



EQO SURVEILLANCE REPORT

EQO Surveillance Number	Surveillance Title	Surveillance Date(s)
COA-FY08-SURV-001	Laser Safety Surveillance Building 366 AWA Laser Room	3/4/08
Program / Activity	Requesting Manager/Org.	Responsible Manager/Org.
Laser Safety Program	J.P. Nolen-COA	John Power - HEP
Team Leader	Team Member(s)	ESH/QA Representative
Jim Hooper, COA-Independent Assessment Group	None	Leon Reed - HEP

Purpose

This surveillance reviewed the HEP division's laser installations in LCA Building 366 AWA Laser Room to determine the implementation of ESH Manual chapter 6.2 *Laser Safety*. This surveillance is a follow on to EQO-FY08-SURV-005 which looked at the institutional laser safety program including what is expected by the Laboratory Laser Safety Officer (LSO).

Scope

An over all laser safety checklist was developed based on reviewing ESH Manual chapter 6.2 and the ANSI Z136.1 standard. (Attachment 1) Only those portions of the check list dealing with program implementation at the division level were included in this surveillance. The surveillance was performed at the same time the LSO was performing his review of the laser installation permits and the overall laser installation, which was scheduled at this same time. This was done to conserve the time spent by the division staff on reviews of this type and will be continued at other installations in the future.

Assessment Details/Results

The laser installations in the AWA laser room were found to have adequate engineering controls, and readily available PPE. However, the training of all staff was incomplete in that not all users listed have completed the site-wide laser safety training nor have been approved for completing the required facility specific on-the-job alignment training (OJAT).

As a result of this surveillance, one issue is noted and six improvement opportunities are being recommended.

ESH Manual chapter 6.2.6 requires all personnel designated as laser users of class 4 laser installations to have completed the Argonne laser safety training course ESH-120. In addition, hands on-the-job alignment training (form ANL-692) must be completed for each authorized laser user designated by the LCA supervisor to perform potentially hazardous alignment operations. In order for the LCA supervisor or other designated trainer to administer OJAT, course ESH-124 must be completed. Two of the thirteen authorized users in the SOP have no record in TMS of having completed ESH-120 and another two have no TMS record as they are visiting FNAL employees that were not issued an Argonne badge. None of the thirteen users have had the OJAT training recorded, although the LCA supervisor had the forms filled out for all users, but he himself was not qualified to provide the training since he had not taken the ESH-124 course, nor were the training form completion endorsements signed by those required to sign them. The laser safety program requires for those that work on class 4 lasers to take ESH-120 every two years. One user's training has been longer than 2 years and has expired.

Issue: The laser safety training for HEP staff in this facility is an issue. Four of thirteen listed users have not had the required ESH-120 training and one has training that expired 6 months ago. None of the listed users have completed OJAT and the OJAT trainer who is also the LCA supervisor (nor the ESH Coordinator) has not had the required ESH-124 training to provide the OJAT or to review the OJAT taken.

IO-1: All users' JHQs (including the ESH Coordinator) should be reviewed and updated as needed. Two of the HEP personnel have the ESH-120 course listed as an elective and as a result there is no notification provided by TMS when refresher training is due. This is the suspected reason the one user's training had expired and the reason those needing ESH-124 training did not get notified by TMS.

(Note: The LSO sent the LCA supervisor an e-mail immediately after this review to remind him that only qualified (those that have taken ESH120) laser users should be listed in the SOP and all training and eye exams need to be verified.)

ESH Manual chapter 6.2.3 indicates that Division Directors/Department Heads approve operation by signing an annual Operating Permit and a Standard Operating Procedure for the laser installations. This approval may be delegated to

the division ESH Coordinator. Presently the ESH Coordinator signs for the DD/DH at the AWA laser installation. The DD/DH is also responsible for appointing a laser controlled supervisor for each LCA.

IO-2: The DD/DH should formally appoint the LCA supervisor and formally delegate his approval responsibilities for laser operations and SOP's to the ESH Coordinator.

ESH Manual chapter 6.2.5.2 indicates that invisible beam class 4 laser systems incorporate a warning device either audible or visible, to indicate presence of a beam. Audible warning devices may include distinctive sounds produced by some pulsed lasers. AWA has no visible warning device, but indicated that the laser itself produces an audible sound to alert personnel when the beam is present.

IO-3: The noise produced by the laser as a warning the beam is present should be so stated in the SOP.

ANSI Z136.1 section 4.3.10.2.1 requires class 4 laser installations to have a panic button readily available to effect beam termination. The AWA laser room utilizes the electric box main pull switch located in the room as their panic button. While the box is assessable, there is a filing cabinet and other equipment located very close to the box (In discussions with an EQO-SME, he indicated OSHA requires a 36 inch clearance).

IO-4: The panic button (electrical box) clearance should be reviewed to determine compliance with OSHA.

The AWA laser room has a standard operating procedure dated March 7, 2007. This procedure meets the requirements defined in ESH Manual chapter 6.2. However there were several things noted that could be improved:

IO-5: For the next SOP revision, the following is recommended:

- All authorized laser users should read and indicate that they understand the SOP by signing and dating the SOP page upon which the user's name is listed.
- Detailed procedures on how the LCA interlocks are to be tested and documented should be included in the SOP.
- The paragraph on the use of gloves should be clarified as it appears gloves are rarely needed or used in these lasers' operation.
- The paragraph on high voltages should be clarified as to whether LCA personnel can work on these high voltage systems and if so, what Argonne electrical safety requirements must be met.
- Additional detail on the control of Fluorine gas should be stated especially how one checks for proper exhaust flow, manner and frequency of how the system fan alarm is to checked, what should be done upon loss of exhaust flow.
- The laser alignment procedure checklist (ANL-649) requires for each YES answer to describe the method, and for each NO answer to write a brief explanation of why control cannot be implemented. The method and explanations should be included on the checklist.

ESH Manual 6.2.5.2 indicates that interlocks be tested quarterly and the results documented. AWA laser room has two doors with interlocks that shut off the laser system when activated. The results of interlock activations (both from tests and accidental door usage) are recorded in a log book. The LCA supervisor indicated that it is actually tested more frequently than quarterly as someone will invariably go through the interlock door without bypassing it, causing a shutdown of the system.

IO-6: Testing of the door interlock system would require that both doors be tested and therefore the LCA supervisor should assure that both doors are tested quarterly and that both are recorded separately as being functional.

List of Attachments

Laser Safety Checklist

Reviews/Approvals

Performed by: Jim Hooper Date: 3/11/08
Team Leader mm/dd/yy

Reviewed by: _____ Date: _____
Requesting Manager mm/dd/yy

Approved by: J. Patrick Nolan Date: 03/11/08
Assessments Program Manager mm/dd/yy

File/Distribution: Responsible Manager
Requesting Manager
Applicable ESH/QA Representative
Assessments Program Manager
PAAA/851/ORPS Coordinator