

HANDBOOK FOR SQUADRON MAINTENANCE OFFICERS

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I. THE BIG PICTURE

1. CAP units have been equipped with aircraft to conduct specific duties such as airborne search, transport, and flight orientation. To carry out these duties Civil Air Patrol, Inc. **is authorized by the U.S. Air Force to acquire a fleet of 550 powered airplanes, plus some 50 gliders.** CAP, Inc. is the registered owner of these aircraft.
2. These aircraft are allocated to each geographical region. In turn, each region allocates those aircraft to its subordinate wings. **The allocating process follows a methodical assessment of needs called the Corporate Aircraft Distribution formula.**
 - a. At present, California Wing (CAWG) operates **25** airplanes and **four** gliders. These aircraft are in turn allocated to the seven geographic areas administered by groups. Group commanders then decide at which airfields a CAP corporate aircraft can be employed most advantageously, utilized most effectively, and supported most efficiently. And that's how your **squadron** wound up with a corporate aircraft to operate -- and maintain.
 - b. Each gaining unit receives both an aircraft and a pot of "**start-up**" money to maintain the aircraft. At that point, the responsibilities fall on that unit to (1) employ the aircraft on as many CAP missions as it can with the aircrews it has, (2) fly the aircraft as much as possible, (3) keep the aircraft in a safe, operable condition, and (4) generate enough revenue (from flight charges) to pay for the aircraft's upkeep.
3. At National Headquarters the CAP/LGM (Directorate of Maintenance) is responsible to make all this happen. The individual charged with day-to-day management of the corporate aircraft fleet is designated the Aircraft Manager.
 - a. In turn, each region designates a counterpart to oversee the utilization and upkeep of its allocated fleet. In turn, each wing relies on a maintenance officer to perform the same management of its allocated fleet.
 - b. CAPR 20-1, *Organization of Civil Air Patrol*, provides the organization structure in which a wing maintenance officer performs these duties. CAPR 20-1 also gives each wing the option of aligning their maintenance officer under the Operations or Logistics staff.

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- c. Within CAWG the Maintenance Officer works for the Director of Operations (CAWG/DO) and is therefore usually referred to by the office symbol "DOAM".
4. CAPR 20-1 further details where the maintenance officer fits in the **squadron**-level organization and lists the primary responsibilities of a squadron maintenance officer.
 - a. Although most of your instructions, technical advice, queries for information, and assistance may come from CAWG/DOAM, you do not work for the Wing Maintenance Officer. He is not in your chain of command. You work for your operations or logistics officer, depending on how your squadron commander aligns the function of aircraft maintenance within your unit.
 - b. Besides performing duties governed by CAP regulations, you must manage a maintenance effort which complies with Federal Aviation Regulations (FARs). CAP regulations on matters of flying and aircraft maintenance must also conform to FARs... so you will not find yourself "caught in the middle".
 - c. You are also the interface between CAP and all the vendors through whom you must deal (**and pay**) to keep your aircraft flying. CAP regulations allow units broad latitude to perform this vital function.
5. So that's where you fit into the scheme for CAP's management of its aircraft fleet: at the bottom of the totem pole. But the **squadron**-level maintenance officer position is where "the rubber meets the road".
 - a. In this position, you have many responsibilities to meet for the upkeep and safeguarding of a corporate asset.
 - b. At the same time you have significant authority to make and spend money on your aircraft.

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II. GOVERNING DIRECTIVES**A. GUIDANCE ORIGINATING FROM CIVIL AIR PATROL**

1. CAPR 10-2, *Files Maintenance And Records Disposition*
 - details procedures to create, organize, maintain, and dispose of written records (amplified procedures are found in CAWGM 11-1)
2. CAPR 20-1, *Organization of Civil Air Patrol*
 - provides organization charts showing chain of command for wing- and squadron-level maintenance officers
 - lists basic responsibilities of a maintenance officer
3. CAPR 60-1, *CAP Flight Management*
 - addresses aircraft equipment required for overwater flights
 - details content of the Aircraft Information File for corporate aircraft
4. CAPR 60-2, *Safety and Regulatory Compliance -- Short-Notice Inspection*
 - tasks evaluation of the unit's maintenance program and inspection of an assigned corporate aircraft's condition
5. CAPR 62-1, *CAP Safety Responsibilities and Procedures*
 - no direct references to aircraft or maintenance, but...
CAWG Sup 1
 - addresses aircraft safety inspections and implementing forms; lists mandatory and recommended survival equipment to be aboard corporate aircraft
 - **provides the CAWG Form 125G for glider inspections**
6. CAPR 62-2, *Mishap Reporting and Investigation*
 - details collection of aircraft records in support of mishap investigations
7. CAPR 66-1, *CAP Maintenance Management and CAWG Sup 1*
 - defines objectives of the centralized maintenance management program; explains terms
 - addresses general maintenance policy, responsibilities, and records keeping
 - identifies CAP-required restrictive placards, marking and painting of corporate aircraft

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- details required aircraft inspections and organizational maintenance requirements
 - addresses an engine management program; lists required equipment
 - provides procedures to seek "major maintenance" reimbursements
 - prohibits use of MOGAS in corporate aircraft
 - details required financial accounting
 - details storage and tiedown requirements
 - establishes policy for transfer and disposal of aircraft
 - lists recommended reference publications
8. CAPR 67-1, *Civil Air Patrol Supply Regulation*
 - addresses aircraft inventory and aircraft-installed equipment accountability
 9. CAPR 67-4, *Acquiring, Reporting, and Disposing of Corporate Aircraft*
 - details policy and procedures CAP uses to acquire and dispose of corporate-owned aircraft
 - details use of the CAP Form 37A, *Shipping and Receiving Document for Aircraft*
 - establishes minimum annual flying time per aircraft
 - describes Aircraft Modernization Program Fund... and its uses
 10. CAPR 123-3, *Civil Air Patrol Assessment Program*
 - offers the **Subordinate Unit Inspection** guide for the maintenance function at **Tab C-4** for use at squadron levels
 11. CAPR 173-3, *Payment for Civil Air Patrol Support*
 - details procedures for processing claims by CAP members or units for costs incurred while participating in reimbursable missions
 - instructs how to fill out CAP Form 108, *CAP Payment/Reimbursement Document*
 12. CAPR 900-6, *Hull Self-Insurance Program*
 - addresses procedures to claim reimbursements under HSI and how to fill out the CAP Form 132, *HSI Claim Form*

NOTE: All CAP regulations can be accessed and downloaded via the Internet at www.cap.gov /Member Services/Publications/Indexes, Regulations and Manuals.

