



UNITED STATES MARINE CORPS
MARINE CORPS RECRUIT DEPOT/EASTERN RECRUITING REGION
PO BOX 19001
PARRIS ISLAND, SOUTH CAROLINA 29905-9580

DepO 5104.2
SAF

18 MAY 2011

DEPOT ORDER 5104.2

From: Commanding General
To: Distribution List

Subj: MARINE CORPS RECRUIT DEPOT (MCRD) LASER HAZARDS
CONTROL PROGRAM

Ref: (a) OPNAVINST 5100.27B/MCO 5104.1C, NAVY LASER
HAZARDS CONTROL PROGRAM
(b) 21 CFR 1040, Performance Standard for Light
Emitting Products
(c) MIL-HDBK-828A, Department of Defense Handbook
Laser Safety on Ranges and in Other Outdoor
Areas
(d) OPNAVINST 5102.1D/MCO P5102.1B, Navy and Marine
Corps Mishap and Safety Investigation Reporting
and Record Keeping Manual
(e) DepO 5100.16F, FORCE PRESERVATION (SAFETY)
PROGRAM
(f) ANSI Z136.1 American National Standard for Safe
Use of Lasers
(g) SECNAVINST 5100.14C

Encl: (1) Example Laser Warning Signs
(2) Laser Safety Requirements Summary
(3) Laser Classification and Risk Assessment
(4) Example of Military Exempt Laser Inventory
(5) Example of Non-Military Exempt Class 3B and 4B Laser
Inventory Format
(6) Glossary of Terms

1. Situation. As directed by guidance in references (a) through (g), this Order provides the policy, assigns responsibility, and presents requirements for the administration of the Marine Corps Recruit Depot's/Eastern Recruiting Region's (MCRD/ERR) Laser Hazards Control Program (LHCP) as a component of the MDRD/ERR Safety Program implemented by reference (a) and (e).

2. Cancellation

3. Mission. This Order establishes a formal LHCP within MCRD and any ERR commands participating in applicable laser use structure to minimize the risk of injury to personnel and the general public, and damage to equipment from improper use. This Order applies to all

MCRD/ERR commands procuring, possessing, using, or responsible for training users of lasers. For the purpose of this Order laser hazards apply to the design, use, and disposal of all equipment and systems capable of producing laser radiation. This includes laser fiber optics and system support equipment, field military lasers used principally for target acquisition, training and fire control. Medical, industrial, and construction laser systems that have no military-specific applications are exempted from this instruction. The widespread use of lasers in both commercial and military applications has increased the probability of injury from exposure to laser radiation. References (a) through (c) provide controls over laser design and operation for protection of personnel and equipment or contain specific information on various laser safety subjects.

4. Execution

a. Commander's Intent and Concept of Operations

(1) Commander's Intent

(a) Enhance unit and individual readiness by maintaining an effective LHCP in compliance with pertinent regulations.

(b) Control sources of laser radiation to minimize personnel exposures and to prevent injury or damage to personnel and equipment.

(c) Provide guidance and requirements for implementing references (a) through (g), for sources of laser radiation used within MCRD/ERR.

(2) Concept of Operations

(a) Per reference (a), commanders are responsible for establishing and implementing the following procedures which reduce the risk of laser related injuries:

(1) Impose implementation and operating requirements of this instruction and enclosure (2) of reference (a) on equipment and facilities. Provide adequate warnings, safety training, documentation, and audits for the control of all hazards resulting from the use of lasers at their activities.

(2) Ensure appropriate Laser Eye Protection (LEP) is worn by all personnel within the Nominal Hazard Zone (NHZ) during testing or operational use of any laser system with the unaided Optical Density (OD) requirement. If optical aids may be used in the exercise, LEP should meet the aided OD requirement.

(3) Appoint the LSSO at that command or activity and forward the LSSO's name, organizational code, and telephone number to the installation ALSO. The activity commander and LSSO will maintain control over laser operations at the local activity. Training requirements are contained in reference (a).

(4) Ensure that only those laser installations and ranges which have been certified by an RLSS and approved by the activity LSSO as safe for specific applications using specific laser systems are allowed to operate and then solely for those applications. Laser systems shall not be fired outside of these LSSO-designated areas and targets. Technical assistance is available from the LNTL on a cost reimbursable basis to enable commanding officers and their LSSOs to certify the safety of their laser ranges. The commanding officer is responsible for range certification and use per reference (c) of reference (a).

