CHANGE

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

8300.10 CHG 14

1/30/02

SUBJ: AIRWORTHINESS INSPECTOR'S HANDBOOK

1. PURPOSE. This change transmits new and revised portions of the handbook.

2. EXPLANATION OF CHANGES. This change to the 8300.10 handbook continues to use the Adobe FrameMaker program. Implementation of the FrameMaker program will eventually include the entire handbook. During this transition period, changes to the handbook will include some formatting differences, and change bars designate new or revised material. Significant areas of new direction, guidance, and policy included in this change are as indicated:

a. Incorporating editorial updates, and the continuation of changing Federal Aviation Regulation (FAR) to 14 CFR references.

b. Three new chapters developed from HBAW 99-03, Introduction to New Chapters 167, 168, and 169: Implementation Procedures of a Bilateral Aviation Safety Agreement and Maintenance Implementation Procedures with the Joint Aviation Authority, volume 2, chapter 167, Process the Application of a Repair Station for Acceptance Under JAR 145; chapter 168, Evaluate a JAA Supplement to a Repair Station's Inspection Procedures Manual; and chapter 169, Support a Maintenance International Standardization Team Visit.

c. Updating volume 3, chapter 36, Monitor Continuous Airworthiness Maintenance Program/Revision, by incorporating HBAW 94-05, Significant Differences Between Flight Cycle and Flight Time Relationship Affecting Airplane Maintenance Programs and (portion) HBAW 97-06, FAA Policy Regarding Segmented Inspections and Built-In Inspections Tolerances (Windows) in Continuous Airworthiness Maintenance Programs.

d. Revised volume 3, chapter 125, Monitor Operator During Strike/Labor Unrest/Financial Stress, by incorporating HBAW 98-21, Monitoring Operators During Periods of Growth or Major Change.

e. Clarification of policy incorporated into volume 2, chapter 202, Designate/Renew Designated Mechanic Examiner or Designated Parachute Rigger Examiner.

f. Editorial changes to volume 2, chapter 23, Certificate Foreign Applicants Located Outside the United States for Mechanic Certificates/Ratings; and volume, 3, chapter 66, Approve a Reliability Program.

g. Appendix 5, Airline/Manufacturer Maintenance Program Development Document, updated.

3. DISPOSITION OF TRANSMITTAL. This transmittal is to be RETAINED AND FILED IN THE BACK OF THIS HANDBOOK until it is superseded by a new basic order.

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James J. Ballough
Director, Flight Standards Service

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CHAPTER 23. CERTIFICATE FOREIGN APPLICANTS LOCATED OUTSIDE THE UNITED STATES FOR MECHANIC CERTIFICATES/RATINGS

SECTION 1. BACKGROUND

1. PROGRAM TRACKING AND REPORTING SUBSYSTEM (PTRS) ACTIVITY CODES.

A. Maintenance: 3501/3508

B. Avionics: 5501/5508

3. OBJECTIVE. This chapter provides guidance and describes procedures for certificating foreign and foreign-based applicants for mechanic certificates and ratings. The inspector (maintenance or avionics) who reviews these documents shall hold a mechanic certificate with an Airframe and Powerplant (A & P) rating.

5. GENERAL.

A. This chapter prescribes procedures for evaluating foreign applicants located outside the United States for Airframe and/or Powerplant Mechanic/Added Rating(s).

(1) Those procedures that are unique to foreign applicants located outside the U.S. are discussed in this chapter. Certification policy is established by the following Federal Aviation Administration (FAA) orders:

- FAA Order 8000.16, U.S. Certification or Designation of Foreign National Airmen, Airman Schools, Examiners, and Repair Station Facilities Outside the U.S., current edition
- FAA Order 8610.4, Aviation Mechanic Examiner Handbook, current edition

(2) This chapter does not apply to foreign applicants in the U.S. Any applicant who is in the U.S. and meets the English language and experience requirements is entitled to take the examinations for a mechanic certificate. Advisory Circular (AC) 65-11, Airframe and Powerplant Mechanics Certification Information, current edition, provides further guidance regarding foreign applicants within the U.S.

B. When foreign nationals are physically located outside the U.S. at the time of the examination, determine that the mechanic certificate is needed for the continued airworthiness (maintenance) of U.S.-registered civil aircraft and that the applicant is neither a U.S. citizen nor a resident alien.

(1) Ensure that a positive identification has been established (review passport prior to issuance).

(2) Require applicant to provide a signed and detailed statement (original document) from their employer substantiating specific types of maintenance performed and the duration of each.

(3) Applicants must provide a letter obtained from the foreign airworthiness authority of the country in which the experience was gained. Experience information submitted must be verified or rejected. All documents must be signed, dated originals, and traceable to the initiator.

(4) If the foreign civil authority will not provide the statement listed above, the inspector may determine eligibility through whatever means he/she deems appropriate.

NOTE: Appropriate action is whatever the inspector deems appropriate to determine that the experience is valid, i.e., review supporting documentation presented to satisfy authorization, without expending an excessive amount of time or resources on behalf of the applicant.

(5) Foreign military experience is considered acceptable experience towards authorization to take the written mechanic test based on the context of Title 14 of the the Code of Federal Regulations (14 CFR) section 65.77. The applicant must present acceptable documentation from the foreign military or government substantiating the military work experience. Review AC 65-11 for guidance.

NOTE: If the applicant shows only foreign military work experience on aircraft that are not manufactured to U.S. standards, that is not an issue, the experience still has to meet 14 CFR § 65.77.

(6) Applicants must be notified that the authorization to test is applicable only to Designated Mechanic Examiners (DME) who exercise privileges in the International Field Office (IFO) and the Flight Standards District Office (FSDO). Should the applicant wish to test with a DME in another district, additional FAA approval will be required.

C. Payment of Fees. Part 187, appendix A, prescribes the methodology for computation of fees for certification services performed outside the United States. The actual fees are in FAA AC 187-1, Flight Standards Service Schedule of Charges Outside the United States. These fees

should be charged to all applicants for such services outside the U.S., whether U.S. citizens or foreign nationals. The payment of fees is addressed in §187.15. The fees are payable to the FAA by check, money order, wire transfers, or draft, payable in U. S. currency and drawn on a U.S. bank prior to the provision of any service. Applicants shall pay bank processing charges when such charges are assessed by banks on U.S. Government deposits.

D. Any mechanic certificate or rating will remain effective unless it is surrendered, suspended, or revoked. Applicants who do not meet the English requirements of § 65.71(a)(2), shall have their certificates endorsed "Valid only outside the U.S."

SECTION 2. PROCEDURES

1. PREREQUISITE AND COORDINATION REQUIREMENTS.

A. Prerequisites:

- Knowledge of 14 CFR part 65

B. Coordination. As needed, coordinate through the regional office with the International Civil Aviation Organization (ICAO) or the appropriate Civil Airworthiness Authority (CAA).

3. REFERENCES, FORMS, AND JOB AIDS.

A. References (current editions):

- AC 60-28, English Language Skill Standards Required by 14 CFR parts 61, 63, and 65
- AC 65-11, Airframe and Powerplant Mechanics Certification Information
- FAA Order 8300.10, vol. 2, ch. 22, Evaluate Airframe and/or Powerplant Mechanic/Added Rating
- FAA Order 8000.16, U.S. Certification or Designation of Foreign National Airmen, Airman Schools, Examiners, and Repair Station Facilities Outside the United States
- FAA Order 8610.4, Aviation Mechanic Examiner Handbook

B. Forms:

- FAA Form 8610-2, Airman Certificate and/or Rating Application
- Aeronautical Center Form AC 8060-56, Application for Replacement of Lost or Destroyed Airman Certificate(s)
- Computer Generated Airman Test Report (with raised embossed seal)
- Test Planning Sheet
- Temporary Airman Certificate, FAA Form 8060-4

C. Job Aids. None.

5. PROCEDURES.

A. Follow the Guidelines in Volume 2, Chapter 22 to Certificate a Foreign Applicant within the U.S. Follow the additional procedures below to certificate a foreign applicant who will exercise the privileges of the certificate outside the U.S.

B. Establish Positive Identification of the Applicant.

C. Ensure that computerized testing centers are following procedures shown in FAA Order 8080.6 for identification of applicants prior to issuance of materials. Further, when an applicant presents FAA Form 8610.2, inspectors or computerized testing centers shall carefully review the form to ensure authenticity.

D. Require the Applicant to Submit two Originals of FAA Form 8610-2, Airman Certificate and/or Rating Application.

E. Determine the Applicant's Ability to Read, Write, Speak, and Understand the English Language. Applicants who do not meet the above requirements but are employed outside the United States by a U.S. air carrier may be eligible if they present a certified statement (original document) from a company official or supervisor attesting to their employment status. Certificates issued to applicants shall be endorsed "Valid only outside the United States" and ensure the following are accomplished:

(1) The certificated U.S. air carrier has submitted documentation regarding the applicant's employment status and need for certification.

(2) The knowledge test is accomplished in accordance with FAA Order 8080.6, Conduct of Airmen Knowledge Test Via the Computer Medium, current edition, as it relates to applicants who do not read, write, speak, or understand English.

(3) The oral and practical tests are administered by an inspector or examiner in the applicant's language, or through the use of a neutral interpreter selected or accepted by the inspector or examiner.

F. Determine the Applicant's Experience Eligibility. Ensure foreign applicants provide a signed, dated, detailed statement substantiating the specific type and duration of experience.

(1) Determine that these statements come from both an employer and either the airworthiness authority of the country in which the experience was gained or an airworthiness advisor of the International Civil Aviation Organization (ICAO). If there is any question about the validity of the statements, contact the regional office.

(2) Do not accept information that cannot be verified or documented. Require each document presented to verify experience to be a signed and dated original, traceable to the originator.

(3) If the foreign civil authority will not provide the statement listed above, the inspector may determine eligibility through whatever means he/she deems appropriate.

7. TASK OUTCOMES.

A. File PTRS Data Sheet and Test Planning Sheet. Planning Sheet shall be retained in the DME file at the FSDO or IFO.

B. Issue a Certificate/Added Rating, IAW Instructions in Order 8610.4.

(1) Temporary Certificate. After the applicant has successfully met all requirements for the certificate/rating, issue FAA Form 8060-4, Temporary Airman Certificate. The original form must be typewritten. The duplicate for the applicant may be filled out in ink.

(a) Original issuance. If a social security number is not provided by the applicant, enter the word "pending" in Block III. If a social security number is provided, enter the number without dashes or spaces in Block III as the certificate number.

NOTE: When an applicant does not have a SSN, as a foreign applicant, then the application will have the word "none" in the SSN Block. On the temporary the word "pending" is used.

(b) Reissuance. The previously assigned certificate number will continue to be shown in Block III. If a social security number is provided, enter the number without dashes or spaces immediately above the applicant's date of birth. A certificate may be reissued when an airman requests that the certificate number correspond with the social security number.

(2) Fill out the appropriate blocks of FAA Form 8610-2.

(a) When the applicant passes a section, check the "Pass" block and indicate the expiration date. Complete the "FAA Inspector Report" portion of FAA Form 8610-2. Sign the form with the office identifier and date.

(b) Give the applicant the duplicate copy of FAA Form 8610-2, with instructions to retain it until the permanent certificate is issued.

(3) Submit a file to AFS-760 containing the following:

- A typewritten original of FAA Form 8060-4, signed by the issuing inspector or DME
- The original copy of FAA Form 8610-2
- Computer Airman Knowledge Test Report or a valid Airman Test Report (with raised embossed seal)
- A document certifying additional instruction, if the test was retaken within 30 days of the initial test
- AC Form 8060-1, Mechanic Certificate (when adding a rating)

(4) Certification files should be sent as soon as possible to permit the necessary review and processing to take place before the expiration of the temporary certificate. The files should be sent to the following:

Attn: Airman Certification Branch

AFS-760

P.O. Box 25082

C. Deny a Certificate/Added Rating. When the applicant fails any required section of the oral or practical test or does not complete the test, accomplish the following:

(1) Complete the "FAA Inspector Report" portion of FAA Form 8610-2. Check the appropriate block.

(2) Send to Airman Certification Branch, AFS-760, Oklahoma City.

(3) Return the duplicate copy to the applicant as a record of the sections passed or failed.

(4) Return other documents to the applicant, as appropriate.

D. Retest After Failure.

(1) Conduct knowledge retests (FAA Order 8080.6).

(2) Conduct oral and practical retest.

(a) The oral and practical retests must cover all the subject areas in the failed section, as indicated on the application; however, applicants who apply for retest within 60 days of the failure and/or incomplete test to the same DME who gave the failure may, at the option of the DME, be examined in only the subject areas failed on the previous test.

(b) If the applicant fails again, complete FAA Form 8610-2 only for the sections included in the retest. AC Form 8080-2 or a valid Computer Airman Test Report (with raised embossed seal) from the Computer Test Center presented by an unsuccessful applicant for the oral/practical retest must be returned to the applicant with the second original of FAA Form 8610-2.

9. FUTURE ACTIVITIES. Routine surveillance.

CHAPTER 66. APPROVE A RELIABILITY PROGRAM

SECTION 1. BACKGROUND

1. PROGRAM TRACKING AND REPORTING SUBSYSTEM (PTRS) ACTIVITY CODES.

A. Maintenance: 3331 (New)/3332 (Revision)

B. Avionics: 5331

3. OBJECTIVE. This chapter provides guidance for approving Title 14 of the Code of Federal Regulations (14 CFR) parts 121 and 135 reliability programs and providing technical assistance to the certificate holder.

5. GENERAL.

A. This task is performed by the Airworthiness Aviation Safety Inspectors (ASI) and needs to be closely coordinated between both the maintenance and avionics specialties. Approving a reliability program is one of the most complex duties of an Airworthiness ASI and special attention must be given to every element of the proposed program.

B. Reliability programs establish the time limitations or standards for determining intervals between overhauls, inspections, and checks of airframes, engines, propellers, appliances, and emergency equipment. Guidance on the program elements is listed in Advisory Circular (AC) 120-17, Maintenance Program Management Through Reliability Methods, as amended; the Airline/ Manufacturer Maintenance Program Planning Document, MSG-2/3; and/or Maintenance Tasks. It is important that the ASI explains all of the program requirements to the operator/applicant.

7. PRIMARY MAINTENANCE PROCESSES.

A. MSG-2, Primary Maintenance Processes Definitions.

(1) Hard-Time (HT), Overhaul Time Limit, or Part Life-Limit. This is a preventive primary maintenance process that requires a system, component, or appliance be either overhauled periodically (time limits) or removed from service (life-limit). Time limits may only be adjusted based on operating experience or tests, in accordance with (IAW) procedures in the operator's approved reliability program.

(2) On-Condition (OC). This is also a preventive primary maintenance process that requires a system, component, or appliance be inspected periodically or checked against some appropriate physical standard to determine if it can continue in service. The standard ensures that the unit is removed from service before failure during normal operation. These standards may be adjusted based on operating experience or tests, as appropriate, IAW a carrier's approved reliability program or maintenance manual.