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B. GUIDANCE ORIGINATING FROM CALIFORNIA WING

CAWGG 11-1, *CAWG Administrative Procedures Guide*

-- establishes reports and forms required by CAWG which involve aircraft status, flying hours, maintenance, and finance; establishes frequency and deadlines for submission

Likewise, all CAWG regulations, supplements, and forms are available for download from the Internet, at www.cawg.cap.gov/html/Pubs.htm

C. OTHER SOURCES OF GUIDANCE

1. FAA: FEDERAL AVIATION REGULATIONS (FARs)

-- you need to get familiar with the contents of these parts of **14CFR**:

- Part 1 (Definitions and Abbreviations)
- Part 23 (Airworthiness Standards for Normal...Category Airplanes)
- Part 39 (Airworthiness Directives)
- Part 43 (Maintenance, Preventive Maintenance, Rebuilding, and Alteration)
- Part 91 (General Operating and Flight Rules)
- Part 145 (Repair Stations)

(All these parts are available in one place if you get your hands on a "FAR/AMT" publication instead of the "FAR/AIM" book pilots are familiar with. Both Jeppesen Sanderson and ASA Inc publish this book annually.)

All parts of FARs can also be accessed and downloaded from the Internet via the FAA's Regulatory & Guidance Library link at <http://av-info.faa.gov>

2. FAA: Aeronautical Information Manual (AIM)

- Full of definitions and descriptions of the maintenance language

3. FAA: Advisory Circulars (AC)

- get your hands on the index for all circulars: AC 00-2.12, *Advisory Circular Checklist* (usually available free, over the counter, at your nearest FSDO)
- lists all ACs numerically or alphabetically by topic; provides blank order forms
- many, many ACs are available which deal with aircraft, aircraft systems, aircraft components, aircraft maintenance, repair practices, and records-keeping

All Advisory Circulars can also be downloaded from the Internet via the FAA's Regulatory & Guidance Library link at <http://av-info.faa.gov>

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4. NTSB: 53CFR Part 830, *Accident/Incident Reporting*
 - details requirements to preserve aircraft involved in reportable mishaps and requirements to collect/preserve maintenance records

5. **Hazardous Materials Regulations (HMRs)**
 - You should be aware of these parts of 51CFR:
 - **Part 173 (General Requirements for Shipments and Packages) para 173.34 addresses inspection, hydrostatic testing, and life limits for oxygen cylinders**
 - **Para 173.309 addresses inspection, testing, and life limits for fire extinguishers**

All HMRs may be accessed through links from the parent Office of Hazardous Materials Safety at www.text-trieve.com/dotrspa.dotbody.asp

D. TECHNICAL ADVICE

(presuming your aircraft is a Cessna...)

1. **FAA: Type Certificate Data Sheet (by make and model)**
 - **Details all specifications of a particular airframe or engine; details operating limitations for that end item; identifies which other appliances (or parts) are authorized to be installed on that end item**

All TCDSs can be accessed and downloaded from the internet through the **Type Certificate Data Sheets link** at <http://av-info.faa.gov>

2. **CESSNA: Pilot Operating Handbook (POH)**
 - for your aircraft by make, model, and year; this is a required aircraft document... your plane can't fly without it
 - it's an aircraft flight manual supplemented specifically for your aircraft's serial number
 - it will have an equipment list tailored to your aircraft; the list must be amended anytime equipment is added to or removed from your aircraft
 - it will also contain supplementing operating instructions for each item of added or altered equipment on board

3. **CESSNA: Servicing Manual (by make and model)**
 - provides manufacturer-recommended (or -required) inspection, servicing, and repair procedures; provides inspection criteria, repair criteria, and operating limits; gives wiring and aircraft system schematics
 - your mechanic must have this manual if he works on your aircraft

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4. CESSNA: *Parts Catalog* (by make and model)
 - identifies all parts by nomenclature, identifier, "useable on" codes, and quantities needed
 - your mechanic will also have this manual if he works on your aircraft

5. CESSNA: *Removal and Installation Labor Allowance Manual*
 - provides job standards for numerous repair actions involving Cessna aircraft, power plants, propellers, and appliances used on Cessna aircraft
 - offers a squadron some protection against inflated labor estimates for significant maintenance actions

6. TELEDYNE CONTINENTAL MOTORS: *Tips on Engine Care* (1997)
 - a collection of brief articles which address various aspects of engine care and servicing for owners/operators
 - available on request from the manufacturer

7. **Numerous manufacturers now make selected technical publications (such as service bulletins, service letters, even supplemental type certificates and operating supplements) available in the public domain of the Internet. CAWG/DOAM continues to compile lists of these useful websites.**

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III. RESPONSIBILITIES

A. What exactly is a **squadron**-level maintenance officer supposed to do? **And how do you get it done?** Well, the basic responsibilities are laid out in CAPR 20-1, Part III (Senior Member Position Descriptions). Your position description says a Maintenance Officer "exercises staff supervision and coordination of all aircraft maintenance. They shall:

- Make recommendations to the commander for the improvement of the maintenance program.
- Ensure that aircraft are painted and identified in accordance with current directives.
- Ensure that aircraft are maintained in an airworthy condition in accordance with FAA requirements."

Pretty vague, huh?

B. As you plow through the various governing directives (see **Part II**) you can start swallowing this job in smaller bites...

1. You have to safeguard and protect your assigned corporate aircraft.
 - You must make sure it is parked on a spot which meets CAPR 66-1 minimum anchoring requirements; then make sure your unit uses approved tiedown devices.
 - You must make sure it has the covers required by CAPR 66-1; and that the covers are both serviceable and presentable.
 - You must make sure it has an acceptable throttle quadrant/avionics lock installed (to deter theft of high-value avionics).
 - You must make sure the door locks work properly so onboard stuff doesn't get pilfered easily; and that there are controls on who gets issued keys to the aircraft.
 - You need to periodically inventory the stuff aboard your aircraft to make sure it hasn't disappeared... or doesn't need repair, replacement, or replenishment.
2. You have to plan scheduled maintenance actions and deconflict these actions from known flying requirements.
 - "Scheduled" maintenance includes oil changes, 100-hour and annual inspections, "calendar" inspections, washes, corrosion preventive spraying, pitot-static/altimeter/transponder recertifications, and ELT battery replacements for example.
 - You may also **get** enough advance notice to plan refurbishments, painting, equipment alterations, or upgrades.

