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U.S. Department of
Homeland Security

United States
Coast Guard

AERONAUTICAL ENGINEERING MAINTENANCE MANAGEMENT PROCESS GUIDE

CGTO PG-85-00-110

This CGTO PG-85–00–110 dated 1 June 2007 supersedes CGTO PG-85–00–110 dated 1 April 2003 and Change 3 dated 7 April 2006 in its entirety. Destroy all previous editions.

Basic 1 June 2007

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1 Jun 2007

MEMORANDUM

From: T. O. Murphy
ARSC (esd)

Reply to Attn of: J.O. Bronson
(252) 335-6829

To: CGTO PG-85-00-110 Users

Subj: CGTO PG-85-00-110, AERONAUTICAL ENGINEERING MAINTENANCE MANAGEMENT PROCESS GUIDE

1. PURPOSE. This memorandum promulgates CGTO PG-85-00-110, Aeronautical Engineering Maintenance Management Process Guide, Enclosure (1).

2. ACTION. Coast Guard aviation personnel members are required to adhere to the guidelines set forth in the enclosed process guide.

3. DIRECTIVES AFFECTED. This process guide supersedes CGTO PG-85-00-110, Aeronautical Engineering Maintenance Management Process Guide, dated 1 April 2003 and Change 3 dated 7 April 2006.

4. DISCUSSION. This process guide ensures procedural consistency for all engineering maintenance management by establishing specific guidelines and procedures that shall be followed.

5. CHANGES. Recommendations for changes and improvements to the Aeronautical Engineering Maintenance Management Process Guide will be submitted via the chain of command using the Aeronautical Publication Change Recommendation, CG Form 22.

#

Enclosure (1) CGTO PG-85-00-110

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CHAPTER 1. MAINTENANCE SUPPORT PROGRAMS

A. GENERAL. The following areas of maintenance management are considered of such sufficient importance that they must be addressed. This chapter will provide information and guidance to maintenance personnel regarding those areas where specific procedures have been developed and/or peculiar problems have been noted.

B. QUALITY ASSURANCE.

1. General.

   a. Maintenance quality and reliability is the responsibility of all maintenance personnel. The quality assurance staff ensures the quality of maintenance accomplished throughout the maintenance organization and performs necessary functions to manage the organization's quality assurance program. The combined efforts of quality assurance personnel, maintenance supervisors, and technicians are necessary to assure high quality maintenance and equipment reliability.

   b. The quality assurance inspection and evaluation program provides objective sampling of both the quality of equipment and the qualifications of maintenance personnel. In this role, quality assurance personnel are an extension of the work force and are normally tasked to perform inspections as a portion of the quality assurance program. Maintenance supervisors also perform inspections while technicians are performing maintenance on equipment and in the maintenance shops. Quality assurance serves as the primary technical advisory source in the maintenance activity, assisting the supervisors and the maintenance officer in the resolution of quality problems.

   c. The evaluation and analysis of deficiencies and problem areas are key functions of quality assurance. This activity must be more than inspection-oriented to identify underlying causes of poor quality in the maintenance effort. By determining probable causes of problems and recommending corrective actions to supervisors, quality assurance can significantly improve the quality of maintenance performed.

2. Quality Assurance Inspectors. Quality Assurance Inspectors shall be selected and designated in writing by the Engineering Officer. Enclosure (1) provides the standard format for a letter of designation for Quality Assurance Inspectors.

   a. Primary Quality Assurance Inspector. A Primary Quality Assurance (QA) Inspector is normally assigned to the QA section of the Engineering Department. The number of designated Primary QA inspectors should be kept to a minimum. The Primary QA shall inspect and sign off all grounding discrepancies and flight control work, except as noted below.

   b. Collateral Duty Quality Assurance Inspector. The Collateral Duty QA Inspector is assigned from a maintenance shop. He or she remains within the work force, supports the quality assurance program, and performs production inspections that do not require a Primary QA. A Collateral QA may sign off grounding discrepancies and flight control work in individual cases when approved by a supervisor possessing maintenance release authority.

3. Responsibilities. Quality assurance personnel shall perform the following:

   a. Determine the quality of maintenance throughout the unit's aircraft maintenance complex, and render complete, impartial reports and recommendations to aid in the elimination of errors in aircraft maintenance.

   b. Establish a relationship with the individual maintenance supervisors to ensure adequate corrective action on all discrepancy reports. Frequently check with maintenance supervisors to determine whether inspection coverage is adequate.

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c. Maintain master library of all applicable technical publications and directives. Review incoming technical publications and directives to determine their application to quality assurance. Assist in preparation of local maintenance instructions. Ensure that each maintenance organization segment has available all publications applicable to their work area and that these publications are kept current.

d. Review aircraft maintenance records and all logs pertaining to the aircraft for proper corrective action, recurring discrepancies, and trends which require special action.

e. Ensure that procedures are established and observed for conducting ground tests and routine and special inspections. Selectively inspect work to ensure that the desired quality is attained. Ensure that current procedures are followed by maintenance personnel in repair and bench test of components.

f. Ensure all work instructions, check lists, and maintenance procedure cards used to define or control maintenance are complete and current.

g. Participate in flight verification checks and test flights. Ensure that pilots and crews are briefed prior to test flights so that the objectives of the flights are clearly understood.

h. Ensure that the configuration of aircraft and aircraft components are such that all essential modifications have been incorporated. Ensure that support equipment meets calibration and safety requirements.

i. Approve or reject work based on appropriate standards.

j. Establish qualification requirements for primary quality assurance inspectors and collateral duty quality assurance inspectors. Review the qualifications of personnel assigned to these positions and maintain a record of all designated inspectors. Ensure that inspectors are limited to their area of expertise.

C. FOREIGN OBJECT DAMAGE (FOD) PREVENTION PROGRAM.

1. General. Damage from foreign objects is a continuing problem. This damage affects safety of flight, consumes excessive maintenance labor-hours, imposes unscheduled workloads on supporting activities, and creates an unwarranted shortage of engines and other spare parts.

2. Responsibilities. Most FOD can be attributed to three general causes: poor housekeeping, poor maintenance practices, and carelessness. Damage due to FOD must be reduced to a minimum. Engineering Officers shall promulgate local instructions stressing the need to reduce FOD and detailing responsibilities and frequencies of inspections. Maintenance personnel shall comply with the following procedures:

   a. Account for each nut, bolt, washer, piece of lock-wire, etc., when working on engines or aircraft.

   b. Account for each tool used in repair work before starting any engine.

   c. Remove loose objects from pockets before working on engines or aircraft.

   d. Wear no loose clothing which can be drawn into an engine or other rotating components.

   e. Remove loose objects from all rolling stock and support equipment used in the vicinity of engines or aircraft.

   f. Perform thorough preflight and postflight inspection of ducts, plenum chambers and engine cavities, rotor heads, and other dynamic components.

   g. Pick up any loose objects in the hangar, on work platforms, or on the flight line and deposit them in the FOD prevention containers.

   h. Use dust covers.

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D. JOINT OIL ANALYSIS PROGRAM.

1. General. The Joint Oil Analysis Program (JOAP) monitors the condition of enclosed mechanical systems through determination of wear metal concentrations in the lubricating fluid. This maintenance tool utilizes the laboratory as a focal point for information and, when properly applied, has proven to be an effective supplement to other maintenance procedures. As a diagnostic tool, oil analysis can tell you how much and what kind of wear is taking place. The following procedures are required:

   a. Take samples properly at the prescribed interval.

   b. Submit complete and accurate information with samples.

   c. Dispatch samples to the laboratory without delay.

   d. Laboratory recommendations are based upon total review of the unit history and reported to the activity in accordance with the required urgency.

   e. Perform maintenance review without delay in response to laboratory recommendations.

   f. Advise the laboratory promptly of all maintenance actions performed which either directly or indirectly affect the lubricated components of the equipment being monitored.

NOTE

History of the oil analysis program has clearly shown that the attitude of an operating activity toward the program is usually the decisive factor in its success.

2. Responsibilities.

   a. USCG aviation facilities shall participate in the Joint Oil Analysis Program.

   b. Commandant (CG-41) will provide funds directly to DOD for USCG participation.

   c. Engineering Officers will ensure that maintenance personnel are thoroughly trained in JOAP sample taking and documentation procedures as outlined in NAVAIR 17-15-50.1, NAVAIR 17–15–50.2, NAVAIR 17-15-50.3, and NAVAIR 17-15-50.4.

NOTE

SCHR entries for engines/components being monitored by a JOAP lab will include the location of that lab and inclusive dates of monitoring that engine or component. Components removed as a result of oil analysis should state the reason for removal and include the contaminants in parts per million in the last oil sample.

3. Directives. Through an interservice agreement, all DOD operated JOAP laboratories (USAF, USA, and USN) process samples without regard to service source. This enables all customers to minimize response time between sampling and analysis by using the nearest lab. Except as provided herein, the primary directive for Coast Guard involvement in the JOAP will be NAVAIR 17-15-50.1. Procedural instructions, sampling methods and special sample requirements, forms usage, and supply/procurement actions shall be in accordance with this technical order.

NOTE

Questions regarding the JOAP should be directed to either Commandant (CG-41) or the JOAP-TSC Director, JOAP Technical Support Center, 85 Millington Ave, Pensacola, FL, 32508–5010, (850) 452–JOAP, http://www.joaptsc.navy.mil.

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4. For HU-25. Spectrometric Oil Analysis Program (SOAP) will be performed by Honeywell as a part of their continuing engine analysis program. Sampling kits and mailing containers are provided. The specifications for SOAP are those contained in the ATF3-6 maintenance manuals.

NOTE

Questions regarding SOAP for the ATF3-6 engine should be directed to the ARSC HU-25 Product Line Engineering Cell, (252) 335–6887, or Honeywell, M/S 2101–2F-46–00, 1944 E. Sky Harbor Circle, Phoenix, AZ 85034, ATTN: SOAP Lab, (602) 365–2248.

5. For HH-65 Engines. Oil and debris analysis for the Arriel 2C2 CG engines will be performed by Turbomeca approved laboratories as a part of their continuing engine analysis program. Perform sampling in accordance with MPC 71001.7 (oil analysis) and/or MPC 71001.9 (debris analysis).

NOTE

Questions regarding oil and debris analysis for the Turbomeca Arriel 2C2 CG engine should be directed to the USCG Contracting Officer's Technical Representative at Turbomeca USA, 2709 Forum Drive, Grand Prairie, TX 75052, ATTN: USCG COTR, (972) 606–7694.

6. For HH-65 Main and Tail Gearbox. If required, a special oil analysis for the main or tail gearboxes (mineral oil) is performed in accordance with the applicable MPC.

NOTE

Questions regarding main and tail gearbox oil analysis should be directed to the ARSC HH-65 Product Line Engineering Cell, (252) 335–6616.

E. RELIABILITY-CENTERED MAINTENANCE. The term reliability-centered maintenance (RCM) refers to a program of disciplined logic to realize the inherent reliability capabilities of equipment being maintained. Fundamental to RCM is the concept that reliability is designed into a component and cannot be improved with preventive maintenance. Scheduled maintenance can only ensure that the designed reliability is achieved. The RCM program will serve as a source of corrective action for maintenance shortcomings. The program will monitor the performance of equipment and it will bring deteriorating trends to management's attention. In addition, it will establish whether corrective action is needed should the desired performance not be achieved. See the Reliability-Centered Maintenance Process Guide, CGTO PG-85-00-30, for further information.

F. AIRCRAFT FUEL SURVEILLANCE.

1. General. Free water and foreign contaminants in aircraft fuel systems, singularly or in combination, constitute a hazard in any aircraft. Although every effort has been made to provide mobile and stationary fuelers with effective filtering systems, free water and contaminants can be introduced into an aircraft. In addition, free water can be introduced in aircraft fuel tanks as a result of condensation of moist air in empty or partially filled tanks and by separation of water in solution in fuels when exposed to relatively low ambient temperatures. Microorganism contaminants which cling to fuel cell walls thrive and multiply in certain water-fuel emulsions. Free water and contaminants in aircraft fuel systems have many harmful effects including erratic or incorrect fuel quantity indications; icing of filters and other fuel system components; engine failure caused by fuel control icing or malfunction; and jet engine starting difficulties caused by fuel flow dividers clogged from corrosion of aircraft and fuel system parts. Furthermore, if contamination remains undetected, rubber fuel cells will deteriorate and be permanently damaged. The most effective and practical procedure

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by which operating activities can preclude the difficulties caused by free water in aircraft fuel tanks is to eliminate this water and inspect for the presence of foreign matter on each daily and preflight inspection.

2. Responsibilities. Procedures shall be established to ensure compliance with the following sampling techniques:

a. All fuel tank drains, including auxiliary tanks and readily accessible fuel system strainers, shall be drained prior to the first scheduled flight of the day. It is recommended that approximately one pint of fuel from each drain be inspected using a clear, clean, dry glass container.

b. When free water or foreign matter is determined to be present in quantity sufficient to ground the aircraft, the aircraft should be defueled and an appropriate fuel cell and fuel system component inspection for corrosion and contamination should be made. In addition, the source of fuel should be immediately determined and cognizant personnel notified.

c. Fuel samples shall be kept for a period of 24 hours or until another fuel sample is taken from that tank.

d. Maintaining quality and limiting contamination of aircraft fuels may be accomplished by observing the following items:

(1) Modern aircraft engines require fuels of high quality. In order to maintain this high quality after it is received from the refinery, careful and continuous measures must be taken to prevent deterioration and contamination. Contamination can occur from mixing with other bulk petroleum products as well as from dirt, rust, and water. Experience has shown that serious engine and airframe problems will develop if inadequate attention and effort are given to maintaining fuel quality.

(2) To ensure that engines will not be susceptible to fuel starvation due to ice in the fuel system, the use of Fuel System Icing Inhibitor, MIL-DTL-85470B, is mandatory. Fuels obtained from military facilities contain this ice inhibitor; however, aviation units and flight crews must ensure its presence in any commercial fuel procured. Fuel system icing inhibitor in turbine fuel should be 0.08 – 0.20 percent by volume.

NOTE

Introduction of this additive will lower the flash point of JP-5 by four degrees Fahrenheit and will inhibit the growth of bacteria.

(3) The following publications provide specific guidance relative to aircraft fuel storage and handling, and establish minimum quality and surveillance standards. Aviation units shall ensure that they are in compliance with the procedures outlined therein.

TITLE	PUBLICATION
USCG Aviation Fuel Handling Procedures Manual	COMDTINST M13001.1
Identification Methods for Bulk Petroleum Products Systems including Hydrocarbon Missile Fuels	MIL-STD-161F(2)
Quality Control of Fuels and Lubricants	AFTO 42B-1-1
Ground Servicing of Aircraft and Static Grounding/Bonding	AFTO 00-25-172
Aircraft Refueling NATOPS Manual	NAVAIR 00–80T-109

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G. CORROSION CONTROL PROGRAM. Aircraft corrosion presents severe safety and economic concerns which are compounded by the corrosive environment USCG aircraft are subjected to. Although manufacturers and overhaul facilities use corrosion preventive procedures, the diligent corrosion maintenance performed at the unit is key to minimizing corrosion damage between overhaul or PDM. The Corrosion Control Program Process Guide, CGTO PG-85-00-60, provides the minimum mandatory requirements for the unit's Corrosion Control Plan.

H. EQUIPMENT CALIBRATION PROGRAM.

1. General. Test equipment and special tooling provided for maintenance and troubleshooting must be maintained at optimum performance levels. Periodic calibration of this equipment is necessary to ensure that accurate measurements are obtained.

2. Responsibilities. Commanding Officers shall ensure that an effective calibration program is implemented for assigned equipment and tooling. DOD or commercial activities in the local vicinity or district calibration programs are generally capable of providing the service necessary. Units shall maintain records that account for the calibration, maintenance, and custody of each piece of test equipment and special tooling. Interval tracking shall be accomplished using ACMS special requirements or the calibration facility tracking list.

I. COAST GUARD AVIATION TEMPEST PROGRAM.

1. TEMPEST. TEMPEST is an unclassified short name referring to investigations and studies of compromising emanations.

2. TEMPEST Responsibilities:

   a. Commandant (CG-41): Commandant (CG-41) will oversee the Coast Guard aviation TEMPEST program. Commandant (CG-61) will provide Commandant (CG-41) with National, Department of Homeland Security, and Coast Guard TEMPEST policy.

   b. ARSC: ARSC shall manage the Coast Guard Aviation TEMPEST policy as directed by Commandant (CG-41). ARSC shall ensure conformance with current Coast Guard TEMPEST policy. This will include, but not be limited to the following:

      (1) Coordinate Instrumented TEMPEST Surveys for each new COMSEC equipment installation or modification in each type or model of aircraft.

      (2) Perform COMSEC certifications for each aircraft during each overhaul and as required by the Field Technical Authority (FTA).

      (3) Have TEMPEST trained personnel onboard to perform as Field Technical Authority.

      (4) Have COMSEC trained personnel onboard to assist field units and perform COMSEC equipment installations.

      (5) Review all Time Compliance Technical Orders (TCTOs) and applicable Aircraft Configuration Control Board forms for TEMPEST implications that would affect TEMPEST compliance.

      (6) Assign a TEMPEST Control Officer with responsibility for the Aviation TEMPEST program to assist field units in complying with TEMPEST requirements.

NOTE

See chapter 23 of the Electronics Manual, COMDTINST M10550.25, for definitions.

3. Coast Guard Aviation TEMPEST Certification.

   a. Purpose. The purpose of certifying aircraft equipped with COMSEC is to ensure that the system, as installed on a particular aircraft, complies with the system security requirements as specified in the design. Certification validates that the aircraft wiring, equipment installation, bonding, and wire shielding have been installed in strict conformance to the aircraft design documents or to applicable TCTOs and

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indicates that the installation inspection and operational test of the system(s) has been satisfactorily completed.

b. Certification vs. TEMPEST Testing. Certification procedures do not include TEMPEST testing, but rely on the TEMPEST testing performed on a prototype installation. This ensures that the COMSEC features designed into the system have been preserved in the aircraft application. The certification procedure relies on the fact that subsequent systems are installed in strict compliance with specific TCTOs. These TCTOs, when followed, duplicate the design requirements that were verified on the TEMPEST surveyed aircraft.

c. Policy. Certification is required for each new or modified airborne COMSEC installation. This includes the initial installation, reinstallation after modification of COMSEC equipment, or after modification of associated COMSEC aircraft wiring. Wiring modifications include, but are not limited to, rerouting of COMSEC equipment wires or other adjacent wiring. Contact the ARSC FTA for further guidance. In addition, aircraft COMSEC installations shall be recertified during the aircraft PDM cycle. Certification is accomplished in accordance with this section.

d. Procedures. The certification procedures for COMSEC systems include an installation inspection, an operational test, and aircraft Significant Component History Report (SCHR) entry.

(1) Inspection. The installation inspection includes continuity checks of all cables and wiring harnesses associated with the COMSEC equipment and is performed to verify that the wiring complies with the aircraft design documents or applicable TCTOs.

(2) Operational Test. The operational test is performed to verify that the COMSEC system performs all of its functions satisfactorily. This part of the certification requires that each function of the COMSEC system operates in accordance with the operational specifications. Coordination is required between an auxiliary station and the test aircraft during the performance of certain operational test portions of the certification procedures. Personnel from the auxiliary station and the test aircraft should review the operational test procedures before the test to discuss the coordination requirements and to develop a frequency plan that identifies primary and backup frequencies that will be used to perform the tests. Operators should be familiar with restrictions concerning frequency management and the discussion of classified information on uncovered circuits.

(3) SCHR Entry. The SCHR entry is automatic upon completion of the applicable MPC and provides a permanent record that the COMSEC system has been certified.

e. Problems. Failure of any portion of the installation inspection or the operational test is a failure of the respective aircraft COMSEC system to pass certification.

(1) Installation Inspection. If the installation inspection is not satisfactory, DO NOT proceed with the operational test. Fault-isolate and repair as necessary.

(2) Operational Test. Upon successful completion of the installation inspection, continue with the operational test. If an equipment failure is encountered or suspected at any time during the operational test, DO NOT continue. Turn the system off, fault-isolate, and repair before proceeding.

(3) Incomplete Certification. If the operational test is not performed immediately following the installation inspection, COMSEC equipment will be removed from the aircraft, loose connectors secured, and applicable circuit breakers tagged until the certification procedure can be completed.

f. Personnel Qualifications.

(1) Installation Inspection. Two people are required to perform the installation inspection, at least one of whom must have attended the limited maintenance

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training course for the COMSEC equipment being certified. In addition, one must have had informal TEMPEST certification training at NATC Patuxent River and received official notice from Commandant (CG-61) that they are certified as an FTA. Both must be familiar with approved techniques for the splicing, bonding, grounding, and shielding of aircraft wiring, and with the specific system installation being certified.

(2) Operational Test. The operational test requires two people. One shall have attended the Limited Maintenance COMSEC training for the equipment and system being certified. One shall be an aircraft technician familiar with the aircraft and qualified to operate aircraft systems. A single person may satisfy both of these requirements; however, a minimum of two people is required.

J. MAINTENANCE INSTRUCTIONS.

1. General. When the need arises at the local level to pass on information to maintenance personnel, a maintenance instruction shall be issued. A standard form, OPNAV 4790/35 (Enclosure (2)), or a locally produced form of like content will be used by maintenance administrators for interpreting and/or amplifying technical directives and maintenance requirements received from higher authority and also to promulgate local instructions as necessary. The maintenance instruction is usually prepared by the quality assurance subsection and signed by the Engineering Officer.

2. Responsibilities. The maintenance instruction must be prepared carefully. It is the instrument upon which maintenance supervisors direct their crew. The maintenance instruction will be used as a cover sheet for message TCTOs received by the unit and provides a convenient place for sign off of accomplished work. A locally promulgated numbering system such as 1-92, 2-92, etc., shall be used in order to facilitate filing and information retrieval.

3. Single Action Maintenance Instruction (SAMI). A SAMI may be prepared when a directive or situation dictates that specific work must be performed on a one-time basis. The work will be completed on one aircraft model or piece of equipment and will not require further action.

4. Continuing Action Maintenance Instruction (CAMI).

   a. A CAMI is a local directive providing instructions for the performance of work which is or may be of a continuing nature.

   b. A CAMI may be prepared when a directive or situation dictates that specific work must be performed at recurring intervals, or upon the occurrence of a particular condition or incident. It is important that the CAMI clearly state when the prescribed action is to be taken and that positive control be exercised to ensure that the work is actually performed. Any new maintenance inspection requirements should be considered for inclusion in an MPC rather than a CAMI.

5. Technical Information Maintenance Instruction (TIMI). A TIMI may be prepared when a directive or situation requires that technical information be promulgated within an activity. When it is necessary to disseminate information, such as techniques and local policy, which does not direct the accomplishment of specific work at definite intervals, but which is sustaining in nature, a TIMI may be issued.

6. Additional Information. Whenever any maintenance instruction has served its purpose, it should be canceled and filed for 6 months after completion date.

K. TOOL CONTROL PROGRAM.

1. Purpose. The purpose of the tool control program is to ensure the safety of aviation personnel through the prevention of aircraft mishaps and foreign object damage (FOD) to aircraft systems that is caused by misplaced tools. Additional benefits of the program are a significant reduction of tool replacement costs and increased maintenance effectiveness due to proper tool availability.

2. Responsibilities. Aviation tools will be of such quality that they meet or exceed Society of Automotive Engineers (SAE) Aerospace Standards (AS-954, AS-4167, etc.) and shall be

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purchased and maintained in the tool control program. Supply Policy and Procedures Manual, COMDTINST M4400.19 (series), addresses the aviation tool control program and provides guidance for the purchase of tools from commercial sources to satisfy SAE Aerospace Standards.

3. Replacement tools shall conform to the same shape and size as original tools to ensure integrity of tool control which utilizes foam cutouts or other tool displacement methods. Local instructions and procedures shall be developed and implemented for a tool control program that ensures safety of flight operations by precluding releasing of any aircraft for flight with misplaced tools.

L. COMPOSITE REPAIR PROGRAM.

1. Purpose. The purpose of the composite repair program is to properly maintain and repair aeronautical composite components.

2. Responsibilities.

a. Field Units. (See Enclosure (3) for a listing of materiels to be maintained by the unit.)

(1) Maintain aircraft composite component structure, hardware, and protective coatings in good condition.

(2) Procure and maintain the composite repair equipment detailed in the applicable maintenance instructions for assigned aircraft.

(3) Perform authorized composite repairs in accordance with applicable maintenance publications, including:

(a) Cosmetic repair to all areas of the aircraft is authorized.

CAUTION

POLYESTER RESINS ARE NOT AUTHORIZED FOR USE ON ANY COAST GUARD AIRCRAFT.

(b) Structural repairs authorized to tertiary and secondary structures as specified in applicable maintenance publications.

(c) No repairs shall be made to any primary structures without prior approval from ARSC Engineering. All repairs to primary or carbon composite structures must be documented in the airframe or applicable component Significant Component History Report (SCHR). Entries will include the type, extent, and location of damage, and type of repair effected.

WARNING

NO REPAIRS SHALL BE MADE TO COMPOSITE STRUCTURES BY ANY UNIT UNLESS THEY MEET ALL SAFETY REQUIREMENTS LISTED IN AFTO 1-1-690. PERSONNEL WORKING WITH THESE MATERIELS ARE REQUIRED TO BE ENROLLED IN THE OCCUPATIONAL MEDICAL MONITORING PROGRAM. THE SAFETY AND ENVIRONMENTAL HEALTH MANUAL, COMDTINST M5100.47 (SERIES) APPLIES.

(4) Field unit repair of the four HH-65 emergency flotation containers requires prior approval from ARSC Engineering. A SCHR entry is not required for these repairs.

(5) Temporary repairs should be immediately applied to damaged secondary and tertiary composite structures. Temporary repairs are defined as those that do not restore the designed structural strength of a component, but protect it from additional environmental and physical damage. Permanent repairs shall be made as soon as practicable. All temporary repairs will be annotated as a Carried Forward (CF) discrepancy until permanent repairs are effected.

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b. ARSC.

(1) Provide technical assistance to field units.

(2) Write maintenance procedures as required for composite repairs.

(3) Provide field repair team to assist units as needed for composite repairs.

(4) Draft or approve repair schemes for field unit repairs to any primary composite structures.

(5) Maintain a list of approved materiels for use in composite repairs.

(6) Maintain a list of recommended sources for approved repair materiels.

M. AVIATION GAS FREE ENGINEERING PROGRAM.

1. General. The Coast Guard Aviation Gas Free Engineering Program applies to the inspection, maintenance, and repair of aircraft and aircraft fuel systems. The purpose of the Aviation Gas Free Engineering (AVGFE) Program is to supplement the requirements contained in Chapter 6, Safety and Environmental Health Manual, COMDTINST M5100.47 (series). ARSC's AVGFE Program shall adhere to this directive. An air station is only required to maintain an AVGFE Program where it is reasonable to anticipate routine entry into aircraft fuel tanks. In the event that a unit does not have an AVGFE Program and the need to enter a fuel tank exists, the requirements of this program may be accomplished by a certified marine chemist, an industrial hygienist, or a certified gas free engineer, as specified in Chapter 6, Safety and Environmental Health Manual, COMDTINST M5100.47 (series).

2. References. The referenced documents describe requirements for trained personnel to measure and certify the conditions of potentially dangerous atmospheres likely to be encountered when working within, or in the vicinity of, aviation fuel cells. The following manuals provide fuel cell entry safety precautions and shall be followed.

a. ACMS Maintenance Procedure Cards

b. Maintenance Instructions, Aircraft Fuel Cells and Tanks, NAVAIR 01-1A-35

c. Chapter 6, Safety and Environmental Health Manual, COMDTINST M5100.47 (series)

d. Inspection and Repair of Aircraft Integral Tanks and Fuel Cells, AFTO 1–1–3

3. Aviation Gas Free Engineer (AVGFE). The Aviation Gas Free Engineer will normally be the Quality Assurance Officer, Assistant Engineering Officer, or Maintenance Officer. The AVGFE manages the engineering department's Gas Free Engineering Program. The AVGFE shall perform the duties of the qualified person as defined in Chapter 6, Safety and Environmental Health Manual, COMDTINST M5100.47 (series) as they apply to aircraft maintenance.

a. The AVGFE shall meet the following qualifications:

(1) Complete Confined Space For Shore Facilities Course at RTC Yorktown or Confined Space Safety at Norfolk Naval Base, Norfolk, VA.

(2) Meet the experience requirements of the Aviation Gas Free Engineering Technician (AVGFET) as specified in paragraph 1.M.4.a.

(3) Be designated by the Commanding Officer in writing.

b. The AVGFE shall be thoroughly familiar with the contents of Chapter 6, Safety and Environmental Health Manual, COMDTINST M5100.47 (series) and the Maintenance Instructions, Aircraft Fuel Cells and Tanks, NAVAIR 01-1A-35. The responsibilities of the AVGFE shall include, but are not limited to the following:

(1) Monitor the Aviation Gas Free Engineering Program within the organization.

(2) Ensure all safety requirements are followed.

(3) Ensure assigned AVGFETs are trained and certified.

(4) Ensure required AVGFE support equipment is available, maintained, and calibrated.

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(5) Provide for the venting and testing of fuel cells.

(6) Provide for the preparation, issuance, and posting of Fuel Cell Entry Permits.

(7) Ensure procedures are established for emergency rescue and medical treatment.

(8) Ensure that annual training is accomplished as specified in Chapter 6, Safety and Environmental Health Manual, COMDTINST M5100.47 (series) for confined spaces.

(9) Maintain administrative requirements including reports and logbooks. All records shall be maintained for 3 years.

4. Aviation Gas Free Engineering Technician. Under the Aviation Gas Free Engineering Program an Aviation Gas Free Engineering Technician (AVGFET) is an individual assigned to the quality assurance department who has the responsibility for determining if a fuel system is safe from fire, explosion, and oxygen deficiency or enrichment.

a. Qualifications of AVGFET. To become certified as an AVGFET, the individual shall meet the requirements of a Qualified Person as designated in Chapter 6, Safety and Environmental Health Manual, COMDTINST M5100.47 (series) and complete the following requirements:

(1) On-the-job training on each type aircraft assigned (minimum of three supervised certifications in each type aircraft is required).

(2) The AVGFE shall recommend the AVGFET for certification by letter to the Commanding Officer.

(3) The Commanding Officer shall sign and date the letter of certification and ensure that applicable entries are made in the individuals training and service record.

NOTE

AVGFET certification is valid for 1 year.

b. The following requirements shall be accomplished annually by the AVGFET:

(1) Pass a written examination administered by the AVGFE.

(2) Submit their AVGFET logbook to the AVGFE for audit.

(3) Be recommended for renewal by the AVGFE.

(4) Be certified in writing by the Commanding Officer.

c. The AVGFET shall be responsible for the following:

(1) Conduct tests of fuel cells as required by Chapter 6, Safety and Environmental Health Manual, COMDTINST M5100.47 (series) and ACMS MPCs prior to maintenance.

(2) Issue, post, maintain, and update Fuel Tank Entry Permits and ensure they are followed.

(3) Stop work and evacuate personnel from a fuel cell when an unsafe condition is detected or suspected and immediately notify the supervisor and the AVGFE.

(4) Use required test equipment properly, ensuring that all test equipment is calibrated as required.

(5) Ensure all emergency procedures are observed and that emergency personnel and equipment are in place. Ensure medical aid is available and that all personnel are familiar with procedures prior to authorizing entry or work.

(6) Ensure personnel have been briefed on the work to be performed, the hazards involved and all emergency procedures.

(7) Report to the maintenance officer any condition that is detrimental to the continued safe conduct of AVGFE related maintenance.

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N. FLIGHT SAFETY CRITICAL AIRCRAFT PARTS (FSCAP) PROGRAM.

1. Definitions. FSCAP is defined as any assembly, or installation containing a Critical Characteristic whose failure, malfunction, or absence could cause an uncommanded engine shutdown, or a catastrophic failure resulting in loss or serious damage to the aircraft.

   a. A Critical Characteristic is defined as any feature throughout the life cycle of a FSCAP, such as dimension, tolerance, finish, material or assembly, manufacturing or inspection process, operation, field maintenance, or depot overhaul requirement which if nonconforming, missing, or degraded could cause the failure or malfunction of the FSCAP. Critical Characteristics which are not introduced during the manufacture of a part but are critical in terms of assembly/installation, e.g., proper torque, are termed “installation critical characteristics.”

2. Procedures.

   a. All new aircraft spare parts (defined as those with new part numbers) introduced into the Aviation Inventory Control Point (AICP) supply system shall be evaluated by ARSC and identified, in accordance with the above definition, as FSCAP if appropriate. Parts classified as FSCAP by ARSC or Other Government Agency (OGA) shall be identified by a “C” following either the Acquisition Method Suffix Code or the FltCrit blocks on the AMMIS Material Identification Data (MID) forms (in the All Data Program). ARSC shall ensure FSCAP is serialized where practical to maintain tracking throughout the life cycle of the part. Additionally, ARSC shall:

      (1) Maintain a process and coding structure in provisioning and cataloging records that ensures FSCAP are identified and tracked.

         (a) The process and coding structure shall ensure required classification action at the time of disposal, i.e., a part can be identified as FSCAP and based on the condition of the FSCAP a determination regarding mutilation or potential sale may be made.

         (b) The process and coding structure shall ensure that FSCAP lacking appropriate documentation, because of configuration or condition, is identified and mutilated prior to disposal.

         (c) The process and coding structure shall ensure that disposal codes are assigned for demilitarization, environmental, safety and others as necessary and “mirrors” the present demilitarization procedures for handling DOD material from declaration of excess to disposal.

         (d) The coding structure shall be compatible with the Federal Logistics Information System and be universally available to DOD or OGAs.

      (2) Ensure provisioning data received from vendors identifies FSCAP so appropriate life cycle documentation can be developed and maintained and part airworthiness status can be determined.

         (a) This may be accomplished by including a data element deliverable in aircraft parts contracts requiring documentation identifying FSCAP and certifying it as airworthy. This provision shall apply to all contracts for new parts or repair, overhaul, servicing or modification of existing parts.

   b. Air Stations shall ensure that:

      (1) Thorough aviation materiel receiving inspections, as outlined in Chapter 4 of this process guide, are accomplished. These receiving inspections are critical to ensure unapproved parts are not installed on Coast Guard aircraft. Particular attention shall be paid to type III/V parts received from OGAs or commercial sources.

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(2) Supply, quality assurance and maintenance supervisory personnel must work together to ensure only approved parts are installed on Coast Guard aircraft. Further, the technician who actually installs FSCAP is the “last line of defense” and should always conduct a parts inspection prior to installation on the aircraft.

(3) Failure or unsatisfactory condition of FSCAP noted by air stations shall be reported by urgent interim Unsatisfactory Report in accordance with Chapter 3 of this process guide.

c. ARSC and air stations shall forward all available historical data/documents for individual FSCAP to the Reutilization and Marketing Activity at the time of declaration of excess. Air stations should contact ARSC prior to disposal of FSCAP. ARSC will identify appropriate documentation to accompany FSCAP at the time of disposal/sale from inventory.

O. AUTHORIZED CHEMICAL USE LIST.

1. General Information. The Authorized Chemical Use List is a complete list of chemicals (greases, oils, paints, sealants, etc.) used to complete MPCs necessary to maintain each aircraft type. Use of particular chemicals is managed jointly by the ARSC Industrial Systems Manager (ISM) and the applicable ARSC aircraft Product Line Engineering Cell.

2. Applicability. The provisions of this section apply to each aircraft with an Authorized Chemical Use List contained in chapter 00 of the ACMS MPC deck.

3. General Requirements. Only those chemicals contained on the list may be procured or stocked by the engineering department for use on the designated aircraft type. Chemicals required for repair IAW original equipment manufacture (OEM) or approved technical orders not listed on the Authorized Chemical Use List are authorized.

4. Requesting Changes to the Authorized Chemical Use List. Coast Guard form CG-22 shall be used to request Authorized Chemical Use List changes. The CG-22 will be routed through the applicable Prime Unit to the Industrial Systems Manager (ISM) for approval.

5. Interim Changes to the Authorized Chemical Use List. Air Station Engineering Officers may authorize a one time purchase of chemicals not contained on the Authorized Chemical Use List to meet operational commitments. Air Station Engineering Officers shall coordinate one time use with the applicable ARSC aircraft Product Line Engineering Cell, specifying the need and application of the proposed chemical.

6. Prototyping of Chemicals.

   a. Prototyping of chemicals used on Coast Guard aircraft or systems must be approved by the ISM prior to use.

   b. The applicable ARSC aircraft Product Line Engineering Cell will review all requests for prototyping of chemicals and approve each specific chemical application on the aircraft.

   c. Prototyping of chemicals may be accomplished by ARSC, the applicable Prime Unit, or an Air Station designated by the ISM.

   d. Engineering Officers shall not independently authorize the purchase of chemicals for the purpose of testing or prototyping of new chemical application procedures.

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CHAPTER 2. AVIATION MAINTENANCE SAFETY

A. SHOP SAFETY PRACTICES.

1. General. This section provides general information and establishes shop safety standards and procedures for all USCG aviation maintenance facilities. Supervisors, safety personnel, or others responsible for shop safety should familiarize themselves with these standards and assume responsibility for instructing their subordinates with the provisions of this section.

2. Shop Layout. Machines will be located to provide sufficient space for the operator to handle materiels, and perform required job operations without interference from other equipment. Lathes, milling machines, and similar types of equipment that produce cuttings or flying particles should be set at 15-degree angles to each other, and secured to floors, bases, or stands. Lighting in the immediate areas must be adequate to eliminate glare or shadows.

3. Machine Guarding.

   a. General. The most effective means of preventing unsafe operations and injuries from powered machinery is through improved machine design, or installation of protective mechanical guards. Guards should be designed to provide maximum operator protection without interfering with equipment operations, changing of drive belts, making adjustments, or adding lubrication and should be hinged or have removable sections to provide for overall access to the machinery when required.

   b. Mechanical Guards. When machinery and powered transmission equipment are not guarded as part of their design, suitable mechanical guards, such as enclosures or barricades, shall be temporarily or permanently installed to eliminate the possibility of injury resulting from contact with moving parts or hazardous substances.

   c. Removal of Guards. Guards shall not be removed while a machine is in operation. The machine shall be completely shut down before guards are removed for maintenance or adjustment. When a machine is equipped with removable guards, it should, if practical, be equipped with an interlock control device that will stop the equipment when a guard is removed.

   d. Controls. Machine controls shall be conveniently located for the operator. Power controls will be of a type that can be locked out or in the off position. Control switches shall have all selective positions properly identified (i.e., Stop, Start, Off, Right, Left, Up, or Down).

   e. Mechanical Power Transmission Equipment. Safety guards or suitable mechanical enclosures or barriers shall be installed on power transmission equipment from the power source to the point of operation.

   f. Inspections. In addition to scheduled shop safety inspections conducted by designated safety representatives, shop supervisors shall, in the interest of operator safety, periodically inspect all shop equipment or machinery. Any equipment or machinery showing signs of misuse, mechanical deterioration, or damage that could result in failure or possible injury will be removed from service for repairs.

4. Metal Working Machines.

   a. Shop Grinders. Safety measures for grinders will be established in the following manner:

      (1) Grinders shall be equipped with shatterproof shields.

      (2) Metal hood type guards shall enclose two-thirds of the abrasive wheel.

      (3) Tool rests shall be adjusted to provide a minimum of one eighth-inch from abrasive wheel grinding surface.

      (4) Care should be exercised during abrasive wheel replacement to ensure that components are assembled in proper sequence.

      (5) Inspect condition of abrasive wheel prior to each use. Inspect for security, cracks, and improper metal impregnation.

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(6) Protective face shield shall be worn by the operator.

b. Alligator Shears. Barrier guards shall be adjusted to prevent the operator from placing their hand or fingers under the shear blades.

c. Band Saws. Protective eye glasses or a face shield shall be worn by the operator. Drive wheels, spindles, and the entire area of the saw blade, except the working area of the blade between the guide rollers and the table, shall be completely enclosed.

d. Circular Saws. Protective eye glasses or a face shield shall be worn by the operator. A self-adjusting guard shall cover the area of the saw blade projecting above the cutting table surface. Over arm radial saw tables shall be of a size sufficient to prevent override of the saw table.

e. Drill Presses. Protective eye glasses or a face shield shall be worn by the operator. Materiel being drilled shall be securely clamped to prevent movement or rotational action during drilling operations.

f. Lathes. Protective eye glasses or a face shield shall be worn by the operator. Chip guards and oil catches shall be provided on the lathe.

g. Power Presses. Operator protection shall be provided by enclosing all moving parts of the press. The work area guard opening shall permit insertion of stock in accordance with the rated capacity of the press.

5. Battery Shop.

a. Shop Space Requirements.

(1) The shop location must be approved by the installation ground safety director, fire inspector chief, and medical officer.

(2) Nickel-cadmium battery shops will be mechanically ventilated to provide three to four air changes per hour in order to ensure the removal of any hydrogen gas generated as a result of charging. Smoking and other ignition sources will be prohibited in the shop. Battery shops shall include provisions for diffusion of flammable gases to prevent accumulation of explosive mixtures. If electrical exhaust fans are installed, they shall be certified explosion proof.

(3) Vented nickel-cadmium batteries shall be isolated from vented lead-acid batteries. Since the electrolyte used in vented lead-acid batteries is a strong solution of sulfuric acid and distilled water, every effort will be made to keep vented nickel-cadmium batteries separated from the vented lead-acid batteries. Do not service vented lead-acid batteries and nickel-cadmium batteries in the same room. Separate storage and charging rooms shall be maintained for these two types of vented batteries.

(4) Sealed lead-acid batteries and sealed nickel-cadmium batteries do not require a dedicated battery room or area, and can be charged in the same battery room or area as long as a five foot minimum clearance is maintained between the different batteries. Sealed lead-acid batteries can be charged in a dedicated nickel-cadmium battery shop and a sealed nickel-cadmium battery can be charged in a dedicated lead-acid battery shop as long as a minimum of five feet is maintained between the different battery chemistries.

(5) Eye wash fountains shall be provided or readily available for battery shop personnel. Contact the Industrial Systems Manager and Ground Safety Officer to determine requirements for, and locations of, eye wash fountains and/or emergency showers.

(6) Floors and battery racks shall be constructed of acid resistant material or painted with acid resistant paint.

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b. Personnel Precautions.

(1) General.

(a) Battery shop hazards, such as chemical burns or heavy concentrations of toxic gases are always a potential in battery servicing, To reduce this injury potential, all battery shop personnel shall be thoroughly trained and indoctrinated in safe operating practices.

(b) Rings must not be worn while working with batteries, since the loss of a finger can result if the ring fuses to the inter-cell connector or exposed terminal of a battery.

(c) Shop personnel shall wear rubber gloves, protective eye glasses and clothing when handling electrolyte or servicing batteries.

(d) The battery shop supervisor will ensure that all visitors entering the battery shop receive a safety briefing on the hazards located in the battery room or area before entry is authorized. If maintenance is being performed while visitors are in the battery shop or area, they are also required to wear appropriate PPE.

(e) Smoking and open flames shall be forbidden in battery shops. Care shall be exercised to eliminate sources of ignition from the immediate area of battery vents during charging or discharging operations when hydrogen concentrations are maximum.

(f) Do not use the same tools and materiels such as screwdrivers, wrenches, syringes, hydrometers, and gloves for both types of batteries. If there is a shortage of tools and it becomes necessary to use the same tools for both the nickel-cadmium and lead-acid batteries, neutralize the tools of any acid contamination prior to use on nickel-cadmium batteries.

(g) Under no circumstances should a wire brush be used for cleaning. Ensure cell vents are closed before attempting to clean.

(h) Lifting devices and hand trucks with rubber tires shall be utilized when handling heavy batteries. Where manual lifting is required to remove and replace heavy batteries request assistance.

WARNING

NEVER POUR WATER INTO THE ELECTROLYTE, AS INTENSE HEAT IS GENERATED AND MAY RESULT IN BURNS.

(i) To mix electrolyte with water, always pour the electrolyte into the water slowly.

(2) Vented Ni-Cad Batteries.

(a) The electrolyte used in vented nickel-cadmium batteries is a strong solution of potassium hydroxide that is alkaline and corrosive. Serious burns will result if the electrolyte comes in contact with any part of the body. Use rubber gloves, rubber apron, and face shield when handling the electrolyte.

- If the electrolyte gets on the skin, wash affected areas with large quantities of water or take shower with soap and water immediately. Seek medical attention in the event of skin burn or if irritation persists.
- If the electrolyte gets into the eyes, flush the eyes immediately with large quantities of water for at least 15 minutes. Seek immediate medical attention.

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- If electrolyte has been taken internally, drink large quantities of water and seek immediate medical attention.

(b) During removal or installation of cells, or removal or loosening of vent caps, a face shield shall be worn to protect the eyes from electrolyte spray. This might occur when cells are removed or squeezed into place or when vent caps are removed.

(c) Exercise extreme care when working around the top of the battery. Do not drop uninsulated tools into the top of the battery assembly. Severe sparking or flashes will result, with possible harm to personnel and damage to tools, equipment, and the battery. Tools used for servicing nickel-cadmium batteries will be insulated. Rings must not be worn while working with batteries, since the loss of a finger can result if the ring fuses to the inter-cell connector. Tools such as sockets, ratchet handles, and other tools used in servicing Ni-Cad batteries may be locally insulated by using heat shrink tubing. This heat shrink tubing will be inspected daily to ensure serviceability and replaced when required.

(d) Since the hydrogen gas generated by nickel-cadmium batteries is explosive, a sufficient accumulation of the gas can be set off by flames, sparks, or bad electrical connections.

(e) The electrolyte level of the nickel-cadmium battery will not be adjusted in the aircraft. Such an adjustment would create the risk of overfilling and result in overflow and possible damage during charging.

(f) Potassium hydroxide is somewhat corrosive to glass. All glass containers, hydrometers, or other devices used that contain glass should be thoroughly washed after their contact with the electrolyte.

(g) If previous troubleshooting tests have located such problems as defective cells, electrolyte leakage, or loose connections, do not perform capacity test until the necessary repairs are made and the battery is charged.

(h) Check the battery temperature occasionally during the charge. If the battery case begins to heat excessively (reaches 115 °F), it may be necessary to add water to the affected cells or discontinue charging until the battery cools. Water can be added to the individual cells, using a squeeze bottle. Add water until the electrolyte is visible above the baffle plate. As the charge proceeds it may be necessary to remove any excess electrolyte as the level increases.

(i) The electrolyte level must not be adjusted until the battery has been charged and allowed to sit for 2 hours, at which time the level will be checked.

(j) When rinsing the battery, do not allow water to enter the cell. Water will dilute the electrolyte, which will then require replacement. It will also cause the cell to boil over when the battery is recharged.

(k) Do not add water to a nickel-cadmium battery that is in an unknown state of charge. If water is added to the battery when it is in an unknown state of charge, there is serious danger that the cells will be overfilled. This condition will have such serious effects as overflow during flight charging, corrosion of battery hardware, and rupture of cell cases should vents become clogged.

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(l) Gassing and the chance of electrolyte overflow increase with higher temperature for a given charging voltage. Excessive gassing and spewing of electrolyte will cause corrosion of battery hardware and loss of electrolyte. This loss will decrease battery performance and possibly cause the cell vents to become clogged, which may lead to cell rupture and other damage. Should the cells become dry from the loss of electrolyte, they will heat up and be destroyed. The inability of a nickel-cadmium battery to deliver capacity at high or low temperatures will likewise result.

(m) Undercharging will result in poor battery performance, while overcharging and high temperatures will cause excessive gassing and spewing of the electrolyte, which will also lower the performance and possibly cause damage to the battery.

(n) The vent outlet on each side of the case and the vent lines to which they are attached must be free and unobstructed at all times, otherwise, gases may build up in the battery case, resulting in an explosion. Also, the vent openings on the inside of the battery case shall be checked to assure that there are no obstructions. The rubber liners have some times closed off these openings, causing explosions or bulging of the case because of pressure buildup.

(o) For safety reasons, and because replacement cells are shipped in a discharged condition, it is important that the battery be discharged before attempting to replace a defective cell.

(p) Battery terminals will be covered by a protective device, plastic covers, etc., during handling of charged battery to and from the aircraft or SE and while being stored after charge. This will prevent accidental shorting during handling.

