

JOINT FLEET MAINTENANCE MANUAL
VOLUME IV
TESTS AND INSPECTIONS
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VOLUME IV
CHAPTER 2
FLEET MAINTENANCE ACTIVITY ASSESSMENT

REFERENCES.

- (a) NAVSEA S9810-AA-GTP-010 - Intermediate Maintenance Activity Work Center Requirements Manual
- (b) COMPACFLTINST 4700.5/COMLANTFLTINST 4700.1 - Navy Afloat Maintenance Training Strategy (NAMTS) Job Qualification Requirements (JQR) Management
- (c) NAVSEAINST 4790.8/OPNAVINST 4790.4 - Ships' Maintenance and Material Management (3-M) Manual
- (d) OPNAVINST 5100.23 - Navy Occupational Safety and Health (NAVOSH) Program Manual
- (e) OPNAVINST 5100.19 - Navy Occupational Safety and Health (NAVOSH) Program Manual for Forces Afloat
- (f) OPNAVINST 3120.32 - Standard Organization and Regulations of the U.S. Navy
- (g) NAVSEA SS521-AG-PRO-010 - U.S. Navy Diving Manual

LISTING OF APPENDICES.

- A Typical Core Capability Assessment Areas
- B Typical Core Capability Assessment Projects
- C Sample FMA Assessment Report
- D FMA Assessment Deficiency Format

2.1 **PURPOSE.** To provide guidance for conducting a Fleet Maintenance Activity (FMA) Assessment, including areas to be assessed, responsibilities for conducting the assessment and deficiency correction and reporting requirements.

2.1.1 **Scope.** Fleet Maintenance Activity assessments will be conducted by the Type Commander (TYCOM) or Fleet Commander with cognizance over the FMA. For assessments conducted by the cognizant TYCOM, the assessment team will be comprised of members from each TYCOM that the FMA performs repairs for, with the senior member from the cognizant TYCOM. For assessments conducted by the cognizant Fleet Commander, the assessment team will be comprised of members from each TYCOM that the FMA performs repairs for, with the Fleet Commander, or Fleet Commander assigned TYCOM representative as the senior member of the assessment team. Assessments will be conducted in accordance with references (a) through (g) using the Quality Assurance assessment areas prescribed by Volume V, Part I, Chapter 9 of this manual.

- a. Assessments of Afloat FMAs will be performed annually, not to exceed 18 months.
- b. Assessments of shore based FMAs will be performed every 18 months, not to exceed 24 months. (TYCOM Quality Assurance assessments, explained in Volume V, Part I, Chapter 9 of this manual, will be accomplished concurrently with FMA assessments when scheduled in the same calendar year.)
- c. (Regional Maintenance Centers only) The following Regional Maintenance Centers (RMC) will be assessed every 18 months not to exceed 24 months. Areas may be assessed more frequently based upon results of previous assessments. These assessments encompass all functions of the RMC standard departments as listed in Commander, Naval Regional Maintenance Center Ship Organization and Regulation Manual:

Mid-Atlantic Regional Maintenance Center (MARMC)

Southeast Regional Maintenance Center (SERMC)

Southwest Regional Maintenance Center (SWRMC)

Pearl Harbor Naval Shipyard and Intermediate Maintenance Facility

Puget Sound Naval Shipyard and Intermediate Maintenance Facility

U.S. Naval Ship Repair Facility and Japan Regional Maintenance Center (SRF-JRMC)

Forward Deployed Regional Maintenance Center (FDRMC)

- d. Assessments are to evaluate the ability of the FMA to execute maintenance in accordance with applicable technical directives and specifications. The assessment of FMAs encompasses Repair Department Work Centers (WC) and the direct repair WC support functions performed by other departments.

2.1.2 Applicability. The assessments described in this chapter are applicable for non-nuclear work only. This chapter does not apply to nuclear work and systems; they are addressed separately in Volume V, Part I, Chapter 9 of this manual.

2.2 ASSESSMENT AREAS.

- a. FMAs are expected to maintain a broad spectrum of capabilities at full readiness. The FMA can expect that many of these capabilities will be observed and evaluated during the course of the assessment. The Assessment Team will place primary emphasis on the essential core capabilities, utilizing the guidelines of references (a) and (b).
- b. Core capability craftsman demonstration areas are shown in Appendices A and B of this chapter. These represent the typical areas to be assessed and, as time permits, the team leader may observe other areas/projects. Observation of "in process work" is preferred to the assignment of projects or mockups in core capability areas. The team leader will make all decisions regarding the assignment of projects.

2.3 ASSESSMENT RESULTS. An overall grade of satisfactory or unsatisfactory will be assigned based on the FMA's compliance with higher-level requirements and governing technical documents.

2.4 RESPONSIBILITIES.

2.4.1 Type Commander.

- a. Promulgate an assessment schedule by 30 November for the following calendar year.
- b. Forward a precepts letter, or a message, to the FMA's Commanding Officer at least two weeks prior to the assessment. This letter should include:
 - (1) The date of the assessment.
 - (2) Assessment Team member's security clearance information.
 - (3) Core capability areas for the observation of in process work.
 - (4) Logistic support requirements.
 - (5) Additional information as appropriate.
- c. Conduct an inbrief and outbrief with the Immediate Superior in Command (ISIC) (if assigned), FMA's Commanding Officer and designated personnel. A preliminary copy of the Assessment Report will be provided to the FMA at the outbrief.
- d. Issue the Assessment Report (Appendix C of this chapter) to the FMA via the ISIC within 15 calendar days following completion of the assessment.

2.4.2 Fleet Maintenance Activity.

- a. Forward team security clearance information to the local base security office and to all units who are or will be in availability during the period of the assessment.
- b. Designate an Assessment Coordinator to act as the point of contact between the Assessment Team and the command. Notify the appropriate TYCOM of the name and phone number of the Assessment Coordinator upon receipt of the assessment precepts letter.
- c. Ensure the following assessment support is provided:
 - (1) Access to all industrial areas within the FMA.

- (2) An adequate and dedicated administrative work area to allow the Assessment Team to assemble.
- (3) Parking for the Assessment Team.
- (4) A telephone with off-ship and long distance capability.
- (5) Access to Maintenance Resource Management System.
- (6) Clerical personnel to assist. These personnel will report to the Assessment Team Leader for assignment of working hours and duties.
- (7) Copying services.
- (8) Access to all Controlled Work Packages (CWP) and standard Formal Work Packages (FWP), including the index of FWPs.
- (9) Access to selected Repair Department training records and the departmental weekly training schedule for the week of the assessment.
- (10) A list of all non-nuclear Technical Work Documents performed since the last assessment.
- (11) A list of key personnel and telephone numbers.
- (12) A list of capabilities required per references (a) and (b), but not held.
- (13) A list of all critical path jobs scheduled during the assessment.
- (14) A list of all production/management meetings scheduled during the assessment.
- (15) In the Assessment Team work area, provide:
 - (a) One desk top computer and a laser printer.
 - (b) A copy of the following reference documents:
 - 1 The previous TYCOM/Fleet Assessment report with corrective actions.
 - 2 Equipment out of commission lists.
 - 3 All FMA instructions and notices, including those pertaining to safety, production and repair functions, and the Command Availability Guide (if applicable).
 - 4 Activity manpower documents.
 - 5 Navy Afloat Maintenance Training Strategy-Training Reports.
 - 6 FMA Capabilities (currently titled IMA Capabilities) and WC Validation Reports for all applicable WCs.
 - 7 Joint Fleet Maintenance Manual.
 - 8 TYCOM Training Manual.
 - 9 Repair Department Equipment Status Log.
 - 10 FMA Audit and Surveillance Program records.
 - 11 FMA self-assessments.
 - 12 Departure from Specification files.
- d. Initiate action to systematically correct each assessment deficiency finding (Appendix D of this chapter) in accordance with paragraph 2.5.1 and 2.5.2 of this chapter.

2.5 ASSESSMENT FINDINGS/CORRECTIVE ACTION.

- a. For each noted deficiency in an assessment area, a finding will be written and classified as either “Immediate Corrective Action Required” or “Corrective Action Required”.

