



DEPARTMENT OF THE NAVY
NAVAL SEA SYSTEMS COMMAND
WASHINGTON, DC 20362-5101

IN REPLY REFER TO
NAVSEAINST 9245.1A
OPR 56XF/86
19 Feb 1988

NAVSEA INSTRUCTION 9245.1A

From: Commander, Naval Sea Systems Command

Subj: SHIP PROPELLERS AND PROPULSION SHAFTS

Ref: (a) NAVSEA SL460-AA-HBK-010
(b) NAVSEAINST 4440.7A
(c) NAVSEA S9245-AR-TSM-010/PROP
(d) NAVSEA S9243-AT-TRS-011/0203-086-009A
(e) NAVSEA S9243-AW-TRS-011/0203-086-501A
(f) MIL-P-2845
(g) NAVSEA S9245-AP-TSM-010/PROP

1. Purpose. To issue procedures for maintaining ship's propellers and shafts in Ready For Issue (RFI) condition and controlling the issue and use of associated special tooling. This includes repairing, preserving, packaging, packing, marking, inspecting and storing procedures.

2. Cancellation. NAVSEAINST 9245.1 of 2 March 1976.

3. Scope. This instruction applies to 2S Cog shipboard propellers and propulsion shafting under the inventory management of NAVSEA 56X. Communication relative to this instruction shall be to NAVSEA 56XF.

4. Background. Support of fleet requirements depends on adequate stocks of ready-for-issue (RFI) propellers and shafts. To ensure that fleet needs can be met, detailed records of the condition of all propellers and shafts not currently installed must be maintained. (R)

5. Policy. NAVSEA 56X is responsible for ensuring that "2S" cognizance propellers and shafts are available, in RFI condition, to meet assigned stock levels. (R)

a. Stocking activities are responsible for maintaining the RFI condition of "2S" cognizance propellers and shafts after receipt from procurement or refurbishment. To ensure proper maintenance of RFI and Not-Ready-For-Issue (NRFI) propellers and shafts in storage, the requirements and inspection procedures defined in reference (a), Handbook for Inspection, Packaging, Handling, Storage and Transportation, must be strictly enforced. The stocking activity is responsible for obtaining an estimate for the necessary industrial services to return to RFI condition any previously RFI propeller or shaft which is found to be damaged or otherwise unserviceable in storage. Forward the estimate to NAVSEA 56X for identification of funding responsibility.

NAVSEAINST 9245.1A

19 Feb 1988

b. Type Commanders are responsible to schedule and fund refurbishment of installed propellers and shafts in the course of a ship's regular overhaul (ROH), restricted/technical availability or extended refit period. If repairs to installed propellers and/or shafts cannot be completed within the time constraints of the overhaul/availability, replacement propellers and/or shafts may be issued from stock if, in NAVSEA 56X judgment, such issue will not adversely impact NAVSEA 56X ability to respond to Fleet maintenance requirements. If propellers and/or propulsion shafts are replaced during service periods for reasons subject to CASREP criteria, NAVSEA 56X provides funding for repair of the removed item(s). When propellers and/or propulsion shafts must be replaced during the course of a ship's scheduled availability or ROH, the cognizant Type Commander provides funding for repair of the removed item(s). Overhaul activities must obtain Type Commander concurrence prior to requisitioning an RFI replacement propeller and/or propulsion shaft.

R) c. Overhaul activities are responsible to plan for and obtain necessary Type Commander overhaul funds for preserving and packaging removed propellers and shafts. This is required to ensure that no further deterioration occurs to NRFI propellers and shafts while in storage awaiting refurbishment.

R) 6. Action

a. NAVSEA 56X will direct the induction of propellers and shafts into refit as required to support the assigned stock levels. The repair activity will ensure that the propeller or shaft is returned to RFI condition by the required completion date specified in the applicable funding document. Blade, plug and/or ring inspection gages, required for accomplishment of repairs to propellers and shafting, will be provided by NAVSEA 56X upon request.

b. All propellers and shafts removed from ships and turned into storage shall be classified as "F" condition unless specifically directed otherwise by NAVSEA 56X. A turn-in document citing "F" condition shall accompany the removed propeller or shaft to the storage activity designated by NAVSEA 56X. "F" condition propellers shall be returned complete with:

- (1) all eyebolts and eyebolt hole plugs
- (2) the propeller gland ring, studs, and nuts
- (3) caps, studs, and nuts
- (4) preserved as specified in reference (c), Technical Manual for Marine Propeller Inspection, Repair and Certification

Shafts removed and replaced shall be returned complete with:

- (1) two each propeller end keys
- (2) four each coupling taper end keys
- (3) one each propeller nut
- (4) preservation applied immediately upon removal, paying particular attention to both taper ends
- (5) sleeves and shaft covering