(3) Condition Monitoring (CM). MSG-2 introduced condition monitoring. This process is for systems, components, or appliances that have neither HT nor OC maintenance as their primary maintenance process. It is accomplished by appropriate means available to an operator for finding and solving problem areas. The user must control the reliability of systems or equipment based on knowledge gained by analysis of failures or other indications of deteriorations.

B. MSG-3, Maintenance Task Definitions.

(1) Lubrication/Servicing (LU/SV). Any act of lubrication or servicing for the purpose of maintaining inherent design capabilities. The replenishment of the consumable must reduce the rate of functional deterioration.

(2) Operational/Visual Check (OP/VC). Hidden functional failure categories. An operational check is a task to determine if an item is fulfilling its intended purpose. The check does not require quantitative tolerances, but is a failure-finding task. A visual check is an observation to determine that an item is fulfilling its intended purpose and does not require quantitative tolerances. This is a failure-finding task that ensures an adequate availability of the hidden function to reduce the risk of a multiple safety failures and to avoid economic effects of multiple failures and be cost-effective.

(3) Inspection/Functional Check (IN/FC), All Categories.

(a) Inspections.

i. Detailed inspection. An intensive visual examination of a specific structural area, system, installation, or assembly to detect damage, failure, or irregularity. Available lighting is normally supplemented with a direct source of good lighting at an intensity deemed appropriate by the ASI. Inspection aids such as mirrors or magnifying lenses may be used. Surface cleaning and elaborate access procedures may be required.

ii. General visual (surveillance) inspection. A visual examination of an interior or exterior area, installation, or assembly to detect obvious damage, failure, or irregularity. This level of inspection is made under normally available lighting conditions, such as daylight, hangar lighting, flashlight, or drop-light, and may require removal or opening of access panels or doors. Stands,

ladders, or platforms may be required to gain proximity to the area being checked.

iii. Special detailed inspection. An intensive examination of a specific item(s), installation, or assembly to detect damage, failure or irregularity. The examination is likely to make extensive use of specialized inspection techniques and/or equipment. Intricate cleaning and substantial access or disassembly procedures may be required.

(b) Functional Check. A quantitative check to determine if one or more functions of an item perform within specified limits. Reduced resistance to failure must be detectable, and there must be a reasonably consistent interval between a deterioration condition and functional failure.

(4) Restoration (RS), All Categories. That work necessary to return an item to a specific standard. Since restoration may vary from cleaning or replacement of single parts to a complete overhaul, the scope of each assigned restoration task has to be specified.

(5) Discard (DS), All Categories. The removal from service of an item at a specified life limit. Discard tasks are normally applied to so-called single-celled parts such as cartridges, canisters, cylinders, engine disks, or safe-life structural members.

9. NEW AIRCRAFT. The lack of real experience with new aircraft requires a careful, detailed study of their characteristics to determine which components or systems would probably benefit from scheduled maintenance (HT or OC).

A. Special teams of industry and FAA personnel developed the initial maintenance programs for the B-747, DC-10, and L-1011 aircraft. Using the MSG-2 decision analysis, these teams identified potential maintenance tasks and determined which of these tasks must be performed to ensure operating safety or determine essential hidden function protection. The remaining tasks were evaluated to determine if they were economically useful.

B. This evaluation provided a systematic review of the aircraft design so that, in the absence of real experience, the best maintenance process could be employed for each component or system. The B-747, DC-10, and L-1011 aircraft operating experience confirmed the effectiveness of these procedures.

11. DATA COLLECTION SYSTEM.

A. Typical sources of data collection include the following:

- Unscheduled removals
- Confirmed failures
- Pilot reports
- Sampling inspections
- Shop findings
- Functional checks
- Bench checks
- Service difficulty reports
- Mechanical Interruption Summaries
- Other sources the operator considers appropriate

B. Not all of these sources may be covered in each and every program. However, the availability of additional information provides the operator with an invaluable source of operating history for determining success or failure in meeting program goals.

C. Data collected must be accurate and factual to support a high degree of confidence for any derived conclusion. It must be obtained from units functioning under operational conditions and must relate directly to the established levels of performance.

13. DATA ANALYSIS AND THE APPLICATION TO MAINTENANCE CONTROLS. The objective of data analysis is to recognize the need for corrective action, establish what corrective action is needed, and determine the effectiveness of that action.

A. Data Analysis Systems. Data analysis is the process of evaluating mechanical performance data to identify characteristics indicating a need for program adjustment, revising maintenance practices, improving (modifying) hardware, etc. The first step in analysis is to compare or measure data against acceptable performance levels. The standard may be a running average, tabulation of removal rates for past periods, graphs, charts, or any other means of depicting a "norm."

B. Programs Incorporating Statistical Performance Standards ("Alert" Programs).

(1) Reliability programs developed under AC 120-17, as amended, and earlier criteria use parameters for reliability analysis such as delays per 100 departures for an aircraft system. They incorporate performance standards as described in paragraph 15 of this section. These standards define acceptable performance.

(2) System performance data usually is reinforced by component removal or confirmed failure data. The condition-monitored process can be readily accommodated by this type of program.

C. Programs Using Other Analysis Standards ("Non-alert" Programs). Data compiled to assist in the day-to-day operation of the maintenance program may be used effectively as a basis for continuous mechanical performance analysis.

(1) Mechanical interruption summaries, flight record review, engine monitoring reports, incident reports, and engine and component analysis reports are examples of

the types of information suitable for this monitoring method. The number and range of inputs must be sufficient to provide a basis for analysis equivalent to the statistical programs standards.

(2) Actuarial analysis should be conducted periodically to ensure that the current process classifications are correct.

15. PERFORMANCE STANDARDS.

A. The following factors are acceptable for establishing or revising a reliability program's performance standards:

(1) Past and present individual operator and industry experience. If industry experience is used, the program must include a provision for reviewing the standards after the operator has gained 1 year of operating experience.

(2) Performance analysis of similar equipment currently in service.

(3) Aircraft or equipment manufacturers' reliability engineering analysis.

(4) History of experience where reliability standards were acceptable to the airline industry.

B. If the program does not incorporate statistical performance standards or significantly deviates from the instructions in AC 120-17.

(1) Performance measurements expressed numerically in terms of:

- System or component failure
- Pilot reports
- Delays
- A/C operating hours
- Number of landings
- Cycles
- Other

(2) Standards adjusted to:

- Operator's experience
- Seasonal
- Environmental

(3) Procedures for periodic review:

- Upward adjustment
- Downward adjustment

(4) Monitoring procedure:

- New aircraft
- Computing performance standards

(5) No statistical performance standards:

- Do not approve program
- By letter submit package to region for review/ forward to AFS-300, Washington, DC

(6) Also any significant deviation from AC 120-17, as amended.

17. EVALUATING PROGRAM DISPLAYS AND STATUS OF CORRECTIVE ACTION PROGRAMS AND REPORTING.

A. Corrective Action System. Corrective action should be positive enough to restore performance effectively to an acceptable level within a reasonable time. The corrective action system must include provisions for the following:

(1) Notifying the organization responsible for taking the action.

(2) Obtaining periodic feedback until performance reaches an acceptable level.

(3) Encompassing methods that have been established for the overall maintenance program, such as work orders, special inspection procedures, engineering orders, and technical standards.

(4) Critical failures in which loss of function or the secondary effects of failure could affect the airworthiness of the aircraft.

B. Statistical Performance Standards System.

(1) A performance measurement expressed numerically in terms of system or component failure, pilot report, delay, etc. (bracketed by hours of aircraft operation, number of landing, operating cycles, or other exposure measurement) serves as the basis for the standard. Control limits or alert values are usually based on accepted statistical methods, such as standard deviations or the Poisson distribution.

(2) Some applications use an average or base line method. The standard should be adjustable and should reflect the operator's experience during seasonal and environmental condition changes and variations.

(3) The program should include procedures for periodic review and adjusting the program as appropriate.

(4) The program should include procedures for monitoring new aircraft until sufficient operating experience is available to compute performance standards, normally 1 year.

C. Data Display and Reporting System.

(1) Operators with programs incorporating statistical performance standards ("alert" programs) should develop a monthly report, with appropriate data displays summarizing the previous month's activity. This report should include the following:

(a) All aircraft systems controlled by the program in sufficient depth to enable the FAA and other recipients to evaluate the effectiveness of the total maintenance program.

(b) Systems that exceeded the established performance standards and discussion of what action has been taken or planned.

(c) An explanation of changes that have been made or are planned in the aircraft maintenance program, including changes in maintenance and inspection intervals and changes from one maintenance process/task to another.

(d) A discussion of continuing over-alert conditions carried forward from previous reports.

(e) The progress of corrective action programs.

(2) Programs using other analytical standards ("non-alert" programs) should consolidate or summarize significant reports used in controlling their program to provide for evaluating program effectiveness. These reports may be computer printouts, summaries, or other forms. A typical program of this type reports the following information:

- Mechanical Interruption Summary (MIS) reports
- Mechanical Reliability Reports (MRR)
- Maintenance process/task and interval assignments (master specification)
- Weekly update to the maintenance process and interval assignments
- Daily repetitive item listing by aircraft
- Monthly component premature removal report, including removal rate
- Monthly engine shutdown and removal report
- Quarterly engine reliability analysis report
- Engine threshold adjustment report
- Worksheets for maintenance process/task and interval changes (not provided to the FAA but the FAA approves the process/task changes)

D. Program Review System. The program should include a procedure for revision which is compatible with FAA approvals. The procedures should identify organizational elements involved in the revision process and the authority. The program areas requiring formal FAA approval include any changes to the program that involve the following:

- Procedures relating to reliability measurement/ performance standards
- Data collection
- Data analysis methods and application to the total maintenance program
- Process/task changes
- Adding or deleting components/systems
- Adding or deleting aircraft types
- Procedural and organizational changes concerning administration of the program

19. INTERVAL ADJUSTMENTS, PROCESS, AND/OR TASK CHANGES.

A. Maintenance Interval Adjustment, Process Category, and/or Task Change System. Reliability programs provide an operator with a method of adjusting maintenance, inspection, and overhaul intervals without prior FAA approval. This does not relieve the operator or the FAA of their responsibilities regarding the effects of the program on safety.

NOTE: If the ASI has any doubt as to the soundness of a requested maintenance interval adjustment or task change, the inspector should coordinate the request with the appropriate Aircraft Certification Office.

B. Procedures. Procedures for adjusting maintenance intervals must be included in the program. Maintenance interval adjustments should not interfere with ongoing corrective action. There should be special procedures for escalating systems or components whose current performance exceeds control limits.

(1) Typical considerations for adjusting HT or OC intervals include the following:

- Sampling
- Actuarial studies
- Unit performance
- Inspector or maintenance findings
- Pilot reports

(2) Methods for adjusting aircraft/engine check intervals should be included if the program controls these intervals. Sampling criteria should be specified.

C. Classifying the Maintenance Processes and/or Tasks. The program should include procedures for the classification and assignment of maintenance processes and/ or tasks and for changing from one process and/or task to another. Refer to MSG-2 for maintenance processes and MSG-3 for maintenance tasks. It should include the authority and procedures for changing maintenance specifications and the related documents to reflect the interval adjustments or process and/or task change.

SECTION 2. PROCEDURES

1. PREREQUISITES AND COORDINATION REQUIREMENTS.

A. Prerequisites:

- Knowledge of the regulatory requirements of parts 121 and/or 135
- Successful completion of the Airworthiness Inspector's Indoctrination Course or equivalent and the FAA Aircraft Maintenance Reliability Program Course
- Previous experience with the type of equipment the operator/applicant proposes to include in the program

B. Coordination. This task requires coordination between the Airworthiness ASIs, to include both maintenance and avionics. Further coordination may be required with regional and national headquarters.

3. REFERENCES, FORMS, AND JOB AIDS.

A. References:

- AC 120-17, Maintenance Control by Reliability Methods, as amended
- MSG-2/3 Documents
- FAA Order 8300.10, vol. 2, ch. 220 and Appendix 5

B. Forms:

- FAA Form 8400-8, Operations Specifications

C. Job Aids:

- Automated operations specifications (OpSpecs) checklists and worksheets

5. PROCEDURES.

A. Meet With Operator/Applicant. In addition to providing AC 120-17, as amended, inform the operator/applicant of the following program requirements:

- Program application
- Organizational structure
- Data collection system
- Methods of data analysis and application to maintenance control
- Procedures for establishing and revising performance standards
- Definition of significant terms
- Program displays and status of corrective action programs
- Procedures for program revision
- Procedures for maintenance control changes

B. Evaluate the Program Application Procedures. When the applicant submits a formal program, ensure that the program document defines the following:

(1) Components, systems, or complete aircraft controlled by the program. Individual systems and/or components are identified by Air Transport Association (ATA) Specification 100. A list of all components controlled by the program must be included as an appendix to the program document or included by reference (e.g., time limits, manuals, or computer report).

(2) The portion of the maintenance program controlled by the reliability program (e.g., overhaul and/or inspection, check periods).

C. Evaluate Organizational Structure. The structure must be described adequately and address committee membership, if appropriate, and meeting frequency. Ensure that the reliability program includes an organizational chart that shows the following:

(1) The relationships among organizational elements responsible for administering the program.

(2) The two organizational elements responsible for approving changes to maintenance controls and specifying the duties and responsibilities for initiating maintenance program revisions.

NOTE: One of the two organizations must have inspection or quality control responsibility or have overall program responsibility.

D. Evaluate the Organizational Responsibilities.

(1) Determine if the reliability program document addresses the following:

(a) The method of exchanging information among organizational elements. This may be displayed in a diagram.

(b) Activities and responsibilities of each organizational element and/or reliability control committee for enforcing policy and ensuring corrective action.

(2) Ensure that authority is delegated to each organizational element to enforce policy.

E. Evaluate the Data Collection System.

(1) Ensure that the reliability document fully describes the data collection system for the aircraft, component, and/or systems to be controlled. The following must be addressed:

- Flow of information
- Identification of sources of information
- Steps of data development from source to analysis
- Organizational responsibilities for each step of data development

(2) Ensure that the document includes samples of data to be collected, such as:

- Powerplant disassembly and inspection reports
- Component condition reports
- Mechanical delay and cancellation reports
- Flight record reports
- Premature removal reports
- In-flight shutdowns
- Confirmed failure reports
- Internal leakage reports
- Engine shutdown reports.

(3) Ensure that the reliability document includes a graphic portrayal of program operations. It must be a closed loop and show source data, data collection, and analysis.

F. Evaluate the Methods of Data Analysis and Application to Maintenance Controls. Ensure that the data analysis system includes the following:

(1) One or more of the types of action appropriate to the trend or level of reliability experienced, including:

(a) Actuarial or engineering studies employed to determine a need for maintenance program changes;

(b) Maintenance program changes involving inspection frequency and content, functional checks, overhaul procedures, and time limits;

(c) Aircraft, aircraft system, or component modification or repair; and/or

(d) Changes in operating procedures and techniques.

(2) The effects on maintenance controls such as overhaul time, inspection and check periods, and overhaul and/or inspection procedures.

(3) Procedures for evaluating critical failures as they occur.

(4) Documentation used to support and initiate changes to the maintenance program, including modifications, special inspections, or fleet campaigns. The program must reference the operator's manual procedures for handling these documents.