- b. Audit cards must clearly “stand on their own” and indicate if certification is or is not impacted by the finding when the audit card deals with SUBSAFE or Deep Submergence Systems deficiencies. All audit cards annotating a certification issue will be classified as “Immediate Corrective Action Required”.
- c. The FMA will annotate in the corresponding assessment report enclosure, the corrective actions taken for each finding.
- d. The Commanding Officer will also submit a findings status report to the TYCOM via the administrative chain of command within 60 days following receipt of the official assessment report.
- e. Unless a delay is specifically authorized by the TYCOM, all findings will be corrected within the time limits specified in paragraphs 2.5.1 and 2.5.2 of this chapter.

2.5.1 Immediate Corrective Action Required. A deficiency that poses a significant safety hazard or results in a total loss or extreme degradation of the FMA’s readiness to perform work or provide a service within an area of required capability. Findings classified as “Immediate Corrective Action Required” require the immediate attention of the Commanding Officer and must be corrected within 15 days following the date of the assessment out-brief. Additionally, the TYCOM may direct the immediate suspension of work in any area(s) pending resolution of critical deficiencies.

2.5.2 Corrective Action Required. A deficiency which poses a potential hazard to personnel safety or has a significant impact on the FMA’s readiness to perform work or provide a service within an area of required capability. Findings classified as “Corrective Action Required” require the prompt attention of the Commanding Officer to preclude them from developing into “Immediate Corrective Action Required” deficiencies and must be corrected within 60 days following receipt of the official assessment report.

VOLUME IV
CHAPTER 4
DIESEL ENGINES

REFERENCES.

- (a) OPNAVINST 9220.3 - Propulsion and Auxiliary Plant Inspection and Inspector Certification Program
- (b) NAVSEA S9233-CJ-HBK-010/020 - U.S. Navy Diesel Engine Inspectors Handbook, Parts 1 (Inspection Procedures) and 2 (Technical Information)
- (c) NAVSEAINST 4730.1 - Shipyard Inspection and Required Conditions of Propulsion Plant Systems (Non-Nuclear) on Nuclear Powered Submarines
- (d) NAVSEAINST 4730.2 - Inspection and Required Conditions of Propulsion Plant Systems (Non-Nuclear) for Nuclear Powered Aircraft Carriers
- (e) NWP 1-03.1 - Naval Warfare Publication Operational Report
- (f) NAVSEAINST 4790.8/OPNAVINST 4790.4 - Ships' Maintenance and Material Management (3-M) Manual
- (g) NAVSEA S9086-HB-STM-010 - NSTM Chapter 233 (Diesel Engines)
- (h) NAVSEA S9086-H7-STM-010 - NSTM Chapter 262 (Lubricating Oil)
- (i) NAVSEA S9086-GX-STM-020 - NSTM Chapter 220, V3 (Water Treatment)

LISTING OF APPENDICES.

- A Assessment/Inspection Main Propulsion Diesel Engine and Ship Service Diesel Generators for LSD-41/49 and LPD-17 Class Ships

4.1 **PURPOSE.** To provide guidance for the conduct of diesel engine inspections, timely correction of discrepancies and the general operation and maintenance of diesel engines.

4.2 **DIESEL ENGINE INSPECTOR CERTIFICATION.** The Diesel Engine Inspector (DEI) Program Manager is Naval Sea Systems Command (NAVSEA) Philadelphia. The Regional Maintenance Center (RMC) is the administrative manager for their respective region. DEI certification and certification extension requirements as outlined in reference (a), are amplified as follows:

- a. Initial Certification. All DEI candidates that have satisfactorily completed the required Certification course, Service School Command A-652-0311, shall receive an Interim Navy Enlisted Classification (NEC). The DEI candidate will have a period of one year from course completion date to satisfactorily perform two diesel inspections under instruction from a certified DEI. Upon completion of the second, successful inspection, the candidate must submit a request to be assigned the DEI NEC 4314, through his chain of command to the appropriate RMC for their review. The RMC will forward their endorsement to the Type Commander (TYCOM) for their endorsement, if required, and then to NAVSEA Philadelphia, who initiates the process of assigning the 4314 NEC. Initial qualification to perform diesel inspections will be for a period of 36 months. The requesting letter must contain:
 - (1) A copy of the two completed inspection reports performed under the observation and supervision of a DEI.
 - (2) Date of graduation from the certification course of instruction.
- b. Transfer of the DEI will not require re-designation or re-qualification, as long as the DEI has maintained his qualifications in accordance with paragraph 4.2.c. of this chapter.
- c. Maintaining Certification. All DEIs must maintain up to date knowledge of approved inspection practices and policies. Certification will be maintained by:
 - (1) Successfully conducting a minimum of two inspections annually in accordance with reference (b).
 - (2) In each calendar year, attending one of the semi-annual inspector seminars. DEIs unable to meet this requirement may obtain a waiver from the Program Manager.

- (3) Extending Qualification. Qualified inspectors may request to extend their initial or subsequent qualifications, in 36 month increments, providing that the requirements in paragraph 4.2.c. of this chapter are met. To extend qualification:
 - (a) The DEI shall submit a letter to the RMC requesting qualification extension that includes a brief description of the inspector's duties during the qualification period, specify the date of the latest seminar attended and provide as enclosures a copy of the two most recent inspection report cover letters performed by the inspector.
 - (b) The RMC shall endorse the letter and forward it to the Diesel Program Manager.
 - (c) The TYCOM may require endorsement on these extension requests.
- d. Revoking Certification. If an inspector has not maintained the qualification requirements of paragraph 4.2 of this chapter, the RMC may submit a request to the Program Manager to have the DEI NEC4314, removed from the inspector. The TYCOM requires endorsement on this action.
- e. Reinstatement of Expired/Revoked Certification. A DEI whose certification either expired or was revoked may request reinstatement of his certification by submitting a letter to the Program Manager via his chain of command and the RMC. The letter must contain:
 - (1) A brief description of the DEI's duties during and following the certification period.
 - (2) Copies of the two most recent inspections performed. If the DEI's certification has been expired for more than six months prior to the request or was revoked, the two most recent inspections shall be completed under the instruction of a certified DEI.

4.3 DIESEL INSPECTIONS.

NOTE: FOR THE ASSESSMENT/INSPECTION OF MAIN PROPULSION DIESEL ENGINES (MPDE) AND SHIP SERVICE DIESEL GENERATORS (SSDG) ON LSD-41/49 AND LPD-17 CLASS SHIPS SEE APPENDIX A.

4.3.1 Diesel Engines Requiring Inspections.

- a. All diesel engines, including main propulsion, ship service and emergency diesel generators onboard ships and submarines shall be inspected in accordance with references (a) and (b).
- b. All small boat diesel engines, including main propulsion, ship service and emergency diesel generators that are 400 Brake Horsepower and above, unless otherwise determined by TYCOM, shall be inspected in accordance with references (a) and (b). TYCOMs may exempt diesel engines on small boats and craft from inspection requirements where the engine or boat configuration provides insufficient access to accomplish the inspection.

4.3.2 Periodicity of Inspections. Diesel engines shall be inspected in accordance with references (a) and (b) on the following events:

- a. Routine/Pre-Availability Inspections.
 - (1) Once during the unit's cycle, not to exceed 24 months. The normal interval between routine diesel inspections is 18 months. Routine/Pre-Availability Inspections may be performed as early as 12 months or as late as 24 months to allow for maximum scheduling flexibility and utilization of assessment findings. The TYCOM, Immediate Superior in Command (ISIC) and other Fleet Maintenance Managers shall ensure the Routine/Pre-Availability Inspection is scheduled to allow adequate time prior to availabilities to utilize the inspection/assessment results to plan work on the diesel. As per reference (a), in no case shall the interval between Routine Inspections exceed 24 months. A Routine/Pre-Availability Inspection normally consists of all three phases as discussed in paragraph 4.3.4 of this chapter. For Emergency Diesel Generators (EDG) onboard nuclear powered vessels, industrial activity work on the diesel engine(s) or its support systems will not normally be approved except during a Chief of Naval Operations (CNO) Availability. The TYCOM/ISIC shall ensure that adequate upkeep time is made available prior to the availability to ensure there are a sufficient number of diesel engines with no outstanding discrepancies to provide the required standby power during the availability.

