

NAVSEA Shipyard Instructional Design Center

SUBMARINE STRUCTURAL CLOSURE INSPECTION & REPAIR

Course Description:

Today, Fleet repair personnel are faced with increased responsibility in ship maintenance, repair, and upkeep. To help activities meet this challenge and improve personnel performance, participants are provided a complete overview of the technical requirements in the performance of submarine watertight hatch and door PMS. Instructor demonstrations followed by hands-on practice on actual components are used to develop proficiency. For these sessions, the following areas will be covered:

- 1) Introduction to the standard submarine structural closure configurations; overview of closure subassembly function to fully understand how each component operates and interrelates with each other from the fully closed, to the fully open position; and, correct application of closure terminology for describing in technical reports, component subassembly conditions and malfunctions.
- 2) Application of technical requirements; performance of periodic maintenance using approved method processes; in service, as-found performance inspection of components using SMMS/MRC's; and, systematic troubleshooting of component malfunctions on watertight hatch and door mock-ups using the NAVSEA Hatch Repair Guide and other related references.
- 3) Performance of appropriate and economical component corrective actions based on most accurate troubleshooting diagnosis. Mock-ups yield conditions that will be discussed and corrected in class.
- 4) Post repair ready-for-sea inspection and certification requirements in accordance with applicable NAVSEA technical standards and standard Technical Work Documents.

Course Content:

Introduction to closures
Configuration of closures
Operation of closures
Technical Documentation
Maintenance Requirements
Performance Inspection (Operational, Seating Clearance, Lug Contact, Lug Engagment, Chalk Test)
Detail Inspection (Further breakdown of components, disassembly and measurement)
Troubleshooting (Systematic approach to isolating problems, use of Hatch Repair Guides)
Repair of components (Mock-ups yeild various conditions)
Certification of components after maintenance/repairs actions are performed

Method of Instruction:

- 1) Instructor classroom lecture, lab demonstrations, and use of videos/graphics.
- 2) Group and individual activities using structural closure training aids.
- 3) One-on-one instructor/participant interaction.
- 4) Field trip(s) to work sites or shops where available.
- 5) Independent study using student guide and handout materials or assignments.

Expectation of Participants:

- 1) Attendance, Promptness, and Participation.
- 2) Satisfactory completion of work assignments and classroom duties.

Method of Evaluation:

- 1) Quizzes to measure comprehension and progress of students.
- 2) Written exams to measure and verify understanding and retention of material (knowledge).
- 3) Performance evaluations (critical element): Instructor evaluation of participant/group work performances on mock-ups IAW technical requirements to evaluate lessons learned (skills).

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Course Objectives: *Upon completion of this technical training course, participants will be able to satisfactorily:*

- Demonstrate proper application and use of technical documents associated with the periodic inspection, maintenance, and repair of structural closures.
- Identify the four (4) major performance inspection methods and know how to verify each inspection attribute in accordance with technical requirements.
- Identify Forces Afloat maintenance responsibilities in accordance with applicable MIP A-80, PMS requirements.
- Perform selected periodic performance inspections in accordance with applicable PMS SMMS/MRC.
- Disassemble for inspection submarine structural closures (hatches and doors) in accordance with the applicable technical work document.
- Perform detail inspections on subassembly components using precision measuring instruments in accordance with technical requirements.
- Assemble structural closures in accordance with applicable technical work documents.
- Perform systematic component troubleshooting IAW the applicable Hatch Repair Guide.
- Perform simulated repairs to a hatch coaming seating surface and locking ring lugs using the PSNS Model #3 Hatch Coaming Refurbishment Machine.
- Perform simulated repairs to a structural coaming lug using the newly developed NAVSEA SIDC, Single Lug Grinder.
- Perform re-certification inspections on refurbished closures in accordance with applicable documentation.
- Evaluate re-certification inspection results in accordance with applicable maintenance standards and technical requirements.
- Develop detailed discrepancy reports identifying unsatisfactory as-found conditions, possible causes, and appropriate corrective action recommendations.