(3) Vented Lead-acid Batteries. Batteries of the lead-acid type shall be located in ventilated, fireproof rooms. Safety precautions will be performed as follows:

(a) Shop personnel shall wear rubber gloves, protective eye glasses and clothing when handling electrolyte or servicing batteries.

(b) To mix electrolyte with water, always pour the electrolyte into the water slowly.

(c) Never apply heat to a lead-acid battery which has been removed from the charging line or has been rapidly discharged under a heavy load. Under these conditions batteries are usually releasing gas and may explode.

(d) Lifting devices and hand trucks with rubber tires shall be utilized when handling heavy batteries. Where manual lifting is required to remove and replace heavy batteries, request assistance.

(e) Battery shop hazards, such as chemical burns or heavy concentrations of toxic gases are always a potential in battery servicing. To reduce this injury potential, all battery shop personnel shall be thoroughly trained and indoctrinated in safe operating practices.

(f) Smoking and open flames shall be forbidden in battery shops. Care shall be exercised to eliminate sources of ignition from the immediate area of battery vents during charging or discharging operations when hydrogen concentrations are maximum.

(g) Floors and battery racks shall be constructed of acid resistant materiel or painted with acid resistant paint. Eye wash fountains shall be provided or readily available for battery shop personnel.

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(h) Battery shops shall include provisions for diffusion of flammable gases to prevent accumulation of explosive mixtures. If electrical exhaust fans are installed, they shall be certified explosion proof.

(4) Sealed Lead-acid Batteries.

(a) Sealed lead-acid batteries require little maintenance, other than a capacity check normally performed once a year.

(b) Do not overcharge sealed batteries. Charge only in accordance with the applicable publication or procedural text.

(c) A five foot distance must be must maintained from other batteries when charging a sealed lead-acid battery in a nickel-cadmium battery shop.

6. Special Handling Procedures For MOS (Metal-Oxide-Semiconductor) Devices. MOS devices require special handling procedures since these devices are easily damaged by operators, high electrostatic or AC voltages on poorly grounded equipment, soldering irons, or work areas. To prevent electrical and mechanical damage, the following precautions should be observed when handling/replacing MOS devices or assemblies.

a. All equipment that comes in contact with the MOS devices must be grounded (i.e., test equipment, power supplies, soldering iron tips).

b. All power supplies should be checked to ensure that excessive voltage transients (70-100V) do not occur at turn-ON or turn-OFF.

c. To eliminate the possibility of damage by electrostatic discharge, all maintenance personnel should utilize a “personnel ground device.” A personnel ground device consists of a conductive bracelet, a 200K ohm resistor, a length of #20 standard copper insulated wire and a clip/clamp, connected in series and attached to an adequate “ground.”

d. All MOS devices or Shop Replaceable Units (SRUs) with MOS devices not in use should be stored in a conductive package so that all leads/pins are shorted via the package. This allows the SRU/device to be moved or stored by normal handling methods. Special metal foil lined packages, conductive foam, conductive plastic packages, or special shorting sockets/connectors may be used to ensure proper shorting.

e. All MOS devices and assemblies should be placed on a grounded bench surface (metal or conductive rubber) and the operator grounded before the devices or assemblies are removed from their special conductive packages. Conversely, the devices or assemblies should be placed in their conductive package before removal from the bench area. Make certain that all exposed leads are in contact with the conductive surfaces of the package.

f. Before inserting SRUs with MOS devices into test sockets or subassembly circuits, manually hold the SRU and the test equipment or subassembly chassis simultaneously to ensure all items have a common potential.

g. Care should be exercised when forming device leads in preparation for assembly. The leads should not be bent directly at the lead-to-seal interface, as this could break the seal leading to eventual failure of the device.

h. Pre-tin the device leads before final assembly. All soldering operations should be done as quickly as possible (while being consistent with established soldering techniques) to prevent excessive heating which could damage the device.

i. Care should be taken not to drop the SRU or MOS devices. High G-forces resulting from the drop can cause premature device failures.

7. Welding. Electronic arc welding equipment shall meet the design criteria of National Electrical Manufacturer’s Association “Requirements for Electric Arc Welding Apparatus,” and shall be installed, maintained, and operated in accordance with the provisions of USA Standards Committee Safety in Welding and Cutting, ANSI/ASCZ49.1–94.

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a. Arc Welding and Cutting Equipment. Arc welding and cutting equipment shall have disconnect switches or controllers installed on, or near, the welding machine. Terminals of the welding generator shall not be bonded to the frame of the welding machine. Cables free of splices shall be used between the electrode holder and welding machine. Fireproof screens/shields shall be used to shield other personnel from welding rays or flashes.

b. Gas Arc Welding. Inert gas tungsten arc welding shall not physically be performed on Coast Guard aircraft or in hangar spaces where aircraft are parked. Welding operations shall be performed on components which are removed from the aircraft and preferably in an approved facility or outside of hangars and away from parked aircraft.

c. Welding Inspection. Inspection of welding and cutting equipment shall be conducted at frequent intervals and records maintained at each maintenance facility. Any equipment found defective during inspections, or at any other time, shall be removed from service for repairs.

d. Compressed Chemicals. Portable cylinders of compressed fuel, gas, or oxygen shall be legibly marked, indicating either the chemical or trade name contents. All cylinders shall be stored in well ventilated areas. Oxygen cylinder storage shall be separate from fuel-gas cylinders or combustible materiels (especially oil or grease) by at least a distance of 20 feet, or have a noncombustible barrier at least 5 feet high and have a fire-resistance rating of at least 1/2 hour.

e. Flammable Gases. Oxygen or compressed flammable gases shall not be used as a substitute for compressed air.

f. Cylinders. Cylinders found to have leaking fittings or valves shall be taken into the open, away from potential sources of ignition and slowly drained of their contents.

g. Ventilation Systems. Welding shop exhaust or general ventilating systems shall be provided to minimize toxic fumes, gases, or dust which may cause respiratory afflictions or diseases.

8. Metal Shop. Metal shop safety will be performed by observing the following items:

a. Maintenance. Maintenance of powered equipment shall not be attempted until the equipment is shut down and control switch locked out or tagged.

b. Security of Materiel. All materiel undergoing work operations shall be secured in vises, clamps, or jigs.

c. Unattended Machinery. Shop machinery shall not be left unattended while operating.

d. Lifting Aids. Suitable mechanical lifting aids shall be used to position heavy stock in the machine.

e. Machine Guards. Machine guards shall not be removed while the equipment is in operation.

f. Burrs, Chips, and Metal Cuttings. Brushes shall be used to remove burrs, chips, and metal cuttings from machines, work tables, stands, and floors.

WARNING
DO NOT USE COMPRESSED AIR FOR THIS PURPOSE.

g. Cutting Procedures. Materiels undergoing cutting procedures shall not be measured while lathe is operating. Do not use hand pressure to stop spinning chucks.

h. Clothing and Protective Equipment. Loose clothing or neckties shall not be worn during lathe operations. Goggles or face shields SHALL be worn by personnel during any lathe operation.

9. Survival Shops. Survival shop safety will be performed by observing the following items:

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a. Sewing Machines. Sewing machines shall have effective guards to prevent operators' fingers from being drawn under the needle. Electric machines shall be properly grounded.

b. Cleaning Fluids. The use of cleaning fluids shall be done in well-ventilated rooms equipped with explosion proof exhaust fans.

c. Metal Safety Containers. Covered metal safety containers shall be provided for disposal of waste or rags saturated with flammable substances.

10. Paint Shop. Paint shop safety will be performed by observing the following items:

a. Housekeeping. Paint rooms will be kept clean and equipment stored in an orderly manner.

b. Fire Resistant Walls. Paint rooms shall be separated from other operations by fire resistant walls.

c. Spray Booths. Spray booths will be used in paint shops to minimize fire and explosion hazards. When paper is used to cover the spray booth walls, this paper will be removed and destroyed when contaminated.

d. Forced Air Ventilation. All paint spray booths shall be equipped with forced air ventilation to prevent accumulation of flammable and injurious vapors. Where water wash facilities are provided for small booths, they will have a minimum of 200 feet per minute linear air velocity across the face of the booth.

e. Aircraft Grounding. Aircraft shall be properly grounded before painting or using paint removers.

f. Fire Extinguishers. Suitable fire extinguishers shall be provided at all paint locations.

g. Disposal of Materiels. Covered metal cans shall be provided for disposal of rags, waste, and other materiels saturated with paint or flammable chemicals. These cans will be emptied daily.

h. Protective Clothing. Protective clothing shall be worn by paint shop personnel to prevent their ordinary clothing from being saturated with paint. This protective clothing will be stored in ventilated metal cabinets when not in use.

i. Paint Storage. Paint storage shall be isolated from the spray booths. Containers of not more than five gallon capacity will be used for storing paints and dopes. Large volume containers will be stored outside in a weather-sheltered area where possible.

j. Pressure Spray Equipment. All pressure spray equipment shall be inspected before use. Particular attention shall be given to pressure-reducing valves to make certain they function properly.

k. Cleaning of Equipment. Spray equipment shall be thoroughly cleaned with the proper solvent at the end of each working day to prevent paint from drying on the pressure and safety valves.

l. Minimum Spray Pressures. Minimum spray pressures will be used to avoid excessive accumulation of vapor in the air.

11. Hand Tool Safety. The following items apply to hand tool safety performance:

a. Use of Tools. All hand tools shall be kept in good repair and used only for the purpose for which they are designed.

b. Defective Tools. Tools having mushroomed heads, defective handles, worn parts, or other defects that will impair their strength or render them unsafe, shall be removed from service.

c. Storage Space. Suitable storage space such as bins, drawers, racks, or cabinets shall be provided for special hand tools when not in use.

d. Use of Tools on Ladders and Scaffolds. Tools shall not be left on ladders, scaffolds, tail stands, or overhead working spaces when not in use. When work is being

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performed overhead on ladders, scaffolds, or tail stands, containers shall be used to hold tools and prevent them from falling.

e. Throwing or Dropping of Tools. The practice of throwing tools from one location to another, from one mechanic to another, or dropping them to lower levels, shall not be permitted.

f. Carrying of Tools. Sharp-edged or pointed tools shall not be carried in pockets. All other tools which may project out of pockets shall be carried in safe containers.

g. FOD Prevention. Hand tools and wiping cloths will be immediately removed from enclosed or nearly inaccessible work areas of an aircraft being repaired, inspected, or modified. Tool control program shall be enforced; see Chapter 1.

12. Portable Power Tools (General). Portable power tools are types which receive power from electricity, air pressure, explosive charges, or rotating flexible cables. Personnel who are required to use portable power tools shall be thoroughly trained in safe operating practices.

13. Electric Power Tools. The following items apply to electric power tool safety performance:

a. Operating Standards. Personnel who use electric power tools will be responsible for being familiar with accepted safe operating standards and also with the general hazards of electricity.

b. Use Near Hazardous Materiels. Electric powered hand tools shall not be used near flammable or explosive type materiels unless they are approved as being explosion proof. Portable electric hand tools shall meet grounding requirements of the National Electrical Safety Code.

c. Use in Hangars with Fueled Aircraft. All electric power tools, switches, junction boxes, and regulators will be positioned at least 18 inches above the floor level in hangars which house fueled aircraft.

d. Abuse of Power Tools. Shop personnel will avoid abusing power cords or portable electric tools. Excessive stretching, scraping, kinking, driving mechanized or portable equipment over power cords, as well as exposure to grease and oil, will cause premature failure.

e. Cutting Edge Guards. Portable electric power saws will be equipped with guards that automatically completely enclose the cutting edge when not actually sawing.

f. Damaged Blades. Cracked, bent, or damaged blades will not be used.

g. Unattended Use. Power tools will not be left running unattended.

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14. Pneumatic Tools. The following items apply to pneumatic tool safety performance:

    a. Protection of Air Hoses. Air hoses on the floor shall be protected against damage from motorized equipment by building a runway over the hose.

    b. Inspection of Tools. Pneumatic tools shall be kept in good operating condition and thoroughly inspected at regular intervals. Particular attention shall be given to control and exhaust valves, hose connections, die clips on hammers, and chucks.

    c. Safety Retainers. Safety clips or retainers shall be installed on pneumatic impact tools to prevent dies and tools from being accidentally expelled from the barrel.

    d. Operating Valves. Before connecting compressed air supply lines to pneumatic tools, operators will make certain the main operating valves are turned off. This is not required on pneumatic quick-disconnect couplings with automatic shut off feature (poppet valve).

    e. Safety Lashing. Safety lashing shall be provided at connections between tool and hose, and at quick made-up type connections. This is not required on pneumatic quick-disconnect couplings with automatic shut off feature (poppet valve).

    f. Trip Hazards. Hoses shall not be laid over ladders, steps, scaffold, or walkways in such a manner as to create a trip hazard.

    g. Prohibited Uses of Compressed Air. The use of compressed air for blowing dirt from hands, face, or clothing is prohibited.

15. Portable Electronic Test Equipment. All portable electronic test equipment shall meet grounding requirements of the National Electrical Safety Code. This ensures the units are equipped with 3-wire AC cords and plugs.

B. HEALTH HAZARDS AND PROTECTIVE EQUIPMENT.

1. General. This section identifies health hazards and related safety practices associated with chemicals, noise, and radiation.

2. Chemical Hazards.

    a. Potential Health Hazards. Potential health hazards from the use of solvents depend on several of the following factors:

        (1) How the solvent is used.

        (2) How operators are exposed.

        (3) The duration of exposure.

        (4) The concentration of vapors in the workroom.

        (5) The relative toxicity hazard suggested by the threshold limit.

    b. Harmful Effects. Harmful effects from industrial solvent exposure come principally from skin contact and inhalation of vapors. From the industrial standpoint, harmful effects to the mouth and digestive tract are regarded as a mishap rather than a regular exposure hazard. The most common result of skin contact is dermatitis, although such an exposure can also be a source of body intake through skin absorption.

    c. Inhalation. The inhalation of excess solvent vapors may produce toxic effects. In some instances, this may result in impairments which have no discernible effects on health, but may cause a lack of coordination, drowsiness, or similar symptoms which lead to an increased possibility of an accident. In other instances, the blood, lungs, kidneys, liver, and gastrointestinal system, or other organs and tissues of the body, may be affected or seriously damaged.

    d. Poisoning. There are two kinds of solvent poisoning: acute and chronic. Acute poisoning results from inhalation of an excessive concentration within a short time. Chronic poisoning results from repeated daily exposures for extended or prolonged periods of time.

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e. Disposal. Hazardous wastes (fuel, oil, solvents, etc.) that require special handling are generated by day to day aircraft maintenance operations. All personnel must be aware of the dangers and damage that can result from improper disposal of hazardous waste. Specific guidance is contained in Hazardous Waste Management Manual, COMDTINST M16478.1 (series) and Aircraft Maintenance Potential Hazardous Waste Items, COMDTINST M16478.4 (series).

3. Dermatitis. The following items describe dermatitis causing chemicals:

a. Specific Skin Irritants. Most industrial solvents encountered in aircraft maintenance will dissolve the natural protecting fats and oils from the skin. Some solvents are primary irritants and may cause tissue destruction upon continuous or repeated contact; a few may be skin sensitizers. Petroleum based solvents, such as paints, varnishes, cutting oils, and strong soap, are a few of the hundreds of materiels which can be classified as specific skin irritants.

b. General Irritants. General irritants are dermatitis causing agents which produce similar effects on all persons under like conditions and include such substances and compounds as hydrochloric acid, hydrofluoric acid, sulfuric acid, sodium hydroxide, potassium hydroxide, alkalies; salts of metals, such as silver, chromium, mercury, zinc; and nonmetallic materiels such as chloral, phosphorus, and bromine.

c. Procedures and Protective Measures. Continued or repeated contact with most solvents may cause dermatitis. Consequently, operational procedures and protective measures should be followed to minimize skin contact.

4. Fire and Explosion. Most industrial solvents are flammable liquids and should be carefully handled in accordance with accepted standards. See the National Fire Code, Vol. 1, page 325-12, for specific flammable liquids and gases. Elimination of ignition sources is essential to preventing fires and explosions. The following protective safety measures shall be observed:

a. Open Flames. Open flames, such as open burners, gas pilot lights, welding, lighted cigarettes, matches, exhaust sparks from internal combustion engines, and sparks from metal tools, shall be prohibited in work areas where flammable solvents are used.

b. Preventing Accumulation of Static Charges. Prevent the accumulation of static charges and resulting sparks by electrical grounding and bonding of flammable solvent containers and storage cabinets.

c. Inspection of Hazardous Areas. Flammable solvent hazardous areas shall be inspected periodically for spontaneous combustion, overheated bearings, exposed electrical heating elements, electric light bulbs, and filaments.

d. Electric Spark Ignition. Electric spark ignition shall be prevented by the use of explosion proof electrical switches, motors, and controls in the work area where flammable solvents are used.

e. Solvent Fires. Inert gases shall be used for protection against solvent fires. Carbon dioxide (CO_2) fire extinguishers are most effective in putting out solvent fires. Nitrogen gas should be used for purging solvent gases from equipment or piping systems and in welding of solvent containers (hot work).

f. Good Housekeeping. Good housekeeping is an essential requirement where solvents are used, stored, and housed. Leaky spigots shall be repaired immediately. Spills shall be cleaned up promptly by workers, using protective equipment. All solvent soaked cloths or waste shall be disposed of in airtight metal containers and removed from the work area.

5. Protective Clothing. Proper protective clothing safety measures are described in the following items:

a. Exposure to Severe Heat and Humidity. Operations involving exposure of personnel to heat or humidity in combinations in excess of the normal range of temperatures for the comfort zone shall be considered for using one of the following types of protection: protective clothing, reflective shielding, and improved ventilation.

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b. Exposure to Temperatures Below the Comfort Zone. Protective clothing shall be used where operations involving personnel exposed to temperatures below the comfort zone exist (flight line personnel, etc.).

6. Ventilation. An adequate system of ventilation shall be provided in all areas where finishing materiels are stored, mixed, or sprayed because of the fire, explosion, and health hazards involved. Particular attention should be directed to painting operations in enclosed rooms. Adequacy of ventilation in such areas shall be determined and approved by the safety officer or committee. Proper ventilation safety measures will be achieved by observing the following items:

   a. Concentration of Toxic Materiels. The concentration of solvents or toxic constituents shall not be allowed to exceed the maximum allowable concentration in the breathing zone. The table of chemical hazards listed in the National Safety Council's Accident Prevention Manual for Industrial Operations, chapter 42, shall be referred to for the specific toxic materiels.

   b. Drying Areas. Drying areas also contribute to potential fume exposures, and ventilation shall be provided in those areas where an excessive concentration may develop.

   c. Air Supply. Air supply or make-up air provisions shall be made where appreciable air is being exhausted by spray booths or other exhaust provisions.

   d. Improper Use of Solvents. Solvents shall not be used for removing paint or grease coatings from the skin. Suitable creams and cleansers not injurious to the skin shall be provided and used by personnel for cleaning the skin.

   e. Toxic Fumes. Toxic fumes shall not be created where they are ingested into heating and ventilation systems, thereby exposing other personnel to possible acute poisoning.

7. Illumination. Offices, workrooms, stairways, corridors, passageways, and hangars shall be adequately lighted while work is in progress by observing the following items:

   a. Measurement for Lighting Minimums. Measurements by the use of a light meter calibrated in foot-candles shall be taken to evaluate the amount of lighting provided in working areas and at the work level in line with the task being performed. The criteria for lighting minimums are found in the Civil Engineering Manual, COMDTINST M11000 (series).

   b. Improvement of Light Levels. Where the light level falls appreciably below the recommended level, steps shall be taken to improve the light level as funds and work can be accomplished.

   c. Maintenance and Cleanliness of Lights. Maximum use should be made of proper maintenance and cleanliness of lights.

   d. Proper Painting. Proper painting of ceilings and walls for light reflection should also be used to give maximum light without glare.

   e. Supplementing General Lighting. Individual task lights may be used to supplement general lighting where the level needed is considerably above the general area lighting required.

8. Noise Hazards. Coast Guard policy regarding noise hazards and hearing conservation is contained in the Safety and Environmental Health Manual, COMDTINST M5100.47 (series).

9. Personal Protective Equipment. The following items describe safety guidelines to follow when using personal protective equipment:

   a. Elimination of Unsafe Acts and Conditions. Personal protective equipment will not be used as a substitute for the elimination of unsafe acts and conditions.

   b. Respirator Equipment. Air line respirator equipment will be used in extremely high concentrations of toxic gases and vapors, i.e., for personnel entering into aircraft fuel tanks. Personnel will wear white duck or cotton overalls which have no metal

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accessories or buttons. Non-sparking tools shall be used near open fuel cells or taken into the fuel cell.

c. Chemical Cartridge Respirators. Chemical cartridge respirators shall be used in spray painting operations in hangars and paint shops.

d. Goggles and Face Shields. Goggles and face shields will be used on all metal grinding, drilling, reaming, and cutting operations.

e. Head Protection. Head protection shall be provided for personnel working in, under, and engaged in taxiing aircraft or in any area where head strikes are a potential hazard.

f. Welding Operations. Welding operations require the use of helmets, goggles, or eye shields with the proper lenses for the operation being performed. Protective aprons, sleeves, and gloves will be used in the welding operation.

g. Protective Hoods and Suits. Protective acid hoods and suits will be used in the aircraft paint stripping and cleaning operation.

h. Bench Cans. Bench cans will be used where small parts are customarily cleaned with flammable liquids.

i. Disposal of Oily Waste. Self-closing airtight metal cans will be used for disposal of oily waste.

j. Safety Cans. Safety cans will be used for carrying and handling small quantities of flammable liquid.

k. Explosion-Proof Flashlights. Explosion-proof flashlights will be used by personnel working in or inspecting an opening in an aircraft fuel tank.

10. Eye Protection. Eye hazardous areas, occupations or trades, equipment or work, shall be determined in accordance with the following criteria:

a. Eye Hazardous Work. Eye hazardous equipment or work is understood to include all machines, work outfits, processes, or procedures which produce high impact particles, burns, acid or caustic splashes, or other effects which may produce eye injury.

b. Eye Hazardous Areas. Eye hazardous areas are determined by the existence of eye hazardous equipment. Each piece of eye hazardous equipment creates a danger zone in its vicinity. The overlapping of such zones creates an eye hazardous area.

c. Exposure to Fine Materiel or Particles. Exposure to dust or other fine materiel or particles blown by the wind should not ordinarily be considered as determining which piece of equipment, type of work, or work area is eye hazardous.

d. Identification of Isolated Eye-Hazardous Zones. If eye hazardous zones are isolated within an area, then they should be identified separately. All personnel entering such areas or zones shall be provided with and shall wear eye protection.

11. Composite Materiels Precautions. The following safety precautions must be strictly observed while repairing or removing moisture from advanced composite structures. General Advanced Composite Repair Processes Manual, AFTO 1-1-690 applies.

a. Damaged composite components may be hazardous to your health. Single fibers can easily penetrate the skin, break off, and become lodged beneath the skin. Sharp tweezers and a magnification lens are generally required to remove the fiber. Graphite composite components damaged by fire may be covered with dust. Single-fiber particles with a diameter of three to four microns and length less than 0.1mm pose the greatest threat to the respiratory system. Respiratory protection is necessary in operations where dust exists or is generated. The dust should be removed through a vacuum system and disposed of properly as hazardous materiel. Eye protection, consisting of safety goggles or a face shield, is also recommended for use in work involving tear down or in any operation where the likelihood of airborne fibers exists. Blowing is not recommended as a means of cleaning.

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b. If the repair is made while the component is on the aircraft, the aircraft and a repair cart, if used, should be statically grounded. Only approved, explosion-proof electrical equipment and pneumatic equipment should be used. Electrical equipment should be grounded while in operation.

c. For repairs made over a fuel tank area, the fuel tank shall be purged and checked continuously for explosive mixtures and the repair area kept well ventilated. Fire fighting equipment shall be available, and special precautions shall be taken while working with flammable materiels.

d. Adequate ventilation shall be provided during mixing and use of adhesives, solvents, and cleaning solvents.

e. Heat-insulating gloves shall be worn when handling hot equipment and repair materiels. Respirators shall be worn for operations creating excess dust, such as the sanding of composite materiels.

f. Pregnant personnel shall not work with composites.

12. Hazardous Materiel. All units will reference the Coast Guard Hazardous Waste Management Manual, COMDTINST M16478 (series).

C. FIRE PREVENTION.

1. General. Fire and explosions are an ever present hazard in aircraft maintenance and handling operations. Extreme care is required by all personnel to avoid the dangers of fire.

2. Fire Prevention Factors. The following basic items shall be observed for the prevention of fires and explosions:

a. A qualified fire guard, adequately equipped with CO_2, Halon, or dry chemical fire extinguisher, shall be stationed near the aircraft during engine starting. The fire guard will be in a position visible to the pilot or copilot and have a clear view of, and quick access to, the engine being started. He or she will stand in readiness until all engines are operating and the danger of fire is no longer present. See aircraft ground handling safety, in this chapter, for additional duties of a fire guard.

NOTE

The purchase of Halon fire extinguishers for flight line, hangar, and shop use is prohibited. Existing Halon fire extinguishers may continue to be used and serviced as long as it is economically feasible. Should the purchase of replacement fire extinguishers be necessary, flight line fire extinguishers shall be 150 pound dry chemical type fire extinguishers. Hangar and shop fire extinguishers shall be either CO_2 or dry chemical as recommended by the local fire marshal.

b. Designated smoking areas shall be established at each maintenance facility. Smoking shall not be permitted in hangar or ramp area or in shops where any flammable petroleum or chemical products are used or stored.

3. Housekeeping. Many industrial fires are the direct result of accumulations of oil-soaked and paint-saturated clothing, rags, waste, excelsior, and combustible refuse. Such materiel shall be deposited in noncombustible receptacles with self-closing covers that are provided for this purpose, and shall be removed from the work areas daily. The safety guidelines in the following items shall be observed:

a. Combustible materiels shall not be stored or allowed to accumulate in air or elevator shafts, stairways, in out-of-the-way corners, near electric motors or machinery, against steam pipes, or within 10 feet of any stove, furnace, or boiler.

b. Oil soaked, paint saturated clothing, rags, waste, or newspapers shall not be stored in locker cabinets and/or in locker rooms.

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c. Drip pans shall be used beneath aircraft engines in hangars or storage.

d. Stoves, heaters, gasoline torches, gas and electric heaters, and electric soldering irons and pots, glue pots, and other types of smaller heating units commonly used for shop and bench work shall be equipped with personnel protective devices such as shields and holders.

e. The risk of fire shall be minimized during cutting and drilling operations in iron, nickel, aluminum, magnesium, and other metals by using cutting or lubricating oils.

f. Oxidizing chemicals shall be protected and stored separately from combustible materiels.

g. Gases and vapors which are flammable shall be dispersed or evacuated by exhaust or blower systems.

h. Welding operations shall be protected with sheet metal, flameproof canvas, or asbestos curtains to prevent sparks from reaching combustible materiels nearby. Welding or cutting will not be permitted in or near rooms containing any flammable materiels.

4. First Aid Fire Appliances. Hand operated, portable fire extinguishers are first aid appliances provided for emergency use to extinguish or confine fires in their initial stages.

5. Fire Extinguishers. Fire extinguishers shall be placed only where they can be reached easily in the event of an emergency. The location of each extinguisher shall be clearly identified by signs or color markings. No extinguisher shall be blocked off by obstructions or placed in doorways or corridors where they are likely to be knocked off the wall by passing personnel or equipment. The following guidelines also apply to use of fire extinguishers:

a. All extinguishers shall be inspected, serviced, and maintained in accordance with the manufacturer instructions. Visual inspections shall be made monthly and recorded on a tag attached to the extinguisher.

b. No fire protection equipment or device shall be made inoperative and used for other purposes.

c. Flight line fire extinguisher requirements shall be IAW Ground Servicing Of Aircraft and Static Grounding/Bonding, AFTO 00-25-172.

D. AIRCRAFT MAINTENANCE AND FLIGHT LINE SAFETY.

WARNING

THE WEARING OF A RING(S) AND OTHER JEWELRY WHILE MAINTAINING AIRCRAFT IS PROHIBITED. FINGER DE-GLOVING, SNAG, AND ELECTROCUTION HAZARD PRESENTED BY EXPOSED JEWELRY IS A PERSONNEL SAFETY HAZARD.

1. General. Good housekeeping in hangars, shops, and on the flight line is essential to personnel safety and efficient maintenance. The highest standards of orderly work arrangements and cleanliness shall be observed during the maintenance, overhaul, and flight line readying of aircraft. Where continuous work shifts are established, the outgoing shift shall conduct an inventory and account for their tools, remove and properly store rollaway boxes, all work stands, maintenance stands, hoses, electrical cords, hoists, crates, and boxes that are superfluous to the task or mission to be accomplished.

2. Static Electrical Inspection, Testing, and Identification Procedures. (See AFM 85-16 and MIL-HDBK-274 (AS) NOTICE 1.)

a. Approved Static Grounds. Approved static grounds are provided for the purpose of conducting electrostatic charges and stray electrical currents to a ground potential. These electrostatic voltages may be as high as 50,000 volts with low currents and consequently, the static ground resistance may be as high as 10,000 ohms; lower resistance is preferred. The purpose of an approved static ground interconnected

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with aircraft and support equipment is to place all components of the system to equal electrical potential to prevent arcing (or sparking).

b. Testing Static Grounds. All static grounds will have resistances of less than 10,000 ohms. All existing static grounds will be tested every 14 months in accordance with MIL-HDBK-274(AS). Any static ground with a resistance greater than 10,000 ohms will be removed or replaced. Any static ground mechanically damaged will be repaired and retested.

3. Safety Lanes. Aisles and clear space shall be maintained to assure access to personnel exits, sprinkler control valves, stand pipe hose, fire extinguishers, and any other fire fighting or control equipment.

4. Cords and Hoses. Power cords and air hoses shall be straightened, coiled, and properly stored when not in use.

5. Spills - Oil and Grease. Drip pans shall be utilized to eliminate engine drippings on hangar floors. Oil, grease, and other slippery substances spilled on hangar or shop floors shall be immediately removed or covered with absorbent materiel.

6. Spills - Fuel. Spills of fuels are classified into one of the three following groups:

a. Spills involving an area of 18 inches or less in any dimension (small priming spills) are normally of minor consequence. Ramp personnel shall stand by until the aircraft is dispatched.

b. Spills not over 10 feet in any dimension or not over 50 square feet in area and not of a continuing nature shall have a fire guard posted, up wind, with a foam-type or Halon-type fire extinguisher until the area is inert and purged.

CAUTION

HALON DOES NOT HAVE FLASHBACK PREVENTION CAPABILITIES.

c. Spills over 50 square feet or of a continuing nature shall be immediately reported to the supervisor in charge, who shall notify the airport or local fire department to inert the spill. Anyone in the spill area shall leave at once.

7. Solvents. Maintenance personnel shall not clean aircraft parts, hangar floors, equipment, or clothing with flammable solvents. All cleaning shall be done with high flash point or nonflammable substances or liquids. Solvent soaked waste, rags, and wiping cloths shall be disposed of in self-closing airtight metal containers and disposed of at the end of the day. See the Hazardous Waste Management Manual, COMDTINST M16478.1 (series), for disposal guidance.

8. Work Stands. Suitable work stands shall be provided and used during maintenance and overhaul operations when access to the aircraft is not possible from the ground level. Temporary improvised scaffolds or stands may be used if approved by the safety officer. Treads or other walking surfaces which become slippery when worn shall be repaired or made safe by the use of abrasive or nonskid surfacing materiel. Guard rails shall be used on all maintenance work stands. Wheel locks, brakes, chocks, and jacks shall be utilized to secure work stands while in use or storage.

9. Maintenance Stands. Personnel maintenance stands and other related equipment used on aircraft parking areas will be stored in hangars or secured outside in such a manner as to avoid the possibility of collision or accidental contact with aircraft, vehicles, or other equipment. Prior to use, equipment shall be inspected to ensure that brakes, jacks, wheel locks, securing cables, or anchor connections are serviceable, so that the equipment cannot be accidentally moved by wind, propeller wash, or jet blast. Particular care will be used when moving maintenance stands and platforms to avoid overturning and striking aircraft or other equipment.

10. Engine Changes: Making Electrical Disconnects Safe. During engine change, fire hazards can result from failure to de-energize electrical systems prior to disconnecting such systems which are in close proximity to flammable vapors. Prior to engine change, the aircraft shall be

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grounded to eliminate static charges. Ignitor circuits shall be grounded when disconnected at the fire wall. Consult the applicable Maintenance Procedure Card (MPC) or technical publications for detailed information and also observe the following guidelines:

a. Electrical systems affected during an engine change or removal/installation shall be deenergized prior to the removal of the engine. Electrical systems shall remain deenergized until flammable vapors are removed. Such flammable vapors may accumulate during the making and breaking of flammable fluid line connections.

b. Personnel performing an engine change shall be advised when the electrical systems are deenergized and reenergized. The deenergized circuits shall be tagged or locked out so that anyone attempting to energize them will be aware that others may be endangered by his or her action.

c. Electrical and fluid line disconnects shall be protected against accidental contact with dirt and moisture during the disconnect period by tight-fitting blind plugs, tape wrapping, or both.

11. Jacking of Aircraft. Extensive damage to aircraft and serious injury to personnel result from careless or improper jacking procedures. Jacking procedures outlined in the specific Aviation Computerized Maintenance System (ACMS) MPC or aircraft maintenance manual shall be strictly adhered to. As an added safety measure, jacks will be inspected before use to determine the specific lifting capacity, proper functioning of safety locks, condition of pins, and general serviceability.

WARNING

SEVERAL TYPES OF TRIPOD JACKS HAVE A SEPARATE RESERVOIR MOUNTED TO ONE LEG WITH A QUICK RELEASE HANDLE. ENSURE THAT THE RESERVOIR IS FIRMLY ATTACHED AND THE HANDLE IS SAFETIED BEFORE JACKING. ALSO, ENSURE THE HAND PUMP IS FIRMLY ATTACHED.

Before raising aircraft on jacks, all work stands and other equipment shall be removed from under and near the aircraft. Personnel shall not remain in the aircraft while it is being raised or lowered, unless ACMS MPC or maintenance manual procedures require such practice for observing leveling instruments in the aircraft. Only the prescribed jack pads and correct adapters to jack screw extensions will be installed. Install safety stands of suitable design and capacity under the wings and tail of the aircraft after it has been raised and leveled. Keep the area under the aircraft clear of all unauthorized personnel and equipment.

NOTE

For aircraft undergoing troubleshooting or maintenance on the landing gear retraction system, jacks shall be placed under the aircraft to prevent injuries to personnel or damage to aircraft in the event the gear is retracted inadvertently. Where applicable ACMS MPCs or maintenance manuals give specific procedures or methods which will positively prevent the landing gear from retracting, this requirement may be waived.

12. Jack Safety Locks. Jacks equipped with locking pins or nuts shall be set after jacking has been completed. On collet-equipped jacks, the collet shall be kept within two threads of the lift tube cylinders during raising and screwed down firmly to the cylinder after jacking is completed to prevent settling. The collet shall also be kept within two threads of all lower lift tube cylinders when lowering to prevent aircraft damage should the jack collapse.

13. Outside Jacking. Outside jacking of aircraft will be permitted where wind conditions are favorable. ACMS or maintenance manual procedures relating to wind velocity shall be observed where these procedures are available. Wind velocity not-to-exceed 15 miles per hour shall be considered the maximum. Always ensure jacks are situated on a flat, level, and hard surface before jacking.

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14. Releasing Jacks. Before releasing jack pressure and lowering the aircraft, personnel shall make certain that all cribbing, work stands, equipment, and personnel are clear of the aircraft. Personnel shall ascertain that the landing gear is down, locked, and all ground locking devices are properly installed. On collet-equipped jacks, the collet shall be kept within two threads of all lift tube cylinders while lowering.

15. Aircraft Tire Mounting. Mounting or removing heavy aircraft tires by maintenance personnel shall be aided by the use of tire dollies and other appropriate lifting and mounting devices to prevent personnel injury. Uninstalled tires shall be inflated in tire cage guards. Extreme caution is required while inflating high-pressure tires to avoid over-inflation, possibly resulting in personnel injury. Pressure regulators shall be used to eliminate the possibility of over-inflation of tires.

16. Weight Testing of Lifting Devices. Facility weight lifting devices (e.g., overhead hoist, cranes) used at aviation units shall be tested in accordance with the Civil Engineering Manual, COMDTINST M11000 (series). Aeronautical equipment (e.g., engine, blade, and prop slings/lifting devices) shall be tested IAW NAVAIR 17–1–114. ACMS special requirements (MSR) should be used to record periodic inspections/testing.

17. Welding on Aircraft. Welding shall not normally be permitted on aircraft in hangars. When welding on aircraft is required, the procedure outlined in applicable technical orders will be followed. Safety procedures must be enforced during the welding process.

18. Oxygen Hazards and Handling Precautions. It is imperative that the highest standard of cleanliness be observed in handling oxygen. Special precautions when handling oxygen are as follows:

    a. Hands and maintenance equipment should be clean and free from oil and grease before using oxygen equipment; do not wear greasy gloves or clothing.

    b. Oil or grease must never be allowed to come into contact with or be used in the presence of oxygen cylinders, valves, regulators, gauges, or fittings.

    c. A spark is not necessary to explode oxygen. The chemical reaction of fuel, gases, or oil combined with oxygen is sufficient to develop spontaneous combustion, causing an explosion.

    d. Never use oxygen from a cylinder without reducing the pressure through a regulator.

    e. Never permit oxygen cylinders to come into contact with electrical welding circuits or apparatus.

    f. Do not allow sparks or flames from welding, cutting torch, or any other source to contact cylinders.

    g. Never attempt to mix other gases or compressed air in an oxygen cylinder.

    h. Do not confuse air with oxygen. Oxygen is one of several elements contained in air and should always be described by its proper name. Any attempt to use oxygen in place of compressed air is apt to result in an accident. NEVER use oxygen for pneumatic tools, as a pressure agent in oil reservoirs, for paint spraying, or for any use other than breathing, welding, or cutting.

    i. Do not store oxygen cylinders in the same bin or cabinet with any materiels which are likely to start or accelerate fire.

    j. Oxygen cylinders must not be stored with acetylene or other combustible gas cylinders in an unventilated place.

    k. Do not store oxygen cylinders and apparatus under moving machinery, cranes, or belts where oil and grease may drop and cause explosion and fire.

    l. Before any attempt is made to connect oxygen cylinders to oxygen systems, ensure that each cylinder is correctly identified as containing aviation breathing oxygen, by a white band around the green cylinder or the words “aviator’s breathing oxygen” painted on the cylinder.

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m. Do not deplete an oxygen bottle below 50 PSI.

19. Safeguarding Aircraft Breathing Oxygen Systems - Test and Repair. The following safety precautions apply to test and repair of aircraft oxygen systems:

a. Never attempt to repair or alter the oxygen system or charging equipment in other than established maintenance facilities. Field operations should be limited to the minimum test needed to ensure tightness and correct operation of the aircraft system.

b. When flow testing the aircraft system, use the minimum amount of oxygen necessary to check the system.

c. Pressure shall be released before attempting to tighten or loosen any oxygen tubing or unions. This does not include connecting or disconnecting the types of containers which incorporate self-opening and self-venting valves.

d. When making tests of oxygen distribution lines, close the valves to isolate the supply container. Test the system in accordance with specific instructions outlined in the ACMS MPC or aircraft maintenance manual. Cleanliness is vital when checking for leaks. Do not permit any oil or grease to come into contact with any escaping oxygen. De-energize electrical circuits in the vicinity of the lines under test. Use only leak testing solutions specifically recommended for the purpose; clean off all solutions following the test.

e. When oxygen regulators or other oxygen system components on the pressure side of shutoff valves are removed for repair or replacement, the oxygen in the lines must be released and all disconnected lines plugged or capped.

20. Servicing Aircraft Breathing Oxygen Systems. The following precautions concerning servicing of aircraft breathing oxygen systems will be observed:

a. Before servicing any aircraft, maintenance personnel shall consult the specific ACMS MPC or aircraft maintenance manual to ascertain the proper type of servicing equipment to be used.

b. Two personnel shall be required to service the aircraft with gaseous oxygen. One person shall be stationed at the control valves of the servicing equipment and one person shall be stationed where the pressure in the aircraft system can be observed. Communication between the two personnel is required in case of an emergency.

c. Servicing control valve shall not be opened more than 3/4 turn so it can be shut off quickly in an emergency.

d. Aircraft shall not be serviced with oxygen during fueling, defueling, or other maintenance work which could provide a source of ignition. Oxygen servicing of aircraft shall be accomplished outside the hangar.

21. Dipping Fuel Tanks. Fuel measuring sticks are occasionally used to determine fuel levels in aircraft. Plastic measuring sticks are authorized, but subject to the following conditions:

a. The measuring stick shall be momentarily grounded prior to insertion in the fuel cell.

b. Dipping shall be avoided during actual refueling.

c. When pressure refueling is used, dipping shall be avoided for at least 3 minutes after completion of the refueling operation.

22. Draining of Fuel from Aircraft. Draining fuel from aircraft is a dangerous operation and one from which serious damage or loss of property and life can result if all safety precautions are not strictly observed. When draining fuel from aircraft the following safety precautions shall be observed:

a. The aircraft shall be removed from the hangar for the removal of fuel from the tanks.

b. It is the prime responsibility of the supervisor in charge to determine that all persons working on or about the aircraft are advised that fuel is to be removed and all electrical power, internal and external, except on those aircraft where electrical power is essential to conduct the fuel draining operation, shall be disconnected.

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WARNING

ELECTRICAL POWER CONNECTION OR DISCONNECTION DURING FUEL DRAINING OPERATIONS IS PROHIBITED.

c. A complete ground of the aircraft and fuel truck is required. Aircraft must be connected to ground and to truck and the truck connected to ground.

d. Adequate fire equipment shall be placed near the aircraft and attended by persons qualified in the use of such equipment.

e. No open flames, smoking, etc., shall be allowed in the area during the removal of fuel from aircraft.

NOTE

These are considered to be minimum requirements. It is the duty of all persons involved to comply with the above and use sound judgment and extreme caution whenever fuel is being removed from aircraft. It is the responsibility of the person in charge of hangar operations to see that the above safety practices are complied with in all respects.

23. Purging Aircraft Fuel Tanks. Whenever a fuel tank is drained for the purpose of inspection, repair, removal, or storage, it shall be purged. The following general precautions are the minimum to be observed:

WARNING

BEFORE ENTERING ANY TANK FOR INSPECTION OR INITIATING REPAIRS, THE ACMS MPC OR SPECIFIC AIRCRAFT MAINTENANCE MANUAL SHALL ALSO BE CHECKED FOR ADDITIONAL SPECIAL PRECAUTIONS THAT ARE REQUIRED.

a. The aircraft and all equipment used in performing the operation must be properly grounded. This includes defueling equipment and any powered or pneumatic devices. Work stands shall be equipped with a personnel static discharge plate of copper or zinc which shall be affixed in a position such that personnel can contact the plate before coming in contact with the aircraft. High static electrical charges are created by the contact and separation of unlike substances, by any sort of motion of personnel or materiel, and are a constant source of danger when generated in the presence of fuels or flammable vapors.

b. The practice of using CO_2 extinguishers to inactivate fumes in tanks which contain or which have contained hydrocarbon products is prohibited. The Coast Guard Safety and Occupational Health Manual, COMDTINST M5100 (series) contains additional information regarding this subject.

c. Draining and purging fuel tanks shall be accomplished as a continuous operation without a lengthy time lapse between drain and purge tasks. Puddles of fuel in a tank evaporate and create an extremely dangerous atmosphere.

24. HH-60 External Fuel Tank Removal and Installation. This shall be performed in accordance with ACMS procedures. Note the safety precautions contained in these procedures.

25. Fuel Tank Entry Precautions. Aircraft fuel tanks are a permitted confined space as defined in Chapter 6, Safety and Environmental Health Manual, COMDTINST M5100.47 (series). Precautionary measures for fuel tank entry apply to all Coast Guard aircraft. Confined space entry and safety procedures contained in Chapter 6, Safety and Environmental Health Manual, COMDTINST M5100.47 (series), Inspection and Repair of Aircraft Integral Tanks and Fuel Cells, AFTO 1-1-3, Aircraft Fuel Cells & Tanks - Organ, Inter & Depot Maint, NAVAIR 01-1A-35, and applicable aircraft specific ACMS MPCs shall be followed.

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26. Aircraft Communications and Electronic Systems. Communications and electronic equipment used in USCG aircraft employ extremely high voltages requiring careful use and strict observance to safety standards. Pertinent minimum safety precautions to be observed by technicians who work on high voltage communications and electronic equipment are as follows:

    a. Repairs to communications equipment shall be made at a bench or in a shop located away from the aircraft. Radar and radio transmitting equipment shall not be operated, tested, or checked on the aircraft whenever fueling, defueling, tank repair operations, or any other similar hazardous operations are in progress. The radar antenna should not be operated within 300 feet of any fueling, defueling, or similar operation unless a dummy load is installed that prevents the energizing of the antenna.

    b. Electrical components shall not be exposed to electrical power of any kind during cleaning operation. Only nonflammable and noncorrosive cleaning solvents shall be used on communications and electronic equipment.

    c. Electrical systems shall be de-energized during maintenance work except in those cases where a live circuit is necessary in order to accomplish the required maintenance. Where more than one maintenance operation is being carried out at the same time and an electrical system is energized, steps shall be taken to inform personnel working on the aircraft that the system is energized. Provisions shall be made to tag or lock out de-energized circuits so that anyone attempting to energize them will be alerted to the resulting hazard to other maintenance operations.

27. Electric Cargo Trucks.

    a. The four wheel electric trucks used for moving cargo about the aircraft ramp and adjacent areas contain relays and sliding bar contactors that can cause arcing and sparking. Consequently, the vehicles are unsafe for use in areas where flammable liquids or explosive vapors exist.

    b. Warning decals have been provided to each activity for use on the electric cargo trucks. The decal should be placed in a conspicuous location on the dash of the vehicle. Additional decals can be obtained from Commanding Officer, ARSC, ATTN: Customer Service Section.

WARNING

THIS VEHICLE SHALL NOT BE OPERATED INSIDE AIRCRAFT HANGARS OR OTHER BUILDINGS UNLESS THE AREA IS WELL VENTILATED AND FREE OF SPILLED FUEL OR OTHER FLAMMABLE LIQUID. THIS VEHICLE SHALL NOT BE OPERATED WITHIN 50 FEET OF AIRCRAFT DURING FUELING/DEFUELING OPERATIONS OR IN THE EVENT OF AN AIRCRAFT FUEL SPILL.

28. 400–Hertz External Aircraft Power.

    a. 400 Hz external power shall include an aircraft interlock circuit, which will energize 400 Hz output contactor only after pins E and F of the aircraft service cable are plugged into the aircraft receptacle.

    b. The interlock circuit shall determine the presence or absence of the 28 VDC feedback signal from the aircraft and shall not allow the output disconnect to close if the 28 VDC signal is not present.

    c. If the output disconnect is closed when the 28 VDC is lost, the disconnect shall open within 2 seconds. The interlock circuit shall not draw more than 20 milliamperes from aircraft's 28 VDC circuit.

    d. The aircraft service cable shall be six conductor; four for power and two for aircraft interlock circuit, pins E and F.

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e. For testing purposes, a two-position switch may be provided.

(1) Normal for aircraft loads.

(2) Bypass for testing with dummy load or no load, or for use with aircraft without 28 VDC.

E. AIRCRAFT GROUND HANDLING SAFETY.

1. General. This section establishes detailed procedures for towing, engine run-up, and taxiing.

2. Responsibility. Each activity operating and maintaining USCG aircraft shall adhere to the following provisions:

a. Taxiing of aircraft should be held to a minimum by utilizing towing procedures whenever practical.

b. Added caution shall be observed when movement of aircraft is necessary during darkness and/or inclement weather. Taxi signalmen shall use illuminated wands whenever guiding aircraft at night.

c. Except in emergencies, aircraft will not be moved or operated unless the minimum approved crew, as specified in this section, is available and utilized.

