



## DEPARTMENT OF THE NAVY

NAVAL SEA SYSTEMS COMMAND  
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ARLINGTON VA 22242-5160

IN REPLY REFER TO

NAVSEAINST 9093.2  
SEA 92/0095  
6 Jan 99

### NAVSEA INSTRUCTION 9093.2

From: Commander, Naval Sea Systems Command

Subj: SUBMARINE COMBAT SYSTEM TEST AND CERTIFICATION PROGRAM

Ref: (a) Anti-Submarine Warfare (ASW) Weapon System Accuracy Trials Program for Submarines (General Manual), NAVSEA OD 43690, of 1 May 1991  
(b) Standardized Combat System Test Program Manual, NAVSEA 0900-076-7010

Encl: (1) Dockside/At-Sea Subsystem Test Requirements  
(2) Terms and Definitions

1. Purpose. To establish policy and assign responsibility for certification of submarine combat systems.

2. Cancellation. NAVSEAINST 9480.1, Certification Tests for Submarine Fire Control Systems and NAVSEAINST 9750.1, Submarine Weapon Handling and Launcher System Certification are hereby canceled. Information in the following instructions regarding test and certification of submarine combat systems is superseded: NAVSEAINST 3360.1, ASW Systems Test Program and NAVSEAINST 9460.5A, Sonar Certification Program.

3. Scope. This instruction applies to submarine combat systems in new construction submarines, and those undergoing industrial availabilities, modernization periods or other designated maintenance periods which involve major modifications of combat systems. If requested and funded by the Type Commander (TYCOM), this program is applicable to submarines undergoing TYCOM funded repairs or modifications to their combat systems.

4. Policy. Submarine combat systems will be tested and certified in accordance with this instruction to provide assurance to the TYCOM that the combat system is ready to support fleet operations.

5. Program Description. The Submarine Combat System Test and Certification Program consists of the Subsystems Test Program, Weapon System Accuracy Trials (WSAT), and an evaluation process which leads to combat system certification. A description of each part of the program is as follows:

a. Subsystems Test Program. The specific subsystems to be tested will be dependent on the particular submarine's combat system configuration and on the work to be performed during the industrial period. Where the combat system design becomes

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totally integrated and subsystem boundaries are not clearly definable, testing shall be accomplished at a level defined by the Ship Program Manager (SPM) who is responsible for sub-system testing functions on new construction ships, or the Participating Manager (PARM) who is responsible for subsystem testing functions on in-service units. The subsystem test program consists of the following:

(1) Electrical, mechanical, functional, and acoustic tests are performed on subsystems and interfaces as further detailed in enclosure (1). Testing may be performed on a specific subsystem or several subsystems as part of an integrated test program.

(2) A logistics audit is conducted to confirm the system configuration and to verify the availability of technical documentation, planned maintenance system, maintenance assistance modules, portable electronic test equipment, special tools, Coordinated Ship's Allowance List support and allowable repair parts.

(3) The Test Conduct Activity (TCA) reports by naval message to NAVSEA/Program Executive Officer Submarines (PEO SUB) following dockside and at-sea testing. The report includes:

(a) Nomenclature of system tested and identification of computer software in use.

(b) A summary of those subsystems which met test specifications and those that did not.

(c) A list of all open major deficiencies, as defined in enclosure (2), including logistic deficiencies.

(4) Test reports and deficiency correction reports from subsystem testing are evaluated by the SPM and PARM.

b. Weapon System Accuracy Trials (WSAT). The WSAT Program encompasses dockside testing and at-sea trials which demonstrate the ability of the installed combat system to meet prescribed standards of performance from target detection through fire control computation to weapon placement. WSATs are conducted aboard submarines following construction, conversion, and other designated maintenance periods. Selection and scheduling of in-service submarines is coordinated for accomplishment between NAVSEA and the TYCOM. WSAT is conducted in accordance with reference (a). WSAT results are evaluated by the WSAT TCA to determine if the combat system is ready to support ship operations.

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c. Certification Process. Successful completion of sub-system testing and WSAT with documented evidence of resolution of major deficiencies is the basis for combat system certification. The NAVSEA Test and Evaluation (T&E) Office reviews all reports to ensure adherence to established guidelines for deficiency classification and resolution. The T&E Office verifies that the certification process is complete and then finalizes the combat system certification for release by SEA 92/PEO SUB. Combat system certification is provided to the TYCOM and submarine Commanding Officer.

6. Responsibilities

a. Submarine Directorate (SEA 92)/PEO SUB

(1) Grants submarine combat system certification for cognizant hulls.

b. Ship Program Manager

(1) Ensures that requirements for subsystem testing are included in specifications, contracts or work packages.

(2) Funds WSAT for new construction submarines.