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3. You have to react to unscheduled (unexpected) maintenance needs and get repairs accomplished as promptly as time, availability of maintenance mechanics, availability of facilities, and money allow.
4. You have to purchase maintenance services, performed by AMTs or repair stations, which keep your aircraft airworthy to standards established by FARs.
 - You may require repairs, alterations, installations or removals, inspections, functional tests, cleaning or corrosion treatments, or troubleshooting.
 - This means you also have to find the right specialist to do the job.
 - This means you also need to get the right facility for the job required.
5. You may have to purchase the parts, components, kits, or materials needed by licensed AMTs to keep your aircraft airworthy.
6. When a maintenance task is completed you must make sure all maintenance actions are correctly and completely documented. **This is a critical task.**
 - a. **A truism in the world of aircraft maintenance is "If it ain't documented... it didn't happen!"**
 - If you request maintenance from an AMT the completed actions must be entered in appropriate maintenance logbooks. **(Usually an aircraft will have separate logbooks for airframe, powerplant, propeller, and radio/avionics.)**
 - If the task involves new or replaced equipment, or modifications, you must also make sure the unit receives appropriate FAA-required documents from the manufacturer or repair station ... **such as "serviceable" tags for new or overhauled parts; or records of "major repair or alteration" certificates.**
 - b. **You have help. FAR 43.9 addresses the "content, form, and disposition of" such maintenance entries. FAR 43, Appendix D further describes the scope and detail of items to be included in Annual and 100-hour Inspections. As examples:**
 - **Oil changes must cite the authority; the oil type and quantity used; and any other actions taken related to the event (such as oil sample taken, oil filter replaced, oil screen cleaned...)**
 - **Inspections must be performed "in accordance with" a cited FAR or manufacturer's publication.**

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- **Time-changes** (such as ELT batteries) must document actions taken; specify make/model/part number of the new item; and list the item's expiration date or next-due event time.
 - **Airworthiness Directives** or **Service Bulletins** must cite the designation of the AD/SB; the **method** of accomplishment; and the **results** if it's an inspection action. If it is a recurring AD/SB the entry must also identify the date or tach reading when **next due**.
 - **Parts or appliance replacements** must cite the specific actions taken; cite the technical data used; specify make/model/part number/serial number to positively identify the replacement component; and identify any functional or operational checks due before the aircraft can be returned to service.
 - **Repair actions** must identify **what** was repaired and by what **method** the repair was accomplished. Functional checks (if appropriate) must be documented, with their results. Any parts or hardware used must be identified (although if the list is lengthy they may be documented on the shop's work order or invoice, and just referenced in the logbook entry).
 - **All** maintenance entries must include the **date** and **tachometer reading** -- or total-time-airframe (TTAF) reading when the action was taken. Most (but not all) actions require an entry that the aircraft (...or engine, or prop...) was returned to service. **All** entries require the signature of the certificated mechanic (AMT) or inspector (IA) or repair station representative who is authorized -- also by FAR 43 -- to make such entries.
7. You also have to **purchase** parts, equipment, tools, materials, and supplies needed by your **squadron** to keep your aircraft clean and presentable for CAP's "customers"... and **your** aircrews
 8. You have to **collect** revenues (from "unfunded" mission flying) and **request** reimbursements (from the CAWG general maintenance fund) sufficient to offset your maintenance costs. **(See Part VI)**
 9. You have to **control** maintenance-related costs to insure your unit doesn't run out of money. At the very least...
 - Decide what maintenance **must** be done **now** to keep the aircraft flying.
 - Decide what maintenance **should** be done, at a later time, to keep the aircraft flying.
 - Decide what maintenance would be **nice to do**... time and money permitting.
 - Decide what maintenance may cost more than the improvements (or enhancements) are worth.

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10. You have to collect a lot of information and data to submit several periodic reports to higher headquarters; **or update electronic databases to include the CAP NTC Form 18 flying hour summaries or the various maintenance events tracked in the Wing Management Utilities (WMU... see Part IX).**
11. From time to time you may get tasked to collect data, change a procedure, assess your aircraft's paint or interior condition, verify compliance with an AD or SB, or otherwise scurry around to get answers for someone else.
12. You should periodically examine how well you are doing. Try the **Subordinate Unit Inspection Guide, Tab C-4, Aircraft Management.** It's available to download from the NHQ CAP website, at www.cap.gov Select Programs/Inspector General/IG Inspections, then select the "SUI Guide" link at the bottom of the page.

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IV. AUTHORITIES

A. A founding principle of effective management is that **AUTHORITY MUST BE COMMENSURATE WITH RESPONSIBILITY.**

1. As a **squadron**-level maintenance officer, CAPR 20-1 delegates the authorities you need to meet assigned responsibilities.
 - Through your unit commander you will be empowered to "ground" the corporate aircraft should you determine its condition warrants being removed from service
 - You are further designated the authority to return your aircraft to service. The CAWG supplement to CAPR 66-1 identifies you as the person who will report changes to the status of your aircraft to higher headquarters.
 - Your signature is required on several recurring reports, to signify the reports are legitimate. CAWG accepts your signature on reimbursement requests to obtain payments from the Wing's general maintenance fund.
 - Through your unit commander you will become a signatory to the unit's "aircraft fund" checking account; and be authorized to write checks and make deposits.
 - Since you are responsible for meeting the unit's maintenance-related expenses, you also are the focal point for determining the hourly flight charges to be collected for "unfunded" flying on your aircraft.
 - You will inherit the keys for your assigned aircraft, avionics lock, hangar doors (if applicable), and any equipment the unit possesses for support of the aircraft. You will likely become the issuer of keys to new aircrew members.
 2. You will also discover you have broad latitude to decide what, when, where, and how to get maintenance done... by default. (Hardly anyone else in your squadron wants this job; nor understands what must be done; nor how to get it done.)
 3. As you gain understanding of the CAP aircraft maintenance program you will gain "expertise". And with "expertise" comes **deferral** to your decisions (on matters of aircraft maintenance and finances, at least). Learn your job well, become successful at it, and you will discover you now have even more **latitude** to do what's best for your aircraft and your **squadron**.
- B.** The **squadron**-level maintenance officer position is a lot of work... but the job can be exhilarating!