3. Fire Guard. A qualified fire guard, adequately equipped with CO_2, Halon, or dry chemical fire extinguisher shall be stationed near the aircraft during all engine starts. The fire guard shall be visible to the pilot or copilot and have a clear view of, and quick access to, the engine being started. When practicable, the fire guard shall have intercommunication system (ICS) communications with the person starting the engine. The fire guard shall ensure that the engine, prop, helicopter rotor area, and jet blast or prop wash path is clear of foreign objects, personnel, or property that may be negatively affected. Fire fighting will normally be external to the engine and the fire will normally be fed by dripping or running fuel, oil, or hydraulic fluid. The fire guard should not introduce extinguishing agent into the engine on internal jet or turbine engine fires unless the fire cannot be controlled with the induction of air. The fire guard shall stand by until all engines are operating and danger of fire no longer exists.

4. Cockpit Checklist. The appropriate cockpit checklist shall be used for starting, operating, and testing aircraft engines. The checklist procedure shall be followed before, during, and after the operation.

5. Ground Power Units. Engine driven generators, heating and air-conditioning units shall be located as far as practical from refueling facilities, tank vents, and drains. Only qualified and authorized personnel shall start or operate ground power and auxiliary power units. Power units shall be positioned away from potential sources of aircraft fuel or fuel vapors and in a manner which clears all parts of the aircraft. Ground power units shall be equipped with a suitable capacity CO_2, Halon, or dry chemical fire extinguisher, or one shall be readily available at all times. Engine driven power units shall be shut down prior to connecting or disconnecting external power cables to the aircraft.

6. Towing Aircraft. Aircraft ground handling personnel shall be thoroughly familiar with all procedures pertaining to the types of aircraft being towed and the local operating procedures regarding the ground movement of aircraft. Newly assigned personnel will complete an adequately supervised on-the-job training program before assignment to ground handling aircraft. Only competent maintenance personnel, properly trained, will supervise the aircraft towing team.

a. Minimum Number of People Required. The minimum number of people employed on the towing team when towing aircraft in a congested area as defined by the Commanding Officer, shall be in accordance with the following table:

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NOTE

Each Aviation Unit is faced with different circumstances in regard to aircraft movement, i.e., hangar size, number and type aircraft, ramp space, proximity to other structures, etc. No one definition of congested area can be applied. Each Commanding Officer shall ensure their unit has a well defined towing plan. Parking and towing guidelines can be painted to aid in safe movement.

	HC-130	HU-25	HH-65	HH-60
Supervisor	X	NOTE 1	NOTE 1	NOTE 1
Vehicle Driver	X	X	X	X
Brakeman in Cockpit	X	X	X	X
Hydraulic Pressure Monitor	X			
Wing Walker (STBD)	X	X	X	X
Wing Walker (PORT)	X	X	X	X
Tail Walker	X	NOTE 2		

NOTE

1. The supervisor may double as either the vehicle driver or one of the wing walkers.

2. A tail walker is required when pushing the HU-25 into a congested area. Because of the swept-back wing of the HU-25, the wing walkers may provide for tail clearance during aircraft pulling (towing) operations.

b. The supervisor shall be in complete charge of the towing team and take a position that will ensure surveillance of the towing procedures and performance of other team members, normally in front of the tow vehicle. The supervisor shall stop the tow operation when alerted by any member. The operation shall not resume until the supervisor has personally checked the reason for the stop and determined that it is safe to resume.

The supervisor shall advise each tow team member of:

(1) Position and responsibility.

(2) All tow team members shall possess a whistle during towing operations. One long blast of the whistle shall be utilized to signal stop.

(3) Critical phases of aircraft movement.

c. The towing vehicle driver shall be responsible for operating their vehicle in a safe manner and shall obey emergency stop instructions given by any team member. The operator shall be a qualified driver.

d. A qualified person shall be in the pilot's seat of the towed aircraft to observe and operate the brakes as required by towing team signals. For HC-130 towing operations, another qualified person shall be assigned to maintain auxiliary hydraulic system pressure utilizing the hand pump.

e. The supervisor of the towing operation shall verify that the locking devices are set to proper position on aircraft prior to towing. The locking device(s) shall be reset after the tow bar has been removed from the aircraft.

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f. Under no circumstances shall personnel walk or ride between the nose wheel of an aircraft and the towing vehicle, nor will they ride on the outside of a moving aircraft. In the interest of personnel safety, no person (except in an emergency situation) shall attempt to board or leave a moving aircraft or towing vehicle.

g. The towing speed of the aircraft shall not exceed that of the walking team members. The aircraft's engines shall not be operated at any time while the aircraft is being towed into position.

h. The aircraft brake system shall be charged before each towing operation. Aircraft with faulty brakes shall only be towed into position for repair of brake systems, and then only with personnel standing by ready with chocks for emergency use. Chocks shall be readily available in case of any emergency during any towing operation.

i. To avoid possible personnel injury and aircraft damage during towing operations, requirements for the position of aircraft doors (open or closed) and ladders, and the use of gear down locks and pins during towing operations shall be clearly defined and delineated and will be promulgated as part of local unit or engineering towing instructions.

j. Prior to towing any aircraft, towing team members shall check all tires and landing gear struts for proper inflation.

k. When towing aircraft, the vehicle operator shall not jerk the aircraft or start and stop suddenly. Cockpit personnel can apply aircraft brakes at their discretion during towing operations.

l. Aircraft shall be parked in specified areas only. Generally, the distance left between rows of parked aircraft shall be enough to allow immediate access of emergency vehicles in case of fire and also permit free movement of equipment and materiels.

m. Prior to any movement of aircraft across runways or taxiways, contact shall be made with the airport control tower for clearance to proceed.

7. Engine Starts and Run-up. Prior to starting engines, the wheels shall be chocked and brakes set. The following precautions shall be observed:

a. The Commanding Officer shall designate engine run-up areas in accordance with airport procedures. Areas should be policed regularly for debris and should be adequately marked to prevent persons walking into jet or propeller blast.

b. Only personnel qualified in aircraft type and designated in writing by the Commanding Officer are authorized to start and run-up aircraft engines. They shall occupy the pilot's seat unless they are directly supervising a trainee and have physical contact with the engine controls. For HC-130 aircraft there shall be two people in the cockpit for all engine starts and run-ups. For HH-60 and HH-65 helicopters there shall be one person in the cockpit for all engine starts. Local engineering policies may dictate additional personnel in the cockpit.

c. All engine starts and run-ups shall be made in accordance with airport noise abatement procedures, appropriate checklist, aircraft flight manual, and/or operation manual.

d. Except in emergencies, all engine starts shall be made with a properly equipped fire guard standing by. This person shall ensure that all equipment in the aircraft or engine area has been removed or secured, and personnel are clear of air intake and exhaust hazard area of jet engines, prior to giving the "Clear-to-Start" signal.

e. All engine run-ups will normally be performed with cowling installed, and when possible, the nose of the aircraft pointed into the wind.

f. Maintenance on helicopter systems that are in close proximity to the rotor system will not be performed with the rotor turning due to the risk of serious injury.

g. The following procedures will be observed for leak checks after maintenance. The technician doing the leak check will be in direct ICS communication with the cockpit and wear a helmet, flight suit, flight gloves, and boots.

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WARNING

ENGINE COMPONENTS FROM THE COMBUSTION SECTION AFT ARE EXTREMELY HOT. DO NOT TOUCH.

WARNING

EXTREME NOISE HAZARD. FLIGHT HELMET (VISOR DOWN) AND HEARING PROTECTION ARE REQUIRED.

CAUTION

FOD HAZARD - SECURE ANY LOOSE GEAR THAT COULD BE INGESTED INTO THE INTAKE.

CAUTION

ONLY QUALIFIED PERSONNEL WILL BE ALLOWED TO PERFORM ENGINE LEAK CHECKS.

8. Aircraft Taxiing. This section describes the duties of the taxi signalman (plane director). Enclosure (4) illustrates standard taxi signals to be used for shore based operations. Shipboard operations are covered in Shipboard-Helicopter Operational Procedures, COMDTINST M3710.2 (series).

   a. Any time an aircraft is ready to taxi from the flight line or is returning to the line for spotting, it should be directed by one or more taxi signalmen, as necessary. Commanding Officers may authorize taxiing without taxi signalman providing the ramp has clearly defined taxi lines and parking spots.

   b. The taxi signalman should assume and maintain a position where the pilot's or qualified aircrew's eyes can be seen at all times. If it is necessary to lose sight of the pilot's eyes in changing positions, or for any reason, the taxi signalman should signal the pilot/aircrew to stop until a new position has been taken up.

   c. The taxi signalman has a definite position to maintain when directing aircraft, calculated to give all possible advantages. This position should be slightly ahead and in line with the wing tip on the pilot's side of the aircraft.

   d. When an aircraft is being taxied within 25 feet of obstructions, a minimum of one wing walker for each wing tip shall be provided. The taxi signalman must always be in a position to see the wing walkers and the pilot's eyes. Aircraft must not be taxied at anytime within five feet of obstructions.

   e. Directing aircraft at night requires extra precaution. The taxi strip and parking area should be inspected for work stands and any other mobile equipment which can damage an aircraft.

9. Aircraft Fueling Operations. The purpose of grounding and bonding the aircraft with the refueler/defueler systems during refueling and defueling operations is to equalize the static electrical potential between the incoming fuel and the fuel in the aircraft. It has been determined and supported by the National Fire Protection Association that grounding of aircraft during refueling/defueling has no effect on equalizing the static electrical potential between the aircraft and the refueler. For this reason, all aircraft being serviced at Coast Guard Aviation Units are only required to be bonded to the refueler/defueler system during fueling and defueling operations. The primary directive for Coast Guard fueling operations is the USCG Aviation Fuel Handling Procedures Manual COMDTINST M13001.1.

NOTE

The grounding and bonding criteria specified in AFTO 00-25-172 apply only to servicing of aircraft. In addition to these minimum requirements, Coast Guard aircraft are to be grounded whenever parked.

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a. Splash proof goggles/face shield shall be worn for all fueling operations.

b. Hot fueling operations are not allowed within 200 feet of an occupied building, unless operating under a waiver from Commandant (CG-41).

F. POLLUTION PREVENTION.

1. Scope. The Coast Guard is committed to an aggressive environmental program which fully supports compliance with environmental laws and regulations. It is Coast Guard policy that environmental compliance receive command priority at every level. Inherent in every mission area is the underlying obligation and responsibility as stewards of the land, sea, and air to make environmentally sound operational and budgetary decisions.

2. General. This section provides general information and establishes pollution prevention standards and procedures for all USCG aviation maintenance facilities. Maintenance managers, supervisors, and technicians should familiarize themselves with these standards and assume the responsibility for the protection of the environment with the provisions of this section.

3. Hazardous Waste Management. Hazardous waste disposal shall be in accordance with the Hazardous Waste Management Manual, COMDTINST M16478.1 (series). It is the responsibility of each aviation maintenance facility to establish guidelines that prevent the improper collection, storage, and/or disposal of regulated and non-regulated waste.

4. Hazardous Materiels Minimization. Each aviation facility shall have in place a procedure to routinely evaluate the procurement, storage, and use of hazardous materiels. This review will include the procurement of the proper materiels (as specified on the Authorized Chemical Use List or chemicals required for repair IAW original equipment manufacture (OEM) or approved technical orders), proper storage time (30 days for the shops, 90 days for supply), and the correct application of the product.

5. Management of Recoverable and Waste Liquid Petroleum Products. Management of Recoverable and Waste Liquid Petroleum Products, AFTO 42B-1-23 shall be used to supplement the applicable environmental regulations by providing procedures and requirements for the collection, segregation, storage, and disposition of Recoverable and Waste petroleum products which are generated through normal aircraft maintenance operations. Aviation Fuel Bowsers procured or constructed after 1 January 1995 for aircraft ground support shall meet the standard specifications contained in appendix A, AFTO 42B-1-23.

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CHAPTER 3. AIRCRAFT AND AERONAUTICAL RECORDS, REPORTS AND PUBLICATIONS

A. AIRCRAFT LOGBOOKS (RECORDS).

1. General. All activities having custody of USCG aircraft shall maintain aircraft logbooks and associated records for assigned aircraft and components in a proper and up-to-date status. Aircraft logbooks are an essential element of aeronautical technical discipline. They provide a history of maintenance, operation, and configuration control of the aircraft.

   a. Standardization of Records and Reports. USCG aircraft maintenance documentation is a compilation of Air Force, Navy, commercial, and Coast Guard developed procedures. This chapter provides specific guidance in the use of Coast Guard aircraft logs, records, and reports. Specific information regarding the completion of the following reports can be found in chapter 4 of this guide: Aircraft Status Record, Flight Schedule, Preflight Record, Flight Record, Flight Generated Maintenance Record, No-Fly Maintenance Record, Flight Safety Maintenance Document, Deferred Maintenance Record, Fuel/Defuel Record, Fuel Sample Record, and the Maintenance Discrepancy Report.

NOTE

The Engineering Officer or a designated representative shall conduct a monthly review of each aircraft logbook as a quality assurance check of Aviation Computerized Maintenance System (ACMS) management procedures. Particular attention should be directed to the airframe configuration report to verify that each installed component has a serial number displayed. In addition, the displayed serial number must correspond to the associated Significant Component History Report (SCHR) contained in the aircraft logbook. The person conducting the review shall sign and date the front of the logbook to document compliance.

   b. Required Logbook Forms and Format. The following forms are required, as ordered below, in each logbook for HH-65, HU-25, HH-60, and HC-130 aircraft:

FORM	TITLE
CG Form 290	Aerospace Vehicle Delivery Receipt
*OPNAV 4790/110	Aircraft Inventory Record
*OPNAV 4790/111	Aircraft Inventory Record Equipment List
*OPNAV 4790/112	Aircraft Inventory Record Shortages
*OPNAV 4790/104	Aircraft Inventory Record Certification and Record of Transfers
AFTO 781J	Airframe and Engine Operating Time and Cycle Information
AFTO 1-1B-50	Weight and Balance Data
CONFIG	ACMS Configuration Report
AFTO 103	Aircraft Missile Condition Report
SCHR	Significant Component History Report

*(See Enclosure (5) for sample forms)

NOTE

HC-130 aircraft utilize MPC 135000.0 in place of OPNAV 4790/111.

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NOTE

AFTO 103 is applicable to HC-130 aircraft only.

NOTE

HH-65 aircraft may utilize MPC 00001.0 in place of the OPNAV 4790 forms.

2. Specific Information.

a. All dates recorded on forms will be recorded by month, day, and year. Two numbers for month, two numbers for day, and two numbers for year (e.g., 4/03/99).

b. Accumulation of flight hours on the CG–4377 Part III shall be recorded to the nearest tenth of an hour. Entries on all other forms and records listed herein will be rounded to the nearest whole hour.

c. AFTO 781J. The following information shall be entered on the Airframe and Engine Operating Time and Cycle Information, AFTO 781J (manual entry or computer spreadsheet) for each aircraft type and maintained for one year. The 781J web report can be accessed in the ALMIS Decision Support System (DSS) Web Reports under "Unit Maintenance Reports."

(1) HC-130: Aircraft flight hours.

(2) HU-25: Aircraft flight hours, landings, engine (airframe) cycles number 1 and 2.

(3) HH-65: Aircraft flight hours, landings, engine starts (idle position) number 1 and 2, engine starts (flight position) number 1 and 2, airframe cycles NG (gas generator turbines) number 1 and 2, airframe cycles NP (engine power turbine speed) number 1 and 2, Zone B and C number 1 and 2.

(4) HH-60: Aircraft flight hours, low cycle fatigue (LCF) 1, LCF 2, engine operating hours (EOC), time-temperature index indicator (TTI).

d. Engine Cycle Tracking. Many engine components require cycle tracking. These components are identified in ACMS. Record engine cycle data as follows:

(1) ATF3. Engine cycle data shall be recorded on the Flight Generated Maintenance Record and/or the No-Fly Maintenance Record. An engine cycle is defined as follows: engine start; power lever advanced to 80% N1 or above; and engine shutdown. All three events must occur to obtain one cycle. Advances of the power lever above 80% N1 more than once between engine start and engine shutdown do not add additional cycles.

(2) Turbomeca Arriel 2C2 CG Turboshaft Engine.

(a) Pilots will note the Turbomeca Arriel 2C2 CG engine parameter data extracted from the aircraft Vehicle and Engine Multifunction Display (VEMD). This information shall be entered as a flight generated discrepancy in EAL or the paper form CG-4377, part III. This information shall be entered as such until EAL is revised to capture the Turbomeca C2C engine parameters via a fill-in form. This information shall be entered into the appropriate engine logbooks and 781J spreadsheets maintained by the Log Yeoman. HH65A/B engine start/Np cycle information: enter a whole number (1 – 99) in at least one of the blocks until further notice. Maintenance personnel are not required to enter HH65A/B engine start data.

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(b) The Log Yeoman will enter the date of flight, total flight time and landings the HH-65 Operating Time and Cycles Documentation Sheet using data from the DSS 781J web report while EAL is available or from the paper maintenance records during EAL contingency operations.

(c) Upon removal of a cycle tracked component from an aircraft, the Significant Component History Report (SCHR) shall be annotated with aircraft TSN and Ng/Np cycle count information.

Example: Component installed on acft No. 6500 at 459 acft hrs, acft Ng cycles - 50, acft Np cycles - 46. Component TSN - 60 hrs/TSO - 60 hrs, Ng cycles - 10, Np cycles - 7. Component removed from aircraft No. 6500 at 500 acft hrs, acft Ng cycles - 35, Np cycles 29.

e. ACMS Configuration Report. This computer generated report lists all serial number tracked components on an aircraft or major assembly. The report also details the actual serial numbers of all installed components. A current copy of the configuration report must be contained in each aircraft logbook.

NOTE

The absence of a serial number entry against a particular component indicates the component is not installed in the data base and required maintenance is not being scheduled against it.

f. Maintenance Due List (MDL). As a minimum, units shall print a new MDL once a month for each aircraft assigned to the unit. The new MDL should project all scheduled maintenance for calendar and hourly tasks for a 2 month operating period. Once the new MDL is printed, the old MDL may be discarded. The MDL can be accessed in the ALMIS Decision Support System (DSS) Web Reports under “Unit Maintenance Reports.”

g. Significant Component History Report (SCHR). This computer generated report maintains a record of significant maintenance actions on serial number tracked items. SCHRs are required to be maintained on all components listed on the aircraft configuration report. SCHR entries for removals, installations, Time Compliance Technical Order (TCTO) accomplishment, overhaul, and special inspections (i.e., over torque, overspeed) are automatic (including TSN, TSO, and cycles since new (CSN) entries) when the associated Maintenance Procedure Card (MPC) is properly entered. Other required entries must be separately entered into the data base using the appropriate ACMS form (see the ACMS User’s Guide - Aeronautical Engineering Process Guide, CGTO PG-85–00–10). Required SCHR entries include, but are not limited to the following:

(1) ARSC Engineering Services Requests (ESRs) that generate a structural repair.

(2) Aircraft hours and brief description of any mishap or incident requiring depot level repairs.

(3) Brief description of airframe or component repair.

(4) ATF3 engine first, second, and fifth stage turbine nozzle effective flow areas (EFA) shall be entered on appropriate SCHR. Baseline nozzle EFAs established during each test cell run shall be recorded on the engine SCHR. The EFA of the installed first stage shall be entered on the high pressure turbine module SCHR. The EFA of the installed second and fifth stage nozzle shall be entered on the engine SCHR.

(5) HH-65 airframe transmission deck leveling plate corrections entered on the airframe SCHR.

(6) HH-65 and HH-60 main rotor blade trim tab settings.

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(7) Date of manufacture of float bags, fuel cells, and pressurized containers which have a shelf life.

(8) Any information required to be entered on a SCHR by an MPC, maintenance text card, Technical Order, or TCTO.

(9) Dates of enrollment (inclusive) for all components enrolled in the Joint Oil Analysis Program, including location of lab.

(10) HU-25 dates of enrollment (inclusive) for all components enrolled in the Spectrometric Oil Analysis Program (SOAP).

(11) Date of suspension/resumption of an aircraft from active ACMS calendar tracking.

(12) HU-25 flight control rigging readings.

h. ACMS Maintenance Procedure Cards (MPC). An MPC shall be completed for any component with an existing removal/installation sign-off card anytime such component is removed or installed. As required by applicable maintenance directives, reasons, and signatures on the card attest to the following:

(1) Reason Removed Block.

TIME	ACMS scheduled removal.
TROUBLE (FAILURE)	Component fails to meet design function. Damaged parts or parts that are inoperable due to influences not included in design function should not be categorized as a TRBL (FAILURE).
CANNIBALIZATION	Component removed for installation on another asset.
OTHER	Reasons not defined above. Examples: component removed for maintenance accessibility, damage not due to design failure of component.

Remarks are required for all removals. Detailed explanations are required when TRBL or OTHER category is selected.

(2) Technician's Signature Block. The lead technician physically conducting the maintenance signs the MPC indicating that the aircraft maintenance was completed in accordance with all applicable maintenance directives.

(3) Quality Assurance Block. The Quality Assurance (QA) representative annotates the MPC (as required) indicating verification that the technician has completed the aircraft maintenance in accordance with all applicable maintenance directives. Furthermore, the QA representative shall ensure compliance with items listed in chapter 1.B. of this process guide.

(4) Review By Block. The Reviewer or Supervisor signs the MPC indicating that the card has been verified to be administratively accurate and is ready for electronic data entry. Signature in this block only serves a clerical function and does not constitute an additional QA check on the actual work accomplished.

i. Instructions for the Monthly Unit Operating Statistics (MORPT). (See Figure 3-1.)

(1) Record total hours available and total hours flown during the month by this aircraft type rounded to the nearest whole hour.

(2) The MORPT entry may only be entered by the activity owning the aircraft when the month ended.

(3) Report the individual aircraft operating statistics recorded on this form and the unit operating statistics, if applicable, to ACMS not later than the seventh day following the end of the report period.

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U. S. COAST GUARD
AVIATION COMPUTERIZED MAINTENANCE SYSTEM

HC-130
MORPT
REV'D 06/01/01

OPERATING ACTIVITY	AIRCRAFT	INFORMATION ENTERED BELOW IS CURRENT AS OF 2400 ON THE LAST DAY OF THE MONTH OF _____ YEAR _____
	HC-130	

ITEM ☐ DUE	CMSCODE	ACTION	DESCRIPTION	CEINUM
	052000	REPORT	MONTHLY OPERATING STATISTICS - ALL UNITS	30-0000-01

AIRCRAFT NUMBER	CURRENT AIRCRAFT HOURS	TURRET ELAPSED	PALLET ELAPSED	REMARKS

NOTE

REFER TO PROCESS GUIDE CGTO PG-85-00-110 FOR COMPLETION INSTRUCTIONS.

OPERATIONAL UNITS & ATC MOBILE ONLY

Record total hours flown during the month by this aircraft type rounded to the nearest WHOLE hour.

☐ TOTAL HOURS FLOWN

LOG YEOMAN	REVIEWED BY	DATA ENTRY COMPLETED

Page 1 of 1

04001a

Figure 3-1. (Sheet 1 of 5)
Monthly Unit Operating Statistics (MORPT)

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U. S. COAST GUARD
AVIATION COMPUTERIZED MAINTENANCE SYSTEM

HH-60
MORPT
REV'D 10/01/98

AIRCRAFT NUMBER	OPERATING ACTIVITY	MAINTENANCE ACCOMPLISHED A/C HOURS	INFORMATION ENTERED BELOW IS CURRENT AS OF 2400 ON THE LAST DAY OF THE MONTH OF _____ YEAR _____

ITEM DUE	CMSCODE	ACTION	DESCRIPTION	CEINUM
☐	052000	REPORT	MONTHLY OPERATING STATISTICS	60-0000-001

TECHNICIAN'S SIGNATURE _____ TECHNICIAN'S ID _____ **ALL UNITS**

ENGINE NUMBER 1 SERIAL NO. ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

TAKE READINGS FROM HISTORY RECORDER			
LCF1	LCF2	TT1	EOH

ENGINE NUMBER 2 SERIAL NO. ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

TAKE READINGS FROM HISTORY RECORDER			
LCF1	LCF2	TT1	EOH

NOTE

REFER TO PROCESS GUIDE CGTO PG-85-00-110 FOR COMPLETION INSTRUCTIONS.

FORM_____ OF (_____)

(NUMBER OF AIRCRAFT REPORTED THIS MONTH)

OPERATIONAL UNITS & ATC MOBILE ONLY

Record total hours flown during the month by this aircraft type rounded to the nearest WHOLE hour.

☐ **TOTAL HOURS FLOWN**

LOG YEOMAN	REVIEWED BY	DATA ENTRY COMPLETED

Page 1 of 1

04001b

Figure 3-1. (Sheet 2 of 5)
Monthly Unit Operating Statistics (MORPT)

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U. S. COAST GUARD
AVIATION COMPUTERIZED MAINTENANCE SYSTEM

HH-65
05 **MORPT**
REV'D 03/01/02

OPERATING ACTIVITY	AIRCRAFT	INFORMATION ENTERED BELOW IS CURRENT AS OF 2400 ON THE LAST DAY OF THE MONTH OF _____ YEAR _____
	HH-65A	

ITEM ☐ DUE	CMSCODE	ACTION	DESCRIPTION	CEINUM
	052000	REPORT	MONTHLY OPERATING STATISTICS - ALL UNITS	65-0000-001

AIRCRAFT NUMBER	CURRENT TOTAL AIRCRAFT HOURS	CURRENT TOTAL AIRCRAFT LANDINGS	AIRCRAFT NG CYCLES NO. 1	AIRCRAFT NG CYCLES NO. 2	AIRCRAFT NP CYCLES NO. 1	AIRCRAFT NP CYCLES NO. 2	REMARKS

NOTE

REFER TO PROCESS GUIDE CGTO PG-85-00-110 FOR COMPLETION INSTRUCTIONS.

OPERATIONAL UNITS & ATC MOBILE ONLY

Record total hours flown during the month by this aircraft type rounded to the nearest WHOLE hour.

☐ TOTAL HOURS FLOWN

LOG YEOMAN	REVIEWED BY	DATA ENTRY COMPLETED

Page 1 of 1

04001c

Figure 3-1. (Sheet 3 of 5)
Monthly Unit Operating Statistics (MORPT)

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U. S. COAST GUARD
AVIATION COMPUTERIZED MAINTENANCE SYSTEM

HU-25
00 **MORPT**
REV'D 05/01/98

OPERATING ACTIVITY	AIRCRAFT	INFORMATION ENTERED BELOW IS CURRENT AS OF 2400 ON THE LAST DAY OF THE MONTH OF _____ YEAR _____
	HU25A	

ITEM ☐ DUE	CMSCODE	ACTION	DESCRIPTION	CEINUM
	052000	REPORT	MONTHLY OPERATING STATISTICS - ALL UNITS	25-0000-001

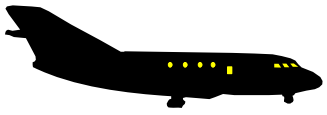
AIRCRAFT NUMBER	CURRENT TOTAL AIRCRAFT HOURS	TOTAL AIRCRAFT LANDINGS	TOTAL NO. 1 AIRFRAME CYCLES	TOTAL NO. 2 AIRFRAME CYCLES	REMARKS

NOTE
REFER TO PROCESS GUIDE CGTO PG-85-00-110 FOR COMPLETION INSTRUCTIONS.

OPERATIONAL UNITS & ATC MOBILE ONLY
Record total hours flown during the month by this aircraft type rounded to the nearest WHOLE hour.

☐ **TOTAL HOURS FLOWN**

LOG YEOMAN	REVIEWED BY	DATA ENTRY COMPLETED



Page 1 of 1

04001d

Figure 3-1. (Sheet 4 of 5)
Monthly Unit Operating Statistics (MORPT)

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U. S. COAST GUARD
AVIATION COMPUTERIZED MAINTENANCE SYSTEM

HC-144
00MORPT
REV'D 12/15/06

AIRCRAFT ACTIVITY	AIRCRAFT	INFORMATION ENTERED BELOW IS CURRENT AS OF 2400 ON THE LAST DAY OF THE MONTH OF _____ YEAR _____
	HC-144	

	CMSCODE	ACTION	DESCRIPTION	CEINUM
ITEM DUE	052000	REPORT	MONTHLY OPERATING STATISTICS - ALL UNITS	44-0000-01

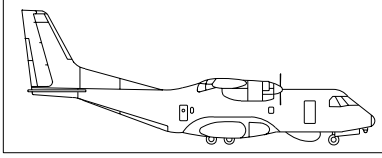
AIRCRAFT NUMBER	CURRENT TOTAL AIRCRAFT HOURS	CURRENT TOTAL AIRCRAFT LANDINGS	AIRCRAFT CYCLES				REMARKS

NOTE: REFER TO COMDTINST 13020.1 (SERIES) FOR COMPLETION INSTRUCTIONS.

OPERATIONAL UNITS & ATC MOBILE ONLY

Record total hours flown during the month by this aircraft type rounded to the nearest **WHOLE** hour.

TOTAL HOURS FLOWN



Page 1 of 1

cg9100037a

Figure 3-1. (Sheet 5 of 5)
Monthly Unit Operating Statistics (MORPT)

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j. Uninstalled Serial Number Tracked (SNT) Components. All uninstalled serial number tracked (SNT) components must be accompanied by a current copy of the SCHR. Major assemblies classified as Type 1, such as engines, rotor heads, etc., which have other SNT components installed, must be accompanied by a current configuration report as well as all the applicable SCHRs.

NOTE

A current SCHR shall be reviewed prior to installation of any serial number tracked component. Additionally, prior to installation of any Type 1 assembly, it is recommended that both a current MDL and configuration report be reviewed. This procedure will preclude inadvertent installation of a component or assembly that has pending or overdue maintenance or that is actually unserviceable.

k. Unknown Data. Components with unknown or missing serial numbers, TSN, TSO, or CSN (if applicable) must not be installed until data is determined or assigned. This data can only be assigned by ARSC Engineering Services Division or Commandant (CG-41). Units are NOT authorized to half-life components. Unknown part numbers should also be verified when possible.

B. AIRCRAFT REPORTS AND FORMS.

NOTE

Forms referenced in this process guide are listed in Enclosure (6).

1. Required Reports. USCG aviation units will be required to submit the following reports and forms using Coast Guard and Air Force forms. Preparation and distribution of these reports and forms shall be in accordance with the prescribing directives unless otherwise listed below.

Prescribing	Form Title	Directive	Applicable Aircraft
CG-22	Aeronautical Publication Change Recommendation	CGTO PG-85-00-20	All
AF Form 847	Recommendation for Change of Publication (Flight and Standardization Manual)	Self-explanatory	All
AFTO 103	Aircraft Missile Condition Report	AFTO 00-25-4	HC-130

2. Description of Forms.

a. CG-22 - Aeronautical Publication Change Recommendation. This form shall be used to recommend corrections of errors which affect the meaning of information or procedures contained in COMDTINSTs, technical manuals, CGTO Process Guides or ACMS MPCs which affect the applicable aircraft maintenance requirements. This form shall also be used for recommending changes in processes, procedures, or materiels that affect aircraft maintenance. See the Coast Guard Form–22 Process Guide, CGTO PG-85-00-20, for instructions on routing and preparing the CG-22. This form will be kept on file for 1 year.

b. AF Form 847 - Recommendation for Change of Publication. This form shall be used for submitting recommended changes to flight manuals. Preparation of the form is self-explanatory. Distribution shall be as follows:

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HC-130

HC-130 Stan Unit, Clearwater, Aviation Unit	Original and one copy
Commandant (CG-41)	One Copy
Commandant (CG-37RCA)	One Copy
Prime Unit	One Copy

HH-65, HU-25, HH-60 Aircraft

AVTRACEN, TRADIV	Original and one copy
Commandant (CG-41)	One Copy
Commandant (CG-37RCA)	One Copy
Prime Unit	One Copy

c. Aircraft Missile Condition Report, AFTO Form 103. This report shall be used to document any unusual work required for aircraft which are scheduled for programmed depot maintenance at military or commercial activities. Items such as extensive corrosion repair or rework of temporary structure repairs should be documented. The form shall be prepared in accordance with AFTO 00–25–4 and routed as directed by the preinduction notice.

NOTE

Any aircraft scheduled for programmed depot maintenance at ARSC should note these repairs (as required) on the applicable form(s); the Deferred Maintenance Record, Flight Generated Maintenance Record, or the No-Fly Maintenance Record.

(1) In order to document discrepancies as they occur, HC-130 reporting custodians shall maintain a running AFTO 103 in each aircraft logbook.

d. Standard Form 368. DOD has adopted this Quality Deficiency Report as a standard form for use in reporting quality deficiencies on all DOD owned materiel (i.e., components, engines, and aircraft). Regulations applicable to the use of SF 368 require that each service establish a central screening point for all SF 368 submissions. The following action will be taken by Coast Guard units when reporting quality deficiencies:

(1) Deficiency reports concerning components and engines, regardless of the overhaul/repair activity involved, shall be submitted to ARSC via an Unsatisfactory Report. ARSC will function as the screening activity and will prepare and submit a SF 368 as required.

(2) Deficiency reports resulting from HC-130 Programmed Depot Maintenance (PDM) shall be prepared in message format by the receiving activity not later than 20 days after receipt of the aircraft, in accordance with USAF Deficiency Reporting and Investigating System, AFTO 00-35D-54. Commandant (CG-41) shall be an information addressee.

(3) Deficiency reports concerning aircraft having completed PDM at ARSC shall be submitted on a Letter Report as described in Chapter 3, paragraph F.

(4) Deficiency reports for aircraft initial delivery from manufacturer shall be submitted on a Letter Report as described in Chapter 3, paragraph G.

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C. MISCELLANEOUS USAF/USN/USCG FORMS. The following USAF/USN/USCG forms will be used in accordance with the prescribing directive indicated:

Form		Prescribing Directive Title
DD 2026	Oil Analysis Request	NAVAIR 17-15-50 (series)
DD 2027	Oil Analysis Record	NAVAIR 17-15-50 (series)
DD 1574	Serviceable Tag	Directive not required
DD 1577-2 (green)	Unserviceable (Reparable) Tag	Directive not required
DD 1577-2 (blue)	Unserviceable (Reparable) Tag	Directive not required
CG 1577-A	Unsatisfactory Report Tag	Directive not required
ARSC 5000–5 (series)	ARSC Repair Division Process Tag	Directive not required
OPNAV 4790 (series)	History Record	OPNAVINST 4790.2 (series) VOL 2
OPNAV 4790/66	Technical Publications Deficiency Report (TPDR)	NAVAIR 00-25-100

NOTE

Convert OPNAV 4790 information to SCHR when component is enrolled. Maintain only the SCHR. Dual record keeping is not required.

NOTE

The terms A Condition, RFI, and serviceable are used interchangeably. The terms F Condition, NON-RFI, unserviceable and class 265 are used interchangeably. The preferred terms are serviceable and unserviceable.

1. Description of Miscellaneous Forms and Use Instructions.

   a. DD-1574 - Serviceable Tag. (Orange) This tag is attached to and identifies serviceable equipment. All entries are self-explanatory. In the “Remarks” section, write the Aircraft Type if this part is used on a single aircraft type. Use the word “Multi” for parts that can be used on multiple aircraft types. See Figure 3-2.

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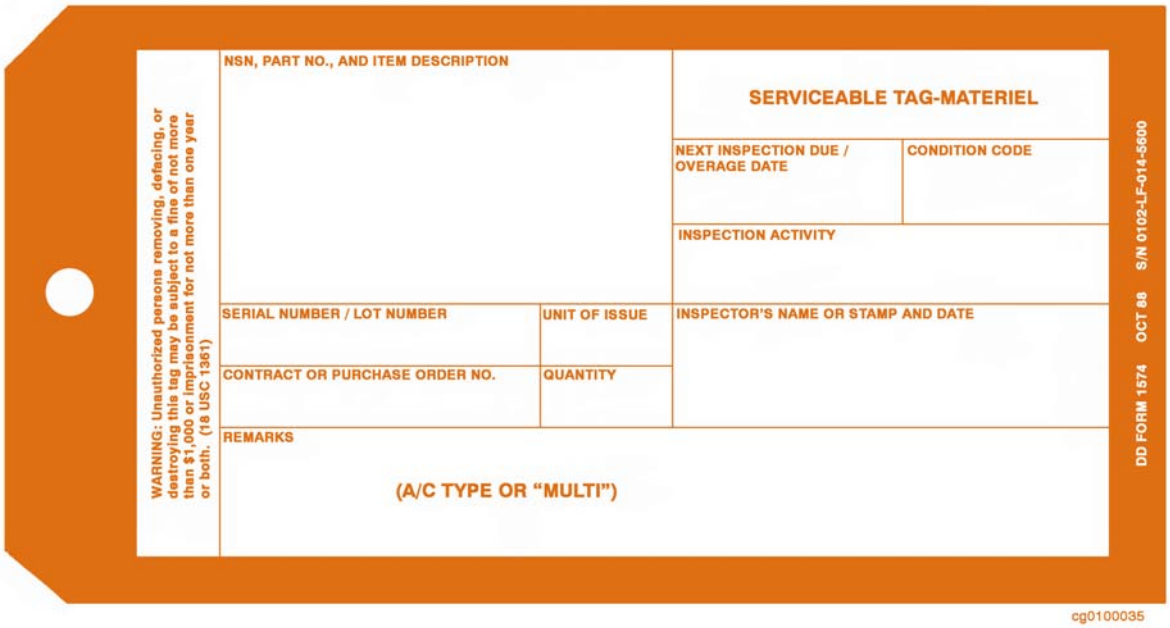

Figure 3-2. DD FORM 1574 Serviceable Tag

b. DD-1577-2 - Unserviceable (Reparable) Tag.

(1) (Green) This form will be attached to an unserviceable item upon removal and will remain attached through all maintenance processing until the item is serviceable **except at ARSC**.Entries are self-explanatory with the exception of the following: In the FSN, PART NO, and ITEM DESCRIPTION sections, write the NSN, Part Number, and item description of the removed part (these may be different than the replacement part information). In the CONDITION CODE section, write "F," in the REASON FOR REPARABLE CONDITION section write the failure mode if known (not "BROKE"). In the REMOVED FROM section, write the Aircraft Tail Number of the Aircraft Type for a non-installed part. See figure 3–4.

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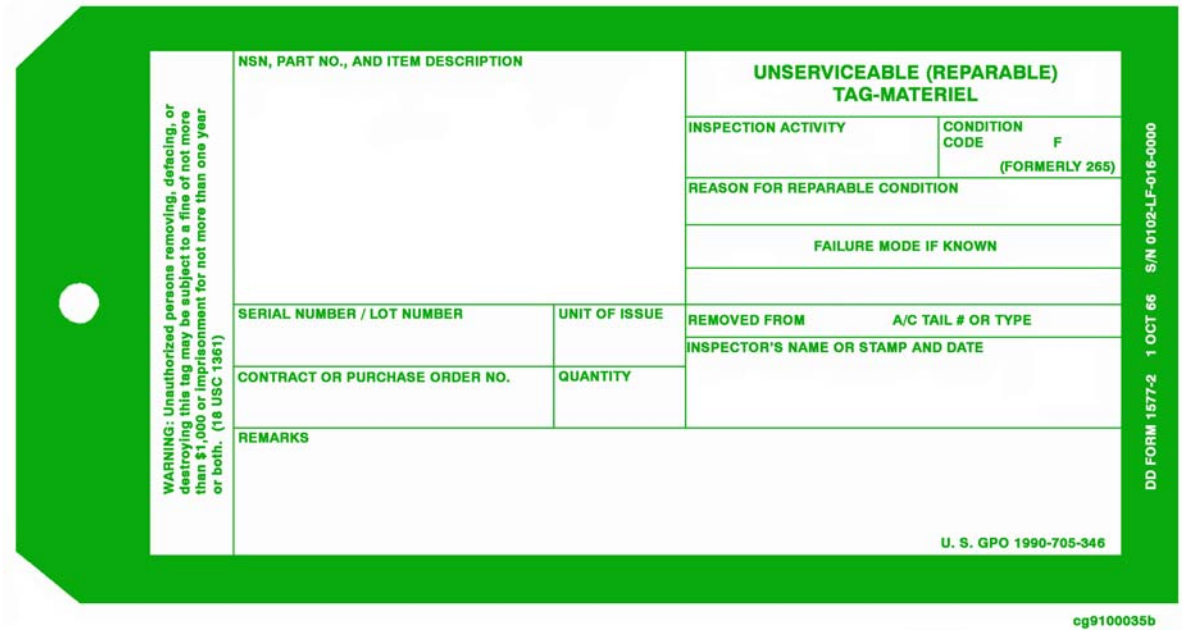

Figure 3-3. DD FORM 1577-2 - Unserviceable (Reparable) Tag

(2) (Blue) This form will be attached to an unserviceable item that is nonreparable at ARSC and will be sent to an outside vendor or manufacturer for repair. Entries are self-explanatory with the exception of the following: In the FSN, PART NO, and ITEM DESCRIPTION sections, write the NSN, Part Number, and item description of the removed part (these may be different than the replacement part information). In the CONDITION CODE section, write “F,” in the REASON FOR REPARABLE CONDITION section write the failure mode if known (not “BROKE”). In the REMOVED FROM section, write the Aircraft Tail Number of the Aircraft Type for a non-installed part. See figure 3–5.

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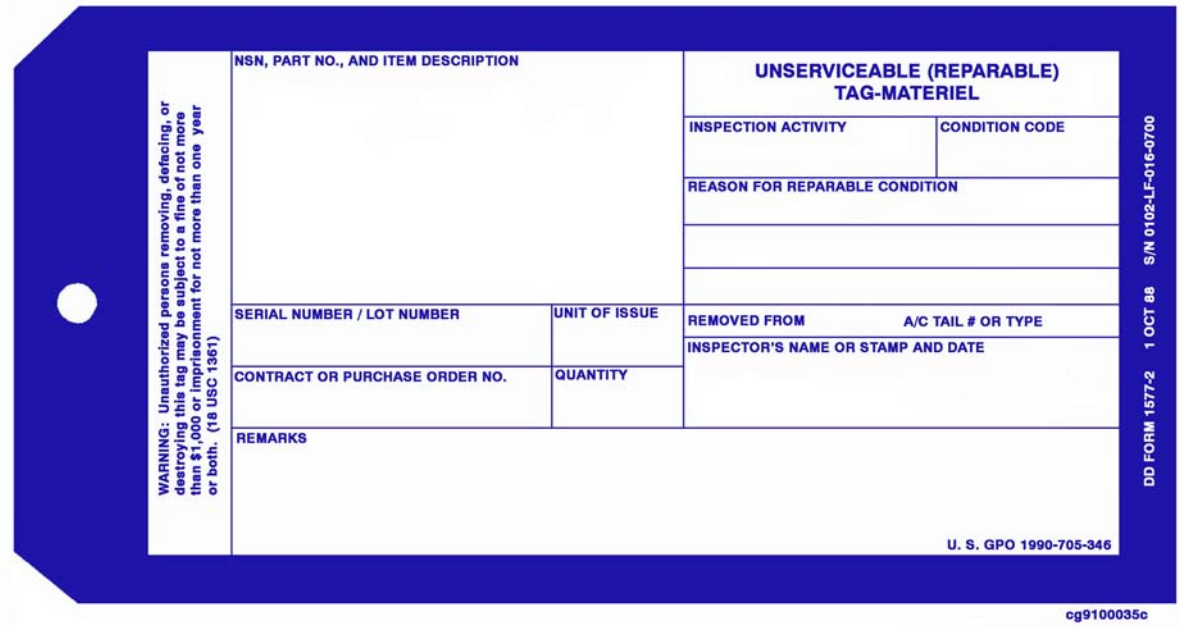

Figure 3-4. DD FORM 1577-2 - Unserviceable (Reparable) Tag

NOTE

While in maintenance at ARSC, Form ARSC 5000–5 (series), ARSC Repair Division Process Tag, will suffice for form DD-1577–2 while the item is being processed. If the item is returned to the product line as part of a PDM Work Order, the routing tag will remain with the item until installed. If the item is returned RFI or NON-RFI to the warehouse, then the appropriate serviceable/unserviceable tag will be utilized. Supply shall not receipt any items without RFI or NON-RFI disposition tags attached.

c. ARSC 5000–5 (series) ARSC Repair Division Process Tag. This bar coded tag is attached to and identifies equipment and the location of the equipment while in maintenance processing at ARSC. All entries are self-explanatory. See Figure 3-5.

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ARSC REPAIR DIVISION PROCESS TAG #

QTY	W/O	A/C	SHOP	NOMENCLATURE	PART NUMBER	SERIAL NO.	MECH SIGN	REMOVAL DATE

SHOP/OP	COMP BY	MECHANIC SIGN	HRS	DATE	INSPECTOR SIGN	OPERATION DESCRIPTION

INSTALLATION DATA

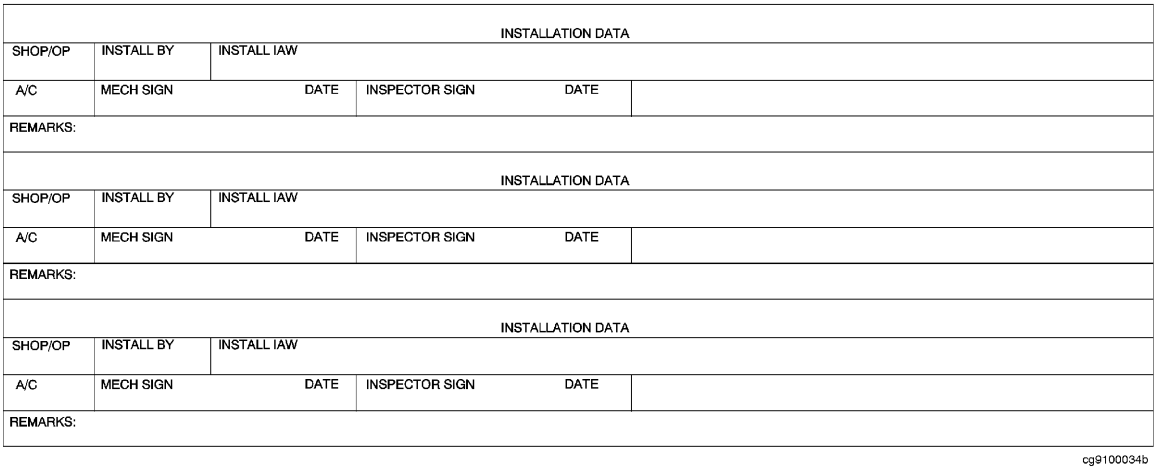
W/O	INSTALL BY	INSTALL IAW		
A/C	MECH SIGN	DATE	INSPECTOR SIGN	DATE

REMARKS:

5417627500014

cg9100034a

Figure 3-5. (Sheet 1 of 2)
ARSC Repair Division Process Tag



INSTALLATION DATA

SHOP/OP	INSTALL BY	INSTALL IAW		
A/C	MECH SIGN	DATE	INSPECTOR SIGN	DATE

REMARKS:

INSTALLATION DATA

SHOP/OP	INSTALL BY	INSTALL IAW		
A/C	MECH SIGN	DATE	INSPECTOR SIGN	DATE

REMARKS:

INSTALLATION DATA

SHOP/OP	INSTALL BY	INSTALL IAW		
A/C	MECH SIGN	DATE	INSPECTOR SIGN	DATE

REMARKS:

cg9100034b

Figure 3-5. (Sheet 2 of 2)
ARSC Repair Division Process Tag

d. CG-1577-A - Unsatisfactory Report (UR) Tag. (Red/White/Blue) This form will be attached to any item, unserviceable or not, requiring a UR, special handling, or an engineering investigation upon removal from an aircraft or equipment end item and will remain attached through all processing until the item is serviceable. Entries are self-explanatory with the exception of the following: In the FSN, PART NO, and ITEM

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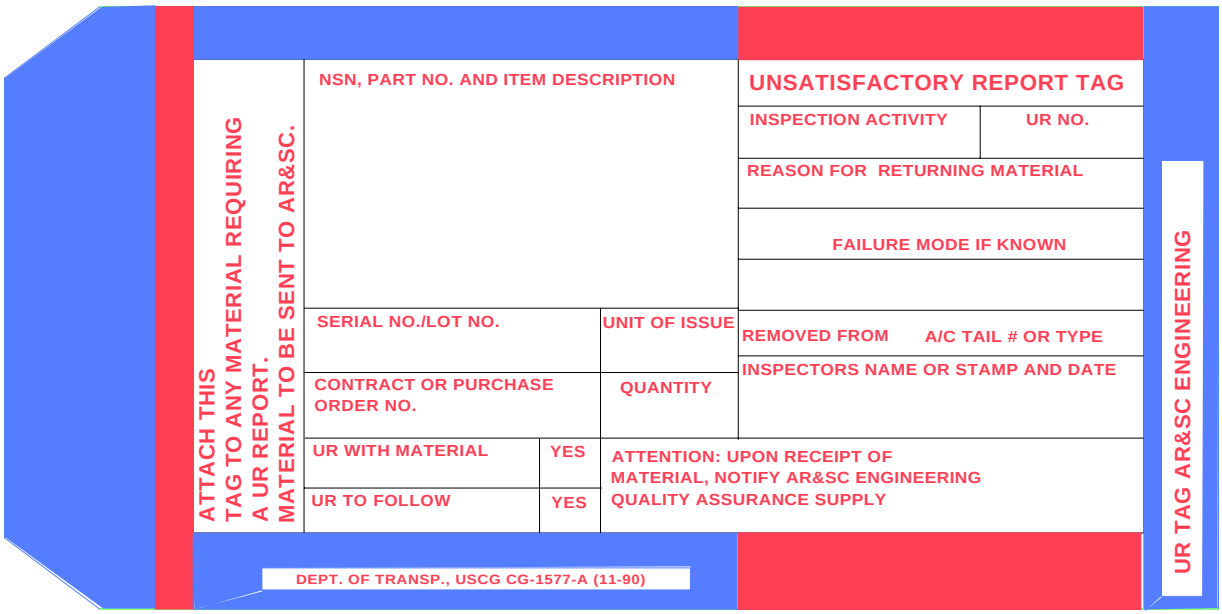
DESCRIPTION section, write the NSN, Part Number, and item description of the removed part (these may be different than the replacement part information). In the REASON FOR RETURNING MATERIEL section, write the failure mode if known (not "BROKE"). In the REMOVED FROM section, write the Aircraft Tail Number or the Aircraft Type for a non-installed part. See Figure 3-6.