Upon receipt of the NRFI propeller or shaft by a storage activity the propeller or shaft shall be taken into stock in "F" condition and a MILSTRAP transaction report, document identifier "D6A" (Receipt Transaction Report), shall be submitted to NAVSEA 56X. This material shall be protected to prevent further damage or deterioration. When a propeller or shaft is inducted into refit, Dual Condition Code (DAC) transaction reports changing condition code shall be submitted. Reference (b), Controlling and Reporting 2F, 2J and 2S Cognizance Material by Serial Number, defines additional reporting responsibilities.

c. Propellers and shafts shall not be issued without prior approval of NAVSEA 56X except in cases of emergency. In case of emergency a message shall be submitted to NAVSEA 56X within 24 hours of such emergency reporting details of the issue and the situation requiring the emergency issue. A MILSTRAP transaction report shall be included in the message, as well as an Asset Status (DZA) report. A Receipt Transaction Report (D6A) covering turned in propeller/ shaft shall perpetuate information contained in the issue document. Serial numbers of the propellers and shafts will accompany all material issue/turn-in transactions per reference (b).

d. The 2F, 2J and 2S Cognizant and Secondary Item Repair Program Report, NAVSEA 4440/1, shall be submitted monthly to NAVSEA 56X in accordance with reference (b). This report shall indicate which items are undergoing repair and those authorized for repair by citing funding document or amendment and status.

e. All propellers and shafts undergoing repair, either within the activity or on a contracted out basis, shall be reported on the Quarterly Propeller and Shafting Status Report, NAVSEA 9245/2, as being in "M" condition. These reports shall identify activities which are accomplishing repairs. Also, these reports shall include Type Commander funded repair of removed propellers and/or shafts destined for turn-in to stock upon completion.

f. A propeller visual preservation inspection, as specified in reference (c), is required as follows:

(1) By the storage activity:

(a) Upon receipt of all reported RFI propellers.

(b) Periodically, while in storage.

(c) Prior to issue of an RFI propeller for installation. If inspection reveals propeller to be NRFI, immediately contact NAVSEA 56X.

(d) Upon receipt of each NRFI propeller turned in for storage. Maximum information as to the extent of propeller damage/defects and all missing accessory parts shall be included in the report.

NAVSEAINST 9245.1A
19 Feb 1988

(2) By the installation/removal activity upon receipt of a RFI propeller.

(3) By the repair activity prior to shipment or consignment to storage.

(4) Propeller visual preservation inspection reports shall be recorded and distributed as follows:

(a) Satisfactory inspections shall be recorded on the propeller certification document.

(b) A copy of all satisfactory or unsatisfactory propeller visual preservation inspection reports from all activities shall be submitted to NAVSEA.

(5) An unsatisfactory propeller visual preservation inspection necessitates a propeller visual technical inspection and subsequent corrective action.

g. A propeller visual technical inspection, as specified in reference (c), is required as follows:

(1) By the storage, installation or repair activity, when packaging/preservation of RFI propellers is determined to be damaged.

(2) By the repair activity:

(a) Prior to repair of a propeller

(b) Upon completion of propeller repair

(3) A report of all propeller visual technical inspections shall be submitted to NAVSEA 56X.

(4) Visual technical inspection of propellers shall be conducted only by qualified personnel who have successfully completed the Propeller Visual Inspection Course or the Propeller Certification Course or by personnel designated by NAVSEA 56X.

h. Propeller dimensional inspection shall be made utilizing applicable cylindrical, edge, fillet and plug gages. The requirement to use gages may be waived, by NAVSEA 56X, for certain propellers when gages do not exist. Gage manufacture repair, serialization, and distribution is administered by NAVSEA 56X. Modifications of any kind to gages are prohibited without prior NAVSEA 56X approval.

19 Feb 1988

i. Pre-repair dimensional inspection of propellers shall be performed by the repairing activity in accordance with reference (c) for each propeller inducted into refit. A copy of the propeller pre-repair dimensional inspection report shall be submitted to NAVSEA 56X within ten days after completion of the inspection. Repair cost estimates must be provided to accomplish the work specified in paragraph 6j. Repair of propellers deemed repairable shall not be held up pending submission of the inspection report. Requests for waivers will be reviewed for approval or repair recommendations. Propellers considered not repairable shall be returned to store in "H" condition and held in abeyance pending receipt of instructions from NAVSEA 56X. The following additional information shall be submitted with the pre-repair dimensional inspection report:

- (1) Surface defect inspection results
- (2) Weldability determination
- (3) Visual technical inspection report

(4) Whether or not the propeller is considered repairable within the specified repair requirements of reference (c).

(5) Request for specific waivers of those dimensions which cannot be repaired to meet requirements.

j. Propellers shall be repaired, final inspected (visual and dimensional), certified, preserved/packed, and marked by the repairing activity in accordance with reference (c) or the applicable Controllable Pitch Propeller (CPP) Technical Repair Standard and furnished with the following accessories;

- (1) all eyebolts and eyebolt hole plugs
- (2) gland ring, studs, nuts and cap
- (3) vent and fill pipe plugs

Repair cost estimates must include the propeller assembly, consisting of the propeller and the accessories listed above.

k. Certification of propellers shall be conducted at each activity only by qualified government personnel who have satisfactorily completed the Propeller Certification Course or by persons designated by NAVSEA 56X. A certification document, as specified in reference (c), shall be prepared for each propeller. The final inspection report shall be approved by NAVSEA 56X and the certification document signed by a qualified person prior to release or shipment of each propeller.

l. A Propulsor Record Book, Form NAVSEA 9245/6, shall be prepared and maintained for each submarine propeller. Refer to general instructions in the Form for submission and transfer of the book.

m. The propeller certification document shall be distributed as follows:

(1) One copy to NAVSEA 56X, along with a copy of the final dimensional and visual technical inspection reports, within ten days after completion of the propeller certification.