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V. TERMS AND EXPLANATIONS

To perform maintenance successfully and keep control of your unit's **aircraft** finances you must know the languages. You don't have to be fluent... but you do need **familiarity with** a certain minimum vocabulary of terms.

1. Aircraft Status: DOWN vs UP. These are slang terms. They refer to an aircraft's serviceability -- either out of service ("down" for maintenance) or serviceable ("up" for flying). Note that an aircraft must be serviceable to be "up"; but can be either serviceable or unserviceable when it is taken "down" to perform maintenance.
2. MAINTENANCE vs PREVENTIVE MAINTENANCE. These terms come from FAR Part 43 and are used to establish who is authorized to perform tasks under each of these definitions. The significance for a unit maintenance officer is that a certificated AMT or repair station is required to perform "maintenance"; while an owner/operator (that's you) can perform "preventive maintenance" as listed in FAR Part 43, Appendix A.
3. INSPECTING, ALTERING, MODIFYING, REPAIRING, REBUILDING, SERVICING, CLEANING, TESTING. These are all specific kinds of tasks under the general description of "maintenance". FAR Part 43, Appendix A, establishes which tasks on which parts of an aircraft may be performed by an owner/operator. This is the single biggest area where a unit maintenance officer can reduce the labor costs on a CAP aircraft.
4. MAINTENANCE LOGBOOKS, WORK ORDERS, INVOICES, CONDITION TAGS, EQUIPMENT LISTS. All these documents serve to record some aspect of maintenance performed on your aircraft or its components. Records-keeping is absolutely essential.
5. AIRWORTHINESS DIRECTIVES vs SERVICE BULLETINS.
"Airworthiness Directives" are issued by the FAA; while "Service Bulletins" are issued by the manufacturer of the component affected. Both are designed to alert the owner/operator to a change... made either to the component or to the way it is operated, inspected, repaired, serviced, or tested.
 - a. ADs are normally issued to improve safety-of-flight conditions; and require mandatory compliance. (As a side note, the FAA also issues Special Airworthiness Information Bulletins, which are not mandatory compliance.)

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- b. SBs may be issued by a manufacturer to correct a deficiency in the part or offer an enhancement to the original part. Since manufacturers cannot compel compliance as the FAA can, they will usually declare that the old (or unmodified, or uninspected) part will become "unserviceable" after a specified period of time.
6. CALENDAR inspections vs TIME inspections. FAA terminology. Corporate aircraft require **several** recurring inspections. The interval between inspections is measured either by elapsed days/months ("calendar" intervals) or elapsed engine tachometer readings ("time" intervals)... not Hobbs meter readings.
7. STC vs STA vs PMA. These are FAA terms.
 - a. Supplemental Type Certificates are sought from the FAA by manufacturers or repair stations so they may modify/alter an aircraft or engine or appliance to some new configuration with new operating parameters acceptable to the FAA and usable on the original aircraft or engine or appliance.
 - b. Supplemental Type Approvals are sought from the FAA by manufacturers for spiffy new components they have devised and want to sell to you for your aircraft.
 - c. Parts Manufacturer Approvals are sought by other parts manufacturers from the original manufacturer so they may continue to sell the same part to customers. Typically, the original manufacturer no longer produces that part. PMA'd parts insure that the item meets the same specifications and requirements that the original part did when it was approved by the FAA.
8. MAJOR maintenance vs MINOR maintenance vs GENERAL maintenance. These are CAP-coined terms used to establish CAP's source of payment. The terms differ from FAR 43 uses of "major" and "minor" repairs.
 - a. MAJOR maintenance defines a variety of maintenance tasks performed on specific kinds of aircraft parts, airframes, powerplants, **or propellers**. **Maintenance** tasks which fall under CAP's definition are eligible for reimbursement from USAF appropriated funds... rather than out of CAP revenues.
 - b. MINOR maintenance -- by default -- covers every other maintenance task.
 - c. GENERAL maintenance is a finance term used by CAP to describe the funds which pay for "minor" maintenance.

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9. REIMBURSABLE vs NONREIMBURSABLE expenses. CAP-imposed definitions. Used to identify which kinds of maintenance-related costs may be reimbursed from either wing-level "general maintenance" funds or NHQ CAP "major maintenance" funds. Not all expenses (to keep a corporate aircraft flying) are eligible for reimbursement.
10. "FUNDED" FLYING vs "UNFUNDED" FLYING. CAP definitions used to identify the source of revenue when using a corporate aircraft.
 - a. "Funded" flying means a recognized agency with an approved LOA (letter of agreement) or MOU (memorandum of understanding) with CAP, will "rent" the corporate aircraft and pay for its flight hours (and related expenses) at rates set by HQ CAP.
 - b. "Unfunded" flying refers to all other flying. Since all Hobbs meter time must be expensed by the unit (accounted for), it falls on the unit which maintains the aircraft to collect payments generated by "unfunded" flying, at rates which the unit is authorized to establish.
11. **SOAP is a Spectrometric Oil Analysis Program. The trace-metal contents of your engine's oil can be an early indicator of unusual or excessive component wear.**
 - **SOAP sampling is required at each oil change during the life of your plane's engine. CAP desires to standardize the source of analyses by issuing Aviation Oil Analysis Inc. sampling kits through the CAP Supply Depot. In the future these same AOA kits should be made available through the CAP Bookstore.**
 - **At squadron level, you must retain the analysis results with your engine logbook.**

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VI. THE AIRCRAFT MAINTENANCE FUND

- A. A squadron which operates and maintains a corporate aircraft must account for all monies generated by that tail number. Commonly, the squadron Maintenance Officer is the focal point for both collecting aircraft revenues and paying the maintenance-related bills. But you should rely on your squadron finance officer to help.
- B. Giving away the "bottom line" first, the secret for successful management of a squadron's aircraft account monies is to (1) recover all possible REIMBURSABLE COSTS and (2) collect enough from "unfunded mission" flying (and maybe fund-raisers and donations) to meet or exceed the squadron's NONREIMBURSABLE COSTS. The goal within CAWG is for each squadron to achieve financial self-sufficiency.
- C. Your understanding of the way money moves within CAP is important. You need to learn about
- CAP's various sources of money
 - Collecting revenues
 - Paying expenses
- Once you understand these features, you can then see how your squadron's flying hours, "flight charges", and nonreimbursable costs relate to each other. And how you can manage them.
- D. However, you won't find the answers in this handbook. The management of a squadron-level aircraft account is important enough to merit a separate handout, Guide to CAP's Aircraft Maintenance Funds. It's a companion to this handout.