(5) A corrective action program that shows the results of corrective actions in a reasonable period of time. Depending on the effect on safety, a "reasonable" period of time can vary from immediate to an overhaul cycle period. Each corrective action plan or program must be made a matter of record and include a planned completion date. Samples of forms used to implement these actions must be included in the program document.

(6) A description of statistical techniques used to determine operating reliability levels.

G. Evaluate the Procedures for Establishing and Revising Performance Standards.

(1) Ensure that each program includes one of the following for each aircraft system and/or component controlled by the program:

- Initial performance standards defining the area of acceptable reliability
- Methods, data, and a schedule to establish the performance standard

(2) Ensure that the performance standard is responsive and sensitive to the level of reliability experienced and is stable without being fixed. The standard should not be so high that abnormal variations would not cause an alert or so low that it is constantly exceeded in spite of the best known corrective action measures.

(3) Ensure that the procedures specify the organizational elements responsible for monitoring and revising the performance standard, as well as when and how to revise the standard.

H. Evaluate Definitions. Verify that each program clearly defines all significant terms used in the program. Definitions must reflect their intended use in the program and will therefore vary from program to program. Acronyms and abbreviations unique to the program also must be defined.

I. Evaluate Program Displays and Status of Corrective Action Programs and Reporting.

(1) Ensure that the program describes reports, charts, and graphs used to document operating experience. Responsibilities for these reports must be established and the reporting elements must be clearly identified and described.

(2) Ensure that the program displays containing the essential information for each aircraft, aircraft system, and component controlled by the program are addressed. Each system and component must be identified by the appropriate ATA Specification 100 system code number.

(3) Ensure that the program includes displays showing:

- Performance trends
- The current month's performance
- A minimum of 12 months' experience
- Reliability performance standards ("alert" values)

(4) The program must include the status of corrective action programs. This includes all corrective action programs implemented since the last reporting period.

J. Evaluate the Interval Adjustments and Process and/or Task Changes System.

(1) Review the change system procedures. Ensure that there are special procedures for escalating systems or

components whose current performance exceeds control limits.

(2) Ensure that the program does not allow for the maintenance interval adjustment of any Certification Maintenance Requirements (CMR) items. CMRs are part of the certification basis. No CMR item may be escalated through the operator maintenance/reliability program. CMRs are the responsibility of FAA engineering as far as approval and escalation.

NOTE: The operator may not use its reliability program as a basis for adjusting the repeat interval for its corrosion prevention and control program; however, the operator may use the reliability program for recording data for later submission to the FAA to help substantiate repeat interval changes.

(3) Ensure that the program includes provisions for notifying the Certificate Holding District Office (CHDO) when changes are made.

K. Evaluate the Procedures for Program Revisions. The reliability document must accomplish the following:

(1) Identify and isolate areas which require FAA approval for program revision, including the following:

- Reliability measurement
- Changes involving performance standards, including instructions relating to the development of these standards
- Data collection system
- Data analysis methods and application to maintenance program
- Any procedural or organizational change concerning program administration

(2) If the operator proposes that the FAA approve all revisions to the program document, isolation of those areas requiring FAA approval is not required. However, the document must recognize each of the above requirements and must contain procedures for adequately administering and implementing changes required by these actions.

(3) Identify the organizational element responsible for approving amendments to the program.

(4) Provide a periodic review to determine that the established performance standard is still realistic.

(5) Provide procedures for distributing approved revisions.

(6) Reference the operator's manual and provide the overhaul and inspection periods, work content, and other maintenance program activities controlled by the program.

L. Evaluate the Procedures for Maintenance Control Changes. Ensure that the reliability program document addresses the following:

(1) Procedures for maintenance control changes to the reliability program.

(2) The organizational elements responsible for preparing substantiation reports to justify maintenance control changes. At least two separate organizational elements are required, one of which exercises inspection or quality control responsibility for the operator.

(3) Processes used to specify maintenance control changes (e.g., sampling, functional checks, bench checks, decision tree analysis, and unscheduled removal).

(4) Procedures covering all maintenance program activities controlled by the program.

(5) Procedures for amending OpSpecs, as required.

(6) Procedures to ensure maintenance interval adjustments are not interfering with ongoing corrective actions.

(7) Critical failures and procedures for taking corrective action.

(8) Procedures for notifying the CHDO, when increased time limit adjustments or other program adjustments are addressed.

M. Analyze Reliability Program Evaluation. Upon completion, record all deficiencies noted. Determine the appropriate corrective action(s) to be taken. Deficiencies noted in the program must be given to the operator/applicant in writing.

7. TASK OUTCOMES.

A. File PTRS Data Sheet.

B. Successful completion of this task will result in the approval of the operator/applicant's reliability program and OpSpecs IAW volume 2, chapter 84, FAR Part 121/135 Operations Specifications.

C. Document Task. File all supporting paperwork in the operator/applicant's office file.

9. FUTURE ACTIVITIES. Normal surveillance.

CHAPTER 167. PROCESS THE APPLICATION OF A REPAIR STATION FOR ACCEPTANCE UNDER JAR 145

SECTION 1. BACKGROUND

1. PROGRAM TRACKING AND REPORTING SUBSYSTEM (PTRS) ACTIVITY CODES.

A. Maintenance: 3377, 3669, 3771

B. Avionics: 5377, 5669, 5771

3. OBJECTIVE. This chapter describes the procedures to process an application of a repair station certificated under Title 14 of the Code of Federal Regulations (14 CFR) part 145 for acceptance under Joint Aviation Requirements (JAR) 145.

5. GENERAL.

A. JAR 145 is a set of requirements established by the Joint Aviation Authorities (JAA) that are similar to 14 CFR part 145. JAR 145 has been adopted by all JAA-member National Aviation Authorities (NAA) and includes those requirements that a repair station must comply with to qualify as a JAA-accepted maintenance organization. JAR 145 also includes requirements specifying that the maintenance of all aircraft registered in JAA-member countries and used in commercial air transport operations be performed by a maintenance organization approved or accepted by the JAA.

B. A repair station certificated under 14 CFR part 145 located in the U.S. may qualify for acceptance by the JAA as a maintenance organization in accordance with (IAW) JAR 145.10. JAR 145.10 permits organizations located outside the territories of the JAA-member countries to be accepted when working IAW the conditions detailed in an international maintenance agreement (for example, a Bilateral Aviation Safety Agreement (BASA) containing Maintenance Implementation Procedures (MIP)). JAR 145.10 also permits these organizations to be accepted before an international maintenance agreement has been signed, subject to certain conditions and limitations.

C. As a result of these provisions, a repair station certificated under 14 CFR part 145 may be accepted by the JAA on behalf of the JAA-member NAA if the repair station complies with specific additional conditions beyond those required by 14 CFR part 145. These conditions are specified in the MIP to a BASA and are further described in JAA Maintenance Leaflet No. 22, JAA Acceptance of American Repair Stations. A repair station accepted by the JAA may perform work on any aircraft registered in a JAA-member country. A repair station accepted by the JAA has the acceptance of all JAA-member NAA's and does not require independent certification by a JAA-member NAA.

D. The U.S. has concluded BASA's with the following JAA-member countries: Austria, France, Germany, Ireland, the Netherlands, Sweden, Switzerland, and the United Kingdom. Of these countries, an MIP only has been concluded with Germany.

7. JAR 145 ACCEPTANCE PROCESS. The JAR 145 acceptance process provides for interaction between the applicant and the FAA during initial inquiry, JAR 145 acceptance, and the renewal process. It ensures that the intended methods of compliance with JAR 145 are reviewed, evaluated, and tested thoroughly. The JAR 145 acceptance process consists of the following five phases:

- Preapplication Phase
- Formal Application Phase
- Document Compliance Phase
- Demonstration and Inspection Phase
- JAA Acceptance Phase

A. Preapplication Phase.

(1) Preliminary Inquiry. A repair station certificated under 14 CFR part 145 seeking to apply for initial acceptance or renewal of acceptance under JAR 145 should inform the Flight Standards District Office (FSDO) with certificate oversight responsibility of its intent to seek JAA acceptance under JAR 145.

(2) Inspector Response. The Aviation Safety Inspector processing a request for JAR 145 initial acceptance or renewal should be the Principal Inspector (PI), Principal Maintenance Inspector (PMI), or Principal Avionics Inspector (PAI) for the applicant. Upon receipt of the preliminary inquiry, the inspector should send an instruction packet to the applicant that includes Advisory Circular (AC) 145-8, Acceptance of Repair Stations by the JAA and JAA-member NAA's Under the Maintenance Implementation Procedures of a Bilateral Aviation Safety Agreement, and JAA Maintenance Leaflet No. 22. JAA Maintenance Leaflet No. 22 describes the conditions the applicant must meet for JAA acceptance and contains an application for JAA acceptance (JAA Form 16) and a sample JAA Supplement. An inspector need not provide these documents to a repair station seeking renewal of

acceptance if the documents have not been revised since the issuance of the repair station's previous acceptance.

B. Document Preparation/Preapplication Discussions. After the applicant has reviewed the information sent by the inspector, preapplication discussions may be held to resolve any questions the applicant has regarding the application package. Because the applicant already has a 14 CFR part 145 certificate, the inspector should be familiar with the applicant. Any questions regarding the preparation of the application may be resolved verbally. During preapplication discussions with a new applicant, the requirements for the completion of the JAA Supplement to the applicant's Inspection Procedures Manual (IPM) should be discussed specifically. The applicant should be encouraged to use JAA Maintenance Leaflet No. 22 for guidance in developing the JAA Supplement to their IPM. The applicant must fill out JAA Form 16, obtain evidence of its need for JAA acceptance, and prepare their own JAA Supplement based on the sample contained in JAA Maintenance Leaflet No. 22. The applicant must also make any required payments.

C. Formal Application Phase. To begin the formal application phase, the inspector will receive the applicant's completed JAA Form 16, JAA Supplement, and evidence of need for JAA acceptance. The inspector should meet with the applicant after receiving the formal application package. All questions regarding the proposed operations as a JAA-accepted maintenance organization, the formal application, and the JAA Supplement should be resolved in this phase.

D. Document Compliance Phase. In this phase, the application and JAA Supplement are reviewed by the inspector thoroughly for acceptance or rejection. This review ensures conformity with applicable JAA requirements, special conditions, and safe operating practices. This phase is performed by the inspector in the FSDO.

E. Demonstration and Inspection Phase. In this phase, the inspector verifies that the applicant's proposed procedures are effective and that its facilities and equipment meet Federal Aviation Administration (FAA) regulatory requirements and JAA special conditions before forwarding the application to the JAA for acceptance.

F. JAA Acceptance Phase. Once the applicant has met the regulatory requirements of 14 CFR part 145 and the JAA special conditions, the inspector will recommend JAA acceptance of the applicant on JAA Form 9. The inspector will send JAA Form 16 and copies of the applicant's 14 CFR part 145 certificate and FAA Operations Specifications (OpSpecs) to the JAA Maintenance Division for issuance of JAA acceptance under JAR 145. The JAA will issue the acceptance directly to the applicant and will provide a copy to the inspector. A JAA acceptance is valid for two years and may be renewed for subsequent two-year periods.

9. CONTINUED VALIDITY OF JAA/NAA ACCEPTANCE.

A. Continued validity of a repair station's JAA acceptance is dependent upon the repair station's efforts to meet the conditions for JAA acceptance, including compliance with 14 CFR part 145 and the JAA special conditions and successful completion of regularly scheduled FAA inspections. The FAA, the JAA, and the JAA-member NAA must be satisfied that the repair station meets these conditions.

B. During the two-year period the repair station's JAA acceptance is valid, the inspector will report to the JAA any change in the status of the repair station's 14 CFR part 145 certificate, such as its surrender, suspension, or revocation, and any serious failure of the repair station to comply with 14 CFR part 145 that could result in enforcement action. The inspector will report this information on JAA Form 9. For reporting of uncorrected findings or discrepancies, the inspector will leave the date corrected and file reference columns blank. Revocation of a repair station's 14 CFR part 145 certificate automatically invalidates its JAA acceptance.

NOTE: Notification to the JAA of a violation does not relieve an inspector of the responsibility to process a violation for FAA enforcement action. An FAA inspector, however, cannot process an action for enforcement if the basis for the action is a violation of the JAR or JAA special conditions but not a violation of the 14 CFR.

C. The inspector will also report to the JAA any failure of the repair station to comply with its JAA Supplement and any other significant findings and discrepancies. This notification is especially critical in those instances when a repair station fails to use design engineering data approved by the JAA for major repairs or when a repair station fails to carry out internal audits and maintain an independent quality monitoring system. These reports for the JAA are made on JAA Form 9.

D. If the JAA or the JAA-member NAA determines there is a safety failure or a significant failure to comply with the conditions of acceptance, there may be a complete or partial revocation of a repair station's JAR 145 acceptance certificate.

E. Any repair station wishing to contest the revocation of its acceptance certificate will have the right of appeal within 21 days against the JAA-member NAA by persons not associated with the revocation or limitation of acceptance subject to evidence being submitted at the time of the appeal. Any appeal to the JAA is addressed to the attention of the JAA Maintenance Director. The repair station's JAA acceptance will remain in temporary

suspension awaiting the outcome of any appeal. Should a special audit be necessary, the repair station will incur a separate fee for the cost of this audit. There is no right of appeal to the FAA when the JAA revokes or limits a repair station's JAR 145 acceptance.

11. ACCEPTANCE OF AIR CARRIER LINE STATIONS. While the JAR 145 acceptance procedure primarily is intended for the acceptance of 14 CFR part 145 certificated repair stations located in the U.S., it can be extended to the line stations of a U.S. air carrier that holds a 14 CFR part 145 certificate. U.S. air carrier line stations located in the U.S. can receive JAA acceptance if the air carrier holds a 14 CFR part 145 certificate for at least one of its base maintenance facilities that is valid for all operated aircraft types, and is able to show that its quality monitoring system covers operations conducted under both certificates and at the line stations. The line stations of a U.S. air carrier located outside the U.S. should submit their request for JAA acceptance to their PMI. The PMI will then contact the JAA Headquarters Division of Maintenance and confirm that the foreign line station is acceptable to the JAA.

