



COMDTINST 9090.1
31 OCT 2018

COMMANDANT INSTRUCTION 9090.1

Subj: USCG COMBAT SYSTEM CERTIFICATION POLICY

- Ref: (a) Ready For Operations (RFO) Designation for Maritime Security Cutter, Large (WMSL) Platforms, COMDTINST 3501.10 (series)
 (b) Major Systems Acquisition Manual (MSAM), COMDTINST M5000.10 (series)
 (c) Combat Certification Policy, PEO IWS Instruction 4730.1A (series)
 (d) Deputy Commandant For Mission Support (DCMS) Engineering Technical Authority (ETA) Policy, COMDTINST 5402.4 (series)
 (e) DoD Standard Practice for System Safety, MIL-STD-882 (series)
 (f) Coast Guard Configuration Management Manual, COMDTINST M4130.6 (series)
 (g) Command, Control, Communications, Computers, Cyber, and Intelligence (C5I) Sustainment Management Policy, COMDTINST 5230.72 (series)

- PURPOSE.** This Directive establishes the Coast Guard Combat System Certification Program to provide a consistent certification requirement across all cutter combat systems and combat system elements delivered by the Program Executive Office (PEO), Acquisitions Directorate, Commandant (CG-93), and supported by the Surface Forces Logistics Center (SFLC) and Command, Control, Communications, Computers, and Information Technology Service Center (C4ITSC), per References (a) through (g). In addition, the Instruction defines certification policy, authorities, standards, roles, responsibilities and provides direction for implementation and execution of the certification process. It assigns responsibility for its governance to the Coast Guard's Office of C4 and Sensor Capabilities, Commandant (CG-761), on behalf of the Coast Guard's Assistant Commandant for Capability, Commandant (CG-7).
- ACTION.** All USCG 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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3. DIRECTIVES AFFECTED. None.
4. BACKGROUND. Combat system certification assesses the capabilities and limitations of a configuration and formally attests to the deployment readiness and the level to which a configured combat system meets operational and mission requirements. Absent its own formal certification policy, the Coast Guard formerly defaulted to processes established by the Navy which accommodate the complexity of AEGIS-based combatants. The resulting certification process has become increasingly demanding in terms of program costs, schedules, and management workload, and far exceeds the needs of the Coast Guard. This Instruction promulgates the policy for cutter class combat system certifications by following the industry best practices of evaluating system quality using direct and indirect evaluation of the products and the processes employed to create those products with minimum duplication of effort. The policy avoids unnecessary re-authorization and re-certification events and minimizes the impact and risk of a particular change within a combat system element or an interfacing sub-system. This policy mandates rigid configuration control of combat systems and individual combat system elements. It also mandates rigorous test and evaluation of combat systems and products to support combat system certification and to ensure deployed combat systems are safe and effective.
5. DISCLAIMER. This guidance is not a substitute for applicable legal requirements, nor is it itself a rule. It is intended to provide operational guidance for Coast Guard personnel and is not intended to nor does it impose legally binding requirements on any party outside the Coast Guard.
6. ENVIRONMENTAL ASPECT AND IMPACT CONSIDERATIONS.
 - a. The development of this Directive 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 Instruction 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 Instruction must be individually evaluated for compliance with the National Environmental Policy Act (NEPA), DHS and Coast Guard NEPA policy, and compliance with all other environmental mandates. Due to the administrative and procedural nature of this Instruction, all applicable environmental considerations are addressed appropriately in this Instruction.
7. DISTRIBUTION. No paper distribution will be made of this Instruction. An electronic version will be located on the following Commandant (CG-612) web sites:

<http://www.dcms.uscg.mil/directives> , and CGPortal:
<https://cgportal2.uscg.mil/library/directives/SitePages/Home.aspx>.