4.3.3.1 Inspection Deferrals. Surface and Carrier Forces shall submit a minor DFS for approval by the respective TYCOM for diesel inspections in the 18 to 24 month window. When an inspection cannot be accomplished within 24 months, Surface, Carrier and Submarine units shall submit a DFS request to the TYCOM no later than the 23rd month since the last inspection, that includes satisfactory operating trend data reviewed by a DEI confirming that the engine is in sound operating condition. For inspection deferrals of greater than 24 months, the TYCOM will forward endorsement to NAVSEA 05Z for approval of the DFS.

4.3.4 Inspection Phases. The diesel inspection consists of a detailed records check, internal material condition inspection and observation of engine operating characteristics. During all phases of an inspection, all safety precautions with the engine and space shall be strictly adhered to. The degree of the inspection shall be decided by the DEI based on the results of reference (b) mandatory check points, TYCOM directed check points, if any, operating data and other records maintained on the diesel engine. The inspection will include the following phases (For LSD-41/49 Class ships and LPD-17 Class ships see Appendix A):

- a. Phase I - Administrative Inspection. This is a complete review of the administrative records associated with the diesel engine(s).
- b. Phase II - Secured Inspection (partial disassembly). Based on the results of Phase I, the inspector will decide the degree of disassembly and will conduct a thorough evaluation of the internal condition of the engine as warranted by Phase I and Phase II findings. In accordance with reference (b), disassembly of the engine will be minimized. Submarines shall have a complete Phase II Inspection in accordance with reference (b).
- c. Phase III - Operation Inspection. The DEI will observe and analyze operating data on all inspected engines in accordance with reference (b) and PMS Maintenance Requirement Card (MRC) for performance testing/troubleshooting the engine. If no PMS guidance exists, then 100 percent or maximum attainable load on all inspected engines should be achieved.

4.3.5 Preparation for Diesel Engine Inspection.

- a. The DEI shall meet with the inspected ship's Commanding Officer or his designated representative, Engineer Officer and a diesel system expert prior to the start of the inspection. Where appropriate, either the Reactor Officer or the Engineer Officer may fulfill this role. This visit will ensure that Ship's Force is aware of the extent of the inspection, what PMS is to be accomplished, required support to be provided to the DEI and interference to be removed to allow access to the diesel engine. Coordination between the ship and the DEI can significantly reduce the time the diesel will be out of commission for inspection purposes and maximize the training to Ship's Force. Ship's Force will perform diesel engine disassembly, reassembly and operation, as well as correcting Ship's Force capable discrepancies concurrent with the inspection. It is the responsibility of Ship's Force to order all software and repair parts for Ship's Force capable work, to include all gaskets, lockwire, etc., for engine reassembly. Discrepancies beyond Ship's Force capability will be scheduled to be corrected through the Fleet Maintenance Managers, utilizing the Current Ship's Maintenance Project. At all times during the inspection, safety precautions with the engine and the space will be strictly adhered to. The DEI will meet with the Main Propulsion Assistant or Engineer Officer on a daily basis to ensure the unit's leadership is informed and produce optimal coordination efforts.
- b. The ship will:
 - (1) Prepare the diesel engine for inspection.
 - (2) Provide the DEI with dedicated time and the appropriate personnel to conduct the inspection. The inspection will be structured to maximize training of shipboard personnel. The ship should ensure continuity of personnel is maintained during the inspection/assessment.
 - (3) Assign a Job Control Number for accomplishing the inspection and record all parts usage through the Maintenance and Material Management system.

- (4) Ensure all equipment directly associated with the engine(s) is operable.
- (5) Ensure all records are available and in good order.
- (6) Ensure that the tools listed on the appropriate MRCs, technical manuals, and DEI check sheets are available for use during the inspection.
- (7) Ensure that all applicable MRCs and technical manuals for the engine and related support systems are available.
- (8) Test diesel engine lubricating oil in accordance with the applicable Lube Oil Quality Management program, as defined by PMS, prior to the inspection. In most cases, this requires Navy Oil Analysis Program results of recent oil sample be available.
- (9) Test jacket water treatment in accordance with PMS prior to the inspection.
- (10) For SSN/SSBN/SSGN Class Submarine EDGs, the unit should evaluate existing conditions of battery capacity, propulsion plant status and shore power reliability. Based upon this evaluation, if conditions warrant, the ship will submit a request for a stand-by generator for emergency power during the diesel inspection.

4.3.6 Inspection Findings. The inspection will report “as found” conditions.

4.3.6.1 Repair Before Operating. An RBO condition is any condition existing that, if left unattended, would pose an immediate or near term hazard to personnel safety. Only a DEI that is currently certified may issue an RBO. RBO deficiencies require reinspection by a DEI that is currently certified after repairs and before the diesel engine is operated. A DFS will not be approved for RBOs. If there is not an immediate or near term danger to personnel but there is to the equipment, the discrepancy shall be assigned as SEVERELY DEGRADED with major operational restrictions. A diesel engine with SEVERELY DEGRADED condition cannot be operated until it is corrected/repaired and reinspected or has a properly approved Major DFS. Discrepancies that may cause an RBO include but are not limited to:

- a. Malfunctioning overspeed governor or trip.
- b. Inoperative alarms or safety devices.
- c. Low lube oil pressure.
- d. Readings that exceed the limits of PMS or manufacturer specifications that would pose a hazard to personnel.
- e. Uncontrollable lube oil or fuel oil leaks.
- f. Lube oil fuel dilution above safe levels.
- g. Evidence of serious internal failure.

4.3.6.2 Major Deficiency. This finding is made when major problems exist, but the engine is still operable with restrictions approved by the TYCOM. Any deficiency that has been noted as major shall require either immediate correction within 30 days of discovery or reported by Naval message in accordance with paragraph 4.4.b(3) of this chapter. This requirement does not alter the normal Casualty Reporting or DFS reporting requirements. In accordance with references (a) and (b), major deficiencies include, but are not limited to:

- a. Engine unable to maintain rated load.
- b. Automatic equipment inoperative or not functioning properly.
- c. Critical components exceed prescribed limits but do not meet the RBO criteria.
- d. Temperature and/or pressure between cylinders are not within specification.
- e. Either Remote or Local engine starting (one of two must be operational) or remote securing devices are inoperative.
- f. Excessive blower clearance readings.
- g. Air box exhaust belt/muffler is excessively dirty or oil laden.

- h. Clogged valves or ports.
- i. Malfunctioning fuel injection system.
- j. Jacket water treatment out of specification.

4.3.6.3 Minor Deficiency. Categorize all other deficiencies as minor.

4.3.6.4 Re-inspections. RBO deficiencies must be re-inspected prior to engine operation by a DEI. If possible, the original DEI should be used, if available. Re-inspection of major and minor deficiencies is not required unless stated in the engine's inspection report.

4.3.6.5 Recurring Discrepancies. A recurring discrepancy from a previous inspection will be so noted on the inspection report.

4.3.6.6 Component Certification (Aircraft Carriers only). With the exception of RBOs, deficiencies identified in the course of diesel engine inspections performed prior to or during a CNO availability do not necessarily affect component certification to support readiness conditions identified in reference (c) and reference (d). Evaluation of specific deficiencies by Ship's Force and Naval Supervisory Authority/project team personnel is necessary to determine system readiness conditions are met. An emergency diesel generator is considered certified for operation per reference (c) and reference (d) provided the diesel inspection and all required PMS are within periodicity, including completion of a satisfactory performance test.

