

# The Importance of Proper Packaging of Repairables

*Improper Preservation and Packing Practices Increases Cost and Impacts Fleet Readiness*

Effective maintenance and protection programs are critical to ensure mission readiness.

The policy of the Naval Air Systems Command (NAVAIR) is to replace failed components with ready-for-issue (RFI) depot level repairables (DLRs) whenever practical. Thus the proper packaging, preservation, packing, handling, and marking (PPPH&M) of non-RFI assets during shipment to a repair facility is necessary to prevent further damage or deterioration of components and is critical for maintaining mission readiness and keeping life cycle cost down.

## Background

As aviation equipment and systems become more complex, their maintenance requires high depot industrial level support. Thus, the use of modular replacement components, also known as repairables, has increased significantly. Approximately 160,000 repairables are processed each year at the three Naval Air Depots.

During routine maintenance procedures, the operational (O) and intermediate (I) level maintenance personnel will periodically remove or replace failed components and turn them into the supply system for replacement. These non-RFI assets are then restored by the depots to a serviceable condition and returned to the supply inventory for re-issue.

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Elevator skin received with corrosion damage due to improper preservation when stored



Gear Box sitting in water as a result of storage container leaking

## The Requirements of the Naval Aviation Maintenance Program (NAMP)

The Naval Aviation Maintenance Program (NAMP) instruction (OPNAVINST 4790.2H) Volume I, Chapter 12, paragraph 12.3.5(b) Preservation, Packaging, and Handling states:

- 1 All aeronautical material, regardless of status, ready-for-issue (RFI) or non-RFI, shall be preserved, packaged, and handled by maintenance and supply personnel in such a manner as to prevent damage or deterioration. The Naval Supply Systems Command (NAVSUP) Publication 700 provides preservation and packaging requirements for specific repairable components.
- 2 In no cases shall non-RFI material be casually or carelessly handled merely because it is intended to undergo repair. Particular care should be given to prevent further damage of repairable items that are to be returned to overhaul.

## Impact of Improper Packaging and Preservation

The Navy has established the Automated Report of Discrepancy (AutoROD) program to record all packaging and preservation discrepancies to help improve the practices and quality of packaging materials for shipment.

The Depots have reported a total of 20,699 AutoRODs to date and the trend continues to climb. Below are some examples of typical packaging discrepancies noted upon receipt:

- 1 An improper container was used to ship the component to the repair facility. This improper container failed to prevent damage or deterioration of a component due to exposure to environmental elements.
- 2 Essential parts were missing or loose on the component.
- 3 Insufficient or no cushioning or blocking/bracing of material caused the component to move about freely in the container (thereby damaging the component).
- 4 Insufficient or lack of preservation to the "internals" of the component caused exposure to environmental conditions and/or corrosion.

- 5 Assets were not drained of aviation fuel prior to shipping.
- 6 Due to open lines, the asset was not protected from foreign object damage (FOD). No caps or plugs were used to block the open lines in the asset.

**All these discrepancies continually cause additional damage and/or deterioration to components resulting in:**

- 1 An increase in the burden of workload maintenance,
- 2 An increase in the cost of repair or the need to survey the component,
- 3 Adverse environmental impacts due to the generation of hazardous waste,
- 4 An increase in the turn-around-time and reduction in supply inventory and availability to the fleet, and
- 5 The potential to significantly impair mission readiness.



Extensive corrosion damage due to improper preservation and storage



Bottom of Gear Box completely corroded away due to leaky storage container



Broken lens due to improper packaging and handling results in additional repair cost

Below is an example of the additional costs incurred due to improper PPPH&M practices for an Optical Stabilizer (NSN 1280-01-186-14181).

#### PROPER Turn-In of Component/Asset

#### DEFICIENT Turn-In of Component/Asset

Net price = Repair Costs

Standard price = Replacement Costs

Plus Surcharges:

Plus Surcharges:

Navy

Navy

Inventory Maintenance

Inventory Maintenance

Cost Recovery Rate

Cost Recovery Rate

Depot Level Repairables Attrition Charge

Cost of Operations

**Total: \$29,790**

**Total: \$786,680**

**— An increase of \$756,890 over and above budgeted costs. —**

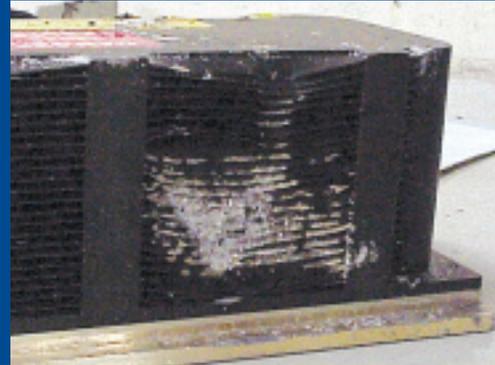
### SOLUTION

Training and guidance are readily available to all personnel for the proper PPPH&M of repairables. They are:

- 1 NAVSUP Publication 700 (P700). NAVSUP Publication 700 (P700) provides appropriate PPPH&M requirements for all aeronautical materials (by navy stock number or part number). The P700 can be obtained at the NAVSUP website [www.icptarp.net](http://www.icptarp.net) and is available in two formats:
  - NAVSUP P700 Web-Pack (a web-enabled packaging data program) or
  - NAVSUP P700 CD-Pack (a CD-based packaging data program).
- 2 The Technical Assistance Repairables Protection (TARP) Program. The Technical Assistance Repairables Protection (TARP) program, under Naval Inventory Control Point, provides general oversight of the Navy's repairable assets to include the packaging, handling, storage, and transportation (PHS&T) of both RFI and non-RFI assets. The TARP program provides support and training at the field level or any other sites that might turn in retrograde Depot Level Repairables (DLR).
- 3 The Container Reclamation and Refurbishment Center (CRRC). The Container Reclamation and Refurbishment Center (CRRC) was established to enhance the visibility and availability of reusable containers, affording NAVICP Depot Level Repairables (DLRs) and high cost material with adequate protection. The CRRCs are dedicated to collection, assessment, refurbishment, requisitioning, maintaining inventories, and reporting of Navy owned reusable shipping containers. There is no documentation needed when turning in or requisition a container. A phone call to the appropriate CRRC member is sufficient.



Plug pins are damaged due to shipment without caps in place.



Cooling Fin damaged due to improper packaging

## BENEFITS

**A relatively small performance improvement of PPPH&M on all aeronautical materials, whether RFI or non-RFI, can keep Naval aviation affordable by:**

- a. Increasing mission readiness through availability of assets to the Fleet,
- b. Improving deployment and sustainability through an increase in supply inventory of needed assets,
- c. Reducing the costs of repair and/or the need to requisition new components,
- d. Extending the life of a components thereby reducing lifecycle cost to the program,
- e. Doing the job right the first time to improve morale and reduce the burden of unexpected maintenance and repair, and
- f. Ensuring compliance with environmental laws, rules, and regulations.

## SUMMARY

It is estimated that a **\$78 million cost avoidance/savings** can be realized due to the elimination of secondary damage/deterioration of components, decrease cost to repair components, and extension of component life cycle. Each person involved in the effort of supporting Naval aviation must realize the significance of proper material handling and protection. The epitome of fiscal irresponsibility is the loss of a multi-million dollar asset due to the non-application of protective measures. Effective logistic management ensures that material handlers are fully supported in that effort while good stewardship ensures that all assets are received into custody with no further degradation of condition.

*For more information about the NAVAIR environmental program, visit [www.enviro-navair.navy.mil](http://www.enviro-navair.navy.mil).*



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