8. RECORDS MANAGEMENT CONSIDERATIONS. This Commandant 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. SCOPE. This document provides guidance and defines organizational responsibilities for the certification of combat systems deployed onboard United States Coast Guard cutters. The certification policy is applicable to all combat systems and combat system elements proposed for installation on U.S. Coast Guard cutters.
10. ROLES AND RESPONSIBILITIES.
 - a. Certification Authority. Commandant (CG-761) is the Coast Guard authority directly responsible for cutter combat system certification. As the Certification Authority, Commandant (CG-761) shall define what elements within each cutter class comprise the combat system for certification purposes in consultation with the Navy Program Executive Office Integrated Warfare Systems (PEO IWS 1CT), the C4ISR Program Manager (PM), the Cutter acquisition PM, and the Principal for Safety (PFS). The Certification Authority shall review and approve individual acquisition program Combat System Certification Plans. The Certification Authority shall designate a Certification Agent to oversee the certification activities for all installed combat systems. A separate Certification Agent may be designated where appropriate to oversee the certification activities of supporting combat system elements or software supporting more than one combatant cutter class if not provided by or integrated with Navy Type/Navy Owned combat system equipment. To support engineering, pre-deployment at-sea events, or at-sea missions, the Certification Authority may render interim authorization decisions via an authorization memo informed by recommendations from the Certification Official. Additionally, to support unrestricted operations the Certification Authority shall render a certification decision via a certification memo and shall be responsible for its maintenance and update.
 - b. Certification Agent. The Certification Agent organization is designated by Commandant (CG-761) as responsible for execution of the certification process in compliance with a ship class Combat System Certification Plan. The Certification Agent reviews results from Verification and Validation (V&V) activities conducted during the development effort and Operational Testing. Using this insight, the Certification Agent provides periodic assessments of the element or combat system to the Certification Authority and shares these findings across the combat system community and certification stakeholders. The Certification Agent designates a Certification Official to oversee all certification efforts.

- c. Certification Official. The Certification Official for combat systems and combat system elements is responsible for providing certification recommendations to the Certification Authority. The Certification Official is also responsible for developing and promulgating a process for combat system certification activities. The Certification Official approves the selection of Mission Readiness Assessment (MRA) and Combat Systems Certification Panel (CSCP) panel members and chairs the authorization/certification panel meetings. The Certification Official shall render recommendations for authorization decisions to the Certification Authority in support of engineering, pre-deployment at-sea events, or at-sea missions of short duration.
- d. Principal for Safety (PFS). Commandant (CG-1B3) shall designate a PFS to coordinate all cutter combat system safety planning and execution. The PFS shall provide leadership for the Combat System Safety Working Group, ensure safety is inherent in any developmental software interfacing with the combat system elements, coordinate with combat system element managers to ensure element-level certifications are maintained, and ensure concurrence is received from the Weapons Systems Explosives Safety Review Board (WSESRB) and the Systems Software Safety Technical Review Panel (SSSTRP) prior to any firing event or deployment. The PFS shall ensure all WSESRB safety findings are tracked and resolved. The PFS shall present safety status to the Certification Authority in support of MRA and CSCP events. The PFS shall support the PM in having unresolved safety issues evaluated and accepted by the appropriate Official as cited in the System Safety Management Plan prior to the use of combat systems.
- e. Technical Authority. Technical Authority for Combat System Elements (CSE) is provided by Technical Warrant Holders (TWH) in accordance with References (c) and (d). TWHs are experts in their warranted technical areas and lead technical efforts independent of organizational boundaries. The TWH ensures technical products are in conformance with technical policy, standards, processes, and requirements and provide technical and readiness recommendations to the Certification Official in their areas of expertise. Commandant (CG-1), Commandant (CG-4), and Commandant (CG-6) provide Engineering Technical Authority for CSEs that support the combat system.
- f. Engineering Technical Authority. Engineering Technical Authority (ETA) has the authority, responsibility, and accountability to establish or assert engineering technical standards, tools, processes, and best practices; monitor compliance with or use of them; and certify conformance with statute, policy, requirements, architectures, and standards. The execution of ETA is a process that establishes and assures adherence to engineering technical standards and policy providing a range of technically acceptable alternatives with corresponding risk and value assessments.
- g. Cutter Acquisition Program Manager. Each Cutter Acquisition Program Manager shall develop a ship class Combat System Certification Plan in compliance with this policy to effect certification of delivered assets. The PM shall provide required funding for, and shall work closely with, the C4ISR Program Manager, the Certification Agent, PEO IWS, PEO C4I, and the Principal for Safety to accomplish the objectives of this policy and to achieve Combat System Certification of the delivered cutters. The PM is also the

Configuration Manager of the cutter, including its Combat System, until the last funded asset is delivered and determined to be Ready for Operations (RFO).

- h. C4ISR Program Manager. As acquisition manager for C4ISR systems, the C4ISR PM shall ensure developed C4ISR systems function effectively to support Combat System objectives for each surface asset. The C4ISR PM shall support the Cutter Acquisition PM and the Certification Agent in scheduling and executing interim authorizations and final certification events in support of this policy.
- i. SFLC Product Line Manager. The Product Line Manager is responsible for the configuration management of all combat system elements and maintaining the Combat System Certification for vessels that have reached Acquisition Decision Event 4 (ADE-4). The Product Line Manager works in concert with the C4IT SC to validate and advise the Certification Agent and cutter CO whether changes to CSEs are compliant with the vessel's Combat System Certification Plan. The Product Line Manager shall support the Certification Agent in scheduling and executing interim and final certification events for vessels in sustainment.
- j. Combat System Engineering Agent. The Combat System Engineering Agent (CSEA) is assigned by PEO IWS 1CT and is responsible for coordinating and communicating with the System Support Agents and System Development Agents of individual CSEs in order to develop and maintain the overall Combat System. The CSEA works with the Cutter Acquisition PM, C4ISR PM, SFLC, C4IT SC, and Department of Homeland Security (DHS) Program Accountability and Risk Management (PARM) to integrate individual CSEs and maintain and support the Combat System throughout the cutter lifecycle in accordance with Reference (g). The entity assigned as CSEA for a cutter class will be identified in the individual platform Combat System Certification Plans and may be reassigned during the lifecycle of the program.