4.4 REPORTING REQUIREMENTS.

- a. Casualty Reporting (submarines only).
 - (1) Purpose. To provide guidance for Casualty Reporting (CASREP) requirements for submarine diesel generators. CASREPs are in addition to, and do not replace the reporting requirements of other documents (e.g., Naval Reactors Technical Bulletins, Operational Orders, Mishap Reports, etc.).
 - (2) Background. The significance of a submarine's emergency and backup power supplies cannot be overstated. Reference (e) defines the CASREP types, requirements and format. CASREP requirements of Out of Commission power generating or storage equipment require additional clarification.
 - (3) SSBN/SSGN Class Submarine EDGs. Report EDG casualties by message as allowed by operational constraints.
- b. The ship's Commanding Officer shall:
 - (1) Ensure that each inspection/assessment is entered in the applicable machinery history with a brief description of any RBO conditions found at the conclusion of the assessment/inspection.
 - (2) All maintenance actions and parts usage as the result of the inspection/assessment are properly documented in accordance with reference (f).
 - (3) Send a Naval message listing the status of all discrepancies listed in the inspection/assessment report within 30 days of receipt of the serialized report and every quarter thereafter until all deficiencies are corrected/resolved or brokered by the Maintenance Manager. The message must contain the engine number, date of inspection, type of inspection conducted, and the status of deficiencies not previously reported as corrected or a listing of what has been brokered. All deficiencies not corrected during or immediately after the inspection must have a Job Control Number assigned and be listed in the message. The ISIC/Fleet Maintenance Managers shall ensure that the deficiencies listed in the inspection/assessment message are corrected at the earliest opportunity in the unit's maintenance cycle.
- c. The DEI shall:

- (1) The DEI shall ensure a maintenance ready 2-Kilo for every discrepancy found during the inspection is entered into the Current Ship's Maintenance Project. The DEI shall also make a verbal report to the ship's Commanding Officer or his designated representative. The verbal report should discuss the findings of the inspection/assessment, with special note of recurring discrepancies from previous inspections/assessments.
- (2) Prepare the inspection report in accordance with reference (b) within 30 days following completion of the inspection. The write up shall further detail the cause or conditions that lead to the discrepancy noted on the 2-Kilo or in the report. The report shall identify what was accomplished during the inspection/assessment to correct any discrepancies and any actions required to correct outstanding discrepancies.
- (3) Utilize the Diesel Inspection Management Information System using the DEI report generator for classes of ships that are currently in use. For classes of ships that are not yet in the system, use the current guidance that is in reference (b). This inspection shall be reviewed by the RMC prior to forwarding the report to the Commanding Officer of the inspected ship, with information copies to the ISIC, TYCOM, Fleet Maintenance Managers, the cognizant Shipyard (Code 260) and Supervisors of ShipBuilding/NAVSEA Shipyard Representative's Office (Pre-Availability and during Availability Inspections only) and In Service Engineering Agent.

4.5 OPERATION AND MAINTENANCE. This section does not supersede existing engine, ship or ship class specific guidance and is only meant to provide guidance where currently none exists.

- a. Per reference (g), the light loading of a diesel engine (less than 60 percent) should be avoided. Consistently light loading a diesel engine will cause one or more undesirable conditions, depending on specific engine design:
 - (1) A loss of cylinder compression due to glazed cylinder walls, leading to an unnecessary premature engine overhaul.
 - (2) Carryover of engine lube oil into the exhaust, causing excessive exhaust smoke and creating conditions for a possible exhaust stack fire.
 - (3) Fuel oil dilution of lube oil, leading to frequent oil changes.
 - (4) Carbon formation on exhaust valves, leading to valve failure.

In situations where light loading of a diesel engine is unavoidable, arrangements should be made to operate the engine at 60-80 percent rated load capacity for a minimum of thirty minutes, preferably three hours, unless other guidance exists specific to the engine's application. This can help offset the detrimental effects of light loading; however, it is not to be considered a suitable alternative to the avoidance of light loading. Further details are provided for LSD-41/49 Class MPDE in Appendix A.
- b. Per reference (h), diesel engines that have online purification capability shall operate the purifier continuously while the diesel engine is operating. On installations where multiple engines are serviced by one purifier, the purifier alignment should be shifted periodically within a 24 hour period to ensure all engines receive adequate oil purification and maintain satisfactory oil condition. Each engine's operating hours and oil condition should be considered when scheduling purification of several engines on a rotational basis.
- c. Per reference (i) and PMS, diesel engine jacket water treatment must be tested and maintained to ensure proper corrosion control and freeze protection, as applicable.
- d. Diesel engine operating hours since engine commissioning, engine overhaul and lifecycle maintenance requirement completions (PMS/Class Maintenance Plan requirements), at a minimum, shall be maintained on all MPDEs, SSDGs, and EDGs. The hours shall be documented and recorded in the appropriate machinery history records in order to assist with scheduling of overhauls and lifecycle maintenance requirements. An overhaul typically includes rebuilding/replacing, as complete sets to new criteria the following components: cylinder heads, piston rings, cylinder liners, main and connecting rod bearings. If one of these sets is not rebuilt/replaced, the repair is generally not considered an overhaul and engine operating hours since overhaul shall not be zeroed, however, machinery history will be

updated and lifecycle operating hours since the significant repairs shall be tracked. A certified DEI shall make the final determination if the extent of the work accomplished constitutes an engine overhaul for a particular engine or not during execution of the Post Overhaul/Repair Inspection detailed in paragraph 4.3.2(c) of this chapter.

4.6 COMPLIANCE.

- a. All ships, submarines and craft shall comply with the procedures herein for the operation, maintenance and inspection of installed diesel engines.
- b. Ship's Commanding Officers shall ensure all diesel records are readily available for the inspector's review and Ship's Force use, including:
 - (1) Engine operating logs.
 - (2) Navy Oil Analysis Program test results, or, for submarines, the applicable oil analysis results.
 - (3) Onboard lube oil testing logs.
 - (4) Diesel Maintenance/history records to include all maintenance and significant items accomplished on the engine since last engine overhaul.
 - (5) Diesel operating and maintenance documents, including Engineering Operational Sequencing System, Steam Plant Manual, Ship System Manual (Submarines only), PMS, Engineering Standing Orders, etc., as appropriate.
 - (6) Engine hours log.
 - (7) Diesel inspection reports since last overhaul and associated Naval message on the status of discrepancies.
 - (8) Fuel Oil Quality Management records.
 - (9) Diesel Engine Technical Manuals.
 - (10) References (g), (h) and (i).
 - (11) Appropriate diesel-related Training records.
- c. The TYCOM/ISIC shall ensure that assigned ships operate and maintain diesel engines in accordance with the procedures in references (a), (b), (g), (h) and (i). Specifically, they shall:
 - (1) Ensure ships are complying with all required instructions by observation of diesel engine operations during shipboard visits.
 - (2) Conduct follow-up action to ensure that any unsatisfactory conditions found are correct at the earliest possible date.
 - (3) Maintain a library of technical material and appropriate visual aids for use by assigned ships in training diesel operations.
- d. (Submarines only) Ensure the induction and exhaust systems are inspected in accordance with the appropriate Maintenance Requirement, and/or Maintenance Requirements for continued Unrestricted Operation.

4.7 SUBJECT MATTER EXPERT IN THE REPAIR AND MAINTENANCE OF DIESEL ENGINES. The SME provides technical oversight on all scheduled and emergent work performed by the RMC personnel, and contractor, as required. The SME ensures work packages include proper repair procedures and are used with maintenance standards and appropriate technical documentation related to the diesel engine assessment/inspection. The SME shall have direct communication with the RMC Engineering Department regarding resolutions of repairs that do not meet Original Equipment Manufacturer specifications.

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VOLUME IV
CHAPTER 9
SYSTEM TEST CHECK LIST

REFERENCES.

- (a) NAVSEA 0387-046-8000 - System Hydrostatic Test Requirements
- (b) NAVSEA S9086-RJ-STM-010 - NSTM Chapter 504 (Pressure, Temperature and Other Mechanical and Electromechanical Measuring Instruments)
- (c) NAVSEA S9505-AF-MMA-010 - Submarine Non-Nuclear Piping Systems Test Manual
- (d) NAVSEA S9086-RK-STM-010 - NSTM Chapter 505 (Piping Systems)

LISTING OF APPENDICES.

- A Nuclear Test Rig Determination and Inspection Check List
- B Non-Nuclear Test Rig Determination and Inspection Check List
- C Nuclear/Non-Nuclear Pre-Test Inspection Check List
- D Nuclear/Non-Nuclear Performance of Test Check List

9.1 **PURPOSE.** To provide standard check lists for the proper preparation for the conduct of and recovery from nuclear and non-nuclear tests. Appendices A through D of this chapter are applicable to installed ship systems, individual components and support equipment tested in conjunction with Formal Work Packages (FWP) and Technical Work Documents (TWD).