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VII. REPORTS AND FORMS

A. The following forms are used to report information or data which involve a corporate aircraft:

1. CAP Form 18(E), *Operations Monthly Activity Report*
 - **use is directed by CAPR 60-1, para 2-7**
 - used to report monthly corporate aircraft flying hours **by tail number**
 - "template" form; submitted electronically through the HQ CAP website
 - requires internet access; CAWG/DOAM provides user ID and password
 - **several products (reports) are available for squadron use**
 - **sample input format is shown in the Appendix**
2. CAP Form 26, *Safety Improvement or Hazard Report*
 - **use is explained in CAPR 62-1, para 2.c**
 - general form used to report hazardous operations or dangerous conditions; may be submitted by anyone, anytime, to lowest level where the problem can be addressed or corrected.
 - may be handwritten; submitter doesn't have to identify themselves
3. CAP Form 37A, *Shipping & Receiving Document for Aircraft*
 - **use is explained in CAPR 67-1, Chapter 5**
 - used by CAWG/DOAM and units to account for corporate aircraft transfers; also to list all modifications and installed equipment
 - updated any time new mods or new equipment is installed or removed
 - unit commander or supply officer must sign
 - **example is shown in the Appendix**
4. CAP Form 71, *Aircraft Inspection Checklist*
 - **use is explained in CAPR 66-1, para 8.f**
 - used at all echelons to document current condition of corporate aircraft as well as status of its maintenance records, inspections, and compliance with CAP-directed requirements
5. CAP Form 78, *Mishap Report Form*
 - **use is directed by CAPR 62-2, para 5**
 - used to report any kind of incident/accident
 - has entries for aircraft information
 - signed by unit commander, or person designated to collect the information; has 48 hour suspense
6. CAP Form 79, *Mishap Investigation Form*
 - **use is directed by CAPR 62-2, para 6**
 - used to investigate all mishaps

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- has data fields for aircraft information
 - signed by investigating officer (appointed by wing commander)
7. CAP Form 99, *Flight Release Log*
 - **use is detailed in CAPR 60-1, chapter 4**
 - used by flight release officers to document flight time and missions
 - reported hours must match flight hours logged in the CAWG Forms 781
 - available as a "template" form
 8. CAP Form 108, *Payment/Reimbursement Document for Aviation/Automotive/ Miscellaneous Expenses*
 - **Use is detailed in CAPR 173-3, para 2**
 - used to document reimbursable expenses related to a corporate aircraft used on funded missions
 - claims may be submitted by either individuals or units
 - available as a "template" form from the HQ CAP website
 9. CAP Form 132, *HSI Claim Form*
 - **use is detailed in CAPR 900-6, para 6**
 - used to identify expenses charged to the general maintenance fund resulting from accidental loss or damage to corporate aircraft
 - filled out at wing level to claim reimbursement through the CAP corporate hull insurance policy
 10. *Aircraft Major Maintenance Reimbursement Request*
 - **use is explained in CAPR 66-1, para 12 and Atch 2**
 - a form letter, filled out by CAWG to request appropriated funds reimbursement from NHQ CAP for designated "major maintenance" expenses on corporate aircraft
 - unit provides the details; wing commander **or designated official** must sign and release the request
 - must be submitted and approved before unit purchases parts or obligates work
 - form now available for download through the CAP "Forms" web page as a template

B. Within California Wing, the following forms are in use:

11. CAWG Form 52, *Corporate Aircraft Flight Charges Questionnaire*
 - **use is explained in CAWGG 11-1, Chap 11**
 - used to report current flight hour charges which squadron establishes for use of corporate aircraft on "unfunded" sorties
 - available as a "template" form on the CAWG website
 - submitted annually or any time the unit changes its rates

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- must be signed by unit finance officer and commander
 - **example is shown in the Appendix**
12. CAWG Form 64, *Reimbursement Request for CAP Owned Corporate Aircraft*
- **use is explained in CAWGG 11-1, Chap 11**
 - used to report aircraft-related maintenance expenses for reimbursement from the CAWG "general maintenance fund"
 - available as a "template" form on the CAWG website
 - submitted with original invoices/receipts, at any time
 - signed by unit commander or "designated representative"
 - **example is shown in the Appendix**
13. CAWG Form 66, *Corporate Aircraft Storage and Mooring Report*
- **use is detailed in CAWGG 11-1, Chap 11**
 - used to verify compliance with CAPR mooring requirements; submitted annually
 - available as a "template" form on the CAWG website
 - must be signed by unit operations officer and commander
14. CAWG Form 125G, *Glider Preflight Safety Inspection Guide*
- **use is detailed in CAWG Sup 1 to CAPR 62-1, para 13 and Atch 5**
 - **used by "designated safety representative" at deployed activity sites to inspect gliders and tow equipment prior to its participation in the activity**
 - submitted through safety channels to the activity commander
15. CAWG Form 781, *Aircraft Operations & Maintenance Log*
- **use is explained in CAWG Sup 1 to CAPR 66-1, para 5.c**
 - has two sides: front for flight operations, reverse for maintenance status **and still-open discrepancies, until cleared**
 - front side used to document all activity which uses Hobbs time; entries usually made by PIC, but may be made by maintenance
 - **squadrons** may use this portion to capture additional information of use to that unit (examples: oil serviced, DF tested, aircraft washed...)
 - reverse side used to document currently open maintenance discrepancies as well as availability/status of onboard CAP mission equipment

Most formatted reports (forms) may now be transmitted by e-mail or fax to save time... unless they require attached documents, original papers, or signatures. Other one-time reports may be tasked from time to time; formats (if needed) will be provided by the requestor. **Current aircraft status and**

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maintenance events are tracked by electronic inputs to selected pages of the Wing Management Utilities (WMU) described in Section IX.

