



COMDTINST 2450.1

23 MAR 2012

COMMANDANT INSTRUCTION 2450.1

Subj: ELECTROMAGNETIC ENVIRONMENTAL EFFECTS (E3) POLICY

- Ref: (a) DOD Electromagnetic Environmental Effects (E3 Program), DOD Directive 3222.3 (series)
(b) Protection of DOD Personnel from Exposure to Radio Frequency Radiation and Military Exempt Lasers, DODINST 6055.11 (series)
(c) Grounding, Bonding and Shielding for Common Long Haul/Tactical Communication Systems Including Ground Based Communications-Electronics Facilities and Equipments, MIL-STD-188-124 (series)
(d) Requirements for the Control of Electromagnetic Interference Characteristics of Subsystems and Equipment, MIL-STD-461 (series)
(e) Electromagnetic Environmental Effects Requirements for Systems, MIL-STD-464 (series)
(f) Shipboard Bonding, Grounding, and Other Techniques for Electromagnetic Compatibility, Electromagnetic Pulse (EMP) Mitigation, and Safety, MIL-STD-1310 (series)
(g) Procedures for Conducting a Shipboard Electromagnetic Interference (EMI) Survey (Surface Ships), MIL-STD-1605 (series)
(h) Standard Electromagnetic Interference (EMI) Survey Procedures, NAVSEA-STD-407-5291780 (series)

- PURPOSE. The purpose of this Instruction is to establish policy and assign responsibilities for a Coast Guard Electromagnetic Environmental Effects (E3) Program.
- ACTION. All Coast Guard unit commanders, commanding officers, officers-in-charge, deputy/assistant commandants, and chiefs of headquarters staff elements shall comply with the provisions of this Instruction. Internet release is authorized.

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NON-STANDARD DISTRIBUTION:

3. DIRECTIVES AFFECTED. None.

4. DISCUSSION.

- a. This Instruction establishes Coast Guard policy and assigns responsibilities for ensuring safe and reliable mission interoperability of all electrical and Command, Control, Communications, Computers and Information Technology (C4IT) equipment, systems and subsystems, devices, ordnance, and fuels within their intended operational electromagnetic environment (EME) to include effects on personnel. E3 considerations apply to all platforms, systems, subsystems, facilities, weapons, electric or electronic equipment, networks, sensors, fuels, and ordnance, (hereinafter referred to as equipment, systems and platforms) developed, procured, acquired, operated, and maintained by the Coast Guard.
- b. Achievement of electromagnetic compatibility in the operational EME is the paramount objective of the Coast Guard's E3 Program. The Coast Guard E3 Program seeks to enhance mission performance by controlling E3 effects to CG equipment, systems, platforms, and personnel. This is accomplished with the prevention, correction and mitigation of mission degrading E3.

5. POLICY.

- a. Adequate E3 control shall be planned and incorporated into all equipment, systems and platforms per References (a) through (h). All electrical and electronic systems, subsystems, and equipment, including ordnance containing electrically initiated devices, shall be mutually compatible in their intended EME without causing or suffering unacceptable mission degradation due to E3.
- b. Military E3 specifications, standards, and handbooks stressing interface and verification requirements, establishing operational performance, and specifying developmental and operational test methodologies have been developed and shall be used by all Coast Guard activities for E3 control.
- c. Analytical tools and databases for Electromagnetic Compatibility (EMC) analysis and E3 assessment shall be developed and/or maintained to predict, prevent, and correct E3 deficiencies in Coast Guard systems for the intended operational EME. Where required standards and specifications for EMC either do not exist or need correction, they shall be developed or updated promptly.
- d. E3 control shall apply to all phases of the acquisition process and shall be implemented as early as possible in the requirements definition, conceptual refinement, technology development, system development and demonstration, and production and deployment phases for all equipment, systems, and platforms. E3 requirements shall be addressed in each phase of Engineering Change Proposal development.
- e. Doctrine, tactics, techniques, and procedures shall consider E3 factors in the operational employment of equipments, systems, and platforms. Consideration of E3 factors in

modeling ensures awareness of the total electromagnetic environment in the evolution of new doctrine, tactics, techniques, and procedures.

- f. A capability for detecting, reporting, solving, and correcting immediate and operationally degrading EMC problems shall be developed and maintained. This capability shall require procedures for detecting and reporting electromagnetic incompatibilities and electromagnetic interference (EMI) which degrades mission effectiveness; identifying sources of the problems and determining necessary corrective actions; and rapid acquisition and implementation of required corrective actions.