04001h

Figure 3-6. CG-1577-A - Unsatisfactory Report (UR) Tag

NOTE

The backside of the Unsatisfactory Report tag is available for additional comments regarding "Reason for Returning Materiel."

2. Supply Information.

a. USAF Forms. USAF forms are distributed at no cost from the Air Force Publications Distribution Center, Baltimore, Maryland, and through ARSC and the Coast Guard Engineering Logistics Center (ELC), respectively. USCG activities requiring USAF forms shall obtain them in the following manner:

(1) Forms. The USAF-type forms listed herein may be requisitioned from the Coast Guard Engineering Logistics Center, utilizing CG-4940, Surf Requisition Log in accordance with the Catalog of Forms, COMDTINST M5213 (series). Requests to utilize other USAF type forms shall be forwarded to Commandant (CG-41), indicating estimated usage data. When additional USAF type forms are approved for Coast Guard use, they will be listed in the Catalog of Forms, COMDTINST M5213 (series) and stocked at the Coast Guard Engineering Logistics Center or accessible on SWIII in USCG Adobe Forms.

D. UNSATISFACTORY REPORT (UR) OF AERONAUTICAL EQUIPMENT. (AMMIS Module as500000.) The UR module should be used to communicate information concerning failures of aeronautical equipment associated with flight, including mission equipment, Support Equipment (SE), and tools. Its primary purpose is to provide information which will be of value to management personnel in identifying a fleet-wide problem. Both AMMIS Module as500000 and the ALMIS

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Decision Support System (DSS) Web Reports can be used to track specific unit submissions, evaluate the performance of the component repair/overhaul facilities, and generate Quality Deficiency Reports (QDRs). Directions for using AMMIS Module as500000 are available in the ALMIS Help module under “QDR Help” and “UR Help.”

1. URs shall be submitted by ARSC, aviation units, and flight deck equipped cutters. Failed components or unsatisfactory conditions of aeronautical materiel will have a number assigned by AMMIS prior to shipping the component. The UR tag will be annotated with this number. All failed components will have a UR tag (CG-1577-A) affixed to the component. The UR identification tag will also be affixed to the outside of the shipping container in a conspicuous place. A printout of the UR form from AMMIS shall accompany the part when shipped.

NOTE

When an item is received with a damaged package or shipping container it may require a Transportation Discrepancy Report (TDR) (Form SF 361) in lieu of a UR (see U. S. Coast Guard Freight Loss and Damage Claim System, COMDTINST 4610.6). If an item has been damaged as a result of improper packing then a UR remains the proper vehicle for reporting the problem.

2. Failures or unsatisfactory conditions of aeronautical materiel affecting SAFETY OF FLIGHT shall also be reported by message (see paragraph 3.E.6. of this process guide for an example). If deemed appropriate, ARSC will forward the message to other Coast Guard operating units of the affected aircraft type. Commandant (CG-41) will route messages to other agencies if deemed appropriate. The message constitutes an urgent interim Unsatisfactory Report and must be preceded by a completed electronic form using the AMMIS module and associated UR tags in accordance with the preceding paragraph.

NOTE

Urgent interim UR messages shall be addressed to ARSC, INFO: Commandant (CG-41), Prime Unit for the aircraft involved, and ACMS. ARSC address shall include routing indicators to ESD/QA, Logistics Management Specialist, and the appropriate Engineering Cell for that aircraft. For example, ARSC//ESDQA/HU25LMS/HU25ENG//, ARSC//ESDQA/HH65LMS/HH65ENG//. Use of Address Indicator Groups (AIGs) to transmit message URs is not authorized unless directed by Commandant (CG-41).

NOTE

Urgent Interim Message URs will first be entered into AMMIS and the UR number generated included in the message.

3. URs shall be submitted whenever a management review of a component is required. Engineering Officers should establish local procedures to ensure that URs are submitted when appropriate, are based on a thorough evaluation, and are submitted promptly.

4. AMMIS will assign a UR number for tracking and will generate reports, as to the disposition of the UR.

5. ARSC will review all URs. Many will be acted on upon receipt and generate Quality Deficiency Reports or other investigative actions.

6. It is mandatory that the UR be printed from AMMIS and a printed copy accompanies the failed component. To ensure the proper handling of unserviceable components requiring Unsatisfactory Reports, the UR Tag (CG-1577–A) will be used in lieu of the Unserviceable (Reparable) Tag (DD 1577–2). Any repair documentation received from an outside source should also accompany the part upon its return.

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NOTE

ACMS does not contain a mechanism to “flag” premature failures. If a serviceable component is received in an unserviceable condition, this failure will not be recorded by ACMS. Also, only a small percentage of aircraft components are tracked by ACMS. The UR continues to be a valuable means of reporting unusual and premature failures of aeronautical equipment.

FM (Facility submitting the msg)
TO COGARD ARSC ELIZABETH CITY NC
INFO CCGD_____
COMDT COGARD WASHINGTON DC//CG-41//
COGARD AIRSTA (Prime Unit for A/C Type)
TO COGARD ARSC ELIZABETH CITY NC//ACMS//
ACCT
BT
UNCLAS //N //
SUBJ: URGENT INTERIM UR NO. (AMMIS UR NUMBER)
A. (Appropriate Reference, i.e., Tech Order, MPC, etc.)
1. IN TEXT GIVE NECESSARY INFORMATION.
BT

Figure 3-7. Sample Message UR

E. POST PDM REPORT.

1. After the PDM induction of an aircraft at ARSC, several Inspection and Evaluation (I&E) processes are completed on the airframe and its components for the purpose of evaluating the condition and determining the disposition of the same. These I&E processes include the determination and mapping of the extent of airframe corrosion. Upon the completion of these I&E processes, the Commanding Officer, ARSC, will provide a Post Induction memorandum to the Commanding Officer of the inducting unit, with an information copy to Commandant (CG-41). This memorandum will outline the general condition of the inducted aircraft and identify any unique or unusual problem areas discovered during the preliminary stages of PDM. This documentation should be useful to field units in highlighting areas of their aircraft maintenance program where greater emphasis is required. This information is provided to units by ARSC solely as feedback to assist in fleetwide maintenance standardization with the long-term goal of narrowing the variability of aircraft condition upon PDM induction, thereby reducing overall product line costs.

2. The unit receiving an aircraft from ARSC PDM shall submit a memorandum report (see Enclosure (7)) to the Commanding Officer, ARSC, with an information copy to Commandant (CG-41), identifying discrepancies that are directly attributable to the PDM effort. This memorandum will include only those discrepancies encountered during the first 14 days of operational availability at the reporting unit. In no case shall the memorandum be submitted later than 30 calendar days after aircraft acceptance. The post PDM report discrepancies must be detailed and exact in description so that ARSC will be provided enough information for identification and correction of specific deficiencies in their PDM procedures. Photographs are helpful in documenting problem areas. Discrepancies should be reported as either major or minor. A major discrepancy is one which affects safety-of-flight or grounds the aircraft. A minor discrepancy is any other discrepancy which would allow ARSC to improve their PDM efforts.

3. Units with aircraft undergoing a PDM type of maintenance at a facility other than ARSC will submit the required forms and reports in accordance with the respective overhaul facilities applicable directive(s).

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NOTE

Letter reports shall not be delayed past the submittal date on the basis of including some future discrepancy. Discrepancies discovered after the 14 day period, that can be attributed directly to the aircraft PDM, shall be submitted expeditiously via a subsequent letter report referencing the initial post PDM report.

4. All discrepancies reported in the unit's post PDM report will be investigated by ARSC. The findings and resultant action taken by ARSC on major discrepancies will be provided to the reporting unit by memorandum with a copy to Commandant (CG-41).

F. POST DELIVERY REPORT FOR NEW AIRCRAFT.

1. A memorandum report will be used for reporting deficiencies discovered on new aircraft delivered to operating units. The report shall be submitted as described in Chapter 3, paragraph E., no later than 30 calendar days after acceptance at the receiving unit.

G. MEASURES OF EFFECTIVENESS (MOE) REPORT. A system of Measures of Effectiveness (MOEs) indicates the performance of Coast Guard Aeronautical Engineering as related to strategic plans and goals. MOEs are available through the ALMIS Decision Support System (DSS).

1. MOEs consist of data points and multi-dimensional MOE indices presented graphically for each Coast Guard aircraft type. The data points and MOEs are considered over sufficient periods of time to enable conclusions relative to system performance and strategic goals.

2. Data points are reported at regular intervals by all Coast Guard Air Stations, ARSC, and PDM contractors. They are derived by answering questions, such as: "What indicators will tell us if our aircraft are reliable?" The data points used in the Aeronautical Engineering MOE system are:

   - Not Mission Capable Due to Maintenance (NMCM)
   - Not Mission Capable Due to Supply (NMCS)
   - Not Mission Capable Due to Depot Maintenance (NMCD)
   - Maintenance Labor Hours Expended at Units
   - Maintenance Labor Hours Expended at Depots
   - Total Flight Time
   - Total Stock Position
   - Direct Maintenance Cost
   - B-0 Rate
   - Dispatch Reliability Index

   MOE indices are multi-dimensional indicators of system performance. Most combine two or more of the data points listed above. The MOE indices are:

   - % Fleet Available
   - % Fleet NMCD
   - Availability Index (AI)
   - Parts Availability Index (PAI)
   - Direct Cost of Ownership Index (DCOI)
   - Overall Maintenance Effort Index (OMEI)
   - Unit Level Maintenance Effort Index (UMEI)
   - Performance Reliability Index (PRI)

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- Time Critical Mission Loading Rate (TCMLR)
- Time Critical Mission Success Index (TCMSI)

Appropriate types of charts are presented for each MOE and data point. These charts provide a sense of system performance in terms of each specific indicator. Overall trends, along with special and common causes, can be identified, particularly from control charts. Greater detail, although not provided in the regular reports for the sake of brevity, is available from the data base.

3. Operational Definitions of MOE Report Data Points:

DATA POINT	DEFINITION
NMCM	NMCM is the status of an aircraft which is Not Mission Capable because unit-level scheduled or unscheduled maintenance work (as defined in chapter 1 of the Aeronautical Engineering Maintenance Management Manual, COMDTINST M13020.1 (series) is in progress. NMCM time also includes the time the aircraft is grounded awaiting maintenance action or until the satisfactory completion of a test flight. Pre-thru-post flight inspections or servicing which would not delay a BRAVO zero launch should not be logged as NMCM time. NMCM time does not include periods when the aircraft is down undergoing depot level maintenance (such as during drop-in depot-level maintenance performed at either ARSC, contractor sites, or other depot facilities, or during periods when depot field teams are performing depot-level work at an Air Station). NMCM is chosen as the cause of lack of aircraft availability when maintenance is the “driver” that prohibits resumption of BRAVO status. For example, if an aircraft is down for a 600 hour inspection, and an adequate supply of parts and supplies are available to permit the inspection to proceed, then the aircraft is considered to be NMCM.
NMCS	NMCS is the status of an aircraft which is Not Mission Capable due to the lack of available parts or supplies. The NMCS ‘clock’ starts when an aircraft is incapable of meeting mission readiness requirements, and corrective maintenance is being prevented because a required part is unavailable. The part should be acting as a ‘show-stopper,’ i.e., its lack of availability is preventing the aircraft from attaining a BRAVO readiness status, and thereby acting as the driving factor causing the NMC condition. The NMCS clock stops as soon as the part is available to maintenance personnel. The NMCM clock starts at that point and stops again once the aircraft resumes BRAVO readiness status. NMCS should also reflect cannibalization. For example, once a part is removed from an airframe (for installation on another airframe) the cannibalized airframe should be listed as NMCS. The status of the airframe receiving the cannibalized part should switch from NMCS to NMCM.

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DATA POINT	DEFINITION
NMCD	NMCD reflects the percentage of time that aircraft of each type are unavailable to Air Stations for operational use due to depot level maintenance or testing. Most NMCD time will be accrued at ARSC and Contractor/DOD depots, but occasionally the Coast Guard makes a business decision to perform depot level maintenance at Air Stations. These NMCD periods prevent accounting for aircraft down time against unit NMCM rates. NMCD is reported as two separate data points, Unit level and ARSC, as follows: a. Reported by Units in the EAL Aircraft Status report. 1. When depot level maintenance is performed by ARSC or contractor field teams. 2. When unit personnel perform a depot level repair or modification authorized by ARSC. 3. When unit aircraft are away for drop-in maintenance to either ARSC or contractor sites, but not transferred in ASR. Aircraft are only transferred if directed by COMDT (CG-37RCA), via message. b. Reported by ARSC in the EAL Aircraft Status report. 1. All aircraft whose custodian OPFAC, assigned via official message by COMDT (CG-37RCA), is not an operational Air Station, are reported by ARSC on a monthly basis. Reportable NMCD for these aircraft includes PDM, and all depot level maintenance (if the aircraft is formally transferred from the field). NMCD is a percentage that is equal to the number of an aircraft type in the depot times the number of process days in the month, divided by the number of calender days in that month (the result is “how many equivalent aircraft were down the whole month for depot?”), then divided by the total active number of that aircraft type in the CG inventory. ARSC also updates all non-operational aircraft in ASR prior to return to service.
MLHs Expended at Units	Maintenance Labor-Hours (MLH) Expended at Units. The total MLHs expended at each unit as reported on ACMS tracked maintenance procedure cards and the EAL maintenance and servicing forms. These do not account for all MLHs expended by units on CG aircraft (such as line and shop maintenance), but they do measure approximately 85% of the total. Audits and surveys can be done to determine standard differentials, and this data can be used to adjust reported MLHs.
MLHs Expended at Depots	Total labor-hours expended on depot level maintenance by ARSC and contractor personnel. Limited to hours expended on airframe PDM only (component repair MLHs show up as Direct Maintenance Cost expenditures).
Total Flight Time	Total flight time accrued for each aircraft type. Collected via EAL flight records after each flight event.

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DATA POINT	DEFINITION
Total Stock Position	All CG owned, non-installed aircraft parts (serviceable and unserviceable Types 1, 2, and 4 parts) to include those at the following locations: • ARSC Warehouse • ARSC Shops • Air Stations • Commercial Vendors • In-Transit • Due-Ins from Vendors Data collected and reported monthly by ARSC accounting until provided by AMMIS.
Direct Maintenance Cost	The total Cost: • To repair parts used on aircraft • To replace parts that were scrapped • Of consumables used on aircraft • PDMs • Of emergency repairs • Of overhead • Of modifications (TCTOs) Tracked continuously by aircraft type and categories listed above through transaction records. Data available through the DSS Web Reports and PowerPlay Cubes.
B-0 Rate	The percentage of time that Air Stations are able to meet their defined mission readiness requirements. Differs from NMC rates in that units are not expected to have all aircraft at B-0 or similar status. The inability to maintain a B-0 asset is reported by occurrence in EAL and recorded in the DSS Unable to Meet Readiness Requirement (UMRR) PowerPlay Cube.
Dispatch Reliability Index	1. A ratio of successful dispatches to total dispatches attempted. It is calculated by dividing the count of successful dispatches for a given time period by the sum of all dispatches attempted, and converting to a percentage. DRI is further subdivided into: a. Attempts where schedule was the primary criteria such as SAR, or rendezvous of any operational nature where timing was intrinsic to mission success, and; b. Attempts where exact departure time was not a significant operational or mission concern, such as routine training or patrol where the objective may be met over a range of time. 2. See EAL (Event Status) Help.

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NOTE

This data point indicates the ability to provide a reliable aircraft capable of completing assigned tasks by capturing the impact of maintenance, operations, pilot/aircrew availability, mission change, or weather. It should not be confused with NMC rates.

DATA POINT	DEFINITION
% Fleet Available	Ratio of 'Up' time to the sum of reported time plus the difference between reported and expected times. Expected time is based on 100% aircraft complement (allowance).
% Fleet NMCD	Depot NMC % viewed from the Fleet vice Aircraft Level, presently for Operating Units only.
Availability Index (AI)	Indicates the percentage of time that aircraft at CG air stations are available to perform missions.
Parts Availability Index (PAI)	Indicates how often air stations have the aircraft parts they need when they need them.
Direct Cost of Ownership Index (DCOI)	Indicates the total cost of ownership for CG aircraft over a given period of time.
Overall Maintenance Effort Index (OMEI)	Indicates how much effort it takes to generate each flight hour.
Unit Level Maintenance Effort Index (UMEI)	Indicates how much unit-level effort it takes to generate each flight hour.
Performance Reliability Index (PRI)	Indicates the ability of the Aeronautical Engineering System to provide a reliable aircraft capable of completing assigned tasks.
Time Critical Mission Loading Rate (TCMLR)	Restricted to time critical operational flight dispatches as reported to ASR by air stations on each flight schedule event status.
Time Critical Mission Success Index (TCMSI)	Percentage of flights completed. Time-critical missions are date/time sensitive.

H. PROCEDURES TO MAINTAIN T.O. LIBRARIES. TIMOS will be used for the maintenance and audit of Coast Guard Technical Libraries.

1. Maintain a hard copy of the Library Report, Library/Index Comparison Report, Allowance Report, and Unit Audit Report.
2. All changes, supplements, RACs, etc., to technical manuals will be incorporated into the applicable manual within five working days.
3. Each unit will conduct semiannual audits during the months of April and October. A Mandatory Special Requirements (MSR) card must be signed showing accomplishment of this task.

NOTE

The April audit will be conducted by QA and shops. The October audit will be conducted by the shops.

4. Each library will be organized alphanumeric in sections as follows:
   a. COMDT Instructions, numerically
   b. Airframe type (i.e., HC-130, HH-60)
   c. Air Force general publications

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d. Navy general publications

e. Army general publications

f. Commercial and miscellaneous publications

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CHAPTER 4. ELECTRONIC AIRCRAFT LOGBOOK NORMAL AND CONTINGENCY OPERATIONS

A. SYSTEM OVERVIEW.

1. The Aviation Logistics Management Information System (ALMIS) is a browser based application designed to interface with the two existing legacy database systems; the Aviation Maintenance Management Information System (AMMIS) and the Aircraft Computerized Maintenance System (ACMS). Aircraft logbook data can be accessed from any Standard Work Station III (SWIII) by users that have login access. The Electronic Aircraft Logbook (EAL) was developed as an application of the ALMIS project. The system was designed to provide real time data by replacing the paper based aircraft logbook and the flight operations module of AMMIS. Data for the EAL system is provided by each operator, and is available to all users in the form of reports, charts, and graphs through the Decision Support System (DSS) module in ALMIS.

2. Each air station is responsible for the timely and accurate entry of data into the ALMIS database. Furthermore, due to the sensitive and important nature of the information stored in the database, each unit must ensure security for, and limit access to, the database.

3. ALMIS access is determined and authorized by the unit. Air stations must periodically review each member's ALMIS "roles and permissions" to ensure the appropriate level of access. The current access level for each member of the unit can be determined by running an ALMIS User Report from the DSS Web Reports. Access changes must be electronically requested on the Access Request Form available at http://cgweb.arsc.uscg.mil/isd/content/helpdesk.cfmunder the heading "Customer Support." Download the appropriate form for military, government, and contractor personnel. Each access request must be submitted via the user's supervisor to ARSC customer support. The email link is located at the bottom of the web page: D05-SMB-ARSC_Cust_Support@uscg.mil.

4. To ensure transferring personnel obtain the proper access level at the next unit, departing units must contact ARSC customer support and have personnel moved to the "flight OPS holding area, OPFAC 90000" upon departure. Receiving units must determine what level of access is required for each incoming member and request system access via the Access Request Form.

5. Requests for changes to the ALMIS system shall be submitted via the unit chain of command to ARSC Information Systems Division (ISD) on the "Software Change Request (Unit)" found on-line at http://cgweb.arsc.uscg.mil/prd/misc_documents/forms/SCR_form_unit.pdf. This form must be completed in Adobe Acrobat 7.0.

B. AIRCRAFT LOGBOOK RECORDS.

EAL incorporates all existing policies and most existing procedures that were utilized under the previously used paper logbook system. However, some procedural changes were necessitated to take advantage of computer technology and to simplify each process. Specific procedures for use of EAL records can be found within the HELP section of EAL. Generally, the information that follows is applicable to both EAL and paper versions of the aircraft logbook. Differences between the two versions are specifically addressed.

1. General. Every tool has limitations and EAL is no different. All software programs require periodic upgrades to ensure optimal system performance is maintained. System upgrades and communication limitations will periodically limit access to the system. During service interruptions users must utilize contingency operation procedures. The EAL contingency operations plan was developed to ensure a seamless transition between normal and interrupted operations. These procedures were designed specifically to ensure flight safety through the availability of previously entered records and through the continued documentation of flight and maintenance operations. MPC 00EAL.0 "EAL Operating Procedures" provides in-depth direction for conducting EAL contingency operations. MPC 00EAL.0 can be accessed at http://cgweb.arsc.uscg.mil/ESD/mpc/h65_mpc/00EAL.pdf.

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2. Differences.

   a. Paper records and logbooks were replaced with electronic versions of the records. Logbook access to records is no longer restricted to a single location and a single individual at a time. Access is limited by user permission and the availability of a computer.

   b. Several differences will be apparent in the way information is recorded. The most significant change is evident when contrasting how Functional Checks are completed in both EAL and the paper logbooks.

   c. Functional Checks. In both systems, the discrepancy describes the symptoms of the problem while the corrective action describes the procedures used to resolve the problem.

      (1) Paper logbooks also utilize a Flight Safety Maintenance Document to inform the pilot and crew that maintenance has been performed that could affect the aircraft's flight characteristics. This form also doubles as a sign-off sheet for the mechanic, quality assurance, maintenance release authority, and the pilot to ensure that all necessary steps are completed. Additionally, a No-Fly discrepancy is created to document the specific procedures that are to be used to ensure that the aircraft's systems are performing to design specifications. The No-Fly is signed by the pilot after completion of the functional check. Diligence is required to ensure that no requirement is overlooked.

      (2) EAL logbooks utilize several electronic flags which replace the Flight Safety Maintenance Document to ensure the pilots and crews are aware of the maintenance performed that could affect the aircraft's flight characteristics. The electronic flags are displayed in two areas, as needed. One set of flags is displayed within the aircraft status display at the top of each maintenance record logbook, while the other flags are displayed adjacent to each discrepancy. When required, the flags are activated and will remain active until all requirements are fulfilled for the specific functional check. Functional check procedural requirements are listed within the discrepancy block as an additional comment. Sign off of the entire functional check requirement is accomplished in a single step. The ability to display all requirements for a functional check within a single discrepancy greatly reduces the need to search for and sign off associated forms, while ensuring that all steps are completed prior to a warning flag being disabled.

3. Paper Forms.

   a. Paper versions of all the EAL records are available in EAL under the heading of "EAL Forms." In preparation for flyaway operations and periods of non-connectivity, each unit shall maintain a sufficient number of printed forms on hand to enable normal aircraft operations for a period of one week. Each form listed below shall be printed on the designated color paper while the remainder of the forms shall be printed on white paper:

      (1) Preflight Record – Yellow

      (2) Flight Record – Blue

      (3) Flight Generated Maintenance Record – Pink

      (4) Flight Safety Maintenance Document – Pink

   b. Units will conduct initial and periodic paper logbook record training to ensure that all aviation personnel are familiar with the use of each form, as appropriate to the their job description.

   c. Selective use of individual forms is authorized for periods of non-connectivity that do not exceed four hours in duration. All paper logbook forms will be used for periods of non-connectivity that exceed four hours in duration. Units are authorized to utilize either the 6 or 9 Crew Flight Schedule (Figure 4-3) as needed for local operations.

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d. The remainder of this chapter provides specific information and instructions for ALL aviation personnel regarding the proper use of the paper logbook forms.

NOTE

Some paper logbook forms may retain the form number of a previous version of the form, while other forms will not retain the previous number. To ensure complete compatibility with the forms utilized in EAL, all forms referenced in this process guide will be referenced by name only.

4. Standard Procedures for Both EAL and All Paper Forms.

a. All entries shall be made in clear, explicit, and concise terms to describe the required information. Entries made on all paper forms shall be PRINTED. All name entries shall include the members' grade/rank/rate and the last four numbers of their Social Security Number (SSN).

b. Dates and times shall be recorded in ZULU format on all forms except the flight schedule. Dates and times on the EAL flight schedule shall be recorded in local time, while dates and times on the paper flight schedule can be recorded in either a local or ZULU format. All dates will be recorded in EAL by month, day, and year. Two numbers for month, two numbers for day, and four numbers for year (e.g., 06/10/2006).

c. In the event that EAL is not available, ALL the paper forms addressed in this chapter shall be used to capture flight and maintenance operations data. When the EAL system becomes available, all data recorded on paper forms shall be entered into EAL by the unit Flight and Maintenance Record Recorder. Once the data is entered into EAL, the paper forms shall be retained at the unit for 90 days, after which they may be disposed.

d. Accumulated flight hours recorded on the Flight Record (Figure 4-5) and the Flight Generated Maintenance Record shall be recorded to the nearest tenth of an hour. Entries on all other forms and records will be rounded to the nearest whole hour.

First Hour		**Subsequent Hours**	
Minutes to Tenths Time Conversion		Minutes to Tenths Time Conversion	
Minutes	Tenths	Minutes	Tenths
0-8	0.1	0-2	0.0
9-14	0.2	3-8	0.1
15-20	0.3	9-14	0.2
21-26	0.4	15-20	0.3
27-32	0.5	21-26	0.4
33-38	0.6	27-32	0.5
39-44	0.7	33-38	0.6
45-50	0.8	39-44	0.7
51-56	0.9	45-50	0.8
57-59	1.0	51-56	0.9
		57-59	1.0

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5. Standard Procedures, Maintenance Records.

a. The following entries will be recorded on the Flight Generated Maintenance Record (Figure 4-6):

(1) All grounding and non-grounding flight-generated discrepancies.

(2) All non-flight generated discrepancies recorded by the Pilot In Command after the preflight record is signed.

NOTE

Units will use the No-Fly Maintenance Record for discrepancies that are not flight-generated and are recorded by maintenance personnel. The paper version of this form is printed on white paper to readily identify non-flight generated discrepancies, including aircraft suspended from ACMS. See chapter 5 of the Aeronautical Engineering Maintenance Management Manual, COMDTINST M13020.1 (series).

b. Aircraft condition is the indication on the maintenance records that depicts whether an aircraft is safe for continued operations. A green up pointing arrow in EAL or a circled up pointing arrow on the paper records indicates that the aircraft is safe for continued operations (e.g., there are no grounding discrepancies reported). A red down pointing arrow in EAL or a circled down pointing arrow on the paper records is an indication that at least one grounding discrepancy has been recorded and must be corrected prior to the next flight.

c. Corrective Action. The following guidelines are applicable to recording all corrective actions. Entries such as “ground checks OK” should not be used.

NOTE

Man-hour accounting is used by Coast Guard headquarters to assist in determining air station staffing and costs. It is imperative that man-hour accounting reflect the true total time to complete all maintenance tasks.

(1) Maintenance Labor-Hours (MLH) include time spent on the following:

- Researching all reference material
- Locating necessary tools, parts, and consumables (grease, oil, rags. etc.)
- Performing the required maintenance
- Inspection by Quality Assurance, if necessary
- Performing Functional and Flight Tests
- Completing all documentation

(2) The person who completes a corrective action sign-off will account for all personnel involved in the corrective action.

(3) Record Maintenance Labor-Hours (MLH) in the following manner:

(a) MLH shall be accounted on either an MPC or a maintenance record. MLH reported on an MPC shall not be accounted for on a maintenance record. Perform one of the following:

[1] When accounted for on an MPC, check “MPC” in the corrective action MLH block.

[2] MLH expended by each maintenance technician are reported in the MLH block adjacent to the technician’s name.

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(b) When recording cannibalization, the total MLH shall include all research, troubleshooting, original component removal, cannibalized component removal, cannibalized component installation, ground checks, test flights, etc.

(4) QA Release. (Mandatory for any grounding discrepancy or flight control work, including trim tabs, rigging work, engine change, prop or governor work, landing gear system work). Completed by a primary or collateral duty quality assurance inspector as applicable. Date, time, and expended MLHs are required entries.

(5) Maintenance Release. A maintenance release is required for a grounded aircraft before the aircraft can be released for flight. The Engineering Officer is authorized to maintenance release aircraft at their unit. Additional officers or petty officers at the unit qualified to sign a maintenance release must be designated in writing. (See the Aeronautical Engineering Maintenance Management Manual, COMDTINST M13020.1 (series) for a sample letter.) When authorized by a releasing official, a designated individual may enter their name in the “By Direction” block and enter the name of the releasing official in the “For” block.

d. Deferred Maintenance Actions

(1) When corrective action on a BRAVO aircraft is delayed beyond 24 hours, one of the following codes must be applied to the discrepancy. When using paper records enter the code into the “+” box that immediately precedes the corrective action block:

- CF - Indicates carried forward
- PP - Indicates pending parts
- SQ - Indicates a “no-fly generated” maintenance squawk

(2) All deferred maintenance actions SHALL be authorized by the Engineering Officer or their designated representative prior to release of the aircraft for flight. For paper records, deferral authorization is accomplished by the appropriate authority initialing the deferred symbol. NO OTHER ENTRY SHALL BE MADE.

(3) When utilizing the paper forms all CF and PP deferred discrepancies shall be transferred to the Deferred Maintenance Record, and all SQ deferred discrepancies shall be transferred to the Maintenance Discrepancy Report. Deferred discrepancies are cleared from both the Deferred Maintenance Record and the Maintenance Discrepancy Report by reentering each discrepancy on a No-Fly Maintenance Record and signing off with the appropriate corrective action.

e. Cannibalization.

(1) Cannibalization is the removal of a specific assembly, subassembly, or component from one equipment end item (donor) for installation on another (recipient) to meet mission requirements. All cannibalization events shall be authorized by the Engineering Officer or their designated representative.

(2) A discrepancy notation for each cannibalized component shall be entered on a No-Fly Maintenance Record (Figure 4-7) in the donor aircraft logbook. Additional component information and removal or installation information shall be documented on the Cannibalization Record located at the bottom of each Flight Generated or No-Fly Maintenance Record.

(3) Cannibalization events recorded on paper forms shall be transferred to the Deferred Maintenance Record to ensure the highest visibility.

(4) Certain components cannot be cannibalized. The NO CANNIBALIZATION items will be listed on the aircraft type specific ACMS Maintenance Procedure Card if applicable.

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CAUTION

THE REMOVAL OR ADDITION OF COMPONENTS WITHIN THE AIRCRAFT MAY SIGNIFICANTLY ALTER THE BASIC AIRCRAFT CENTER OF GRAVITY. THE UNIT WEIGHT AND BALANCE OFFICER WILL BE NOTIFIED OF ALL AIRCRAFT CONFIGURATION CHANGES SO THAT A REVISED WEIGHT AND BALANCE FORM F (DD FORM 365F) MAY BE COMPLETED PRIOR TO FLIGHT.

NOTE

With the exception of deployed aircraft, no deferred discrepancies shall remain open for a period longer than 30 days without the approval of the Unit Engineering Officer or their designated representative.

6. Flight Safety Maintenance Document.

   a. The paper record performs the same function as the records in EAL symbolized by the following icons:

Figure 4-1. EAL Icons

   b. This form is used to inform the pilot that maintenance has been accomplished that could affect the characteristics of flight (Figure 4-8).

   c. If ground checks are the only requirement for the release for flight, the QA Inspection and Maintenance Release sections do not require a signature.

NOTE

The process for recording Functional Check Flight (FCF) requirements on the paper record forms is listed below, This process differs significantly from the process used to record FCF requirements in EAL. The EAL process is thoroughly discussed in EAL Help.

   d. Functional Check Flight (FCF) requirements shall be listed on a No-Fly Maintenance Record. Partial completion of the requirements is documented in the corrective action block in the following manner: “Completed steps 1–5, steps 6–10 remain to be completed.” Corrective actions shall be signed and dated. All remaining FCF requirements shall be entered a new No-Fly discrepancy. Completion of all No-Fly FCF requirements is indicated by the entry of “FCF Completed” in the corrective action block. FCF completions shall be date/time stamped and signed.

7. Deferred Maintenance Record.

   a. The Deferred Maintenance Record (Figure 4-9) is used to record delayed maintenance discrepancies from the Flight Generated Maintenance Record or the No-Fly Maintenance Record when action must be delayed for more than 24 hours (either Carry Forward (CF) or Parts Pending (PP) discrepancies). This record will be located at the front of the paper logbook.

   b. All deferred discrepancies that remain open beyond 30 days require approval from the Engineering Officer.

   c. Used to record limitations to the operational use of an aircraft.

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d. Used to record special inspection requirements (i.e., TCTO's and retorques).

e. Used to record cannibalization entries.

f. For explanation of deferred maintenance, see paragraph 4.B.5.d. of this instruction.

8. Summary. The Engineering Officer or their designated representative shall review these forms on a daily basis. It is important that discrepancies which affect flight safety or system operation not be overlooked and corrective action be taken prior to flight. The Flight Generated Maintenance Record and the No-Fly Maintenance Record are the documents that receive the most review before flight. Discrepancies transferred to the Maintenance Discrepancy Report from the Flight Generated Maintenance Record and the No-Fly Maintenance Record must be approved by the Engineering Officer or their designated representative. Maintenance managers are required to implement procedures which will prevent "system related" or "flight safety" discrepancies from being entered on the Maintenance Discrepancy Report.

C. PAPER FORMS. Examples begin on the next page.

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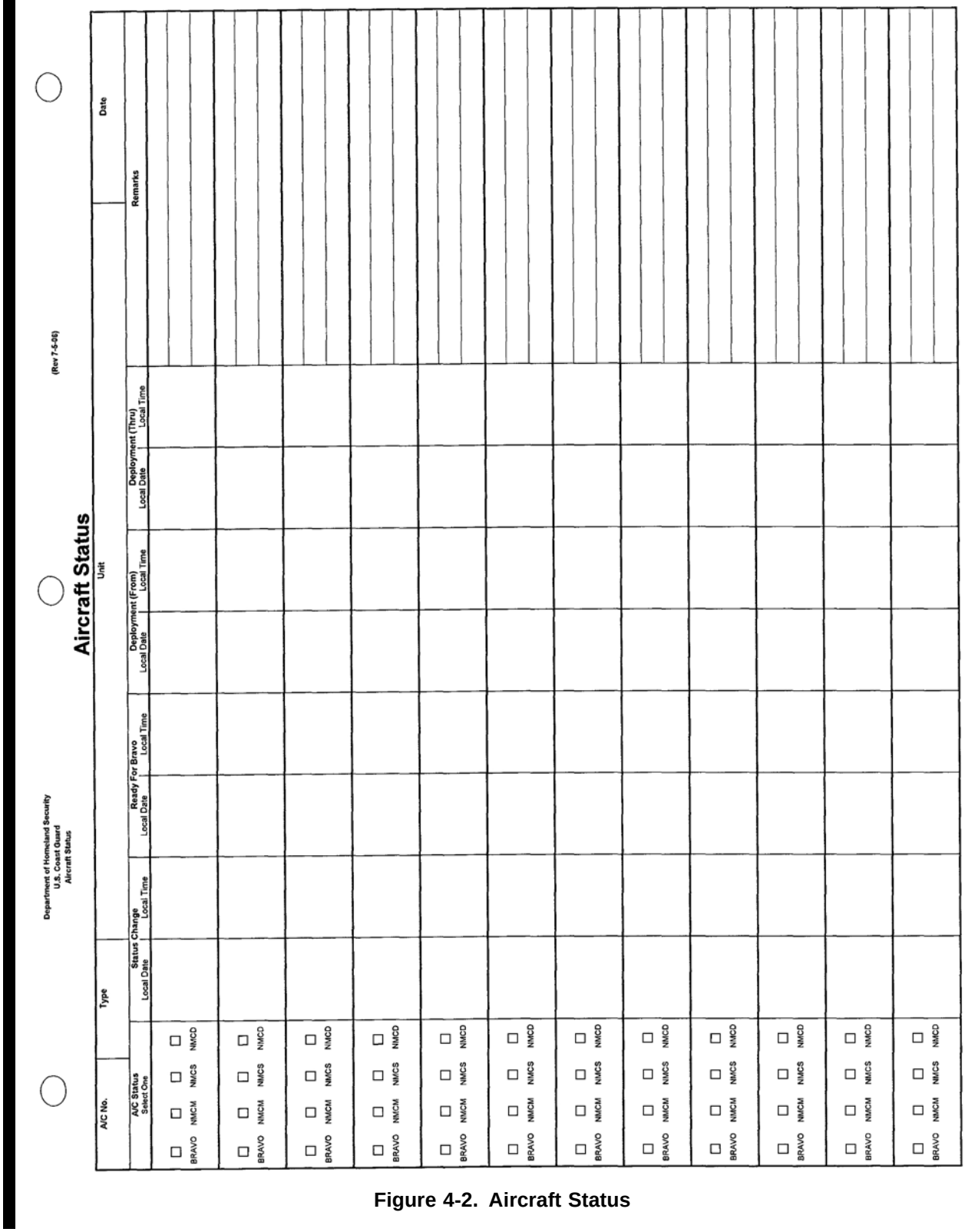
1. Aircraft Status.



Department of Homeland Security
U.S. Coast Guard
Aircraft Status

(Rev 7-6-06)

Aircraft Status

A/C No.	Type	Status Change		Ready For Bravo		Deployment (From)		Deployment (Thru)		Remarks	Date
A/C Status Select One		Local Date	Local Time	Local Date	Local Time	Local Date	Local Time	Local Date	Local Time		
☐ ☐ ☐ BRAVO NMCM NMCS NMCD											
☐ ☐ ☐ BRAVO NMCM NMCS NMCD											
☐ ☐ ☐ BRAVO NMCM NMCS NMCD											
☐ ☐ ☐ BRAVO NMCM NMCS NMCD											
☐ ☐ ☐ BRAVO NMCM NMCS NMCD											
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☐ ☐ ☐ BRAVO NMCM NMCS NMCD											
☐ ☐ ☐ BRAVO NMCM NMCS NMCD											

Figure 4-2. Aircraft Status

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a. Instructions for Aircraft Status.

(1) A/C NO, TYPE, UNIT, DATE: Self-explanatory.

(2) AC STATUS: Check the appropriate box to indicate the current aircraft status.

- BRAVO – Flying or ready to fly
- NMCM – Not Mission Capable Maintenance
- NMCS – Not Mission Capable Supply
- NMCD – Not Mission Capable Depot Maintenance

(3) STATUS CHANGE: The date and time at which the previous status changed to the current status.

(4) READY FOR BRAVO: As applicable, record the date and time that the aircraft is expected to be ready for a status change from not mission capable to BRAVO status.

(5) DEPLOYMENT (FROM, THRU): As appropriate, record the date and time that the aircraft departed for, or returned from deployment.

(6) REMARKS: Amplifying information concerning the current aircraft status or deployment. This entry is a required for each NMC status and all deployments.

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2. Flight Schedule. 6 or 9 Crew (6 Crew used as an example)

Department of Homeland Security
U.S. Coast Guard
Flight Schedule

(Rev 3-22-07)

6 Crew Flight Schedule

Local Date	Event No.	Local Ramp Time	Local ETD	Zulu ETD	A/C Type	A/C No.	ETE (Hrs)	Fuel (Lbs)	Emp. Cat.	Claimant	Position	Pilots & Crew	Last 4 of SSN	Mission / Engineering Comments

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a. Instructions for Flight Schedule.

(1) LOCAL DATE: The date of each scheduled event.

(2) EVENT NO: A locally generated sequential number for each scheduled event.

(3) LOCAL RAMP TIME: The local time where the aircraft is currently located.

(4) LOCAL AND/OR ZULU ETD: The estimated time of departure using local time when at the home unit, or both Local and ZULU times when away from home station.

(5) A/C NO, TYPE, UNIT, DATE: Self-explanatory.

(6) ETE (HRS): The estimated time en route.

(7) FUEL (LBS): The fuel load required for the mission.

(8) EMP. CAT: The employment category that describes the primary reason for this event.

(9) CLAIMANT: The organization maintaining operational authority over the asset during the event.

(10) POSITION: The crew position each crew member will hold while assigned to this event.

(11) PILOTS & CREW: Self-explanatory.

(12) LAST 4 OF SSN: Self-explanatory.

(13) MISSION/ENGINEERING COMMENTS: Narrative that further explains the purpose or requirements of the mission.

(14) SUBMITTED AND APPROVED BY: Self-explanatory.

(15) PAGE 1 OF: Self-explanatory.

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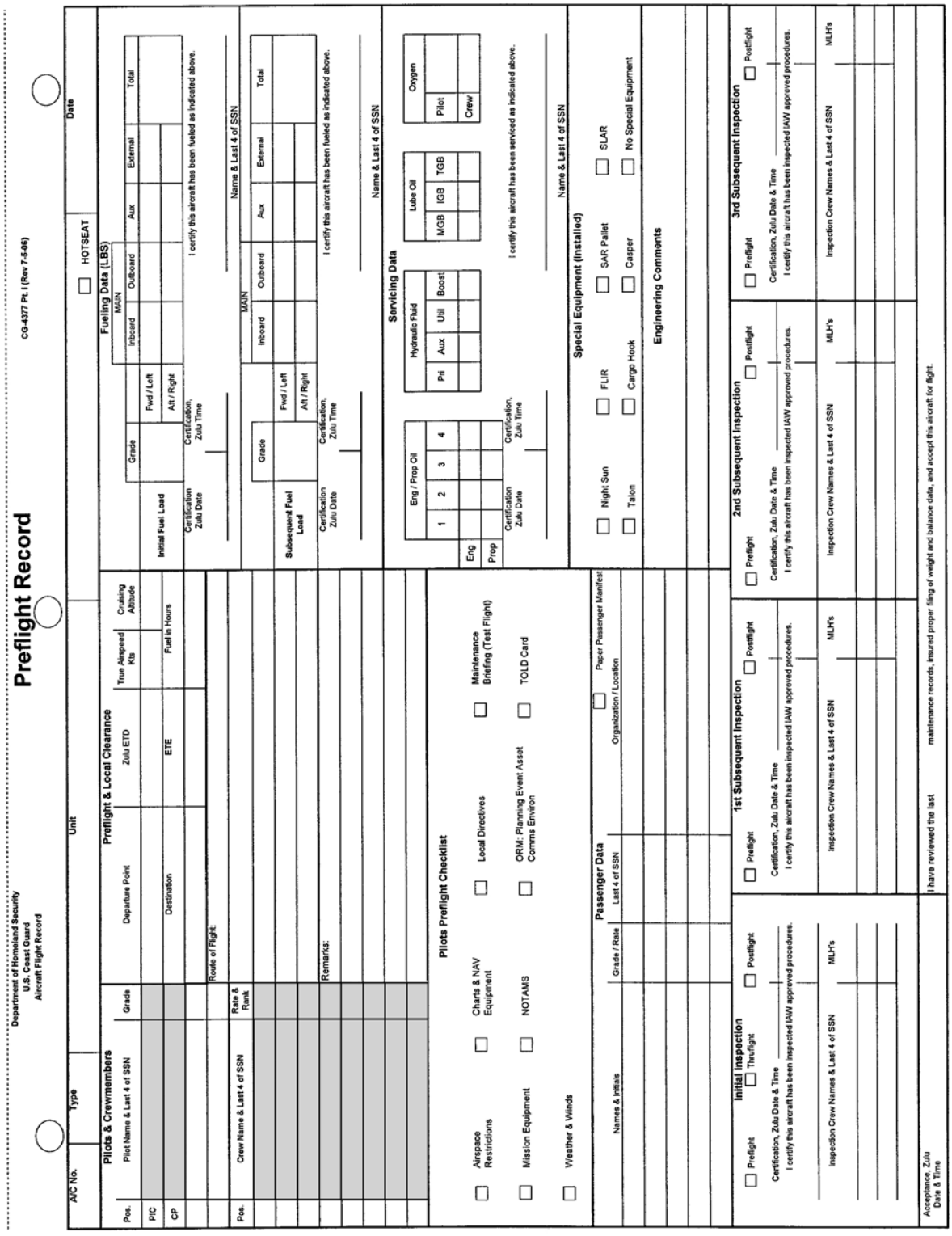
3. Preflight Record.



Department of Homeland Security
U.S. Coast Guard
Aircraft Flight Record

Preflight Record

CG-4377 Pt. I (Rev 7-06)

A/C No. | Type | Unit | HOTSEAT | Date

Pilots & Crewmembers

Pos.	Pilot Name & Last 4 of SSN	Grade
PIC		
CP		

Pos.	Crew Name & Last 4 of SSN	Rate & Rank

Preflight & Local Clearance

Departure Point | Zulu ETD | True Airspeed Kts | Cruising Altitude

Destination | ETE | Fuel in Hours

Route of Flight:

Remarks:

Pilots Preflight Checklist

- Airspace Restrictions
- Charts & NAV Equipment
- Local Directives
- Maintenance Briefing (Test Flight)
- Mission Equipment
- NOTAMS
- ORM: Planning Event Asset Comms Environ
- TOLD Card
- Weather & Winds

Fueling Data (LBS)

	Grade	MAIN Inboard	MAIN Outboard	Aux	External	Total
Initial Fuel Load	Fwd / Left					
	Aft / Right					

Certification, Zulu Date | Certification, Zulu Time

I certify this aircraft has been fueled as indicated above.

Name & Last 4 of SSN

	Grade	MAIN Inboard	MAIN Outboard	Aux	External	Total
Subsequent Fuel Load	Fwd / Left					
	Aft / Right					

Certification, Zulu Date | Certification, Zulu Time

I certify this aircraft has been fueled as indicated above.

Name & Last 4 of SSN

Servicing Data

	Eng / Prop Oil 1	2	3	4	Hydraulic Fluid Prl	Aux	Util	Boost	Lube Oil MGB	IGB	TGB	Oxygen Pilot	Crew
Eng													
Prop													

Certification, Zulu Date | Certification, Zulu Time

I certify this aircraft has been serviced as indicated above.

Name & Last 4 of SSN

Special Equipment (Installed)

- Night Sun
- FLIR
- SAR Pallet
- SLAR
- Talon
- Cargo Hook
- Casper
- No Special Equipment

Engineering Comments

Passenger Data

Paper Passenger Manifest

Names & Initials	Grade / Rate	Last 4 of SSN	Organization / Location

Initial Inspection

☐ Preflight ☐ Thruflight ☐ Postflight

Certification, Zulu Date & Time _____

I certify this aircraft has been inspected IAW approved procedures.

Inspection Crew Names & Last 4 of SSN | MLH's

1st Subsequent Inspection

☐ Preflight ☐ Postflight

Certification, Zulu Date & Time _____

I certify this aircraft has been inspected IAW approved procedures.

Inspection Crew Names & Last 4 of SSN | MLH's

2nd Subsequent Inspection

☐ Preflight ☐ Postflight

Certification, Zulu Date & Time _____

I certify this aircraft has been inspected IAW approved procedures.

Inspection Crew Names & Last 4 of SSN | MLH's

3rd Subsequent Inspection

☐ Preflight ☐ Postflight

Certification, Zulu Date & Time _____

I certify this aircraft has been inspected IAW approved procedures.

Inspection Crew Names & Last 4 of SSN | MLH's

Acceptance, Zulu Date & Time

I have reviewed the last maintenance records, insured proper filing of weight and balance data, and accept this aircraft for flight.

Figure 4-4. Preflight Record

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a. Instructions for Preflight Record.

NOTE

The Coast Guard Air Operations Manual, COMDTINST M3710.1 (series) contains additional generalized information for pilots regarding the proper use of the Preflight and Local Clearance form.

(1) A/C NO, TYPE, UNIT, DATE: Self explanatory.

(2) Operations Section.

(a) HOTSEAT: Completed by the Pilot In Command (PIC) for an event that involves a PIC swap out of an aircraft that is returning from a prior mission.

(b) PILOTS & CREW MEMBERS:

- POS: Each crew member's assigned position.
- PILOT OR CREW NAME & LAST 4 OF SSN: Self-explanatory.
- GRADE/RATE & RANK: Self-explanatory.

(c) PREFLIGHT & LOCAL CLEARANCE:

- DEPARTURE POINT: The location the AC will depart from.
- ZULU ETD: The estimated time of departure.
- TRUE AIRSPEED KTS: The intended A/C speed.
- CRUISING ALTITUDE: The intended flight altitude.
- DESTINATION: The intended landing location.
- ETE: Estimated time en route.
- FUEL IN HOURS: A calculation of maximum flight time with the current fuel load.
- ROUTE OF FLIGHT: A concise description of the intended flight path. VFR /IFR only inputs are NOT authorized.
- REMARKS: A concise description of the intended mission.

(d) PILOTS PREFLIGHT CHECKLIST: Select all resources utilized during preflight planning.

(e) PASSENGER DATA:

- PAPER PASSENGER MANIFEST: Place a check mark in this block when a DD Form 2131 (Passenger Manifest) is utilized to record passenger information.
- NAMES & INITIALS: Self-explanatory.
- GRADE/RATE: Self-explanatory.
- LAST 4 OF SSN: Self-explanatory.
- ORGANIZATION/LOCATION: List each passenger's home organization or unit.

(f) ACCEPTANCE ZULU DATE & TIME: The date and time that the PIC accepts the aircraft for the scheduled event.

(g) NUMBER OF MAINTENANCE RECORDS REVIEWED: Enter the number of maintenance records reviewed prior to acceptance of the aircraft.

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(h) NAME OF PIC: Self-explanatory.

(3) Engineering Section.

(a) FUELING DATA (LBS):

- GRADE: The fuel type.
- FUEL LOAD PER TANK: The amount of fuel in each tank (in lbs). Use only those tanks that apply and cross through those do not apply.
- TOTAL: The total fuel load (in lbs).
- CERTIFICATION, ZULU DATE and TIME: The date and time that the fuel load was certified.
- CERTIFYING INDIVIDUAL: The person that certified the fuel load.

(b) SERVICING DATA:

- ENG/PROP OIL LEVELS: The amount/level of oil in each engine or prop (as applicable).
- HYDRAULIC FLUID LEVELS: The amount/level of hydraulic fluid in each reservoir (as applicable).
- LUBE OIL LEVELS: The amount/level of lube oil in each gearbox (as applicable).
- OXYGEN LEVELS: The amount/pressure of oxygen in each tank (as applicable).
- CERTIFICATION, ZULU DATE and TIME: The date and time that the servicing data was certified.
- CERTIFYING INDIVIDUAL: The person that certified the servicing data.

(c) SPECIAL EQUIPMENT (INSTALLED): Place a check mark adjacent the type equipment installed.

(d) ENGINEERING COMMENTS: Enter applicable comments that describe A/C limitations or enhancements that could affect the mission.

(e) INITIAL and SUBSEQUENT INSPECTIONS:

- PREFLIGHT/THRUFLIGHT/POSTFLIGHT: Place a check mark adjacent the type inspection performed.
- CERTIFICATION, ZULU DATE and TIME: The date and time that the inspection was certified.
- INSPECTION CERTIFICATION NAME: The person that certified the inspection as being complete.
- MLHS OF CERTIFYING OFFICIAL: The maintenance labor hours expended by the certifying official.
- ADDITIONAL INSPECTION CREW: Each person involved in this inspection.
- MLHS: The maintenance labor hours expended by each person involved in the inspection.

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4. Flight Record.

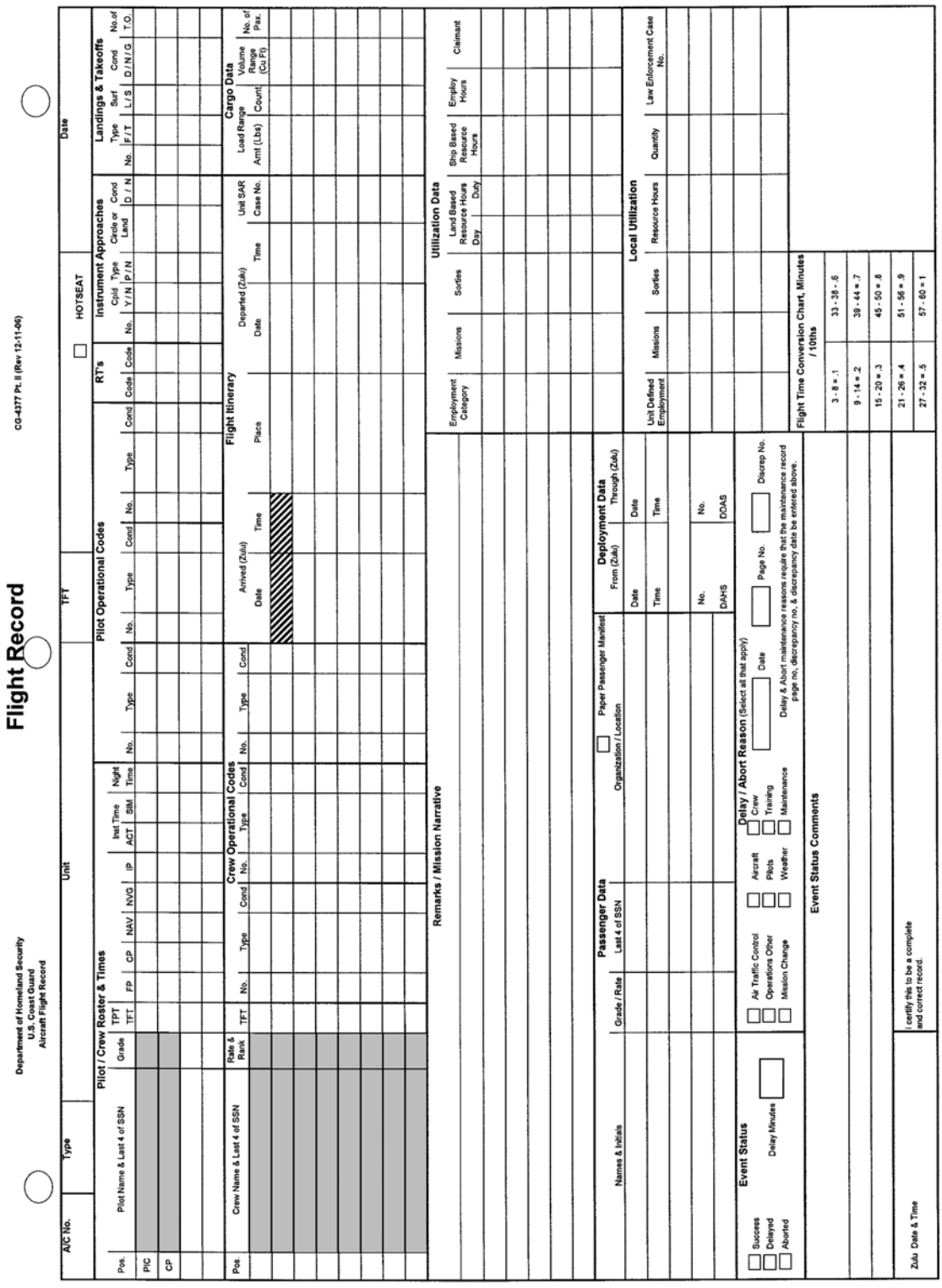

Figure 4-5. Flight Record

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a. Instructions for Flight Record.

NOTE

The Coast Guard Air Operations Manual COMDTINST M3710.1 (series) contains generalized information for pilots regarding the proper use of the Flight Record form.

(1) A/C NO, TYPE, UNIT, DATE: Self explanatory.

(2) TFT: The total flight time accrued during this event. A time conversion chart is provided at the lower right side of the flight record form.

(3) HOTSEAT: Completed by the Pilot In Command (PIC) for an event that involves a PIC swap out of an aircraft that is returning from a prior mission.

(4) PILOT and CREW ROSTER and TIMES:

- POS, PILOT OR CREW NAME and LAST 4 OF SSN, GRADE/RATE and RANK: Self explanatory.
- TPT/TFT: Total pilot time/total flight time for this event. Crew members will typically be credited with TFT for the event, but shall be credited with partial time when onboard for less than the entire flight.
- FP: First pilot time. Total FP time (all pilots) must equal TFT.
- CP: Copilot time. Total CP time (all pilots) must be equal to or less than TFT.
- NAV: Navigator time. May be logged by a pilot qualified in type that is manning the navigator's position in the C-130.
- NVG: Time logged by a pilot or pilots, wearing Night Vision Goggles at a flight control position, in flight between the official time of sunset and sunrise.
- IP: Instructor pilot. IP time may be logged, by a pilot designated as an Instructor Pilot, when exercising control over a flight during which syllabus instruction or a flight check is conducted. IP time shall not exceed TPT for any individual pilot. An IP entry should provide the pilot with a corresponding IF operational code entry.
- ACT: Actual instrument time is credited to both pilot and copilot as applicable.
- SIM: Simulated instrument time is credited to only the pilot flying the aircraft.
- NIGHT TIME: Self-explanatory. Credited to both pilot and copilot. Night hours must be recorded if night or NVG operations are to be recorded elsewhere on this form.

(5) PILOT and CREW OPERATIONAL CODES:

- NO: Record the total number of times that each type operation was performed.
- TYPE: Record the 2 letter code of the operation that was performed.

Use of code "EO" requires that remarks be entered in Remarks/Mission Narrative block.

Helicopter pilots utilizing code "GC" shall not enter Recurrent Training code "50" for the same pilot on the same event.

- CONDITION: Record D (day), N (night), or G (NVG).

(6) RTS: Record the applicable routine training code. RTs do not count towards mins.

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(7) INSTRUMENT APPROACHES:

- No: Enter the number/amount of each type approach that a pilot executed.
- CPLD: Enter Y (yes) or N (no) to indicate if the approach was accomplished in a coupled mode.
- TYPE: Enter P (precision) or N (non-precision) in to indicate the approach type.
- CIRCLE OR LAND: Enter C (circling) or L (landing) to indicate how the approach was terminated.
- COND: Enter D (day) or N (night) to indicate the condition during the approach.

(8) LANDINGS and TAKEOFFS:

- No: Enter the number/amount of each type landing that was executed.
- TYPE: Enter F (full stop) or T (touch and go) to indicate the landing type.
- SURF: Enter L (land) or S (ship) to indicate the landing surface.
- COND: Enter D (day), N (night), G (NVG) to indicate the condition during the landing.
- NO. OF T.O: Enter the number of takeoffs that were executed.

(9) FLIGHT ITINERARY:

- PLACE: The departure and/or arrival locations for each leg of the event. Each arrival location is typically the subsequent departure location.
- ZULU DATE and TIME: Self-explanatory.
- UNIT SAR CASE No: SAR case numbers shall be recorded adjacent the leg of the flight event during which the SAR case occurred.

(10) CARGO DATA: “Equipment and non-crew personnel not normally required for the support of the aircraft’s operation, systems, or crew,” see paragraph 2.B.3 of the Abstract of Operations, CIM 3123.

- LOAD RANGE AMT (LBS): The number of pounds of cargo that was moved during a particular leg of the flight event.
- LOAD RANGE COUNT: The number of times that the load range was carried during a leg of the flight event.
- VOLUME RANGE: The total number of cubic feet of cargo that was moved during a single leg of the flight event.
- NO.OF PAX: The total number of passengers carried on each leg of the event, regardless of whether listed on a Paper Passenger Manifest or in the Passenger Data section of the flight record. Passenger weight should be recorded as Load Range Amt.

(11) REMARKS/MISSION NARRATIVE: A complete descriptive record of the event, to include any occurrences not recorded on the remainder of the flight record. When Operational Code “EO” (Other), or Employment Category “36” (Misc) are entered, remarks are required.

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(12) UTILIZATION DATA:

- EMPLOYMENT CATEGORY: The type mission for which the aircraft was utilized. The use of Category “36” (Misc.) requires an explanation in the Remarks/Mission Narrative block.

- MISSIONS: The number of times an Employment Category is benefited under separate tasking. Subject to the conditions and limitations set forth in the Abstract of Operations, CIM 3123, chapter 2.B.2.

- SORTIES: The individual movement of an aircraft from the time it is underway until it returns for replenishment or terminates to begin another mission. Subject to the conditions and limitations set forth in the Abstract of Operations, CIM 3123, chapter 2.B.2.

- LAND BASED RESOURCE HOURS: The number of day or duty hours flown. Day hours are 0800 – 1600 local time, Monday through Friday, except holidays. Duty hours are all hours not considered to be day hours.

- SHIP BASED RESOURCE HOURS: - Helicopter flight hours involving direct operation with a ship. Subject to the conditions and limitations set forth in the Abstract of Operations, CIM 3123, chapter 2.B.2.

- EMPLOYMENT HOURS: Generally the sum of Land Based Resource Hours and Ship Based Resource Hours on any line. However, employment hours may be entered (not to exceed TFT) for any listed employment category, even if no resource hours were assigned to the category.

- CLAIMANT: The organization maintaining operational authority over the asset during the event.

(13) PASSENGER DATA:

- PAPER PASSENGER MANIFEST: Place a check mark in this block when a DD Form 2131 (Passenger Manifest) is utilized to record passenger information.

- NAMES and INITIALS: Self-explanatory.

- GRADE/RATE: Self-explanatory.

- LAST 4 OF SSN: Self-explanatory.

- ORGANIZATION/LOCATION: List each passenger’s home organization or unit.

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(14) DEPLOYMENT DATA:

- FROM ZULU DATE and TIME: Entered on the first flight record of the deployment.
- THRU ZULU DATE and TIME: Entered on the last flight record of the deployment.
- No. DAHS: Number of Days Away from Home Station. DAHS are rounded to the nearest whole day, whenever an aircraft is away from its parent unit for a continuous period in excess of 12 hours. During aircraft transfer/ferry operations, DAHS is calculated from departure from the losing unit and arrival at the gaining unit. Aircraft deployed aboard ship are not counted in this category, except during transit to and from the ship, or when temporarily operating at a shore facility away from the ship. Subject to the conditions and limitations set forth in the Abstract of Operations, CIM 3123, chapter 2.B.3.
- No. DDAS: Number of Days Deployed Aboard Ship. DDAS includes any part of a day the aircraft was deployed aboard ship. DDAS are subtracted from total days deployed to determine DAHS. Subject to the conditions and limitations set forth in the Abstract of Operations, CIM 3123, chapter 2.B.3.

(15) LOCAL UTILIZATION: Consists of Unit Defined Employment Categories. Local policy dictates the use of these codes and the manner in which the data is entered for the following categories: Missions, Sorties, Resource Hours, Quantity, and Law Enforcement Case No.

(16) EVENT STATUS: Place a check mark in the appropriate status block. If delayed, enter the number of minutes the event was delayed.

(17) DELAY/ABORT REASON: Place a check mark adjacent the reason for the delay and/or abort event status. When maintenance is selected as the reason, enter the date, page no. and the discrepancy no. of the discrepancy that caused the delay or abort.

(18) EVENT STATUS COMMENTS: Narrative added to explain reasons for the event status.

(19) PIC CERTIFICATION ZULU DATE and TIME: Self-explanatory.

(20) PIC CERTIFICATION OF RECORD COMPLETION: Self-explanatory.

(21) CONVERSION CHART MINUTES TO 10THS: Self-explanatory.

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5. Flight Generated Maintenance Record.

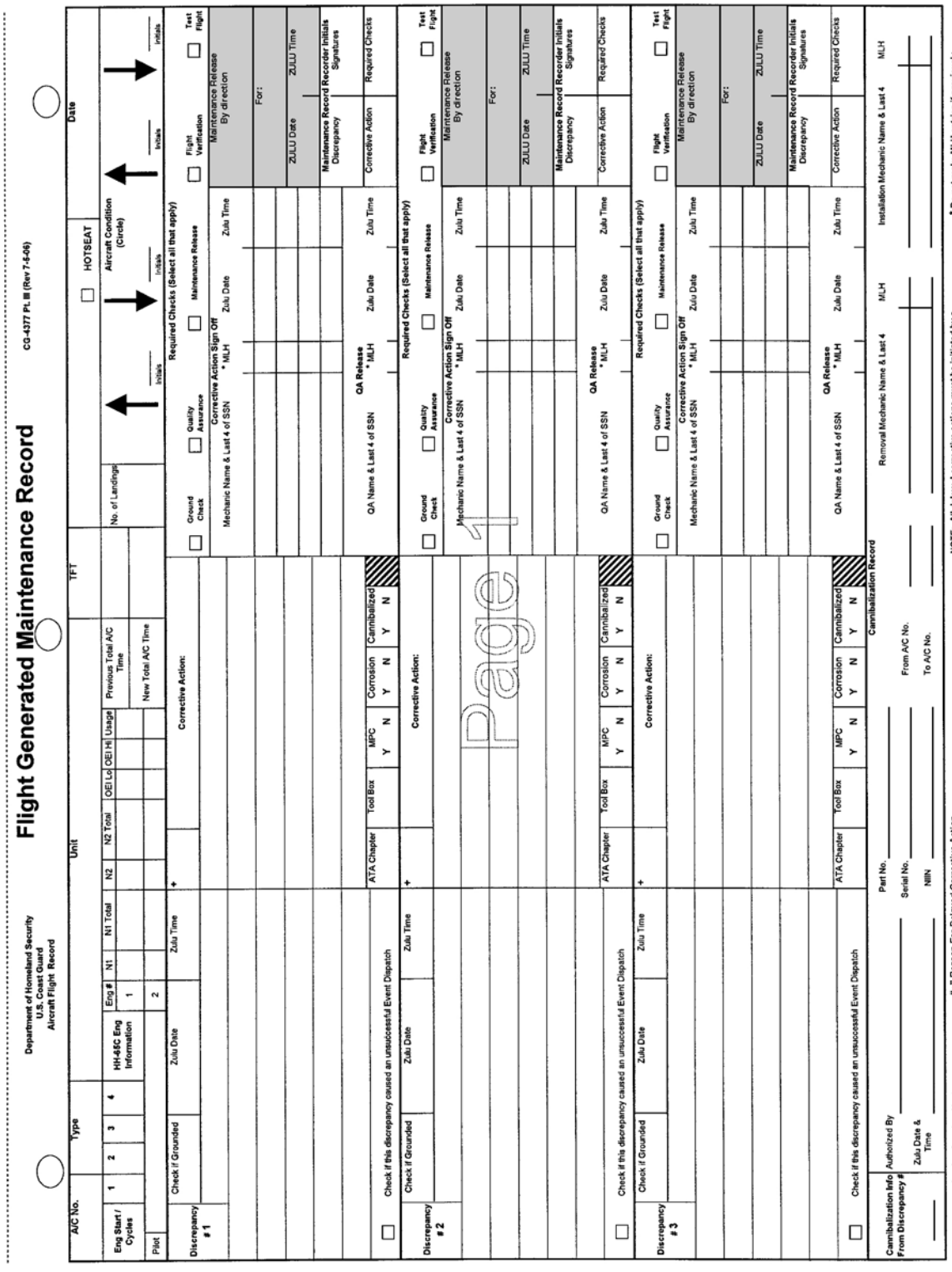

Figure 4-6. Flight Generated Maintenance Record

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a. Instructions for Flight Generated Maintenance Record.

(1) A/C NO, TYPE, UNIT, TFT (TOTAL FLIGHT TIME), HOT SEAT, DATE, PILOT: Self-explanatory.

(2) ENG START/CYCLES: The total A/C Engine Start Cycles from this flight event.

(3) HH-65C ENG INFORMATION: The engine information for Turbomeca engines from this flight event.

(4) Transfer the “NEW TOTAL A/C Time” from the previous Flight Generated Maintenance Record to the “PREVIOUS TOTAL A/C Time” on the current Flight Generated Maintenance Record. Add TFT and “Previous TOTAL A/C Time” together to calculate the “NEW TOTAL A/C Time.”

(5) NO OF LANDINGS: The total number of landings from this flight event.

(6) AIRCRAFT CONDITION: Circle the appropriate ARROW (from left to right) and initial to the right of the circle to indicate if the aircraft is grounded. When the aircraft is released for flight from a grounded condition, the releasing authority will circle the UP ARROW and initial to the right of the circle. For further explanation, see paragraph 4.B.5.b. of this instruction.

(7) DISCREPANCY:

- GROUNDED: Mark an “X” in this block if the discrepancy is considered grounding.
- ZULU DATE and TIME: Record the date and time that the discrepancy is reported. This applies to all grounding and non-grounding discrepancies.
- DISCREPANCY: Describe the problem in clear concise terms. When no discrepancies exist enter “None.”
- CAUSE OF UNSUCCESSFUL EVENT DISPATCH: Mark an “X” in this block if the equipment condition caused an unsuccessful dispatch (delay or abort) after the pilot accepted the aircraft for an operational mission.

(8) CORRECTIVE ACTION:

- “+”: Enter deferred maintenance action symbols as applicable. For further explanation, see paragraph 4.B.5.d. of this instruction.
- CORRECTIVE ACTION: Enter a full description of all maintenance performed. List all references used to correct the discrepancy.
- ATA CHAPTER: The ATA chapter number of the affected system. Typically the first two digits of the MPC number. If discrepancies do not have an ATA chapter, enter chapter 12.
- TOOL BOX: The number of the tool box used to correct the discrepancy.
- MPC: Circle Y (yes) or N (no) to indicate if that MLHs are documented on an MPC and the MPC will be submitted for entry into AMCS.
- CORROSION: Circle Y (yes) or N (no) to indicate if the maintenance resulted because of corrosion or if corrosion was discovered during the corrective action.
- CANNIBALIZATION: Circle Y (yes) or N (no) to indicate if a component was removed from or installed on this aircraft because of cannibalization. If yes, record additional cannibalization information.

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(9) REQUIRED CHECKS: Check the appropriate box(es) to indicate if any of the listed functional checks must be performed prior to release for operational flight. See the Aeronautical Engineering Maintenance Management Manual, COMDTINST M13020.1 (series), paragraph 1.O. for explanations of each check.

(10) CORRECTIVE ACTION SIGN-OFF:

- MECHANIC NAME and LAST 4 OF SSN: Self-explanatory.
- MLH: Self-explanatory. For further explanation, see paragraph 4.B.5.c. of this instruction.
- ZULU DATE and TIME: Self-explanatory.

(11) QA RELEASE: Self-explanatory. For further explanation, see paragraph 4.B.5.c.of this instruction.

(12) MAINTENANCE RELEASE: Self-explanatory. For further explanation, see paragraph 4.B.5.c.of this instruction.

(13) MAINTENANCE RECORD RECORDER: Initial the appropriate block to indicate that the information has been recorded in EAL.

(14) CANNIBALIZATION RECORD: Required entries include:

- The discrepancy number of the No-Fly record where the component cannibalization is recorded.
- The NIIN and serial number of the affected component.
- The tail number of the donating “From A/C”.
- The tail number of the receiving “To A/C”.
- Removal and installation technician(s) identification information.
- MLHs expended to remove and install the donated part.
- For further explanation, see paragraph 4.B.5.e. of this instruction.

(15) DISCREPANCIES CONTINUED ON NEXT SHEET: Self-explanatory.

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6. No-Fly Maintenance Record.

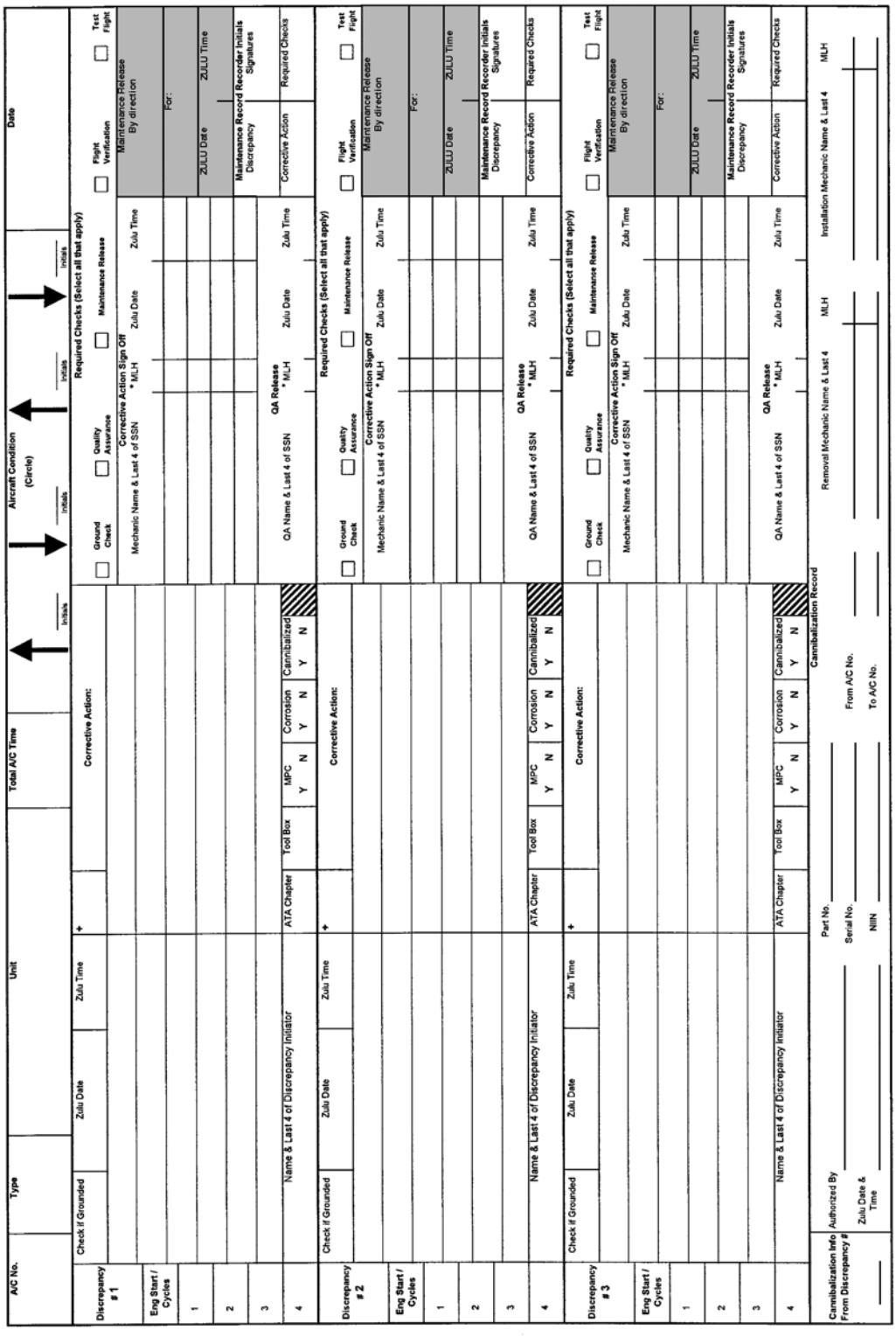

Figure 4-7. No-Fly Maintenance Record

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a. Instructions for No-Fly Maintenance Record.

(1) A/C NO, TYPE, UNIT, DATE: Self-explanatory.

(2) TOTAL A/C TIME: Enter the total AC time from the most recent Flight Generated Maintenance Record.

(3) AIRCRAFT CONDITION: Circle the appropriate ARROW (from left to right) and initial to the right of the circle to indicate if the aircraft is grounded. When the aircraft is released for flight from a grounded condition, the releasing authority will circle the UP ARROW and initial to the right of the circle. For further explanation, see paragraph 4.B.5.b. of this instruction.

(4) ENG START/CYCLES: For all A/C, logged by whoever records the discrepancy, for the tracking of total AC Engine Start Cycles.

(5) DISCREPANCY:

- GROUNDED: Mark an “X” in this block if the discrepancy is considered grounding.
- ZULU DATE and TIME: Record the date and time that the discrepancy is reported. This applies to all grounding and non-grounding discrepancies.
- DISCREPANCY: Describe the problem in clear concise terms.
- NAME and LAST 4 OF DISCREPANCY INITIATOR: The identifying information of the person who originally recorded this discrepancy.

(6) CORRECTIVE ACTION:

- “+”: Enter deferred maintenance action symbols as applicable. For further explanation, see paragraph 4.B.5.d. of this instruction.
- CORRECTIVE ACTION: Enter a full description of all maintenance performed. List all references used to correct the discrepancy.
- ATA CHAPTER: The ATA chapter number of the affected system. Typically the first two digits of the MPC number. If discrepancies do not have an ATA chapter, enter chapter 12.
- TOOL BOX: The number of the tool box used to correct the discrepancy.
- MPC: Circle Y (yes) or N (no) to indicate that MLHs are documented on an MPC and the MPC will be submitted for entry into AMCS.
- CORROSION: Circle Y (yes) or N (no) to indicate if the maintenance resulted because of corrosion or if corrosion was discovered during the corrective action.
- CANNIBALIZATION: Circle Y (yes) or N (no) to indicate if a component was removed from or installed on this aircraft because of cannibalization. If yes, record additional cannibalization information.

(7) REQUIRED CHECKS: Check the appropriate box(es) to indicate if any of the listed functional checks must be performed prior to release for operational flight. See the Aeronautical Engineering Maintenance Management Manual, COMDTINST M13020.1 (series), paragraph 1.O. for explanations of each check.

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(8) CORRECTIVE ACTION SIGN-OFF:

- MECHANIC NAME and LAST 4 OF SSN: Self-explanatory.
- MLH: Self-explanatory. For further explanation, see paragraph 4.B.5.c. of this instruction.
- ZULU DATE and TIME: Self-explanatory.

(9) QA RELEASE: Self-explanatory. For further explanation, see paragraph 4.B.5.c. of this instruction.

(10) MAINTENANCE RELEASE: Self-explanatory. For further explanation, see paragraph 4.B.5.c. of this instruction.

(11) MAINTENANCE RECORD RECORDER: Initial the appropriate block to indicate that the information has been recorded in EAL.

(12) CANNIBALIZATION RECORD: Required entries include:

- The discrepancy number of the No-Fly record where the component cannibalization is recorded.
- The NIIN and serial number of the affected component.
- The tail number of the donating “From A/C”.
- The tail number of the receiving “To A/C”.
- Removal and installation technician(s) identification information.
- MLHs expended to remove and install the donated part.
- For further explanation, see paragraph 4.B.5.e. of this instruction.

(13) The page number is used to track consecutive No-Flys. The pages should be tracked by the date of each discrepancy. Numbering will end when a Flight Generated Maintenance Record is inserted into the logbook after a flight.

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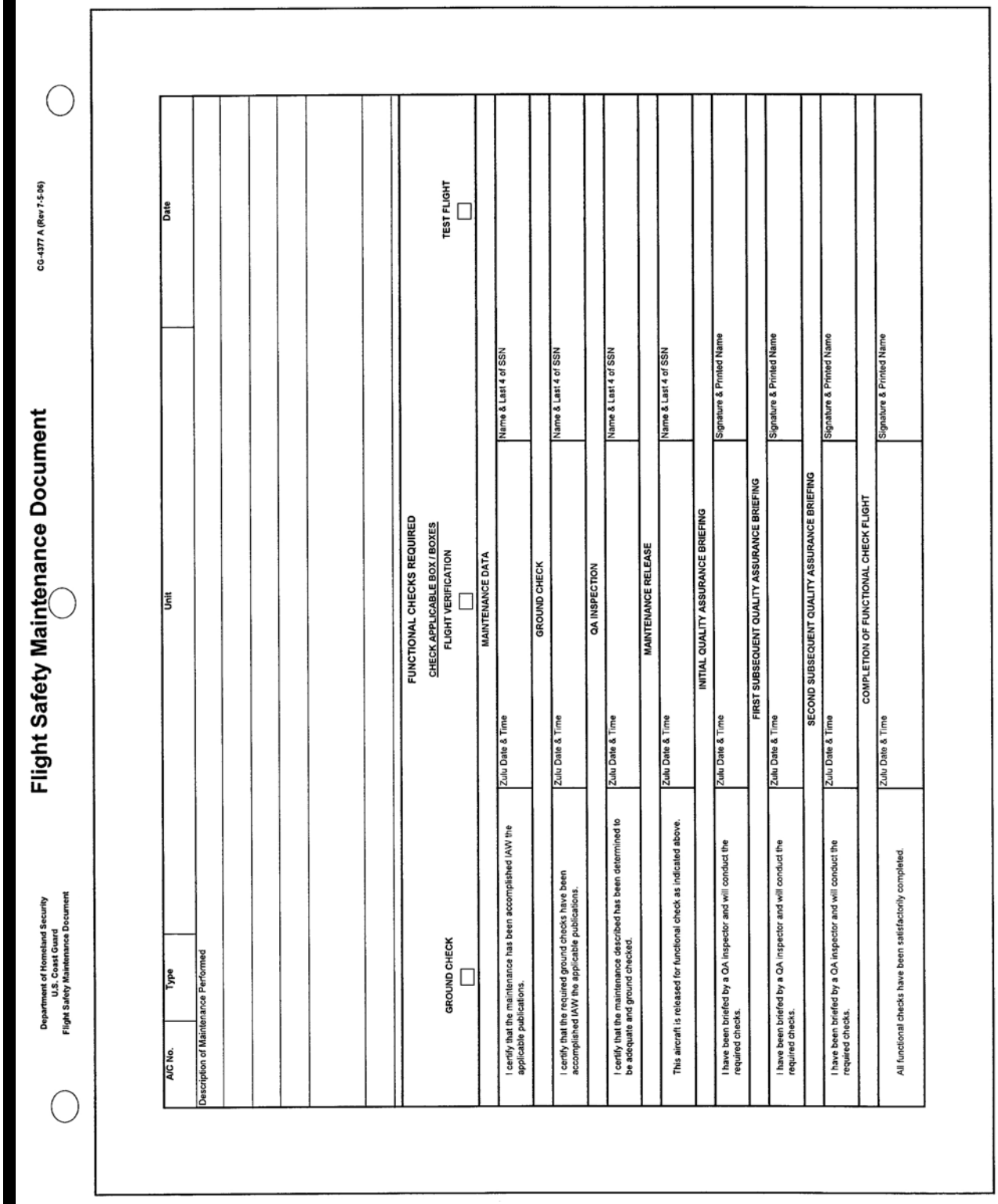
7. Flight Safety Maintenance Document.



Department of Homeland Security
U.S. Coast Guard
Flight Safety Maintenance Document

Flight Safety Maintenance Document

CG-4377 A (Rev 7-5-06)

A/C No.	Type	Unit	Date
Description of Maintenance Performed			

FUNCTIONAL CHECKS REQUIRED

GROUND CHECK ☐ | CHECK APPLICABLE BOX / BOXES | FLIGHT VERIFICATION ☐ | TEST FLIGHT ☐

MAINTENANCE DATA		
I certify that the maintenance has been accomplished IAW the applicable publications.	Zulu Date & Time	Name & Last 4 of SSN
GROUND CHECK		
I certify that the required ground checks have been accomplished IAW the applicable publications.	Zulu Date & Time	Name & Last 4 of SSN
QA INSPECTION		
I certify that the maintenance described has been determined to be adequate and ground checked.	Zulu Date & Time	Name & Last 4 of SSN
MAINTENANCE RELEASE		
This aircraft is released for functional check as indicated above.	Zulu Date & Time	Name & Last 4 of SSN
INITIAL QUALITY ASSURANCE BRIEFING		
I have been briefed by a QA inspector and will conduct the required checks.	Zulu Date & Time	Signature & Printed Name
FIRST SUBSEQUENT QUALITY ASSURANCE BRIEFING		
I have been briefed by a QA inspector and will conduct the required checks.	Zulu Date & Time	Signature & Printed Name
SECOND SUBSEQUENT QUALITY ASSURANCE BRIEFING		
I have been briefed by a QA inspector and will conduct the required checks.	Zulu Date & Time	Signature & Printed Name
COMPLETION OF FUNCTIONAL CHECK FLIGHT		
All functional checks have been satisfactorily completed.	Zulu Date & Time	Signature & Printed Name

Figure 4-8. Flight Safety Maintenance Document

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a. Instructions for Flight Safety Maintenance Document.

(1) A/C NO., TYPE, UNIT, DATE: Self-explanatory.

(2) DESCRIPTION OF MAINTENANCE PERFORMED: Enter a description of the maintenance performed. List the references that the maintenance was performed in accordance with.

(3) FUNCTIONAL CHECKS REQUIRED: Check the appropriate boxes. See the Aeronautical Engineering Maintenance Management Manual, COMDTINST M13020.1 (series), paragraph 1.O. for complete explanations of each term.

(4) MAINTENANCE DATA: Enter the identification information of the maintenance technician who completed all related maintenance.

(5) GROUND CHECK: Enter the identification information of the maintenance technician or pilot who completed all necessary ground checks.

(6) QA INSPECTION: Enter identification information of the maintenance technician who completed all related quality checks and ensured that all maintenance was determined to be adequate.

(7) MAINTENANCE RELEASE: Enter the identification information of the maintenance releaser who authorized release of the aircraft for the functional check.

(8) Functional Check Flight.

(a) QUALITY ASSURANCE BRIEFING: QA must brief the pilot who is going to accomplish the in-flight check. The pilots' identifying information in these blocks indicate that the brief has been completed. QA briefing blocks are provided for two subsequent functional check attempts.

(b) COMPLETION OF FUNCTIONAL CHECK FLIGHT: The pilot who ensures the successful completion of the functional check flight item will enter identifying information to signify the completion of the functional check flight.

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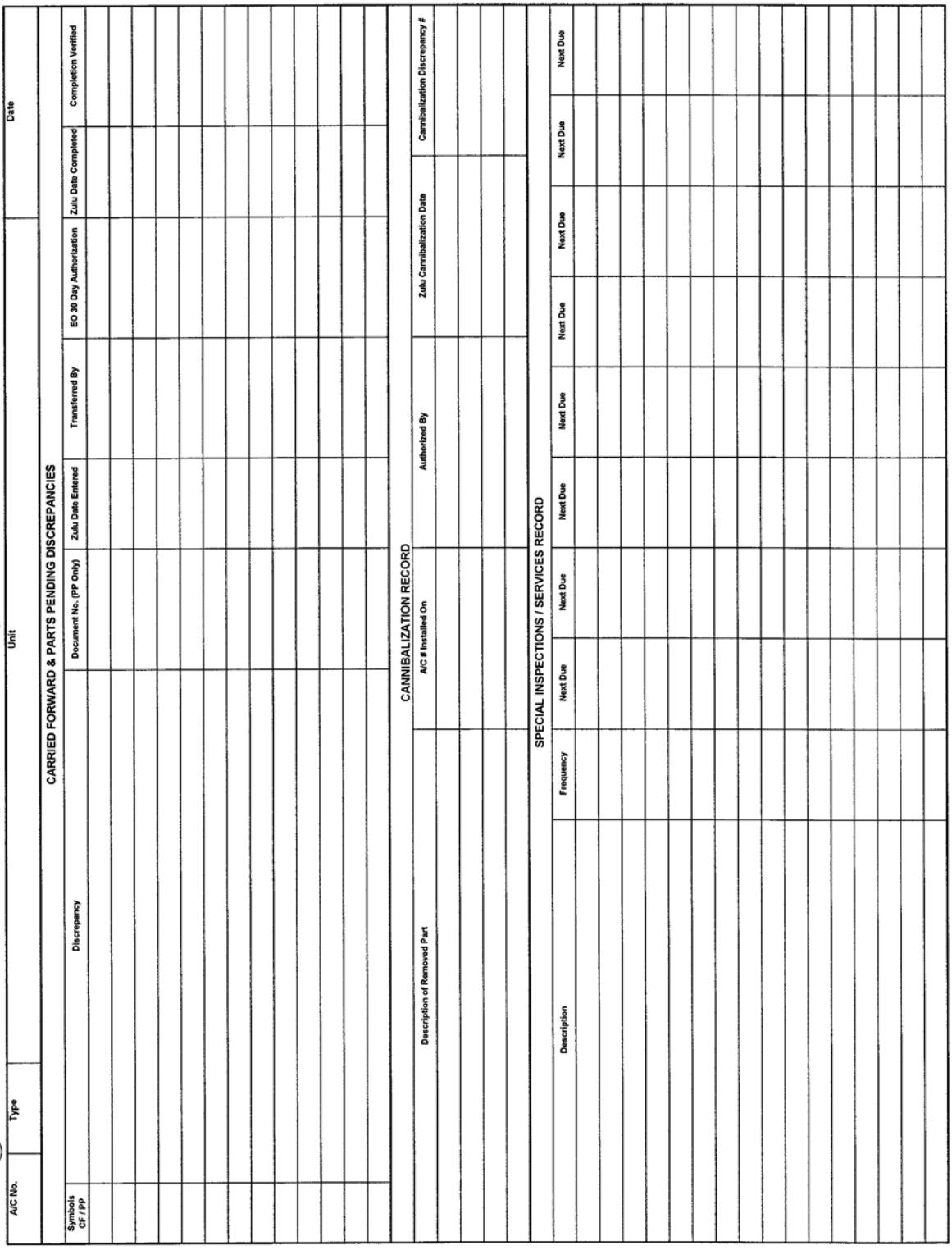
8. Deferred Maintenance Record.



Department of Homeland Security
U.S. Coast Guard
Aircraft Deferred Maintenance Record

Deferred Maintenance Record (Rev 7-5-06)

A/C No. | Type | Unit | Date

CARRIED FORWARD & PARTS PENDING DISCREPANCIES

Symbols CF / PP	Discrepancy	Document No. (PP Only)	Zulu Date Entered	Transferred By	EO 30 Day Authorization	Zulu Date Completed	Completion Verified

CANNIBALIZATION RECORD

Description of Removed Part	A/C # Installed On	Next Due	Next Due	Authorized By	Zulu Cannibalization Date	Next Due	Next Due	Cannibalization Discrepancy #

SPECIAL INSPECTIONS / SERVICES RECORD

Description	Frequency	Next Due	Next Due	Next Due	Next Due	Next Due	Next Due	Next Due

Figure 4-9. Deferred Maintenance Record

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a. Instructions for Deferred Maintenance Record.

(1) A/C NO, TYPE, UNIT, DATE: Self-explanatory.

(2) SYMBOLS CF/PP: Record one of the following two letter symbols “CF”,”PP” from the “+” block adjacent to the discrepancy being deferred.

(3) DISCREPANCY: Record the discrepancy being deferred.

(4) DOCUMENT No (PP ONLY): Record the document number of the parts pending item. Document numbers must be recorded within 3 days of the “PP” deferral.

(5) ZULU DATE ENTERED: The date the discrepancy was deferred and transferred to the Deferred Maintenance Record.

(6) TRANSFERRED BY: Record the identifying information of the person who transferred the deferred discrepancy to the Deferred Maintenance Record.

(7) EO 30 DAY AUTHORIZATION: Record the identifying information of the person who authorized the deferral extension past 30 days.

(8) ZULU DATE COMPLETED: The date the discrepancy was transferred to the No-Fly Maintenance Record for correction.

(9) COMPLETION VERIFIED: Record the identifying information of the person who verified the discrepancy was transferred to the No-Fly Maintenance Record.

(10) Cannibalization Record.

(a) DESCRIPTION OF REMOVED PART: The description of the removed component including the NIIN and Serial Number if applicable.

(b) A/C INSTALLED ON: Self-explanatory.

(c) AUTHORIZED BY: Record the identifying information of the person who authorized the cannibalization.

(d) ZULU CANNIBALIZATION DATE: The date the cannibalization occurred.

(e) CANNIBALIZATION DISCREPANCY #: The discrepancy number of the discrepancy that created the need for the cannibalization.

(11) Special Inspections/Services Record.

(a) DESCRIPTION: The description of the special inspection requirement.

(b) FREQUENCY: How often the special inspection is to be completed.

(c) NEXT DUE: When due, special inspection requirements are recorded and signed of as complete on the No-Fly Maintenance Record. The maintenance technician that complies with the special inspection requirement, shall also calculate and record the next due information in the left most open block adjacent the inspection description. Next due is calculated by adding frequency amount to current amount.

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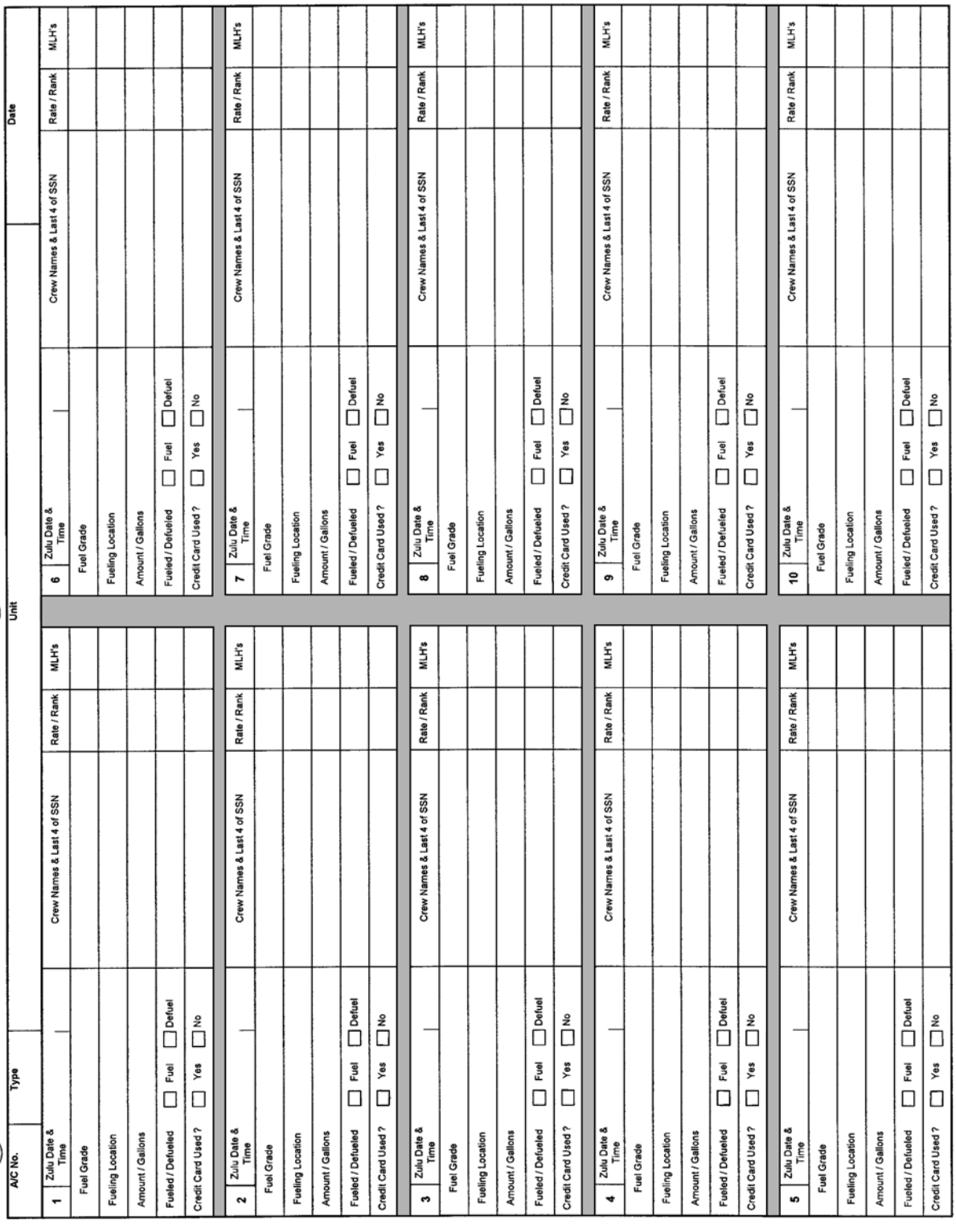
9. Fuel/Defuel Record.



Department of Homeland Security
U.S. Coast Guard
Aircraft Fuel / Defuel Record

Fuel / Defuel Record

(Rev 7-5-06)

A/C No. | Type | Unit | Date

| | | |

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a. Instructions for Fuel/Defuel Record.

(1) A/C NO, TYPE, UNIT, DATE: Self-explanatory.

(2) ZULU DATE and TIME: Self-explanatory.

(3) FUEL GRADE: Self-explanatory.

(4) FUELING LOCATION: Where the fueling/refueling operation occurred.

(5) AMOUNT/GALLONS: The amount of fuel (in gallons) transferred to or from the aircraft.

(6) FUELED/DEFUELED: Check “Fuel” or “Defuel” to indicate the type of operation that occurred.

(7) CREDIT CARD USED? Check “Yes” or “No” to indicate whether a credit card was used to pay for fuel.

(8) CREW NAME and LAST 4: Self-explanatory.

(9) RATE/RANK: Self-explanatory.

(10) MLHs: Self-explanatory.

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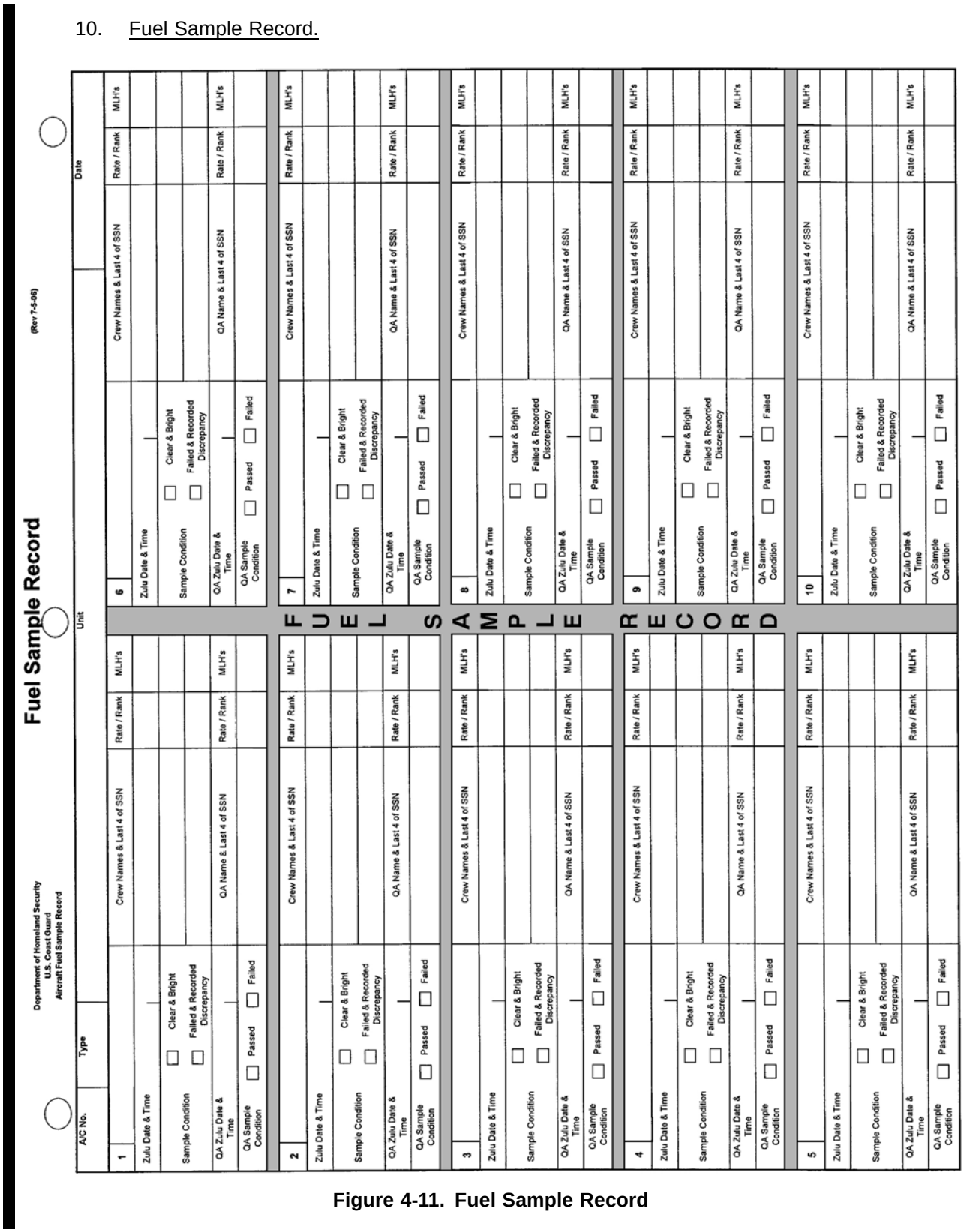
10. Fuel Sample Record.



Department of Homeland Security
U.S. Coast Guard
Aircraft Fuel Sample Record

Fuel Sample Record (Rev 7-5-06)

A/C No. | Type | Unit | Date

| | | |

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a. Instructions for Fuel Sample Record.

(1) A/C NO, TYPE, UNIT, DATE: Self-explanatory.

(2) ZULU DATE and TIME: Self-explanatory.

(3) SAMPLE CONDITION: Check the appropriate box to indicate whether the sample passed or failed. Failed conditions require that a No-Fly Maintenance Record be written describing why the sample failed.

(4) CREW NAME and LAST 4: Self-explanatory.

(5) RATE/RANK: Self-explanatory.

(6) MLHs: Self-explanatory.

(7) QA ZULU DATE and TIME: The date and time that the fuel sample was checked by quality assurance.

(8) QA SAMPLE CONDITION: Check the appropriate box to indicate whether the sample passed or failed. Failed conditions require that a No-Fly Maintenance Record be written describing why the sample failed.

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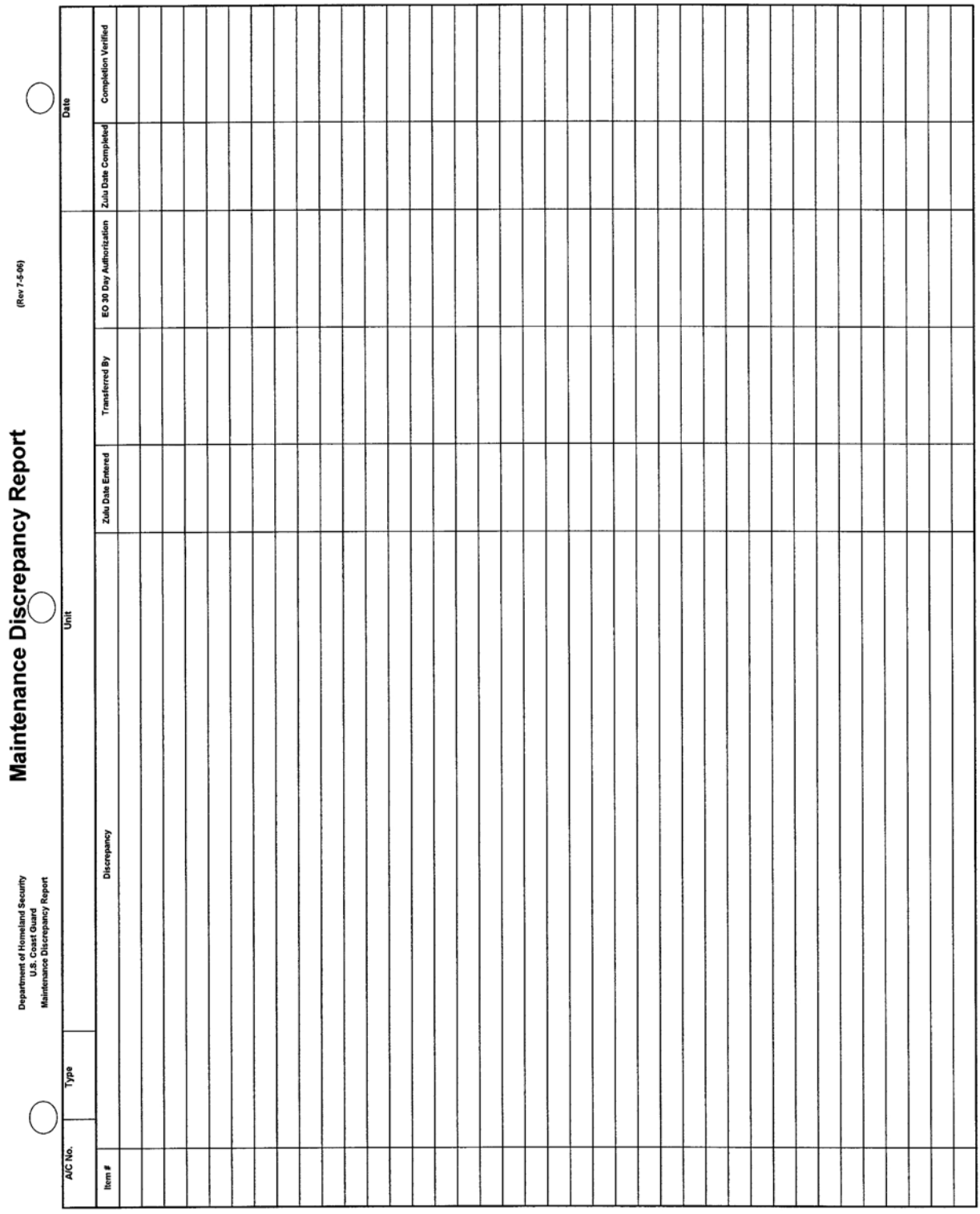
11. Maintenance Discrepancy Report.



Department of Homeland Security
U.S. Coast Guard
Maintenance Discrepancy Report

Maintenance Discrepancy Report (Rev 7-5-06)

A/C No. | Type | Unit | Date

Item #	Discrepancy	Zulu Date Entered	Transferred By	EO 30 Day Authorization	Zulu Date Completed	Completion Verified

Figure 4-12. Maintenance Discrepancy Report

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a. Instructions for Maintenance Discrepancy Report.

(1) A/C NO, TYPE, UNIT, DATE: Self-explanatory.

(2) ITEM NO: Used for sequential numbering of discrepancies.

(3) DISCREPANCY: Record the “SQ” discrepancy being deferred.

(4) ZULU DATE ENTERED: Record the date that the discrepancy was deferred and transferred to the MDR.

(5) TRANSFERRED BY: Record the identifying information of the person who transferred the “SQ” deferred discrepancy to the MDR.

(6) EO 30 DAY AUTHORIZATION: Record the identifying information of the person who authorized the 30 day extension of the “SQ” deferral.

(7) ZULU DATE COMPLETED: Record the date that the discrepancy was transferred to the CG-4377B, No-Fly Maintenance Record for correction.

(8) COMPLETION VERIFIED: Record the identifying information of the person who verified the discrepancy was transferred to the No-Fly Maintenance Record.

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CHAPTER 5. AVIATION SUPPLY SUPPORT

A. GENERAL. The procedures addressed in this chapter reflect current inventory management as it impacts all of Coast Guard aviation.

This chapter brings together policies and procedures specific to aviation. Further guidance can be found in:

- Comptroller's Manual — COMDTINST M4400.13 (series)
- Supply Policy and Procedures Manual — COMDTINST M4400.19 (series)
- AIRLOG Messages

B. SEEKING ASSISTANCE. Contact the offices listed below for assistance with AMMIS or logistics information:

ASSISTANCE REQUIRED	OFFICE	TELEPHONE NUMBER
Technical Help for ALMIS	ARSC Customer Support	(252) 335-6793/5261
Logistics Information	Logistics Support Branch Staff	(252) 335-6280
Materiel Requests	Officer of the Day	(252) 335-6289
Technical Help for AMMIS	ARSC Customer Support	(252) 335-6793/5261

C. AIRLOG MESSAGE SYSTEM. Aviation Logistics (AIRLOG) messages provide policies and procedures relevant to all air units. These messages are numbered consecutively for each fiscal year. Each unit shall maintain these messages as official directives.

D. LOGISTICS COMPLIANCE INSPECTION (LCI). The LCI team is comprised of members from Commandant (CG-41) and ARSC who inspect the internal processes required to complete the maintenance support function. LCIs provide a critical look at all aspects of engineering, logistics, and maintenance management functions. These inspections provide Headquarters and the unit valuable information about the health of that stations' engineering and logistic functions. See Enclosure (8) for the LCI Worksheet and chapter 1 of the Aeronautical Engineering Maintenance Management Manual, COMDTINST M13020.1 (series) for additional details.

E. DEFINITIONS. These definitions are used throughout this chapter and are common in logistics circles:

NOTE

The terms A Condition, RFI, and serviceable are used interchangeably. The terms F Condition, NON-RFI, unserviceable and class 265 are used interchangeably. The preferred terms are serviceable and unserviceable.

CODE	TITLE	DEFINITION
A Condition (also referred to as RFI)	Serviceable (Issuable Without Qualification)	New, used, repaired, or reconditioned materiel which is serviceable and issuable to all customers without limitation or restriction.
F Condition (also referred to as either class 265 or NON-RFI)	Unserviceable (reparable)	Economically reparable materiel which requires repair, overhaul, or reconditioning.

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F. **MATERIEL TYPES.** Aeronautical and avionics materiel managed by Aviation Inventory Control Point (AICP) Elizabeth City, is divided into seven "type" classifications according to price and/or source to determine the kind of control that will be used in its management.

1. Materiel types used in USCG aviation supply support are described in the following paragraphs:

a. Type 1, The aeronautical materiel under individual (serial number) management by ARSC is defined below.

(1) Aircraft Engines

(2) High Value Components

(3) Items Requiring Special Configuration Control Procedures

(4) Items in critical supply and of sufficiently high cost and low volume that require individual management

b. Type 2. Aeronautical materiel, less avionics, for which ARSC has service-wide support responsibility. To qualify as Type 2 materiel, one of the following conditions must be satisfied:

(1) Unit price of $250 or more

(2) Procured from a commercial source of supply

(3) Flight critical

(4) Reparable

c. Type 3. Consumable aeronautical materiel, less avionics, with a unit price less than $250 and procurable from an Other Government Agency (OGA) source. Units set their own allowance quantities and procure materiel using unit AFC 30 funds.

d. Type 4. Avionics materiel for which ARSC has service-wide support responsibility. To qualify as Type 4 material, one of the following conditions must be satisfied:

(1) Unit price of $800 or more

(2) Procured from a commercial source of supply

(3) Flight critical

(4) Reparable

e. Type 5. Consumable avionics materiel with a unit price less than $800 and procurable from an Other Government Agency (OGA) source. Units set their own allowance quantities and procure material using unit AFC 30 funds.

f. Type 6. Aeronautical Support Equipment (SE): For items costing more than $250 but less than $2500 ARSC will provide initial provisioning but will not provide subsequent replacement or repair.

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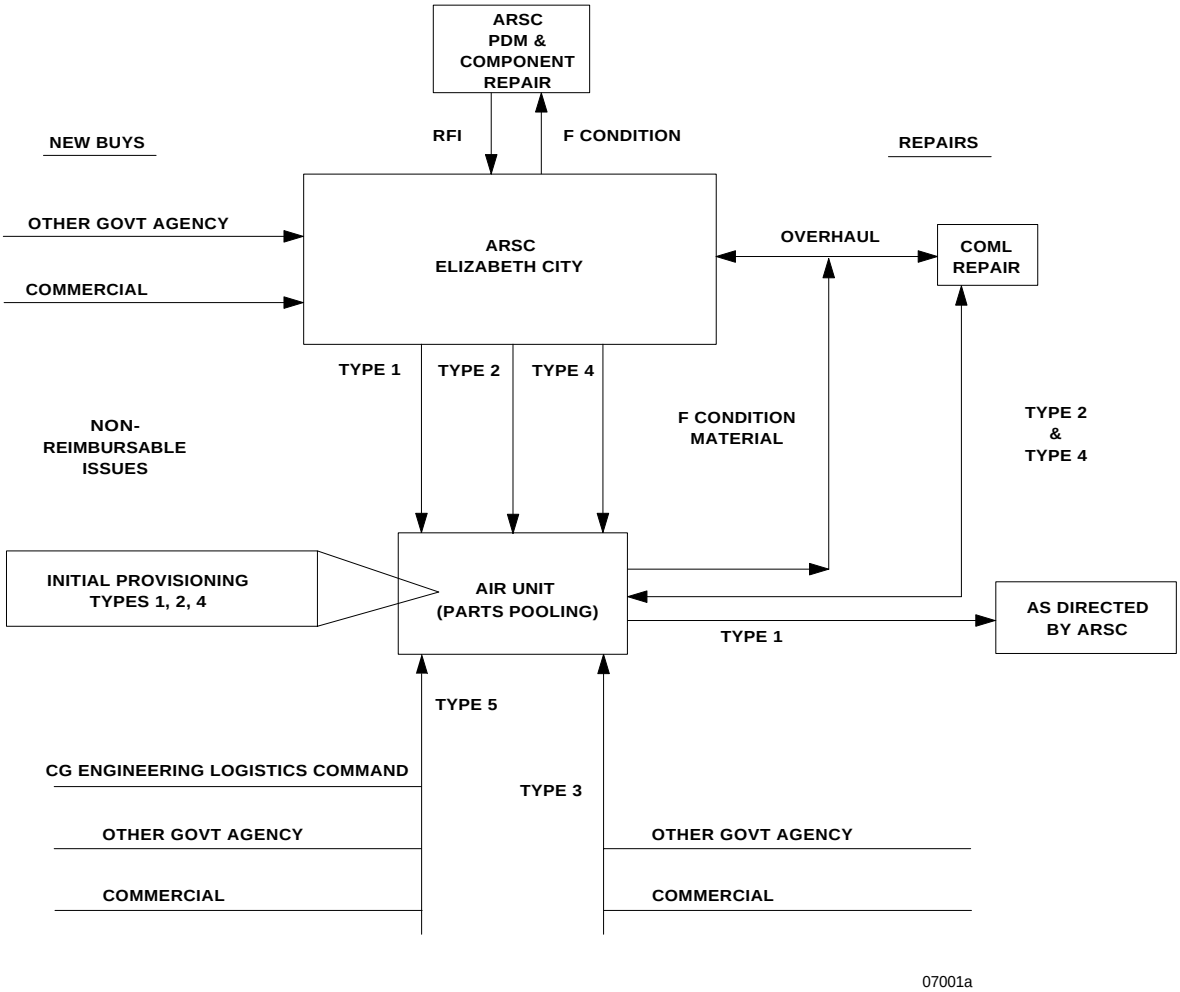

Figure 5-1. Supply Support Materiel Flow

g. Type 7. Material used to support the Turbomeca Arriel 2C2 CG engine.

h. Type 8. ARSC has service-wide responsibility for Aeronautical Support Equipment when one of the following is satisfied:

(1) Unit price of $2500 or more

(2) Difficult to procure through OGA or commercial sources.

(3) Critical support item.

(4) ARSC managed Depot Level Repairable (DLR) program.

(5) Reparables beyond unit capability and funding of $2500 or more.

2. Flow Diagram. The flow diagram (Figure 5-1) indicates how materiel moves through the supply system.

a. Initial Provisioning Package. Each new unit or existing unit receiving a new model aircraft receives a site staging package or initial provisioning package consisting of all materiel for the new aircraft model(s), including Types 1, 2, 4, 6, 7 and 8. Units will be responsible for the purchase of Type 3 and 5 materiel with unit funding.

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b. Subsequent Type 1 Materiel Transactions. Subsequent Type 1 materiel transactions are controlled by ARSC. Type 1 materiel transactions shall be reported by routine message to COGARD ARSC ELIZABETH CITY NC or by email to the appropriate Item Manager (IM).

(1) Type 1 Materiel Receipt. Report receipt of Type 1 materiel by routine message or email with the following information:

NOTE

Materiel must be receipted for in AMMIS in addition to the message.

(a) Part Number

(b) Serial Number

(c) Receipt Date

(d) Requisition that applies (if known)

(e) Name and phone number of Point of Contact (POC)

(2) Type 1 Materiel Removal. Report Type 1 removal by routine message (or priority message if requesting immediate replacement) or email whenever Type 1 materiel is removed for unscheduled maintenance (unit reparable) or is classified as unserviceable. The following information will be provided:

NOTE

Materiel must be requisitioned in AMMIS.

(a) Part Number

(b) Serial Number

(c) Time since new and time since overhaul

(d) Reason for removal or classification as unserviceable

(e) Unsatisfactory report number (if appropriate)

(f) Serial Number of replacement

(g) Estimated date of return to serviceable (if repaired locally)

(h) Remarks (i.e., request replacement (state priority) and disposition instructions)

(3) Unserviceable Type 1 Materiel Returned to Serviceable. Whenever Type 1 materiel has been repaired locally and returned to serviceable status, the following information will be provided by routine message or email:

(a) Part Number

(b) Serial Number

(c) Status Data

NOTE

Engines removed solely for the purpose of routine inspection need not be reported unless difficulties are encountered which would require assistance beyond unit capabilities.

(4) Shipping Instructions. Unserviceable, Type 1 materiel shall be expeditiously preserved and prepared for shipment. Upon receipt of the message in (2) above, ARSC will issue orders for shipment to the designated overhaul/repair point. Type 1 materiel shall be shipped as soon as practical but not later than 15 days

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following receipt of shipping orders. The following information will be provided by routine message or email:

(a) Part Number

(b) Serial Number

(c) Shipping data (date, mode of transportation, Government Bill of Lading (GBL) number)

(5) Transfer of Type 1 Materiel. Occasional transfer of Type 1 materiel between units is necessary. Orders for shipment will be issued by ARSC and shipment will be effected within 24 hours of receipt of message. A routine message or email shall be sent to ARSC (info: Receiving District, Receiving Unit) with the following information:

NOTE

All materiel movements require appropriate transactions in AMMIS to ensure asset visibility is maintained.

(a) Part Number

(b) Serial Number

(c) Shipping data

[1] Government Bill of Lading (GBL) number

[2] Name of carrier

[3] Origination and date of shipment

[4] Destination of shipment

(6) Requisitioning. Distribution of serviceable Type 1 materiel for stocking as spares at operating activities is controlled by ARSC.

c. Subsequent Type 2, 4, 6, 7 and 8 Materiel Transactions. Type 2, 4, 6, 7 and 8 materiel transactions are handled in the following manner: the Allowance List prescribes the content and quantity of materiel a unit may stock; replacement materiel is requisitioned from ARSC, at no cost to the unit, via AMMIS; unserviceable reparable materiel is returned to ARSC using the AMMIS generated NON-RFI turn-in document.

d. Subsequent Type 3 and 5 Materiel Transactions. Type 3 and 5 materiel is requisitioned using unit funds. Procurement of additional materiel and designation of stocking levels for Types 3 and 5 materiel are decisions made by unit managers.

G. MATERIEL REQUISITIONING PROCEDURES.

1. Priority Assignment. Priority assignment is an important part of the requisitioning process. The procedure for selecting a priority is governed by the Uniform Materiel Movement and Issue Priority System (UMMIPS). In general, USCG Headquarters and air stations are assigned a Force/Activity Designator of II, while ARSC, ATTC, and ATC Mobile are assigned a Force/Activity Designator of III.

	A	B	C
II	02	05	12
III	03	06	13

NOTE

More specific definitions can be found in the Supply Policy and Procedures Manual, COMDTINST M4400.19 (series).

2. Source of Supply. ARSC is the supply source for all Types 1, 2, 4, 6, 7 and 8 items.

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3. Requisition Procedures. Materiel is requisitioned through one of two channels.

   a. From ARSC. Types 1, 2, 4, 6, 7 and 8 materiel requisitions are submitted directly to ARSC via AMMIS. For non-allowance materiel or any other instance where "Remarks" are required, enter an identifier code AOE (for exception orders, order by part number) requisition through AMMIS.

   b. From Other Sources. Automated Requisition Management System (ARMS) or Simplified Uniform Requisitioning Format (SURF) procedures are used to order Type 3 and 5 materiel from Government supply sources.

4. Requisition Processing. After a valid requisition is received in AMMIS, the required materiel is either released for shipment or, if sufficient materiel is not in stock, the requisition is placed in a back ordered queue according to its priority and date-time-group.

5. Processing Receipts for Materiel Shipped to Field Units. When materiel is ordered from ARSC and is in the ARSC inventory, it will be shipped to the ordering unit. High priority requisitions and a safety stock may preclude immediate filling of lower priority requisitions. Priority 2 requisitions are selected for immediate shipment and will be filled as long as there are parts on the ARSC shelf. Priority 5 and 12 requisitions are evaluated once per day for subsequent shipment. Priority 5 requisitions will be filled if there are more than two parts on the ARSC shelf. Priority 12 requisitions will be filled if there are more than five parts on the ARSC shelf. When materiel is ordered from ARSC and is not in the ARSC inventory, it will be ordered from the appropriate Government agency or commercial vendor. This materiel may be direct shipped to the ordering unit from the Government source of supply or commercial vendor. In these cases, after the materiel is shipped to the ordering unit, ARSC is billed for payment. The Prompt Payment Act requires that these invoices be paid within 30 days of receipt of materiel, or interest must be paid to vendors. ARSC cannot make payment unless the ordering unit acknowledges receipt of materiel. Acknowledgment of receipts will be made via AMMIS. It is essential that field units notify ARSC of receipt of direct shipment.

6. Receiving Inspection of Aviation Materiel. All aviation materiel received by the Air Station shall be inspected upon receipt. If the materiel is serial number tracked by ACMS, supply personnel shall ensure that the materiel has proper documentation and is currently enrolled in ACMS. If the materiel is not enrolled, it will be enrolled at the time of receipt. All materiel will be inspected for obvious defects, leaks, unserviceable indications, lack of a serviceable tag, etc. Any part with questionable background, or whose condition is suspect, will be brought to the attention of the Engineering Officer. The Engineering Officer will determine whether the part is serviceable or unserviceable. Any questions concerning the condition of the part will be brought to the attention of the appropriate ARSC Product Line Engineering Cell.

7. Type 1 Materiel. Type 1 materiel is requisitioned via AMMIS. The Type 1 message or email is a secondary alert to ARSC personnel to ensure appropriate action is taken in the absence of the Item Manager (IM). Unless the shipping and reporting procedures are closely followed, the spares on hand will not be sufficient to prevent NMCS conditions.

8. Parts Pooling. A parts pool allows air stations to support one another when parts are needed before ARSC can supply them through the normal resupply pipelines. The decision to parts pool rests with the unit that has the initial request (requesting unit). Before a parts pool can be completed, a potential donor initiates the parts pool process using the Parts Pool Module within AMMIS. AMMIS will generate a replacement asset for the losing unit if the parts pool results in the unit falling below their allowance quantity. The requesting unit must receipt for the materiel via AMMIS and is responsible for any unserviceable materiel turn-in.

NOTE

The requesting unit must coordinate the entire parts pool process. All parts pool packages require AMMIS processing and shall be marked clearly with:

CG Aviation Parts Pool

Document Number: (Gaining Unit Document Number)

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H. CHANGE KIT CONTROL PROGRAM.

1. General Information. ARSC controls TCTO change kits. To maintain accountability, both ARSC and operating activities must apply the following procedures to the USCG TCTO change kit program:

   a. The need for kits and their applicability will appear in the TCTO.

   b. Only unit-level incorporation kits will be issued to operating activities. PDM level incorporation kits will be shipped directly to the appropriate PDM facility.

   c. Units will be issued kits with the TCTO for applicable aircraft. The following general guidelines shall apply, unless safety-of-flight considerations or TCTOs dictate otherwise:

      (1) Kits requiring more than four labor-hours for incorporation will not normally be issued within four months of the scheduled aircraft PDM induction date.

      (2) Kits requiring four or less labor-hours for incorporation will not be issued within 45 days of scheduled aircraft PDM induction dates.

   d. Kits will be supplied for a specific aircraft or system. The kit will be labeled with the aircraft/engine serial number upon issue and will not be installed in a different serial numbered aircraft/engine without approval from ARSC. Uninstalled change kits for a specific aircraft/engine will accompany that aircraft on all ferry missions until incorporated. TCTO change kits for spare components will be supplied as above except the letters “SPAR” will be used in lieu of aircraft/engine serial number. Kit disposition instructions for strike damage aircraft and information on other kit accountability problems must be obtained from the appropriate aircraft Product Line staff at ARSC.

   e. Kits will be packaged with distinctive kit markings to identify them to supply and maintenance personnel as a kit.

I. REPARABLE MATERIEL MANAGEMENT SYSTEM.

1. Reparable Cycle. Aeronautical and avionics materiel (except Type 1), removed from service and classed as unserviceable, is processed as follows:

   a. Preservation, Packaging, and Tagging. Unserviceable materiels must be preserved, packaged, and tagged at the unit with DD-1577-2 for unserviceable items or CG-1577-A for unserviceable items with an Unsatisfactory Report. Ensure that the DD-1577-2 or CG-1577-A is filled out completely.

   Hazardous materiel shall be individually packaged and the container clearly marked as to the hazardous contents. See Transportation of Freight, COMDTINST M4610.5 for specific packaging, marking, and shipping information.

NOTE

Incomplete or illegible tags increase processing time and reduce availability resulting in increased lead time and non availability of serviceable assets.

NOTE

DO NOT use wire for tagging equipment. Twine or other soft materiel shall be used to eliminate damage during handling.

NOTE

Attach a copy of the Serviceable Tag (DD-1574), Unserviceable Tag (DD–1577–2), or Unsatisfactory Report Tag (DD–1577–A) to each component, and a copy on the outside of the component container.

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b. Component Documentation. Accurate component documentation is critical to proper asset management and is directly related to aircraft availability. Commanding Officers shall ensure that the following procedures are strictly adhered to:

(1) Ensure an updated ACMS Significant Component History Report (SCHR) is included with components which require an SCHR. Additionally, a current ACMS Configuration Report must be included with those components listed on the ACMS Configuration Report as next higher assembly. Units shall compare the Configuration Report, SCHRs, and actual component serial numbers, routinely, prior to shipment.

(2) Ensure a fault printout or statement of CTS-81 inoperability is included with equipment tested on the CTS-81.

c. Shipping. Materiel shall be shipped to ARSC or other designated repair facility with the appropriate documentation within 15 days of removal from service.

NOTE

Many items are shipped from ARSC in reusable containers. These containers are designed to provide the greatest amount of protection during shipment. Maintain and reuse these containers. Materiels damaged in shipment which are not properly packaged create increased cost and decreased availability.

NOTE

Containers should be appropriately marked, especially when fragile equipment is involved (i.e., FRAGILE - HANDLE WITH CARE).

d. Screening. Screened by ARSC for P/N, NSN, and condition (economical for repair).

e. Stocking. Stocked in an unserviceable condition at ARSC.

f. Withdrawal. Withdrawn in economic sized lots for repair/overhaul at ARSC, USN/USAF rework facilities, commercial firms, or for exchange with USN/USAF for equivalent serviceable items.

g. Return/Direct Shipments. Returned from repair/overhaul to ARSC stock as serviceable materiel or direct shipped to air stations.

h. Restocking. Serviceable materiel restocked at units to fill allowances.

2. Elements of the Cycle. To function smoothly, the reparables cycle must conform closely to the planning parameters used in selecting the number of reparables needed to keep the pipeline full. Specifically these are, for the example of a generator, as follows:

a. Number of Generators Installed. If a particular aircraft type uses 2 generators, and we have 40 aircraft, we obviously start with 80 generators required.

b. Pipeline Spares. The “pipeline” can be described by the eight steps in paragraph 5.I.1. Assume we have 10 units operating the aircraft in question and know the allowance quantity, days required to process and ship an unserviceable generator, shipping time from various units, repair lot size considered economically justified, overhaul/repair time, shipping time back to ARSC, and shipping time to various units. We can do computations or run a computer simulation to determine the number of spares required to preclude several “probabilities” of having shortages.

c. Scrap Out Rate. Using past history, manufacturer data, and engineering studies, we can predict an annual percentage of the total number of generators that will be uneconomical to repair for various reasons.

3. Operation. For example, if we assume that we bought 80 generators to be installed, 40 for pipeline spares, and 12 more to anticipate the scrap out rate of 5 percent for each of the first 2

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years, we would have 132 generators in the inventory. Initially, 80 would be installed, 20 would be on 10 air-unit shelves or en route and 32 would be at ARSC. At the end of 2 years we would expect to have 80 installed, 20 at units, and 20 in the repair pipeline. Engineering officers have a direct impact on the number of items in the pipeline; delays in returning materiel to ARSC disrupt the reparables in the following manner:

a. Loss of Reparable Assets. If an item classed as reparable is disposed of from lack of knowledge at the shop level or other mistake, a reparable item is lost and the scrap-out rate is affected.

b. Forecasts. Forecasts are made by ARSC every 6 months concerning the number of generators (in this example) needed to support the 40 aircraft and 10 units. If the quantity needed is less than the serviceable quantity, arrangements are made to overhaul the remainder at some overhaul activity. Forecasts are also made of unserviceable returns to ARSC and economic lot sizes are contracted for. Delay in returning unserviceable generators to ARSC for overhaul prevents ARSC from fulfilling its contractual obligations. Not only do serviceable generators fail to come out the end of the pipeline, but fiscal year funds projected for generator overhauls may be lost.

c. NMCS Conditions. NMCS conditions eventually result when insufficient reparables are received from units. Generators cannot be overhauled until they arrive at the overhaul facility.

d. Overstock Conditions. Overstock conditions result when ARSC procures new generators to meet current requirements and then receives overdue unserviceable assets from units. Funds that could have been used to procure other necessary spares are tied up in excess generators.

4. Solutions. Maintenance personnel can greatly improve the operation of the reparable cycle by performing the following:

a. Screen Inoperative Components. Carefully screen inoperative components to determine if repairs can be made locally.

b. Provide Specific Information. Provide specifics on the Unserviceable tag (CG-1577-A or DD-1577-2).

c. Attach SCHRs. Ensure SCHRs are attached for all components which require an SCHR and accurate configuration reports for assemblies.

d. Clearly Identify Reparables. Assure that documentation for reparables is clearly identified to prevent disposal of reparable assets.

e. Quick Return of Reparables. Reparables shall be returned to ARSC or ARSC directed repair facility within 15 days of removal from service.

f. Periodic Inspection of Shop Areas. Make routine inspections of shop areas to locate unauthorized serviceable spares and forgotten unserviceable assets.

g. Check for Excess Serviceable Materiel. Urge supply personnel to make frequent checks for excess serviceable materiel and weekly checks for unserviceable items. (Remember, your excess serviceable is your counterpart's NMCS materiel and your onboard unserviceable assets will eventually increase your NMCS rate.)

h. The following reports are available in the ALMIS Decision Support System (DSS) to assist units in the management of materiel:

(1) Air Station Turn-in Report

(2) CO Report – RFI Material Not Receipted

(3) CO Report – NON-RFI Material Not Receipted

5. Procedures.

a. When a unit submits a valid requisition to ARSC for a serviceable reparable item, the following will occur:

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(1) A due-in from the unit to ARSC for an unserviceable item will be established on AMMIS.

(2) A NON-RFI turn-in document for each item will be computer generated. This document will carry the same document number as the serviceable item document number.

(3) Turn-in documents will be transmitted to aviation units each workday.

(4) The unit may query AMMIS to determine their unserviceable due-ins at anytime utilizing the report function in "Generate Cumulative Turn-in Report."

(5) Computer generated NON-RFI turn-in documents or screen prints of NON-RFI from maintenance turn-ins may be used to turn in unserviceable parts. (See exceptions paragraph 5.I.5.c.)

NOTE

When returning RFI reparable items to ARSC, utilize the same AMMIS procedures used for NON-RFI items. Write "RFI" on the AMMIS document in bold print. When returning RFI consumable materiel ensure that it is individually packaged and properly identified with the NSN, P/N, and nomenclature. If consumable materiel cannot be identified at the unit level, the unit should dispose of the materiel locally. DO NOT send unidentified materiel to ARSC.

b. When a unit receives an RFI reparable part from ARSC, the following should occur:

(1) Establish a file of NON-RFI turn-in documents.

(2) Monitor unserviceable items in maintenance for over 15 days utilizing the Cumulative Turn-In Report in AMMIS. If the unserviceable item has not been received in supply for shipment, initiate action to determine the item's status. Units shall expedite shipment of components and not cause shipment delays by waiting to multi-pack these items. Aviation units will be allowed a maximum of 30 days from date of failure of the part to date of shipment to ARSC for handling of unserviceable materiel. Local procedures shall be instituted to ensure this handling requirement is met. Priority should be given to critical components and components valued in excess of $1500.

(3) Ship the unit to ARSC with one copy of the AMMIS generated NON-RFI document attached to the part. Engineering and/or Supply Officers shall review the CO's reports in AMMIS to ensure assets are being turned in expeditiously and properly.

c. Exceptions. Each NON-RFI turn-in document must be returned to ARSC to clear the account. Air stations may contact the NON-RFI control clerk if difficulties are experienced in this process.

J. MATERIEL PRESERVATION. The fundamental principles and approved methods and techniques used in the protection of supplies and equipment against deterioration and damage during shipment and storage are contained in the following generic publications. They shall only be used when such procedures are not addressed in applicable ACMS MPCs or component maintenance manuals.

NUMBER	TITLE
1. NAVSUP PUB 503	Preservation, Packaging, and Packing of Military Supplies and Equipment, Vol. II
2. NAVAIR 15-01-500	Preservation of Naval Aircraft

NOTE

The above publications may be ordered using the TIMOS program.

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K. AIR STATION SPARE PARTS ALLOWANCE POLICY.

1. General Information. The spare parts allowance standard was developed to meet the following goals:

   a. Establish a consistent allowance policy across product lines.

   b. Establish clear guidelines for submitting and approving Allowance Change Requests (ACRs).

   c. Reduce inventories at air stations resulting in reduced administrative overhead and space requirements.

   d. Improve allowance fill rates and accuracy.

   The current ability to analyze and monitor part demand within AMMIS permits development and management of this spare parts allowance policy. The standard allowance gives an air station a 90 day part supply based on 2 years of historical usage and/or required maintenance actions. A 120 day part supply standard is allowed for OCONUS units and over-the-horizon operations. These allowances will normally cover lead-time requirements for parts that enter a back order status.

2. Allowance Quality Determination. The spare parts allowance quantities are derived using one or more of the following methods and guidelines:

   a. Demand data is specifically drawn from AMMIS/ALMIS and analyzed against a unique OPFAC.

   b. Demand is analyzed using the 90/120 day demand data standard or by a specialized parts demand model. If a specialized model is used, that model will be noted in the part's SIS field in AMMIS.

   c. Items with a unit price greater than $125K are not considered.

   d. Power-by-the-hour items are contractual and their allowances are not changeable by this method.

3. Allowance Change Request Procedures.

   a. General. Allowance Change Requests (ACR) are processed through AMMIS. Authorized AMMIS users can fill out the ACR form following the on-screen prompts. The request will be routed automatically through an ARSC internal process to validate the request. Therefore, written justification (a mandatory entry on the AMMIS form) is required and shall clearly state the reason for the allowance change. References to MPCs should be included as appropriate. Any questions from ARSC about the ACR will normally be routed back to the user submitting the request via phone or email.

   b. Allowance Considerations. The establishment of the spare parts allowance standard for unit aviation materiel allowance levels dictates the need to establish a compatible ACR policy. The allowance quantities are determined by analyzing historical demand data, referencing maintenance procedures provided by units or aircraft product line managers, and specific unit requirements, such as AIRFAC support, number of HSKs needed, etc. The Aviation Logistics Division at ARSC will conduct periodic reviews and analysis of unit demand to verify the unit allowance levels, which can also result in an allowance change. Various events may trigger an analysis, but at a minimum, a review of a unit's allowance list will be conducted within 6 months prior to a Logistics Compliance Inspection (LCI).

   c. ACR Justification. Units must submit ACRs with documented justification. This justification must be explicit to the part and detailed enough to satisfy the Item Manager review and audit documentation requirements. Examples of reasons on which to base a justification are:

      (1) Support for assignment of additional aircraft

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(2) Support for number of transient CG aircraft on a routine basis

(3) Support additional missions (including support of remote sites)

(4) Support sustained increased demand for the part

(5) Support replacement of obsolete/discontinued parts

(6) Quantity needed to support a set of parts required for maintenance actions

(7) Quantity needed to complete a maintenance action (provide MPC reference)

(8) Quantity needed to stock all HSK, QEC, OTH, PROP kits

(9) A validated insurance item

It is critical that the justification be explained sufficiently in order to properly document the need, especially for an item increase request based on insurance. The space is limited in the AMMIS ACR screen, therefore, it is important to concisely document the justification, using commonly known/acceptable abbreviations as much as possible.

d. Review and Approval Process. ARSC will process the ACR, where it will be reviewed by the Item Manager (IM) and additional technical and/or logistics personnel as appropriate based upon the justification and specific part. Final action will be entered into AMMIS, along with any additional comments. Unit personnel are responsible for monitoring the status of their ACRs.

(1) All ACRs will have the demand reviewed against the standard and any specialized demand model if appropriate. Parts that show a new demand level that is validated by the standard or specialized part demand model will normally be approved. Requests that will result in a deviation from the standard allowance calculation will be carefully scrutinized. An isolated, one-time demand requirement is not a basis for an allowance change.

(2) Parts to support HSKs, QECs, etc., are intended for kits that are meant to be permanent or to support operations/deployments with a duration in excess of 6 months and/or over-the-horizon WHEC operations. Short term operations will have items pushed to them by ARSC, and allowances will remain the same with excess parts either returned after the operation has been completed or through attrition at the unit. Short term operations will not be justification for an allowance increase. Long term operations will have their allowance quantities validated by the periodical allowance review.

L. OBSOLESCENCE MANAGEMENT. Also known as Diminishing Manufacturing Sources and Material Shortages (DMSMS), Obsolescence Management is a discipline all to itself. An item becomes obsolete when the last known manufacturer of an item or raw material stops producing that item. At the same time, that item may still be needed as a repair part on a Coast Guard aircraft or system. There are a number of solutions to an obsolete parts problem. They are:

1. Reclamation. Removing a part from an existing system. Also known as cannibalization.
2. Substitute Part. A different part with the same form, fit, and function.
3. Alternate Part. A similar part that does not have the exact same form, fit, and function.
4. Emulation. A manufacturing process that creates form, fit, and function replacements for obsolete microelectronics in small or large quantities.
5. Redesign. When an existing circuit board or microelectronic item is redeveloped and remanufactured using new, non-obsolete components.
6. Life of Type Buy. Buying enough spare parts and storing them to last for the expected life of the system.
7. Existing Source. Convince the existing manufacturer to keep producing that part.
8. New Source. A new manufacturer that is making the same part with the same form, fit, and function.

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9. Redefine Mil-Spec. Change the Military Specification to better fit the actual functions needed of an item.

10. Replace System. If a system contains too many obsolete items, then it may be more cost effective to replace the system with a new system containing non-obsolete parts.

11. Contractor Inventory. Leftover items sitting in storage at a distributor's or prime contractor's facility.

12. Production Inventory. Leftover items from previous production sitting in storage at a manufacturer facility.

13. Reverse Engineering. A process of developing an exact copy of an item through review of available technical data and physical disassembly and analysis of the original item and its components.

Obsolescence management is more than just a list of solutions. It is a management process that minimizes obsolescence problems throughout the life of a system, from the choice of parts in a new system that are not obsolete, to predicting when parts used in a current system will become obsolete. It is one key part of a system's lifetime support strategy.

Obsolescence management is generally the responsibility of a Program Manager if the item is being purchased as part of an acquisition project, or an Item Manager if it is a spare part. There may be occasions when a part has no "owner" and the user must solve the obsolescence problem. For those situations, contact Commandant (CG-44) for help and direction.

M. EVALUATION AND SERVICE TESTING OF MATERIALS AND PROCESSES PRIOR TO APPLICATION ON COAST GUARD AIRCRAFT. ARSC provides policy and procedures to manage the introduction of new materials and processes into Coast Guard aviation. It establishes a standard set of guidelines for the introduction of new materials and processes to ensure maximum benefit at minimum risk to the Coast Guard. Engineering Officers shall ensure compliance with the provisions of this enclosure.

1. General Information. When a new material or process not qualified by a military specification, Federal Test Method Standard, American Society for Testing and Materials (ASTM) Method Standard, or other recognized standard for the intended application, is introduced by a manufacturer, it is essential that necessary tests be performed and results properly analyzed to ascertain its suitability and adaptability to the particular application intended to include performance, quality, and reliability requirements. Additionally, this is necessary to provide a control on all service tests; to prevent duplication of efforts; to prevent damage to Coast Guard aircraft, equipment, and materials; and decrease undesirable or unsafe conditions such as corrosion, personnel hazards, stream pollution, etc.

NOTE

It is important to note that the Coast Guard does not possess the capability to test and evaluate most materials and processes, and possesses no capability to qualify materials and processes, deferring to the Air Force when faced with such issues.

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2. Procedures.

a. Any manufacturer or supplier of new materials or processes desiring to introduce those materials or processes into Coast Guard aviation, whether solicited by the Coast Guard or of their own accord, shall complete Manufacturer's Application for Introduction of Materials and Processes, Enclosure (9) of this process guide. The application is designed to be completed electronically and can be obtained at http://www.uscg.mil/hq/arsc/index.htm. The purpose of the application is to provide sufficient information to persuade the Coast Guard that the proposed material or process represents an innovative approach to an aerospace or process problem experienced by Coast Guard aviation. Beyond that, the application should convince the Coast Guard that the material or process has a reasonable chance of meeting the objective, that the approach is innovative, not routine, and that the manufacturer has the capability to implement the material or process. Once completed, the original Manufacturer's Application for Introduction of Materials and Processes, Enclosure (9) shall be sent to the following address.

Commanding Officer
USCG Aircraft Repair & Supply Center
Attn: Industrial Systems Manager (ISM)
1664 Weeksville Rd.
Elizabeth City, NC 27909–5001

b. The ARSC Industrial Systems Manager (ISM) will provide the initial screening of all applications of candidate materials and processes. The ISM reviews the application to determine material or process compliance with all national, state, and local environmental regulations. The ISM also scrutinizes the application to identify hazardous materials, determine potential health hazards and ascertain whether any Occupational Safety and Health Administration (OSHA) and workplace safety rules apply.

NOTE

Only materials and processes that have received preliminary approval by both the ISM and Aging Aircraft Branch will be candidates for application on Coast Guard aircraft.

c. Applications receiving preliminary approval from the ISM will be forwarded to the ARSC Aging Aircraft Branch (AAB) for technical review. A minimum of three AAB members, one of which will be the AAB Chief or his designate, will collectively review the application and come to a consensus on its disposition.

NOTE

If the Coast Guard deems laboratory testing necessary, the manufacturer or supplier will arrange for laboratory testing, paying all costs associated with such testing. The laboratory must be considered satisfactory by the Defense Contract Management Agency (DCMA).

d. Following preliminary approval of the application by the AAB, a joint review by both the ISM and AAB will be conducted for the purpose of determining the requirement for laboratory and/or field/shop service testing. If laboratory testing is deemed necessary, the application will be returned to the manufacturer or supplier indicating the requirement for such testing. Once the requirement for laboratory testing is complied with, the manufacturer or supplier is eligible to resubmit the application to the Coast Guard, through the ISM, for reconsideration.