(5) Use and dispose of military exempt lasers per references (c), (k) and (l) of reference (a). Obtain approval of the ALA prior to disposal. The LSRB may be used to ensure that the system is demilitarized per reference (l) or disposed of in accordance with reference (k) that will prevent public access to military exempt technology.

(6) Maintain a current inventory of all military exempt lasers and all class 3B and class 4 lasers as defined in reference (a) for submission to the ALA as requested. A sample format for submission of military exempt laser data is given in enclosure (1). A sample format for submission of non-military exempt class 3B and class 4 lasers is given in enclosure (2). The LSSO shall keep the inventory of military exempt and class 3B and class 4 lasers. Report lost lasers to the ALA using the inventory formats given in enclosures (1) and (2).

(7) Immediate consultation shall be obtained with an ophthalmologist or optometrist for personnel with suspected or observed laser exposure. Since early medical intervention may lessen the severity of the damage or subsequent retinal scarring for the laser injury, efforts should be made to have the individual promptly seen by an ophthalmologist or at the ophthalmology department of a hospital on an urgent basis. First aid should not be attempted for damage produced by laser energy to the eye; therefore, prompt reporting to a medical treatment facility is imperative for known or suspected laser injuries. For reporting, the following department notifications are required:

(a) Depot Force Preservation Office per reference (d).

(b) Bureau of Medicine and Surgery (BUMED, M3B4) by electronic mail, fax, message or telephone of suspected or observed laser exposure as soon as possible at commercial (202) 762-3448, DSN 762-3448, fax commercial (202) 762-0931, DSN 762-0931. Additionally, contact the tri-service laser safety hotline (800-473-3549) as soon as possible.

(8) Submit a laser incident report for all cases where personnel are inadvertently exposed to laser energy and maintain the laser incident reports per reference (g) of reference (a). This report is required for all incidents involving personnel with suspected or observed exposure to class 3B or class 4 lasers. The report shall be sent by the LSSO to BUMED within 30 days of the incident per reference (a).

(9) Submit a safety investigation report per references (e), (f), and (g) of reference (a) for all incidents that meet the safety investigation thresholds.

(10) Submit a hazard report for any work-related events that could have potentially resulted in a laser exposure such as using defective safety equipment or inadequate standard operating procedures using the laser incident report criteria in paragraph 7e(9) of reference (a) as applicable.

(11) Ensure Laser equipment is approved by the LSRB for all class 3B, class 4 and military exempt lasers.

b. Per enclosure (3), Navy and Marine Corps regions, commands, or activities having only class 1, 2, and 3a or 3R lasers not used in combat, combat training or classified in the interest of national security are not required to assign an LSSO. However, they shall:

(1) Ensure users read manufacturer literature and labeling.

(2) Report any instances of contact of the laser beam with an eye to the safety office immediately.

c. The Unit Safety Officer is responsible for monitoring the unit laser hazard control program, training and coordinating laser safety classes when required and informing the commander of the potential laser risk to personnel.

d. Unit Supervisory Personnel are responsible for directly monitoring personnel and ensuring adequate safety precautions are taken to prevent laser related injury.

e. Incidental workers are personnel whose work makes it possible to be exposed to laser energy, in amounts sufficient to damage the eyes. Examples are:

- (1) Operators of fielded laser equipment.
- (2) Personnel involved in laser use on approved laser ranges.
- (3) Personnel involved in "force on force" laser training exercises (when adequate protection, administrative and/or protective equipment is provided).
- (4) Personnel involved on a short-term basis in research, development, test and evaluation or maintenance of laser equipment.

f. Laser workers are personnel who work routinely in laser environments and have a higher risk of accidental overexposure. Personnel regularly involved in maintenance of laser equipment or who work in situations where adequate protective measure cannot be provided.

g. Range Personnel that are exposed to laser hazards must be briefed by the Laser Range Safety Officer (LRSO). Proper personal protective equipment for eyes and skin should also be furnished.

h. All personnel must obey WARNING signs and placards when around the operation or maintenance lasers. An example of warning signs are contained in enclosure (1).

i. Other responsibilities and restrictions are contained reference (a) under the following sections:

- (1) Activity Laser Hazard Control Program;
- (2) General Laser Hazard Control Program;
- (3) Laser Firing Log;
- (4) Safety Requirements for Military Laser Ranges;
- (5) Laboratory Laser Use and Laser Maintenance Requirements.

5. Administration and Logistics

a. Submit modifications or changes to this Order for approval by the Safety Division (CMC (SD)) prior to issuance. Submit modifications to policies affecting specific NRMPs to the permit holder for approval.