11. DEFINITIONS.

- a. Artifact. A document that formally attests the safety, effectiveness, performance, suitability, or reliability of a combat system or element. Artifacts include design drawings, as-delivered drawing, test reports, inspection reports, Certification Memos, engineering measurements, demonstration results, modeling results, and analyses.
- b. Bounded Statement of Risk. The bounded statement of risk delineates the system performance capabilities and limitations, as well as the potential impact of those limitations on operations, safety, and mission success and is an integral part of the authorization and/or certification.
- c. Certification. Combat systems and CSE certification formally confirms meeting an operational requirement and related technical specifications within acceptable safety parameters. Certification attests to system or element readiness in a bounded statement of risk. An associated certification memo also documents areas of non-compliance and resulting operational restrictions. Deployment readiness is established to an acceptable

level of confidence with all risks mitigated or deemed acceptable. Certification is strictly based on Objective Quality Evidence (OQE).

- d. Combat System Certification Plan. A tailored plan for each cutter class approved by the Certification Authority that outlines the required test events, certification events, and level of oversight for any combat system or CSE change governed by this Instruction. This plan describes the specific configuration level to which items managed in accordance with Reference (f) shall be maintained for individual CSEs and the overall Combat System in order to support Combat System Authorization and Combat System Certification.
- e. Combat System. A combat system is a physically integrated or functionally supportive set of mission-critical and mission-support elements capable of accomplishing the plan-detect-control-engage-assess functions across multiple mission areas.
- f. Combat System Mission Readiness Assessment (MRA). A combat system MRA is conducted to assess the ability of the combat system to perform a specific mission or sequence of missions culminating in an Authorization Memo issued by the Certification Authority at the recommendation of the Certification Official. MRAs may also be used to assess a specific engineering build at the end of an iterative development cycle. The Certification Official shall convene a panel consisting of Technical Warrant Holders, Subject Matter Experts (SMEs), and other Stakeholders that is responsible for monitoring the status and evaluating the testimony of an assessment team staffed by Subject Matter Experts. The panel shall advise the Certification Authority and the Certification Official regarding the significance of reported problems and risks with respect to the intended mission. The Certification Official provides the results of an MRA in a letter to the Certification Authority. The Certification Authority may authorize the combat system for limited pre-deployment activities detailing any restrictions as recommended by the Certification Official.
- g. Combat System Authorization. The Certification Official may recommend issuing an Authorization Memo based on a Mission Readiness Assessment (MRA) prior to final certification to allow interim use of the combat system in an operational unit to conduct engineering or pre-deployment at-sea events, or limited mission events. This Authorization Memo does not certify the combat system for unrestricted deployment, rather it grants permission to proceed with specific test events and/or restricted missions. The authorization decision is based on the completion of all planned development, corrections, and certification activities up to those events. The Authorization Memo can specifically limit or exclude the use of individual unproven or unsafe CSE pending OQE support for lifting those restrictions. An Authorization Memo does not have to be reissued if a CSE component replacement or software update features a tested and quality-controlled variant if verification testing demonstrates the CSE's functions, capabilities, and definable interfaces are not affected, and if the CSE maintains its element-level certification. Technical Warrant Holders determine if a component replacement within a CSE meets these standards and advises the Configuration Manager and the Certification Authority through the CM process.

- h. Combat System Certification Panel (CSCP). A CSCP shall be conducted prior to unrestricted certification of a Combat System placed under configuration control. The Certification Agent charters a CSCP chaired by the Certification Official that is comprised of independent SMEs including Technical Warrant Holders. This body assesses the combat-system readiness and effectiveness for unrestricted operations. The CSCP shall convene to review the supporting data and documentation based on testimony from the assessment team. This testimony will primarily consist of the core team's final certification status report including element certification status, a summary of operational test, a final assessment of warfare/mission area effectiveness, and capabilities and limitations. The certification criteria will be assessed, included, and assembled in this testimony such that the panel will understand the risk boundaries associated with deployment of the system, the significance of these risks, and the level of confidence underlying this assessment. Upon completion of the testimony, the certification panel shall deliberate and provide recommendations to the Certification Official.
- i. Combat System Certification. Combat System Certification is granted by the Certification Authority for an approved combat system configuration and is achieved through a formal process that assesses the capabilities and limitations of the combat system and culminates with statements to the deployment readiness. A Certification Memo confirms that the overall combat system and combat system elements are mature, safe, and effectively support the full range of Coast Guard missions identified in the cutter's concept of operations.
- j. Combat System Element (CSE). A CSE is a sub-system within a combat system or supporting a combat system that typically provides integrated or stand-alone capabilities used to accomplish combat system planning, detection, control, engagement, or assessment. CSEs can be weapon systems, command and control systems, navigation systems, sensors, data links, information systems, or training systems.
- k. Component. The term component is used within this document to define a segment of a CSE that possesses well-documented requirements, capabilities, and definable interfaces. As such, it provides an identification form that allows for assessment of the quality and suitability for reuse within other elements. An example is the electro-optical range finder component of the Mk 38 (25 mm) Gun Weapons System.
- l. Independent. Technical independence of a CSCP or MRA is achieved by including Navy SMEs who meet the following parameters:
 - (1) Technical independence - Requires the inclusion of SMEs/TWHs who are not involved in the development of the system.
 - (2) Managerial independence - Requires separation of SME/TWH from the development and program management organizations.

- (3) Financial independence - Requires control of the CSCP/MRA budget to be vested independent of the development organization.
 - m. Objective Quality Evidence (OQE). OQE is the basis of certification. OQE is any quantitative or qualitative artifact, pertaining to the quality of a product or service based on tests, demonstrations, inspections, or analyses, which can be verified. OQE is proper evidence that the system complies with established requirements as well as certification criteria.
 - n. Non-Compliance. Non-Compliance exists when a system, CSE, component, process, or procedure does not comply with specific design, technical, or quality assurance requirements or does not meet certification criteria. A non-compliance approval is a formal acceptance by the Certification Authority of known combat system issues and risks, which may cause moderate, significant, or severe operational impact(s) for a specific ship configuration and its required missions as defined in Reference (c). Non-compliance approval within an authorization or certification may occur as an interim step pending execution of an engineering change to rectify or mitigate the issue or risk, and the authorization or certification memo may contain specific prohibitions or limitations on the use of the non-compliant CSE or component.
 - o. Validation. Validation is the process of providing and evaluating the OQE that the system will satisfy the intended operational requirements and user needs.
 - p. Verification. Verification is the process of providing and evaluating the OQE that the system design, development, testing and product conforms to the specific standards, practices and policies.
 - q. Weapon System Explosives Safety Review Board (WSESRB). WSESRB is the independent safety review organization for Navy weapons systems, comprised of subject matter experts for Navy combat weapons systems. WSESRB assesses cutter combat weapons systems and provides formal written concurrence or non-concurrence for a proposed specific test firing operation, or for unrestricted combat system deployment from the standpoint of explosives safety. WSESRB concurrence is mandatory prior to any test firing or release of energy. WSESRB concurrence is also the explosives safety input considered during a CSCP or MRA.
13. POLICY. This Directive establishes CG Combat System Certification policy and implementation guidance. Every combat system delivered to a U.S. Coast Guard cutter must be safe, operationally effective, and operationally suitable with minimal risk of failure during operations.
- a. Any changes to individual CSE defined within a combat system outside of an approved Combat System Certification Plan that have not been approved by WSESRB, or that invalidate their element level certification are unauthorized and will invalidate the Combat System Certification with respect to those CSE for the affected cutter.

- b. Every combat system developer shall execute effective and comprehensive V&V consistent with industry standard system engineering.
- c. The certification process shall be integrated with the developer's system engineering process.
- d. MRAs, leading to a Combat System Authorization, shall be executed as needed to cover all operations, testing, and training following cutter delivery.
- e. MRAs shall be conducted prior to a Combat System Certification Panel or a final Certification Memo from the Certification Authority.
- f. The decision for Combat System Certification shall be made by the Certification Authority upon the recommendation of the Certification Official informed by the results of a Combat System Certification Panel.
- g. Any deviation from this policy requires the express approval of Commandant (CG-7) prior to implementing or executing.

14. FORMS/REPORTS. None.

15. REQUESTS FOR CHANGES. Commandant (CG-761) will coordinate changes to this Instruction. This Instruction is under continual review and will be updated as necessary. All users are urged to provide recommendations for improvement to this Instruction via the chain of command.

MICHAEL P. RYAN /s/
Rear Admiral, U. S. Coast Guard
Assistant Commandant for Capability