REPAIR STATION MANUAL
and
QUALITY CONTROL MANUAL

California Department of Forestry and Fire Protection

5500 Price Avenue
McClellan, CA 95652
FAA APPROVED REPAIR STATION
No. CF0R047Z
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INTRODUCTION

The California Department of Forestry and Fire Protection have revised our Repair Station and Quality Control Manual to include the entire McClellan facility for the inspection, repair and overhaul of all CAL FIRE aircraft and components. This Manual has been prepared in accordance with the recently revised requirements set forth in Federal Aviation Regulations Part 145 (FAR 145), effective January 31, 2004, and the policies of the California Department of Forestry and Fire Protection, hereafter known as CAL FIRE.

This manual combines the Repair Station Manual contents and the Quality Control Manual contents into a single combined document.

The manual contents include the following: Manual Revision and Notification to the Sacramento FSDO; Manual Identification and Control; Organization Chart; Rosters; Description of Operations Specifications; Work Performed at Other Locations; Contracting Procedures; Inspection Program; Training Program; Required Records and Record Keeping; and Forms.

The repair or overhaul of products will be performed in accordance with the current Federal Aviation Regulations, manufacturer’s specifications, or other data as approved by the Administrator. Airframe and power plant limited ratings and limited ratings for brake and wheel accessory and limited ratings for pitot static/transponder will be performed in accordance with the procedures outlined in the CAL FIRE Repair Station Operations Specifications and Repair Station Manual and Quality Manual.

This repair station will not maintain or alter any item(s) for which it is not rated and will not maintain or alter any article(s) for which it is rated if it requires technical data, equipment, materials, facilities or trained personnel that are not available.

The Technical Library and this Manual are required for operation of this repair station and will be maintained in a current status at all times.

A current copy of this manual will be given to each supervisor and inspector. Each individual must read and thoroughly understand this manual and each is required to keep the manual current by inserting revision(s) as provided. This manual will also be available to other repair station personnel.

Each individual will follow the procedures outlined in this manual applicable to the work being performed.

MANUAL IDENTIFICATION AND CONTROL

Each manual will have a control number and an assignment entry on the manual cover page. A Master List of Manual Control Numbers, containing the manual number, assigned/location, date issued and date returned will be kept in the Quality Control Office.
The Director of Maintenance, (DOM) will obtain from the Chief Quality Control Inspector a manual status report. This report will either confirm that the manual is still current and valid for the section to use or will identify needed changes.

The DOM will add those revisions he finds necessary. He will produce them in a final form and submit to the Federal Aviation Administration FSDO, Sacramento, CA, for acceptance. The DOM thereto will approve the manual and revision. Upon acceptance by the Federal Aviation Administration, he will produce enough copies to provide revision pages for each manual holder.

Upon receipt of a revision, each manual holder will be responsible for inserting the revised page (s) in their manual, record the revision on the manual’s record of revision page, sign and return the acknowledgment form (provided with the revision) to the Chief Quality Control Inspector.
**MANUAL REVISION**

Revisions to this manual will be noted by a bold vertical line to the left side of the text being revised or added. Retain this record in the manual. Upon receipt of revisions, insert revised pages in the manual and enter in the appropriate blocks on the record of revisions. Return the acknowledgment form to the Chief Quality Control Inspector. All personnel are expected to suggest revision requirements when need is apparent.

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Approved:________________________________________
FAA Inspector

Approved:________________________________________
Director of Maintenance
Deputy Chief, Aircraft Maintenance
SECTION I – CAL FIRE ORGANIZATION

ORGANIZATION CHART

Director of Maintenance

- Safety Officer
  - Chief Quality Control Inspector
  - QC Inspectors
  - Data Entry
  - Shop Maintenance Collateral Inspect

- Logistics Manager
  - Lead Inventory
  - Inventory Specialists
  - Overhaul Shop Collateral Inspect

- Procurement Lead
  - Buyers

- Maintenance Officer
  - Shop Maintenance Shop Lead
  - Shop Mechanics
AUTHORITY DELEGATION

For a complete list of duties, see Section II, Personnel.

The DOM is the Department's Accountable Manager and is the final authority for the airworthiness and continued operation of CAL FIRE Aircraft. The DOM may assign and delegate inspection and maintenance functions to appropriate technical personnel with related aircraft maintenance repair and overhaul experience and FAA certificates as applicable.

Management and Supervisory Personnel
The following personnel are Management and Supervisory Personnel:
1. Director of Maintenance, must be FAA A & P and IA
2. Safety Officer, must hold FAA certificate
3. Maintenance Officer, must be FAA A & P and IA
4. Chief Quality Control Inspector, must be FAA A & P and IA
5. Parts Manager

Inspection Personnel
The following personnel are Inspection Personnel:
1. Chief Quality Control Inspector, must be FAA A & P and IA
2. Quality Control Inspectors, must be FAA A & P and IA

The Inspector will signify acceptance of work performed by stamping the appropriate box on the work order or inspection form along with the date the work is accepted.

A stamp inventory control log (Form 110) will be maintained by the Repair Station with each inspector's name and title, certificate type and number, signature, initial and numbers stamp. A stamp issued to an inspector will be destroyed when the inspector no longer acts as a member of the Inspection Department, and that number will not be reissued. The Authority Delegation Roster of Inspection Personnel (Form 117) will be maintained by the Repair Station Quality Control Department.

Logbook entries, work orders, inspection forms and FAA forms must be signed in ink and/or stamped by the inspector completing the inspection.

All appropriately rated inspectors are authorized to return to service aircraft and/or components for which the repair station is rated after inspections, major alteration, or major repairs have been completed.
SECTION II - PERSONNEL

DIRECTOR OF MAINTENANCE (DOM)

The DOM is the Accountable Manager and has total overall responsibility for financial management, policy formulation and general management through organizational assignment and delegation of the overhaul and repair operations of the repair station. He is responsible for the maintenance of files to completed work orders in such a manner that the file pertaining to a specific item repaired can be readily located for review. He is responsible for providing adequate training, equipment, material and component personnel pertinent to the operations of the repair station in order that it complies with all applicable Federal Aviation Regulations (FAR) and manufacturer’s recommendation.

The DOM is responsible for the operation of the repair station. Several of the primary functions are delegated to key management personnel in the operation of the repair station. The DOM may delegate all duties to any qualified assistant as necessary; however, such delegation does not relieve the DOM of the overall responsibilities.

The DOM is responsible for and may delegate duties as indicated by foot notes (1), (2) & (3).

1. Training and assisting subordinates in the proper work procedures and practices to be followed.
2. Maintaining all hanger and shop equipment and tools in a serviceable working condition (3).
3. Ascertaining that all necessary maintenance entries on maintenance forms and work orders used by the repair station are properly executed by the responsible mechanics (1).
4. Maintaining the premises of the repair station in a clean and orderly manner (3).
5. Initiating purchase requisitions for stock, repairs and specialized work as required (3).
6. Assuring that the personnel in the maintenance department do quality work.
7. Indoctrinating the personnel in observing the safety precautions relevant to the functions for which they may be utilized. (2).
8. Making available to the departments under the Chief Quality Control Inspector, the required technical data on all aircraft, engines, and appliance, for the maintenance accomplished and keeping the data current with latest revision. The data will include manufacturers’ maintenance and overhaul manuals, service bulletins, parts specifications, related Federal Aviation Administration approved data, and any other technical data used by the repair station.
9. Assuring the proper handling of parts while in repair process when work is being accomplished and completed. (1).
10. Maintaining the preservation of all units or parts during the work process, installation and storage. (2).

   (1) indicates that Chief Quality Control Inspector is the delegated accountable manager
   (2) indicates that Supervisor Technicians are delegated accountable manager
   (3) indicates that State Maintenance Officers are delegated accountable manager

SAFETY OFFICER

The Safety Officer Reports directly to the CAL FIRE Chief of Aviation and is an independent Quality Assurance auditor. The Safety Officer has delegated responsibility for independent supervision, audit and disposition of Quality Control issues.

He has delegated responsibility to resolve any safety or quality assurance issue to insure that it complies with all applicable Federal Aviation Regulations (FAR), approved data and manufacturer’s recommendation.

In the absence of the DOM, the Safety Officer assumes the responsibilities and delegates authority to qualified personnel as dictated by FAR Part 145 and FAR Part 43 to release aircraft and/or components for service after repair.

The Safety Officer has delegated responsibility for:

1. Resolving any Quality Control/Assurance issue.
2. Auditing Quality Control Inspections and Inspectors.
3. Insure compliance with all FAA regulations, approved practices and procedures.
4. Assure that the personnel in the maintenance department do quality work.

The Safety Officer may sub-delegate all duties to any qualified assistant as necessary.

CAL FIRE MAINTENANCE OFFICER

The Maintenance Officer has delegated responsibility for a segment of the Repair Station shop operation and parts procurement. The Maintenance Officer has financial management and limited management through organizational assignment and delegation of the shop repair and overhaul operations of the repair station.

He has delegated responsibility for providing adequate training, equipment, material and component personnel pertinent to the aircraft operations of the repair station in order that it complies with all applicable Federal Aviation Regulations (FAR) and manufacturer’s recommendation.
In the absence of the DOM, the Maintenance Officer assumes the responsibilities and delegates authority to qualified personnel as dictated by FAR Part 145 and FAR Part 43 to release aircraft and/or components for service after repair.

The Maintenance Officer has delegated responsibility for:

1. Training and assisting subordinates in the proper work procedures and practices to be followed.
2. Maintaining all hanger and shop equipment and tools in a serviceable working condition.
3. Ascertaining that all necessary maintenance entries on maintenance forms and work orders used by the repair station are properly executed by the responsible mechanics.
4. Maintaining the premises of the repair station in a clean and orderly manner.
5. Initiating purchase requisitions for stock, repairs and specialized work as required.
6. Assuring that the personnel in the maintenance department do quality work.
7. Indoctrinating the personnel in observing the safety precautions relevant to the functions for which they may be utilized.
8. Making available to the departments under the Maintenance Officer’s control, the required technical data on all aircraft, engines, and appliance, for the maintenance accomplished. The data will include manufacturers’ maintenance and overhaul manuals, service bulletins, parts specifications, related Federal Aviation Administration approved data, and any other technical data used by the repair station.
9. Assuring the proper handling of parts while in repair process when work is being accomplished and completed.
10. Maintaining the preservation of all units or parts during the work process, installation and storage.

The Maintenance Officer may sub-delegate all duties to any qualified assistant as necessary, however, such delegation does not relieve the Maintenance Officer of the delegated responsibilities.

**CHIEF QUALITY CONTROL INSPECTOR**

The Chief Quality Control Inspector is responsible to the Safety Officer for the overall operation of the Inspection Department and, as such, will have the final authority in the releasing to service of aircraft and the component parts thereof. In addition, the Chief Quality Control
Inspector will be responsible for establishing inspection standards, procedures for complying with Federal Aviation Regulations (FAR) and manufacturer’s specifications. The Chief Quality Control Inspector also performs the function of Director of Training.

The Chief Quality Control Inspector’s responsibilities are listed below and may be delegated to collateral Quality Control Inspectors.

1. Assist, supervise and direct all collateral quality control inspection personnel assigned to the Inspection Department.

2. Ascertain that all inspections are properly performed on all completed work and that the proper inspection records, reports and forms used by the repair station are properly executed prior to releasing the product for return to service.

3. Maintain and keep current a data base file of pertinent Federal Aviation Regulations, specifications, type certification data sheets, and airworthiness directives.

4. Determine that all technical data on all articles overhauled or repaired by the repair station are secured and kept current with latest revisions by the respective department inspectors. This data will include the repair station’s process specification for limited rating specialized services, manufacturer’s overhaul manuals, service bulletins, part specifications; related FAA approved data and other technical data used by the repair station.

5. Assure that periodic checks are made on all inspection tools and the calibration of precision test equipment used by the repair station and mechanics that have their own precision equipment. Further assure that a current record of those inspections and tests are maintained.

6. Determine that no defective, unserviceable, or unairworthy parts are installed in any component or articles released by the repair station.

7. Submit reports of defects of unairworthy condition in accordance with FAR 145.221.

8. Assure the proper execution of FAA Form 337 when required, and/or as maintenance release.

9. Accomplish the final acceptance of all incoming material, including new parts, supplies and the airworthiness of articles on which work has been performed outside the repair station by contract.

10. Conduct the preliminary, hidden damage, in-progress, and final inspection of all articles processed by the repair station and record results as outlined in this manual.

11. Oversee the proper tagging and identification of all parts and components as outlined in this manual.
12. Provide for continuity of inspection responsibilities, assuring completion of required inspection when personnel shift or assignment changed occurs.

13. See that rejected and unserviceable parts are handled in such a way as to prevent their reuse as serviceable parts.

14. Maintain files of completed work orders and inspection forms in such a manner that the file pertaining to specific item repaired can be readily located for review.

The Chief Quality Control Inspector may delegate all duties assigned to any qualified assistant as necessary, however, such delegation does not relieve the Chief Quality Control Inspector of the overall responsibilities.

QUALITY CONTROL INSPECTOR

The Quality Control Inspector is responsible to the Chief Quality Control Inspector for assisting in the operation of the Inspection Department and, as such, will have the authority in the releasing to service of aircraft and the component parts thereof. In addition, Quality Control Inspectors will be responsible for following inspection standards, procedures for complying with Federal Aviation Regulations (FAR) and manufacturer’s specifications.

Quality Control Inspector’s responsibilities are listed below:

1. Ascertain that all inspections are properly performed on all completed work and that the proper inspection records, reports and forms used by the repair station are properly executed prior to releasing the product for return to service.

2. Assist in the maintenance of and keep current a data base file of pertinent Federal Aviation Regulations, specifications, type certification data sheets, and airworthiness directives.

3. Assist with the determination that all technical data on all articles overhauled or repaired by the repair station are secured and kept current with latest revisions by the respective department inspectors. This data will include the repair station’s process specification for limited rating specialized services, manufacturer’s overhaul manuals, service bulletins, part specifications, related Federal Aviation Administration approved data and other technical data used by the repair station.

4. Assist with and assure that periodic checks are made on all inspection tools and the calibration of precision test equipment used by the repair station and mechanics that have their own precision equipment. Further assure that a current record of those inspections and tests are maintained.

5. Determine that no defective, unserviceable, or unairworthy parts are installed in any component or articles released by the repair station.
6. Submit reports of defects of unairworthy condition in accordance with FAR 145.221.

7. Assist with the proper execution of FAA Form 337 when required, and/or as maintenance release.

8. Accomplish the final acceptance of all incoming material, including new parts, supplies and the airworthiness of articles on which work has been performed outside the repair station by contract.

9. Conduct the preliminary, hidden damage, in-progress, and final inspection of all articles processed by the repair station and record results as outlined in this manual.

10. Assist with the proper tagging and identification of all parts and components as outlined in this manual.

11. Assist with the continuity of inspection responsibilities, assuring completion of required inspection when personnel shift or assignment changed occur.

See that rejected and unserviceable parts are handled in such a way as to prevent their reuse as serviceable parts.

12. Maintain files of completed work orders and inspection forms in such a manner that the file pertaining to specific item repaired can be readily located for review.

**PARTS MANAGER/STOCKROOM MANAGER**

The Supply Manager and stockroom manager are responsible to the DOM for the overall operation of the supply section. In addition he is also responsible:

1. For identifying, controlling, segregating and maintaining all stock and tools to serviceable or unserviceable category as designated by the Chief Quality Control Inspector.

2. To accomplish the acceptance of all incoming materials, including new parts, supplies and the airworthiness of articles on which work has been performed outside of the repair station by contract in coordination with the Chief Quality Control Inspector. In the absence of the Quality Control Inspectors the authorized aircraft or parts room Inspectors may accomplish the acceptance inspection.

3. For the preservation of all articles or parts while carried in inventory, including parts that are subject to deterioration and shelf-life specifications.

4. For controlling the inventory.
5. For distributing to all pertinent sections any miscellaneous technical information which is received by the stockroom.

The Supply Manager may delegate all duties assigned, to any qualified assistant, however, such delegation does not relieve him of the overall responsibilities.

EMPLOYMENT SUMMARY

The DOM will be responsible for maintaining an employment summary file for all employees involved in the operation of the repair station.

The summary will include the following information:

- Employee’s Full Name
- Job Title
- Total years aviation experience and type of maintenance work performed
- Past employment history in aviation, employer & periods of employment
- Scope of Present Employment
- Certificates Held, Types, and Number of Ratings
SECTION III - OPERATIONS, HOUSING AND FACILITIES

REPAIR STATION OPERATIONS

GENERAL

The Repair Station Operations section of this manual includes descriptions pertaining to: operations, housing, facilities, equipment, and material.

OPERATIONS

The Repair Station described in this manual is for the support of State fire fighting aircraft. No work is authorized for outside customers. This Repair Station facility is owned and operated by the State of California for the protection of the State's citizens and natural resources. The State of California has invested in the necessary tooling, shop equipment, instrumentation, and technical publications and developed written policies, manuals and forms and documentation to properly administer and operate the Repair Station.

Incoming work is initiated with the issuance of a Work Order issued by Quality Control. The Work Order and planned work is then assigned to a Supervisor Technician. The work performed is noted on the Work Order and all discrepancies and corresponding resolutions are listed on CAL FIRE Form FC-43A. All parts issued are listed on the Work Order. After all work is performed and accepted by quality control, the Work Order is reviewed for completeness and a maintenance release is signed-off. The Work is then filed in quality control.

NON-CERTIFICATED EMPLOYEES

All work performed will be accomplished under the supervision of a Supervisor Technician or Journey Level Technician. Non-certificated maintenance personnel performing maintenance shall be directly supervised by a Supervisor Technician or Journey Level Technician. Repairman that have the training and experience to perform specialized maintenance, such as altimeter and transponder tests and certification may work without direct supervision.

All non-certificated personnel assisting with maintenance functions shall be under direct supervision of the Supervisor Technician until he/she is satisfied with the prior and current experience, training and reached a knowledge and skill level to work without direct immediate oversight supervision.

HOUSING AND FACILITIES

CAL FIRE owns an 18-acre facility on the former McClellan AFB. The McClellan facility is a depot level aircraft inspection and overhaul facility with in-depth support shops. There are two large 18,000 sq. ft. aircraft maintenance hangars and one 12,000 sq. ft. shop and office building. The hangars have winter heating systems and the shop and office building has year round
environmental control systems. Additional smaller allied buildings support hazmat storage, battery service shop and ground support equipment.

EQUIPMENT

CAL FIRE owns and maintains an extensive inventory of shop equipment and tooling to inspect, maintain, overhaul and repair State aircraft and component parts. Equipment includes: machine shop tools; environmental paint booth; heating ovens; overhead hoists; cleaning and bead blast units; wing jacks; fuel flow test benches; brake relining tooling and fixtures; flat table and precision measuring tools; Rockwell hardness tester scales B & C; engine tooling; propeller tooling; helicopter rotary component tooling; non-destructive test and inspection equipment; and sheet metal equipment. All tooling and equipment is maintained in good repair and operable condition. All measurement and testing tools used to make airworthiness determinations are calibrated every 12 months.

RECORD KEEPING SYSTEM

GENERAL

The CAL FIRE inspection system and related documentation is fully described in the Quality Control Manual. The CAL FIRE Record Keeping System must comply with Parts 43, 91 and 145 as well as fiscal and documentation requirements for the State of California. CAL FIRE uses a "paper" type record keeping system

MALFUNCTION OR DEFECT REPORT

This repair station will report to the FAA within 72 hours after it discovers any serious defect in, or other recurring unairworthy condition of, an aircraft, powerplant, or propeller, or any component there in. The report will be made on an FAA Form 8010-4, Malfunction or Defect Report, describing the defect or malfunction completely without withholding any pertinent information.

In any case, where the filing of a report under the preceding paragraph might prejudice the repair station, it will be referred to the Administrator for a determination as to whether it must be reported. If the defect or malfunction could result in an imminent hazard to flight, the repair station will use the most expeditious method it can to inform the Administrator.

RESPONSIBILITY FOR SUBMITTING REPORTS

The Chief Quality Control Inspector and Quality Control Inspectors are responsible for preparing and submitting a Malfunction or Defect Report to the FAA.

SPECIAL FORMS AND CHECKLISTS
Special forms and checklists may be used in the performance of manufacturer’s recommended inspection program. All forms used will be attached to the appropriate work order. All information will be transferred to aircraft logbooks upon completion to Quality Control Audit and held there for a period of (2) two years.

**SUSPECTED UNAPPROVED PARTS DETECTION/REPORTING**

1. New items from the manufacturer should be inspected for:
   (a.) Shipping damage
   (b.) Traceability of life limits, if applicable
   (c.) Identification and tagging of parts to manufacturers invoice.
   (d.) Proper paperwork

2. Overhauled or repaired parts from an approved agency for:
   (a.) Shipping damage
   (b.) Traceability of life limits, if applicable
   (c.) Traceability of overhauled recorded and/or maintenance release tag.
   (d.) Proper paperwork

3. Items sent out for contracted maintenance functions for:
   (a.) Shipping damage
   (b.) Conformity to specifications (FAA & Manufacturer’s), to include type of material and state of preservation.
   (c.) Airworthiness status including A.D.’s and traceability of life limits, if applicable.
   (d.) Functional test, if applicable.
   (e.) Proper paperwork.

**SUSPECTED UNAPPROVED PARTS NOTIFICATION**

1. Potential unapproved parts will be reported to the Quality Control Inspectors and the DOM.
   (a) The Quality Control Inspectors shall follow the proper procedures for reporting suspected unapproved parts. FAA form 8120-11
   (b) Shall be completed and forwarded to the FAA. Follow instructions for completing the form on the back of FAA form 8120-11

**REQUIRED RECORDS**

**WORK ORDERS**

This repair station shall maintain a record of all work performed within the repair station. CAL FIRE Form 109, CAL FIRE Work Order, will be used to record work performed within the repair station. All work orders will be issued, reviewed, signed-off and retained by the Chief Quality Control Inspector or his designee. The original copy of the Work Order will be maintained in the Inspection Office. Supporting documents will be attached to and maintained with the Work Order. Active Work Orders and completed Work Orders will be maintained in the Inspection Office.
Office for 24-months after completion and release of the aircraft, engine, propeller or appliance. Work Orders shall be issued with a serialized Work Order Number. The Chief Quality Control Inspector shall maintain a log of all Work Orders issued by CAL FIRE. The log will include enough information so that Work Orders can be reviewed and recovered from files by date, type of work performed, or aircraft worked on.

**SUPPORTING RECORDS**

Supporting records and documents shall be attached to the work order. Supporting records and documents include:

- Maintenance Release tags from sub-contracted maintenance
- Work Orders/Certificates of Material Conformity from process shops
- Certificates of Material Conformity and/or Maintenance Release Tags for new purchase materials or parts
- Shop Traveler for component overhaul
- Shop Traveler for sub-component overhaul

**SPECIAL INSPECTIONS**

Records for special inspections, such as hydrostatic tests, NDI inspections, etc. will be maintained with the aircraft, engine, propeller or component. A copy of the special inspection will be maintained with the Work Order.

**FAA FORM 337 RECORDS**

When an aircraft or engine has had a major repair or alteration and an FAA Form 337 is required, the original copy shall be included with aircraft or engine file, a copy attached to the Work Order and a copy goes to the FAA.

**PURCHASE DOCUMENTS**

Purchase documents for material and parts are maintained in the CAL FIRE Procurement and Accounting Office. These records include Purchase Orders and specifications for certificates of material conformity. These records are maintained by the Supply Manager.

**INVENTORY CONTROL AND RECORDS**

CAL FIRE tracks all aircraft, engines, propellers and component parts by part number and serial number for rotable spare parts. The Supply Manager is responsible for maintaining the electronic inventory of parts. Procurement and parts personnel maintain copies of all certificates of material conformity for raw materials. The Certificates of Material Conformity (C of C) shall be maintained and attached to the Purchase Order. The PO number and date shall be affixed to all raw materials for traceability.
PERSONNEL RECORDS

Management, supervision, inspection and maintenance personnel records and logs for personnel and quality control inspectors will also be maintained. These records are described in detail in the Quality Control Manual. The DOM is the Accountable Manager. These records will be maintained in the inspection office.

MATERIALS

All materials used in the Repair Station will be procured from known reputable suppliers. CAL FIRE uses a team of specialized aircraft buyers and aircraft logisticians to procure all materials. All aircraft grade material will have traceability as to the manufacturing source and have a Certificate of material Conformity (C of C). CAL FIRE maintains aircraft material in an environmental controlled stockroom. All materials will be listed on CAL FIRE’s central computer system. Stockroom personnel will process "Material Requisition and Transfer" (MRT) forms to transmit material from the stockroom to the work area where maintenance is being performed.

INCOMING MATERIAL

All incoming material shall be inspected for quantity, quality, conformity to dimensions or specifications and state of preservation. At this time, the cure date of materials that have a shelf life shall be noted and the older stock will be used first provided it is not beyond the manufacturer’s specifications.

SHELF-LIFE

For those materials having a specific shelf life, repair station Material Control Label Form 108 will be attached showing the expiration date of the shelf life as established by applicable specifications. Inspectors and mechanics will red tag any life-dated material that has exceeded its shelf-life expiration date or does not have a material control label affixed. These condemned items will then be reviewed by the Chief Quality Control Inspector/Stock Room Manager for final disposition.

PARTS RECEIVING POLICY

The Quality Control Inspectors of the repair station (or designee) are responsible to see that all incoming materials, AN, MS, and other hardware, parts, components, equipment and other products for use by the repair station are subject to receiving inspection to assure conformance to part number, purchase order and/or other applicable specifications, also for obvious shipping damage. A record of such inspections will be recorded on the accompanying invoice. Any products that fail to meet applicable specifications will be red tagged as unserviceable, the discrepancies listed, the item or items returned to the vendor and a copy of FAA Form 8010-4 (Malfunction or Defect Report) forwarded to the Flight Standards District Office in Sacramento, California. To preclude these parts from being used, they will be placed in a special holding area until they are repacked for shipping.
PRESERVATION OF PARTS AND MATERIALS

Components when necessary will be preserved in accordance with manufacturer’s recommendations or other acceptable industry standards. To afford protection against humidity, extreme temperatures, dust, rough handling or other damage, the component will be preserved by wrapping in suitable containers, plastic bags, and/or rigid boxes containing suitable shock absorption material. The component will then be placed in a designated protected storage area until required for use.

SECTION IV - TRAINING

TRAINING

Classroom instruction, factory schools, and on-the-job training as necessary will accomplish training of repair station inspectors and other personnel.

Classroom training will be accomplished by the DOM., Director of Training, Supervisor, Technicians, Quality Control Inspectors, Maintenance Managers, Factory Field Service Representatives, or other industry professionals.

Repair Station maintenance personnel shall not perform work within the repair station unsupervised until they have been trained on the aircraft, engine, propeller or appliance and so noted on the employee’s training record.

All new hire repair station personnel shall receive 16 hours of initial repair station operating procedures and shall receive a minimum of 8 hours of recurrent training each year on repair station operations, aircraft and systems maintenance, accident and safety, and FAA regulations.

Current records for each employee will be maintained by the Quality Control Inspectors on Form 105, Record of Employee’s Training, Quality Control Manual. The record will indicate the type of training (detailed), method, duration, date of completion, location and include the name of the instructor that conducted the training. Copies of certificates issued for Factory Training will be kept in employee’s files.

Revisions to this training program must be submitted and approved by the Sacramento FSDO, in accordance with our Repair Station Manual.

The Approved Training Manual shall be revised in accordance with the Repair Station Manual procedure.
SECTION V - WORK PERFORMED AT OTHER LOCATIONS

WORK PERFORMED AT OTHER LOCATIONS

GENERAL

CAL FIRE operates and maintains a fire fighting fleet of approximately 53 aircraft. In addition to CAL FIRE’s main aircraft maintenance facility located at McClellan, CA, CAL FIRE deploys all fire fighting aircraft to 13 airtanker bases and 9 helitack bases during summer wildland fire operations periods. Work will only be performed on CAL FIRE aircraft at outlying locations as approved by the accountable manager or his/her designee. CAL FIRE will provide a Field/Line Level Maintenance and Parts Manual for each type aircraft to be maintained at outlying bases. CAL FIRE will provide all special tooling and parts at each line location for maintenance performed. No major inspections shall be performed at other locations. Procedures at airtanker bases will not deviate from McClellan procedures.

LINE MAINTENANCE and SCHEDULED INSPECTIONS

The accountable manager or his/her designee establishes the training and experience levels for field assigned personnel. Personnel assigned to tanker bases (other locations) are authorized to initiate maintenance and repair aircraft under the direction of the accountable manager or his/her designee. FAA certificated A & P maintenance technicians may be deployed to perform maintenance on CAL FIRE aircraft if they have received applicable type aircraft instruction on the inspections and maintenance to be performed. The on-site technician may perform the work, and then inspect the work performed.

CAL FIRE maintains and repairs aircraft in accordance with type specific Maintenance and Inspection Programs. All maintenance performed at outlying bases comply with the type specific Maintenance and Inspection Program. CAL FIRE checklists shall be completed for all inspections performed and entered onto the appropriated form. Completed forms shall be transmitted to the McClellan central facility within 24-hours of completion of the work. Aircraft repaired and released for service shall have a logbook entry made describing the work performed, date, aircraft hours and a release to service statement.

UNSCHEDULED MAINTENCE

Outlying maintenance personnel may perform unscheduled maintenance to repair aircraft, provided that the maintenance is the replacement of line replaceable units. The following items may be changed at outlying bases, but will require inspection and acceptance by a quality control inspector: engine, propeller, engine fuel metering components, and flight control components or actuators. The removal and replacement of any landing gear component will require a landing gear retraction test. Landing gear actuators may be changed at outlying bases provided that the aircraft is empty and a minimum crew only ferries the plane, wheels down, to McClellan for a landing gear retraction test. Aircraft repaired and released for service shall have
a logbook entry made describing the work performed, date, aircraft hours and a release to service statement.

SECTION VI - MAINTENANCE FOR AIR CARRIERS

MAINTENANCE PERFORMED FOR AIR CARRIERS

GENERAL

CAL FIRE will not perform maintenance, preventive maintenance or alterations for certificate holders under parts 121, 125, and 135 and for foreign air carriers or foreign persons operating a U S registered aircraft in common carriage under part 129.

SECTION VII - CONTRACT MAINTENANCE

SUBCONTRACTED MAINTENANCE FACILITY INSPECTION

CAL FIRE shall conduct an on-site inspection with QC and the DOM or their representative for the following subcontracted repair facilities:
- Facilities that do not hold an FAA Repair Station Certificate for the work being performed
- New manufacture of parts
- Repair to parts not specifically covered in a component overhaul manual

No on-site inspection is required for the following facilities:
- FAA certificated OEM manufacturer with a production certificate or PMA
- FAA Repair Station Certificate with a rating for the work to be performed

The DOM and Chief Quality Control Inspector will determine the facility to be inspected and which Repair Station personnel have the experience and background to perform the inspection. A written record will be made during the inspection evaluating the facility housing, equipment, tooling, repair processes, technical data, personnel, aerospace experience applicable to work being evaluated, and quality control procedures.

SUBCONTRACTED MAINTENANCE INSPECTION OF PARTS AND COMPONENTS

Any work performed by another agency for this repair station will be inspected by the Quality Control Inspectors or an inspector delegated for such inspection. Any manufacturing and/or processing of repairs to parts from non-certified process or manufacturing facilities will be inspected by the DOM or their representative. This inspection will be to verify that the work was performed in an airworthy manner, that parts and materials used were of such quality to be airworthy, and that the paperwork received with the material verifies the authenticity of the part and work performed. At no time will anyone release any parts, which have been made or repaired by a subcontractor until the Quality Control Inspectors, or an inspector designated has approved the materials as being airworthy.
All subcontracted work shall be kept separate from regular stock until this inspection has been performed and the material accepted for use.

If for any reason subcontracted material is rejected as being unairworthy, it will immediately be identified (tagged) as unairworthy and the proper disposition made, such as scrap or return to vendor.

**LIST OF SUBCONTRACTED MAINTENANCE**

The List of Subcontracted Maintenance includes those suppliers and processing facilities that manufacture and process aircraft parts during depot level repair. Typically, these suppliers and process shops perform aircraft grade work, but work with OEM manufacturers using their supply line and QC system to inspect and accept outside subcontracted work. Examples of non-certificated suppliers and process shops include: welding, heat treating, plating, forming, machining, forging, etc. CAL FIRE can use outside manufacturing and process shops for the repair of aircraft parts and components after the DOM or their representative inspects the facility, tooling, personnel and aircraft work knowledge and experience and make a capability to perform assessment.

See Form 115A in file folder for list of Subcontracted Maintenance providers.
SECTION VIII - INSPECTION SYSTEM

INSPECTION SYSTEM

GENERAL

The Repair Station Authorized Inspectors are responsible to the Safety Officer for full compliance with all procedures outlined in this system in accordance with FAR 145.157 and 145.213, as appropriate to any item being inspected, repaired, overhauled or altered by the repair station. The airworthiness of those items and compliance with record requirements of those items and overall performance of the repair station, depends upon conformity to the procedures of this system.

REPAIR STATION OPERATION AND CORRECTIONS TO OPERATING DEFICIENCIES

When Repair Station operating deficiencies are discovered, the deficiencies shall be presented to the DOM. The DOM shall assess the deficiency and take appropriate corrective actions to mitigate the deficiency.

INSPECTION PERSONNEL

Inspection personnel are required to be thoroughly familiar with all inspection methods, techniques and equipment used in their area of responsibility to determine the quality of airworthiness of an article undergoing maintenance, repair or alteration. All personnel must also maintain proficiency in the use of the various types of inspection aids to be used for inspection of the particular items undergoing inspection. Available to all inspection personnel are current specifications, involving inspection tolerances, limits, and procedures as set forth by manufacturer of the product undergoing inspection and other forms of inspection information such as FAA airworthiness directives, manufacturer’s bulletins, depot level overhaul manuals, original drawings and specifications, etc. A file of maintenance manuals, engineering letters, service letters, FAA regulations, military bulletins, depot level overhaul manuals, original drawings, specifications, etc., are maintained in the inspection office, records vault and/or engineering office.

Inspection personnel assigned to repair station operations are required to familiarize themselves with FAA regulations applicable to such operations with particular emphasis on the following:

- FAR Part 21-Certification Procedures for Products and Parts
- FAR Part 23-Airworthiness Standards: Normal, Utility and Aerobatics Category Airplanes
- FAA Part 25-Airworthiness Standards: Transport Category Airplanes
- FAR Part 39-Airworthiness Directives
INSPECTORS AND MECHANICS

All forms listing work performed have been designed to show the name of the mechanic, or repairman who performs the work (or supervises it), and the name of the inspector inspecting that work. The basic inspection system requires mechanics to sign their last name for work performed by them prior to submitting the item to inspectors for final acceptance. Inspectors will indicate their acceptance of work performed with the application of the inspector’s acceptance stamp next to the item on the work forms. See Section X of this manual for sample forms.

CONTINUITY OF INSPECTION RESPONSIBILITY

The Quality Control Inspectors will maintain a “Line of Succession” list to assure performance of his duties by an “Acting Quality Control Inspector”.

In the event that an inspector leaves a project before its completion, the Quality Control Inspectors will assign a new inspector and provide any information necessary to assure that the continuity of the in-progress work inspection is not broken.

A project involving work other than inspection only, may not be approved for return to service unless it has been cleared by the Quality Control Inspectors as satisfying the requirements of FAR 145.213(a) and 145.219.

PARTS RECEIVING POLICY

The Quality Control Inspectors of the repair station (or designee) are responsible to see that all incoming materials, AN, MS, and other hardware, parts, components, equipment and other products for use by the repair station are subject to receiving inspection to assure conformance to part number, purchase order and/or other applicable specifications, also for obvious shipping damage. A record of such inspections will be recorded on the accompanying invoice. Any products that fail to meet applicable specifications will be red tagged as unserviceable, the discrepancies listed, the item or items returned to the vendor and a copy of FAA Form 8010-4 (Malfunction or Defect Report) forwarded to the FAA. To preclude these parts from being used, they will be placed in a special holding area until they are repacked for shipping.
GENERAL TEST REQUIREMENTS

1. New components manufactured under a type or production certificate or in accordance with a Technical Standard Order (or similar FAA approved technical data) or components which have been rebuilt by the manufacturer to production specifications, require a visual receiving inspection.

2. Any repaired or overhauled components received from an FAA certificated repair station do not normally require more than a visual receiving inspection before being returned to service. Repaired or overhauled components that are received from other than an FAA certified repair station, in addition to the normal receiving inspection, will be functionally checked before being returned to service.

   2a. Functional checks are performed in accordance with instructions contained in the appropriate manufacturer’s publications. However, if such specific instructions are not available, functional check requirements will be determined by the Quality Control Inspectors, and issued on a form to provide a means of recording compliance therewith. If suitable test facilities are not available in the repair station, components may be functionally checked in the aircraft. In any case, all functional checks must be monitored and recorded by the Quality Control Inspectors or Designee.

3. All adhesives, sealers, primers, finishing and other materials having limited shelf-life are identified by material control labels showing the expiration date of the shelf-life as established by applicable specifications. Inspectors and mechanics will dispose of any materials found in the shop or storerooms without such identification or with expired shelf-life.

4. Details of material inspection covered by a manufacturer’s quality assurance directive and/or inspection bulletin will be used to supplement the operation of the repair station with respect to the control and identification of materials, parts and equipment received for direct use in the repair station.

WORK ORDER

Upon receipt of a work request for overhaul, repair or inspection of an aircraft, accessory or a product requiring a specialized service covered by the repair station certificate, a Repair Station Work Order Form No. 109, will be issued to authorize that work to be accomplished. The form is pre-numbered and that number will be the basic reference for the product’s maintenance record. The work order will be supplemented as necessary with detailed inspection instructions along with applicable forms, to assure proper inspection and repair of the unit involved. The number of additional forms used will be identified on the work order. The Original of the printed and numbered work order form will be retained in the Quality Control Inspectors office for two years.
A logbook will be maintained in Quality Control Inspectors office for recording each work order in numerical order, identifying the customer, the product for which it was issued along with manufacturer serial number, special instructions and the work to be accomplished.

It will be the responsibility of the supervisor to assure proper progressive servicing inspection and testing of the involved component.

**RECORD OF WORK**

A detailed record shall be kept of all work performed by the repair station. A copy of each Work Order (Form No. 109) with all attached supplementary form(s) will be maintained in the repair station records section. A separate file area is provided for all paperwork associated with the repair station’s work activities. Each work record is checked by an inspector for work accomplished, parts used, signature of mechanic and inspectors who performed maintenance. Records are maintained in active files for two (2) years.

**PRELIMINARY INSPECTION**

The Quality Control Inspectors of the repair station are responsible for assuring that all units delivered to the repair station for maintenance, alteration or repair under the privileges of the repair station certificate are subjected to a preliminary inspection to determine the state of preservation and any defects in the items involved. This inspection, including any required functional and/or nondestructive tests will be recorded on the appropriate CAL FIRE Form FC-43A and Form 109, with any discrepancies noted. The forms will be attached to the work order identified with the unit involved.

**INSPECTION FOR HIDDEN DAMAGE**

Before any work is begun the article will be given a thorough and searching inspection for hidden damage by a qualified inspector, in areas adjacent to the damaged area and/or in the case of deterioration, a thorough review of all similar materials or equipment in a given system or structural area. The scope of this inspection will be governed by the type of unit involved with special consideration accorded previous operating history, malfunction or defect reports, service bulletins and AD notes applicable to the unit involved. The inspector is responsible for listing all discrepancies noted during inspection on the work order form 109 or FC-43A maintenance inspection, prior to release for return to service.

**IN-PROGRESS INSPECTIONS**

An authorized qualified inspector will be assigned to make inspections at various stages of teardown, overhaul, and repair of all units or components received by the repair station for service. In-progress inspections are accomplished with a frequency determined by applicable manual recommendations and/or repair station originated work forms.
MAJOR REPAIR AND ALTERATION AIRCRAFT AND COMPONENTS

Following the preliminary inspection, additional records may be prepared by the inspection department to provide a comprehensive historical record of the work performed. These records will contain work orders, service bulletins, AD notes, manufacturers service bulletins letters, instructions for continued airworthiness, type of inspection, detailed figures related to functional tests and special nondestructive tests to be accomplished. A DER shall review major repair and modification plans and specifications if the repair is not covered by a Structural Repair Manual or other approved data. The approved engineering or other approved technical data authorizing the repair or alteration will be clearly indicated and included in aircraft records.

Units received from the aircraft will be tagged with appropriate serviceable or unserviceable identification tag listing the aircraft serial number, unit serial number and reason for removal.

No item removed and tagged as above described will be installed unless the unit is cleared as “serviceable” by inspection.

REPAIR, ALTERATION, AND OVERHAUL ACCESSORIES AND APPLIANCES

Self contained accessory and applicable units such as brakes, actuators, pumps, valves, generators, etc., which after preliminary inspection, have been established as eligible for overhaul or repair, will be identified with a green repairable part tag. Where applicable, manufacturers or military inspection, repair and overhaul standards and data shall be adhered to during the inspection, repair and overhaul. Instructions for continued airworthiness shall be followed where provided. No such unit shall be approved for returned to service without a maintenance release tag authorizing its return to service.

INSPECTION PROCEDURES

The Chief Quality Control Inspector is responsible for the complete and efficient performance of inspections assigned to the repair station to assure inspection acceptance in accordance with manual specifications or other approved technical data.

Overhaul and repair of components will be subject to inspection by the Inspection Department. Discrepancies generated during the process of accomplishing the work involved will be recorded on the appropriate work forms. Discrepancies so recorded will be corrected before the unit is submitted for final inspection. Upon completion of this progressive inspection, the inspector will clear the unit for final acceptance.

Upon completion of a specific operation, the mechanic will sign off the records using his signature indicating that the item is complete and ready for inspection. The action accomplished to correct a specific discrepancy will be noted under each item on the work order. The inspector will then assure conformance to manufacturers and military specifications and established workmanship standards. Functional checks of any system affected by the work
involved will be accomplished before final acceptance. Inspection acceptance will be indicated by the inspector’s stamp.

**MAINTENANCE INSPECTION**

The inspection paperwork will be supplemented as necessary to cover items to be replaced for time, special inspection items, discrepancies, airworthiness directives, and instructions for continued airworthiness. All inspection paperwork will comply with FAR Part 43 Appendix D.

No article will be returned to service following an inspection as outlined above until all the discrepancies affecting airworthiness have been corrected.

Maintenance supervisors are responsible for screening completed work orders covering work performed in their assigned area to assure that all items on the work order have been cleared, that there are no open discrepancies and that all major work accomplished is covered by approved data. Quality Inspectors will recheck to assure compliance with this section.

After work orders have been screened for completeness and accuracy, they are routed to the Quality Control Inspectors office. Such inspection and work records will be retained in a active file for a period of not less that two years (as required by FAR Part 145.219(c) and then transferred to dead storage for 3 additional years.

**HANDLING OF PARTS**

All items or components undergoing maintenance, repairs and/or alterations in the repair station shall have the component parts segregated in containers in order to assure that all parts of the same unit(s) are kept together. Suitable trays, racks, stands and protective coverings (as required) are to be provided in shop areas to assure maximum protection of all parts. Rejected parts will be identified by the use of a red reject tag and final disposition will be the responsibility of the Primary Quality Control Inspectors. Rejected parts will be segregated from serviceable and repairable parts. Final disposition of rejected parts will be either mutilation of the part or permanently and clearly marking or stamping parts “not for Aviation use” and “not serviceable”. (Ink stamping is not an acceptable method). FAA order 8120.11.
TAGGING AND IDENTIFICATION OF PARTS

The following is our four (4) tag system:

**White Tag** - Used for identification of unit or component only. To be completed by person receiving work to be performed

**Green Tag** - Will be Attached to units or parts requiring repair or test.
To be executed and signed by a mechanic or inspector.

**Yellow Tag** - To be attached to completed units which have received final inspection and are approved for return to service. The maintenance release is printed or stamped on the reverse side of this tag. (See Maintenance Release Statement, Section X). This release will be signed by an inspector only. This tag is supported by a work order.

**Red Tag** - Will be attached to rejected parts, pending final disposition. If rejected parts are in large quantities, they can be placed in a special container marked “rejected parts”. This tag to be completed by an inspector or designee

**White Tag w/Red Border** - Will be attached to parts removed or rejected that were recently overhauled and where warranty repair is due

All tags contain the following information: (with the exception of white tags).

- Work Order Number
- Date
- Mechanic/Inspector Name
- Part Number
- Serial Number
- Name of Part
- Reason for Removal
- Manufacturer Name and Model No.

The yellow, green, white, or white tag with red border will remain attached to the parts returned to the parts room.

The red tag will be made a part of the work order file. Red tags will remain attached to the part and a record will be made on the work order showing the part was returned for final disposition. Copies of all tags are in forms Section X.

**PART FINISHING**

Cleaning and painting will be accomplished in area segregated from the assembly areas.
PRESERVATION OF PARTS

Components when necessary will be preserved in accordance with manufacturer’s recommendations or other acceptable industry standards. To afford protection against humidity, extreme temperatures, dust, rough handling or other damage, the component will be preserved by wrapping in suitable containers, plastic bags, and/or rigid boxes containing suitable shock absorption material. The component will then be placed in a designated protected storage area until required for use.

SHELF-LIFE

For those materials having a specific shelf life, repair station material controls label Form No. 108, will be attached showing the expiration date of the shelf life as established by applicable specifications. Inspectors and mechanics will red tag any life-dated material that has exceeded its shelf-life expiration date or does not have a material control label affixed. These condemned items will then be forwarded to the Primary Quality Control Inspectors/Stock Room Manager for final disposition.

INCOMING MATERIAL

All incoming material shall be inspected for quantity, quality, conformity to dimensions or specifications and state of preservation. At this time, the cure date of material (shelf life) shall be noted and the older stock will be used first provided it is not beyond the manufacturer’s specifications.

HARDWARE AND EQUIPMENT STORAGE

The Stock Room Manager is responsible for the operation of the stockroom and will control, segregate and maintain all stock and tools as to a serviceable or unserviceable category.

In addition, the Stock Room Manager will:

- Properly store, segregate and protect materials, parts and supplies.
- Provide suitable storage areas for storing standard and spare parts and assure that raw materials are segregated from shop and working places.
- Provide for the preservation of all articles or parts, while in inventory that are subject to deterioration and shelf-life specifications and assure that only acceptable parts and supplies will be issued for any job.
- Insure that all parts will be shipped in adequate protective shipping containers.

RECORD OF SPECIALIZED INSPECTION, TEST AND/OR CALIBRATION

Specific notations, attesting accomplishment, will be made on appropriate printed work forms for recording specialized inspection, testing and/or calibration of a component.
RECORD OF TEST AND/OR CALIBRATION

A. Records of specialized inspections, testing, and/or calibrations such as Part 43 Appendix “E” & “F” tests.
   (1) Signature of person doing work
   (2) Signature of person inspecting work
   (3) Dates of work/inspection
   (4) Type of form used and how this form is tied to the work order
   (5) Identification of aircraft or article worked on (serial # or company assigned number)

B. A file system will be used to keep records of the test equipment used in these types of test and inspections
   (1) Test equipment properly identified
   (2) Date test equipment calibrated
   (3) Person who calibrated test equipment

C. Work performed by outside contractors should include the same records as mentioned above.

RECORD OF INSPECTIONS

Where a record of the inspection by dimensions, tests or calibration is required by the manufacturer’s technical data, such record shall be made on an appropriate form properly identified with the work order, it must also be dated and signed by the mechanic performing the inspection, tests or calibration and/or the inspector as appropriate.

TEST EQUIPMENT CALIBRATION REQUIREMENTS

Test equipment shall be calibrated at periodic intervals established on the basis of stability, purpose and degree of usage. 12 calendar months shall be the maximum calibration interval. The intervals for each piece of equipment will be kept in the calibrated equipment file in the inspection office.

Each piece of test equipment will be labeled. The label will identify the unit by manufacturer, model and serial number. The attached label must indicate the last calibration date and next calibration due date.
During the first week of each month the Primary Quality Control Inspectors will review the test equipment calibration history file to determine calibration requirements. They will perform the required calibration or prepare a work order for the appropriate outside contractor. A label will identify equipment that is not routinely calibrated, or placard which states: “Reference Use Only”. Equipment information will be logged in a Reference Use Only tracking form and kept in the repair station files.

After calibration, the test unit will be checked for proper labeling and the equipment calibration history file will be updated and returned to the Inspection Department active file.

At no time will any person be permitted to perform work on components requiring the determination of airworthiness using test equipment that is out of calibration. All repair station personnel, before using test equipment, are responsible to check that the test unit has a calibration label attached and is current. If at any time a piece of test equipment inadvertently exceeds its calibration due date; it will immediately be removed from service and tagged “out of calibration” until a calibration check has been performed.

Standards used to calibrate test equipment will be traceable to the National Institute of Standards and Technology or an FAA approved foreign country’s standards by certificate from the testing facility under FAR 145.109(b).

**REFERENCE USE ONLY EQUIPMENT**

Inspection and test equipment that is not subjected to periodic calibration when no test data is recorded, e.g., null indication, wave form monitoring, continuity checking, trouble-shooting, to determine the feasibility of repairing versus scraping on item, etc. The equipment shall be clearly identified “REFERENCE USE ONLY”. Equipment so identified cannot be utilized for task requiring test data to be recorded, product acceptance, or leading up to a return to service finding.

“REFERENCE USE ONLY” equipment must be properly identified and tracked using a “Reference Use only” tracking form, Form 116. An inventory of all “reference use only” items shall be kept in the repair station files. The quality control inspectors shall assure that the list is current and updated.

**FINAL INSPECTION AND RETURN TO SERVICE**

Prior to approval for return to service, irrespective of the method to be used to indicate such approval, the Quality Control Inspectors will audit the records “package” as identified by the work order, to determine that all work has been inspected as required for compliance with this inspection system and FAR Section 145.213. He will indicate approval by affixing his stamp in the appropriate section of the work order.

When approval has been given to the above audit, either the Primary Quality Control Inspectors or the individual authorized in the official roster and individual summary of employment, will
approve the article for return to service. A Maintenance Release will be generated and affixed to the aircraft logs and a copy (form 109A) will be attached to the work order.

This approval will be accomplished as appropriate to the work done, the article involved, the records available with the article, and the instructions of the customer. Care will be exercised to comply with FAR Part 43 in every case.

Whenever the aircraft records (log) are available, the Chief Quality Control Inspector or designees will make a record of the work or inspection accomplished therein. This does not waive any FAR Part 145 records requirements. Neither will FAR Part 43 or FAR Part 91 be considered waived by FAR Part 145 records requirements. A listing of work or inspection performed, components repaired or replaced and name, date, certificate type, and number will be included in the log entry.

Articles such as appliances, accessories, individual parts or components may not have an individual record to which an entry may be added. However, the installation of these items on an aircraft constitutes an aircraft maintenance or alteration, and records must be made accordingly.

Routine, major repair approvals will be handled in accordance with Section 43.9 and paragraph (b) or FAR Part 43, Appendix B. A maintenance release will be completed as a part of the work order form at the time of approval for return to service. A separate maintenance release card will be completed and shipped on an article that is shipped to a customer. At the request of the customer (to be indicated on the work order when originated), FAA Form 337 will be completed in accordance with the procedure in paragraph (a) of FAR Part 43, Appendix B.

In cases where a major alteration or major repair is involved, FAA Form 337 will be completed per FAR Part 43.9 and FAR Part 43, Appendix B or a signed copy of the work order with a maintenance release per FAR 43, Appendix B.

The authorized supervisor in whose area the repair, alteration or inspection is accomplished will be responsible for establishing that the repair, alteration or inspection was made in accordance with the requirements of FAR Part 43 and will sign the conformity statement (Item 6) on FAA Form 337.

The Quality Control Inspectors are responsible for the approval for return to service of articles and will indicate such approval by signing the approval for return to service (Item 7) on FAA Form 337. Appropriate entries will be made in the aircraft record pertinent to the repairs and alterations accomplished by the repair station. Specific reference will be made by calendar date to the aircraft record with a copy forwarded to the local FAA-district office and copy retained with the copy of the aircraft work order.

It is the responsibility of the person authorizing the return to service to assure that the aircraft flight manual is properly revised as necessary following any alteration or modification to the aircraft and that the weight and balance record as been amended as necessary.
Aircraft components, appliances, and other items, other than completed aircraft repaired or overhauled as authorized by the repair station specification, will be returned to service through the use of a maintenance release preprinted on the serviceable parts tag described in this section of this manual. The authorized supervisor or inspector under whose jurisdiction the work is accomplished will be responsible for the release of units in that category.

No aircraft or unit may be released for return to service until the work order and other records have been reviewed for completeness and final acceptance cleared by the Inspection Department. Particular attention shall be accorded the status of applicable airworthiness directives.

MAINTENANCE RELEASE STATEMENT

A maintenance release statement stamp and/or preprinted tag, prepared in accordance with FAR Part 43, Appendix B, will be used to release to service major repairs or alterations which have been accomplished by this station in accordance with FAR Part 43. Other records required by FAR Part 43.9 will be executed, as required, regardless of whether an FAA Form 337 or a maintenance release has been used to return the article to service. In any event, the repair station will indicate on their copy of the work order whether or not a maintenance release was used, including the signature of the authorized representative.

“Example”

Maintenance Release

The aircraft, airframe, aircraft engine, propeller or appliance identified above were repaired and inspected in accordance with current regulations of the Federal Aviation Administration and is approved for return to service. Pertinent details of the repair are on the file at this repair station under work order number______________________________Date_________________Signed __________________________________________For FAA Repair Station No. CF0R047Z

(Signature of authorized representative)

NOTE: Inspection stamp/symbol will not be used on the maintenance release.
MALFUNCTION OR DEFECT REPORT

This repair station will report to the FAA within 72 hours after it discovers any serious defect in, or other recurring unairworthy condition of, an aircraft, powerplant, or propeller, or any component there in. The report will be made on an FAA Form 8010-4, Malfunction or Defect Report, describing the defect or malfunction completely without withholding any pertinent information.

In any case, where the filing of a report under the preceding paragraph might prejudice the repair station, it will be referred to the Administrator for a determination as to whether it must be reported. If the defect or malfunction could result in an imminent hazard to flight, the repair station will use the most expeditious method it can to inform the Administrator.

RESPONSIBILITY FOR SUBMITTING REPORTS

The Chief Quality Control Inspector and Quality Control Inspectors are responsible for preparing and submitting a Malfunction or Defect Report to the FAA.

SPECIAL FORMS AND CHECKLISTS

Special forms and checklists may be used in the performance of the manufacturer’s recommended inspection program. All forms used will be attached to the appropriate work order. All information will be transferred to aircraft logbooks upon completion to Quality Control Audit and held there for a period of (2) two years.

NON CERTIFICATED MAINTENANCE FUNCTION LIST

Form 115A, page 55, "APPROVED SUBCONTRACT MAINTENANCE LIST", will be used to obtain approval from the Sacramento FSDO for the local fabrication and process of repair parts and overhaul/repair of engines, propellers, rotors, and component parts. The DOM or their representative will be responsible for maintaining the list in a current status and inspect all non-certificated manufacturing and process facilities for their capability to perform. Any proposed changes to the list shall be submitted to the Sacramento FSDO for approval prior to implementation.

SUBCONTRACTED MAINTENANCE, NON-CERTIFICATED FACILITIES

Any work performed by another agency for this repair station will be inspected by the DOM or their representative. This inspection will be to verify that the work was performed in accordance with approved aerospace industry procedures including drawings, process specifications and/or Milspecs and AMS specifications. The work will be performed in an airworthy manner insuring that parts and materials used were of such quality to be airworthy, and that the paperwork received with the material verifies the authenticity of the part and work performed. At no time will anyone release any parts, which have been made or repaired by a subcontractor until the
Quality Control Inspectors, or an inspector designated has approved the materials as being airworthy.

All subcontracted work shall be kept separate from regular stock until this inspection has been performed and the material accepted for use.

If for any reason subcontracted material is rejected as being unairworthy, it will immediately be identified (tagged) as unairworthy and the proper disposition made, such as scrap or return to vendor.

**LIST OF SUBCONTRACTED MAINTENANCE**

See list of subcontracted maintenance on file.

**REQUIRED INSPECTION ITEMS (RII)**

CAL FIRE does not use at this time.

**SUSPECTED UNAPPROVED PARTS DETECTION/REPORTING**

1. New items from the manufacturer should be inspected for:
   (a.) Shipping damage
   (b.) Traceability of life limits, if applicable
   (c.) Identification and tagging of parts to manufacturers invoice.
   (d.) Proper paperwork
2. Overhauled or repaired parts from an approved agency for:
   (a.) Shipping damage
   (b.) Traceability of life limits, if applicable
   (c.) Traceability of overhauled recorded and/or maintenance release tag.
   (d.) Proper paperwork
3. Items sent out for contracted maintenance functions for:
   (a.) Shipping damage
   (b.) Conformity to specifications (FAA & Manufacturer’s), to include type of material and state of preservation.
   (c.) Airworthiness status including A.D.’s and traceability of life limits, if applicable.
   (d.) Functional test, if applicable.
   (e.) Proper paperwork

**SUSPECTED UNAPPROVED PARTS NOTIFICATION**

Potential unapproved parts will be reported to the Quality Control Inspectors, Safety Officer or DOM.
The Quality Control Inspectors shall follow the proper procedures for reporting suspected unapproved parts. FAA form 8120-11 shall be completed and forwarded to the FAA. Follow instructions for completing the form on the back of FAA form 8120-11.

TECHNICAL LIBRARY MAINTENANCE REQUIREMENTS

This section describes the System Requirements for the Maintenance of Repair Station Technical Data.

General

All Master copies of Manuals, Drawings, Charts and other pertinent data will be maintained by the Quality Control Office. These articles are for the use of the repair station personnel.

1.) The DOM is responsible for the currency and condition of all technical data. Periodically all manuals will be validated for currency by the Primary Quality Control Staff. This includes tracking manuals that are issued to maintenance on the hanger floor. A computer database will be utilized to maintain and update manuals and the subsequent incorporation of changes and revisions.

2.) Commercial Technical Manuals that are in current printing status will be maintained on a subscription basis with the appropriate source vendor.

3.) Military Manuals will be updated by subscription with the Prime Military unit holding responsibility to that manual.

4.) All manuals which are out of print or circulation will be marked “OUT OF CIRCULATION DATE: _______________” on the cover page of the manuals affected.

5.) Any manual, which is not to be maintained in a current updated status will be marked “CONTENTS NOT UPDATED, FOR REFERENCE ONLY” on the cover page and will not be maintained on any update listing or database.

6.) A Manual Update Form (Form 114) showing the latest version or revision of manuals will be placed in the front of each manual used.

The Quality Control Inspectors, may delegate all duties assigned here to any qualified individual, however such delegation does not relieve them of the overall responsibilities.
SECTION IX - RECORD KEEPING SYSTEM

RECORD KEEPING SYSTEM

GENERAL

The CAL FIRE inspection system and related documentation is fully described in the Quality Control Manual. The CAL FIRE Record Keeping System must comply with Parts 43, 91 and 145 as well as fiscal and documentation requirements for the State of California. CAL FIRE uses a "paper" type record keeping system. All records will be maintained in English.

REQUIRED RECORDS

WORK ORDERS

This repair station shall maintain a record of all work performed within the repair station. CAL FIRE Form 109, CAL FIRE Work Order, will be used to record work performed within the repair station. All work orders will be issued, reviewed, signed-off and retained by the Chief Quality Control Inspector or his designee. The original copy of the Work Order will be maintained in the Inspection Office. Supporting documents will be attached to and maintained with the Work Order. Active Work Orders and completed Work Orders will be maintained in the Inspection Office for 24-months after completion and release of the aircraft, engine, propeller or appliance. Work Orders shall be issued with a serialized Work Order Number. The Chief Quality Control Inspector shall maintain a log of all Work Orders issued by CAL FIRE. The log will include enough information so that Work Orders can be reviewed and recovered from files by date, type of work performed, or aircraft worked on.

SUPPORTING RECORDS

Supporting records and documents shall be attached to the work order. Supporting records and documents include:

- Maintenance Release tags from sub-contracted maintenance
- Work Orders/Certificates of Material Conformity from process shops
- Certificates of Material Conformity and/or Maintenance Release Tags for new purchase materials or parts
- Shop Traveler for component overhaul
- Shop Traveler for sub-component overhaul

SPECIAL INSPECTIONS

Records for special inspections, such as hydrostatic tests, NDI inspections, etc. will be maintained with the aircraft, engine, propeller or component. A copy of the special inspection will be maintained with the Work Order.
FAA FORM 337 RECORDS

When an aircraft or engine has had a major repair or alteration and an FAA Form 337 is required, the original copy shall be included with aircraft or engine file, a copy attached to the Work Order and the FAA gets a copy.

PURCHASE DOCUMENTS

Purchase documents for material and parts are maintained in the CAL FIRE Procurement and Accounting Office. These records include Purchase Orders and specifications for certificates of material conformity. These records are maintained by the Supply Manager.

INVENTORY CONTROL AND RECORDS

CAL FIRE tracks all aircraft, engines, propellers and component parts by part number and serial number for rotatable spare parts. The Supply Manager is responsible for maintaining the electronic inventory of parts. Procurement and parts personnel maintain copies of all certificates of material conformity for raw materials. The Certificates of Material conformity shall be maintained to and attached to the Purchase Order. The PO number and date shall be affixed to all raw materials for traceability.

PERSONNEL RECORDS

Management, supervision, inspection and maintenance personnel records and logs for personnel and quality control inspectors will also be maintained. These records are described in detail in the Quality Control Manual. The DOM is the Accountable Manager. These records will be maintained in the inspection office.
SECTION X – FORMS

FORM 105

RECORD OF EMPLOYEES TRAINING

FORM 105

NAME

TYPE OF TRAINING

METHOD OF TRAINING

DURATION OF TRAINING

COMPLETION DATE

NAME OF INSTRUCTOR

COMMENTS

NOTE: This form will be utilized to record employees training history while employed at this repair station. Forms will be kept in master file.
Form 108

MATERIAL FORM LABEL
FORM 108

MATERIAL CONTROL LABEL
LIMITED SHELF-LIFE

Date Received: ____________

Expiration Date: ____________

Completion of this form is self-explanatory.
Form 109A

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<tr>
<th>TAIL #:</th>
<th>CAL FIRE MCC</th>
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<td>AIRCRAFT SERVICE CENTER</td>
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<td>ACTT:</td>
<td>Repair Station No. CF0R047Z</td>
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<td>HOBBS:</td>
<td>Form 109A</td>
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<tr>
<td>W/O #:</td>
<td>WORK ORDER</td>
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<td>REVERSALS:</td>
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ACTION REQUIRED

- PROGRESSIVE INSPECTION
- DISCREPANCIES
- BENCH CHECK
- OVERHAUL
- MODIFICATION
- REPAIR
- OTHER

WORK ACCOMPLISHED:

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<tr>
<th>NO:</th>
<th>MECH:</th>
<th>JOB DESCRIPTION:</th>
<th>CORRECTIVE ACTION:</th>
<th>MECH:</th>
<th>INSP:</th>
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MAINTENANCE RELEASE

The aircraft or appliance identified above were repaired and inspected in accordance with the current regulations of the Federal Aviation Administration and have been determined to be airworthy and are approved for return to service. Pertinent details of repairs made are on file at this repair station.

Signed: ___________________________ Date: ________________

Print Name: ___________________________

Cert. No. ___________________________

(For Signature of Authorized Representative)
CAL FIRE MCC AIRCRAFT SERVICE CENTER
FAA Repair Station No. CF0R047Z
5500 Price Avenue
McClellan, CA 95652

G.C. AUDIT ________ DATA ENTRY ________ White - Quality Control | Yellow - Program | Pink - Flight Log
TAG EXAMPLES
COMPONENT TAGGING REQUIREMENTS

**Yellow Tag:**  Serviceable Part

- **Part Name:** Self Explanatory
- **Part Number:** Self Explanatory
- **Serial Number:** Self Explanatory
- **TSO:** Time Since Overhaul if known
- **Work Order Number:** Work Order Number
- **Overhaul Agency/Vendor:** Fill in for new or verified parts
- **Date:** Self Explanatory
- **Inspector:** Designated repair station inspectors only

When part is installed, on reverse side of yellow tag the mechanic must include the following information:

1. **Name**
2. **Date**
3. **Aircraft Tail Number**
4. **Aircraft Total Time**
5. **Location – Examples #1 Eng., #2 QEC, Rt. MLG, Etc.**

All yellow tags will be attached to the appropriate form FC-43A for routing.

**Green Tags:**  Repairable part

- **Part Name:** Self Explanatory
- **Part Number:** Self Explanatory
- **Serial Number:** Self Explanatory
- **Date:** The date the part was removed from service
- **Station:** Location or base when part was removed
- **Aircraft Number:** Tail Number of aircraft
- **Aircraft Time:** Airframe total time when part was removed (Do not use Hobbs)
- **TSN:** Time since new if known

**Reason for Removal:** Clear and concise explanation of the part disposition (Do not write “Failed” or “Broke” etc.) include a short explanation.

**Mechanic:** Persons signature who removed part

**Note:** On reverse side of green tag write in large print **“WARRANTY”** if it is known that this part has had a service life of less than 100 hours operation.
**White Tags:** Identification tags only

These tags will be utilized to clearly and simply identify components removed from aircraft, engines or accessories which will return to their original position for continued service.

Information Record on white tags:

1. Aircraft Number
2. Location

**Red Tag:** Reject (Not Repairable)

- Part Name: Self Explanatory
- Part Number: Self Explanatory
- Serial Number: Self Explanatory
- Quantity: Self Explanatory
- Reason for Rejection: Clear concise reason explaining rejection status
- Date: The date part was inspected
- Work Order Number: Work Order Number if applicable
- Mechanic / Inspector: Name of person rejecting part

**Note:** All red tagged parts will be forwarded to CAL FIRE for disposal and demolition per F.A.A. standards.
FC-43A AIRCRAFT INSPECTION DISCREPANCY LIST

The Form FC-43A will be used for the following situations:

- As a Record of Routine Maintenance performed on aircraft, engines, propellers or accessories.
- As a Record of Compliance for scheduled inspections and FC-44 items.
- Will be used as subsequent pages to a work order package.

The following information will be included on all Form FC-43A’s:

A. **Heading:** CAL FIRE No.: A-210 or T-77 etc. Self explanatory

B. **Mech. & Date:** Date & Name of person opening discrepancies

C. **Discrepancy:** Discrepancies will be written in a clear, concise manor with appropriate locations noted.

D. **Corrective Action:** Corrective action will be written out clearly no symbolism will be accepted, IE: R+R, R, etc.

E. **Serial Numbers:** Serial No. of item being removed will always be written on the bottom line of the discrepancy block likewise the serial no. of item being installed will be written on bottom line of corrective action block.

F. **Mech. & Date:** Mechanics hand written signature along with A&P No. or IA No. (no stamps) along with Date of Compliance.

G. **Mech. Hours:** Man hours required to perform task.

H. **Insp. & Date:** Inspecting individuals signature or company issued stamp.

**Note:** See sample FC-43A Form enclosed

All component yellow tags will be attached to the Form FC-43A for which the discrepancy is listed.
# FC-43A INSPECTION FORM

## FC43 AIRCRAFT DISCREPANCY LIST

<table>
<thead>
<tr>
<th>MFG S/N</th>
<th>FAA NO.</th>
<th>CDF NO.</th>
<th>DATE</th>
<th>PAGE</th>
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**DISCREPANCY**

1. Provide a detail description of the discrepancy.
2. Serial Number "OFF" for components removed.
3. Part Number "OFF" for components removed.

**CORRECTIVE ACTION**

1. Technical reference
2. Function / leak check
3. Part Number "ON"
4. Serial Number "ON"
5. Safety of Flight Requires "Red X" in QC Box.

---

Entered By: [Signature]
Date: [Date]
Time: [Time]

Corrected By: [Signature]
Supervisor: [Signature]
QC: [Signature]

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Entered By: [Signature]
Date: [Date]
Time: [Time]

Corrected By: [Signature]
Supervisor: [Signature]
QC: [Signature]

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Entered By: [Signature]
Date: [Date]
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Corrected By: [Signature]
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Entered By: [Signature]
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Entered By: [Signature]
Date: [Date]
Time: [Time]

Corrected By: [Signature]
Supervisor: [Signature]
QC: [Signature]
### TECHNICAL MANUAL UPDATE FORM 114

Manual Type _____________________________

Manual Number ___________________________

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### FAA APPROVED MAINTENANCE FUNCTION LIST – FORM 115A

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This Form shall be prepared and submitted to the FAA on initial application and every 12-months for review and approval. Completion of this form is self-explanatory.
## CONTRACT MAINTENANCE LIST – FORM 115B

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REFERENCE USE ONLY TRACKING FORM - FORM 116

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Completion of this form is self-explanatory.
### AUTHORITY DELEGATION ROSTER OF PERSONNEL - FORM 117

<table>
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<th>CERTIFICATE Type &amp; Number</th>
<th>INSPECTOR’S IDENTIFICATION</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>SIGNATURE</td>
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</tbody>
</table>

**AUTHORITY DELEGATION:**

1. * Authorized to sign for the repair station for final and release statement of serviceability of part(s) within the scope of the repair station - specialized service rating.
2. ** Authorized to sign for parts receiving inspection.

Note: Completed forms will be maintained in a separate manual. Any changes to Repair Station Personnel shall be made, and rosters updated within five days after said changes. Completion of this form is self-explanatory.
ALTIMETER/STATIC SYSTEM TEST & INSPECTION CHECKLIST – FORM 122 PAGE 1 OF 3

TECHNICIAN__________________________________ WORK ORDER____________________ DATE________

SIGNATURE________________________________________

AIRCRAFT MAKE & MODEL_________________________N_________ TACH________

CUSTOMER NAME & ADDRESS________________________

AIRCRAFT ALTIMETER SERIAL #______________TEST SET ALTIM. CALIB DATE____________

REMARKS:

____________________________________________________________________________

____________________________________________________________________________

STATIC SYSTEM TESTS:

1. **INSPECT** system to ensure freedom from entrapped moisture and restrictions________

2. **CHECK** Static Port Heater (if installed) for normal operation______________

3. **INSPECT** Airframe Surface for alteration of deformation near Static Port_______

4. **PERFORM** Static Pressure System Leak Test:

   **UNPRESSURIZED AIRCRAFT:**
   Evacuate system to 1,000 feet above test elevation. Observe Aircraft Altimeter for 1 minute. Observed Altitude Loss: _______ Feet (Maximum loss 100 feet)

   **PRESSURIZED AIRCRAFT:**
   Maximum Operational Aircraft Altitude: _________________ feet
   Maximum Cabin Altitude: ___________________ feet
   Subtract to obtain maximum differential: _________________ feet __________ feet
   Add (or subtract) Field Elevation: ____________________ feet x .02 (2%)
   Test Altitude (Evacuate system to): ___________________ feet

   Maximum allowable altitude loss in 1 minute: _______
   Actual observed loss in 1 minute: _______

NOTE: WHEN ALTIMETER CALIBRATION TEST IS PERFORMED BY REMOVING ALTIMETER FROM AIRCRAFT, THE STATIC SYSTEM TEST IS PERFORMED FOLLOWING REINSTALLATION OF THE ALTIMETER.
ALTIMETER/STATIC SYSTEM TEST & INSPECTION CHECKLIST – FORM 122 PAGE 2 OF 3

**ALTIMETER TESTS:**  (Perform Tests 1 through 3 using table below)

1. **SCALE ERROR TEST:**  Set Barometric Pressure Scale to 29.92 inches of mercury
2. **FRICTION TEST:**  Accomplished a steady rate of 750 ft/min (pressure decrease)
3. **CASE LEAK TEST:**  Maximum leakage rate is 100 ft/min at 18,000 ft

<table>
<thead>
<tr>
<th>TEST ALT(FT)</th>
<th>TOLERANCE(FT)</th>
<th>OBSERVED SCALE ERROR</th>
<th>FRICTION ERROR ALLOWED</th>
<th>OBSERVED FRICTION ERROR</th>
<th>OBSERVED CASE LEAK @ 18,000</th>
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ALTIMETER/STATIC SYSTEM TEST & INSPECTION CHECKLIST – FORM 122 PAGE 3 OF 3

4. HYSTERESIS TEST

Test point No. 1: ____________feet. (50% OF Maximum Test Altitude)

Observed Error: ____________feet. (Maximum allowable error if 75 ft.)

Test Point No. 2: ____________feet (40% of Maximum Test Altitude)

Observer Error: ____________feet (Maximum allowable error is 75 ft.)

5. AFTER EFFECT TEST: (Accomplished not more than 5 minutes after Hysteresis Test)

Original Atmospheric Pressure Reading at 29.92 in/Hg ____________ft.

Aircraft Altimeter Reading after Test ____________ft. (Max. error +/- 30 feet.)

6. BAROMETRIC SCALE ERROR TEST: (Maximum error +/- 25 feet.)

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<th>ALTIMETER READS</th>
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TRANSPONDER INSPECTION REPORT FORM 123
(PAGE 1 OF 2)

WORK ORDER____________MFR___________MODEL__________S/N___________DATE________

AIRCRAFT MAKE AND MODEL________________________N_________________

MECHANICAL
  1. All attaching parts secure________
  2. Code control freedom and decent action___________
  3. Code numerical alignment____________
  4. Variable controls, freedom of movement___________
  5. Connectors, clean contact, no pin damage________
  6. Retaining device operation___________

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Inspector    Date

Technician    Date
ENCODING ALTIMETER, BLIND ENCODER, TRANSPONDER CODING CHECKLIST

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<td>B2,C2</td>
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<td>A2,B1,B2,B4,C2</td>
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<td>+ - 125</td>
<td>A11,A4,B1,C3,D4</td>
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</table>

Max. Opert. Alt. + - 125

To be acceptable the altimeter normally used to maintain flight altitude corresponds with the output of the digitizer thin + - 125 feet at no less than 70 percent of the test points.