6. Command and Signal

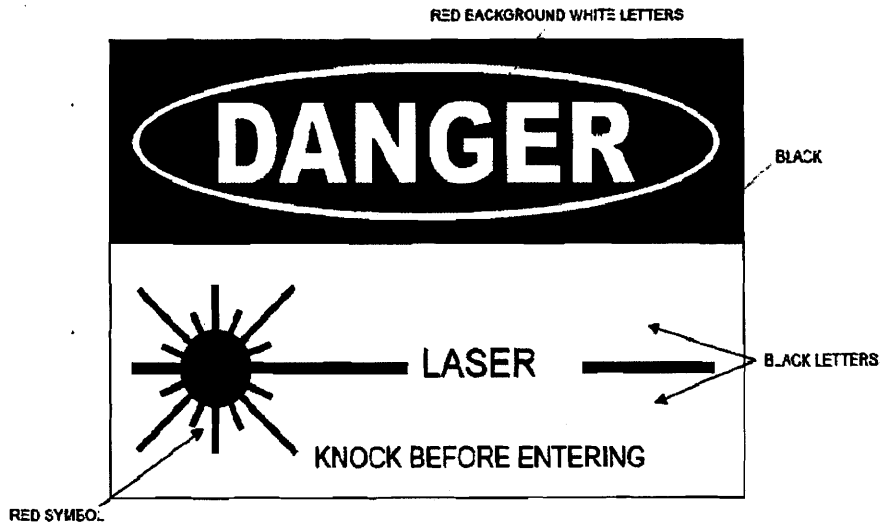
a. Command. This Depot Order is applicable to tenant commands and visitors operating lasers and associated equipment. Commanders will ensure strict compliance with references (a) through (g) and this order.

b. Signal. This Order is effective the date signed.

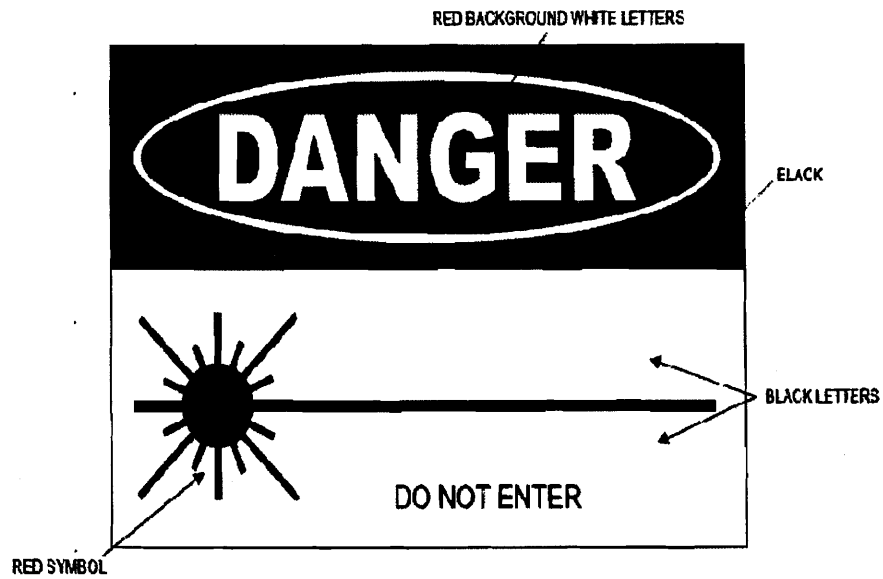


R. L. GROBOWSKI
Chief of Staff

Distribution: A



Laser Maintenance Area Warning Sign



Laser Range Warning Sign

Enclosure (1)