6. RESPONSIBILITIES.

- a. Commandant (CG-644) shall be the Coast Guard E3 Program Director. Commandant (CG-644) shall:
 - (1) Provide Coast Guard policy execution guidance, management direction, and coordination for the Coast Guard E3 Program.
 - (2) Provide Coast Guard representation to joint, national, and international E3-related meetings and forums as required.
 - (3) Exercise overall authority for EMC waivers.
 - (4) Perform E3 reviews of program acquisition and requirements documentation and platforms under development by the Coast Guard to ensure performance requirements are established and met while operating in the intended EME, and that operation of the equipment, systems, and platforms will not degrade the performance of other equipment, systems, or platforms.
- b. The C4IT Service Center (C4ITSC) shall be the E3 Program Coordinator responsible for planning, implementing, and maintaining E3 Program Management. C4ITSC shall:
 - (1) Develop procedures for Shipboard and Shore E3 Certifications including test planning, funding, and execution. Use References (a) and (b) as appropriate.
 - (2) Establish and maintain an engineering capability for preventing, detecting, measuring, analyzing, reporting, and correcting EMI deficiencies.
 - (3) Develop and issue interface standards and handbooks for achievement and maintenance of E3 in CG equipment, systems, and platforms.
 - (4) Provide a quick response capability to evaluate and correct EMI degradation reported by afloat assets and shore facilities involving Coast Guard equipment, systems, and platforms. Use References (g) and (h) as appropriate.

- (5) Exercise approval authority for the proposed correction of E3 problems and the acceptance of operational performance degradation or impact for E3 problems that cannot be corrected within current capabilities or with current resources.
 - (6) Exercise approval authority for E3 studies performed by other government agencies and non-government entities.
7. DISCLAIMER. This document is intended to provide operational requirements for Coast Guard personnel and is not intended to nor does it impose legally-binding requirements on any party outside the Coast Guard.
8. RECORDS MANAGEMENT CONSIDERATIONS. This Instruction has been thoroughly reviewed during the directives clearance process, and it has been determined there are no further records scheduling requirements, in accordance with Federal Records Act, 44 U.S.C. 3101 et seq., NARA requirements, and Information and Life Cycle Management Manual, COMDTINST M5212.12 (series). This policy does not have any significant or substantial change to existing records management requirements.
9. ENVIRONMENTAL ASPECT AND IMPACT CONSIDERATIONS.
 - a. The development of this Instruction and the general policies contained within it have been thoroughly reviewed by the originating office and are categorically excluded under current USCG categorical exclusion (CE) #33 from further environmental analysis, in accordance with Section 2.B.2. and Figure 2-1 of the National Environmental Policy Act Implementing Procedures and Policy for Considering Environmental Impacts, COMDTINST M16475.1 (series).
 - b. This directive will not have any of the following: significant cumulative impacts on the human environment; substantial controversy or substantial change to existing environmental conditions; or inconsistencies with any Federal, State, or local laws or administrative determinations relating to the environment. All future specific actions resulting from the general policies in this Manual must be individually evaluated for compliance with the National Environmental Policy Act (NEPA), Council on Environmental Policy NEPA regulations at 40 CFR Parts 1500-1508, DHS and Coast Guard NEPA policy, and compliance with all other environmental mandates.
10. FORMS/REPORTS. None.

R. E. DAY /s/
Assistant Commandant for Command, Control,
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Encl: (1) Definitions

DEFINITIONS

Command, Control, Communications, Computers and Information Technology (C4IT):

A C4IT system is any combination of related people, methods or processes, hardware, software, data and telecommunications components utilized to accomplish mission or business needs.

Electromagnetic Compatibility (EMC):

The ability of all equipment, systems, and platforms to operate and exist in their intended operational environments without causing or suffering unintentional performance degradation or harmful reactions as a result of electromagnetic interference.

Electromagnetic Environment (EME):

The resulting product of the power and time distribution, in various frequency ranges, of the radiated or conducted electromagnetic emission levels that may be encountered by a military force, system, or platform when performing its assigned mission in its intended operational environment.

Electromagnetic Environmental Effects (E3):

The impact of the Electromagnetic Environment (EME) on the operational capability of military forces, equipment, systems, and platforms. It encompasses all electromagnetic disciplines, including Electromagnetic Compatibility (EMC) and Electromagnetic Interference (EMI); Electromagnetic Vulnerability (EMV); Electromagnetic Pulse (EMP); Electro-Static Discharge (ESD); Hazards of Electromagnetic Radiation (RADHAZ) to Personnel (HERP), Ordnance (HERO), and volatile materials (HERF); and natural phenomena effects of lightning and Precipitation Static (P-Static).

Electromagnetic Interference (EMI):

Any electromagnetic disturbance that interrupts, obstructs, or otherwise degrades or limits the effective performance of electronics/electrical equipment. EMI can be induced intentionally, as in some forms of electronic warfare, or unintentionally, as a result of spurious emissions and responses, intermodulation products, and the like.