9.1.1 **Background.**

- a. Appendices A through D of this chapter are similar to a standard FWP that will require entries, prior to each use, to detail the specifics of the test to be performed. When TWDs are utilized, the locally developed FWP should direct execution of the check lists and need only direct other actions that are not included in the check lists. For example, since Forces Afloat rarely perform hydrostatic tests on hot systems, the check lists are prepared based on system temperatures less than 200 degrees F. In the event that a hydrostatic test is performed with temperatures greater than 200 degrees F, the locally developed FWP must contain additional requirements for the test from the referenced test manual.
- b. These lists are developed from references (a) through (d) and **are not inclusive of all requirements.** All applicable test references must be reviewed in preparation for the test to ensure no requirement or precaution is overlooked. Other references such as the Reactor Plant Manual (RPM), Propulsion Plant Manual, Steam Plant Manual, Steam and Electric Plant Manuals, Ship Systems Manuals, Ships Information Books, Test Pressure Drawings, component technical manuals, etc., provide additional guidance and requirements that shall be included in the locally developed FWP for the test.

9.2 **GENERAL INSTRUCTIONS.**

- a. Blank spaces are provided throughout the check lists so that requirements for the specific test to be performed may be added. These specifics shall be entered during FWP preparation.
- b. Portions that are not applicable shall be marked "N/A" prior to FWP approval.
- c. Multiple "Completed by" signature blanks are provided at the end of each check list since one individual may not be able to fully complete a particular check list. Additional signature blanks may be added if required.
- d. The Test Rig Determination and Inspection Check List, Appendices A and B of this chapter, shall be completed by the activity issuing the test equipment. It is the responsibility of both the issuing and receiving activity to ensure that the correct test gear is used. **Local exceptions to gages specified in reference (b) Table 504-6-1 will be approved by an individual with a technical warrant. When gage exceptions are invoked, the approved exception shall be included with associated test form.** This may be accomplished by requesting the correct test equipment, and the issuing activity completing the

check list and providing it with the test equipment for review. To satisfy the scope of this chapter, the activity requesting the test equipment must include in their request (OPNAV 4790/2L) the information necessary for the issuing activity to complete Item 1 of Appendices A or B of this chapter, as applicable.

- e. These check lists may also be used when a maximum operating pressure test is specified and an external pressure source is required to obtain this pressure. Installed system equipment shall be used whenever possible to perform operating pressure tests.
- f. Appendices B, C, and D of this chapter may contain classified information when filled in (i.e., the nuclear information or classified test pressures). It will be the responsibility of the requesting activity to ensure the proper classification is annotated on the document when applicable.

9.3 **RECORD RETENTION.** System Check Lists do not require retention after the test has been satisfactorily completed, documented in the FWP or TWD, and the FWP or TWD is closed. Additional reviews of testing information are provided as follows:

- a. For Ship's Force testing to recertify TWD work performed by the Fleet Maintenance Activity (FMA), the completed check lists, or copies shall be provided with the test documentation provided to the FMA. When the FMA Quality Assurance Officer accepts the completed retest, the check list may be discarded.
- b. For FMA shop testing of controlled work, the completed check lists, or copies, shall be provided with the test documentation required by the Controlled Work Package until the FMA Quality Assurance Officer or Quality Assurance Supervisor accepts the testing objective quality evidence. Once the tests are accepted, the check list may be discarded.

VOLUME IV

CHAPTER 11

TECHNICAL DATA AND INFORMATION MANAGEMENT

REFERENCES.

- (a) TL130-A1-HBK-010 MSC Procedures Manual - Maintenance Support Center Library Procedures Manual
- (b) COMNAVAIRFORINST 4700.23 - Aircraft Carrier Maintenance Support Centers (MSC) Policy and Procedures
- (c) NAVSUP P2003 - Navy Stock List of Forms and Publications
- (d) SECNAVINST 5510.36 - Department of the Navy Information Security Program Regulation
- (e) NAVSEA S8800-00-GIP-000 - NAVSEA Guidance Handbook for Intermediate Maintenance Activity Technical Library Personnel
- (f) NAVSEA S0005-AA-GYD-030 Technical Manual Users Quick Reference Guide
- (g) SECNAVINST 5510.30 - Department of the Navy Personnel Security Program
- (h) NAVSEA SL720-AA-MAN-030 - Navy Modernization Program
- (i) NAVSEA S9040-AC-IDX-010 - Ships 3-M Reference Information CD
- (j) NAVAIR 00-25-100 - Naval Air System Command Technical Manual Program
- (k) NAVSEAINST 4160.3 - Technical Manual Management Program
- (l) NAVSEA S0005-AA-PRO-010/TMMP - NAVSEA Technical Manual Management Program Operations and Life Cycle Support Procedures
- (m) NAVSEAINST 9210.29 - Nuclear Powered Ships and Prototypes - Responsibilities of Holders of Reactor Plant and Related Manuals
- (n) NAVSEA S9086-CV-STM-010 - Naval Ship's Technical Manual Chapter 086 Command Technical Manual Management

11.1 PURPOSE. This chapter defines the responsibilities with respect to the management of technical documentation and data and requires the establishment and operation of technical libraries. Unless otherwise noted, Aircraft Carriers are governed by references (a) and (b).

11.1.1 Discussion. Technical data and information are critical for the proper operation, maintenance, troubleshooting and repair of all plant equipment. Improper maintenance or equipment remaining not repaired and inoperative can result from a lack of proper documentation in the form of technical manuals, ship's drawings and blueprints, Military Specifications and standards, etc.

11.2 Shipboard Technical Document Management. Ships shall maintain the Advanced Technical Information Support (ATIS) System up to date. ATIS updates are mailed out to the ship on Compact Disks (CD/DVD). An additional system available for use is the Technical Data Knowledge Management (TDKM) system. Ship technical document distribution is based on configuration and therefore relies upon the Configuration Data Managers Database - Open Architecture being maintained up to date to accurately assign documents to the ship. To ensure ships maintain up to date technical documents, the following requirements shall be met:

- a. The ship shall assign a senior Petty Officer (E-6 or above) as the Technical Librarian who will maintain the ATIS and TDKM systems up to date under the supervision of the 3M Systems Coordinator. Assignments as a Technical Librarian should be for a minimum of 12 months. Technical Librarians on Aircraft Carriers are assigned for 18 months in accordance with reference (b). For Aircraft Carriers, the point of contact is the Maintenance Support Center (MSC) Officer and the Maintenance Officer. **At Submarine Fleet Maintenance Activities (FMA), ashore and afloat, the Technical Librarian will work under the supervision of the Planning and Estimating Officer for ATIS, TDKM and other databases maintained for FMA use.**
- b. The Technical Librarian shall promptly apply ATIS changes within one week of being received on board.

- c. If TDKM is activated, the Technical Librarian shall synchronize and index TDKM once per week and report completion with received changes to the 3M Systems Coordinator. For Aircraft Carriers the point of contact is the MSC Officer and the Maintenance Officer.
- d. 3M System Coordinator shall report completion of ATIS and/or TDKM updates to the Executive Officer. For Aircraft Carriers the point of contact is the MSC Officer and the Maintenance Officer.

11.3 TECHNICAL LIBRARIES. Technical Library personnel maintain a complete master technical library including **electronic or hard copies of** technical manuals, drawing/aperture cards, Coordinated Shipboard Allowance Lists, provisioning Allowance Parts Lists (APL), computerized databases and any other technical documents or aids which support maintenance functions. The appropriate IT system computer programs will be used to maintain the library. In general, the technical library serves the following basic functions:

- a. Acquisition of new documents and data and the updating of existing materials.
- b. Cataloging, indexing and filing all documents, data and information materials to allow for effective use of library technical information.
- c. Accountability and control to ensure continuous integrity of the library collection and to enhance periodic inventories.
- d. Central control point for all technical documents received, held, used, transferred or disposed of by the repair department (FMA only) or command. For FMAs having a Nuclear Support Facility (NSF), all Naval Sea Systems Command Nuclear Propulsion Directorate (NAVSEA 08) controlled documents shall be controlled by the NSF. For MSCs aboard aircraft carriers, all NAVSEA 08 controlled documents shall be controlled by the Reactor Department Technical Publication Library. All aircraft maintenance related documents shall be controlled by the Aircraft Intermediate Maintenance Department.
- e. Maintain access to the following computer networks/websites whenever possible.
 - (1) Technical Data Management Information System (TDMIS).
<https://mercury.tdmis.navy.mil/default.cfm>
 - (2) Military Engineering Drawing Asset Locator System.
<https://www.dlis.dla.mil/medals>
 - (3) Naval Surface Forces, Atlantic Planning and Execution of Alterations and Repair (FMA and COMNAVSURFLANT and COMNAVSURFPAC commands only)
<https://www.spear.navy.mil> click on SPEAR info.
 - (4) Maintenance and Modernization IT Systems.
 - (5) Monthly Advance Change Notice Report.
<https://nsdsa.nmci.navy.mil>
 - (6) **ASSIST Quick Search** <http://quicksearch.dla.mil>
 - (7) <https://assist.dla.mil>

