

CAP STANDARD 74-1  
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# sUAS MAINTENANCE MANAGEMENT

NATIONAL HEADQUARTERS CIVIL AIR PATROL  
Maxwell Air Force Base, Alabama

OPR: CAP/DO

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## INTRODUCTION

All CAP aircraft are required to meet airworthiness standards by Federal Aviation Regulations (FARs) and CAP regulations. CAP region and wing commanders are responsible for ensuring that CAP corporate owned sUAS assigned to their organizations meet these standards and are maintained in a safe, airworthy condition. Region and wing commanders are responsible for management level supervision and control of CAP corporate owned sUAS and associated mission sets.

CAP sUAS aircraft are required to be maintained and operated in accordance with applicable FARs, including 14 CFR Part 107. Any changes to the design of the airframe, motors, power supplies, propellers, and ground control stations must be accomplished in accordance with applicable FARs, as well as acceptable methods, techniques, and practices; and then only with the approval of the CAP/DOU, CAP/DON, and the CAP/DO.

## MAINTENANCE RESPONSIBILITIES

CAP Regions (with aircraft assigned) and wings are responsible for developing their sUAS maintenance management programs to ensure the provisions of this standard are implemented. This program should focus on centralized responsibility for timely accomplishment of inspections and maintenance of corporate sUAS aircraft. Wings with many sUAS aircraft, (twenty or more), may find it more effective to delegate maintenance management responsibilities to a level lower than wing. Regions (with sUAS aircraft assigned) and wings will publish a supplement to this regulation providing specific guidance on their centralized maintenance management program.

Supplements shall be updated biennially. Supplements shall be coordinated through the respective Wing/DOU to their Wing/CC. Approvals for supplements to this standard must then go through the respective Wing's chain of command to the Region/DOU and Region/CC. From the Region/CC the supplement must then be approved through the CAP/DOU, CAP/DON, and the CAP/DO with concurrence from the CAP-USAF/DO

## CONFLICT OF INTEREST

All professional organizations must avoid real and perceived conflicts of interest. To this end, CAP members who have authority to approve maintenance of CAP sUAS aircraft shall not authorize or contract for such maintenance with any business entity where they, or any member of their household are employed; or where they, or any member of their household, maintain any share of ownership. In cases where this type of conflict of interest may exist, or be perceived to exist, the wing or region commander shall appoint a knowledgeable person to contract or authorize this maintenance. In all cases, wing and region commanders shall ensure that all decisions regarding contracted maintenance services are based on the most economical and practical considerations.

## SCHEDULED MAINTENANCE

Quality maintenance programs are based on performing scheduled maintenance at specific intervals and prompt correction of discrepancies discovered during inspections. CAP scheduled maintenance requirements for corporate sUAS aircraft include:

**Monthly.** Each month, the sUAS aircraft's chassis will be inspected for cracks & loose screws, and the monthly maintenance checklist followed and documented. Wing sUAS maintenance officers shall ensure that aircraft oil and filter changes are accomplished, and engine logbooks annotated accordingly.

**150-Hour Inspection.** Corporate sUAS aircraft shall not be operated unless within the preceding 150 hours' time in service it has received a new or approved replacement motor(s) and has been approved for return to service in accordance CAP/OPS procedures. Up to one percent (1.5hours) over-fly is authorized to allow mission accomplishment and for the aircraft to be repaired by HQ CAP.

For fixed wing E384, the aircraft's frame and body shall be replaced at the 150-hour flight mark.

**Biennial.** Corporate sUAS aircraft shall not be operated unless within the preceding 24 calendar months in service it has received an annual inspection in accordance with 14 CFR Part 107, performed by the CAP National Technology Center and documented on CAPF 74-1A. Over-fly is not authorized. In addition to repairs, preventive maintenance to maintain airworthiness or to enhance aircraft appearance, such as decal touch-up, shall be accomplished as required.



## NON-SCHEDULED MAINTENANCE

Non-scheduled maintenance actions are equally important for a quality maintenance program. Non-scheduled maintenance for corporate aircraft includes:

**Airworthiness Directives.** Corporate sUAS aircraft logbooks shall reflect the status of all applicable ADs as required by FAR Part 91 and/or Part 107. Applicable AD numbers and titles are posted on the CAP/DOU website and copies sent to wings/regions that possess aircraft affected by these ADs.

**Service Bulletins.** Manufacturer's service bulletins are reviewed by NHQ/LGM for applicability. Bulletins that relate to safety and airworthiness and manufacturer Service Bulletins with posted credit dates shall be complied with. These bulletins will be posted on the CAP/DOU website and copies sent to wings/regions with aircraft affected by these service bulletins.

**Authorized Preventive Maintenance.** Preventive maintenance includes routine care, such as cleaning, servicing, replacement of propellers, and preflight and post-flight inspections. During preflight and post-flight inspections, the sUAS case, frame, and landing gear shall be inspected for proper fit, loose, missing, or incorrect fasteners, security, and contour.

