



UNITED STATES MARINE CORPS

3d Marine Division (-) (REIN), FMF  
FPO San Francisco 96602-8600

DivO P5100.1  
15A

25 Feb 1983

DIVISION ORDER P5100.1

From: Commanding General  
To: Distribution List

Subj: Light Amplification by Stimulated Emission of Radiation  
(LASER) Safety (Short Title: SOP for LASER Safety)

Ref: (a) American National Standard for the Safe Use of Lasers  
ANSI Z136.1  
(b) SECNAVINST 5100.14A  
(c) NAVMEDCOMINST 6470.2  
(d) SPAWARINST 5100.12  
(e) MCO P3570.1C  
(f) FMFPACO 5100.5  
(g) E0410-BA-GYD-010/7034

Encl: (1) Locator Sheet

Report Required: Military Exempt LASER Inventory Report (Report Symbol  
DIV-5100.1, par 5005).

1. Purpose. To promulgate guidelines and assign responsibilities for the safe use of LASER systems within the 3d Marine Division, in accordance with references (a) through (f).

2. Information

a. The term LASER refers to a device emitting or amplifying visible, infrared and/or ultraviolet radiation primarily by the process of controlled stimulated emission.

b. Exposure to LASER beams above the maximum permissible exposure limits can result in serious radiation burns, particularly to the eyes. While maximum permissible exposure (MPE) levels have been established by reference (a), unnecessary exposure to LASER radiation is to be avoided.

3. Action. All 3d Marine Division personnel and all Reserve units, units of other U. S. Armed Forces, and foreign National units, when hosted by the 3d Marine Division will comply with the safety instructions and provisions of this Order.

4. Recommendations. Recommendations concerning the contents of the SOP for LASER Safety are invited. Such recommendations will be forwarded to this Headquarters (Attn: Safety Officer) via the appropriate chain of command.

DivO P5100.1  
25 Feb 1988

5. Certification. Reviewed and approved this date.



R. R. WRIGHT  
Chief of Staff  
Acting

DISTRIBUTION: A/D

Copy to: CG, MCB, CamBut  
CG, 1st MarDiv  
CG, 2d MarDiv  
CG, 1st MAB



UNITED STATES MARINE CORPS

3D MARINE DIVISION (-) (REIN): FMF  
FPO SAN FRANCISCO, CA 98602-8600

DivO P5100.1 Ch 1  
G-4SAF

21 MAR 1990

DIVISION ORDER P5100.1 Ch 1

From: Commanding General  
To: Distribution List

Subj: LIGHT AMPLIFICATION BY STIMULATED EMISSION OF RADIATION  
(LASER) SAFETY (SHORT TITLE: SOP FOR LASER SAFETY)

Encl: (1) New page inserts to DivO P5100.1

1. Purpose. To transmit new page inserts to the basic Manual.
2. Action. Remove pages 7-1 and 7-3 of the basic Manual and replace with pages 7-1, 7-3, and 7-4 contained in the enclosure.
4. Summary of Changes. Reference (c) redefined the criteria for assignment to the Medical Surveillance Program.
5. Change Notation. Significant changes on the revised pages for this change are denoted by an arrow (  ) symbol.
6. Filing Instructions. This Change transmittal will be filed immediately following the signature page of the basic Manual.
7. Certification. Reviewed and approved this date

  
C. W. REINKE  
Chief of Staff

DISTRIBUTION: A/D

Copy to: CG, MCB CamBut  
CG, 1st MarDiv  
CG, 2d MarDiv  
CG, 1st MEB

SOP FOR LASER SAFETY

RECORD OF CHANGES

Log completed change action as indicated.

Change Number	Date of Change	Date Received	Date Entered	Signature of Person Entering Change
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1	9/20/22	9/20/22	9/20/22	Shirley Jackson
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# SOP FOR LASER SAFETY

## CONTENTS

### CHAPTER

- 1 LASER SAFETY ORGANIZATION
- 2 LASER SAFETY PROGRAM REQUIREMENTS
- 3 LASER SAFETY REGULATIONS
- 4 ACTIVITY AUDIT OF LASERS
- 5 LASER SAFETY TRAINING PROGRAM
- 6 LASER PROTECTIVE GOGGLES
- 7 MEDICAL SURVEILLANCE PROGRAM
- 8 ACCIDENT INVESTIGATION/REPORTING PROCEDURES
- 9 RECORDS

### APPENDIX

- A MILITARY EXEMPT LASER ANNUAL INVENTORY REPORT FORMAT
- B LASER RANGE FIRING LOG
- C LASER SAFETY INSPECTION CHECKLIST
- D LASER MAINTENANCE SAFETY PRECAUTIONS
- E MILITARY EXEMPT LASERS