11.3.1 Technical Library Supervisor. The Technical Library Supervisor is responsible for keeping current plans, prints, specifications, manuals and all other technical documents and information needed by ship and FMA departments and for managing the daily operation of the library. The Technical Library Supervisor shall:

- a. Have a sufficient understanding of technical library organization requirements in references (a) through (n) (as applicable) to supply the necessary technical information.
- b. Have a **minimum** security clearance equal to the highest security classification of any document held within the library.
- c. Supervise personnel assigned to library.
- d. Operate the technical library in the following manner:

- (1) Schedule and carry out a frequent and recurring on the job training program for all personnel assigned to the technical library staff or to satellite librarian positions. As a minimum, training shall include topics that provide guidance for performing each library or satellite library function. Satellite librarian training may be tailored to cover only those areas applicable to satellite libraries. Lesson plans shall be developed for each topic.
- (2) Maintain and provide applicable and current plans, prints, specification, manuals and all other technical documents and information needed by the cognizant department. FMAs will also provide technical documents to tended units, other FMAs, non-FMA government activities or qualified Department of Defense contractor personnel.
- (3) Maintain an inventory of technical publications/manuals and manufacturer instruction books and other technical/repair documents available in the technical library and/or any satellite libraries (Work Centers/division offices, etc.).
- (4) Develop a system for checking out/in and recall of library technical publications issued to individuals in order to maintain the integrity of the library and ensure revisions/changes are made as received and also to minimize lost materials due to unaccountability. The system should include a recall capability that would allow for the location and recall/reissue of materials after 90 days. FMAs issuing technical publications/documents to tended units should establish a 90-day or end of fleet maintenance availability recall whichever comes first.
- (5) Requisition technical documentation needed for maintenance and repair procedures but not already available on board. Maintain a separate file of material on order. Track the status of requisitioned documents until received. Initiate follow-up action for those documents where supply status has not been received for a 30-day period, unless previous supply status indicates no follow-up is required.
- (6) Ensure proper security for the contents of the technical library.
- (7) Exercise positive control over access to the Library Management or TDMIS database functions using locally generated procedures.
- (8) Maintain written procedures which describe how to perform each function carried out by the technical library (i.e., check-out/check-in of technical documents, updating library document files, operating reproduction equipment, performing updates, requisitioning, inventories and audits of library documents, etc.).
- (9) Ensure maintenance calls/contracts are made for all viewing, reproduction, computer and powered document retrieval systems/equipment used to carry out library functions. The program shall include devices associated with this equipment.
- (10) Perform an inventory of technical publications/manuals and manufacturer's instruction books.
 - (a) Ships are to perform an annual inventory of technical publications/manuals and manufacturer's instruction books and other maintenance/repair documents available in the technical library and satellite libraries (work center/division offices).
 - (b) Shore facilities and submarine tenders are to perform an inventory of technical publications/manuals and manufacturer's instruction books and other maintenance/repair documents available in the technical library and satellite libraries (work center/division offices) every 12 months.
- (11) Ensure manuals within library's inventory contain applicable Advance Change Notices (ACN), or Interim Rapid Action Changes (IRAC). Verify each manual against the ACN report available from Naval Systems Data Support Activity (NSDSA), Port Hueneme, CA, and the NATEC IRAC Tracker Report.
- (12) Perform an annual data verification (configuration audit) of technical manuals and other repair documents available in the technical library and satellite libraries. Afloat libraries should perform verifications as often as operational constraints permit, within 6 months of major deployments, is recommended if verifications are not conducted annually.

- (a) Verify each NAVSEA/Space and Naval Warfare Systems Command technical manual held with the data listed in TDMIS using LMD for manual or automated verification. Verify Naval Supply Systems Command (NAVSUP) manuals with the modem Internet access.
 - (b) Verify NAVSUP manuals against reference (c) (i.e., NAVSUP 600 CD) or by performing a process verification file with LMD/TDMIS.
 - (c) Compare each technical manual held with the ACN Report provided from NSDSA, Port Hueneme, CA. This should be performed monthly.
 - (d) Compare each technical manual held with TDMIS (Index of Technical Publications) to ensure library is receiving the technical manual automatically.
 - (e) Compare each technical manual held with the Technical Manual Deficiency Evaluation Report file to make sure information received from Technical Manual Deficiency Evaluation Report submissions is reflected in applicable technical manuals.
 - (f) Make sure each technical manual is in good material condition (i.e., does not have loose or unrepaired torn pages, is readable and has an outside cover).
 - (g) For Naval Air Systems Command manuals, submit an Automatic Distribution Requirements List annually to NATEC to update distribution and verify manuals in accordance with reference (a).
- (13) Keep a record of annual inventories for 24 months. The annual inventories should include an assessment of recorded deficiencies in the technical data management program to determine areas that require improvement.
- (14) Establish procedures to incorporate changes/revisions to technical documents held within library or satellite libraries as soon as practical after receipt. Updates involving the safety of personnel or equipment (ACNs) shall be entered within 48 hours of receipt. Routine changes shall be installed before publication use or within 30 days of receipt, whichever occurs first.
- (15) Establish procedures that assure positive control of all technical documents held by the library. If Process Instructions or documents listed in **ASSIST Quick Search** <http://quicksearch.dla.mil> or any alteration text documents are held in Satellite library inventories, verify that these documents are up-to-date at least semiannually.
- (16) Establish procedures for issuing technical documents to Department of Defense contractor personnel using guidance provided in references (d) (FMA only).
- (17) Be the department point-of-contact for the Integrated Logistics Overhaul team with respect to technical documentation.
- (18) Ensure all superseded technical documentation is removed and disposed of in accordance with local procedures.

11.3.1.1 **Technical Library Non-Supervisory Personnel.** The Technical Library non-supervisory personnel will carry out the daily operations of the technical library as directed by the Technical Library Supervisor. The Technical Library non-supervisory personnel shall:

- a. Be a reliable and motivated petty officer (E5 or above for FMA/MSC or full time civilian equivalent).
- b. Military should be assigned for at least 12 months. On Aircraft Carriers they are assigned for 18 months in accordance with reference (b).
- c. Personnel assigned as satellite librarians will be reliable and motivated petty officers appointed in writing and assigned for at least 9 months. Satellite librarians will have a **minimum** security clearance equal to the highest security classification of any document held within the library in accordance with reference (n).

11.3.2 Technical Library Materials. The technical library has a wide variety of technical information and data in many different forms and formats. For FMA Technical Libraries eight broad categories of information exist which are described in reference (e).

11.3.2.1 Indices. Indices serve as reference or information sources that name systems, supplies and other information sources. Examples of indices include:

- a. Ships Drawing Index (SDI).
- b. Index of Technical Publications (ITP).
- c. TDMIS.
- d. Navy publications, forms and instructions (Reference (c)).
- e. ASSIST Quick Search <http://quicksearch.dla.mil>
- f. ATIS Systems

11.3.2.2 Technical Manuals. Technical manuals outline inspection and repair procedures for shipboard systems. Examples of technical manuals include:

- a. Ship's Information Books.
- b. General Information Books.
- c. Naval Ships' Technical Manual (NSTM).
- d. Propulsion Operating Guide.
- e. General Specifications for Overhaul.
- f. Equipment Technical Manuals.
- g. Organizational Maintenance and Management System - Next Generation (OMMS-NG).
- h. Ordnance Publications.
- i. Ordnance Data.

11.3.2.3 Drawings. Drawings have engineering and design requirements needed to repair equipment to original specifications. Drawings are also used to find the location of shipboard systems and system equipment and components. Drawings stored in technical libraries include:

- a. Ship's construction drawings.
- b. Ship Alteration installation drawings.
- c. Selected Record Drawings.
- d. Ship's Equipment Drawings.
- e. Vendor/Manufacturer's Drawings.
- f. Booklet of General Drawings.