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SECTION 2. PROCEDURES

1. PREREQUISITES AND COORDINATION REQUIREMENTS.

A. Prerequisites:

- Knowledge of the regulatory requirements of 14 CFR parts 43 and 145
- Knowledge of the requirements of JAA Maintenance Leaflet No. 22
- Successful completion of the Airworthiness Inspector Indoctrination Course or equivalent
- Successful completion of the JAR 145 Application to Domestic Repair Stations Training computer-based instruction
- Previous experience with certification or surveillance of 14 CFR part 145 repair stations

B. Coordination. This task requires coordination with the following:

- Applicant (repair station)
- Applicant's PMI or PAI
- FAA Regional JAA Coordinator
- FAA regional and district offices, as appropriate

3. REFERENCES, FORMS, AND JOB AIDS.

A. References:

- 14 CFR parts 43 and 145
- FAA Order 8300.10, Airworthiness Inspector's Handbook, vol. 2, chapters 161, 162, 164, 168, and 169
- JAA Maintenance Leaflet No. 22, JAA Acceptance of American Repair Stations
- AC 145-8, Acceptance of Repair Stations by the JAA and JAA-Member NAA's Under the Maintenance Implementation Procedures of a Bilateral Aviation Safety Agreement

B. Forms:

- FAA Form 8000-4, Air Agency Certificate
- FAA Form 8000-4-1 or FAA Form 8000-8, Repair Station Operations Specifications
- JAA Form 9, FAA Status Report on a 14 CFR Part 145 Repair Station JAA Accepted or Applicant for JAA Acceptance
- JAA Form 16, USA Repair Station Application for Initial/Renewal/Amendment of JAA Acceptance IAW JAR 145

C. Job Aids. None.

5. PREAPPLICATION PHASE.

A. Respond to the Preliminary Inquiry.

(1) Upon receipt of a preliminary inquiry from a repair station seeking to apply for initial acceptance under JAR 145, the PI should send the applicant an application packet that includes AC 145-8 and JAA Maintenance Leaflet No. 22. The PI does not need to provide these documents to an applicant seeking renewal of its JAA acceptance if the documents have not been revised since the issuance of the applicant's previous acceptance. JAA Maintenance Leaflet No. 22 includes the following:

- Guidance on complying with JAA Special Conditions
- A sample JAA Supplement

(2) The preliminary inquiry may be made electronically or by letter or facsimile. An applicant is not required to submit an FAA Form 8400-6, Preapplication Statement of Intent (PASI).

NOTE: An applicant seeking acceptance under JAR 145 must hold a valid repair station certificate issued under 14 CFR part 145 and be located in the U.S. An applicant may not apply concurrently for a repair station certificate and JAA acceptance.

B. Conduct Preapplication Discussions. An applicant should conduct a thorough review of the material contained in the application packet to determine the personnel, facility, equipment, procedural, and documentation requirements they must address. After the applicant has reviewed the packet, the inspector should resolve any questions the applicant may have regarding JAA requirements. The applicant already has a 14 CFR part 145 certificate; therefore, the inspector should be familiar with the applicant, and any questions regarding the preparation of the application may be resolved verbally.

(1) Completion of the JAA Supplement. During any preapplication discussions, the requirements for the completion of the JAA Supplement to the applicant's IPM should be reviewed. The applicant should be encouraged to use JAA Maintenance Leaflet No. 22 for guidance in developing the JAA Supplement to its IPM. Guidance for evaluating a JAA Supplement is contained in volume 2, chapter 168. The JAA Supplement should allow the user to understand its content without further explanation and must not contradict any regulatory requirements.

NOTE: It is the applicant's responsibility to develop a supplement that ensures safe operating practices and compliance with the JAA requirements and guidance material. The inspector can offer suggestions for improvement but must not write the material.

(2) Evidence of Need. The applicant should obtain evidence of their need for JAA acceptance. This evidence may be a letter of intent, contract, or work order from a

JAR 145-approved maintenance organization, a JAA-accepted 14 CFR part 145 repair station located in the U.S., a JAA-accepted Transport Canada Civil Aviation AM573 certificated maintenance organization located in Canada, or a European airline or air taxi operation.

(3) JAA Form 16 and Payments. The applicant should complete JAA Form 16 and submit any required payments.

7. FORMAL APPLICATION PHASE.

A. Receive the Formal Application. The PI must ensure all documents have been submitted and are complete.

(1) Initial Application. For an initial application for JAA acceptance, the applicant must submit JAA Form 16 in duplicate. The applicant also should submit two copies of their JAA Supplement to their IPM and evidence of their need for JAA acceptance. The proposed JAA Supplement should conform with the sample JAA Supplement contained in JAA Maintenance Leaflet No. 22.

(2) Renewal of Acceptance. For a renewal of JAA acceptance, the applicant must submit JAA Form 16 in duplicate and evidence of their continued need for JAA acceptance. The applicant should not submit a new JAA Supplement if their current procedures and activities are reflected in their current supplement and the document has been submitted previously to the FAA. An applicant seeking renewal should check that their JAA Supplement reflects their current procedures and activities. Any changes will require a revision of the supplement and resubmission to the FAA. All documentation submitted by an applicant seeking renewal, including, if appropriate, any amendment to its JAA Supplement, should be sent to the supervising FSDO at least 60 days before the expiration of their current JAA acceptance. Unless significant changes have taken place since the applicant's last JAA acceptance, this will ensure continuity of the applicant's JAA acceptance.

(3) Amendment of Acceptance. The FAA procedures for processing a request for an amendment of JAA acceptance are similar to those used to process a request for initial JAA acceptance, except that evidence of the applicant's need for JAA acceptance does not need to be submitted. The applicant must submit two copies of JAA Form 16 and any corresponding revisions to their JAA Supplement. An amendment of acceptance is necessary for changes to a repair station's name, ownership, location, or ratings.

NOTE: Revisions to the repair station's JAA Supplement that reflect changed procedures, but do not change the nature of the repair station's JAR 145 acceptance, must be submitted by the repair station to the inspector for review before implementation. Submission of JAA Form 16 is not required for such revisions.

(4) Fees. For an applicant seeking initial JAA acceptance, the initial fee specified on the current version of JAA Form 16 should be sent to the JAA account specified on the form at least 30 days before the date initial acceptance is needed. For an applicant seeking renewal of JAA acceptance, the renewal fee should be sent to the same account at least 30 days before the expiration of the current acceptance certificate. Electronic transfers should quote the information on page 2 of JAA Form 16. The fee transfer information may also be obtained from the JAA web site "http://www.jaa.nl/maintenance/documents/tgl_frame.html. The fees are nonrefundable. No fee is required for the amendment of an existing JAA acceptance; therefore, the fee section of JAA Form 16 is not applicable.

NOTE: The inspector should ensure that the applicant is aware that application for JAA acceptance requires payment of a fee; however, the inspector is not required to determine if the applicant has paid the fee.

B. Evaluate the Application Package. The inspector must determine whether to continue with the JAA acceptance process based on an initial survey of the application package. The inspector should ensure the applicant has submitted a completed JAA Form 16, JAA Supplement, and evidence of its need for JAA acceptance, if applicable.

NOTE: JAA acceptance will not permit an applicant to perform work outside the scope of their current 14 CFR part 145 rating.

C. Conduct Further Application Discussions. Any open questions concerning the package must be answered before proceeding to the next phase. This can be accomplished through meetings, correspondence, or any other effective means.

9. DOCUMENT COMPLIANCE PHASE.

A. Review the Application Package. The inspector must review the content of each submitted document for compliance with JAA requirements. The JAA Supplement to the applicant's IPM should be reviewed IAW JAA Maintenance Leaflet No. 22 (see volume 2, chapter 168 of this order to determine the requirements of the JAA Supplement). The inspector should review the applicant's JAA Form 16 for completion and ensure that evidence of the applicant's need for JAA acceptance has been included, if required.

B. Document Any Deficiencies. If deficiencies are found in any document, the inspector should return it to the applicant with a letter outlining the deficient areas. The inspector also should inform the applicant that the application process will not continue until all document deficiencies have been corrected.

11. DEMONSTRATION AND INSPECTION PHASE.

A. Initial Acceptance.

(1) The assigned inspector will perform an inspection of the applicant for compliance with 14 CFR parts 43 and 145 and the JAA Supplement. The inspector is not required to check for compliance with 14 CFR parts 43 and 145 if the applicant was subject to an inspection within the past 90 days and no findings or discrepancies were found.

(2) The inspector must review the applicant's compliance with those items specified on JAA Form 9, specifically the following:

- The applicant complies with 14 CFR part 145
- The applicant complies with 14 CFR part 43
- FAA access to the applicant is satisfactory
- The applicant's JAA Supplement contains the signature of the organization's current accountable manager
- Work orders used by the applicant are clear
- Work orders used by the applicant are followed
- FAA-approved data is used, except when the use of JAA-member NAA data is required
- FAA Airworthiness Directives (AD) are used on original U.S. type-certificated products
- Foreign AD's are used on original foreign type-certificated products
- Additional JAA-member NAA AD's are used on any type-certificated product
- Major repairs performed on JAA products are JAA-member NAA-approved
- Major alterations performed on JAA products are JAA-member NAA-approved
- Component maintenance releases are complete
- FAA Form 8130-3 is used for component releases
- The applicant is aware of Airworthiness Certificate validity
- Aircraft maintenance releases are complete
- The applicant complies with procedures to report serious defects to the JAA
- The applicant's Quality Monitoring System is working
- JAA-regulated aircraft are hangared during the performance of work
- The aircraft components used comply with the requirements of appendix 4 to the applicant's JAA Supplement

(3) The inspector will also perform the following:

(a) Confirm that the applicant's JAA Supplement generally is available throughout the facility; and

(b) Confirm whether any work has been performed for a JAA customer since the last inspection. If work has been or currently is being performed for a JAA customer, the inspector will:

- Sample the work for satisfactory standards and the associated maintenance records for clarity and completeness, or if the product has been returned to the customer, sample the associated maintenance records. The inspector should pay particular attention to the approved data used for major repairs and modifications for aircraft components and ensure that an FAA Form 8130-3 approval for return-to-service document always is issued by the applicant.
- Evidence of need shown.
- Confirm that aircraft maintenance only is performed in the hangar, except in the case of line maintenance performed by an applicant also operating as a 14 CFR part 121 air carrier.
- Confirm that the applicant is performing internal quality audits and correcting any findings or discrepancies identified.
- When reviewing the findings of the repair station's Quality Monitoring System (QMS) internal quality audits findings, the inspector should regard the QMS findings as a self-disclosure process and should not process violations on these findings. The inspector should recommend to the repair station that they submit the identified findings in accordance with FAA voluntary disclosure procedures. However, if the inspector notes findings that represent intentional violations or systemic problems within the repair station, normal FAA investigation procedures should be followed.

B. Renewal of Acceptance.

(1) For a repair station seeking renewal of its JAR 145 acceptance, the inspector must ensure the repair station has been subject to two complete inspections during the preceding two-year period to determine compliance with 14 CFR part 145 and JAA Special Conditions. The inspector should identify the dates of each annual inspection

on JAA Form 9 in the block that states " FAA Annual Audits." Inspections conducted before the effective date of this chapter do not need to indicate compliance with JAA Special Conditions. Before completing JAR Form 9, the inspector must be satisfied that the repair station is in compliance with both 14 CFR parts 43 and 145, and the JAA Supplement conditions. Any significant findings/ discrepancies found during the preceding two-year period must be listed together with the corrective action taken on JAR Form 9 and forwarded to the JAA Maintenance Division with a copy to the FAA Regional JAA Coordinator.

(2) If any repair station elects not to renew their JAA acceptance, the PMI/PAI will complete a JAA Form 9 with the name, address, and certificate number in the appropriate section. In the FAA oversight section write NON-RENEWAL and complete the non-recommendation block. The JAA Form 9 will be forwarded to the JAA using the address specified in par. 13B.

(3) Inspections of repair stations seeking renewal of their JAA acceptance will be aligned with the existing repair station facility inspection program of the inspector. Should this result in the inspector not being able to process the JAA Form 9 recommendation for renewal before the expiration of the JAA acceptance, the JAA acceptance renewal date may need to be adjusted to ensure reasonable alignment with the inspector's program. The inspector must coordinate with the JAA through the FAA Regional JAA Coordinator to extend the JAA acceptance renewal date to allow for the accomplishment of the facility inspection at the date specified in the inspector's program.

C. Amendment of Acceptance. Depending on the nature of the proposed amendment, it may be necessary for the FAA to perform a limited inspection of the applicant seeking an amendment of their JAR 145 acceptance.

D. Analyze and Document any Deficiencies.

(1) If deficiencies are noted, the inspector must brief an appropriate representative of the applicant at the end of the inspection, confirm any findings, notify the applicant in writing within two weeks, and if appropriate, meet with the applicant to review the deficiencies in detail.

(2) For an initial application, all deficiencies noted by the inspector must be corrected within 60 days of the inspector's notification to the applicant. If the deficiencies have not been corrected within 60 days, the inspector will terminate the application. The inspector may extend the 60-day period if the applicant demonstrates an ability and willingness to correct the noted deficiencies.

(3) For an application for renewal or amendment, the inspector may allow the applicant to submit a plan for corrective action, depending on the nature of the deficiencies. If the plan for corrective action is satisfactory, the inspector will submit the corrective action plan along with the JAA Form 9 recommendation for acceptance. If the applicant for renewal fails to correct the deficiencies or to provide a plan for corrective action prior to the expiration of its JAA acceptance, the inspector will terminate the renewal application and submit JAA Form 9 to the JAA with a non-recommendation for acceptance. In the event of unusual circumstances (for example, a short period of time between the inspection and the expiration date), the JAA may extend the duration of the applicant's JAA acceptance for a reasonable period of time. If an applicant for amendment fails to correct the deficiencies or to provide a plan for corrective action within the 60-day time period, the inspector will terminate the application and submit JAA Form 9 to the JAA with a non-recommendation for acceptance.

(4) If corrective action must be taken for the certification process to continue, the inspector must be notified in writing by the applicant when all deficiencies have been corrected. Each deficiency and corrective action must be documented and recorded in the applicant's certification file. The inspector must notify the FAA Regional JAA Coordinator of all deficiencies that have not been corrected, any problem that may result in denial of initial JAA acceptance or nonrenewal of JAA acceptance, any issue that requires consultation with the JAA, or any other actions that must be coordinated with the JAA by the applicant.

13. JAA-ACCEPTANCE PHASE.

A. Preparation of JAA Form 9.

(1) To recommend JAA acceptance of an applicant, the inspector should be satisfied with the proposed JAA Supplement; any amendments, if applicable; and any inspections the FAA has performed. The inspector will recommend acceptance of the applicant to the JAA by preparing JAA Form 9.

(2) For an applicant seeking a renewal of acceptance, the inspector must include on JAA Form 9 a list of the significant findings/discrepancies found during the preceding two-year period. These findings/discrepancies also should have been reported previously IAW section 1, paragraphs 9B and C of this chapter.

(3) Inspector's must not delay or submit JAA Form 9 with a non-recommendation based on pending enforcement actions or an enforcement action that has not been dispositioned by FAA legal council. The inspector must submit a recommendation for renewal and describe the potential violation of the findings in the Discrepancy area of JAA Form 9.

B. JAA Policy Regarding JAA Form 9 Reporting Requirements. Any change to the status of the repair station part 145 certificate, such as surrender, suspension, or revocation and any serious failure of the repair station to comply with part 145 that could result in enforcement

action. The inspector will report this information on JAA Form 9. For reporting of uncorrected findings or discrepancies, the inspector will leave the date-corrected column blank. Revocation of a repair station part 145 certificate automatically invalidates its JAA acceptance.

(1) Recommendation. The JAA recommends the following items are reportable as recommendations when the repair station has taken corrective action, or has submitted a plan for corrective action that the FAA has accepted. Any enforcement action taken as a result of the findings/discrepancies will not effect the FAA providing the JAA with a recommendation for renewal. The corrective action plan must be attached to the Form 9.

- Serious failure to comply with NAA requirements
- Overall failure to comply with the FAA supplementary conditions
- Failure to use FAA-approved data for major repairs/alterations/modifications
- Failure of the repair station to maintain a working quality monitoring system

(2) *Non-Recommendation.* The FAA should provide the JAA with a non-recommendation when the FAA has found significant safety issues using the criteria above and corrective action has not been taken or a plan for corrective action has not been accepted by the FAA. The JAA may elect not to renew or amend a JAA acceptance until corrective action has taken place or a plan for corrective action has been accepted by the FAA and submitted with the Form 9.

NOTE: Withdrawal of NAA approval/certification will result in withdrawal of FAA certification because FAA certification is based on compliance with NAA requirements and FAA Special Conditions.

C. Process the Recommendation for JAA Acceptance.

(1) The inspector will send the following items by mail, facsimile, or electronic mail (Telephone 31-23-5679711; Facsimile 31-23-5621714) to the JAR 145 Coordinator, JAA Maintenance Division, Saturnusstraat 8-10, P.O. Box 3000, 2130 KA Hoofddorp, Netherlands.

- JAA Form 9
- JAA Form 16
- A copy of the applicant's FAA OpSpecs
- Any line station appendix from the JAA Supplement, if appropriate

NOTE: Any items submitted previously that have not been revised do not need to be resubmitted.

NOTE: The privileges of the JAR 145 acceptance must not exceed the applicant's FAA certificate ratings and limitations. Acceptance by the JAA and JAA-member NAA's also will be limited by the FAA OpSpecs issued to the applicant.

(2) For an initial application, the inspector must not forward JAA Form 9 or any accompanying material to the JAA until the applicant corrects all significant findings/discrepancies. If the applicant is applying for initial acceptance and has an alleged finding/discrepancy being processed for possible enforcement action, the inspector will advise the JAA of the enforcement action on JAA Form 9 but cannot withhold JAA recommendation. If the applicant is applying for a renewal or amendment of their JAA acceptance and an alleged finding/discrepancy is being processed for possible enforcement action, the inspector will advise the JAA on JAA Form 9 IAW section 1, paragraph 9B of this chapter.

D. JAA Acceptance. After the JAA receives a completed recommendation from the FAA, is satisfied that the applicant meets all regulatory requirements, and obtains proof of any required fee payment, it will forward a JAR 145 acceptance certificate to the applicant and inspector. The JAA will list the applicant as JAA-accepted in JAA Administrative and Guidance Material. A JAR 145 acceptance certificate is valid for up to two years.

15. TASK OUTCOMES.

A. File PTRS Data Sheet.

B. Completion of the Task. Completion of the task will result in the following:

(1) For a successful application:

(a) Issuance of a JAR 145 acceptance to the applicant by the JAA and its inclusion in the applicant's JAA Supplement;

(b) Revision of paragraph A001, Issuance and Applicability, of a new applicant's OpSpecs to include the following (or equivalent) language: "The repair station specified on these OpSpecs is performing maintenance and/or alteration of aircraft and/or aeronautical products to be installed on aircraft under the terms and conditions of BASAs and associated MIPs between the FAA and JAA-member countries.";

(c) Updating of the Vital Information System (VIS) by completing all relevant data fields to indicate that the applicant is JAA-accepted;

(d) Return of the JAA Supplement to the applicant, if provided; and

(e) Filing of a copy of the JAA Supplement and JAA acceptance in the applicant's office file.

(2) For an unsuccessful application, because the applicant terminated the process or failed an inspection:

(a) The return of all copies of the JAA Supplement, if provided, and JAA Form 16 to the applicant with a letter explaining all deficiencies, including what must be corrected and resubmitted to proceed with the process of seeking JAA acceptance, renewal, or amendment; and

(b) The completion of correspondence describing the situation to the FAA Regional JAA Coordinator.

C. Document Task. File all supporting paperwork in the applicant's office file and update the VIS. The inspector also will enter on the applicant's file that the applicant will be FAA-certificated, JAA-accepted, and add JAA Supplement aspects to all future FAA inspections of the applicant's facility. A copy of the applicant's JAA Supplement together with its 14 CFR part 145 IPM will be maintained at the FSDO. The JAA does not require a copy of either the applicant manual or JAA Supplement.

17. FUTURE ACTIVITIES.

A. Surveillance Planning. When the JAR 145 acceptance process is complete, surveillance planning and scheduling for the applicant must be revised to include surveillance and inspections for compliance with 14 CFR part 145 and JAA special conditions.

B. Maintenance International Standardization Team (MIST) Visits. Although JAA MIST visits are separate from the inspections discussed earlier in this chapter, they will provide information valuable to inspectors. Such teams will visit each FAA region every one to two years to sample standards of compliance achieved by 14 CFR part 145 applicants who are JAA-accepted under the BASA/MIP process. In most cases, the MIST performs a snapshot audit of a number of 14 CFR part 145 applicants, but may perform a more in-depth inspection in any particular case. The PI assigned to an applicant being visited by a MIST will accompany the MIST during the visit.

CHAPTER 168. EVALUATE A JAA SUPPLEMENT TO A REPAIR STATION'S INSPECTION PROCEDURES MANUAL

SECTION 1. BACKGROUND

1. PROGRAM TRACKING AND REPORTING SUBSYSTEM (PTRS) ACTIVITY CODES.

A. Maintenance: 3377, 3669, 3771

B. Avionics: 5377, 5669, 5771

3. OBJECTIVE. This chapter provides guidance for evaluating the Joint Aviation Authorities (JAA) Supplement to a repair station's Inspection Procedures Manual (IPM).

5. GENERAL.

A. Before a repair station may be accepted by the JAA under Joint Aviation Requirements (JAR) 145, the repair station must prepare a JAA Supplement to its IPM. This supplement must be reviewed by the Federal Aviation Administration (FAA) for compliance with JAA requirements. When a JAA-accepted repair station revises an existing JAA Supplement to its IPM, these revisions also must be submitted to the FAA for review before implementation.

B. If this task is performed as part of processing an original application for JAA acceptance, the entire JAA Supplement will be submitted. If this task is performed as part of processing a renewal of JAA acceptance or conducting a review of a revision to the JAA Supplement, only the revised portion of the JAA Supplement will be submitted.

C. The information contained in the JAA Supplement is based on JAA Special Conditions contained in the Maintenance Implementation Procedures (MIP) of a Bilateral Aviation Safety Agreement (BASA). These special conditions state that the repair station must provide a supplement to the IPM accepted by the FAA on behalf of the National Aviation Authority (NAA) to include the following:

(1) Detailed procedures for operating an independent quality monitoring system.

(2) Procedures for the release or approval for return to service that meet the requirements of JAR 145.50 for aircraft; use of FAA Form 8130-3, Airworthiness Approval Tag, for aircraft components; and any other information required by the owner or operator, as appropriate.

(3) Procedures to ensure repairs and modifications, as defined by JAA requirements, are accomplished in accordance with (IAW) NAA-approved data.

(4) Procedures for reporting to the NAA, aircraft design organizations, and the customer or operator unairworthy conditions on civil aeronautical products as required by JAR 145.

(5) Procedures to ensure completeness of and compliance with the customer or operator work order or contract including notified NAA airworthiness directives (AD) and other notified mandatory instructions.

(6) A statement by the accountable manager, as defined by JAR 145, that commits the repair station to the JAA Special Conditions.

(7) For a repair station rated for an aircraft type, procedures to ensure that the aircraft's airworthiness certificate has not expired before releasing or returning the aircraft to service.

(8) The repair station must specify the items to be contracted and have procedures in place to ensure contractors meet the terms of the implementation procedures (that is, using a JAA-certificated source), or work under the repair station's contracted provisions of Title 14 of the Code of Federal Regulations (14 CFR) part 145, appendix A, the asterisk items.

D. Specific JAA guidance for preparing a JAA Supplement to a repair station's IPM is contained in JAA Maintenance Leaflet No. 22 (TGL-22), JAA Acceptance of American Repair Stations. This document also contains a sample JAA Supplement. This document is provided to a repair station in response to a preliminary inquiry regarding initial JAR 145 acceptance. It should be reviewed thoroughly by the inspector and used in conjunction with this chapter in conducting a review of an applicant's JAA Supplement number.

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SECTION 2. PROCEDURES

1. PREREQUISITES AND COORDINATION REQUIREMENTS.

A. Prerequisites:

- Knowledge of the regulatory requirements of 14 CFR parts 43 and 145
- Knowledge of the requirements of JAA Maintenance Leaflet No. 22
- Successful completion of the Airworthiness Inspector's Indoctrination course or equivalent
- Successful completion of JAR 145 Application to Domestic Repair Stations Training computer-based instruction
- Previous experience with certification or surveillance of 14 CFR part 145 repair stations

B. Coordination. This task requires coordination with:

- The applicant (repair station)
- The applicant's Principal Maintenance Inspector (PMI) or Principal Avionics Inspector (PAI)
- The FAA regional JAA coordinator
- FAA regional and district offices, as appropriate

3. REFERENCES, FORMS, AND JOB AIDS.

A. References:

- 14 CFR parts 43 and 145
- FAA Order 8130–21B, Procedures for Completion and Use of FAA Form 8130–3, Airworthiness Approval Tag
- FAA Order 8300.10, Airworthiness Inspector's Handbook, volume 2, chapters 161, 162, 164, 166, 167, and 169
- JAA Maintenance Leaflet No. 22, JAA Acceptance of American Repair Stations
- Advisory Circular (AC) 145–5, Repair Station Internal Evaluation Programs
- AC 145–8, Acceptance of Repair Stations by the JAA and JAA-Member NAA's Under the Maintenance Implementation Procedures of a Bilateral Aviation Safety Agreement

B. Forms:

- FAA Form 8000–4, Air Agency Certificate
- FAA Form 8000–4–1 or FAA Form 8000–8, Repair Station Operations Specifications
- FAA Form 8130–3, Airworthiness Approval Tag
- JAA Form 9, FAA Status Report on a CFR part 145 Repair Station JAA accepted or Applicant for JAA Acceptance
- JAA Form 16, USA Repair Station Application for Initial/Renewal/Amendment of JAA Acceptance in Accordance with JAR 145

C. Job Aids. None.

5. PROCEDURES.

A. Receive the Applicant's JAA Supplement/Supplement Revision.

(1) For an initial application for acceptance, ensure that the submission includes at least two copies of the JAA Supplement and that the JAA Supplement is signed by the applicant's accountable manager.

(2) For a renewal or amendment of acceptance requiring a revision of the JAA supplement or for any revision to the JAA Supplement, ensure the submission includes at least two copies of any revision to the JAA Supplement.

B. Review the Applicant's JAA Supplement/Supplement Revision. The JAA Supplement/Supplement Revision must be added to the applicant's 14 CFR part 145 IPM. The JAA Supplement must conform to the organizational structure specified in the sample JAA Supplement. If a section of the applicant's IPM addresses information required in the JAA Supplement, the JAA Supplement should not reference that section of the IPM, but should include the information in the appropriate section of the JAA Supplement. Review the JAA Supplement to ensure it includes the following sections and appropriate information.

NOTE: An inspector is not required to review an applicant's entire JAA Supplement if the applicant is submitting only a revision.

(1) List of Effective Pages. Ensure that the JAA Supplement includes a list of the sections it contains, the page number of each section, and the current revision date of each section.

(2) Amendment Procedure. Ensure this section describes the procedures the applicant will use to guarantee that their JAA Supplement remains current. Ensure the JAA Supplement identifies, by title, the person responsible for amending the JAA Supplement and states that the applicant will provide copies of any revision to their JAA Supplement to the FAA before implementation.

(3) Introduction. Ensure this section addresses the purpose of the JAA Supplement. It must indicate that work performed by the applicant is accepted by JAA-member NAA's through compliance with the provisions of a BASA or through the unilateral acceptance provisions of JAR 145. This section also must indicate that the JAA Supplement addresses additional JAA requirements that the applicant must comply with to retain JAA acceptance.

(4) Accountable Manager's Commitment Statement. Ensure a statement is included that indicates the applicant will comply with the provisions of the JAA Supplement and that is signed by the applicant's accountable manager for and on behalf of the applicant. This section also should include recognition of the consequences of failing to meet applicable requirements or standards. The accountable manager is the person who has corporate authority for ensuring that all maintenance required by an aircraft operator can be financed and performed to the standards required by JAR 145. The accountable manager is usually the applicant's chief executive officer or president but also may be the vice president of engineering in an organization where this person sits on the organization's corporate board and has full financial authority. Whenever the accountable manager is replaced, ensure that the statement is signed by the new accountable manager. An acceptable accountable manager's commitment statement is provided below:

(a) This Supplement, in conjunction with the repair station's approved IPM, defines the organization and procedures on which JAA acceptance is based.

(b) These procedures are approved by the undersigned and must be followed, as applicable, when maintenance, preventive maintenance, or alterations are being performed, subject to JAA or JAA-member NAA acceptance.

(c) The repair station's procedures do not override the necessity of complying with any additional requirements formally published by the JAA.

(d) I understand that the JAA will issue an acceptance and list the repair station as an acceptable source of maintenance for Europe in a formal JAA publication while the JAA is satisfied that the procedures are being followed and work standards are being maintained. I understand that the JAA reserves the right to revoke any acceptance and remove the repair station from the formal JAA publication if the JAA considers that procedures are not followed or standards are not upheld.

(5) Acceptance Basis and Limitation. Ensure that this section indicates that JAA acceptance is based on the applicant's compliance with 14 CFR parts 43 and 145, and the JAA Special Conditions identified in the MIP and described in JAA Maintenance Leaflet No. 22. Ensure that this section indicates that the scope of work the applicant may perform is limited to the scope of work detailed on its 14 CFR part 145 certificate and that such work may be performed only at the location(s) specified on its certificate and FAA Operations Specifications.

(6) Access by the JAA and FAA. Ensure that this section states that the applicant must agree to allow JAA, JAA-member NAA, or FAA staff, acting on behalf of the JAA, access to the repair station to check compliance with procedures and standards and to investigate any problems.

(7) Work Orders/Contracts. Ensure that this section establishes procedures that the applicant will use to ensure that it obtains a clear work order from the customer specifying the work to be completed. Ensure the work orders specify the inspections, repairs, alterations, overhauls, AD's, and parts replacements that should be accomplished. Also ensure that this section lists a person, by title, responsible for communicating with the customer in the case of any ambiguity in the work order. The customer ultimately remains responsible for correctly informing the applicant, in a work order, of all required maintenance and alterations it wishes to have performed to comply with national or JAA requirements.

(8) Approved Design Engineering Data. Ensure that this section establishes procedures the applicant will use to confirm that the customer has provided data approved by the JAA-member NAA of either the Type Certificate (TC) holder (or equivalent) or the customer, before performing work on a product.

NOTE: The section also should emphasize that data developed under Special Federal Aviation Regulation No. 36, by a designated engineering representative (DER), or through a special process approval may not be accepted automatically by a JAA-member NAA. Therefore, this section must describe the applicant's procedures for obtaining data approved by the JAA-member NAA.

(9) Airworthiness Directives. Ensure this section describes the procedures the applicant will use to verify that it holds a copy of all the ADs a customer wishes to be accomplished. This section may note that the applicant may require the customer to supply the ADs the customer wishes the applicant to comply with.

(10) Major Repairs, Alterations, or Modifications. Ensure this section describes the procedures the applicant will use when performing major repairs, alterations, or modifications to ensure the customer has either obtained JAA-member NAA approval for the repair or alteration data or confirmed that FAA data are acceptable to the JAA-member NAA.

(11) Release of Components After Maintenance. Ensure this section describes the procedures the applicant will use to ensure the release of components, up to and including complete powerplants, is performed IAW 14 CFR and sections 7 through 10 of the applicant's JAA Supplement. This section must state that, when the maintenance is complete, FAA Form 8130–3 must be issued as a maintenance release by the applicant indicating that the maintenance was performed IAW JAA requirements. If the component is newly overhauled, this section must state that a completed FAA Form 8130–3, and not an export certification, is required. This section should note that the use of Parts Manufacturer Approval (PMA) parts on a component may not be approved automatically by a

JAA-member NAA and must include procedures the applicant will use to verify that the use of PMA parts is acceptable to the customer. This section should state that FAA Form 8130–3, block 13, must indicate the JAA acceptance number, if issued; specify any overhaul, repairs, alterations, or AD's accomplished; specify any replacement or PMA parts used; reference, including the issue and revision, any approved data used to accomplish the work; and include the following statement:

(a) [Name of repair station] certifies that the work specified in blocks 12 and 13 was performed IAW JAR 145, and with respect to that work the aircraft component is considered ready for release to service under JAA Acceptance Certificate Number [insert number].

(b) This section must also state that FAA Form 8130–3 should be signed in block 20.

(12) Certificate of Airworthiness Validity. If the applicant has an airframe or limited airframe rating authorizing them to perform work on an entire aircraft, ensure this section describes the procedures the applicant will use to ensure the aircraft's certificate of airworthiness is valid through the date of release of the aircraft after maintenance. Certificates of airworthiness issued by JAA-member NAA's have expiration dates. This section also should state that if the certificate of airworthiness has expired before this date, the customer shall be informed.

(13) Release of Aircraft after Maintenance. If the applicant has an airframe or limited airframe rating, ensure this section describes the procedures the applicant will use to ensure the release of aircraft is accomplished IAW 14 CFR and sections 7 through 10 and 12 of the JAA Supplement. Ensure this section indicates that when maintenance is complete, the applicant writes a statement in the aircraft maintenance record that certifies that, except as otherwise specified, the work was performed IAW 14 CFR and, with respect to that work, the aircraft is considered ready for release to service.

(a) Ensure that this section notes the use of the clause "except as otherwise specified" is intended for use with two types of deviations, those where:

- All required maintenance was not carried out
- The particular maintenance requirement was only JAA-approved and not FAA-approved (for example, a JAA-member NAA AD not approved by the FAA)

(b) Ensure this section states that where the customer or operator requires his/her paperwork to be signed, the following alternate release to service certification can be made in accordance with JAR 145.50:

> [*Name of repair station*] certifies that the work specified, except as otherwise specified, was performed in accordance with JAR 145, and with respect to that work the aircraft is considered ready for release to service.

(c) In both cases, ensure this section states that the applicant must issue the certification when all required maintenance has been carried out. However, if it was not possible to complete or perform all maintenance, the maintenance not completed must be listed on the release to service, and the maintenance not performed must be noted on the aircraft maintenance record. The customer must be informed.

(d) Ensure this section states that the JAA Acceptance Certificate Number and 14 CFR part 145 Certificate Number must be listed for both a 14 CFR part 43 return to service and a JAR 145 return to service.

(14) Reporting of Unairworthy Conditions. Ensure this section describes the procedures the applicant will use to report a serious defect found in JAA-member NAA-regulated aircraft or aircraft components. Ensure this section indicates the defect must be reported to the JAA-member NAA via the JAA using FAA Form 8070-1 or other means, and to the customer within 3 days (72 hours) of discovery. When reporting a defect to the JAA, the identity of the customer must be included to allow for follow-up action.

(15) Quality Monitoring System. Ensure this section includes a description of the applicant's Quality Monitoring System (QMS), including its audit procedures and management control. Also, ensure this includes a description of both an independent audit system and a management/control and follow-up system.

(a) Independent Audit System.

i. The independent audit system is a process that consists of sample audits of all aspects of the applicant's ability to complete all maintenance on time and to the required standards. It represents an overview of the complete maintenance system and does not replace the need for mechanics to ensure they perform maintenance to the required standard, nor does it replace any associated inspection/quality control systems. Independence should be established by ensuring that audits are not performed by the personnel responsible for the function, procedure, or product being audited. It is acceptable to use personnel from one section/department to audit the work and products of another section/department IAW a procedure under this paragraph. Applicants with less than 10 personnel may contract the audit function to a person who is acceptable to the JAA and not employed by the applicant. An applicant that contracts this function to a person not employed by the applicant must include a written description in this section of the auditor's experience and qualifications for review.

ii. The process of sample audits may be accomplished once per year as a single exercise or subdivided over a one-year period IAW an audit program. Ensure all applicable sections of 14 CFR parts 43 and 145 and the JAA Supplement are checked at least once per year

against each primary product line. (A primary product line is any one aircraft, engine, avionics, or mechanical product line where the systems and procedures are very similar throughout that product line.)

(b) Management Control Follow-up System. The Management Control Follow-up System, which must not be contracted to outside persons, consists of a system to ensure that all findings/discrepancies resulting from the independent audit system are corrected in a timely manner. The system should enable the accountable manager to remain informed about the state of compliance and any safety issues. The accountable manager should hold routine meetings to check the progress on clearing outstanding findings/discrepancies. In the larger repair stations, such meetings may be delegated on a day-to-day basis to the quality manager as long as the accountable manager meets at least once per year with the senior staff involved to review the overall performance.

(c) Part 121 Line Stations. When an applicant also is associated with part 121 line stations, the QMS must describe how these line stations are integrated into the system and must specify the need to audit each line station at least once per year. Each line station accepted by the JAA must be listed in this section of the supplement.

NOTE: Inspectors are not required to survey a part 121 line station for compliance with a JAA Supplement. If an inspector is responsible for an air carrier with line stations outside the inspector's geographic area, the inspector should request assistance from the office with the geographic responsibility for the line station if a problem is suspected.

(d) Audit Procedures.

i. The audits will monitor compliance with required aircraft/aircraft component standards and the adequacy of the maintenance procedure to ensure that such propcedures invoke good maintenance proctices and airworthy aircraft/aircraft components. Ensure one example of a particular product line is used as the basis for each audit; however, in the case of store audits, ensure a random selection of parts is used for the audit. For example, an applicant maintaining aircraft and off-aircraft engines and mechanical parts would need to carry out three audit sample checks each year with the particular product being audited or changed each year.

ii. The sample check of a product means to witness any relevasnt testing and visually inspect the product and associated documentation. The sample check should not involve repeat disassembly or testing unless the sample check identifies findings requiring such action. A product to be audited should be selected from each hangar and each workshop. The audit program should be applied at least once per year. In the case of procedures common throughout the repair station, the procedure shall only be audited once per year if there are no problems.

iii. Ensure that a report is completed for each audit performed describing what was checked and any findings/discrepancies. The audit procedures must state that the report must be sent to the relevant department(s) for corrective action and should give target correction dates. To ensure the effectiveness of any corrective action taken, the applicant must have procedures in place to verify that the relevant department(s) corrected any findings/discrepancies and informed the quality department.

NOTE: An applicant may use the procedures specified in AC 145-5 to develop audit procedures for their quality monitoring system; however, they should audit those applicable audit subjects specified in JAA Supplement appendix 1 or JAA Maintenance Leaflet No. 22.

(16) Provision of Hangar Space for Aircraft Maintenance. If the applicant has an airframe or limited airframe rating, ensure this section describes the procedures the applicant will use to ensure that they have sufficient hangar space available for JAA-member NAA-regulated aircraft undergoing maintenance and alteration. Also, ensure that this section states that hangar space will be available at the time maintenance or alterations are performed and that aircraft maintenance will be performed only in a hangar, except in the case of line maintenance performed by an applicant that is also operating as a 14 CFR part 121 air carrier.

(17) Contracted Maintenance. Ensure that if an applicant contracts part of its maintenance out to another organization, that organization is specified in this section of the JAA Supplement. These organizations must either be listed by the JAA according to the type of maintenance work to be performed or must work under the repair station's contracted provisions of 14 CFR part 145 appendix A, the asterisk items.

(18) Appendix 1 – Sample Audit Program. Ensure a sample of an audit schedule for one product line is included in appendix 1. This audit program can be applied in the aircraft hangars, engine workshops, or component workshops. Not all audit subjects will apply in all cases, and the sample audit program should be used as a starting basis after which it can be altered to fit the particular type of repair station.

(19) Appendix 2 – Line Stations. If the applicant is an air carrier operating line stations under 14 CFR part 121, ensure each line station used by a JAA-member NAA-regulated aircraft is listed in appendix 2. Ensure this list includes the location and capabilities of the line stations. The line stations can be accepted under JAR 145 only if the air carrier holds a 14 CFR part 145 certificate for all operated aircraft types for at least one of its base maintenance facilities. The applicant's QMS must cover the

air carrier certificate, 14 CFR part 145 certificate, and the line stations. Ensure the applicant's QMS includes provisions to audit the listed line station locations.

(20) Appendix 3 – FAA Form 8130-3. Ensure the applicant has procedures to guarantee FAA Form 8130-3, when being used as a maintenance release, is completed IAW FAA Order No. 8130.21B. Ensure the JAA Supplement also identifies those personnel authorized to issue the form on behalf of the applicant. The JAA does not recognize any other form of maintenance release from a 14 CFR part 145-approved, JAA-accepted organization located outside a JAA-member country except FAA Form 8130-3.

(21) Appendix 4 – Components Authorized for Use During Maintenance and Alteration. Ensure the applicant establishes procedures for the use of new and used components during the conduct of maintenance and alterations. Component means any component part of an aircraft up to and including a complete powerplant and any operational or emergency equipment.

(a) New Components. Ensure the applicant includes provisions in this appendix to ensure compliance with the following provisions regarding the use of new components:

i. New components should be traceable to the Original Equipment Manufacturer (OEM) as specified in the TC holder's Parts Catalog and be in a satisfactory condition for installation. The new component should be accompanied by a release document issued by the OEM or Production Certificate (PC) holder. The release document should clearly state that it is issued under the approval of the relevant JAA-member NAA under whose regulatory control the OEM or PC holder works.

ii. For OEMs and PC holders located in the U.S., new components should be released on FAA Form 8130-3 as a new part.

iii. For all JAA-member NAA OEMs and PC holders, new components should be released on JAA Form 1 as a new part.

iv. For Canadian OEMs and PC holders, new components should be released on TC Form 24-0078 as a new part.

NOTE: Standard parts are exempt from the foregoing provisions, except that such parts should be accompanied by a conformity statement and be in a satisfactory condition for installation. PMA parts may be installed only on products manufactured in the United States, and only when accompanied by FAA Form 8130-3.

(b) Used Components. Ensure the applicant includes provisions in appendix 4 to ensure compliance with the following provisions regarding the use of used components:

i. Used components should be traceable to maintenance organizations and repair stations accepted/approved by the JAA-member NAA or JAA who certified the previous maintenance and/or, in the case of life-limited parts, certified the life limit. The used component should be in a satisfactory condition for installation and be eligible for installation as stated in the TC holder's parts catalog.

ii. Used components from JAA-accepted 14 CFR part 145 repair stations should be released on FAA Form 8130–3 issued as a maintenance release.

iii. Used components from a 14 CFR part 145 repair station not JAA-accepted must not be used even if accompanied by FAA Form 8130-3.

iv. Used components from JAA-approved JAR 145 maintenance organizations should be released on JAA Form 1 issued as a maintenance release.

NOTE: A repair station that receives a used component with FAA Form 8130-3 should verify that the facility providing the component is accepted by the JAA to approve that component for return to service if the repair station intends to install the component on an aircraft subject to the regulatory control of the JAA. This may be accomplished by obtaining a copy of the facility's JAA acceptance letter or by reviewing FAA Form 8130-3 to ensure that it includes the facility JAA approval number, if issued, or a statement in block 13 indicating that the component was approved for return to service IAW JAA requirements.

v. Used components from JAA-accepted Canadian AM573 maintenance organizations should be released on TC Form 24-0078 issued as a maintenance release.

vi. Used components from any other source normally are not accepted other than under certain circumstances and conditions specified in Maintenance Leaflet No. 11, which can be found in JAA Administrative & Guidance Material, Section Two: Maintenance, Part Three: Temporary Guidance.

NOTE: All JAA-accepted maintenance organizations and repair stations throughout the world are listed in JAA publication "JAR-145 Listed Organizations." The applicant should have a copy of this publication.

C. Perform a Facilities Inspection, as Applicable. If an amendment to a JAA Supplement includes a change to the facilities or equipment, the inspector must inspect those facilities (see volume 2, chapter 167).

7. TASK OUTCOMES.

A. File PTRS Data Sheet.

B. Completion of the Task. Completion of this task will result in one of the following actions:

(1) Acceptance of the JAA Supplement/Supplement Revision by:

(a) Continuing to process the applicant's request for JAA certification IAW chapter 167 of this order, if applicable;

(b) Placing on the list of effective pages "Accepted" with the date, office identification, and the inspector's signature;

(c) Returning one copy of the JAA Supplement/ Supplement Revision to the applicant after receipt of their JAA acceptance; and

(d) Filing a copy of the JAA Supplement/ Supplement Revision as follows:

i. For an original JAA Supplement, file a copy of the JAA Supplement in the certificate holder/ applicant's office file; or

ii. For a revision, remove the affected pages and insert the revised pages into the current JAA Supplement and update the supplement control system.

(2) Rejection of the JAA Supplement/Supplement Revision by:

(a) Returning all copies of the JAA Supplement/ Supplement Revision to the applicant with a letter explaining the deficiencies; and

(b) Explaining to the applicant that the JAA Supplement/Supplement Revision must be corrected and resubmitted in order to proceed with the process of seeking JAA acceptance.

C. Document Task. File all supporting paperwork in the certificate holder/applicant's office file and update the Vital Information System.

9. FUTURE ACTIVITIES. None.

CHAPTER 169. SUPPORT A MAINTENANCE INTERNATIONAL STANDARDIZATION TEAM VISIT

SECTION 1. BACKGROUND

1. PROGRAM TRACKING AND REPORTING SUBSYSTEM (PTRS) ACTIVITY CODES.

A. Maintenance: 3817

B. Avionics: 5817

3. OBJECTIVE. This chapter provides guidance to Federal Aviation Administration (FAA) inspectors assisting a Maintenance International Standardization Team (MIST) during inspections of Title 14 of the Code of Federal Regulations (CFR) part 145 repair stations that are accepted under Joint Aviation Requirements (JAR) 145 in accordance with (IAW) the Maintenance Implementation Procedures (MIP) of a Bilateral Aviation Safety Agreement (BASA).