SOP FOR LASER SAFETY

REPORT REQUIRED

<u>REPORT TITLE</u>	<u>REPORT SYMBOL</u>	<u>PARAGRAPH</u>
I: Military Exempt LASER Inventory Report	DIV-5100-01	5005

SOP FOR LASER SAFETY

CHAPTER 1

LASER SAFETY ORGANIZATION

	<u>PARAGRAPH</u>	<u>PAGE</u>
LASER SAFETY COMMITTEE.....	1001	1-3
LASER SYSTEM SAFETY OFFICER.....	1002	1-4
RANGE LASER SAFETY OFFICER.....	1003	1-5
LASER SUPERVISOR.....	1004	1-7

# SOP FOR LASER SAFETY

## CHAPTER 1

### LASER SAFETY ORGANIZATION

1001. LASER SAFETY COMMITTEE. The 3d Marine Division LASER Safety Committee is established to assist in meeting the requirements for LASER hazards control. The Committee will coordinate areas of mutual concern in regard to the training, use, and support of LASER systems. The following staff sections will be represented on the board and are assigned the specified responsibilities:

a. The Division Safety Officer is designated as the LASER Systems Safety Officer (LSSO) for the 3d Marine Division. The Division Safety Officer will:

Publish safety standards for the safe use of LASERS

Chair the Division LASER Safety Committee

(3) Provide administrative support for the Division LASER Safety Program.

Publish LASER protective equipment/device requirements.

(5) Publish accident prevention and investigation procedures.

(6) Coordinate the LASER Safety Inspection Program.

Establish LASER record-keeping procedures.

(8) Coordinate LASER safety program requirements with and act as a board member to the Host Command LASER Safety Committee.

(9) Maintain and submit all necessary records and reports required by host commands, and references (d) and (f), to include class IIIb, class IV and military exempt LASER inventories and firing logs.

(10) Maintain a list of all certified LASER ranges in the WESTPAC area, to include their recertification dates.

b. Assistant Chief of Staff, G-3 will:

(1) Appoint ground and air component members to the Division LASER Safety Committee.

(2) Coordinate LASER operator training and LASER safety training within the Division.

(3) Coordinate range LASER operation and training requirements with appropriate host commands.

c. Assistant Chief of Staff, G-4 will

(1) Appoint a member to the Division LASER Safety Committee

(2) Coordinate acquisition, inventory and disposal of LASER systems

(3) Coordinate recommended changes to operators manuals (TM's TI's, etc.) of ground LASER systems.

(4) Coordinate acquisition of protective equipment/devices.

(5) Establish and coordinate LASER system and support system maintenance.

d. The Division Surgeon will

(1) Appoint a member to the Division LASER Safety Committee.

(2) Coordinate the LASER Medical Surveillance Program.

(3) Coordinate LASER injury medical reporting.

e. Regiments/Separate Battalions utilizing LASER systems will:

(1) Assign a qualified Category I or II LASER Systems Safety Officer (LSSO) as the Regimental/Battalion LSSO.

(2) Establish, in writing, and implement a Regimental/Battalion LASER Safety Program.

(3) Assign the Regimental/Battalion LSSO, to assist the Division LSSO in maintaining an up to date LASER hazard control program.

(4) Maintain and provide, to the Division LSSO, copies of all reports, firing logs, training records, and incident investigations as specified and required by references (d) and (f).

1002. LASER SYSTEMS SAFETY OFFICER (LSSO). An individual will be designated by name as the LASER Systems Safety Officer with direct access to the Commanding Officer with sufficient technical competence and authority to approve or disapprove the local use of LASERs. The LSSO shall:

a. Receive, prior to LSSO assignment, LASER safety training by successfully completing LSSO course SET 460 at the NAVSEA safety

school or SPAWAR (OOF) approved equivalent training. Refresher training will be obtained if technical training is not used within one year of course completion.

b. Comply with the procedures, instructions and guidance of this order, host country requirements, host command requirements, and higher authority directives and instructions. In the event a conflict arises, the LSSO shall comply with the most restrictive requirement pending resolution by appropriate authority.

c. Ensure that each LASER is classified and labeled prior to use in accordance with reference (d).

d. Maintain a list of all LASERs and their location within the command and submit an annual list of all military exempt LASERs to the Division Safety Office, via appropriate chain of command, by 15 July of each year.

e. Maintain records on all personnel exposed to LASERs. These records shall be submitted to the medical officer for medical surveillance in accordance with reference (c).