- C. As a maintenance officer, you will also need some familiarity with FAA-required forms and related documents:
1. FAA Form 337, *Major Repair and Alteration*
 - issued to evaluate repairs and/or alterations to airframe, powerplant, propeller, or appliances
 - used to certify that such repairs/alterations conform to FAR Part 43 requirements and procedures
 - must be signed by a certified AMT or repair station; must describe the work that was performed
 - must be filed with the local FSDO (submitted by whoever signed it)
 - **the original must be retained with the aircraft logbooks**
 2. FAA Form 8010-4, *Malfunction or Defect Report*
 - designed to collect information on any aircraft components which fail, or fail to perform as advertised, for any cause
 - may be submitted by anyone, to nearest FSDO
 3. FAA Form 8050-3, *Certificate of Aircraft Registration*
 - required document; must be aboard the aircraft for it to fly
 - issued in the name of Civil Air Patrol, Inc.
 4. FAA Form 8070-1, *Service Difficulty Report*
 - similarly designed to collect information on any aircraft component which may have been affected by improper or nonstandard repair, alteration, misuse, servicing, inspection...
 - may be submitted by anyone, to nearest FSDO
 - **these may now be submitted electronically via internet; template can be accessed at <http://av-info.faa.gov> through the "SDR Main Menu" link on this page**
 5. FAA Form 8100-2, *Standard Airworthiness Certificate*
 - establishes airworthiness of the make, model, and serial number; certifies aircraft conforms to the type certificate
 - specifies which "category(s)" the aircraft can be operated in (i.e., Normal Category flight operations)
 - mandatory document; aircraft can't fly without it aboard

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6. FAA Form 8110-2, *Supplemental Type Certificate*
 - used by the FAA to certify that new installations or modifications meet airworthiness requirements and are acceptable changes to the type certification for your aircraft
 - **STCs will include installation/modification instructions, operating limitations, applicability, and any operating instructions needed to supplement the aircraft's POH**
 - **such supplements must be filed in the aircraft's POH**

7. FAA Form 8120-11, *Suspected Unapproved Parts Notification*
 - used to notify FAA of a suspected unapproved or counterfeit aircraft component
 - may be submitted by anyone, directly to FAA System & Surveillance Analysis Division
 - **notification can now be made electronically through a template form available at www.faa.gov/avr/sups.htm**

8. FAA Form 8130-3, *Airworthiness Approval Tag*
 - filled out by the manufacturer or repair station to certify the part/appliance you just received was manufactured in accordance with FAR Part 21 approved parts specifications

9. *Serviceable Tag or Return to Service Tag*
 - a locally-prepared document; has no particular format
 - used by repair stations to certify the part you just received was repaired (or overhauled, or serviced, or inspected) in accordance with FAR Part 43 accepted practices & methods... and is serviceable
 - by convention, these tags are always colored yellow

10. FAA: *Type Certificate Data Sheet*
 - issued for a specific make, model, and series of **airframe, engine, or propeller**
 - provides design, performance, and operating specifications for the **end item** described
 - additional "notes" may describe permissible operating limitations and the accessories/parts approved to be used on/with this item
 - will also describe all acceptable variants of the basic item, and what the differences are

11. *Weight and Balance Certificate*
 - a locally-prepared document; has no particular format
 - may be prepared by any certificated AMT, **IA**, or Repair Station
 - a required document; becomes part of your aircraft's POH; aircraft can't fly without it aboard

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- must be updated whenever installed equipment is added or removed, or whenever the airframe structure is altered

12. *Maintenance Logbooks*

- books follow no particular format or form; but generally must provide entries for aircraft identification, date of entry, tach time at entry, and space to describe the maintenance actions performed
- individual logbooks are normally kept up for the airframe, the powerplant, the propeller, and radios/avionics
- available from several publishers

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VIII. WORKING WITH OTHERS

A squadron maintenance officer must interface with many other CAP "players" to insure aircraft maintenance is deconflicted from flight operations; required maintenance gets done; logbooks get documented; reports get completed; **flight charges get collected**; checks get issued; and expenses get reimbursed. This duty position is also the focal point for conducting aircraft maintenance through FAA-certificated aircraft maintenance technicians (AMTs), airworthiness inspectors (**IAs**), and Repair Stations.

1. With squadron personnel:
 - a. Commander
 - assigns duty positions through personnel actions (CAP Form 2a) or published orders
 - signs and releases many reports
 - delegates check-writing authority
 - issues "standard operating procedures" document on aircraft scheduling, utilization, maintenance, flight charge collection
 - usually the focal point for all unit incoming mail
 - b. Logistics Officer
 - responsible for other squadron assets to include vehicles, facilities, utilities, and supplies/equipment
 - may have oversight for aircraft maintenance and hangar or tiedown rentals
 - c. Supply Officer
 - responsible for upkeep of squadron-possessed equipment (other than aircraft or aircraft-installed equipment)
 - may sign the CAP Form 37A for receipt/transfer of aircraft or aircraft-related equipment
 - d. Finance Officer
 - Oversees **all** squadron accounts; must report balance of aircraft account along with other unit funds accounts
 - helps establish aircraft flight hour charges (CAWG Form 52) and signs the report
 - e. Operations Officer
 - normally responsible for aircraft utilization and flight scheduling
 - may have oversight for aircraft maintenance
 - signs off on aircraft mooring report (CAWG Form 66)