5. GENERAL.

A. A MIST is a team of maintenance inspectors from National Aviation Authorities (NAA) that are members of the Joint Aviation Authorities (JAA). These inspectors visit JAA-approved maintenance organizations (AMO) and repair stations to determine whether these facilities perform maintenance IAW the JAR and all JAA Interpretive Explanatory Material (IEM), Acceptable Means of Compliance (AMC), and Maintenance Leaflets. The JAA may audit any repair station that has or requests JAA acceptance. During the performance of MIST visits, FAA inspectors will serve with JAA and JAA-member NAA inspectors.

B. The FAA and JAA have identified differences between CFR part 145 and JAR 145. These differences are embodied in Special Conditions to the MIP. A part 145 certificated repair station that is JAA-accepted must develop a JAA Supplement to its Inspection Procedure Manual (IPM) to comply with the JAA Special Conditions. When a MIST inspects a repair station, it will inspect specifically those areas referenced in the JAA Supplement. It will also review the methods and procedures used by the repair station to perform work on aircraft registered in JAA-member countries and on the aircraft's engines, components, and appliances. The JAA will use this information to evaluate the repair station's compliance with JAR 145.

C. Although JAA MIST visits are separate from the certification audits of repair stations, they may provide valuable information to FAA inspectors. These teams will visit each FAA region every one to two years to sample standards of compliance achieved by JAA-accepted part 145 repair stations. The team is comprised of two JAA members representing two different JAA-member countries, an FAA regional representative serving as a MIST coordinator, and the Principal Inspector (PI), (Principal Maintenance Inspector (PMI) or Principal Avionics Inspector (PAI)) of the repair station being visited. In most cases, the MIST performs a snapshot audit of a number of part 145 repair stations, but may perform a more in-depth audit in any particular case.

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SECTION 2. PROCEDURES

1. PREREQUISITES AND COORDINATION REQUIREMENTS.

A. Prerequisites:

- Knowledge of the regulatory requirements of 14 CFR parts 43 and 145
- Knowledge of the requirements of JAA Maintenance Leaflet No. 22, JAA Acceptance of American Repair Stations
- Successful completion of the Airworthiness Inspector's Indoctrination course or equivalent
- Successful completion of the JAR 145 Application to Domestic Repair Stations Training computer-based instruction
- Previous experience with certification or surveillance of part 145 repair stations

B. Coordination. This task requires coordination with:

- Any repair station being inspected by the MIST
- The repair station's principal inspector
- The FAA Regional JAA Coordinator
- FAA regional and district offices, as appropriate

3. REFERENCES, FORMS, AND JOB AIDS.

A. References:

- CFR parts 43 and 145
- FAA Order 8300.10, Airworthiness Inspector's Handbook, volume 2, chapters 161, 162, and 164 through 168
- JAA Maintenance Leaflet No. 22, JAA Acceptance of American Repair Stations
- AC 145–8, Acceptance of Repair Stations by the JAA and JAA-Member NAA's Under the Maintenance Implementation Procedures of a Bilateral Aviation Safety Agreement

B. Forms:

- JAA Form 8, Visit Report to a Non-JAA Territory Maintenance Organization
- JAA Form 10, Visit Report to a Bilateral/Unilateral Country

C. Job Aids. None.

5. FAA RESPONSIBILITIES.

A. Responsibilities of the FAA Regional JAA Coordinator. Upon receiving a notice from the JAA that a MIST plans to visit a specific FAA region, the FAA Regional JAA Coordinator should:

- Assist the MIST and local Flight Standards District Office (FSDO) in developing an itinerary for team members
- Coordinate the schedule of planned visits with all participants
- Provide hotel accommodation and ground transportation information to the JAR 145 Coordinator at JAA Headquarters, if requested (JAA inspectors will confirm their own reservations)
- Notify the inspector of any repair station that the MIST intends to visit
- Ensure the inspector will be present at the repair station during any inspection
- Accompany the MIST on their visits to repair stations
- Attend the entrance and exit briefings at inspected repair stations

B. Responsibilities of the FAA Participating Inspector.

(1) Upon receiving notice from the FAA Regional JAA Coordinator that a MIST plans to visit a repair station for which the inspector has oversight responsibility, the inspector should:

- Notify the affected repair station of the upcoming MIST visit
- Obtain hotel and ground transportation information and forward the information to the FAA Regional JAA Coordinator
- Accompany the MIST to the repair station
- Attend the repair station entrance and exit briefings
- Provide assistance to the JAA MIST members, if requested

(2) Inspectors should note that the MIST visit is conducted by the JAA to determine compliance with JAR 145 and the JAA Special Conditions addressed in the JAA Supplement to the repair station's IPM. The FAA should offer coordination and assistance to the JAA MIST members to help them accomplish their tasks efficiently. Inspectors may be requested to provide FAA policy or guidance information to the MIST members if such questions arise.

7. INFORMATION REGARDING MIST INSPECTION.

A. The MIST inspectors will perform an inspection of the repair station for compliance with the repair station's JAA Supplement. The MIST inspectors must inspect the repair station for compliance with parts 43 and 145.

B. The MIST inspectors will review the repair station's compliance with those items specified on JAA Form 9, identified in chapter 167, section 2, paragraph 11.

9. TASK OUTCOMES.

A. File PTRS Data Sheet.

B. Completion of the Task. Completion of this task will result in the following:

(1) For any MIST visit, the FAA Regional JAA Coordinator should:

(a) Ensure the MIST inspectors provide the repair station with a debriefing;

(b) Review the results of the MIST inspection as recorded by the MIST inspectors on JAA Form 8;

(c) Sign JAA Form 8 and JAA Form 10, and retain a copy of each form in the regional office files;

(d) Provide a copy of the completed and signed JAA Form 8 to the inspector;

(e) Forward a copy of any correspondence from the JAA regarding a specific repair station to its inspector and place a copy in regional office files; and

(f) If any deficiencies are noted:

i. File a copy of the repair station's correction action plan in the regional office files;

ii. File a copy of the repair station's written notification that all deficiencies have been corrected in the regional office files; and

iii. File a copy of any JAA letter accepting the corrective action taken by the repair station in the regional office files and forward a copy to the repair station's inspector.

(2) For any MIST visit the inspector should:

(a) Review the results of the MIST inspection by obtaining a copy of JAA Form 8 from the FAA Regional JAA Coordinator;

(b) File a copy of the MIST inspection results in the repair station's certification file;

(c) If deficiencies are noted:

i. Ensure an appropriate representative of the repair station is briefed on the deficiencies at the end of the MIST visit;

ii. Confirm any CFR-related findings with the repair station in writing;

iii. Meet with an appropriate representative of the repair station to review all deficiencies in detail, if necessary;

iv. Review the repair station's corrective action plan, if required;

v. Forward a copy of the repair station's corrective action plan to the FAA Regional JAA Coordinator, if applicable; and

vi. Ensure the repair station has forwarded a copy of its corrective action plan to the JAA, if applicable;

(d) Receive written notification from the repair station that all deficiencies have been corrective and forward a copy to the FAA Regional JAA Coordinator;

(e) Ensure documentation recording each deficiency and correction action is in the repair station's certification file;

(f) Place any letter from the JAA accepting the corrective action taken by the repair station in the repair station's certification file; and

(g) Ensure any discrepancies are corrected adequately by inspecting the repair station, if necessary.

(3) If the MIST determines there is a safety failure or significant failure to comply with the conditions for acceptance, this could result in complete or partial revocation of the repair station's JAR 145 acceptance and part 145 certification.

C. Document Task. File all supporting paperwork in the certificate holder's office file and update the Vital Information System, if appropriate.

11. FUTURE ACTIVITIES. Schedule and conduct a reinspection, if appropriate.

CHAPTER 202. DESIGNATE/RENEW DESIGNATED MECHANIC EXAMINER OR DESIGNATED PARACHUTE RIGGER EXAMINER

SECTION 1. BACKGROUND

1. PROGRAM TRACKING AND REPORTING SUBSYSTEM (PTRS) ACTIVITY CODES.

- *Maintenance:* 3522/3524

3. OBJECTIVE. This chapter provides procedures for the issuance, renewal, and cancellation of certificates for Designated Mechanic Examiners (DME) or Designated Parachute Rigger Examiners (DPRE).

5. GENERAL.

A. Authority. Title 14 of the Code of Federal Regulations (14 CFR) part 183 provides for DME's and DPRE's. Federal Aviation Administration (FAA) Order 8610.4, Aviation Mechanic Examiner Handbook, current edition, describes the procedures for designation and renewal of the DME. FAA Order 8610.5, Parachute Rigger Examiner Handbook, current edition, describes the procedures for designation and renewal of the DPRE.

B. An examiner will be required to conduct oral and practical tests within the guidelines provided by the FAA. The examiner must understand the authority and limitations of the designation.

NOTE: The district office must establish a need on the part of the public for each designation issued or renewed.

7. ELIGIBILITY.

A. Applicants for DME or DPRE certificates must have the following qualifications:

- Be at least 23 years old
- Show evidence of a high level of knowledge in the subjects required by 14 CFR part 65 for the certification of mechanics or parachute riggers
- Have available a fixed base of operation equipped to test each subject area for the ratings authorized

B. An applicant should be personally known by inspectors of the designating district office as a person with a reputation for honesty and dependability. If this is not the case, the applicant may be recommended in writing by an FAA inspector personally acquainted with the applicant's work, standards, and integrity for at least one year.

C. An applicant for a DME certificate must have held a mechanic certificate for at least five years. The applicant's mechanic certificate and rating(s) must correspond to the examiner designation(s) sought.

(1) The applicant must have actively exercised the privileges of the mechanic certificate for the three years immediately before the issuance of the examiner designation.

(2) When eligible persons are not available for designation, the five-year requirement may be reduced to three years if the applicant meets all other requirements and possesses above average technical qualifications.

D. The applicant for a DPRE certificate must have held a master parachute rigger certificate for at least 2 years. The applicant must have actively exercised the privileges of the rigger certificate for at least the 2 years immediately before the issuance of the examiner designation.

E. All new applicants for DME or DPRE will be evaluated and rated by the National Examiner Board (NEB). Reinstated applicants who will be exercising their privileges in the same Flight Standards District Office (FSDO) location as previously held need not go through the NEB. All others must apply through the Board. Specific procedures or questions should be addressed to the NEB, AFS-640, Oklahoma City, Oklahoma.

F. The NEB was created to improve designated examiner oversight and standardization, develop initiatives for the designee program, and represent Flight Standards on designee issues. The NEB is a permanent board composed of representatives from Flight Standards divisions having designee oversight responsibility. The NEB meets quarterly and schedules additional meetings as required. The NEB oversees and administers the following functions.

(1) The National Examiner Candidate Pool. The NEB is responsible for maintaining a national examiner candidate pool which contains the application files of all examiner applicants who meet applicable requirements for the designation sought. Applicants approved for assignment to the national examiner candidate pool will be categorized by the geographical area(s) which the applicant can serve and by the type(s) of designation sought.

(2) Examiner Applications. The NEB accepts and evaluates applications from examiner applicants whose designations are governed by the guidance in FAA Order 8610.4 and/or 8610.5, except as noted in paragraphs G(5) and (6) below. The NEB will use the general qualification requirements, technical requirements, and experience criteria detailed in the current editions of

FAA Orders 8610.4 and 8610.5 for each type of designation, as applicable, to determine whether applicants meet FAA requirements for the initial examiner designation sought.

(3) DME and DPRE applicants must meet all of the qualification criteria of FAA Orders 8610.4 or 8610.5, as applicable.

(4) DME and DPRE applicants must have a fixed base of operation within the geographical area of the FSDO under whose jurisdiction they wish to serve.

G. Referral of Examiner Candidates for Initial Designation. At the request of a FSDO, which has determined the need for an examiner, the NEB will send the FSDO copies of applicant files for the three most highly qualified candidates appropriate to the designation needed and the geographic area to be served. If fewer than three appropriate candidates are on file in the national pool, the NEB will send the FSDO files for all of the available candidates appropriate to the designation needed and geographic area to be served.

(1) The FSDO may accept or decline any candidate referred by the NEB. Except in cases where fewer than three candidates are referred by the NEB, or when a referred candidate does not meet all applicable criteria, a FSDO that declines all of the candidates referred by the NEB may not request further referrals for a period of 6 months.

(2) If fewer than three appropriate candidates are available, the FSDO may maintain an open request for the files of all additional candidates that become available through the national examiner candidate pool until such time that the NEB is able to refer three candidates.

(3) If a FSDO requests DME/DPRE candidates and there are no candidates in the national examiner pool available to provide service in that FSDO's geographical area, the NEB will immediately advise the FSDO that no candidates are available. If the FSDO deems the need for a DME/DPRE to be time critical and finds that geographical resolution is not appropriate or available, the FSDO may encourage a suitable applicant to apply and forward that person's application to the NEB with a request for priority processing.

(4) Upon receipt of a DME/DPRE application with a FSDO's request for priority processing, the NEB will convene within 10 days and approve or disapprove the application. The NEB will advise the FSDO and the applicant by the most expeditious means of the approval/disapproval of the application and continue to give priority handling to the FSDO's request until the critical shortage is filled.

(5) If a FSDO that has declined all candidates referred by the NEB requests new referrals after a lapse of 6 months, the NEB will again refer the three most highly qualified candidates currently in the national pool, appropriate to the designation needed and the geographic area to be served. Whether the candidates are the same or different from those previously referred shall have no bearing on current or subsequent referrals.

(6) The NEB reviews the applicant's accident/incident/violation history at the time of initial evaluation; however, the NEB does not maintain a record of the applicant's enforcement history. The requesting FSDO reviews each candidate's accident/incident/violation history at the time the candidates' files are forwarded to the FSDO by the NEB. The review must be accomplished before the FSDO selects a candidate for designation.

9. ORIENTATION AND STANDARDIZATION.

A. Candidates for initial designation must successfully complete an Initial Technical Personnel Examiner Standardization Seminar before the issuance of the designation.

(1) Inspectors who have never held a DME certificate shall attend the Recurrent Technical Personnel Examiner Standardization Seminar. Inspectors must attend the Initial Technical Personnel Examiner Standardization seminar before being assigned as the office DME focal point.

(2) Candidates for DME and DPRE must attend the Initial Technical Personnel Examiner Standardization seminar presented by AFS-640 before designation.

B. Examiners must successfully complete a Recurrent Technical Personnel Examiner Standardization Seminar every other year or their designations will be canceled.

(1) The Examiners must schedule themselves for the Recurrent Technical Personnel Examiner Standardization seminar at least once every 2 years and attend.

(2) The supervising district office may extend the two-year recurrent training requirement for an additional 12 months.

C. Assignment as the FSDO/International Field Office (IFO) DME Focal Point. Each office will assign one inspector as the DME focal point. Assistant focal points may also be assigned. Duties of DME focal points are as follows:

(1) Monitor the activities of DME's to ensure adequate performance and that the guidelines are followed as set forth in FAA Orders 8610.4 and 8300.10, Airworthiness Inspector's Handbook.