(3) Ensures that cognizant major subsystem deficiencies are corrected.

c. Participating Manager

(1) Budgets for testing on submarines receiving NAVSEA funded combat system upgrades or major modifications to existing systems.

(2) Defines the scope, content, and conduct of subsystem level testing on in-service submarines.

(3) Develops the applicable test procedures.

(4) Funds any special test equipment and instrumentation required for support of subsystem testing.

d. NAVSEA Test and Evaluation Office (SEA 91T)

(1) Advises ship and system acquisition offices on combat system test and certification matters.

(2) Manages the overall Combat System Test and Certification Program.

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(3) Evaluates subsystem and WSAT test reports and major deficiency corrections.

(4) Prepares/staffs the combat system certification correspondence.

(5) Funds WSAT for selected in-service submarines.

(6) Provides technical and administrative oversight for the WSAT and Standardized Combat System Test Program Manuals, references (a) and (b).

e. Test Conduct Activity

(1) Conducts testing.

(2) Evaluates test results. Categorizes deficiencies using guidance in enclosure (2).

(3) Provides test reports as specified in subparagraph 5.a.(3) for subsystems and in reference (a) for WSAT.

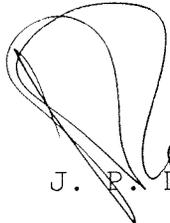
(4) Provides status of submarine combat system deficiencies until the test ship is certified.

(5) Makes certification recommendations.

f. Submarine Maintenance Engineering Planning and Procurement (SUBMEPP)

(1) Maintains the repository for non-new construction combat system test procedures.

(2) Maintains the Standardized Combat System Test Program Manual, NAVSEA 0900-076-7010, reference (b).



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DOCKSIDE/AT-SEA SUBSYSTEM TEST REQUIREMENTS**DOCKSIDE SUBSYSTEM TEST REQUIREMENTS:**

Dockside tests consist of selected measurements of installation characteristics and performance parameters to assess installation quality, verify performance, and ensure readiness to support sea trials. The dockside tests include but are not limited to: visual and mechanical inspections; power and control checks; sensitivity measurements; beam pattern measurements; source levels; minimum detectable levels; static tracking accuracy and calibration measurements; console display clarity; control and operational tests; interface tests; performance monitoring and fault localization.

Weapons handling and launcher testing includes shipping, unshipping and indexing weapon shapes; loading shapes in all tubes; shooting instrumented water slugs and ejecting launch vehicles; operating countermeasures launchers; inspecting ammunition, small arms, pyrotechnic and countermeasure stowage; and reviewing weight test records. Vertical Launch System (VLS) submarines will include installing a VLS loading platform; shipping and unshipping All-Up-Round Simulators (AURS) to and from each missile tube; and test firing the simulator from each missile tube. Dockside subsystem testing will be treated as part of the submarine's Integrated Test Package during shipyard availability.

**AT-SEA SUBSYSTEM TEST REQUIREMENTS:**

At-sea tests consist of evolutions which could not be conducted or completed dockside, and which are essential to complete the performance assessment. They include, but are not limited to sonar transmit power levels; tracking accuracy; array gain and receive sensitivity; beam patterns; array deployment and retrieval; and self-noise measurements. Torpedo tube loading and unloading weapon shapes; instrumented water slugs; and hand pump operations for tubes, muzzle and shutter doors will be conducted at test depth. The countermeasures launchers will be tested at various depths and speeds. VLS submarines will operate the VLS pressurization/vent system and flood/drain system as well as cycle all missile tube muzzle hatches on tube loaded AUR simulators at maximum VLS launch depth.

**Enclosure (1)**

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Enclosure (1)

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Terms And Definitions

**COMBAT SYSTEM.** Those components and systems involved in detection, classification, localization, data processing, and combat control. Combat systems also include weapon launchers, weapon handling and stowage equipment, countermeasures, applicable training equipment and documentation.

**COMBAT SUBSYSTEM.** A subset of equipments which together perform an identifiable function within the combat system, e.g., combat control.

**COMBAT SYSTEM CERTIFICATION.** A formal written statement by COMNAVSEASYS/PEO SUB to the Type Commander and ship's Commanding Officer that the combat system has been installed properly, meets required specifications, and is "Operationally Ready". Implicit in this statement is that required logistic and technical support elements for maintaining the system are on board and that component subsystems have been adequately tested. The term "Operationally Ready" means the system is ready to support operations at sea in fulfillment of the submarine's mission.

**MAJOR DEFICIENCY.** A deficiency that causes degradation or loss of a mission area and results in a CASREP is normally considered major. This deficiency results in a condition that degrades equipment performance below acceptable levels; causes equipment failures that would severely degrade operational capabilities, or creates unsafe conditions for personnel, equipment or navigation. Correction of major deficiencies is mandatory for certification of the combat system.

Enclosure (2)