LASER SAFETY REQUIREMENTS SUMMARY

<u>LASER SAFETY REQUIREMENTS SUMMARY</u>	All Lasers used in combat, combat training and classified in the interest of national security					Other Lasers							
						<u>All Locations</u>			<u>Indoor Lab Test</u>		<u>Range</u>		
	1.1M	2.1M	3a.3R	3B	4	1.1M	2.1M	3a.3R	3B	4	3E	6	
X - shall C - should blank - not required													
OPNAVINST 5100.236 (ashore) OPNAVINST 5100.15E (afloat) This instruction	X	X	X	X	X	X	X	X	X	X	X	X	
OPNAVINST 5100.14D	X	X	X	X	X								
ISRB APPROVAL	X	X	X	X	X	C	C	C	C	C	X	X	
CI CFR (FIA REGISTERED)						X	X	X	X	X	X	X	
LASER SAFETY DESIGN REQUIREMENT CHECKLIST ADAPTED FROM MIL-STD-1472A	X	X	X	X	X								
MANUAL INVENTORY	X	X	X	X	X						X	X	
APPROVAL FOR DISPOSAL FROM ADMINISTRATIVE LEAD AGENT (ALA)	X	X	X	X	X								
THE BY LINE	X	X	X	X	X	C	C	C	C	C	X	X	
CONTRACTING OFFICER NOTIFY CONTRACTOR CONCERNING EXEMPTION AND LABELING PER EXCL 16	X	X	X	X	X								
CAUTION LABEL PER ANSI Z39.1		X	X										
DANGER LABEL PER ANSI Z39.1			X	X	X								
CAUTION LABEL PER CI CFR							X	X					
DANGER LABEL PER CI CFR								X	X	X	X	X	
<u>USER TRAINING</u>													
Read manufacturer literature and labeling	X	X	X	X	X	X	X	X	X	X	X	X	
Formal safety specific training with Demo Military video				X	X				X	X	X	X	
LASER SYSTEM SAFETY OFFICER ASSIGNED & TRAINED	X	X	X	X	X				X	X	X	X	
LASER UNIT PROMOTABLE				X	X				X	X	X	X	
MIL-STD-1472	X	X	X	X	X						X	X	

For labels that exceed 1000 sq. in. or 100 sq. ft. for added viewing attention, requirements may apply.

Required by Navy Regulations

Enclosure (2)

Laser Classification and Risk Assessment

Class	Energy	Hazards	Risk Assessment Matrix
Class 1	Depends on wavelength. Example: AN/PAQ-4C, Infrared Aiming Light (830 nm) below 0.7 milliWatt (mW).	Incapable of producing damaging radiation.	Effect: Negligible (IV) Hazard Probability: Unlikely (E) Risk Assessment: LOW
Class 2 (visible Lasers only)	Depends on wavelength. Example CW helium neon alignment lasers: Cannot exceed 1 mW.	Eye protection usually afforded by the aver- sion response (0.25 second(s) for visible). Hazards comparable to projectors or the sun.	Effect: Moderate (III) Hazard Probability: Unlikely (E) Risk Assessment: LOW
Class 3 (3a (3R) and 3b)	Class 3a (Class 3R). Depending on wave- length: Between 1 and 5 times the Class 1 or Class 2 emission limit (AEL) Example: Multiple Integrated Laser Engagement System (MILES) devices.	Direct and specular reflection viewing. hazards. Diffuse reflection is usually not a hazard.	Effect: Moderate (III) emission limit (AEL) Hazard Probability: Seldom (D)- Unlikely (E)
	Class 3b. CW and repetitively pulsed lasers: cannot exceed 0.5 Watts (W) 0.25 s. Example: Airborne Infrared Multipurpose (AIM)-1/D, Infrared Aiming Light Pulsed lasers: Cannot exceed 0.030 Joule (CA J/ pulse or 0.125 J within 0.25 s). Example: Army Navy/Ground Vehicular, Visible Light, Fire Control (AN/VVG)-3, M1 laser rangefinder.	Direct and specular reflection viewing. Diffuse reflection is usually not a hazard.	Effect: Critical (II)- Catastrophic (I) Hazard Probability: Frequent(A)- Unlikely (E) Risk Assessment: LOW-EXTREMELY HIGH

Laser Classifications according to ANSI Z136: 1, 1m, 2, 2m, 3a, 3r, 4

Enclosure (3)

EXAMPLE DEPOT MILITARY EXEMPT LASER INVENTORY

From: Force Preservation Officer
To: Commanding General

Subj: EXEMPT and CLASS 3b LASER INVENTORY REPORT FOR FY__

Encl:

System Name:

Type:

Manufacturer:

Approved by LSRB? (Y) _ (N)_ If no, explain:

Exemption Qualification (Check applicable spaces)
Combat: Training: __ Classified: __

Optional: N/A Contract Number: N/A

Total to date in this contract: N/A

NSN: 5855-01-534-5931

Serial Numbers: See Attachment

STATUS

Subtotals should add up to quantity possessed. Disposed lasers shall be maintained as a separate part of the inventory. Lost lasers shall be reported immediately to the ALA.

Quantity Possessed: __

Subtotals: In use: __ Repair: __ Storage: __ Awaiting Disposal: __

Laser Location(s): _____

Custodian Name(s): _____

Phone: _____

Signature(s) _____

Copy to:

Enclosure (4)