11.3.2.4 Handbooks and Cataloging. Handbooks have detailed information about specific systems or equipment and may also list equipment repair procedures. Examples of handbooks include the following:

- a. Micro-Electronic Device Date Handbook.
- b. Identification Markings for Fasteners.
- c. Gasket Material (Non-metallic).
- d. Guide for Sampling Inspections.
- e. Shipyard welding procedures.

11.3.2.5 Military Specifications and Standards. Military specifications and standards are specific, detailed requirements for equipment or material. ASSIST Quick Search <http://quicksearch.dla.mil>

11.3.2.6 Documents and Lists. Documents and lists are catalogs of parts, equipment or publications and alteration records. The following are examples of documents and lists typically found in technical libraries:

- a. Navy Management Data List (NAVSUP Publication 4100).
- b. Navy Directive List.
- c. Introduction to Federal Supply Catalogs and Related Publications (NAVSUP Publication 4400).
- d. Ship Changes.
- e. Planning Yard Work Instructions.

11.3.2.7 Instructions, Technical Publications and Bulletins. These publications give guidelines for the operation of equipment, introduce new equipment and may have lists of available items. Instructions, technical publications and bulletins commonly stocked in technical libraries include:

- a. General Services Administration Supply Catalog.
- b. Electronics Information Bulletins.
- c. Field Change Bulletins.
- d. N AVSEA Instructions.
- e. Type Commander Instructions.
- f. Technical Directives.

11.3.2.8 Repair Standards. These standards are detailed repair procedures for the troubleshooting and overhaul of specific equipment and guidance for standard processes. Examples of repair standards include:

- a. Technical Repair Standard.
- b. Maintenance Standard.
- c. Intermediate Maintenance Standard.
- d. Unified Industrial Process Instruction.

11.4 INDEX OF TECHNICAL PUBLICATIONS AND SHIP'S DRAWING INDEX. Due to the wide variety of types of materials that may be included in a technical library, it may be confusing as to what are the minimum titles and requirements needed for a particular ship. The ITP and SDI have been developed for each ship and list the titles and drawings applicable to the ship.

11.4.1 Index of Technical Publications. The ITP is a guide to facilitate the identification of technical manuals used on board a ship. The ITP is tailored to the configuration of a specific ship and lists technical manuals needed to operate, maintain and repair ship systems and equipment. It also lists any other general and ship related manuals needed by Ship's Force. The ITP will:

- a. Contain a list of the technical manuals needed on board a ship.
- b. Identify technical manuals for specific systems and equipment.
- c. List the systems and equipment supported by a specific technical manual.
- d. Include information about each technical manual.
- e. Be in electronic (EXCEL) format and sorted by APL/Repairable Identification Code and Hierarchical Structure Code.

11.4.2 Ship's Drawing Index. The SDI is a list of ship drawings and related design reference information that shows the actual current configuration of the ship. SDIs are required by General Specifications for Shipbuilding for all ships over 200 feet in length.

APPENDIX G

SAMPLE CATAPULT ACCUMULATOR RESCISSION MESSAGE

FM RMC//
TO USS (SHIPS NAME AND HULL NO)//
INFO/COMNAVAIRPAC SAN DIEGO CA/COMNAVAIRLANT NORFOLK VA (as applicable)//
USS (SHIPS NAME AND HULL NO.//
NAVSURFWARCEN SHIPSYSENGSTA PHILADELPHIA PA//
PEO CARRIERS WASHINGTON DC//
COMNAVSEASYS COM WASHINGTON DC//

BT

//SUBJ/USS (SHIPS NAME AND HULL NUMBER) NUMBER ()CATAPULTS/REPAIR
BEFORE OPERATE (RBO) RESCISSION// REF/A/ (ORIGINATING RBO MESSAGE DTG)//
NARR/REF A ADDRESSES RBO DEFICIENCIES FOUND DURING STEAM CATAPULT
INSPECTIONS CONDUCTED ON (Date)//

RMKS/1. REF A RESTRICTIONS RESCINDED BASED UPON RE-INSPECTION.
2. FOR FURTHER INFO, CONTACT UNCLASSIFIED E-MAIL (Senior Inspector).//

BT

**NOTE: ENSURE MESSAGES ARE IN ACCORDANCE WITH CURRENT MESSAGE FORMAT AND
CURRENT PLAD IS UTILIZED.**

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VOLUME IV
CHAPTER 18
SUBMARINE SALVAGE INSPECTION

REFERENCES.

- (a) NWP 1-03.1 - Naval Warfare Publication Operational Report

LISTING OF APPENDICES.

- | | |
|---|---|
| A | SSN 21 Class Submarine Salvage Inspection Check-Off List |
| B | SSN 688 Class Submarine Salvage Inspection Check-Off List |
| C | SSBN/SSGN 726 Class Submarine Salvage Inspection Check-Off List |
| D | SSN 774 Class Submarine Salvage Inspection Check-Off List |
| E | Sample Pre-Inspection Information/Certification |
| F | Sample Report of Salvage Inspection Forwarding Letter |

18.1 PURPOSE. To ensure the continued readiness and quality of maintenance performed on submarine rescue and salvage equipment.

18.2 INSPECTIONS.

18.2.1 Periodicity. The readiness of submarine rescue and salvage equipment is determined by periodic salvage inspections. Salvage inspections will be conducted within a 72 month interval, or as listed below:

- a. Whenever requested by the submarine.
- b. Prior to initial builder's trials for new construction ships, prior to initial sea trials for ships in Chief of Naval Operations (CNO) Maintenance Availabilities, and prior to initial sea trials for ships in Interim Dry Docking.
- c. A partial salvage inspection will be completed for all items worked during an availability (i.e., hatches, salvage air valves, etc.).
- d. (SSBN Only) Once in conjunction with every other docking refit, not to exceed 72 months.
- e. (SSGN Only) Every fourth maintenance modernization period, not to exceed 72 months.
- f. Prior to Sea Trials for repairs of damage from collision or grounding where deformation is observed to be in the hull integrity envelope or supporting structure.

18.2.2 Procedures and Reports. The specific rescue and salvage items to be inspected and the type of submarines to which they are applicable are identified in Appendices A through D of this chapter. Appendix E of this chapter is a sample pre-inspection form to be completed by the submarine prior to the salvage inspection. Appendix F of this chapter is a sample Submarine Salvage Inspection forwarding letter. Inspection attributes or elements of Appendices A through D may not be locally waived or have equipment substituted. Temporary changes to the attributes or elements of Appendices A through D will only be revised by the Type Commander (TYCOM) and the revision must be documented in formal correspondence. Any attributes or elements of Appendices A through D as applicable to the respective ship class not met or which fails inspection is underway limiting until corrected or waived by the TYCOM.

NOTE: IF NO QUALIFIED INSPECTORS ARE AVAILABLE, CONTACT THE TYPE COMMANDER FOR DIRECTION.

18.2.3 Inspection Resources. The hatch and watertight door portion of this inspection will be conducted by members of the local Ship's Maintenance Monitoring Support Performance Monitoring Team (PMT) (i.e., personnel who have successfully completed Submarine Structural Closure Inspection course or personnel designated by NAVSEA). Other portions of the inspection should be conducted by personnel who, by their rate and experience, are qualified in that particular section. Inspection teams are to be assembled, as required, from the following sources in order of the priority shown:

- a. Undersea Rescue Commands.
- b. Submarine Fleet Maintenance Activities.
- c. Immediate Superior In Command (ISIC) Staffs.
- d. Submarines of the same class.
- e. Other submarines.
- f. Salvage ships (ARS).

18.3 RESPONSIBILITIES. Responsibility for the preparation, conduct, and completion reporting for a salvage inspection is as follows:

18.3.1 Immediate Superior In Command.

- a. Schedule salvage inspections for assigned submarines as specified in paragraph 18.2.1 of this chapter. The inspection should be conducted early enough in the availability to allow for the correction of deficiencies prior to Fast Cruise.
- b. Designate the inspecting team using the guidance provided in paragraph 18.2.3 of this chapter to conduct the salvage inspection.

18.3.2 Commanding Officer/Officer In Charge.

- a. Request the ISIC to conduct a salvage inspection in accordance with the periodicity set forth in paragraph 18.2.1 of this chapter.
- b. Coordinate support requirements as may be needed by the inspecting team to fulfill the requirements of the applicable Appendix of this chapter.