**Pilot/sUAS Aircrew Reported Discrepancies.** This maintenance shall be determined from information provided by sUAS pilots who discover aircraft discrepancies during day-to-day sUAS aircraft operation. Clear and concise discrepancy reporting is essential for a safe aviation maintenance program. All wings will utilize the CAP provided online maintenance system. Instructions for use of the of this system are posted on the sUAS website.

**Aircraft Security.** Corporate sUAS aircraft shall securely stored in the provided cases and placed in a locked facility to prevent unauthorized access when not in use.

**Cannibalization.** Cannibalization involves removal of parts or components from one sUAS aircraft to replace defective or damaged items for another sUAS aircraft to maintain airworthiness. This practice contributes to further damage and mismanagement of valuable CAP assets. Cannibalization of CAP sUAS aircraft below the CAP/DOU level is prohibited.

## MOTOR MANAGEMENT PROGRAM

**Motor Management Program.** The CAP sUAS motor management program consists of a motor replacement schedule, electronic speed controller replacement schedule, and other preventive maintenance. The program requires proper management to ensure CAP corporate sUAS aircraft are maintained in accordance with the highest airworthiness and safety standards.

**Motors.** Motors shall be replaced with new, rebuilt, or overhauled motors on condition, or at the manufacturer's recommended hourly operating time between overhaul (TBO), or at 150 hrs. of flight time on the motor; whichever is less. Flying beyond the manufacturer's recommended hourly TBO or 150 flight hours (whichever is less) is not authorized. For aircraft with liquid fueled motors, fluid carrying hoses shall be replaced on condition or at motor change, whichever is first.

**Electronic Speed Controllers (ESC).** Electronic Speed Controllers shall be replaced with new, rebuilt, or overhauled units at the manufacturer's recommended TBO or 150 flight hours, whichever is less. Flying beyond the manufacturer's recommended TBO or the 150 hours is not authorized.

## PAINING, DECALS, AND MARKINGS

**Marking.** Corporate sUAS aircraft shall be marked in accordance with 14 CFR Part 107 and this standard. CAP sUAS aircraft decals may be applied using a standard white/black label maker.

**Painting.** Application of paint to an sUAS chassis or airframe is prohibited.

**Decals.** High visibility decals displaying an international orange color are permitted to be applied to Corporate sUAS aircraft to aid in airborne visual identification. Only CAP/DOU, CAP/DON, and CAP/DO approved decal systems can be applied to CAP sUAS aircraft.



## SUAS MAJOR AIRCRAFT MAINTENANCE

Wing commanders or maintenance officers must receive approval for any major maintenance prior to shipping the sUAS to the CAP/DOU. Forward a completed CAPF 176U, sUAS Aircraft Major Maintenance Request, to CAP/DOU for approval and assignment of a control number. Once authorized, the CAP/DOU will fax, mail, or e-mail the control number to the requester. Shipping instruction from CAP/OPS shall not be performed prior to issuance of the control number from CAP/DOU. The control number will be valid for 180 days. After the 180-day period, the control number will be automatically cancelled unless an extension has been requested in writing.

NHQ will fund only the following major maintenance items/actions:

- Engine / motor changes
- Electronic Speed Controller changes
- Accident damage repair
- Avionics/instrument replacements and upgrades (i.e., installation of newer, more capable systems and exchange of unserviceable components)
- Exterior decal systems (CAP/DO approved)

**NOTE:** Photographs detailing the current condition of the aircraft shall accompany CAPF 176U requests for accident damage repair, and replacement of exterior decal systems.

**Payment for Contracted Major Maintenance.** Direct payment to maintenance facilities is preferred over after-the-fact reimbursement to the wing. Contracted major maintenance may only occur with CAP/DOU and CAP/DON approval.

**Items not covered.** The following items or maintenance actions will not be paid for by HQ CAP:

- Minor or preventive maintenance, except for replacement propellers
- Major maintenance performed without prior authorization or approval from CAP/DOU
- Repairs to individual avionics components and instruments unless approved by CAP/DOU

## DAMAGE AND MISHAP REPORTING

**sUAS Aircraft Damage.** When a mishap occurs resulting in damage to a sUAS aircraft; wings and regions must make every reasonable effort to protect and preserve the sUAS aircraft. Any loss due to failure to protect the aircraft will be the responsibility of the wing or region. Reasonable expenses incurred protecting the aircraft are considered part of repair or replacement costs.

**Reporting.** All sUAS aircraft mishaps must be reported in accordance with CAPR 160-2, Mishap Reporting and Review. Within 30 days of a mishap resulting in damage to an sUAS aircraft, submit photographs and CAPF 176U, sUAS Aircraft Major Maintenance Request to the CAP/DOU. Aircraft are considered destroyed if the total cost of repair plus salvage cost exceed the currently accepted value for the aircraft prior to the crash. If it is impossible or impractical to obtain an estimate, CAP/DOU may certify the aircraft as destroyed. Final disposition of salvage will be accomplished in accordance with CAPR 174-1, Property Management and Accountability.

## STORAGE

Region and wing commanders are responsible for ensuring that all possible preventive measures are taken to safeguard corporate sUAS aircraft from dust, water, and unnecessary wear. sUAS Aircraft are required to be stored in their protective cases and should be kept in a locked storage space, whenever possible.