential hazards. Sweep techniques must be adapted to allow for changing room configurations. Persons performing sweeps are responsible for ensuring that the control is executed properly every time, and line management is responsible for enforcing controls. The importance of this diligence must be continually reinforced so that incidents like this do not occur. Engineering controls can force a sweeper to take their time and cover the required territory but are no substitute for being diligent in the personnel sweep search. Periodic evaluation of administrative and engineering controls is necessary to ensure that personnel are protected.

**Analysis:** Basic Lesson Learned messages from this event are:

- 1) Facility management should limit access to essential personnel.
- 2) Training for special hazard environments, such as laser labs, needs to ensure people understand the consequence and significance of alarms.
- 3) Emergency egress scenarios need to be considered in lab interlock design. In this event, laser lab door signage and hardware were inconsistent with function and did not allow prompt egress.
- 4) Sweep techniques must adapt to the changing room configuration. There was an obstruction created after the experimental setup was first approved.

**Actions:** Followup actions from this event included an extent of condition review. Specific actions are listed below:

- 1) Two to four sweep buttons in each FEL lab to verify that the sweep goes to all portions of the lab. There will be a sweep button in each walk-in hutch as well.
- 2) A verbal announcement is made that a sweep is occurring as the sweep begins.
- 3) A verbal announcement is made that lasing is to begin after the sweep has taken place and 30 seconds before beam is provided to the lab.
- 4) FEL visiting scientific users are briefed on this event and fully aware of applicable FEL protocols prior to initiating experiments.

**Savings:**

**Keywords:** Laser, Laser Safety, Laser Lab, Laser Interlocks

**Hazard(s):** Personnel Injury

**ISM Code(s):** Provide Feedback and Continuous Improvement, Perform Work Within Controls

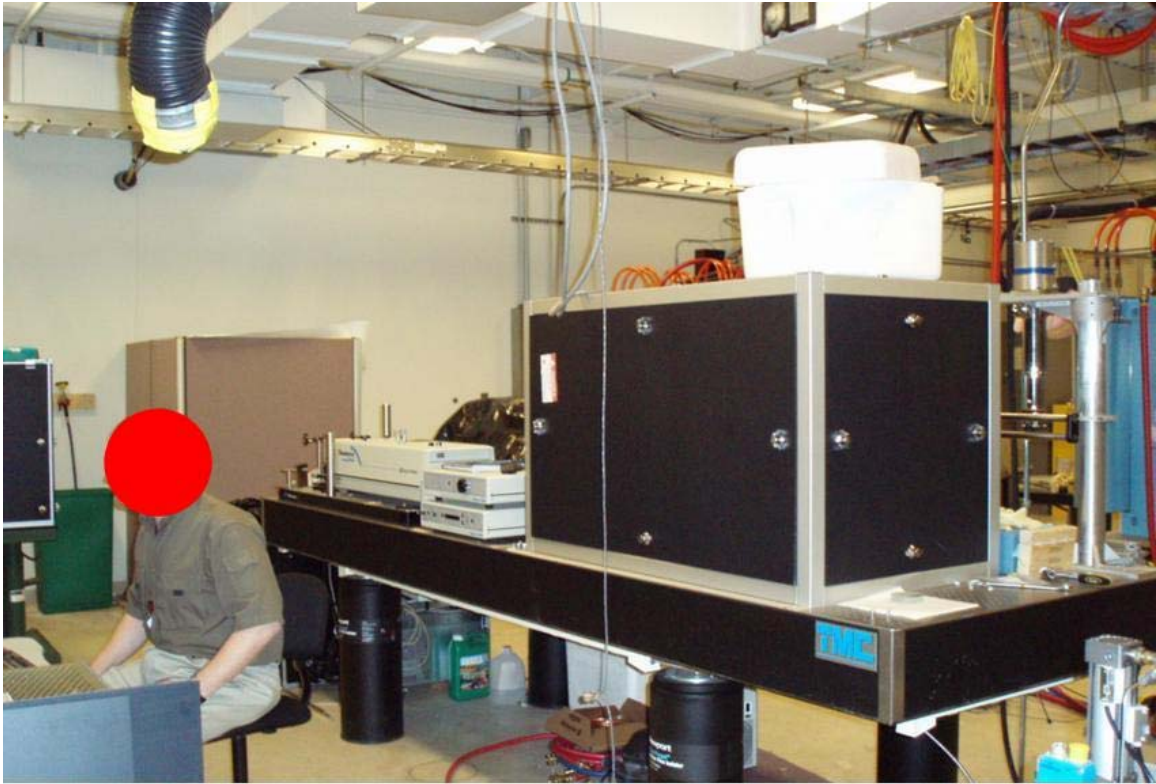
**Work Functions:** Other

**References:**

**Priority Descriptor:** Blue / Information



**View of Lab 1 from entrance door. Computer workstation is located along the wall on the right side of the lab, behind the magnet setup**



**Position of user at computer workstation in Lab 1. This view is from the right-rear corner of the lab.**