It has been proven that regularly scheduled inspections and preventive maintenance assure airworthiness. Operating failures and malfunctions of equipment are appreciably reduced if excessive wear or minor defects are detected and corrected early. The importance of inspections and the proper use of records concerning these inspections cannot be overemphasized.

Airframe and engine inspections may range from preflight inspections to detailed inspections. The time intervals for the inspection periods vary with the models of aircraft involved and the types of operations being conducted. The airframe and engine manufacturer's instructions should be consulted when establishing inspection intervals.

Aircraft may be inspected using a flight hours inspection system, a calendar inspection system, or a combination of both. Under the calendar inspection system, the appropriate inspection is performed on the expiration of a specified number of calendar weeks. The calendar inspection system is an efficient system from a maintenance management standpoint. Scheduled replacement of components with stated hourly operating limitations is normally accomplished during the calendar inspection falling nearest the hourly limitation. In some instances, a flight hour limitation is established to limit the number of hours that may be flown during the calendar interval.

Aircraft operating under the flight hour system are inspected when a specified number of flight hours are accumulated. Components with stated hourly operating limitations are normally replaced during the inspection that falls nearest the hourly limitation.

## Basic Inspection

### Techniques/Practices

Before starting an inspection, be certain all plates, access doors, fairings, and cowling have been opened or removed and the structure cleaned. When opening inspection plates and cowling, and before cleaning the area, take note of any oil or other evidence of fluid leakage.

### Preparation

In order to conduct a thorough inspection, a great deal of paperwork and/or reference information must be accessed and studied before proceeding to the aircraft to conduct the inspection. The aircraft logbooks must be reviewed to provide background information and a maintenance history of the particular aircraft. The appropriate checklist or checklists must be utilized to ensure that no items are forgotten or overlooked during the inspection. Also, many additional publications must be available, either in hard copy or in electronic format, to assist in the inspections. These additional publications may include information provided by the aircraft and engine manufacturers, appliance manufacturers, parts vendors, and the Federal Aviation Administration (FAA).

## Aircraft Logs

"Aircraft logs," as used in this handbook, is an inclusive term that applies to the aircraft logbook and all supplemental records concerned with the aircraft. They may come in a variety of formats. For a small aircraft, the log may indeed be a small 5" × 8" logbook. For larger aircraft, the logbooks are often larger and in the form of a three-ring binder. Aircraft that have been in service for a long time are likely to have several logbooks.

The aircraft logbook is the record where all data concerning the aircraft is recorded. Information gathered in this log is used to determine the aircraft condition, date of inspections, time on airframe, engines, and propellers. It reflects a history of all significant events occurring to the aircraft, its components, and accessories. Additionally, it provides a place for indicating compliance with FAA airworthiness directives (ADs) or manufacturers' service bulletins (SB). The more comprehensive the logbook, the easier it is to understand the aircraft's maintenance history.

When the inspections are completed, appropriate entries must be made in the aircraft logbook certifying that the aircraft is in an airworthy condition and may be returned to service. When making logbook entries, exercise special care to ensure that the entry can be clearly understood by anyone having a need to read it in the future. Also, if making a hand-written entry, use good penmanship and write legibly. To some degree, the organization, comprehensiveness, and appearance of the aircraft logbooks have an impact on the value of the aircraft. High quality logbooks can mean a higher value for the aircraft.

## Checklists

Always use a checklist when performing an inspection. The checklist may be of your own design, one provided by the manufacturer of the equipment being inspected, or one obtained from some other source. The checklist should include the following:

1. Fuselage and Hull Group
    a. Fabric and skin—for deterioration, distortion, other evidence of failure, and defective or insecure attachment of fittings.
    b. Systems and components—for proper installation, apparent defects, and satisfactory operation.
    c. Envelope gas bags, ballast tanks, and related parts—for condition.