Coast Guard
Laser Hazard Control Program

Program Update and Way Ahead for Safety Officers

Flight Safety Officer Training Course 2009

Homeland Security

CG Laser Program Outline

- Background
  - Internal and External Hazards
- Policy / Program Progress
  - ALCOAST 290/08
  - Charter to Laser Hazard Control Standing Committee (LHCSC) to CG-Safety and Occupational Health Committee (CG-SOHC)
  - Draft COMDTINST 5100.27
  - Draft LHCSC Process Guide
- Basic Program Elements
- Known CG Systems

Background

- Regulated by the Center for Devices and Radiological Health (CDRH), Food and Drug Administration (FDA)
- Five classifications based on the hazards
  - Class I: Can not emit at hazardous levels
  - Class 2: Low power. Eye safe, but based on the premise that the person looks away immediately
  - Class 3: Intermediate power. Eye safe but not when viewed through magnification (binoculars)
  - Class 4: Moderate power. Require control measures due to eye hazards.
  - Class 5: High power. Hazards to eyes and skin within specified distances.
- External Hazard Assessment Completed

Background

- FDA Certification (21 CFR 1010.2)
  - As completed by manufacturer upon delivery
    - Operational use of the CG systems would preclude some of the required safety control measures
      - Key control, Radiation Emission Indicator
    - Does not regulate how it is used.
- Exemption for Government Use (21 CFR 1010.5)
    - Requires agency to prove how radiation protection will be provided due to the deviations.
- Military Exemption
    - FDA letter approving DOD to self certify systems that do not meet the requirements of 21 CFR 1040.1 for:
      - Combat, Combat Training, Systems classified in the interest of national security
    - CG does not meet this criteria for all mission sets

Policy / Program Progress

- ALCOAST 290/08
- CG Central Micro Site
- Policy Build
  - COMDTINST 5100.27
  - CG-SOHC LHCSC Process Guide
- LHCSC Charter Signed (March 2009)

Basic Program Elements

- Certification
- Detailed System Description and Concept of Operation
- Control Measures (PPE, SOPs, manual changes)
- Laser Safety Officer Designation
- Training Program
- Medical Surveillance (OMSEP)

Laser Safety Officer Responsibilities

- Maintain Inventory of all class 3b and 4 lasers.
- Ensure all class 3b and class 4 lasers are properly secured when not in use, so as to avoid an accident by someone not trained on the system.
- Ensure only trained and authorized operators and maintainers have access to class 3b and class 4 lasers.
- Conduct Initial and Annual Laser Training
- Ensure the appropriate unit personnel are entered into OMSEP
- Report all laser injuries or potential injuries via mishap reporting guidance.

Training Program

- 2 parts (CG-113 basic and then unit specific)
  - Fundamentals of laser operation (physical principles, construction, etc.)
  - Bioeffects of laser radiation on the eye and skin
  - Significance of specular and diffuse reflections
  - Non-beam hazards of lasers (electrical shock, etc)
  - Laser and laser system classifications
  - Control measures
  - Overall responsibilities of management and employee
  - Medical surveillance practices (if applicable)
  - CPR for personnel servicing or working on lasers with exposed high voltages and/or the capability of producing potentially lethal electrical currents

Known Coast Guard Systems

- Electro Optic Sensor System (ESS)
- Star SAFIRE III
- Aircraft Ship Integrated Secure Traverse (ASSIST)
- Infrared Target Pointer/Illuminator/Aiming Laser (ITPIAL)
- Sea WITS (Wireless Integrated Target System)
- First Defender Chemical Identification System
- Industrial Lasers at ARSC, Elizabeth City
- Laser Beam Designators (Dazzlers)

Electro Optic Sensor System (ESS)

- Purpose / System Description:

  EOIR system w/ optional illuminator to increase range and effectiveness of sensor.

- Classification:

  Class I rangefinder / Class IV Illuminator

- Certification Status:

  None. Reviewed by Navy Laser Safety Review board, and approved on Navy test range for test and evaluation only.

- Deployment Status:

  HITRON, anticipated for MH60 and MH65 AUF platforms

- Additional Information:

  Past CG EOIR systems did not include the use of illuminators, so there is no loss in current capability. Restricting use of the illuminator until certification and safety program is established will not stop mission execution at HITRON, only preclude advancements in capabilities.

Star SAFIRE III

- Purpose / System Description:

  EOIR system w/ optional illuminator to increase range and effectiveness of sensor.

- Classification:

  Class I rangefinder / Class IV Illuminator

- Certification Status:

  Unknown.

- Deployment Status:

  HC-144, Anticipated to be on HC-130J Aircraft and National Security Cutter (NSC)

- Additional Information:

  Similar to the ESS, this is a new capability, so the interim restriction will not effect current capabilities, only future advancement of new capabilities.

Aircraft Ship Integrated Secure Traverse (ASIST)

- Purpose / System Description:
  Rapid secure and traverse option for NSC cutters
- Classification:
  Class IV
- Certification Status:
  Unknown.
- Deployment Status:
  Prototype testing on
  1-H65 and 1-NSC 2009
- Additional Information:
  CG-9 Acquisition program is building package for certification

First Defender Chemical Identification System

- Purpose / System Description:
  Laser chemical spectrum analysis for first responders from USCG Strike teams
- Classification:
  Class 3B
- Certification Status:
  FDA
- Deployment Status:
  USCG Strike Teams

Non-Lethal Laser Designators (Dazzlers)

- Purpose / System Description: Warning Devices
  - Hand Held
  - Ship Fixed: Unambiguous Warning Device (UWD), a cross between a 50-caliber gun mount and an aircraft flare device. The UWD was designed to warn approaching small craft they are encroaching in an unwelcome area and advise them to leave immediately
- Classification:

  Class 3B and 4
- Certification Status:

  None.
- Deployment Status:

  Test and Eval

Infrared Target Pointer/Illuminator/Aiming Laser (ITPIAL)

- Purpose / System Description:
  Target illumination option for viewing w/ NVGs
- Classification:
  Class IIIb selectable mode
- Certification Status:
  No FDA certification.
- Deployment Status:
  HITRON AUF weapons, anticipated for fleet wide distribution on same weapons.
- Additional Information:
  System incorporates a Class I pointer, so does not change the current capability of AUF units to use laser pointers. The interim restriction will only affect the new capability of illuminating the surrounding area for NVG operators. CG-711 R172021Z Authorization and Policy

Sea WITS / MILES System

- Purpose / System Description:

  "Laser Tag" type system to measure effectiveness of dynamic use of force scenarios.

- Classification:

  Class IIIa (eye safe to naked eye)

- Certification Status:

  Unknown.

- Deployment Status:

  Special Missions Training Center, limited testing in 9th District and HITRON

- Additional Information:

  This system technically doesn't need many control measures due to the classification, but still has hazardous potential through magnification optics. It should be reviewed as well to ensure adequate control measures are incorporated into the use of this as a training tool.

Industrial Purpose Aviation Lasers

- Purpose / System Description:
  Selective paint removal, turbine blade cleaning
- Classification:
  Class IV
- Certification Status:
  Yes, FDA
- Deployment Status:
  ARSC, Elizabeth City

- Additional Information:
  Since this is an industrial use laser, and doesn't have associated issues with control areas, operational use, or military exclusive uses, it can easily be used IAW ANSI standards. ARSC has drafted their own local policy that conforms to ANSI standards until a CG policy is published. Although it is limited to ARSC at the moment, the cost could allow it to be purchased at the unit level. Policy will guide new acquisitions to ensure safety standards are applied.

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