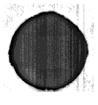
f. Investigate suspected LASER radiation incidents, initiate appropriate corrective action and report such incidents as directed by references (d) and (f) and this order.

g. Establish and promulgate organizational LASER safety regulations. This includes, for Regimental and Battalion levels, standing operating procedures for safety for LASER operations, emergency procedures, and documented safety duties and responsibilities for LASER supervisors as specified in reference (d).

h. Obtain eyewear with sufficient optical density protection at the operating wavelengths and other personal protective equipment required for hazard control. Insure protective equipment is properly and appropriately maintained and utilized where and when required.

i. Conduct and document FMFPAC approved LASER safety training and refresher training programs for LASER and incidental personnel.

1003. RANGE LASER SAFETY OFFICER (RLSO). An RLSO must be formally trained in LASER systems safety by a qualified LSSO and certified by the Range Command approved authority, to conduct and supervise LASER operations on specified range(s). RLSOs must be certified for each LASER system and each range for which operations are to be conducted, as each system and each range may present different and unique requirements, limitations, restrictions and procedures. Host range commands normally will maintain up to date records of personnel certified to conduct LASER operations on their ranges. Units are



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SOP FOR LASER SAFETY

CHAPTER 2

LASER SAFETY PROGRAM REQUIREMENTS

	<u>PARAGRAPH</u>	<u>PAGE</u>
STANDARDS .....	2001	2-3
PROGRAM ELEMENTS.....	2002	2-3
LASER EQUIPMENT SECURITY.....	2003	2-3

# SOP FOR LASER SAFETY

## CHAPTER 2

### LASER SAFETY PROGRAM REQUIREMENTS

2001. STANDARDS. As directed by the current edition of reference (b), the standards for the safe use of LASERs provided in reference (a), are established as the maximum permissible exposure (MPE) levels for all Marine Corps personnel and all personnel within Marine Corps facilities. In all cases where conflicts exist regarding exposure limits (i.e., Federal, Navy, Host Nation, or Host Command), the standard which is the most restrictive (provides the greatest degree of safety) will be used.

2002. PROGRAM ELEMENTS. Program requirements include, but are not limited to:

- a. LASER safety committee.
- b. LASER safety organization.
- c. LASER safety regulations (SOP).
- d. Acquisition, inventory and disposal procedures.
- e. LASER operator training and LASER safety training.
- f. LASER safety equipment/devices program.
- g. LASER systems safety maintenance program.
- h. Medical surveillance program.
- i. Accident/incident investigation and reporting procedures.
- j. Survey and inspection program.
- k. Records.
- l. Reporting.

2003. LASER EQUIPMENT SECURITY. All military exempt, Class III and Class IV LASERs will be stored, transported and handled in the same manner as individual weapons.

SOP FOR LASER SAFETY

CHAPTER 3

LASER SAFETY REGULATIONS

	<u>PARAGRAPH</u>	<u>PAGE</u>
POLICY.....	3001	
SOP FOR MAINTENANCE OPERATIONS.....	3002	
SOP FOR RANGE LASER OPERATIONS.....	3003	

# SOP FOR LASER SAFETY

## CHAPTER 3

### LASER SAFETY REGULATIONS

3001. POLICY. Control measures will be outlined for firing of a LASER on a given installation and/or range. Some of the control measures will be specific to a given location, however, there are some general guidelines that can be adopted to every installation and LASER system. In addition to the requirements to the current editions of references (a) through (g) and local requirements, the LASER safety regulations contained in this order will apply.

3002. SOP FOR MAINTENANCE OPERATIONS. Most injuries associated with LASER systems have occurred in the laboratory and/or maintenance facility. The most severe cases reported include death by electrification, permanent visual impairment and severe radiation burns. These have usually involved experienced LASER specialists who have failed to wear protective eyewear or clothing, or neglected to follow proper safety procedures. General requirements for LASER maintenance and facility hazard control are provided in enclosure (8) of reference (d). Additionally requirements for LASER maintenance operations include, but are not limited to:

a. Control measures for the maintenance facility and operations will be designed to protect all personnel having access to the area as well as the LASER personnel.

b. Engineering controls (i.e., beam stops, attenuators, caps, and containment; interlocked warning lights, bells and buzzers; power interlocks, secure barriers, etc.) shall be utilized as the primary means of hazard abatement.

c. Maintenance of LASER systems and safety devices/equipment will be in strict compliance with the appropriate TI, TM or operating manual of the LASER system. Refer to Appendix D for further information.

d. Maintenance will be accomplished by qualified personnel only.

e. Control measures enforced will be commensurate with the requirements established for the highest class LASER in operation.

3003. SOP FOR RANGE LASER OPERATIONS. Most ranges in the Western Pacific are subject to changes either in the physical dynamics, political fluctuations and/or local population encroachment. Consequently, range commands will be required to modify and update existing regulations and, where conditions warrant, cancel LASER operations completely. Should the former condition arise, host range commands may require recertification of RLSOs.

1. MCB Camp Butler requires Range LASER Safety Officers to complete certification training for each LASER system and each range the RLSO is to conduct LASER operations. Requests for RLSO certification will be submitted to Division G-3 Training for processing.
2. The MCB Camp Butler LASER Systems Safety Officer is negotiating with Air Force, Army and Navy Commands for authority to conduct RLSO certification for various WestPac ranges. Information relative to this item may be obtained directly from MCB Camp Butler Safety Office.
3. In addition to the local range requirements for prior permission, target identification and adherence to scheduled range/target times, the RLSO shall comply with the following basic requirements for LASER range operations and LASER target restrictions:
  - a. Only targets surveyed and approved may be lased.
  - b. All lasing must be within the LASER certification parameters of the range being used.
  - c. Target clearance and target identification are accomplished to insure no unauthorized vehicle or personnel are in the target area or buffer zone.
  - d. Lasing will be terminated, if necessary, to preclude any possibility of the LASER beam leaving the immediate assigned area. The beam shall not be directed at nor be allowed to enter into the buffer zone.
  - e. In no case shall the beam be directed at or above the horizon
  - f. All targets shall be free of mirrorlike (specular) objects such as glass, plexiglass or highly polished surfaces.
  - g. Care shall be exercised that no other specular reflectors are inadvertently lased. The target and vicinity shall be visually inspected with this in mind prior to conducting LASER operations. (Examples: Standing water from melted snow or previous rainfall near or on the target could easily reflect the beam outside the permissible lasing area. Specular surfaces rendered diffuse by tape or paint coverings may have peeled or worn reexposing the reflecting surface).
  - h. LASERS shall not be activated until the designated target has been acquired optically or through a recognized tracking system.
  - i. No LASER range operations are authorized without the presence and permission of a Range LASER Safety Officer certified for the specific LASER system and LASER range to be used.

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associated buffer with or without optics unless either personnel or magnifying optics have eye protection attenuating filters of the appropriate OD and wavelength. An OD of six or greater at 1064 nm wavelength is adequate to protect personnel under all viewing conditions for currently deployed Nd: YAG LASER systems.

y. Manned mobile targets will be occupied by a minimum of two personnel. Two-way communications will be assigned to the individual not charged with operating the manned mobile target.

z. All personnel within the restricted area (beam path or buffer zone) must wear appropriate LASER eye protection when LASER firing is in progress.

SOP FOR LASER SAFETY

CHAPTER 4

ACTIVITY AUDIT OF LASERS

	<u>PARAGRAPH</u>	<u>PAGE</u>
LASER EQUIPMENT INVENTORY.....	4001	
USER IDENTIFICATION.....	4002	
LASER INSTALLATION SAFETY SURVEY.....	4003	

# SOP FOR LASER SAFETY

## CHAPTER 4

### ACTIVITY AUDIT OF LASERS

#### 4001. LASER EQUIPMENT INVENTORY

1. A LASER audit must be completed to establish a LASER equipment inventory, identify personnel who require medical surveillance, and provide safety survey inspections of LASER installations. This audit will be conducted by the Regimental or separate Battalion LSSO annually, using the sample inspection checklist contained in Appendix C of this Order, and other applicable directives.

2. A LASER equipment inventory and classification of LASER hazards is required for hazard control. The inventory records should identify the type of LASER, operating characteristics, hazards classification, application, frequency of operation, physical location, and the individual(s) responsible for disposition (if applicable), as contained in reference (b), and other applicable directives.

4002. USER IDENTIFICATION. During the LASER audit, all personnel who operate or are exposed to LASER radiation should be identified. Risk category may be established identifying (low, moderate, or high) risk exposure situations, as explained in Chapter 5. Personnel exposure records must be kept regarding the equipment used, job assignments, LASER related medical history. All records shall be maintained for a period of five years with the exception of the medical records which shall be maintained at the regional Medical Center for a period of fifty years as per reference (c).

4003. LASER INSTALLATION SAFETY SURVEY. Each individual LASER installation must be thoroughly inspected at least once a calendar year to ensure that it meets and continues to meet safety requirements. Inspections must include, but are not limited to, a review of the standing operating procedures, of protective eyewear and of all other protective equipment. In addition the installation must be inspected to assure that the required warning systems and signs are posted in all appropriate locations for the protection of all personnel from LASER radiation. Safety survey inspections are done by the Naval Surface Weapons Center, Dahlgren, Virginia, and are requested by Marine Corps Base, Camp Butler.

# SOP FOR LASER SAFETY

## CHAPTER 5

### LASER SAFETY TRAINING PROGRAM

5001. CLASS I LASERS. Class I LASERS are nonhazardous devices which may be viewed directly or indirectly without any protective devices over extended periods of time.

5002. CLASS II LASERS. Class II LASERS are low-risk LASER devices which are hazardous only if viewed continuously without protective devices. Class I and II LASERS require no special training.

5003. CLASS IIIA LASERS. Class IIIA LASERS are moderate risk LASER devices which require protective equipment for personnel and specific mechanical safety devices to ensure personnel safety during LASER operations. Simple review of the LASERS characteristics and hazards is sufficient training. A formal hazard control program is required for Class IIIA LASERS with an output greater than 2.5 cmw/cm<sup>2</sup>. These LASERS are marked with a danger sign and will be considered high risk LASER devices.

5004. CLASS IIIB AND CLASS IV LASERS. Class IIIB and IV LASERS are high risk LASER devices which require protective equipment for personnel and extensive mechanical safety devices to ensure personnel and physical safety during LASER operations. These LASERS require the following formal classroom training:

- a. Type of eye protection to be worn (when and where, appropriate wavelength and proper periodic inspection).
- b. Potential hazards in the target area, maintenance area, etc., types of warning signs to be posted and specific procedures to avoid these hazards.
- c. Thorough briefing on all range procedures with specific emphasis to ensure that:
  - (1) Two way communications with all involved ships, aircraft, personnel, etc. are established before LASER operations commence.
  - (2) Acquisition, identification, and tracking of the specifically assigned target are established prior to LASER activation.
  - (3) No lasing occurs until cleared by the range control officer.
  - (4) Lasing shall cease immediately whenever the LASER is not pointed in the immediate vicinity of assigned targets or the range officer terminating the run.

(5) Personnel know where to post signs, range barriers, or range guards and for what purpose.

(6) The importance of interlocks for maintenance buildings

(7) Biological effects if any.

(8) Specular reflections (mirror like reflections)

(9) Diffuse reflections (refers to objects which can scatter the beam's reflection such as rocks, trees, etc.).

(10) The medical surveillance requirements

5005. MILITARY EXEMPT LASERS. These are all LASERs which due to their military application and/or security classification are not specifically identified as to class, function of purpose and which may be exempt from the requirements contained in reference (a) and other applicable regulatory publications. However, safety requirements for use and operation do apply. Units possessing military exempt LASERs will submit a report to this Headquarters (Attn: Safety Officer) not later than 15 July of each year. Refer to Appendix A for the format of this report. See Appendix E for further guidance on military exempt LASERs.

SOP FOR LASER SAFETY

CHAPTER 6

LASER PROTECTIVE GOGGLES

	<u>PARAGRAPH</u>	<u>PAGE</u>
GENERAL.....	6001	6-3
INSPECTION AND MAINTENANCE.....	6002	6-3

# SOP FOR LASER SAFETY

## CHAPTER 6

### LASER PROTECTIVE GOGGLES

6001. GENERAL. When LASERs are put into operation, the using organization must ensure that all exposed personnel, both in work areas and down range, are adequately protected from LASER radiation. Goggles must be permanently labeled for their optical density. There should be sufficient goggles with the proper optical density at the appropriate wavelengths to issue to all personnel who require one and to handle any visitors required to be in the LASER hazard area.

6002. INSPECTION AND MAINTENANCE. Periodic inspections shall be made by using organizations of protective eyewear to ensure the maintenance of satisfactory conditions. This shall include:

- a. Inspection of the attenuator material for pitting, cracking and discoloration.
- b. Inspection of the frame for mechanical integrity.
- c. Inspection for light leaks that would permit hazardous intra-beam viewing. Eyewear in suspicious condition should not be used until tested for acceptability.

SOP FOR LASER SAFETY

CHAPTER 7

MEDICAL SURVEILLANCE PROGRAM

	<u>PARAGRAPH</u>	<u>PAGE</u>
MEDICAL EXAMINATIONS .	7001	7-3
MEDICAL SAFETY .	7002	7-3
REFERENCE. . .	7003	7-3
MEDICAL SURVEILLANCE PROGRAM . .	7004	7-3

# SOP FOR LASER SAFETY

## CHAPTER 7

### MEDICAL SURVEILLANCE PROGRAM

7001. MEDICAL EXAMINATIONS. A medical surveillance program is required for class IIIB and class IV LASER systems. All personnel designated as incidental LASER personnel should have a documented visual acuity screening examination prior to assignment to LASER systems operations. Incidental personnel are those personnel whose work makes it possible, but unlikely that they will be exposed to LASER energy sufficient enough to damage their eyes or skin. Operators of LASER systems are considered incidental personnel. LASER personnel are those personnel who run a high risk of exposure to LASER energy sufficient enough to produce eye or skin damage. LASER systems maintenance personnel and custodians of LASER systems (i.e., armorers) are considered LASER personnel. LASER personnel should have examinations as required by paragraph 7004.

7002. MEDICAL SAFETY. Personnel designated as incidental or LASER personnel by their Regimental or separate Battalion LSSO's, will be required to wear the proper eye protection when engaged in force-on-force tactical exercises. Additionally, any incidental personnel involved in work downrange, i.e., moving targets, will wear approved eye protection.

7003. REFERENCE. The medical surveillance program is in accordance with reference (c).

7004. MEDICAL SURVEILLANCE PROGRAM. Enrollment in the Laser Radiation Medical Surveillance Program is limited to those personnel who are clearly at risk from exposure to laser radiations. The nature of such risks is associated with accidental, acute injuries and not as a result of chronic exposures. A preplacement ocular examination is conducted to establish a baseline against which ocular damage can be measured in the event of an accidental exposure. A termination ocular examination is provided when a laser worker is removed from the program. Periodic examination is required triennially or when a suspected or known exposure to the eye has occurred. Ocular examinations should be clearly identified in the individual's health record as a preplacement, periodic, or termination laser eye examination.

1. The unit LSSO must choose personnel for enrollment into the Laser Radiation Medical Surveillance Program using the following guidance:

a. Designation as laser personnel applies to those individuals routinely working with class 3 or 5 lasers. This designation includes:

(1) Maintenance personnel who routinely repair or align class 3 or 4 laser systems.

(2) Operators and down-range personnel who routinely work with class 3 or 4 engineering laser transits, geodimeters, and alignment laser devices.

b. Designation as incidental personnel applies to those whose work makes it possible, but unlikely, that they will be exposed to laser energy. This designation includes:

(1) Personnel routinely working with class 1 laser systems containing class 3 or 4 lasers and who are not exposed to the open laser beam.

(2) Supervisory, clerical, and custodial personnel who work in the laser areas and where laser safety procedures preclude their exposure to levels of laser radiation.

c. Medical surveillance is not required for visitors or other personnel involved infrequently in testing laser equipment or in laser demonstrations and training when the LSSO has ensured such personnel will be protected from exposure to levels of laser radiation.

d. Operators (personnel behind the laser) of fielded military laser systems do not require medical surveillance when these systems are operated on certified laser ranges and following prescribed laser safety procedures. The LSSO must verify that no specular reflectors are present on the range.

e. The unit LSSO has the responsibility to determine the designation of laser or incidental personnel.

SOP FOR LASER SAFETY

CHAPTER 8

ACCIDENT INVESTIGATION/REPORTING PROCEDURES

	<u>PARAGRAPH</u>	<u>PAGE</u>
ACCIDENT INVESTIGATION.....	8001	
REPORTING .....	8002	
INCIDENT NOTIFICATION.....	8003	

# SOP FOR LASER SAFETY

## CHAPTER 8

### ACCIDENT INVESTIGATION/REPORTING PROCEDURES

8001. ACCIDENT INVESTIGATION. When an individual is exposed to LASER radiation and an injury is suspected or observed, a complete medical examination will be performed as soon as possible. Examination procedures are covered in Chapter 7. The Commanding Officer will direct an accident investigation. This investigation will be forwarded to the appropriate installation commander (Attn: Range Control) in accordance with the requirements of reference (e).

8002. REPORTING. A letter report shall be submitted to the Commander, NAVMEDCOM (MEDCOM-21) via the Commanding General, 3d Marine Division (Attn: Surgeon) within fifteen days of the incident. As a minimum, the report shall contain a list of personnel exposed, an estimate of the exposure received, a copy of medical examinations performed, and a narrative summary of events leading to the incident.

8003. INCIDENT NOTIFICATION. The Division LSSO will be notified immediately of any suspected LASER radiation incident, to include the time, location, individuals involved, points of contact, and a brief description of the incident.

SOP FOR LASER SAFETY

CHAPTER 9

RECORDS

	<u>PARAGRAPH</u>	<u>PAGE</u>
RECORDS.....	9001	9-3

# SOP FOR LASER SAFETY

## CHAPTER 9

### RECORDS

9001. RECORDS. At a minimum, the exposure records will contain a list of exposed personnel, an estimate of the exposure received, and a description of the physiological symptoms. This report should also include as an enclosure, a description and examination of the situation and the corrective measures/recommendations necessary to prevent future occurrences. Records will include, but need not be limited to:

- a. A log to record all operational, maintenance or training LASER firings to include date, time, location, target, LASER range officer, operator, purpose and personnel present. If the LASER is fired airborne, include type aircraft, Bureau Number (BUNO), location/heading, altitude, and designated target. Additional documentation may also be included, as deemed appropriate.
- b. An inventory record of all organization held LASER devices along with a description and Analysis Report will be maintained, as required by reference (b).
- c. A current listing of all units and personnel who are authorized to engage in LASER operations and their specific function/limitations. Such a list should be readily accessible to the LSSO, and range control and periodically updated when changes occur.
- d. Training records of all personnel who engage in LASER operations, maintenance or training, to include times and dates of training received, as well as copies of designations and assignments for LASER operations.

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SOP FOR LASER SAFETY

APPENDIX B

LASER RANGE FIRING LOG

COMMAND \_\_\_\_\_ DATE \_\_\_\_\_  
RANGE \_\_\_\_\_  
LASER SYSTEM \_\_\_\_\_  
USER \_\_\_\_\_  
MAX RANGE AUTHORIZED \_\_\_\_\_ MIN RANGE AUTHORIZED \_\_\_\_\_  
TIME CLEARED FOR USE \_\_\_\_\_ TIME SECURED FROM USE \_\_\_\_\_  
LASER SAFETY OFFICER \_\_\_\_\_  
(Grade, Name, Unit)

<u>FIRING NUMBER</u>	<u>TIME</u>	<u>TARGET</u>	<u>LOCATION</u>	<u>OPERATOR</u>
1.				
2.				
3.				
4.				
5.				
6.				
7.				

SOP FOR LASER SAFETY

APPENDIX C

LASER SAFETY INSPECTION CHECKLIST

		<u>YES/NO</u>
	Does the command have Class III or IV LASERS or military exempt LASERS?	/.
REFERENCE	If yes, continue with the following:	
SPAWARINST 5100.12a(7)	Has a LASER hazard control program been established?	___/___
SPAWARINST 5100.12a(7)	Has a LASER Systems Safety Officer (LSSO) been designated in writing and does he have direct access to the CO?	___/___
SPAWARINST 5100.12a(7)	Does the LSSO have sufficient technical competence and authority to approve or disapprove the local use of LASERS?	/.
SPAWARINST 5100.12a(7)	Has the LSSO received a minimum of 20 hours of formal classroom training in LASER radiation (LASER Safety School or equivalent)?	___/___
SPAWARINST 5100.12a(7)	Has a local LASER Safety Organization or Committee been established to assist the LSSO in discharging his responsibilities (If warranted by the magnitude of the Potential hazard in local operations)?	/.
SPAWARINST 5100.12a(7) 5100.12a(8)	Has each local LASER installation/uses been approved or submitted for safety approval to higher authority by the LSSO?	/.
SPAWARINST 5100.12a(7)	Does the LSSO maintain a list of all LASERS and their locations?	/.
SPAWARINST 5100.12a(7)	Is a list of Class IIIB and IV LASERS and Military Exempt LASERS submitted annually to NAVELEXSYSCOM (Due 31 August)?	/.

SOP FOR LASER SAFETY

SPAWARINST 5100.12a(7) Have local LASER safety regulations been established including standing operating procedures for indoor maintenance and outdoor operational LASER operations? \_\_\_/\_\_\_

SPAWARINST 5100.12a(7) Have safety responsibilities been written for LASER or LASER System Operations which include normal operational procedures, emergency procedures and documentation of all LASER firing? \_\_\_/\_\_\_

SPAWARINST 5100.12a(7) Are LASER Ranges surveyed and approved by SPAWAR (OOF)? /.

SPAWARINST 5100.12a(7) Are warning systems and signs placed in appropriate locations to protect all personnel from LASER radiation? \_\_\_/\_\_\_

SPAWARINST 5100.12a(7) Has a LASER protective goggles program been established? Are they properly labeled and periodically inspected and evaluated? \_\_\_/\_\_\_

SPAWARINST 5100.12a(7) Have all personnel in areas with LASERs been informed by formal classroom training about the potential hazards associated with accidental exposure to LASERs? \_\_\_/\_\_\_

SPAWARINST 5100.12a(7) Are local LASER radiation accidents and incidents investigated with appropriate recommendations and corrective actions initiated? \_\_\_/\_\_\_

NAVMEDCOM INST 6470. 2.5 d&e Is medical evaluation performed and an incident report submitted via the chain of command to COMNAVMEDCOM (MEDCOM 21) within 30 days of the incident with a copy to NAVELEXSYSCOM (ELEX 7034)? /.

Medical Surveillance

NAVMEDCOM INST 6470. 2.5.b Has the LSSO determined and designated incidental and LASER personnel?  
NOTE; Incidental personnel - Those whose work make it possible but unlikely for them to be exposed to LASER energy

SOP FOR LASER SAFETY

sufficient to damage eyes or skin  
(e.g., range personnel).

LASER personnel- those who operate  
laser devices.

SPAWARINST  
5100.12a(7)

Has the LSSO submitted records of  
personnel exposed to LASER emissions to  
the medical officer for medical surveillance?

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NAVMEDCOM  
INST 6470.  
2.5.b

Are all personnel designated either as  
Incidental or LASER Personnel enrolled  
in the appropriate medical surveillance  
program?

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NAVMEDCOM  
INST 6470.  
2.5.b

Are the required examinations performed  
prior to participation in and upon  
termination of LASER work and following  
any suspected LASER injury?

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NAVMEDCOM  
INST 6470.  
2 Encl (2)

Have incidental personnel received eye  
examinations for visual acuity?

\_\_\_/\_\_\_

NAVMEDCOM  
INST 6470.  
2 Encl (2)

Do LASER personnel receive visual acuity  
determinations and eye examinations based  
on the wave length of LASER radiation?  
Is a medical history taken?

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NAVMEDCOM  
INST 6470.  
2.5.b

Are there any military exempt LASERs  
(Those designed for combat, combat  
training or classified)?

\_\_\_/\_\_\_

IF YES

SECNAVINST  
5100.14A  
7.c(1)

Have all military exempt LASERs in use  
been reviewed and approved safe by the  
NAVY LASER Safety Review Board?  
(Contact NAVELEXSYSCOM (ELEX 7034)).

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SECNAVINST  
5100.14A  
7.B(2)

Is the required caution label affixed to  
all military exempt LASERs?

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SECNAVINST  
5100.14A  
7.c(3)

Is an inventory and record of the status  
of all exempted LASER products main-  
tained?

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SECNAVINST  
5100.14A  
7.c

Is a report on military exempt LASERs  
provided to NAVELEXSYSCOM by 15 Oct  
of each year?

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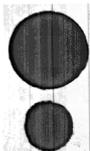
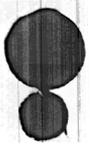
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.p L. SER

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# SOP FOR LASER SAFETY

## APPENDIX D

### LASER MAINTENANCE SAFETY PRECAUTIONS

1. LASER hazard warning signs will be posted on all entrances to LASER maintenance areas in accordance with reference (b), so as to minimize the risk of accidental exposure. The LASER units and test benches will be marked with warning signs as well.
2. All personnel engaged in essential duties concerned with LASER firing will wear approved, eye protection during firing. Non-essential personnel will leave the LASER area during firing.
3. All functional entrances to bench and boresight LASER firing areas will be interlocked so that opening such a door will stop LASER emission.
4. Equipment interlocks will be maintained in operating condition at all times. In the event required and approved maintenance procedures can only be performed by circumventing some interlock feature, that procedure will be performed only under the supervision of a designated LASER Safety Supervisor, with prior approval of a qualified Maintenance Officer. In all such cases, a documented quality assurance inspection will be performed at the completion of that work to ensure that proper interlock operation has been restored.
5. Appropriate and adequate LASER safety radiation containment procedures and devices will be in effect whenever any LASER is fired. Examples of containment devices are lens covers, diffusers, shields, and enclosures.
6. The LASER test area will be kept clear of all specular reflectors or diffuse surfaces with a high coefficient of reflection.
7. During LASER operations, the minimum amount of personnel (normally two) will be present.
8. Where practical, a countdown procedure will be followed prior to LASER firings.

# SOP FOR LASER SAFETY

## APPENDIX E

### MILITARY EXEMPT LASERS

DEFINITION. LASERs designed for actual combat, combat training operations or classified in the interest of national security and exempted from radiation safety "performance" standards set forth in 21 CFR 1040.10 and 1040.11. The term "Military Exempt LASER" should not be misconstrued or interpreted to mean anything other than a LASER product that: (a) does not comply with all FDA radiation safety performance standards, (b) is used explicitly by the military, and (c) is manufactured under authorization granted by Department of Health, Education and Welfare.

BACKGROUND. On August 2, 1976, Federal regulations became effective that established specific safety engineering requirements in the manufacture of all LASERs capable of producing hazardous radiation. It was evident that certain LASER products intended for military applications required capabilities which did not lend themselves to full compliance with all provisions of the LASER manufacturing and engineering standards promulgated under the Act.

On July 2, 1976, the Department of Defense requested and received an exemption from the forthcoming performance standards. In granting the exemption, the Department of Health, Education and Welfare established several conditions and requirements including reports, inventories, labeling, personnel training, user safety, and monitoring, control, disposal and exemption modification procedures. It further required that military LASER products will be manufactured with as many of the standards as practicable. The Department of Health, Education and Welfare also retained the right to withdraw or amend the exemption should any of the terms of the exemption not be adhered to, or if other information indicated that the public health and safety are not adequately protected from electronic product radiation emitted by military exempted LASER products.

IMPACT. It obvious that the continued manufacture and use of LASERs capable of supporting military unique requirements is predicated upon the establishment and conduct of a comprehensive and effective LASER safety program.