NOTE: HATCHES THAT ARE FOULED WILL PREVENT THE SATISFACTORY COMPLETION OF THIS INSPECTION. COORDINATION BETWEEN THE SHIP, INSPECTING TEAM AND MAINTENANCE ACTIVITY IS THE RESPONSIBILITY OF THE COMMANDING OFFICER/OFFICER IN CHARGE.

- c. Complete and forward a pre-inspection information letter to the Senior Inspecting Officer using the sample provided in Appendix E of this chapter as a guideline. Modify Appendix E as necessary to align required attributes with the applicable class-specific checklist.
- d. Assemble all ship's data indicated in the applicable Appendix of this chapter prior to the inspection for ease of reference by the inspecting team.
- e. Upon receipt of the Senior Inspecting Officer's report, take action to correct the discrepancies found and report by letter or message their corrections to the ISIC with a copy to the TYCOM and Supervising Authority (when assigned) prior to commencement of Fast Cruise.
- f. Submit a Casualty Report (CASREP), if applicable, in accordance with reference (a) for each item which degrades the Submarine Rescue Chamber (SRC) and/or Submarine Rescue Diving Recompression System (SRDRS) capability.

18.3.3 Senior Inspecting Officer.

- a. Assemble the inspecting team designated by the ISIC.
- b. Conduct the salvage inspection in accordance with the applicable Appendix of this chapter. Ensure Appendix E of this chapter is received prior to commencement of the inspection. The inspection should be completed at least 14 days prior to commencement of Fast Cruise, or for new construction ships and ships in a CNO Maintenance Availability, at least 28 days and no sooner than 60 days, prior to the scheduled commencement of Sea Trials. This examination should normally be performed close to Phase I crew certification, if possible.
- c. At the completion of the salvage inspection, report the following to the Commanding Officer/Officer In Charge of the inspected ship:

26.2.3 Ship Commanding Officer. The Commanding Officer shall:

- a. Ensure that the ship is prepared for the inspection.
- b. Promulgate a ship wide Plan of Action and Milestones (POAM) in preparation for INSURV.
- c. Be prepared to discuss with the senior member of the board any item from the previous INSURV Inspection which is still on the CSMP, all items which were determined to be not correctable and designated "pass to history", or those for which reporting had been deferred by the TYCOM, including supporting rationale and reference material.
- d. Designate an officer as INSURV Coordinator and a Chief Petty Officer, preferably the 3-M Coordinator, as his assistant.
- e. Assign a senior coordinator for each INSURV functional area as defined in paragraph 26.4.2.b of this chapter.
- f. (Surface Force Ships Only) Submit a letter of concern to INSURV/TYCOM/ISIC.

26.2.4 INSURV Coordinator. The INSURV Coordinator shall:

- a. Brief all Department Heads on the review of the CSMP, confirm existing Job Control Numbers as valid, and report any existing deficiencies which are not in the CSMP.
- b. Review the Automated Work Request (AWR)/CSMP package with the TYCOM/ISIC Maintenance Document Control Office to ensure quality (e.g., readability, proper printing and page-break by Work Center).
- c. Segregate the AWR originals by INSURV departmental designations for turnover to the INSURV team.
- d. Provide the original of the complete CSMP Report to the INSURV team.
- e. Retain a copy of the AWRs and the CSMP for use during the inspection.
- f. Distribute copies of the AWRs to Department Heads and Work Centers.
- g. Collect and track all INSURV deficiencies identified during the inspection.
- h. Coordinate Work Center updating of the CSMP and the processing of updated OPNAV 4790/2Ks or AWRs.

26.2.5 Regional Maintenance Centers. In support of the tasking and funding, the Regional Maintenance Centers (RMC) will:

- a. Provide RMC support coordination for INSURV in each home port.
- b. Upon TYCOM direction, provide a weekly or, if required, daily update for critical path inspection repairs.
- c. Provide or obtain subject matter experts with the experience and system knowledge for assessment to accomplish INSURV approved procedures based on the tasking, schedule and funding provided by INSURV.
- d. Provide documented subject matter experts findings to, and formatted for, INSURV.
- e. Utilize subject matter experts resources in the most cost effective manner to support the tasking.
- f. Develop annual INSURV budget estimate based on projected INSURV schedule. **Mid-Atlantic Regional Maintenance Center** INSURV Support Coordinator will correlate individual estimates for transmittal to INSURV.

26.3 INSPECTION SCHEDULING.

26.3.1 Combined Trial/Acceptance Trial Inspections. The scheduling of these trials for new construction or conversion ships will be coordinated by the TYCOM and Program Executive Officer (PEO) Submarines in accordance with Volume I, Chapter 4 of this manual and reference (e).

26.3.2 Guarantee Material Inspection/Final Contract Trials. The scheduling of the Guarantee Material Inspection or Final Contract Trials will be coordinated by the PEO Ships or PEO Aircraft Carriers in accordance with Volume I, Chapter 4 of this manual and reference (e).

26.3.3 Material Inspections. Scheduling the INSURV MI at a consistent time in the Fleet Response Training Plan will provide invaluable independent assessments of how well our maintenance processes perform.

- a. An INSURV MI will be included in a unit's five-year plan. The desired outcome is for INSURV's MIs to be conducted at a consistent time within the Fleet Response Training Plan, and in a manner not to interfere with carrier strike group or amphibious readiness group operations. In achieving this end state, TYCOMs will avoid scheduling INSURV MIs in the time frame between the numbered fleet commander deployment certification event (e.g., Composite Training Unit Exercise, Joint Warrior, etc.) and the end of post-deployment stand down.
 - (1) Surface Force Ships. The MI will optimally be conducted after the Unit Level Training phase and prior to the start of the Integrated Level Training phase, after every other deployment, not to exceed 54 months. With these scheduling considerations, the overall average time between examinations for surface ships will be about 48-54 months.
 - (2) Aircraft Carriers. The optimal time to conduct MIs is 60 to 90 days following the completion of the CNO maintenance availability. Avoid conducting MIs after the air wing is embarked for carrier qualification. With these scheduling considerations, the overall average time between examinations for carriers will be about 48-54 months, not to exceed 60 months.
 - (3) Submarines. INSURV MIs are integrated into the submarine engineered operating cycle per reference (f). MIs should be scheduled post major availability and at mid-cycle. With these scheduling considerations, the overall average time between examinations for submarines will be about 65-70 months, not to exceed 84 months.
- b. Conduct of INSURV MIs outside of these time frames requires approval from Commander US Fleet Forces Command/PACFLT (N43). Material inspections of surface ships and aircraft carriers that cannot be conducted within 60 months, and submarines that cannot be conducted within either 84 months or within 180 days of completion of a major CNO availability planned for greater than 180 days in duration require a formal waiver of periodicity requirements from CNO per reference (a).
- c. Scheduling the INSURV inspection at a consistent time in the Fleet Response Training Plan will provide invaluable independent audits of our maintenance processes. Coordinating these inspections with TYCOM assessment events reduces the burden on our Sailors and saves money.
- d. Assessment planning shall be in accordance with Volume VI, Chapter 42, paragraph 42.5.4 of this manual.

26.4 PREPARATION FOR INSURV INSPECTION.

26.4.1 Active Preparation. Ships routinely must maintain their CSMP in accurate condition and continuously monitor and accurately report their own material readiness posture per reference (d). However, due to outside agency assessments/audits/inspections/certifications the scheduling of an inspection should occur at an optimum time when full material condition awareness is maximized. Active preparation for the INSURV inspection will commence upon receipt of the TYCOM approved proposed INSURV inspection schedule. The TYCOM will notify the Commanding Officer (via the ISIC if applicable) of the proposed dates with specific guidance for the preparation and execution of the inspection. Direct and early liaison with the INSURV is essential to ensure agenda approval, facilitate travel arrangements, berthing and other similar items. Ships shall make use of the information and data available at the INSURV website (<http://www.public.navy.mil/fitfor/insurv>) to better understand and prepare for an inspection. Ships are strongly encouraged to liaison with INSURV regarding current material problem areas that may exist within the fleet and to actively resolve them as appropriate within their own command.

26.4.2 Ship's Internal Organization. The ship will establish an internal organization for the INSURV. While the details of such an organization will vary from ship to ship, two key elements must be addressed: