

ATTACHMENT 1

NATIONAL MUSEUM OF THE UNITED STATES AIR FORCE (NMUSAF) LOAN AND STATIC DISPLAY PROGRAMS

INSTRUCTIONS FOR PREPARATION AND MAINTENANCE OF AEROSPACE VEHICLES

SECTION A - GENERAL

A. Information:

1. This instruction covers the requirements for the preservation and preparation of aircraft for static display purposes by an organization borrowing an aerospace vehicle from the National Museum of the United States Air Force (NMUSAF).
2. These requirements are designed to return and/or maintain the aerospace vehicle in as near original configuration as possible and to render them suitable for display.
3. Generally, all reconditioning, repairing, and refinishing will be accomplished in accordance with current Air Force directives and instructions and in a manner that would not modify it in any way, thereby altering the original form, design, or the historical significance of, said property. Deviations from this standard must be requested in writing and approved by NMUSAF.

B. Security Requirements:

1. The aerospace vehicle on display and undergoing preparation for display shall be kept secure from unsupervised personnel. The aerospace vehicle will be maintained with sufficient security to insure that it is protected from vandalism and theft or unauthorized removal of components.
2. Any theft or unauthorized removal of components shall be immediately reported to the local law enforcement agency and by the next working day to NMUSAF. This must be followed by a report of the investigation of the incident within 30 days.
3. All canopies, doors, access hatches, and access plates, except for one entrance door, will be permanently sealed shut by any of the following methods to prevent unauthorized entry:
 - a. Bolting through the hatch to internal crossbars placed across the opening. These can be fabricated from sturdy steel strapping or channel iron.
 - b. Riveting the door securely to the jamb section.

c. Attaching hasps internally and securing with inside padlock.

d. Whatever method is employed to secure doors and access hatches, the crevices remaining will be filled with caulking compound or elastic putty to prevent internal damage from rain, snow, dust and ice. A hasp welded or riveted in place must secure the access door that is not permanently sealed. Multiple locks (two or three) are preferable, each with separate key or combination. This technique will reduce the possibility of unauthorized access but will provide emergency entrance for authorized personnel.

C. Maintenance Records:

1. Whenever items are permanently removed, the removal and disposition of such items shall be annotated on a maintenance log or AF Form 3581, (available from NMUSAF).

2. All work items that are accomplished shall be listed and signed off on a maintenance log.

3. Utilizing the maintenance log, a detailed accounting will be maintained by the borrower of all items removed or installed with the date of installation/removal and the name of the individual accomplishing the work.

4. Copies of all maintenance records must be returned to NMUSAF with the annual loan renewal process for preservation.

D. References:

The work requirements listed herein have been developed in accordance with the following directives: AFM 23-110, Vol. VI, TO 00-20-1, Defense Disposal Manual 67-4, AFI 84-103, and applicable maintenance technical orders.

SECTION B - REQUIREMENTS

A. Demilitarize All Armament Systems and Explosive Material:

1. Disarm all systems in accordance with the applicable Aircraft Technical Orders and certify action on AF Form 3580, (or later equivalents). Warning: Disarming must be accomplished by a fully qualified USAF ordnance systems specialist. Documentation of these actions must be sent to NMUSAF. (If applicable)

2. Aerospace vehicles intended for outdoor display must have all weapons under 30mm (machine guns, cannons) removed. Only simulated weapons may be used. No weapons of any type may be loaned to non Department of Defense (DoD) organizations.

B. Prepare Power plant for Permanent Storage:

1. Prepare engines for permanent storage. (If applicable)
2. Disconnect and drain all water and oil lines, tanks, valves, and pumps. Reconnect lines and reinstall plugs after draining. (If applicable)
3. Clean excess oil and grease from exterior components of engines. (If applicable)
4. Check power plant cowling for corrosion and damage. Repair and refinish as necessary for display.
5. Install intake and exhaust protective covers. Standard covers may be used if available, or suitable substitutes.
6. Clean and preserve propeller domes.
7. Clean deicer shoes and apply corrosion preventative compound.
8. Clean and check metal components of propellers for corrosion. Treat any affected areas and refinish to standard configuration.

C. Defuel and Purge Fuel Systems:

1. Defuel and purge all fuel tanks and check for safety with a combustible gas indicator.
2. Disconnect and drain all fuel lines, valves, sumps, pumps, etc. Reconnect lines after purging.
3. Spray or seal fuel tanks with a corrosion preventive compound.
4. Drain water injection systems and deicing fluids whenever found.

D. Prepare Landing Gear:

1. Release high-pressure air from all landing gear shock struts.
2. Clean and preserve strut.
3. Clean all wheels and other landing gear components.
4. Check and remove corrosion. Repaint to standard configuration.
5. Check all tires for excessive wear and adjust pressure as required.
6. Secure all retractable landing gear in the down position with positive locking devices.

E. Prepare Hydraulic Systems:

1. Dissipate hydraulic system pressure and release air from hydraulic accumulators. (If applicable)
2. Disconnect and drain all hydraulic lines, reservoirs, valves and pumps. Reconnect and reinstall drain plugs after draining. (If applicable)
3. Clean all exposed finished surfaces of actuating rods, hydraulic cylinders, locks, and valves. Other hydraulic equipment will be cleaned and coated with corrosion preventative compound.