(2) One copy attached to the propeller in accordance with reference (c). This copy shall remain with the propeller until it is installed on a ship. Following installation of the propeller, the certification document shall be retained by the installing activity.

(3) For submarine propellers only, a copy shall be added to the Submarine Propulsor Record Book.

n. The shafting visual inspection, in accordance with references (d), Technical Repair Standard for SSN and SSBN Submarine Main Propulsion Shafting and (e), Technical Repair Standard for Surface Ship Main Propulsion Shafting, shall be completed by the issuing or installing activity for RFI shafts whose condition is considered suspect because of actual or possible damage or deterioration either in storage or in transit. When inspection is conducted and results indicate shaft to be NRFI, immediately contact NAVSEA 56X. The visual inspection report shall be retained by the inspecting activity with a copy forwarded to NAVSEA 56X. Visual inspection of shafting at each activity shall be conducted only by persons designated by NAVSEA 56X.

o. Shaft pre-repair inspection reports, in accordance with references (d) and (e), shall be submitted to NAVSEA 56X for all shafts inducted into refit within ten days after completion of the shaft inspection. This report should also indicate whether or not the refit activity considers the shafts to be repairable and, if applicable, a description of the repairs to be accomplished. Repair cost estimates for shafting must be provided and shall include a shaft assembly consisting of all components shown below and on the applicable drawing except flange coupling bolts or as modified in references (d) and (e).

- (1) propeller end keys
- (2) coupling taper end keys
- (3) propeller nut
- (4) sleeves and shaft covering

Refit of shafts deemed repairable shall not be held up pending submission of inspection reports. Shafting shall be repaired and final inspected in accordance with references (d) and (e). Shafts considered not repairable shall be returned to storage in "H" condition and held pending receipt of instructions from NAVSEA 56X.

p. Inspection and certification of shafts shall conform with references (d) or (e) as applicable. The final inspection report shall be submitted to

19 Feb 1988

NAVSEA 56X within ten days following certification of the shaft. The inspection and certification forms are to be placed in a watertight envelope and securely attached near the aft end of the shaft with copper wire. Following installation these forms will be retained by the installing activity with the visual inspection report.

q. Serial numbers for propellers, shafts, CPP blades and hubs will be assigned only by NAVSEA 56X during manufacture or as needed during refit. Repair activities shall verify that all propellers, shafts, CPP blades and hubs are serialized. The serial number shall be stamped on the forward face of the shaft (excluding mating surfaces), the aft periphery of the propeller hub, and the top flange surface of CPP blades. Upon completion of repairs, propellers and shafts not having the required identification data shall be stamped with the applicable stock number, drawing revision number and serial number.

r. Repair activities, upon receipt of propeller or shaft inspection gages and again upon completion of repairs to a propeller or shaft, shall visually inspect the gages as specified in reference (c). Dimensional inspection of propeller blade gages, as described in reference (g), Manual of Instructions for Design of Marine Propeller Blade Gages, shall be performed by repair activities only when specifically directed by NAVSEA 56X. A copy of all visual and dimensional gage inspection reports and the certification documents shall be submitted to NAVSEA 56X within 10 days after completion of inspection. When the gage or gage set does not meet specifications, but appears to be in good condition, the inspection report shall be submitted for review by NAVSEA 56X. Reports of incomplete or damaged gages shall be submitted with an estimate of time and costs to replace or restore deficient gages to satisfactory condition. NAVSEA 56X will determine funding responsibility and authorize corrective action to replace or repair the missing and/or damaged gages. Gages are to be returned to stock only in RFI condition and packed as specified in reference (f), Packaging of Main Propulsion Shafting, Bearings, Boat and Ship Propellers, and Associated Repair Parts. A copy of the gage certification document shall be enclosed in a waterproof envelope within the shipping box.

7. Reports. All inspection and transaction reports requested in this instruction are exempt from reports control procedures in accordance with OPNAVINST 5214.7, Chapter IV-7, paragraph 10.

8. Forms. Form NAVSEA 4440/1 (2/75), S/N 0116-LF-044-4005, may be obtained through normal supply channels under NAVSUP Publication 2002. Form NAVSEA 9245/2 (2/76) and NAVSEA 9245/6 (7/87) may be obtained from Commander, Naval Sea Systems Command, SEA 56XF, Washington, D.C. 20362-5101.


M. MACKINNON III
Deputy Commander for
Ship Design and Engineering

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NAVSEAINST 9245.1A
19 Feb 1988

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