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**Acquisition**

**AIRCRAFT STRUCTURAL INTEGRITY  
PROGRAM**

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This instruction defines the responsibilities and procedures followed by appropriate organizations in implementing and sustaining the Aircraft Structural Integrity Program (ASIP). It implements AFD 63-10, *Aircraft Structural Integrity*, and is consistent with DoD Directive 5000.1, *The Defense Acquisition System*, and DoD Instruction 5000.2, *Operation of the Defense Acquisition System*. Maintain and dispose of records created as a result of processes prescribed in this publication in accordance with AFMAN 37-139, Records Disposition Schedule.

**SUMMARY OF REVISIONS**

This document requires: the use of statistical sampling procedures to ensure valid sample sizes are selected when collecting usage data used to make inferences about the entire fleet; annual review and documentation of the need to continue collecting usage data; Lead/Operating Commands' notification to the single manager about all aircraft operational usage changes; and single manager action to ensure the data collection requirements, tracking requirements and safety critical structural inspections identified in the policy are accomplished.

**1. Objectives of ASIP:**

- 1.1. Establish, evaluate, and substantiate the structural integrity (airframe strength, rigidity, damage tolerance, and durability, including economic life) of aircraft structures.
- 1.2. Acquire, evaluate, and apply operational usage data to provide a continual update of the structural integrity of operational aircraft.
- 1.3. Provide quantitative information for decisions on force structure planning, inspection and modification priorities, and related operational and support decisions.

1.4. Provide a basis for improving structural criteria and methods of design, evaluation, and substantiation for future aircraft systems and modifications.

**2. ASIP Requirements.** The technical details for ASIP are in MIL-HDBK-1530, *General Guidelines for Aircraft Structural Integrity Program*.

2.1. ASIP, as described in MIL-HDBK-1530, is tailored as appropriate for application to all piloted aircraft developed or used by the Air Force. It also applies to aircraft intended for operation as unmanned air vehicles, but capable of carrying safety pilots. For unpiloted vehicles, apply those elements needed to ensure sufficient structural safety and durability to meet the intended use of the airframe.

2.2. Apply ASIP as necessary to ensure structural safety and determine the economic life for the following:

2.2.1. Current operational aircraft.

2.2.2. Aircraft used, but not originally developed by the Air Force.

2.2.3. Air Force aircraft modified for (or directed to) new missions.

2.3. Apply ASIP as needed to provide flight safety during prototype evaluation. Apply the program to any follow-on aircraft developed by the Air Force and account for it in the prototype evaluation.

2.4. Use statistical sampling when it is not feasible to instrument all aircraft of a series.

**3. ASIP Planning .** ASIP will be incorporated into the Integrated Management Plan and Integrated Management Schedule of new or updated weapon system programs and will:

3.1. Incorporate the requirements of this instruction, using the guidance in MIL-HDBK-1530, and other applicable documents into a meaningful aircraft structural integrity program.

3.2. Cover the entire life cycle of the aircraft to the time it fails to meet the criteria established in paragraph 2.2.

3.3. Include aircraft historical data, required service life, and economic life of all major structural components.

3.4. Incorporate appropriate ASIP events and milestones and make sure they are documented for the program. ASIP will be approved by each weapon system Single Manager (SM). The aircraft ASIP manager will keep SAF/AQR, HQ USAF/ILM and the Office of Primary Responsibility (OPR) for ASIP in each participating command informed on ASIP, as well as any changes to the program.

3.5. The aircraft ASIP manager will document changes to the program annually or more frequently, if necessary.

**4. ASIP Management .** Carry out the program based on the following guidelines:

4.1. For systems under development, carry out the program as an integral part of the total system engineering effort in the acquisition of the aircraft weapon system.

4.1.1. The ASIP manager will translate the requirements of this instruction and the guidance in MIL-HDBK-1530 into a program for each aircraft and ensure the program is documented.

- 4.1.2. Document the program no later than 30 days after the start of the Engineering and Manufacturing Development phase.
- 4.1.3. Draft an initial plan for the program before exiting the Program Definition and Risk Reduction acquisition phase to ensure ASIP is considered early in the program.
- 4.2. For systems not developed by the Air Force, but which the Air Force intends to use, an assessment of the aircraft's structural integrity program shall be an integral part of the evaluation and selection process. SM approval of the program must occur before the Air Force makes the production or buy decision.
- 4.3. For systems already in use, but which have not had full ASIP requirements accomplished and documented, the ASIP manager will determine what part of the total program is essential to establish the structural safety and remaining economic life of all major structural components.
- 4.4. For systems that are to be modified for a new mission, a revised program must be approved before fleet modification or regular operations begin under the new mission.

## **5. ASIP Assigned Responsibilities :**

### **5.1. SAF/AQ will:**

- 5.1.1. Ensure that an effective aircraft structural integrity program is established for each aircraft operated by the Air Force and provide guidance.
- 5.1.2. Ensure that ASIP requirements are included in the procurement documentation for each aircraft weapon system acquisition, including aircraft weapon system structural modification programs.
- 5.1.3. Evaluate requests for deviation from the provisions of this instruction and grant approval, if appropriate.
- 5.1.4. Use and consider ASIP information in force structure planning and in modification ranking and implementation.

### **5.2. All Air Force commands and agencies will:**

- 5.2.1. Carry out the requirements of this instruction by issuing detailed documentation that specifies the command ASIP responsibilities and tasks.
- 5.2.2. Keep implementing documents current.

### **5.3. AFMC will:**

- 5.3.1. Establish an OPR for command-wide policy and procedures for execution of the aircraft structural integrity program.
- 5.3.2. Ensure each aircraft weapon system has an up-to-date ASIP.
- 5.3.3. Implement ASIP requirements in a timely manner as an integral part life cycle aircraft weapon system acquisition engineering process.
- 5.3.4. Develop and sustain data acquisition systems technology to monitor individual aircraft to ensure the operational effectiveness of ASIP.

5.3.5. Maintain and revise MIL-HDBK- 1530 as needed, to reflect technological advances or improvements in ASIP.

5.3.6. Advise appropriate program offices, operating commands, and other management organizations of ASIP requirements.

5.3.7. Develop advanced data reduction and analysis techniques for evaluating operational usage and fleet experience data.

5.3.8. If the SM's operational usage data processing concept requires new weapon system structural data collection programs or new computer application software programs, ensure they are supportable and compatible with each other.

5.3.9. Sustain and enhance Aircraft Structural Integrity Management Information System (ASIMIS) capability as required by participating SMs.

5.3.10. Establish procedures for periodic review of the program of each Mission Design Series (MDS) aircraft to verify that:

5.3.10.1. Required data collection and analysis efforts are effective and operating efficiently.

5.3.10.2. Fleet ASIP inspection and corrective actions are valid and adequate to protect safety and durability of the airframe.

5.3.10.3. Fleet ASIP inspection and corrective actions are on schedule.

5.3.10.4. All significant changes in the economic life of any major structural component are reported to SAF/AQR, HQ USAF/ILM, and each participating command.

5.3.10.5. Develop structural design criteria and methods for evaluating and substantiating airframe safety and durability for future aircraft systems.

5.4. The Single Manager will:

5.4.1. Ensure the minimum baseline ASIP data collection requirements, tracking requirements, and safety critical structural inspections prescribed in current policy are followed. Develop POM inputs, for the lead command, necessary to provide sufficient data to ensure the Operational Safety, Suitability, and Effectiveness (OSS&E) baseline is being maintained. Highlight any breach of requirements to operating/lead Command.

5.4.2. Appoint an ASIP manager for each aircraft weapon system being acquired or used by the Air Force.

5.4.3. Ensure data acquisition systems are installed in a sufficient number of aircraft to define the force usage spectra considering fleet size and appropriate statistical sampling procedures.

5.4.4. Provide individual usage tracking capability on all aircraft. Install recorders when, reliability and maintainability requirements are satisfied, and an adequate scope of data parameters for the particular system has been identified.

5.5. The ASIP Manager will:

5.5.1. Establish the program as outlined in this instruction and coordinate with each participating command as required.

- 5.5.2. Document and update the program, coordinate it with participating commands, obtain SM approval, and keep SAF/AQR, HQ USAF/ILM, and the OPR for ASIP in each participating command informed on the initial plans for ASIP, as well as any changes to the program.
  - 5.5.3. Carry out the ASIP program.
  - 5.5.4. Advise SAF/AQR, HQ USAF/ILM, AFSC/SEF, and each participating command of the impact on structural integrity of the aircraft system when its mission changes.
  - 5.5.5. Establish a usage data processing capability and assess the reports. Begin corrective action where needed.
  - 5.5.6. Annually, with SM and lead/operating Command participation and coordination, establish and document minimum baseline ASIP data collection requirements to define force usage spectra.
  - 5.5.7. Ensure personnel develop and sustain weapon system structural data collection programs and the required computer applications software programs. If the SM's operational usage data processing concept is to use the ASIMIS capability, ensure the computer programs are compatible and supportable with ASIMIS.
  - 5.5.8. Document the justification and rationale if the SM's operational usage data processing concept is not to use the ASIMIS capability.
  - 5.5.9. Establish and document the life cycle inspection and modification actions and schedules required to maintain the structural integrity of each aircraft system.
  - 5.5.10. Establish and document cost data elements required to determine the economic life of the aircraft system throughout its life cycle.
- 5.6. Operating/Lead Commands will:
- 5.6.1. Establish an OPR for managing this program command-wide.
  - 5.6.2. Provide data on system utilization, operational usage, and fleet experience to the ASIP manager through the aircraft single manager.
  - 5.6.3. Establish procedures to notify the aircraft single manager and ASIP manager of contemplated changes in the operational usage that deviate from the original design.
  - 5.6.4. Install, operate, and maintain ASIP hardware as required.
  - 5.6.5. Lead Commands will plan, program and budget for funds, per AFPD 10-9, Lead Operating Command Weapon Systems Management, necessary to obtain the data required to ensure the OSS&E baseline for the weapon system is being maintained.
  - 5.6.6. Prepare and process operational usage data according to governing directives.

5.6.7. Provide requirements for and monitor performance at unit levels to ensure that an effective data collection system is functioning in support of each program.

5.6.8. Establish the required service life for all aircraft systems.

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**Attachment 1**

**GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION**

***References***

DoD Directive 5000.1, The Defense Acquisition System

DoD Instruction 5000.2, Operation of the Defense Acquisition System

AFPD 63-12, Assurance of Operational Safety, Suitability, and Effectiveness

AFI 63-1201, Assurance of Operational Safety, Suitability, and Effectiveness

MIL-HDBK-1530, Aircraft Structural Integrity Program

MIL-HDBK-1783A, Engine Structural Integrity Program

MIL-HDBK-1798, Mechanical Systems Integrity Program

MIL-HDBK-1803, Software Development Integrity Program

MIL-HDBK-87244, Avionics Integrity Program

***Abbreviations and Acronyms***

**AFI**—Air Force Instruction

**AFPD**—Air Force Policy Directive

**AFPDO**—Air Force Publishing Distribution Office

**ASIMIS**—Aircraft Structural Integrity Management Information System

**ASIP**—Aircraft Structural Integrity Program

**DoD**—Department of Defense

**MIL-HDBK**—Military Handbook

**OPR**—Office of Primary Responsibility

**OSS&E**—Operational Safety, Suitability and Effectiveness

**POM**—Program Objective Memorandum

**SM**—Single Manager