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e. If the joint review by the ISM and Aging Aircraft Branch deems that the materials and processes are eligible for field/shop service tests, such tests will be coordinated by the Aging Aircraft Branch. Failure of materials or processes to meet any of the requirements of the field/shop service tests will be sufficient grounds to discontinue such testing and reject the materials or processes.

f. If the joint review by the ISM and Aging Aircraft Branch deems that the materials and processes require no testing prior to application on Coast Guard aircraft or if the materials and processes successfully pass the field/shop service tests, the application will then be forwarded to the ARSC Contracting Office for procurement.

g. Applications received by the Contracting Office will have undergone technical review and approval. The Contracting Office will consider budgetary requirements and other relevant procurement issues in rendering a decision to accept or reject the manufacturer application.

h. ARSC's timely processing of the manufacturer application is fundamental to the prompt employment of a new material or process for the benefit of Coast Guard aviation. Within 30 calendar days of the ISM's receipt of the manufacturer application, the application will process through ARSC. A response as to the disposition of the application will be provided by the ARSC Aging Aircraft Branch to the applicant within 40 calendar days.

i. Figure 5-2 provides an overview of the process leading to application of materials and processes on Coast Guard aircraft.

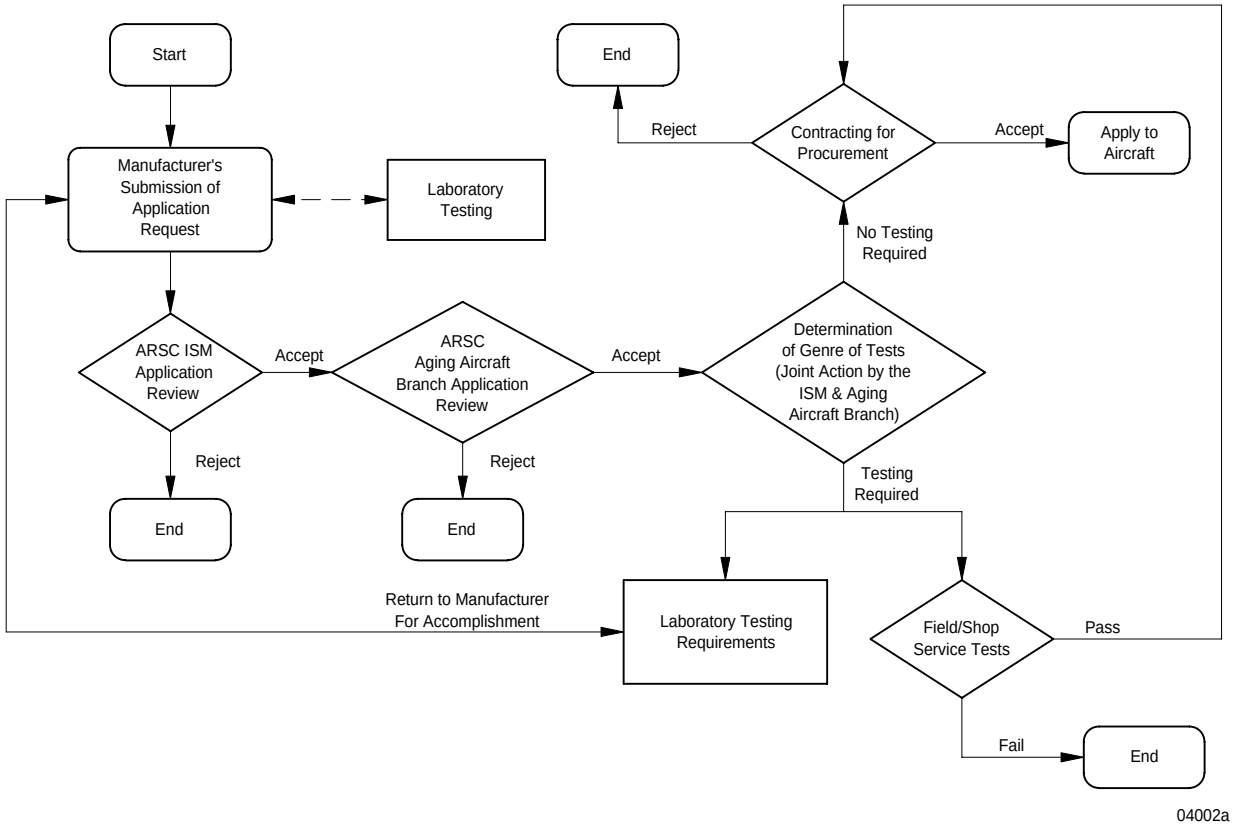

Figure 5-2. Flow Chart for Review for Applications of New Materials/Processes

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3. Manufacturer's Application Review.

a. Review of the Manufacturer's Application for Introduction of Materials and Processes, Enclosure (9), will be a judgmental assessment in the areas of technical performance, supportability, cost, and general considerations. This assessment will result in the identification of risks/critical issues leading to a risk rating for each. Through the assignment of risk ratings, a risk assessment may be accomplished to assist in determination of the overall value of material or process to satisfy the needs of the Coast Guard.

b. The Application Review Document , and Risk Rating Matrix, , are provided to document and assist the reviewers in identification of risks/critical issues, assignment of probabilities and consequences, and determination of risk ratings. A completed and signed Application Review Document should be filed/retained, along with the Manufacturer's Application for Introduction of Materials and Processes, Enclosure (9), for a period of 3 years and serves as a source document for future reference.

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Table 5-1. Application Review

Technical Performance				
Area/Source Process	Risk(s)/Critical Issue(s) • Identify significant or typical risk events that could occur. • What might or might not happen, what could go wrong. • Those aspects of a system's capability (either operational, technical, or other) that must be questioned before a system's overall suitability can be known.	Probability (from table)	Consequence (from table)	Risk Rating (from table)
Statement of Need • Assess the timeliness, completeness, and quality of problem identification. • Assess the manufacturer's understanding and/or identification of a technical problem or opportunity.				
a. Define the specific technical problem or opportunity addressed and its importance.				
b. Application				
c. Removal				
d. Operating environment				
e. Maintenance				
f. Maintainability				
Performance Specifications and Product Information • Assess the completeness and quality of performance specifications and product information. • Assess product performance and reliability objectives relative to requirements (inclusive of operating environment). • Assess indirect costs and their impact on budget and affordability (e.g., facility improvements, operating permits, personal protective equipment, enhanced monitoring requirements, special tools, and equipment). • Assess reliance on new and/or unproven technology or exotic materials to achieve performance objectives. • Assess the performance advantage over an existing product/system.				
a. Complete description of product.				

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b. Purchase description used by other government activities or as used in commercial transactions.				
c. Length of time product has been produced.				
d. Product data/performance characteristics.				
e. Brief description of reliability design program.				
f. Applicable regulatory and de facto standards.				
g. Availability of product samples.				
h. Cost drivers in the use of this product.				
i. List of products and company services satisfying identical or similar service requirements.				
j. Discuss average time between product changes and practice of providing continued inventories, upgrades, or production for phased-out product.				
Test Data • Assess the validity of the manufacturer's claims. • Assess whether the product is operationally effective and suitable. • Assess the testing accomplished to assure that the material conforms to specified quality, reliability, safety, and operational performance standards.				
a. Manufacturer's test results attached				
b. Certification or test results from independent test organizations.				
Area/Source Process	Risk(s)/Critical Issue(s) •Identify significant or typical risk events that could occur. •What might or might not happen, what could go wrong. •Those aspects of a system's capability (either operational, technical, or other) that must be questioned before a system's overall suitability can be known.	Probability (from table)	Consequence (from table)	Risk Rating (from table)
Hazardous Material, Environmental Data • Assess safety and health hazards, environmental risks, and compliance with regulations/law.				

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a. Attach current Material Safety Data Sheet (MSDS).				
b. Attach product label that complies with OSHA Hazard Communication Standard (29CRFR1910.1200).				
c. Attach copies of any industrial hygiene survey reports which address potential health hazards related to working with the product.				
d. Attach copies of any toxicity study reports involving laboratory animals subjected to dusts/vapor from the product, its ingredients, or its pyrolysis products, when burned or severely heated.				
e. Attach reports of laboratory reports which address the composition and magnitude of pyrolysis products emitted from the product when it is involved in a fire or otherwise severely heated/allowed to contact molten metal, etc.				
f. Document product compliance with:				
1) Provisions of the Federal Clean Air Amendments Act.				
2) State and local laws.				
3) Provisions of the National Emission Standards for Hazardous Air Pollutants (NESHAP).				
g. Product safety issues as experienced by similar users.				
Supportability				
Area/Source Process	Risk(s)/Critical Issue(s) •Identify significant or typical risk events that could occur. •What might or might not happen, what could go wrong. •Those aspects of a system's capability (either operational, technical, or other) that must be questioned before a system's overall suitability can be known.	Probability (from table)	Consequence (from table)	Risk Rating (from table)
Maintainability Data • Assess the ability of an item to be retained in, or restored to, a specific condition when maintenance is performed by personnel having specified skill levels, using prescribed procedures and resources, at each prescribed level of maintenance and repair.				

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a. What are the maintainability features of the product?				
b. What are the limitations, if any, on organizational-level support?				
Area/Source Process	Risk(s)/Critical Issue(s) •Identify significant or typical risk events that could occur. •What might or might not happen, what could go wrong. •Those aspects of a system's capability (either operational, technical, or other) that must be questioned before a system's overall suitability can be known.	Probability (from table)	Consequence (from table)	Risk Rating (from table)
Market Acceptance Data • Assess the product in terms of relevance, maturity, reliability, performance, and application of quality controls.				
a. Is the material or process designed for, already in use in the aerospace sector?				
b. Is the product a commercially available Off-the-Shelf item?				
c. Is there a need for any pre-production qualification testing and special quality assurance requirements?				
d. Length of time the product has been on the market or available for sale.				
e. Annual sales.				
f. Reliability and performance of the product.				
g. Anticipated future orders.				
h. Description of quality controls.				
i. Has analysis been conducted to determine Coast Guard annual usage?				
Support Data • Assess the stability of the current configuration and technology. • Assess the degree to which the product is operationally effective and suitable. • Assess the probability that a product will perform mission essential functions for a given period of time under the mission profile.				

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• Assess the availability of support resources which allow the product to effectively and efficiently perform its assigned mission over time. • Assess manpower/training requirements.				
a. Stability of current configuration and technology.				
b. What is the reliability history of the product as experienced by similar users? In similar environments?				
c. What is the product quality and maintainability experience of similar users?				
d. What are the requirements for manpower and personnel?				
e. What are the requirements for and availability of special tools and/or test equipment?				
f. How are customers supported?				
g. What special training is needed and what are the training support requirements?				
h. What training sources are available to customers?				
i. How will product upgrades be introduced and provided?				
j. What is the commitment to out-year support?				
k. What is product availability and lead-time?				
Supplier Capability • Assess the manufacturer's capability to produce, distribute, and supply product.				
a. Number of suppliers.				
b. Size and location of suppliers and their current markets.				
c. Product distribution channels.				
d. Business practices in sales and distribution.				
e. Production capability to meet projected requirements.				
f. Packaging, handling, storage, and transportation practices.				

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Cost				
Area/Source Process	Risk(s)/Critical Issue(s) •Identify significant or typical risk events that could occur. •What might or might not happen, what could go wrong. •Those aspects of a system's capability (either operational, technical, or other) that must be questioned before a system's overall suitability can be known.	Probability (from table)	Consequence (from table)	Risk Rating (from table)
Business Data • Assess the company's effectiveness in managing, controlling, and reporting costs. • Assess the reasonableness, affordability of the product given its performance. • Assess the cost advantage over an existing product/system.				
a. Minimum order quantities.				
b. Pricing data.				
c. Typical contract terms and conditions.				
d. Warranty terms and procedures.				

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General Considerations				
Area/Source Process	Risk(s)/Critical Issue(s) •Identify significant or typical risk events that could occur. •What might or might not happen, what could go wrong. •Those aspects of a system's capability (either operational, technical, or other) that must be questioned before a system's overall suitability can be known.	Probability (from table)	Consequence (from table)	Risk Rating (from table)
• Assess the company's past performance data. • Assess company's history of reasonable and cooperative behavior, customer satisfaction. • Assess the company's application of resources to the effort. • Assess the company's strong points/attributes. • Assess the company's weak points. • Assess the reference's reservations in providing recommendations.				
References				
References				
References				
References				

Company	CAGE Code	Date of Application

Position	Reviewer's Signature		Accept		Reject	Date
ARSC ISM			Accept		Reject	
ARSC Aging Aircraft Branch Chief			Accept		Reject	
- **ARSC Aging Aircraft Branch**						
- **ARSC Aging Aircraft Branch**						
Contracting Office			Accept		Reject	

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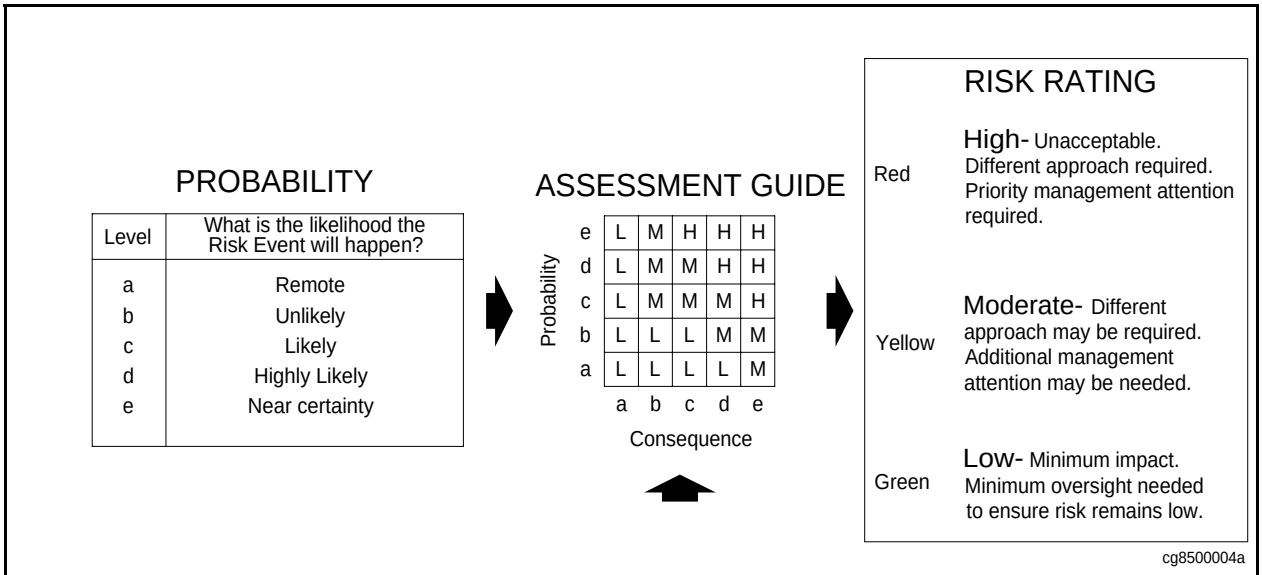
Table 5-2. Risk Rating Matrix



Level	Technical	Supportability	Cost	General Considerations
a	Exceptional. Exceeds a specified minimum performance or capability requirement in a way beneficial to USCG. Technology planned for project is good match to problem.	Minimal or no impact. Proven technology has been in use for some time.	Low. Solution is based on existing systems and is competitive in price. Costs are well established and regulated by contracts or competitive market forces. Little potential for increase in cost.	Low. Little doubt exists that the company can perform the proposed effort.
b	Good. Meets and exceeds some specified minimum performance or capability requirements necessary for acceptable performance.	Acceptable with some reduction in margin. New technology for a non-critical activity.		
c	Acceptable. Meets specified minimum performance or capability requirements necessary for acceptable performance.	Acceptable with significant reduction in margin. Requires adaptation of new technology from other applications.	Medium. Solution requires significant modification to existing systems. Costs are not well established but should be regulated by competitive market forces. Can potentially increase in cost.	Moderate. Some doubt exists based on the company's performance record that the company can perform the proposed effort.
d	Marginal. Does not clearly meet some specified minimum performance or capability requirements. Some of the planned technology is not well suited to the problem.	No remaining margin. Project is being done in sub-optimum way to leverage the purchase or development of new technology.		
e	Unacceptable. Fails to meet specified minimum performance or capability requirements. Selected technology is a poor match to the problem.	Unacceptable. Requires development of new technology. Project is being done as a way to show a new technology or an excuse to bring a new technology into the organization.	High. Solution requires extreme modification and/or is high cost. Costs are not well established and not subject to competitive market forces. Likely to increase in cost.	High. Significant doubt exists, based on the company's performance record, that the company can perform the proposed effort.
Consequences (What is the consequence should the risk event happen?)				

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CHAPTER 6. PROGRAMMED DEPOT MAINTENANCE AND ENGINEERING SERVICES

A. AIRCRAFT PROGRAMMED DEPOT MAINTENANCE (PDM).

1. General. The Commandant provides for and schedules the PDM of aircraft according to established standards and, when required, the repair of aircraft due to crash damage, accelerated deterioration, or similar items. The periods between PDMs of aircraft may vary and may be accomplished by ARSC, DOD overhaul activities, or commercial contractors. The purpose of the aircraft PDM program is to provide periodic inspection of areas of an aircraft which are not accessible without extensive disassembly, to perform heavy maintenance which is beyond the capability of operating units, and to incorporate changes and modifications which are too extensive to perform at the operating unit level.

2. Requirements.

   a. ARSC will publish a message each quarter with the proposed PDM and depot maintenance schedule for the next 6 months for the four main aircraft types. This message will serve as notification of upcoming PDM for aircraft custodians. Further guidance concerning PDM location, delivery date, delays, and changes will be through direct liaison with ARSC. HC-130 units will use Enclosure (10) for additional PDM induction procedures.

   b. TCTO change kits, available at ARSC, will be shipped to arrive at the PDM activity concurrently with the scheduled aircraft. Kits which become available after aircraft induction will not be shipped without Product Line Manager authorization.

   c. Aircraft shall normally be delivered to the PDM facility with a complete inventory of equipment. With the exception of HC-130 aircraft, the respective ARSC aircraft Product Line Division will coordinate the completion of a pre-induction flight with the field unit providing the aircraft for induction. For HC-130 aircraft, a standard test flight will be conducted prior to delivery or en route to the PDM facility. The discrepancies discovered on these PDM-related flights shall be furnished to the PDM activity for correction.

   d. Upon receipt of an aircraft from PDM, the new reporting custodian will prepare a Standard Form 368 (Quality Deficiency Report) or post PDM report as stipulated in Chapter 3 The importance of these post PDM reports should not be minimized. These forms are reviewed at all levels and should provide specific information to the PDM activities and Commandant (CG-41) on the adequacy of work accomplished. This information is utilized by the PDM activity to correct specific deficiencies in their PDM or Quality Control procedures. Information regarding warranty claims against the contract is also extracted from these reports. Remarks must be in sufficient detail to identify the problem clearly and to describe the action taken to correct the discrepancy, including the number of labor-hours utilized (for HC-130 aircraft).

B. AIRCRAFT HEAVY REPAIR.

1. General. The purpose of this program is to repair aircraft requiring unscheduled work beyond the capability of unit maintenance facilities. Severe corrosion damage, structural failures, and crash damage are examples of the type of repairs placed in this category.

2. Requirements. If the condition of the aircraft requires extensive repair beyond unit capability before the next scheduled PDM induction, the unit shall contact the respective ARSC Product Line Engineering Cell, who will assist as necessary in determining the degree of repair required, and the ARSC Product Line Manager, who will assist in scheduling the necessary transfer, maintenance, and resources required. Units shall submit a “Request For Technical Assistance” message to the respective ARSC product line, with an information copy to Commandant (CG-41). This message request shall provide a detailed description of the damage and amplifying information on the situation. The respective ARSC Product Line Manager will develop, advise, coordinate, and direct the repair plan (e.g., field team, depot fabrication of replacement parts, Drop-In Maintenance (DIM) at ARSC or other

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DOD/commercial depot activity, early PDM induction). If further flight to a suitable maintenance facility is required, the unit shall ensure that the specific requirements of the Coast Guard Air Operations Manual,COMDTINST M3710.1 (series)) on Clearance of Damaged Aircraft are accomplished.

C. CAMP. The Contract Aviation Maintenance Program (CGTO PG-85–00–140) provides Coast Guard policy governing the use of contract maintenance personnel to support Coast Guard owned aircraft at the unit level.

1. Contractor Field Team.

   a. General. The Contractor Field Team (CFT) program is designed to provide a cost-effective alternative to incorporate depot-level modifications to aircraft systems and airframes in the field.

   b. Requirements. All requirements for CFT use are managed by, and all such requests for CFT tasking shall be directly coordinated through, the respective ARSC aircraft Product Line. Units may be required to have an On-Site Project Officer and Primary Quality Assurance representative specifically designated in writing by the ARSC CFT Project Officer prior to the commencement of CFT work at their respective unit.

2. Technical Assistance Field Team.

   a. General. The technical assistance field team can be provided to any unit encountering unique or encumbering maintenance situations or aircraft damage deemed to be beyond the scope of the field unit's capabilities or resources.

   b. Requirements. All requests by field units for ARSC technical assistance should be made through the respective aircraft Product Line Engineering Cell. Should the difficulty being encountered by the requesting field unit require on-site technical assistance, the field unit shall send a "Request for Technical Assistance" message as outlined in the Aeronautical Engineering Maintenance Management Manual, COMDTINST M13020.1 (series). The respective ARSC Product Line Manager, with the assistance of the Engineering Cell, will coordinate the personnel, repair plan, parts, tooling, special equipment, transportation, funding, and expertise necessary to assist the field unit in correcting the pertinent aircraft discrepancies.

D. AIRCRAFT COMPONENT REPAIR.

1. General. This program is designed to overhaul and repair certain aircraft components for a variety of reasons (e.g., high time, internal failure, etc.). ARSC is responsible for the final determination regarding overhaul or repair of components returned from field units. The UR, Unserviceable (reparable) Tag (CG-1577-A) and SCHRs are sources of information used in making the final determination; therefore, they should be filled out as completely as possible.

2. Overhaul Tags. There have been instances where an item has been reported on an Unsatisfactory Report as having been overhauled at ARSC. However, when these components are received at ARSC, the tag indicates the item has only been tested and/or repaired and then returned as serviceable. Improper data for the Unsatisfactory Report system can result in many unnecessary man-hours being expended in researching problem areas. In an effort to reduce part of this problem, ARSC has developed two different decals. One decal is white and indicates the component has been completely overhauled at ARSC. The other decal is yellow and indicates the item has only been inspected and/or repaired as necessary to return the item to a serviceable condition.

E. ENGINEERING SERVICES.

1. General. ARSC's Engineering Services Division (ESD) provides engineering services and technical support for Aviation Life Support, UR research and Avionics systems, and the ALMIS system. The respective aircraft Product Line Engineering Cell is the point of contact for other Engineering Services. Personnel assigned include engineers and technical specialists, including manufacturer technical representatives.

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2. The following services are provided by the respective aircraft Product Lines solely or in coordination with ESD:

   a. Technical Assistance. Troubleshooting assistance for maintenance difficulties, which are beyond the scope of available technical orders, may be provided by the respective aircraft Product Line Engineering Cell personnel.

   b. Special Repairs. Upon request, the respective aircraft Product Line provides engineering technical assistance to its PDM Cell. This assistance includes, but is not limited to: generation of local specifications to cover repair or overhaul of equipment and aircraft when publications are inadequate, direct assistance concerning difficult or new maintenance practices, and approval or disapproval of requested engineering deviations.

   c. UR Research and Analysis. ESD's Policy and Product Assurance Cell receives, reviews, analyzes, and coordinates corrective action with the respective aircraft Product Line Engineering Cell on URs received. Under certain circumstances, a UR follow-up letter is prepared by the Product Assurance Cell and sent to the originating unit. This letter may advise of corrective action taken, request additional information, or provide correct information if the UR indicates that the problem was caused by improper maintenance practices.

   d. Materiel Deficiency Evaluations (MDE). There are three classifications of MDEs; the Engineering Investigation (EI), the Disassembly Inspection Report (DIR), and the Condition Exception Report (CER). The Engineering Investigation is a complete, in-depth study of any component performed by a team of highly qualified experts. The DIR is conducted by cognizant shop personnel, usually with a representative of the Policy and Product Assurance Cell present. The CER is a basic listing of discrepancies found during disassembly by shop personnel. The costs associated with subject inspections are directly proportional to the depth and number of people involved. The order, by cost, is EI, DIR, CER. The publishing of any hard and fast rules concerning MDEs is difficult. Each case must be individually evaluated regarding the impact it would have on the overall Coast Guard aviation program. If ARSC held an EI, DIR, or CER on every component for which the submitting units requested, it would require a significant increase in dollars/personnel. Therefore, every failed/removed component must be individually screened. In cases of aircraft accidents and incidents, any reasonable suspect component should receive an appropriate, expeditious examination. The cognizant systems managers in Commandant (CG-41) serve as the coordinating point for obtaining MDEs for such parts, providing the following functions:

      (1) Determine the type of MDE necessary to provide the needed information to the mishap board.

      (2) Designate the activity to perform the MDE and coordinate the induction requirements.

      (3) Direct the necessary transportation of exhibits and distribution of reports of findings.

      NOTE

      In the case of items reported by urgent or routine URs, appropriate attention should be given in each case whether an MDE is requested or not. A suitable MDE may be accomplished at or contracted by ARSC, with ARSC fulfilling the function of (1), (2) and (3) above.

   e. Message TCTOs. When required, the respective aircraft Product Line drafts Message TCTOs for correcting aircraft problems of an urgent nature.

   f. Liaison with Other Agencies. The respective aircraft Product Line communicates with other Government agencies and aircraft manufacturers concerning problems on common aircraft and equipment. Changes proposed by other agencies are reviewed

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for USCG application. If these proposed changes are considered necessary for safety of flight, improved mission effectiveness, or for common parts procurement, the Product Line recommends approval to Commandant (CG-41).

g. Publications. ARSC Technical Publications Cell is the only entity authorized to communicate with the Department of Defense, Government and Commercial Contractors concerning publication issues. When requested, proposed publication changes are reviewed and corrected. The Cell routinely submits publication changes and corrections when deficiencies exist. Occasionally new chapters are added to existing publications to cover new systems or maintenance procedures.

h. Manufacturer's Technical Representatives. Manufacturer's technical representatives are contracted for and assigned by the respective ARSC aircraft Product Line. These representatives may be utilized by operating units to help solve specific maintenance problems, as a source of information to ensure latest techniques are known, and as a source of information and instruction for the unit's training program. Direct liaison between the operating unit and the technical representatives is authorized. However, unit maintenance officers should ensure that internal procedures at that unit are established to minimize requests for information that is readily available from normal sources. Technical representatives' services requiring temporary duty assignments shall be requested by letter, message, or telephone from the respective Product Line Engineering Cell. Under special circumstances, technical representatives from manufacturers of non-contract major components are also available.

i. Change Process for Life Limit and Overhaul Intervals

(1) The extension of overhaul or service life limits without OEM approval or testing is inherently hazardous. Safe limits are established by developmental testing to establish symptoms and conditions surrounding failures of an item and other items or system capabilities affected by these failures. Limits are a conservative fraction of the average life achieved during the tests. Extension of such intervals is not generally recommended, and extreme care must be taken before such action is followed.

(2) Manufacturers set life limits because an item exhibits an age when a rapid increase in the conditional probability of failure occurs, yet a large proportion of the items in service survive to that age. Overhaul intervals meet the additional requirement that the item can be restored to its original failure resistance by an applicable and effective renewal process.

(3) Since field survival and conditional probability information are commonly unavailable to the customer when equipment enters service, interval modification depends on accumulation of maintenance data. Overly conservative intervals are exhibited by disassembly inspections which reveal damage well below acceptable limits with low probability of significant failures in further operation. Excessive intervals are seen during service as abnormal failure rates or modes, or as abnormally high costs driven by the need to replace or restore additional piece parts. Overhaul interval extensions have been successfully accomplished with less manufacturer support than with life limits but such support is always sought.

(4) An Interval Analysis (IA) may be initiated by the Reliability Program Manager (RPM). Requests originate from Prime Units, ARSC Product Lines and maintenance or repair activities as CG-22 Forms describing the situation and proposed actions. Requests may also originate from a review of existing ACMS Reports, Quarterly Reports or past studies. The Reliability Analyst (RA) receiving the CG–22 from the RPM to carry out the study must be well versed in the methods used to evaluate maintenance data and have the experience to determine the risk for ages past the current interval.

(5) If ample maintenance data exist and a case can be made, the RA is directed to proceed as follows:

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(a) Retrieve data from data base, repair shop or any other available source.

[1] Retrieve available maintenance and supply data.

[2] Collect data from repair shop or vendor.

[3] Collect data from other existing sources such as the Product Line, field and other customers. Establish whether similar projects have been undertaken.

(b) Data reduction.

[1] Convert the retrieved data to a format appropriate for analysis.

[2] Review tracked parameters and remarks and note inconsistencies with recommended action, with additional focus on removals. Notations should be kept separate from retrieved data to facilitate data base updates.

[3] Correct erroneous data entries with aircraft maintenance analyst.

[4] Categorize failures. Three to five categories are normally ideal. Ten to eleven categories should be viewed as an upper limit.

[5] Evaluate whether each data point is valid.

(c) Data analysis.

[1] Analyze the data using standard engineering practices and appropriate engineering and/or mathematical methods.

[2] Derive desired parameters for the item's existing interval and establish probability graphs indicating the existing interval.

[3] Determine new interval and derive parameters where items in service survive to the new age. The population percentage surviving to the new interval must be optimized for logistics and economics without compromise to safety. Calculate the risk at both old and new intervals.

[4] For the limits below, safety concerns may drive the requirement upward while economics may drive the value lower. Limits given are the minimum for all cases.

- For Life Limits, a survival rate above 80% is required.
- Overhaul Intervals must be applicable and effective by RCM methods with the survival rate above 75%.

[5] Compare the risk parameters for both existing and new intervals and produce the draft study. Estimates for safety and long term support cost impacts are recommended.

[6] Provide the draft study for discussion to the RPM and other RA personnel to answer possible questions or obtain input. Repeat the process with the repair vendor, Prime Unit or others in the support structure.

[7] Incorporate any further data changes into the corrections accumulated during data reduction.

(d) Outline criteria for substantiation testing. Typical considerations include:

[1] Testing to failure or disassembly inspection to reveal any new failure modes and their ages unless disapproved or capability does not exist.

[2] Establishment of preferred and alternate flight evaluation parameters specifying whether failures are permitted.

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(e) Complete the report and forward to the RPM for addition to the original CG-22.

(f) Chief, ESD, ARSC is the signature authority for approval of the CG-22. This authority is not intended to be delegated. For approved CG-22s, the RA will obtain testing and feedback of test results for prototype/trial efforts from the RPM.

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DESIGNATION/RECOMMENDATION OF QUALITY ASSURANCE INSPECTOR

From: Quality Assurance Officer

To: Engineering Officer

Subj: Quality Assurance Inspector; Designation/Recommendation of

Ref: a. Appendix A, Coast Guard Air Operations Manual, COMDTINST M3710.1 (series)

b. Chapter 1, Aeronautical Engineering Maintenance Management Process Guide, CGTO PG-85–00–110

1. In accordance with references a and b, the following person is recommended for primary Q.A. Inspector _____Collateral Duty Q.A. Inspector _____ for the following systems:

NAME	SSN	DATE

Certification: I understand my responsibility as set forth herein:

"An individual, when performing inspections, is considered to be the direct representative of the Commanding Officer for ensuring safety of flight of the item concerned. He/she shall not permit factors such as operational desires, maintenance consideration, personal relations, or the approach of liberty to modify his/her judgment. By signing an inspection report, the inspector is certifying upon his/her own individual responsibility that the work involved has been personally inspected by him/her; that it is satisfactory; that any related parts or components which may have been removed to accomplish the work are properly replaced and all parts are secure; all accompanying documentation is complete and correct and the work has been performed in such a manner that the item is completely safe for flight."

SIGNATURE OF CANDIDATE	SIGNATURE OF QA OFFICER	DATE

FIRST ENDORSEMENT

From: Engineering Officer

To:

1. You are hereby designated Quality Assurance Inspector as recommended above.

2. You shall perform your assigned duties in accordance with the provisions of reference a.

SIGNATURE	DATE

Copy to: Quality Assurance Officer
Aviation Engineering Section Files

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MAINTENANCE INSTRUCTION

1. ORIGINATING ACTIVITY	2. DATE	3. MAINTENANCE INSTRUCTION NO.
4. SUBJECT		
5. REFERENCE		
6. APPLICABLE WORK CENTERS		
7. ACTION		

8. SUBMITTED BY (Signature of Operating Officer)	9. APPROVED BY (Signature of Maintenance Officer)

OPNAV 4790/35 (REV.8-81) S/N 0107-LF-047-9177 U.S. Government Printing Office e10001

Figure 1. Maintenance Instruction, OPNAV 4790/35 (REV. 8–81) S/N 0107–LF-047–9177

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COMPOSITE REPAIR MATERIELS - MAINTAINED BY UNIT

EQUIPMENT

TRANSDUCER ASSY

VACUUM PORT

HOSE ASSY

VACUUM GAUGE

PYROMETER

HOT BONDER

THERMOCOUPLE WIRE (J TYPE)

THERMOCOUPLE WELDER

HEAT LAMP

VACUUM, HEPA

TRIPLE BEAM SCALE

CONSUMABLES

VACUUM BAG SEALANT TAPE

NYLON BAGGING FILM

10 oz AIRWEAVE BREATHER/BLEEDER CLOTH

4 oz AIRWEAVE BREATHER/BLEEDER CLOTH

POROUS TEFLON

NON-POROUS TEFLON

SMOOTHER, 5103

RESIN, HYSOL 9309.3NA

RESIN, HYSOL 956

RESIN, EPON 828

CATALYST, DTA (EPON 828)

SCRIM CLOTH (HH-60 ONLY)

CHEESE CLOTH

COTTON SWABS

PAPER CUPS

CLOTH GLOVES

SURGICAL GLOVES

STIR STICKS/TONGUE DEPRESSORS

FLASHBREAKER TAPE

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HAND TOOLS

SCISSORS, 6" UTILITY

PINKING SHEARS

TWEEZERS

TEFLON/NYLON SQUEEGEES

DISC ABRASION KIT

8" DIVIDERS

****COMMON HAND TOOLS NOT LISTED**

REFERENCES

1. GENERAL ADVANCED COMPOSITE REPAIR MANUAL, AFTO 1-1-690
2. STRUCTURAL REPAIR MANUAL, CGTO 1H-65A-3
3. STRUCTURAL REPAIR – ORGANIZATIONAL AND INTERMEDIATE, NAVAIR A1-H60HA-SRM-000

NOTE

Due to constantly changing sources and technology, ARSC will maintain and periodically distribute a list of sources and part numbers.

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HAND SIGNALS FOR AIRCRAFT

HAND SIGNALS FOR FIXED WING AIRCRAFT

SIGNAL FROM DIRECTOR TO PILOT

1

I HAVE COMMAND

DAY - Holds one hand open with palm forward, motionless high overhead.

NIGHT - Holds one hand with wand motionless high overhead.

SIGNAL FROM DIRECTOR TO PILOT

2

CONNECT AUXILIARY POWER UNIT

DAY - Holds extended index finger of right hand against the flat palm of vertical left hand.

NIGHT - Same as day except makes plugging action with wands.

REMARKS - Signal is initiated by pilot, repeated by director, and executed by deck crew.

SIGNAL FROM PILOT TO DIRECTOR

3

DISCONNECT AUXILIARY POWER UNIT

DAY - Pulls extended index finger of right hand from palm of left hand.

NIGHT - Same as day except makes unplugging action with wands.

REMARKS - Signal is initiated by pilot, repeated by director, and executed by deck crew.

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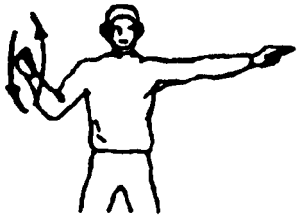
	SIGNAL FROM DIRECTOR TO PILOT	
4	 **DISCONNECT AUXILIARY POWER UNIT**	**DAY -** Pulls extended index finger of right hand from palm of left hand. **NIGHT -** Same as day except makes unplugging action with wands. **REMARKS -** Signal is initiated by pilot, repeated by director, and executed by deck crew.
	SIGNAL FROM PILOT TO DIRECTOR	
5	 **READY TO START ENGINE**	**DAY -** Moves hand in circle perpendicular to the deck; follows with a “thumbs up” signal. Copilot signals for No. 1 engine; pilot signals for No. 2. **NIGHT -** Turns on flashlight or movable light and moves it in a circle perpendicular to the deck.
	SIGNAL FROM DIRECTOR TO PILOT	
6	 **START ENGINES**	**DAY -** Gives “Emergency Stop” to ensure that brakes are on. Points at engine to be started while rotating other hand in a cranking motion. **NIGHT -** Same as day except with wands.

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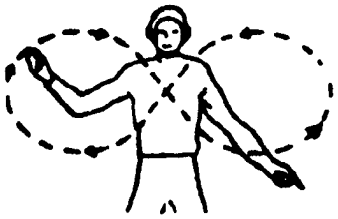
SIGNAL FROM DIRECTOR TO PILOT

7



ENGINES FIRE

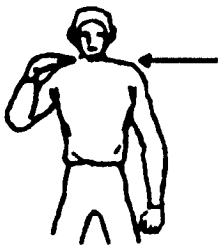
DAY - Describes a large figure eight with one hand and points to the fire area with the other hand.

NIGHT - Same as day except with wands.

REMARKS - Signal is meant for information only. Pilot should be given a cut engine or continuous turn-up signal, as appropriate.

SIGNAL FROM DIRECTOR TO PILOT

8



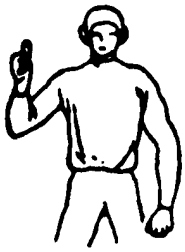
CUT ENGINES

DAY - Makes “Throat Cutting” action with one hand. For multi-engine aircraft, points to appropriate engine with other hand.

NIGHT - Same as day except with wands.

SIGNAL FROM DIRECTOR TO PILOT

9



THUMBS UP

DAY - Holds fist at shoulder level with thumb extended up. Given by pilot when he desires to start engine or taxi.

NIGHT - Holds wand in “Thumbs Up” position.

REMARKS - “Thumbs Up” reply indicates “all clear.”

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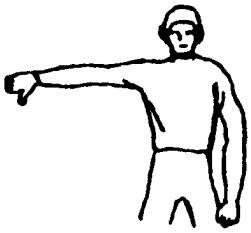
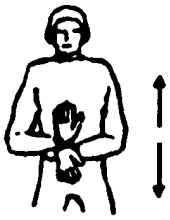
	SIGNAL FROM DIRECTOR TO PILOT	
10	 **THUMBS DOWN**	**DAY -** Holds fist at shoulder level with thumb extended down. **NIGHT -** Holds wand in “Thumbs Down” position. **REMARKS -** Indicates that all is not OK.
	SIGNAL FROM DIRECTOR TO PILOT	
11	**OPEN COWL FLAPS**	**DAY -** Holds hands against side of head. Opens hands by moving thumbs forward and outward. **NIGHT -** Same as day except with wands.
	SIGNAL FROM DIRECTOR TO PILOT	
12	 **LOWER WING FLAPS**	**DAY -** Positions hands in front of body, with palms together horizontally. Opens palms from wrists, alligator mouth fashion. **NIGHT -** Same as day except with wands.
	SIGNAL FROM DIRECTOR TO PILOT	
13	**RAISE WING FLAPS**	Reverse of LOWER WING FLAPS signal.

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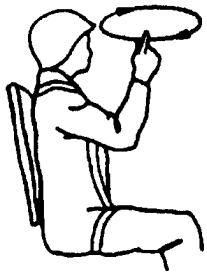
	SIGNAL FROM PILOT TO DIRECTOR	
14	 **READY TO ENGAGE ROTORS**	**DAY -** Moves hand in horizontal circle with index finger at eye level. **NIGHT -** Same as day except holds red light in hand.
	SIGNAL FROM DIRECTOR TO PILOT	
15	**ENGAGE ROTORS**	**DAY -** Facing pilot, holds left hand (fist clenched) above head. Moves right hand in horizontal circle with index finger at eye level. **NIGHT -** Facing pilot, holds red wand in left hand above head. Moves right hand in horizontal circle with index finger at eye level.
	SIGNAL FROM DIRECTOR TO LINE CREW	
16	**REMOVE TIEDOWNS**	**DAY -** Makes wiping motion down left arm with right hand. **NIGHT -** Same as day except with wands.

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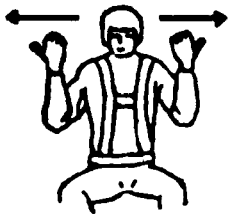
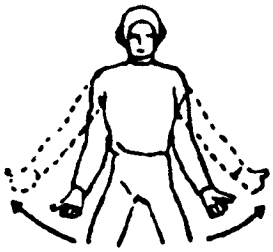
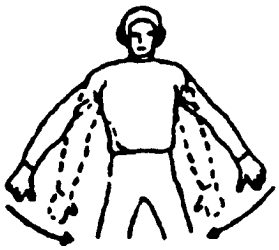
	SIGNAL FROM PILOT TO DIRECTOR	
17		
	REMOVE CHOCKS	**DAY -** Swings arms apart; extends thumbs outward. **NIGHT -** Using hand light or flashlight, gives on/off signals at one second intervals.
	SIGNAL FROM DIRECTOR TO LINE CREW	
18		
	REMOVE CHOCKS	**DAY -** Gives “Emergency Stop” signal to ensure that brakes are ON. Sweeps fists apart at hip level with thumbs extended and pointing outward. **NIGHT -** Same as day except with wands.
	SIGNAL FROM DIRECTOR TO LINE CREW	
19		
	INSERT CHOCKS	**DAY -** Sweeps fists together at hip level with thumbs extended and pointing inward. **NIGHT -** Same as day except with wands.

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	SIGNAL FROM DIRECTOR TO LINE CREW	
20	**REMOVE DOWNLOCKS**	**DAY -** Holds arms overhead with right hand clasping left forearm. Unclasps right hand from forearm and straightens right arm from elbow. **NIGHT -** Same as day except with wands.
	SIGNAL FROM DIRECTOR TO LINE CREW	
21	**INSTALL DOWNLOCKS**	**DAY -** Holds arms overhead with right hand clasping left forearm. **NIGHT -** Same as day except with wands.
	SIGNAL FROM DIRECTOR TO PILOT	
22	**UNLOCK TAIL WHEEL**	**DAY -** Positions hands overhead with palms together. Opens palms from wrists to form a vertical “V.” **NIGHT -** Same as day except with wands.

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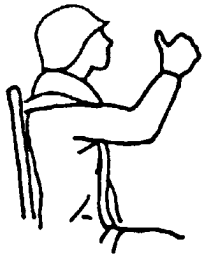
	SIGNAL FROM DIRECTOR TO PILOT	
23	**LOCK TAIL WHEEL**	**DAY -** Positions hands overhead with palms forming a vertical “V.” Closes palms suddenly. **NIGHT -** Same as day except with wands.
	SIGNAL FROM PILOT TO DIRECTOR	
24	 **READY FOR TAKEOFF / TAXI**	**DAY -** Gives “thumbs up” signal at eye level. **NIGHT -** May give “up” signal by turning on flashlight or other movable light and moving it up and down.
	SIGNAL FROM DIRECTOR TO PILOT	
25	**MOVE FORWARD**	**DAY -** With hands at head level and palms toward face, makes closing motions toward head. **NIGHT -** Same as day except with wands.

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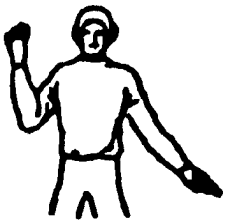
	SIGNAL FROM DIRECTOR TO PILOT	
26	 **LEFT TURN**	**DAY -** Makes beckoning action with left hand, while pointing at left brake with right hand, index finger extended. **NIGHT -** Same as day except with wands. **REMARKS -** For HARD TURN, clench fist pointing to brake. For FAST TURN, open hand pointing to brake. At night, vary the rate of beckoning motion to indicate desired rate of turn.
	SIGNAL FROM DIRECTOR TO PILOT	
27	 **RIGHT TURN**	Reverse of LEFT TURN signal.
	SIGNAL FROM DIRECTOR TO PILOT	
28	 **PROCEED UNDER GUIDANCE OF NEXT DIRECTOR**	**DAY -** Moves both hands at shoulder height, with arms extended, both pointing to the next director. **NIGHT -** Same as day except with wands.

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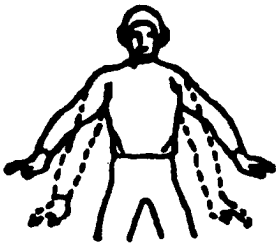
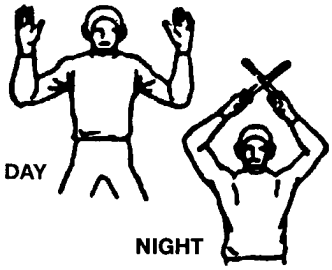
	SIGNAL FROM DIRECTOR TO PILOT
29	 **SLOW DOWN**
	DAY - Raises arms to waist level, palms down. Makes a downward patting motion. **NIGHT -** Same except with wands, held horizontally.
	SIGNAL FROM DIRECTOR TO PILOT
30	 **STOP**
	DAY - Raises both hands to eye level, palms to pilot, in policeman's "stop." **NIGHT -** Holds crossed wands overhead.
	SIGNAL FROM DIRECTOR TO PILOT
31	 **EMERGENCY STOP**
	DAY - Crosses forearms overhead with fists clenched. **NIGHT -** Crosses wands overhead.

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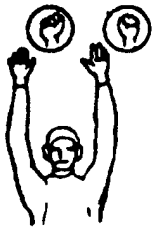
	SIGNAL FROM DIRECTOR TO PILOT
32	
HOLD BRAKES	**DAY -** Clenches fists overhead with arms uncrossed.
	SIGNAL FROM DIRECTOR TO PILOT
33	
RELEASE BRAKES	**DAY -** Opens and clenches fists as arms are held above head.
	SIGNAL FROM DIRECTOR TO PILOT
34	
DROOP STOPS OUT	**DAY -** When rotor starts to “run down” taxi signalman stands with both hands raised above head, fists closed, thumbs pointing out. **NIGHT -** Same as day signal with addition of wands.

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	SIGNAL FROM DIRECTOR TO PILOT	
35		
	DROOP STOPS IN	**DAY -** When droop stops go in, taxi signalman turns thumbs inwards. **NIGHT -** Same as day signal with addition of wands.
	SIGNAL FROM DIRECTOR TO PILOT	
36		
	ROLL BACK	**DAY -** Arms down, palms open facing forward, sweeping backward and forward movement with the arms.
	SIGNAL FROM DIRECTOR TO PILOT	
37		
	TURNS WHILE BACKING – TAIL TO PORT	**DAY -** Point right arm down and bring left arm from overhead vertical position to horizontal forward position, repeating left arm movement.

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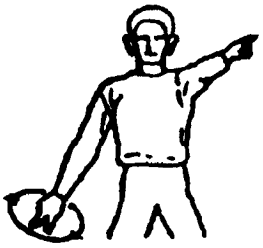
	SIGNAL FROM DIRECTOR TO PILOT	
38	**TURNS WHILE BACKING – TAIL TO STARBOARD**	**DAY -** Reverse of TURNS WHILE BACKING - TAIL TO PORT (LEFT).
	SIGNAL FROM DIRECTOR TO PILOT	
39	 **START AIRCRAFT AUXILIARY POWER UNIT**	**DAY -** Points to power unit exhaust with left hand index finger. Moves right hand in horizontal circle, index and middle fingers pointing downward. **NIGHT -** Same as day except with wands.
	SIGNAL FROM DIRECTOR TO PILOT	
40	**STOP AUXILIARY POWER UNIT**	**DAY -** Makes “Throat Cutting” action with left hand. Moves right hand in horizontal circle, index and middle fingers pointing downward. **NIGHT -** Same as day except with wands.