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- f. Standardization/Evaluation Officer
 - as a CAP check pilot, can perform functional check flights or operational checks if deemed necessary following significant maintenance
 - may also perform "ferry" flights if FAA approves Special Flight Certification
 - g. Safety Officer
 - available to assist with mishap reporting
 - can enter maintenance-related information in the Pilot Read File
2. With Group personnel: Group commander
 - provides intermediate review of many recurring reports going to wing
 - has say in allocation of corporate aircraft within the group
 - may direct aircraft "sharing" between squadrons
 3. With California Wing personnel:
 - a. Commander (CAWG/CC)
 - has final say on allocation of corporate aircraft within wing
 - negotiates receipt/transfer of corporate aircraft into/out of wing
 - signature authority for all real property purchases, leases, or rentals to include aircraft hangar spaces or tiedown spots
 - b. Director of Operations (CAWG/DO)
 - has oversight of the aircraft maintenance program
 - establishes flying mission priorities
 - may direct short-notice unit inspections (CAPR 60-2)
 - c. Aircraft Manager (CAWG/DOAM)
 - focal point for all aircraft-related matters within the wing
 - reallocates/reassigns corporate aircraft and funds
 - manages the "general maintenance fund"
 - conducts "periodic" inspections of corporate aircraft (CAP Form 71)
 - selects aircraft for upgrades/modifications/repainting/refurbishing
 - may solicit vendors for aircraft components or repair facilities for aircraft modifications/upgrades to installed equipment
 - **validates all maintenance reimbursement requests (CAWG Fm 64)**
 - **establishes the minimum "flight charge" for each make/model corporate aircraft in the fleet**
 - d. Director of Finance (CAWG/FM)
 - processes reimbursement requests made via CAP Form 108
 - releases payments from the aircraft "general maintenance fund" (CAWG Fm 64) through the Wing Finance Officer

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- e. Director of Logistics (CAWG/LG)
 - may advise/coordinate with squadrons for matters involving lease or rental agreements for aircraft tiedowns or hangars
 - **focal point for non-expendable property (equipment) reporting (CAP forms 37A, C, E, V)**
 - f. Director of Safety (CAWG/SE)
 - has responsibility for safe operating practices within the wing
 - involved with all aircraft mishap investigations
 - g. **Incident Commanders**
 - will alert/employ individual aircraft for search missions based on aircraft status and configuration (mission equipment)
4. With National Headquarters CAP: Aircraft Manager (**NHQ CAP/LGM**)
- charged with overall management of CAP's corporate aircraft fleet
 - directs release of appropriated funds for aircraft "major maintenance" expenditures
 - provides funds for aircraft modernization, avionics/mission equipment upgrades, equipment modernization, **aircraft replacement**
 - acquires and disposes of corporate aircraft
 - authorizes avionics upgrades/replacements through the Radio Exchange Program
 - processes reimbursement claims for the CAP HSI Program
 - disseminates manufacturer's Service Bulletins to subordinate organizations
 - authors CAPR 66-1
5. With the CAP Bookstore Aircraft Support Unit: (eff: 15 May 03)
- **has picked up duties previously performed by the CAP Supply Depot; contact through Depot's old number... (800) 858-4370**
 - **alternate** source for purchase of aircraft-related parts for corporate aircraft
 - does parts ordering and shipping; can assist units with parts research and pricing
 - can arrange purchase and transport of end items (such as engines and propellers)
 - may act as intermediary for factory support of new CAP equipment or aircraft
 - focal point for CAP Radio Exchange Program

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6. With the Federal Aviation Agency: **nearest** Flight Service District Office (FSDO)
 - source of interpreting FAR requirements, Airworthiness Directive applicability
 - must approve all requests for modification/alteration (FAA Form 337)
 - maintains listing of all certified repair stations in geographic area **as well as designated engineering representatives (DERs)**
 - source of free Advisory Circulars and other publications

7. With businesses:
 - Parts Suppliers **and Retailers** (for aircraft parts, technical publications, tools, kits, equipment, materials, consumable supplies)
 - Repair Stations (for component troubleshooting/repairs/alterations, new equipment installations)
 - Aircraft Maintenance Technicians (**AMTs**) and Airworthiness Inspectors (**IAs**) (for aircraft and powerplant inspections, repair estimates, testing, repairs, modifications, alterations, servicing, cleaning, parts purchases)
 - Fixed Base Operators (FBOs) (for fuel, hangar/tiedown rental, access to wash facilities, access to hangar space, pilot supplies, minor aircraft hardware & parts)
 - Airport managers (for airfield security, fire protection, utilities -- water, electricity, waste disposal, sewer, **airfield repairs and upkeep**)
 - Banks (for checking and savings account services)

8. Last... but not least:

WITH YOUR FELLOW MAINTENANCE OFFICERS!!!!!!

(Talk with them... many have learned better -- or easier -- ways to get some of these tasks done!)

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IX. ELECTRONIC REPORTING (NEW)

- A. BACKGROUND. NHQ CAP continues to build an internet-based data collection system which will give visibility to all aspects of squadron-level activities. At present, these collection tools are called the Wing Management Utilities... or WMU. Within the WMU a set of formatted reporting templates grouped under the "Aircraft Manager" utility allows squadron maintenance officers to enter aircraft status changes, maintenance events, and changes in mission equipment aboard those aircraft. This centralized database is accessed via the Internet at <http://wmu.nat.cap.gov>.
- B. For California Wing it is critical that squadrons use the two primary pages within the "Aircraft Manager" utility: the Aircraft Status page and the Aircraft Maintenance Form page. Here's why...
1. NHQ CAP expects its wings to centrally plan, organize, coordinate, direct, and control all maintenance on their corporate aircraft.
 - a. But in California the geographic dispersal of our pilots/aircrews means CAWG also has to geographically disperse its aircraft to achieve highest utilization of those aircraft.
 - b. Because of the size of the CAWG fleet and the size of this state, total "centralized maintenance management" by the CAWG staff would be unresponsive to the squadrons' day-to-day needs -- and therefore ineffective.
 2. Instead, CAWG relies on decentralized direction and control of maintenance... at the squadron level. CAWG/DOAM can centrally plan, organize, and coordinate maintenance for its fleet... but only if it has centralized visibility over its fleet. Reliance on the WMU's Aircraft Manager utilities allows DOAM to make "decentralized maintenance" work.
 3. CAWG/DOAM will enter the names of squadron-assigned maintenance officers to the WMU and establish their "permissions" to enter the various maintenance management utilities. Once accomplished, the squadron may then add, delete, correct, or update the record of maintenance events, or aircraft status, or mission equipment aboard their corporate aircraft.

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C. Description of the various Aircraft Manager utilities.

1. At present there are seven interactive pages available for use within the WMU Aircraft Manager functional area:
 - Update Aircraft Status
 - Aircraft Maintenance Records
 - Aircraft Schedule
 - Generate Monthly Usage Report
 - View Annual Aircraft Usage
 - Aircraft Discrepancy Maintenance
 - CAPF 99 Flight Release
2. Currently, only four of these pages are of use to a squadron maintenance officer. For the Update Aircraft Status page the principal "customer" for the data displayed in this utility is the Incident Commander. This utility provides two kinds of information:
 - a. The utility first displays a list of each corporate (and, if selected, each member-owned) aircraft. It shows the tail number, make/model, home station, maintenance status, notes (specific to each aircraft), and the maintenance point-of-contact. This info will immediately tell an IC what aircraft are available; and allow prompt, direct followup with the maintenance officer responsible for that aircraft.
 - b. At the end of this list is the "Aircraft Detail" template, which allows selection of any tail number to display details of that aircraft's configuration, location, flight status, notes peculiar to that aircraft, manager's name and contact info, CAPFLT call sign, whether it's a corporate or member-owned aircraft, type (make/model), what Reimbursement Group it falls under, aircraft colors, the "owner CAP ID", the specific mission-related "equipment" aboard that aircraft, and "Aircraft Group". Some explanations are needed.
 - The "Notes" block should address the principal, or pacing, maintenance event which is grounding the aircraft, and provide a date for its estimated return to service (RTS). (This block can also be used to alert viewers to any other features unique to this aircraft such as temporary parking locations, alternate points of contact, mission or flight restrictions, etc.)
 - The "Reimbursement Group" block identifies which funded mission reimbursement rate applies to this tail number.
 - The "Owner CAP ID" block is **critical**. Unless the ID entered in this block matches the ID of whoever entered the Aircraft Manager utility the WMU will block any data inputs (or updates).

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- The "Equipment" section allows you to check all equipment which are available with this aircraft.
 - The "Aircraft Group" identifies which CAP aircraft grouping applies ...and therefore establishes pilot requirements (i.e. "complex" endorsement required, "hi performance" endorsement required, "tailwheel endorsement" required).
- c. At the very bottom you have three command buttons.
- Click "Update Aircraft" to enter any changes you just made to the contents of the Aircraft Detail
 - Click "Show Private Aircraft/Hide Private Aircraft" to add or hide member-owned tail numbers in the pulldown list
 - "Delete Aircraft" can be used only by members to remove their member-owned aircraft from the list. (Only CAP/LGM can delete corporate tail numbers.)
3. Next, the Aircraft Maintenance Records page. The principal customer for this page is YOU... the squadron maintenance officer. But DOAM is a close second. The purpose of this utility is to provide ready tracking of all the recurring maintenance events which CAP requires you to accomplish. The software which supports this page takes the dates and tach readings you load, then displays accumulated calendar time and operating time for the various events. This utility is designed to give visibility to upcoming maintenance events. It does not archive maintenance event history.
- a. Correct display of accumulated time (calendar or tach hour) depends on two inputs by the squadron maintenance officer.
- (1) The "Tach Time Synchronization" fields must be filled in completely for this utility to work -- contrary to the instructions offered at the bottom of that page. Without a beginning date and tach reading, the software doesn't have a "starting point" from which to begin counting elapsed time for any of the maintenance events.
 - (2) Accumulated time displays are measured against the "Most Current Tach Date" and "Last Tach Reading" inputs. Update these entries only when you have need to update some other maintenance event elsewhere in this page.
- b. The software supporting this page is rudimentary; and has led to several peculiarities which will force you to "game" the entries in order to get correct results.

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- (1) The software doesn't know that accomplishment of an Annual Inspection "resets the clock" on the next-due 100-hour Inspection and 50-hour Oil Change. To help this utility help you track these events, you have to also enter the just-completed Annual's date/tach info to the 100-hour and 50-hour event data fields. Only then will this page project the "next due" 100-hour Inspection and 50-hour Oil Change correctly.
 - (2) The software doesn't know that accomplishment of a 100-hour Inspection drives the tach reading for the next 50-hour Oil Change. So you have to enter the same date/tach from the 100-hour event to the oil change event. Only then will the utility project the correct "next due" oil change time.
 - (3) The software also doesn't know that an Engine Overhaul/ Replacement entails an oil change. So you have to intercede (to match the 50-hour event time to the engine change event time) for this utility to correctly project the "next due" oil change.
 - (4) Several calendar events in this page ask for entry of an expiration date rather than an accomplishment date. Those particular events don't follow a fixed interval which the software can count ... and therefore correctly project a "next due" date.
 - (5) The "Oil Used since 50 Hour" field has no input from this page. Rather, data inputs come from the "CAPF 99 Flight Release" utility and would be entered by the aircrew.
4. Next, the Aircraft Schedule page. This utility is designed to allow universal, standardized scheduling of corporate aircraft by anyone (or any squadron) at any time, from any location.
- a. Currently CAWG has not tasked subordinate units to use this utility; however some squadrons are using this feature on their own initiative.
 - b. The potential benefit of this scheduling utility for maintenance: squadron maintenance officers can load required "down time" for scheduled maintenance events and thereby deconflict their maintenance activities from planned flying activities.

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5. Last, the Aircraft Discrepancy Maintenance page. This utility allows a squadron to record a history of maintenance discrepancies against their aircraft... and the corrective actions taken.
(Currently CAWG does not expect squadrons to feed data to this utility without guidelines which would standardize the kinds of maintenance discrepancies to enter. DOAM has no plans to implement such guidelines at this time.)

- D. As with any other developing data collection system, you will likely encounter "bugs" in the software. If you can't puzzle out a solution -- or if you concoct a work-around -- notify DOAM. This will alert CAWG staff to the problem. In turn, DOAM will alert the WMU webmaster and work to get a fix. DOAM also recognizes that feeding data to the various WMU utilities can be time-consuming... and therefore only requires squadrons to support the Aircraft Status and Aircraft Maintenance Record utilities at this time.

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APPENDIX OF USEFUL FORMS

(NOTE: This .doc file will not support the annotated pages used to illustrate key points in the forms used below. Until fixed, the referenced forms will have to be provided by DOAM upon request.)

- A. NTC: CAP Form 18(E), *Flight Hour Monthly Report*
 - Example of inputs template
 - Example report product

- B. CAP Form 37A, *Shipping and Receiving Document for Aircraft*
 - Example of template with contents (front side)
 - Example of 'additional equipment' (reverse side)

- C. CAWG Form 52, *Corporate Aircraft Flight Charges Questionnaire*
 - Example report template

- D. CAWG Form 64, *Reimbursement Request for ... Corporate Aircraft*
 - Submission template (with remarks)