DEPARTMENT OF THE NAVY
UNITED STATES NAVAL ACADEMY
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USNAINST 5100.13C
4/Safety

APR 17 2003

USNA INSTRUCTION 5100.13C

From: Superintendent

Subj: LASER SAFETY PROGRAM

Ref: (a) OPNAVINST 5100.27
(b) OPNAVINST 5100.23.F

Encl: (1) Guidelines for Preparing a Standard Operating Procedure (SOP)/Operator's Checklist for Laser Operations

1. Purpose. To publish a Laser Safety Program instruction for the United States Naval Academy (USNA) to prevent injury to personnel and material damage as a result of exposure to laser radiation.

2. Cancellation. USNAINST 5100.13B. This instruction is a complete revision and should be reviewed in its entirety.

3. Scope. This instruction applies to all equipment and systems capable of producing (non-ionizing) laser radiation, including laser fiber optics, at the USNA.

4. Background. The widespread use of lasers in both commercial and military applications has increased the probability of exposure to injury from laser operations.

5. Definitions

a. Laser Classifications. The four laser classifications range from Class 1 lasers, which are inherently safe for viewing under all conditions to Class 4, which require the strictest controls. Reference (a) contains details concerning laser classifications.

b. Military Exempt Lasers. Lasers designed for actual combat, combat training operations, or classified for national security purposes, are exempt from compliance, except for the labeling and classification requirements in reference (a). Military exempt lasers will not be operated at the USNA.

c. Laser Personnel. Those who work routinely in laser environments, included in this category are faculty teaching courses utilizing Class 3b, Class 4 lasers, and conducting laser-related research. Midshipmen conducting a laser-related independent study or Trident research projects are also included in this category.

d. Incidental Personnel. Those whose work makes it possible, but unlikely, to be exposed to laser energy sufficient to damage their eyes or skin. Included in this category are clerical, custodial, and supervisory personnel not working directly with laser devices. Midshipmen enrolled in courses using lasers in a carefully controlled laboratory environment are classified as incidental personnel.

6. Responsibilities

a. The Laser System Safety Officer (LSSO) will be appointed by the Superintendent. He/She is the single point of contact and authority at the USNA for laser-related matters. He/She will have direct access to the Superintendent as required by his/her duties. The LSSO will:

(1) Be thoroughly familiar with the contents of references (a) and (b).

(2) Evaluate and approve applications for laser systems and operations. Survey lasers annually to ensure adequate hazard control, sufficiency of personal protective equipment, and compliance with applicable safety regulations. Suspend, restrict, or terminate the operation of any laser or laser operator that fails to comply. Accompany inspectors from external regulatory agencies on inspection tours of the USNA laser facilities.

(3) Maintain an inventory of Class 3b and Class 4 lasers and their locations for the Bureau of Medicine and Surgery (BUMED) (MED212).

(4) Coordinate with Naval Medical Clinic (NMCL) Annapolis Occupational Health to maintain medical surveillance of laser personnel per reference (b).

(5) Conduct annual refresher training and maintain records per references (a) and (b). Provide training for emergency medical technicians and firefighters in laser hazards.

(6) Investigate laser radiation incidents and near misses, take corrective action, and report incidents per reference (a).

b. Each division working with Class 3b and Class 4 lasers should provide a single point of contact for the LSSO. The point of contact will:

(1) Assist the LSSO in determining which faculty/midshipmen will be laser operators/incidental personnel.

(2) Report laser radiation incidents and near misses within 24 hours to the LSSO.

(3) Establish and post laser SOPs per enclosure (1) and Emergency Shutdown Procedures.

(4) Accompany inspectors on inspection tours of their laser facilities.

(5) Conduct laser hazard training for incidental laser personnel exposed to Class 3b or Class 4 lasers per reference (a).

c. A Laser Range Safety Officer is not assigned. Outdoor firing of Class 3b and Class 4 lasers will not be conducted at the USNA.

7. Training

a. The LSSO will complete the LSSO training course available through the Naval Occupational Safety and Health and Environmental Training Center. Re-certification is required every 4 years.

b. Class 3b and Class 4 laser personnel will have initial and annual refresher laser safety training.

c. Incidental personnel will be informed via safety briefings and posted warning signs.

d. Firefighters and emergency medical technicians will have initial laser safety training.

e. The above training will be conducted per the requirements of references (a) and (b).

8. Medical Surveillance

a. Laser operators of Class 1, Class 2, and Class 3, without danger logos, require no medical surveillance.

b. Operator of Class 3a laser with a danger logo label will require a visual acuity test.

c. Class 3b and Class 4 laser operators will have examinations per reference (b).

d. Incidental personnel will have an eye examination for visual acuity only. Special examinations are not required for midshipmen included in this category.

e. The NMCL Annapolis will conduct the medical surveillance per reference (b).

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Distribution:
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Guidelines for Preparing a Standard Operating Procedure (SOP)/Operators' Checklist for Laser Operations

These guidelines are intended to assist Laser Personnel in preparing SOP/Operators' Checklist for Laser Operations. This information applies to Class 3b or 4 lasers only All laser operators must review laser SOP's annually, make changes if necessary, and forward a current copy to the Laser System Safety Officer (LSSO). No SOP is required for other class lasers.

1. Introduction

   a. Location of laser (building and room number).

   b. Description of authorized laser and the normal operations.

   c. Purpose or application of beam.

   d. ANSI Z136.1 classifications.

   e. Other applicable information as required.

   f. Review annually and submit a copy of the SOP(s) of the laser(s) is your responsibility, annually, to the LSSO.

2. Hazards

   a. Identification of laser hazards (beam).

   b. Identification of associated hazards (non-beam).

   c. Authorized hazardous materials allowed and conditions permitting use, including personal protective equipment (PPE), firefighting equipment, ventilation requirements, storage containers, allowed amounts, and emergency response procedures.

3. Controls

   a. Access controls (entry restrictions, door interlocks, signs, signals, etc.).

   b. Beam controls (activation of key interlock, enclosures, shutters, beam dumps, types of beam stops, area clearance procedures, etc.).

   c. Electrical controls (power supply indicator lights, high voltage signs, etc.).

   d. Eye protection required (type of eye protection approved, wavelength and optical density, etc.).

   e. Spectator controls--if authorized (PPE, etc.).

   f. Conditions for unattended operation if permitted by LSSO.

g. Other controls as required (i.e., no smoking or flame; no eating or drinking in area).

4. Operating Procedures

   a. Initial preparation of laboratory environment (key position, warning lights on, door interlocks activated, identification of personnel present, PPE issued, etc.).

   b. Personnel protection (isolation barriers in place, eye protection donned).

   c. Alignment procedures.

   d. Target preparations.

   e. Shut down procedures.

5. Maintenance Procedures

   a. Authorized personnel.

   b. Phone numbers of authorized personnel.

   c. Shutdown procedures in place.

   d. Lockout/Tagout implementation.

6. Emergency Procedures

   a. Potential emergencies and corresponding procedures.

   b. Specific rescue and/or evacuation procedures.

   c. Emergency phone numbers (laser operator, Laser Safety Officer, fire, ambulance, etc.).

7. Training

   a. Indoctrination for authorized laser personnel (prior to operating a laser, authorized midshipmen working on a project must be trained by the professor and documentation must be submitted to the Laser Safety Officer).

   b. Indoctrination for authorized incidental laser personnel.

   c. Briefing for authorized spectators.