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	SIGNAL FROM DIRECTOR TO LINE CREW	
41		
	INSTALL TIEDOWNS	**DAY -** Rotates hands in a circle perpendicular to and in front of his body. **NIGHT -** Same as day except with wands.
	SIGNAL FROM DIRECTOR TO LINE CREW	
42	**TIEDOWNS IN PLACE**	**DAY -** Same signals as INSTALL TIEDOWNS followed by thumbs up. **NIGHT -** Same as day except with wands.

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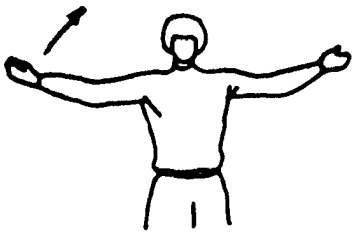
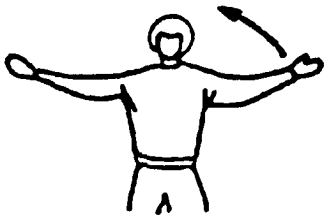
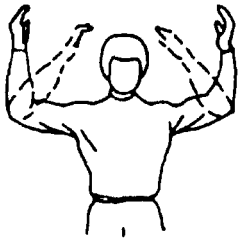
HAND SIGNALS FOR AIRBORNE HELICOPTERS

	SIGNAL FROM DIRECTOR TO PILOT	
1	 **MOVE RIGHT**	**DAY -** Left arm extended horizontally sideways in direction of movement and other arm swung over the head in same direction in a repeating movement. **NIGHT -** Same as day signal with addition of wands.
	SIGNAL FROM DIRECTOR TO PILOT	
2	 **MOVE LEFT**	**DAY -** Right arm extended horizontally sideways in direction of movement and other arm swung over the head in same direction in a repeating movement. **NIGHT -** Same as day signal with addition of wands.
	SIGNAL FROM DIRECTOR TO PILOT	
3	 **MOVE FORWARD**	**DAY -** With hands at head level and palms toward face, makes closing motions toward head. **NIGHT -** Same as day except uses green wands.

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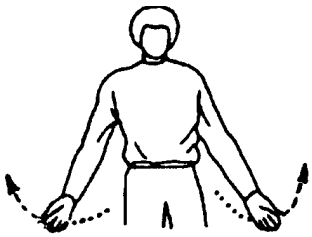
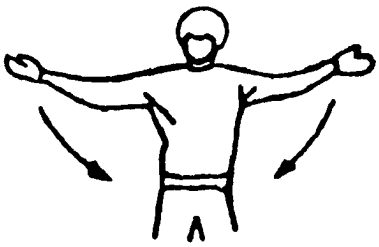
	SIGNAL FROM DIRECTOR TO PILOT	
4	 MOVE BACK	**DAY -** Arms by sides, palms facing forward, swept forward and upward repeatedly to shoulder height. **NIGHT -** Same as day signal with addition of wands.

	SIGNAL FROM DIRECTOR TO PILOT	
5	MOVE UPWARD	**DAY -** Arms extended horizontally sideways beckoning upwards, with palms turned up. Speed of movement indicates rate of ascent. **NIGHT -** Same as day signal with addition of wands.

	SIGNAL FROM DIRECTOR TO PILOT	
6	 MOVE DOWNWARD	**DAY -** Arms extended horizontally sideways beckoning downwards, with palms turned down. Speed of movement indicates rate of ascent. **NIGHT -** Same as day signal with addition of wands.

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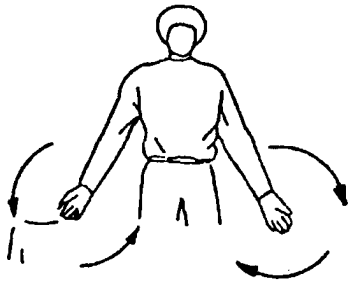
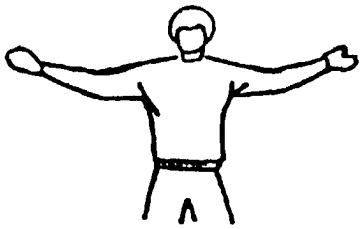
	SIGNAL FROM DIRECTOR TO PILOT	
7	 GEAR DOWN	**DAY -** When aircraft approaches with landing gear retracted, taxi signalman makes circular motion with arms down 45 degrees and ahead 45 degrees. **NIGHT -** Same as day with addition of wands.
	SIGNAL FROM DIRECTOR TO PILOT	
8	 HOVER	**DAY -** Arms extended horizontally sideways, palms downward. **NIGHT -** Same as day signal with addition of wands.
	SIGNAL FROM DIRECTOR TO PILOT	
9	LAND	**DAY -** Arms crossed and extended downwards in front of the body. **NIGHT -** Same as day signal with addition of wands.

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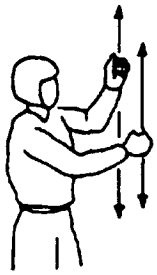
	SIGNAL FROM DIRECTOR TO PILOT	
10	**WAVEOFF**	**DAY -** Crosses and uncrosses arms overhead. **NIGHT -** Same as day except uses green wands. **NOTE -** Applies regardless of color of signal device. MANDATORY SIGNAL.
	SIGNAL FROM DIRECTOR TO PILOT AND HOOKUP CREW	
11	 **HOOK UP EXTERNAL LOAD**	**DAY -** Makes a rope climbing action, to the side. Once hookup is completed and cargo hookup man gives “thumbs up” signal, taxi signalman gives “launch” signal to pilot. **NIGHT -** Same as day except uses green wands; holds wands vertical and moves them in a vertical plane.
	SIGNAL FROM DIRECTOR TO PILOT	
12	**RELEASE LOAD**	**DAY -** Left arm extended forward horizontally fist clenched, right hand making horizontal slicing movement below the left fist, palm downward. **NIGHT -** Same as day signal with addition of wands.

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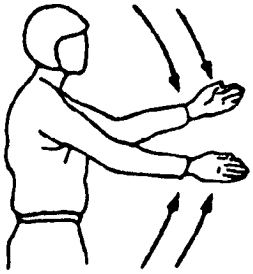
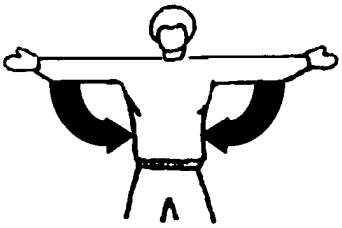
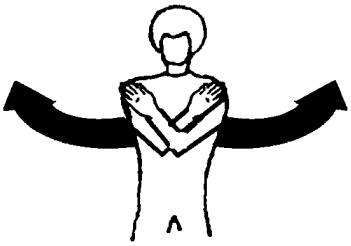
	SIGNAL FROM DIRECTOR TO PILOT	
13		
	HOOK NOT DOWN / UP	**DAY -** With arms extended make short up and down chopping action alternating hands. **NIGHT -** Same as day except uses green wands.

	SIGNAL FROM DIRECTOR TO PILOT	
14		
	FOLD WINGS/ HELICOPTER BLADES	**DAY -** Arms straight out at sides, then swept forward and hugged around shoulders. **NIGHT -** Same as day signal with addition of wands.

	SIGNAL FROM DIRECTOR TO PILOT	
15		
	SPREAD WINGS/ HELICOPTER BLADES	**DAY -**Arms hugged around shoulders then swept straight out to the sides. **NIGHT -** Same as day signal with addition of wands.

NOTE

For Shipboard Helicopter Handling Procedures see COMDTINST M3710.2 (series).

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AIRCRAFT INVENTORY RECORD

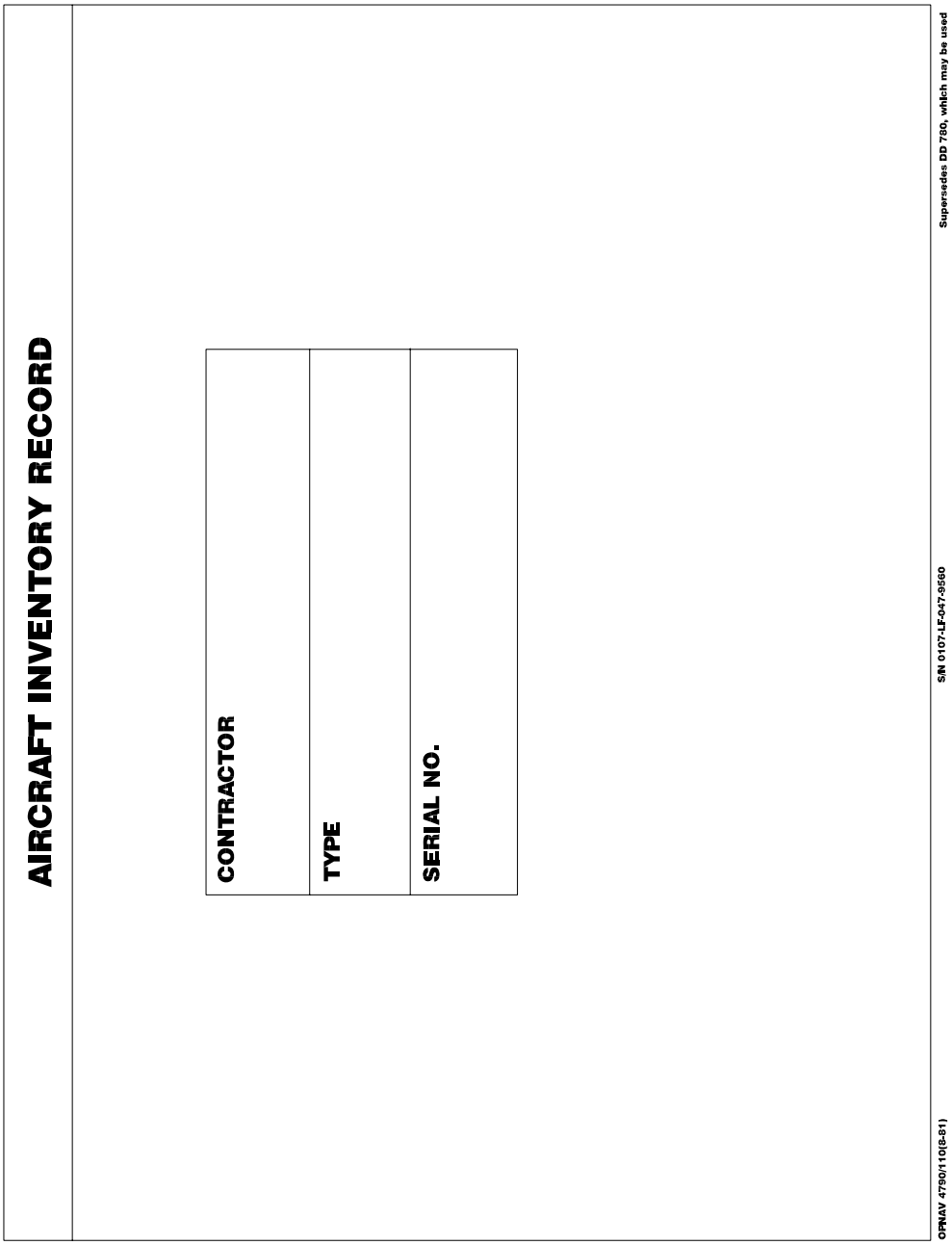

Figure 1. Aircraft Inventory Record, OPNAV 4790/110 (8–81)

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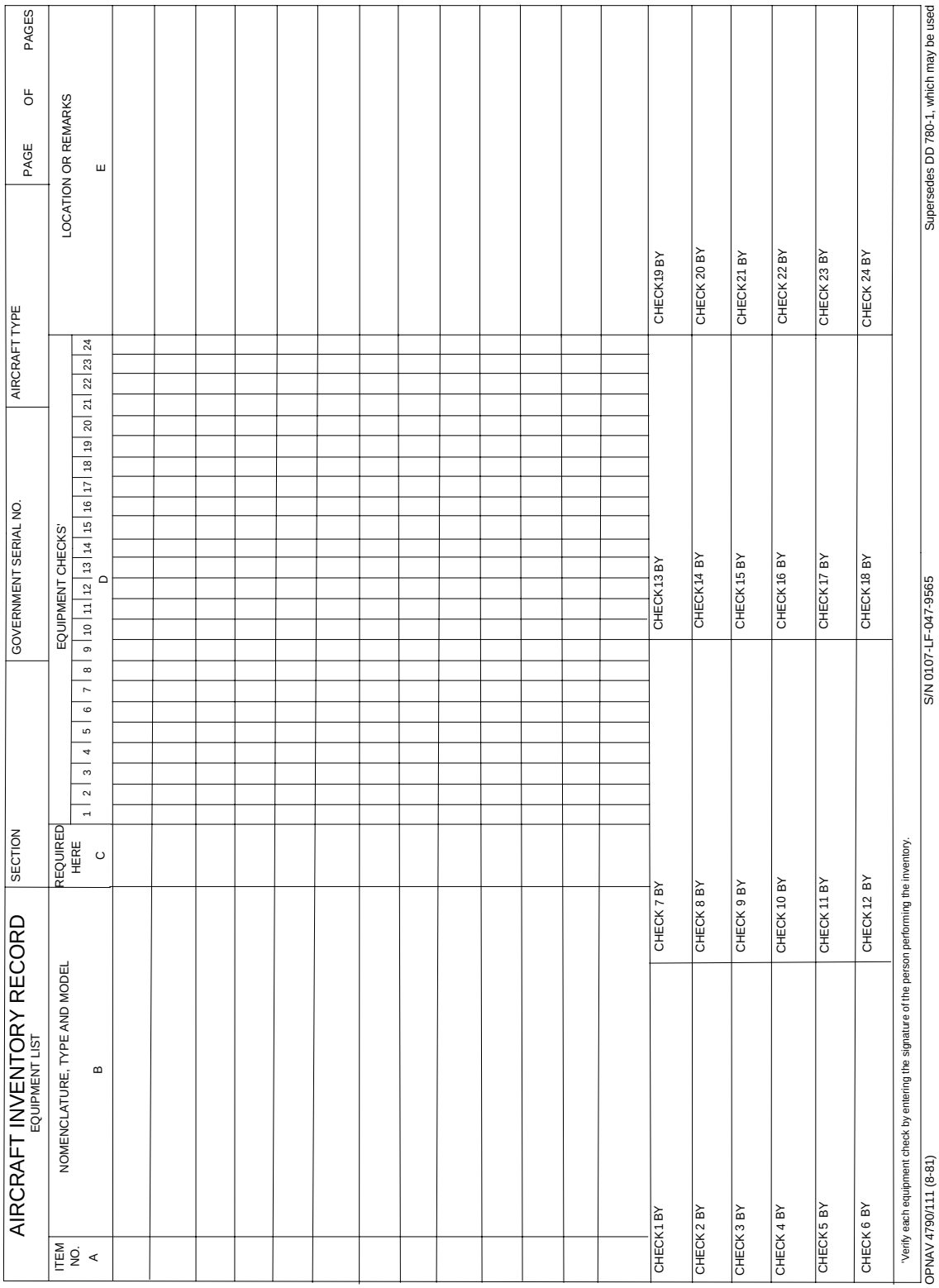

AIRCRAFT INVENTORY RECORD
EQUIPMENT LIST

SECTION | GOVERNMENT SERIAL NO. | AIRCRAFT TYPE | PAGE OF PAGES

ITEM NO. A	NOMENCLATURE, TYPE AND MODEL B	REQUIRED HERE C	EQUIPMENT CHECKS' 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 D	LOCATION OR REMARKS E
CHECK 1 BY	CHECK 7 BY		CHECK 13 BY	CHECK 19 BY
CHECK 2 BY	CHECK 8 BY		CHECK 14 BY	CHECK 20 BY
CHECK 3 BY	CHECK 9 BY		CHECK 15 BY	CHECK 21 BY
CHECK 4 BY	CHECK 10 BY		CHECK 16 BY	CHECK 22 BY
CHECK 5 BY	CHECK 11 BY		CHECK 17 BY	CHECK 23 BY
CHECK 6 BY	CHECK 12 BY		CHECK 18 BY	CHECK 24 BY

*Verify each equipment check by entering the signature of the person performing the inventory.

OPNAV 4790/111 (8-81) S/N 0107-LF-047-9565 Supersedes DD 780-1, which may be used

Figure 2. Aircraft Inventory Record Equipment List, OPNAV 4790/111 (8–81)

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AIRCRAFT INVENTORY RECORD SHORTAGES		GOVERNMENT SERIAL NO.		AIRCRAFT TYPE	PAGE OF PAGES
ITEM NO. A	NOMENCLATURE, TYPE AND MODEL B	QUAN-TITY SHORT C	AUTHORITY OR REASON FOR SHORTAGE D		REMARKS E
NAME OF TRANSFERRING/RECEIVING ACTIVITY:					
EQUIPMENT CHECK#/ CERTIFICATION #:					
DATE:					
SIGNATURE OF TRANSFERRING ACTIVITY COMMANDING OFFICER OR A REPRESENTATIVE AUTHORIZED TO SIGN BY DIRECTION:					

OPNAV 4790/112(8-81) S/N 0107-LF-047-9570 Supersedes DD780-2, which may be used ☆ U.S. Government Printing Office: 1965-505-012/18059 2-1

Figure 3. Aircraft Inventory Record Shortages, OPNAV 4790/112 (8–81)

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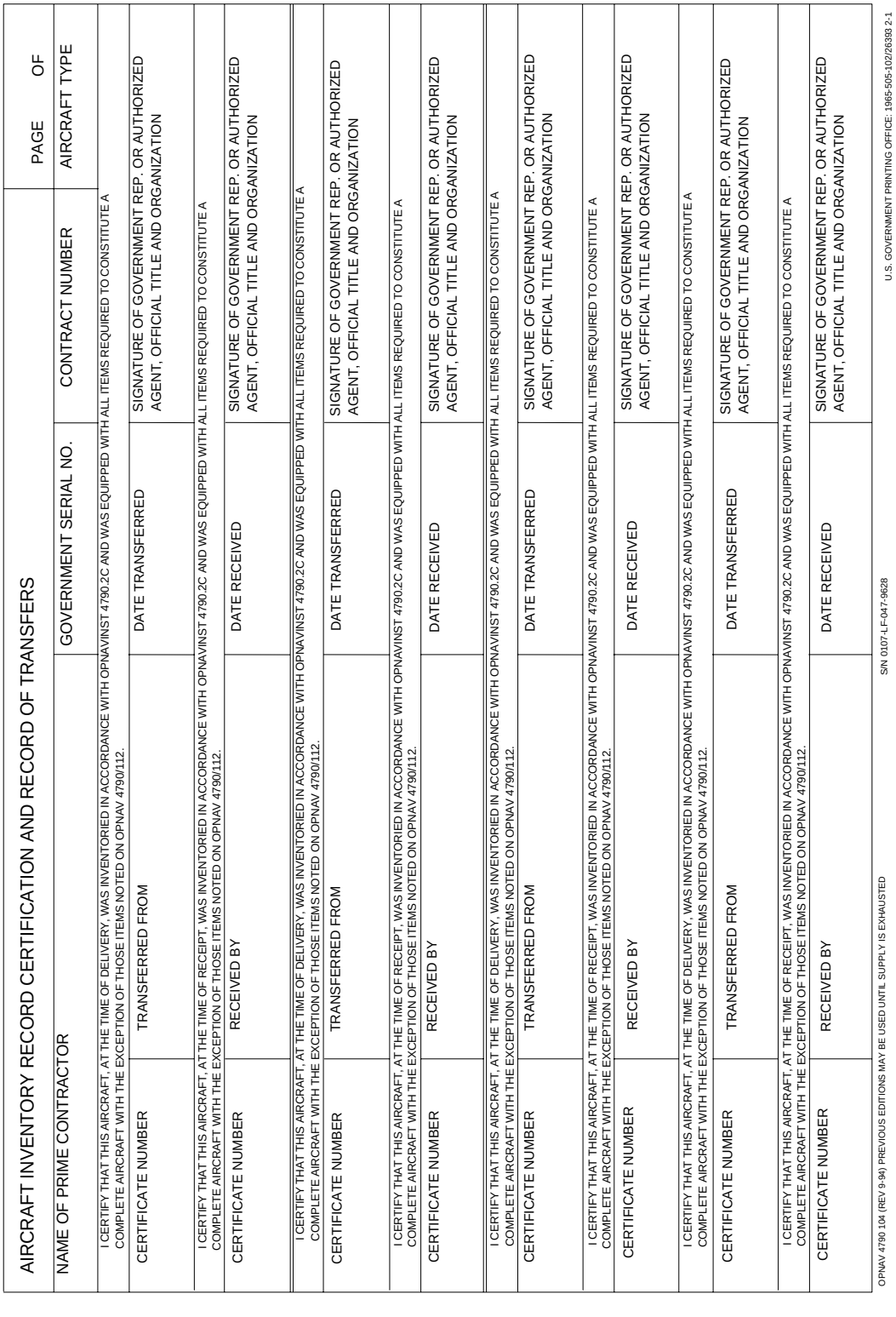

AIRCRAFT INVENTORY RECORD CERTIFICATION AND RECORD OF TRANSFERS

PAGE OF

NAME OF PRIME CONTRACTOR	GOVERNMENT SERIAL NO.	CONTRACT NUMBER	AIRCRAFT TYPE
I CERTIFY THAT THIS AIRCRAFT, AT THE TIME OF DELIVERY, WAS INVENTORIED IN ACCORDANCE WITH OPNAVINST 4790.2C AND WAS EQUIPPED WITH ALL ITEMS REQUIRED TO CONSTITUTE A COMPLETE AIRCRAFT WITH THE EXCEPTION OF THOSE ITEMS NOTED ON OPNAV 4790/112.			
CERTIFICATE NUMBER	TRANSFERRED FROM	DATE TRANSFERRED	SIGNATURE OF GOVERNMENT REP. OR AUTHORIZED AGENT, OFFICIAL TITLE AND ORGANIZATION
I CERTIFY THAT THIS AIRCRAFT, AT THE TIME OF RECEIPT, WAS INVENTORIED IN ACCORDANCE WITH OPNAVINST 4790.2C AND WAS EQUIPPED WITH ALL ITEMS REQUIRED TO CONSTITUTE A COMPLETE AIRCRAFT WITH THE EXCEPTION OF THOSE ITEMS NOTED ON OPNAV 4790/112.			
CERTIFICATE NUMBER	RECEIVED BY	DATE RECEIVED	SIGNATURE OF GOVERNMENT REP. OR AUTHORIZED AGENT, OFFICIAL TITLE AND ORGANIZATION
I CERTIFY THAT THIS AIRCRAFT, AT THE TIME OF DELIVERY, WAS INVENTORIED IN ACCORDANCE WITH OPNAVINST 4790.2C AND WAS EQUIPPED WITH ALL ITEMS REQUIRED TO CONSTITUTE A COMPLETE AIRCRAFT WITH THE EXCEPTION OF THOSE ITEMS NOTED ON OPNAV 4790/112.			
CERTIFICATE NUMBER	TRANSFERRED FROM	DATE TRANSFERRED	SIGNATURE OF GOVERNMENT REP. OR AUTHORIZED AGENT, OFFICIAL TITLE AND ORGANIZATION
I CERTIFY THAT THIS AIRCRAFT, AT THE TIME OF RECEIPT, WAS INVENTORIED IN ACCORDANCE WITH OPNAVINST 4790.2C AND WAS EQUIPPED WITH ALL ITEMS REQUIRED TO CONSTITUTE A COMPLETE AIRCRAFT WITH THE EXCEPTION OF THOSE ITEMS NOTED ON OPNAV 4790/112.			
CERTIFICATE NUMBER	RECEIVED BY	DATE RECEIVED	SIGNATURE OF GOVERNMENT REP. OR AUTHORIZED AGENT, OFFICIAL TITLE AND ORGANIZATION
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CERTIFICATE NUMBER	TRANSFERRED FROM	DATE TRANSFERRED	SIGNATURE OF GOVERNMENT REP. OR AUTHORIZED AGENT, OFFICIAL TITLE AND ORGANIZATION
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CERTIFICATE NUMBER	RECEIVED BY	DATE RECEIVED	SIGNATURE OF GOVERNMENT REP. OR AUTHORIZED AGENT, OFFICIAL TITLE AND ORGANIZATION
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CERTIFICATE NUMBER	RECEIVED BY	DATE RECEIVED	SIGNATURE OF GOVERNMENT REP. OR AUTHORIZED AGENT, OFFICIAL TITLE AND ORGANIZATION

OPNAV 4790 104 (REV 9-94) PREVIOUS EDITIONS MAY BE USED UNTIL SUPPLY IS EXHAUSTED

S/N 0107-LF-047-9628

U.S. GOVERNMENT PRINTING OFFICE: 1995-505-102/26393 2-1

e06004

Figure 4. Aircraft Inventory Record Certification and Record of Transfers, OPNAV 4790/104 (9–84)

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FORMS

A. CG-1577-A, Unsatisfactory Report (UR) Tag-Materiel — S/N CG-1577-A — Forms supplied to the air stations by ARSC.

B. CG-22, Aeronautical Publication Change Recommendation — Available on SWIII USCG Adobe Forms.

C. CG-4940, SURF Requisition Log — Available on SWIII USCG Adobe Forms.

D. AFTO Form 781J, Airframe and Engine Operating Time and Cycle Information — Available on SWIII USCG Adobe Forms.

E. AFTO Form 103, Aircraft/Missile Condition Report — Electronic Forms available on the AFPDL CD.

F. AF Form 847, Recommendation for Change of Publication — Available on SWIII USCG Adobe Forms.

G. CG Form 290, Aerospace Vehicle Delivery Receipt — S/N 1991-548-041/4014 — Available on SWIII USCG Adobe Forms.

H. DD-1574, Serviceable Tag-Materiel — S/N 0102-LF-016-0300 — Forms supplied to the air stations by ARSC.

I. DD-1577-2, Unserviceable (Reparable) Tag-Material — S/N 0102-LF-016-0700 — Forms supplied to the air stations by ARSC.

J. DD-2026, Oil Analysis Request — Available on SWIII USCG Adobe Forms.

K. DD-2027, Oil Analysis Record — S/N 0102-LF-002-0270 — U/I PD — Stock Point Navy.

L. DD Form 365-4, Weight and Balance Clearance Form F — Transport/Tactical — S/N 0102–LF-008-8700 — Stock Point Navy.

M. EAL Paper Logbook Records – Available in EAL under EAL FORMS

- Aircraft Status Report
- ATA Chapters
- Deferred Maintenance Record
- Flight Generated Maintenance Record
- Flight Record
- Flight Safety Maintenance Document
- Flight Schedule
- Fuel/Defuel Record
- Fuel Sample Record
- Maintenance Discrepancy Report
- No-Fly Maintenance Record
- Operational Codes and Employment Categories
- Preflight Record

N. OPNAV 4790/35, Maintenance Instruction — S/N 0107-LF-047-9177 — U/D 100 sheets U/I PD— Stock Point Navy.

O. OPNAV 4790/66, Technical Publications Deficiency Report — S/N 0107-LF-002-4400 — U/D 50 sheets, U/I PD — Stock Point Navy.

P. OPNAV 4790/104, Aircraft Inventory Record Certification and Record of Transfers — S/N 0107-LF-047-9529 — U/D 50 sheets, U/I PD — Stock Point Navy.

Q. OPNAV 4790/110, Aircraft Inventory Record — S/N 0107-LF-047-9560, U/D 50 sheets, U/I PD — Stock Point Navy.

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R. OPNAV 4790/111, Aircraft Inventory Record Equipment List — S/N 0107-LF-047-9565 — U/D 100 sheets, U/I PD — Stock Point Navy.

S. OPNAV 4790/112, Aircraft Inventory Record Shortages — S/N 0107-LF-047-9570 — U/D 100 sheets, U/I PD — Stock Point Navy.

T. SF 368, Product Quality Deficiency Report — Available on SWIII USCG Adobe Forms.

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POST PDM REPORT

A. SAMPLE

13000

From: Commanding Officer, (Unit submitting the report)
To: Commanding Officer, Coast Guard Aircraft Repair and Supply Center

Subj: POST PDM REPORT FOR AIRCRAFT CGNR _____

Ref: (a) Aeronautical Engineering Maintenance Management Process Guide, CGTO PG-85-00-110

1. In accordance with the requirements listed in reference (a) the following report is submitted as a post PDM report for CGNR _____ received at this unit on (date).

2. The following were major discrepancies noted, corrective action taken, and labor-hours expended:

a. Discrepancy: Oil leaks at the #2 filter bowl. O ring replaced several times and filter bowl replaced twice. Leak persisted.
Corrective Action: Replaced #2 oil pump housing.
Labor-hours Expended: 27

3. The following were minor discrepancies noted, corrective action taken, and labor-hours expended:

a. Discrepancy: Torque split of 10% between #1 and #2 engines in a hover.
Corrective Action: Completed torque calibration IAW MPC 77007.0 and anticipator adjustment IAW MPC 76001.3.
Labor-hours Expended: 4.5

b. Discrepancy: Starboard position light lens cracked.
Corrective Action: Replaced with new lens.
Labor-hours Expended: 0.5

4. (Supplemental Information, Points of Contact, Recommendations, and Future Maintenance Arrangements involving ARSC.)

COMMANDING OFFICER
or
ENGINEERING OFFICER
"By direction"

Copy: Commandant (CG-41)

Figure 1. Aircraft Inventory Record Certification and Record of Transfers, OPNAV 4790/104 (9–84)

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LOGISTICS COMPLIANCE INSPECTION (LCI) WORKSHEET

A. **TEAM LEADER.** The LCI Team Leader will complete the following items during the inspection:

1. Review unit engineering instructions and maintenance instructions, including unit salvage plan and hot refueling procedures.
2. Assist with inspection as necessary.
3. Conduct in-brief and out-brief.
4. Compile final report.

B. **PRODUCT LINE REPRESENTATIVE.** The Product Line Representative will:

1. Review aircraft logbooks. Inventory logbooks for Aeronautical Engineering Maintenance Management Manual, COMDTINST M13020.1 (series) compliance.
2. Compare SCHRs to the Configuration Report for accuracy.
3. Check aircraft for proper configuration and condition.
4. Review aircraft maintenance logbooks for sign-off and documentation.
5. Inspect hangar deck and shops for compliance with chapter 2 of this process guide.

C. **CORROSION REPRESENTATIVE.** The Corrosion Representative will:

1. Complete MPC 53001.1 for the HH-65 and HH-60 and MPC 530000.0 for the HU-25 and HC-130. These MPCs cover aircraft corrosion inspection, unit wash rack, non-approved chemical usage, unit corrosion plan, unit CPA and carried forward discrepancies.
2. Conduct corrosion training for unit personnel. This training will be tailored to meet unit needs. It is recommended that all unit personnel, including pilots, receive basic corrosion training (identification) while maintenance personnel receive more in-depth training on prevention and treatment.

D. **SUPPLY REPRESENTATIVE.** The Supply Representative will:

1. Inventory all Type 1, 2, and 4 items in the warehouse and remote locations with an extended price over $5000.00.
2. Inventory all Type 7 materiel at HH65 units.
3. Research discrepancies between AMMIS and the physical inventory to reconcile differences and determine the source of the discrepancy.
4. Conduct a random sample of physical inventory in the warehouse.
5. Check for Unit of Issue discrepancies and adjust balances.
6. Identify “Bogus” locations in both AMMIS and at the station. Take corrective action.
7. Review the following reports to identify requisitions and unserviceable turn-ins and the dates they were submitted.
   a. Cumulative Turn-In Report
   b. Requisition Status Report
   c. Commanding Officer’s Report
8. Review aircraft logbooks to ensure all Parts Pending Discrepancies have a legitimate document number. Reconcile against requisition status reports.
9. Identify inventory adjustments (gains/losses) performed during the last three months and ensure that supply personnel understand RFI turn-in, inventory transfer and remote location procedures. EO or Comptroller should be the approving authority for any loss of materiel over a $5000 unit price threshold.
10. Provide training in “Air Station Supply Procedures.” This minicourse is a refresher in the procedures to obtain, account for, return and troubleshoot aviation supply items using AMMIS.

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11. Provide training for managers in “Air Station Procedures.” This minicourse is a refresher for managers in the review of AMMIS/COGNOS reports, what the reports mean to the availability of parts, and how to improve our supply process.
12. Discuss procedures used for tracking Type 3 and 5 materiel. Has the unit encountered any problems with CMPlus?
13. Conduct inspection of maintenance shops.
    a. Are shops properly handling accountable materiel? Are A Condition items found in the shops identified in AMMIS, bound for an aircraft, or “off book?”
    b. Conduct a random sample of physical inventory at remote storage locations. Reconcile inventory to AMMIS and vice versa.
    c. Interview mechanics to determine if they understand the supply system and their responsibilities in accounting for aviation materiel.
    d. Resolve any discrepancies found and assist where needed or requested.
14. Observe supply materiel ordering procedures and order sheet process. Discuss priority 2 999, priority 02, priority 05 and priority 12 ordering procedures.
15. Observe warehouse security and ensure there is an adequate level of control.
16. Discuss the Allowance Change Request submittal process.

E. ENGINEERING SUPPORT REPRESENTATIVE. The Engineering Support Representative will:

1. Review Unit Engineering Instructions (TIMIs, CAMIs, SAMIs, etc.) for changes and applicable equipment support.
2. Perform audit of air station Aviation Computerized Maintenance System (ACMS) Mandatory Special Requirements (MSR) and Special Requirements (SR) for compliance and the Component Summary Report (CSR) for accuracy against air station on hand inventory.
3. Inspect Aviation Life Support Equipment (ALSE) on aircraft and located in ready rack for current inspection dates and equipment condition.
4. Inspect Avionics, Battery and Aviation Survival Shops for compliance with chapter 2 of this process guide.
5. Inspect Aviation Survival Shop for compliance with maintenance of gaseous oxygen systems IAW chapter 5 of the Aviation Life Support Systems Manual, COMDTINST M13520.1 (series) and MSR MPC 256141.0.
6. Inspect avionics and ground support equipment for compliance with item configuration, allowance quantity, calibration, periodic maintenance and storage.
7. Review air station’s daily, weekly, monthly, annual refueling equipment checklist records to ensure compliance IAW the USCG Aviation Fuel Handling Procedures Manual , COMDTINST M13001.1 (series).
8. Inspect support equipment assigned to unit’s deployable support kits and AIRFACs.
9. Review training records for appropriate support equipment operator and maintenance training.
10. Review CG-22 process, equipment requisition procedures and publication access, as it pertains to support equipment with the unit Aviation Engineering Staff.
11. Assist air station personnel, as required, to alleviate/resolve Aviation Engineering Support issues and discrepancies.
12. Review short and long term support equipment facilities for upgrade/improvement projects to perform mission requirements.

F. UNIT RESPONSIBILITIES. The Unit will compile the following information and submit the package to the LCI Team Leader:

1. Personnel. List your aviation enlisted and commissioned officer billets authorized and actual personnel onboard. Are they adequate?

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2. Training. Are you satisfied with the quality of training our “A” and “C” School graduates receive? What recommendations do you have to improve the quality of our training? Are enough quotas available to meet your requirements?

3. AFC-30 Funding. What is your AFC-30 base? List your Engineering and Avionics annual budgets. List Type 3 and Type 5 as separate entities. Compare funding availability to requirements and briefly describe how this has impacted your Engineering Department.

4. Information System (IS) Resources (i.e., AMMIS, ACMS, DSS, EAL, TIMOS, CG-22 Generation/Tracking System). How are the IS resources working for you? Have you had any performance or functionality problems? Do you have any suggestions for improvement?

5. Aviation Fuels. List the type(s) of aviation fuel your unit uses. Do you have any concerns about or suggestions to improve the current Coast Guard Aviation fuel policy? If so, what?

6. Hot Refueling. If the unit conducts hot refueling operations, attach a copy of hot refueling instructions/procedures (required by Chap. 7.4 of the USCG Aviation Fuel Handling Procedures Manual, COMDTINST M13001.1). When was the instruction last reviewed? Review training of personnel and condition of equipment.

7. Cannibalization. Briefly describe your cannibalization procedures. What is your rate of cannibalization by aircraft type (i.e., cannibalization events per aircraft per month)?

8. Unsatisfactory Reports (UR). List the URs your unit submitted last FY and this FY to date. Do you receive adequate feedback and/or response to submitted URs?

9. CG-22s. List the CG-22s submitted by your unit last FY and this FY to date. Do you receive adequate feedback and/or response to submitted CG-22s?

10. Technical Publications. Are your technical publications adequate? Do your personnel have proper training in the ordering of publications and maintaining a library? What technical publications need revision (cite specific shortcomings)?

11. Equipment Calibration Program. Attach the latest Calibration Due/Status Report. Is your calibration program meeting your needs? How can we improve the program? Who pays for your equipment calibration?

12. CTS-81 Utilization. Does your avionics maintenance program call for verification of all serviceable LRUs received from ARSC and vendors? Do you fault verify/confirm unserviceable LRUs prior to shipment? Do you receive adequate CTS-81 support?

13. Support Equipment (SE). List specific SE that you need, but don’t have. What are your projected needs over the next 5 years? Do you have SE or test equipment that is under-utilized or for which your personnel are inadequately trained in the use or maintenance of? Provide an inventory of all SE.

14. Aircraft Computerized Maintenance System (ACMS). What ACMS reports do you run on a standard basis? What difficulties do you have with ACMS? What is the normal interval of your Maintenance Due List (MDL)? How frequently do you run a new Status Report and Aircraft Configuration Report?

15. Aircraft Salvage. Attach the latest edition of your unit salvage plan. When was it last reviewed? When was your last salvage drill?

16. Pollution Prevention. Briefly describe any Hazardous Materiel Management issues your department is involved in (i.e., disposal, paint booth, fuel farms, etc.).

17. Measures. List process measures your department uses or is in the process of developing. How have these helped you to identify process improvements?

18. Concerns. List any additional concerns you would like addressed during the Aeronautical Engineering Logistics Compliance Inspection.

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MANUFACTURER'S APPLICATION

U.S. COAST GUARD AIRCRAFT REPAIR AND SUPPLY CENTER CGTO-PG-85-00-110 Enclosure (10)	MANUFACTURER'S APPLICATION FOR INTRODUCTION OF MATERIALS AND PROCESSES

1. COMPANY INFORMATION (Include Commercial and Government Entity (CAGE) Code)

Name, Address, and Zip Code	CAGE Code	Technical Point of Contact (Name, Address, Zip Code, and Phone

2. STATEMENT OF NEED (Define the specific technical problem or opportunity addressed and its importance.)

Consideration given to:	YES	NO
a. Application		
b. Removal		
c. Operating environment		
d. Maintenance environment		
e. Maintainability		

3. PERFORMANCE SPECIFICATIONS AND PRODUCT INFORMATION

a. Complete description of product:	1) Part number
	2) Common name (e.g., trade name, brand name, generic name)
	3) Intended applications
b. Purchase description used by other government activities or as used in commercial transactions:	c. Length of time product has been produced:

d. Product data/performance characteristics: (Attach technical specification/product data sheets; product instructions which relate to application/use of product including time/temperature curing scenarios if applicable. Specify desgin service temperature and shelf-life/storage stability. Note: submission of advertising brochures is discouraged.)

e. Brief description of reliability design program: (include elements: e.g., thermal analysis; failure modes and effects; environmental stress screening; shock and vibration analysis; system reliabilty testing)

f. Applicable regulatory and de facto standards:	g. Availability of product samples:
	h. Cost drivers in the use of this product:
	i. List of products and company services satisfying identical or similar service requirements:

j. Discuss average time between product changes and practice of providing continued inventories, upgrade, or production for phased-out product (plans for handling upgrades and obsolescence).

4. TEST DATA (Used to verfiy claims of product performance. Note: testimonials do not qualify as test data.)

Manufacturer's test results attached.	YES	NO	Certification or test results from independent test organizations attached.	YES	NO

5. HAZARDOUS MATERIAL, ENVIRONMENTAL DATA

	YES	NO		YES	NO
a. Attach current Material Safety Data Sheet (MSDS).			d. Attach copies of any toxicity study reports involving laboratory animals subjected to dusts/vapors from the product, its ingredients, or its pyrolysis products, when burned or severely heated.		
b. Attach product label that complies with OSHA Hazard Communication Standard (29CFR1910.1200).					
c. Attach copies of any industrial hygiene survey reports which address potential health hazards related to working with the product.			e. Attach copies of laboratory reports which address the compostion and magnitude of pyrolysis products emitted from the product when it is involved in a fire or otherwise severely heated/allowed to contact molten metal, etc.		

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Figure 1. (Sheet 1 of 3)

Aircraft Inventory Record Certification and Record of Transfers, OPNAV 4790/104 (9–84)

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f. Document product compliance with (attach documentation to validate responses):					
1) Provisions of the Federal Clean Air Amendments Act					
2) State and Local Laws					
3) Provisions of the National Emission Standards for Hazardous Air Pollutants (NESHAP)					
g. Product safety issues as experienced by similar users:					
6. MAINTAINABILITY DATA					
a. What are the maintainability features of the product? (e.g., reparability, cleanability, stripability)?			b. What are the limitations, if any, on organizational-level support (can the system be supported and maintained by the user or is organic support required)?		
7. MARKET ACCEPTANCE DATA					
a. Is the material or process designed for, already in the aerospace sector (commercial and/or military)?	YES	NO	b. Is the product a commercially available Off-The-Shelf item (as defined by the Federal Acquisition Regulation (FAR) 2.101)?	YES	NO
			c. Is there a need for any pre-production or production qualification testing and special quality assurance requirements?		
d. Length of time the product has been on the market or available for sale.			e. Annual sales (number of units sold).		
f. Reliability and performance of the product.			g. Anticipated future orders.		
h. Description of quality controls.			j. Has analysis been conducted to determine Coast Guard annual usage?		
8. SUPPORT DATA					
a. Stability of current configuration and technology (provide criteria for establishing stability).			b. What is the reliability history of the product as experienced by similar users? In what environments (e.g., service life, corrective maintenance actions)?		
c. What is the product quality and maintainability experience of similar users?			d. What are the requirements for manpower and personnel (number of personnel by skill type required for operation and maintenance)?		
e. What are the requirements for and availabilty of special tools and/or test equipment?			f. How are customers supported (e.g., customer service; application, installation product instructions)?		
g. What special training is needed and what are the training support requirements?			h. What training sources are available to customers?		
i. How will product upgrades be introduced and provided?			j. What is the commitment to out-year support?		
k. What is product availability and lead-time?					
9. SUPPLIER CAPABILITY					
a. Number of suppliers.			b. Size and location of suppliers and their current markets.		

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Figure 1. (Sheet 2 of 3)

Aircraft Inventory Record Certification and Record of Transfers, OPNAV 4790/104 (9–84)

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c. Product distribution channels.	d. Business practices in sales and distribution (e.g., from manufacturer to wholesaler to distributor or retailer to user).
e. Production capacity to meet projected requirements.	f. Packaging, handling, storage, and transportation practices.
10. BUSINESS DATA	
a. Minimum order quantities.	b. Pricing data.
c. Typical contract terms and conditions.	d. Warranty terms and practices.
11. REFERENCES (List of users currently using the product in similar environments and applications applicable to Coast Guard aviation.)	
Name , Address, Zip Code, POC and Phone Number	Name , Address, Zip Code, POC and Phone Number
Name , Address, Zip Code, POC and Phone Number	Name , Address, Zip Code, POC and Phone Number

12. CERTIFICATION AND SIGNATURE. I certify the above information is true and correct to the best of my knowledge. I further certify that should the product not be qualified to a recognized and/or applicable standard and, following the Coast Guard's review of this application, laboratory testing is deemed necessary, the burden of such testing, including the logistics of and all costs associated with such testing, shall be the sole responsibility of the manufacturer. I acknowledge that the Coast Guard does not possess the capability to test and evaluate most materials and processes, and possesses no capability to qualify materials and processes.

a. Typed Name and Title of Certifying Official	b. Signature and Date	c. Telephone (Include Area Code)

13. REQUIRED DISTRIBUTION

X	a. ARSC ISM		
X	b. ARSC Aging Aircraft Branch		
X	c. ARSC CO/COR		

INSTRUCTIONS TO APPLICANTS

1. Complete this application in its entirety. Blocks which have no applicablity should be annotated with N/A.
2. Be direct, concise, and informative utilizing the space provided. Your submission of this application should be based on an innovative and cost effective approach to a technical problem or opportunity, within Coast Guard aviation.
3. This application will be scrutinized for factors which will benefit Coast Guard aviation (e.g., enhance performance characteristics, cost benefits, labor reductions, reduced cycle time, reduction or elimination of adverse health effects and environmental pollutants).
4. Submit the completed "Manufacturer's Application For Introduction Of Materials and Processes" along with product performance data, detailed test data, current MSDS, other Hazardous Material and Environmental documentation to:

Commanding Officer
USCG Aircraft Repair & Supply Center
Attn: Industrial Systems Manager (ISM)
1664 Weeksville Rd
Elizabeth City, NC 27909-5001

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Figure 1. (Sheet 3 of 3)
Aircraft Inventory Record Certification and Record of Transfers, OPNAV 4790/104 (9–84)

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HC-130 PROGRAMMED DEPOT MAINTENANCE (PDM) INDUCTION GUIDELINES

A. **UNIT NOTIFICATION.** Each C-130 unit will be notified by ARSC when the aircraft will be scheduled for induction into PDM. Aircraft transfer and personnel travel orders will be issued at the appropriate time by Commandant (CG-37RCA).

B. **PDM-RELATED ACTIVITIES.** Units will prepare an Aircraft/Missile Condition Report, AFTO Form 103 and submit 45 days prior to aircraft induction date. Once completed, the original AFTO Form 103 shall be sent to the following address:

HC-130 PDM/PSI Manager
USCG Aircraft Repair and Supply
Center Elizabeth City, NC 27909

Copies should be forwarded to:

Commanding Officer U.S. Coast Guard
Aircraft Repair and Supply Center
Elizabeth City, NC 27909–5001
ATTN: C–130 Product Line Manager

The following information should be listed on the form:

1. All known outstanding depot level maintenance requirements.
2. Uninstalled applicable depot level airframe TCTOs and other work, as appropriate, that would not normally be accomplished under PDM contract.
3. Landing gear information including position installed serial number, overhaul, and installation date.
4. Aircraft paint data, i.e., date the aircraft was last painted and whether it was scuff sanded or depainted/repainted.

NOTE

Aeronautical Engineering Maintenance Management Process Guide, CGTO PG-85–00–110 contains pertinent information concerning aircraft rework programs and transfer procedures and requires that standardized test flights (6CF check) are completed prior to induction into PDM. The discrepancies discovered on these PDM-related flights shall be furnished to the PDM activity for correction.

C. **AIRCRAFT DELIVERY.** Aircraft depot inductions take place on Monday through Friday between the hours of 0730 and 1500 (local time). Ferry crews shall perform an incoming pressurization check and record the readings and discrepancies on the Flight Generated Maintenance Record. The delivery should be planned so the aircraft arrives with a maximum of 8,000 pounds of fuel and no cargo. Units must ensure that sufficient time remains on all time replacement items to permit delivery to the PDM facility, completion of a test flight, and ferry to any Coast Guard air station before any item comes due for replacement.

D. **PDM WORK SPECIFICATION.** The PDM work specification returns C-130 type aircraft to a serviceable but not like new condition. The primary focus of the PDM is airframe structure. Only those systems worked by specific requirements or disturbed by other requirements of the PDM work specification shall be operational unless safety of flight conditions exist or it is an overseas requirement as called out in the specification. The aircraft shall be returned to the assigned unit in the same configuration as received except as noted below.

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1. Communication, Navigation and Radar Equipment listed below shall be operational prior to departure from the PDM facility.

For non-overseas USCG Flights:		For overseas USCG flights:	
UHF Radio	1 ea.	UHF Radio	1 ea.
VHF Radio	1 ea.	VHF Radio	1 ea.
VOR/ILS	1 system	HF Radio	2 ea.
TACAN	1 ea.	VOR/ILS	1 system
Intercom System		TACAN	1 ea.
Transponder (IFF)		ADF	1 ea.
Radar Altimeter		Intercom System	
*CDNU		Transponder (IFF)	
TCAS		Radar Altimeter	
		*CDNU	
		TCAS	

NOTE

*For aircraft modified with the CDNU.

2. During PDM, powerplant maintenance will be performed as required and/or as directed by the C-130 Product Line.