F. Prepare Oxygen Systems

1. Release oxygen, both gaseous and liquid, from all systems. (If applicable)
2. Stow all oxygen masks, bottles, and hoses. Remove all oxygen masks from aerospace vehicles displayed outside and store in a secure area conducive to preservation.
3. Install dust plugs in filler valves and recharge hoses.

G. Prepare Electrical Systems:

1. Remove aerospace vehicle batteries and turn in to battery shop, DRMO, or other authorized organization, or as locally required. (If applicable)
2. Remove dry cell batteries from frequency meters and other equipment. (If applicable)
3. Pull all circuit breakers only if of the non-radioactive (white plastic shank) type. Contact NMUSAF for a radiation survey of circuit breakers if in question, and for assistance with problems. Do not pull radioactive circuit breakers open, as deteriorated radium paint may be scattered in the process to create a possible hazard.
4. Cover all battery vent hole openings.

H. Prepare Electronic Systems:

1. Leave all electronic equipment that is not reclaimed installed on the aerospace vehicle.
2. Coat exposed metal whip antennas and mechanical items with a corrosion preventative compound.
3. Stow all connectors from equipment that has been removed.

I. Miscellaneous Utilities:

1. Remove bottles from all fire extinguisher systems, dissipate and reinstall. Caution: Insure all chemicals are disposed of in accordance with established State environmental policies.
2. Drain and clean entire drinking water system. (If applicable)
3. Drain, clean, and reinstall coffee jugs and water jugs. (If applicable)

J. Prepare Airframe:

1. Check airframe for corrosion and treat affected areas.
2. Clean all debris and foreign material from interior of fuselage.
3. Check airframe for external damage and repair.
4. Cover all openings that will allow the entrance of water or other foreign matter that may have a corrosive or other deteriorating effect. Use standard covers if available, or suitable substitutes. Additional protection may be incorporated for aerospace vehicles placed in outside storage.
5. Check all fuselage, wing, and empennage drain holes for obstructions. Outside storage or display may necessitate additional drain holes to ensure proper drainage. Drain holes should be periodically probed to insure they are not obstructed.
6. Clean and treat lavatory and relief facilities. (If applicable)
7. Check all astrodomes and plastic panels for crazing and damage, repair and/or replace as necessary. Clean all plastic panels thoroughly with soap and water.
8. Inspect for water trapped in lower portions of fuselage. If water is present comply with instructions contained in applicable technical order for removal and correction.

K. Prepare Control Surfaces:

1. Check all metal control surfaces for corrosion and treat-affected areas.
2. Check all control surfaces for external damage and repair areas as necessary for display purposes.
3. Inspect all fabric-covered control surfaces, repair or recover as necessary.

4. Check all control surfaces, attaching mechanisms for loose rivets and/or sheared bolts and make necessary repairs.

5. Secure all moveable surfaces in a neutral position with positive locking devices.

L. Radiation Safety:

1. Completion of radiation survey will be verified by NMUSAF prior to physical transfer of aerospace vehicle.

2. Interior of aircraft must be secured and all access prevented until radiation survey is completed. No restoration activity inside or outside the aircraft will be permitted until the radiation survey is completed.

3. Survey of aircraft displayed at non-DoD organization will be accomplished by the NMUSAF Radiation Safety Officer or an authorized USAF representative annotated on an AF Form 3583.

4. No radioactive components will be reinstalled by the borrowing organization. If radioactive items are found reinstalled during later inspections, the borrowing organization will pay the cost of removal of the radioactive items and any decontamination required.

M. Final Preparation:

1. Entire aircraft cleaned and refinished as required.

2. Secure aircraft by attaching tie down restraints to surface attaching points and to a major structural part of the item. Tie down restraints, including surface attaching points, should be of sufficient strength to withstand the expected wind condition for the locality.

3. Place aerospace vehicle on surface concrete or asphalt of sufficient strength to support its weight. This will not apply if the recipient, with the written permission of the NMUSAF, has mounted the aerospace vehicle on a pylon attached to the aerospace vehicles structural members.

4. Aerospace vehicles inside or outside that are normally supported on pneumatic tires must be placed on display stands of sufficient height to provide approximately 1" clearance between the tire and the display surface, tires should be inflated and or checked to maintain normal tire shape, or tires must be filled with a permanent tire filling compound which will maintain their inflated shape and support the weight of the item for the life of the casing.

5. Remove all antenna wires that could serve as a bird roost.

6. Install bird proofing on all aerospace vehicle openings, including intake and exhaust covers.

7. Flag or cover all protruding objects of a hazardous nature.

N. Coordination:

1. Deviation from the procedures outlined in this attachment must be requested in writing and require written approval prior to deviation.

2. No aerospace vehicle will be renovated, reconfigured, have markings changed, or tail number altered, or any parts added, removed, or replaced as part of a planned restoration effort without prior written approval from the NMUSAF.

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