(2) Ensure that a meeting of DMEs and inspectors with DME oversight is conducted annually to discuss DME procedures, problems, and designation renewal. Follow up

to ensure that DMEs are notified of upcoming renewal Standardization seminars.

(3) Maintain liaisons with AFS-340 and AFS-640 on current DME policy.

(4) Provide guidance and on-the-job training (OJT) to other inspectors in the office that have responsibility for DME activity.

(5) Provide guidance and OJT for office personnel that perform functions dealing with any portion of the airman certification file, to include the Airman Certification and/or Rating Application, FAA Form 8610-2. (This would include Aviation Safety Technicians (AST) that might review applications before the inspector, or review applications from graduates of Aviation Maintenance Technician (AMT) Schools.)

(6) Ensure that all personnel are made aware of changes to the policy regarding the DMEs.

D. FAA Airworthiness Inspectors shall attend the seminar(s) with their assigned examiners, or at least at the same frequency.

11. FIXED BASE OF OPERATION. Each examiner must have available a fixed base of operation equipped to exercise the authority of the designation.

A. The equipment and materials provided must be adequate for an airman applicant to demonstrate the knowledge and skills required for the rating sought. Adequate equipment and materials is defined as having equipment and materials to test in at least 25 percent of all level 1, level 2, and level 3 practical projects in each subject area. Equipment and materials may be evaluated by selecting random projects in each subject area from the oral and practical test guide. If the examiner cannot test in each subject area or if the range of possible projects in any subject area is too restrictive, the examiner's equipment and materials will be considered inadequate.

B. Airworthy aircraft, other aircraft, aircraft subassemblies, operational mock-ups, and other aids may be used for testing airman applicants.

C. Tools, equipment, materials, and necessary apparatus required to complete a project assignment must be the type recommended by aircraft manufacturers or accepted in the aviation industry.

D. The examiner will be required by the designating district office to report any significant change in the equipment or materials available to test applicants.

13. PRIVILEGES AND LIMITATIONS.

A. A designated examiner is authorized to do the following:

(1) Accept applications and conduct oral and practical tests appropriate to the examiner's certificate of authority (COA);

(2) Charge a reasonable fee for services and materials. The amount of the fee and the conditions required for passing the tests should be clearly understood; and

(3) Issue originals of FAA Form 8060-4, Temporary Airman Certificate, unless otherwise directed by the designating district office.

B. A designated examiner shall NOT do the following:

(1) Conduct tests at locations other than the base of operations, unless authorized by the supervising FAA district office;

(2) Conduct or monitor any portion of FAA airman knowledge tests;

(3) Endorse, amend, alter, or issue any permanent airman certificate;

(4) Reissue an expired temporary airman certificate;

(5) Conduct oral and practical tests simultaneously with more than one applicant unless both the DME and the applicant are affiliated with the same AMT schools, and then the DME may only test two applicants at a time;

(6) Combine teaching with testing of an applicant;

(7) Conduct oral and practical tests without proof of the applicant's eligibility as required by part 65; and

(8) Conduct any oral and practical test unless the FSDO/IFO having surveillance authority over the DME has authorized the applicant to test in that district. This authorization must take place by affixing an appropriate signature on the Airman Certificate and/or Rating Application (FAA Form 8610-2) or through other written means if the applicant has already been authorized by an inspector in another geographic location.

C. DMEs wanting to administer oral and practical tests outside the geographical area of their designating district office must first accomplish the following:

(1) Request permission in writing from both the designating district office and the office where the tests will be conducted;

(2) Provide these offices with written notification of the date and address of the testing site;

(3) Make the request so that the designating district office has sufficient time to evaluate the proposal; and

(4) Provide evidence to the receiving district office that the temporary test site has adequate facilities,

equipment, and materials for testing applicants for the ratings sought.

D. When permission is granted for an examiner to administer oral and practical tests in the area of jurisdiction of another district office, the examiner then comes under the jurisdiction of that office. Certification files must be submitted to the jurisdictional district office. Requests for testing outside the DME's regional geographic area will be denied.

15. RENEWAL.

A. All designations expire on October 31, every year. The designation will be renewed when the district office determines that the need for the designation still exists and the examiner meets the requirements for renewal.

B. An annual meeting of designated examiners shall be held by each district office to discuss examiner procedures and problems. This meeting may be held in conjunction with a Recurrent Technical Personnel Examiner Standardization seminar conducted by AFS-640.

C. A renewal file presented by the designee must include FAA Form 8430-9, Certificate of Authority, FAA Form 8110-28, Application and Statement of Qualification, and a record of all oral and practical tests conducted since the issuance or last renewal of the designation. In addition, include a Certificate of Attendance at the Recurrent Technical Personnel Examiner Standardization seminar, if necessary. DME's must meet all requirements of FAA Order 8610.4, paragraph 2-2g to be renewed.

17. VOLUNTARY SURRENDER OR CANCELLATION OF DESIGNATION.

A. Voluntary surrender of an examiner's designation shall be treated as a cancellation.

B. Designations may be canceled for the following reasons:

- The examiner no longer meets the requirements for designation
- The need for an examiner's services no longer exists
- There is evidence of malpractice or fraud
- The examiner needs constant and/or continuing assistance and guidance in order to comply with procedures and the requirements of the regulations
- The examiner shows an inability to work well with applicants and/or FAA personnel
- FAA policy changes affect the examiner program
- The examiner does not attend or does not successfully complete a Recurrent Technical Personnel Examiner Standardization seminar required as a condition of renewal
- The supervising FAA district office determines that cancellation is appropriate (§ 183.15(d)(6))

NOTE: District offices should keep in mind that a cancellation of designation may be contested. Therefore, documentation of substandard performance, lack of need, or other reasons for cancellation should be established before taking this action.

SECTION 2. PROCEDURES

1. PREREQUISITES AND COORDINATION REQUIREMENTS.

A. Prerequisites:

- Knowledge of 14 CFR parts 65 and 183

B. Coordination. This task may require coordination with the NEB or AFS-640.

3. REFERENCES, FORMS, AND JOB AIDS.

A. References (current editions):

- 14 CFR parts 1, 21, 39, 43, 91, and 183
- FAA Order 8610.4, Aviation Mechanic Examiner Handbook
- FAA Order 8610.5, Parachute Rigger Examiner Handbook
- AC 183-32, Certificated Technical Personnel Examiners Directory

B. Forms:

- FAA Form 8000-5, Certificate of Designation
- FAA Form 8110-28, Application and Statement of Qualification (DME-DPRE)
- FAA Form 8430-9, Certificate of Authority

C. Job Aids. None.

5. PROCEDURES.

A. Ensure the Applicant Meets the Qualifications for the Designation Sought.

B. Determine Need for Initial/Continuing Designations. Evaluate the following:

- Public need for the designation
- Number of requests for the service received by the district office
- Activity levels of current designees

C. Treat All Former Designees as Original Designations. If the former designee has not turned in the superseded COA, then ensure that it is returned and destroyed. Contact AFS-640 to determine whether the former designee must retake the initial course.

D. DME/DPRE Application Procedures. The applicant is responsible for sending all required application materials and documents to the NEB.

(1) The applicant sends the completed form to the NEB. The NEB will evaluate the application and advise the applicant by letter whether or not the applicant meets the applicable criteria for the designation sought. If the applicant meets the criteria, the NEB will advise the applicant that the application has been accepted and instruct the applicant to apply for a predesignation knowledge test at a computerized test center. The cost of the predesignation test is borne by the applicant. The applicant SHOULD NOT take the predesignation test until receiving a letter of acceptance from the NEB. If the applicant does not meet the applicable criteria, the NEB will advise the applicant how the deficiency may be corrected. The applicant should retain a copy of all documents submitted to the NEB for the applicant's personal records. Application documents should be addressed to:

Federal Aviation Administration
Designee Standardization Branch, AFS-640
ATTN: National Examiner Board
PO Box 258082
Oklahoma City, OK 73125

(2) Upon receiving a letter of acceptance by the NEB, the applicant should take the appropriate predesignation knowledge test at any FAA computerized testing center. The applicant should request the Designated Maintenance Examiner Test or the Designated Parachute Rigger Examiner Test, as applicable to the designation sought. The NEB will verify the applicant's test grade. The passing grade for the predesignation knowledge test is 80 percent. If an applicant fails the predesignation test, that applicant must wait 30 days from the date the test was failed before retaking the test. The applicant should retain a copy of the test report.

(3) After receiving the applicant's test report and reviewing the applicant's accident/incident/violation history, the NEB will notify the applicant in writing whether the application is approved or disapproved. Application materials from applicants who are not approved for the national candidate pool will be returned to the applicant. Applicants who are approved will be assigned to the national examiner candidate pool for a period of 2 years or until the applicant is selected for designation by a FSDO, whichever comes first. When a FSDO accepts a candidate for designation, the candidate's file will be transferred to the designating FSDO. After 2 years, candidates not selected for designation will be deleted from the pool and must repeat the application process in order to apply for reassignment to the candidate pool.

(4) An applicant who is not approved for assignment to the candidate pool may request a review of the NEB's decision by a Flight Standards appeals board. The decision of the appeals board is final. A letter signed

by the Flight Standards Service Director will convey the board's decision to the applicant.

7. TASK OUTCOMES.

A. File PTRS Data Sheet.

B. Issue Designation. Designation numbers will be the same as their respective mechanic or master parachute rigger certificate numbers.

(1) The designee and the issuing inspector should each sign FAA Form 8430-9, Certificate of Authority. Enter the jurisdictional district office number on the reverse side.

(2) All designations expire on October 31 of each year. Those made in October will expire the following year.

(3) Issue FAA Form 8000-5, Certificate of Designation. This certificate may be issued for display purposes.

(4) An examiner may be designated to serve outside the United States, provided that the designation will serve U.S. citizens abroad and the examiner's activities will be properly supervised by the designating FAA office. Certification limitations may be placed on the examiner as provided by current FAA policy regarding certification of airmen outside the U.S.

9. FUTURE ACTIVITIES.

A. Provide examiners with the publications necessary to perform their duties.

B. Cancellation or Voluntary Surrender of Examiner Designation. Treat voluntary surrender as a cancellation. When cancellation becomes necessary, notify the designee in writing. Request surrender of FAA Form 8430-9, Certificate of Authority, and return of all supplies and documents furnished by the FAA.

(1) If the cancellation is based on deficient performance or the actions of the examiner, give the examiner an opportunity to discuss the problems with the district office. Ensure the items for proof are maintained in a file for future reference.

(2) Notify the examiner that cancellation is effective upon receipt of the written notice. The letter of cancellation may also contain a statement thanking the examiner for services rendered.

(3) Unless the supervising district office decides otherwise, allow the examiner to retain FAA Form 8000-5, Certificate of Designation.

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CHAPTER 36. MONITOR CONTINUOUS AIRWORTHINESS MAINTENANCE PROGRAM/REVISION

SECTION 1. BACKGROUND

1. PROGRAM TRACKING AND REPORTING SUBSYSTEM (PTRS) ACTIVITY CODES.

A. Maintenance: 3637

B. Avionics: 5637

3. OBJECTIVE. This chapter provides guidance for ensuring that the operator's total continuous airworthiness maintenance program (CAMP) includes the maintenance/ inspection tasks necessary to maintain its aircraft in an airworthy condition.

5. GENERAL.

A. Definitions.

(1) Scheduled Maintenance. A group of tasks, accomplished at specified intervals, that prevent deterioration of the safety and reliability levels of the aircraft.

(2) Unscheduled Maintenance. A group of tasks resulting from scheduled maintenance, reports of malfunctions, and data analysis, used to restore equipment to acceptable safety and reliability levels.

(3) Accountability. For the purposes of this job task, "accountability" refers to the procedures established by the operator to control the issuance and return of completed job cards, non-routine coupons/sheets, and other work forms issued during any maintenance/inspection function.

(4) Work Packages. Work packages contain detailed instructions, standards, methods, and techniques for performing a task and may be presented as work forms, job cards, and/or other accepted methods. A work package satisfies accountability and recordkeeping requirements.

B. Continuous Airworthiness Maintenance Program.

(1) Operators operating under Title 14 of the Code of Federal Regulations (14 CFR) parts 121/135 (10 or more) and 129, section 129.14 are required to have a CAMP. The total CAMPs must be detailed in the operator's manual system. The manual(s) must contain specific maintenance and inspection tasks, including methods, standards, and techniques for accomplishing these tasks.

(2) There are additional programs required by the regulations, including training programs, continuing analysis and surveillance programs, recordkeeping and reporting systems, etc. These programs are an important part of the total CAMPs and are used to support the maintenance tasks.

(3) An approved CAMP establishes the operator as a maintenance entity, and when followed, ensures the continued airworthiness of an aircraft and its equipment.

C. Operations Specifications (OpSpecs). The scheduled maintenance program is derived from the approved requirements stated in the operator's OpSpecs. The operator must have work forms, job cards, and/or other methods to accomplish the scheduled maintenance program and have manual procedures for implementing each special authorization.

NOTE: OpSpecs are considered to be as legally binding as the regulations themselves.

7. PERFORMING THE INSPECTION.

A. The Certificate-Holding District Office (CHDO). Since the operator is required to provide the appropriate manuals containing the CAMP to the CHDO, the majority of this task is performed there. At a minimum, the CHDO must be provided with the following:

- The general maintenance manual
- Detailed instructions for accomplishing the scheduled maintenance/inspection program
- Aircraft manufacturer's maintenance manuals incorporated by the operator, including the illustrated parts catalogue

B. Maintenance Facility. The CHDO normally does not have, and is not required to have, all of the repair/overhaul manuals for engines, propellers, and appliances. The Aviation Safety Inspector (ASI) must therefore go to the operator's facility to ensure that the operator has the appropriate instructions and standards to accomplish its repair/overhaul maintenance functions.

C. Manual System. The operator's manual system must define every facet of the CAMP, and should consist of the following:

(1) General Maintenance Manual. The manual(s) containing general information on how the operator conducts its business. These manuals contain the scheduled maintenance program instructions and requirements for a specific type of aircraft. The manuals must include

provisions for accountability and for meeting the recording requirements of 14 CFR sections 121.380 and 135.439, and may include the following:

- Instructions to accomplish scheduled checks (lettered, phased, numbered, etc.), including the job cards for accomplishing these checks
- Job cards for accomplishing recurring non-routine maintenance, i.e., engine change cards, propeller change cards

(2) Technical Manuals for Maintenance Standards and Methods. These manuals contain the standards for overhaul, repair, replacement, calibration, and other requirements to return the aircraft and its components to its original or properly altered condition. They consist of the current manufacturer's maintenance/overhaul manuals and/or other standards developed by the operator and accepted by the Federal Aviation Administration (FAA).

D. Key Areas of the Maintenance Program.

(1) Aircraft Inspection Requirements. This area includes routine inspections and tests performed on the aircraft at prescribed intervals.

(a) In the past, operators have been approved to use maintenance programs developed by operators with similar equipment but greatly different operational environments. To ensure that the aircraft is maintained properly, it is imperative that whatever combination of inspection intervals are used (calendar time, cycles, or hours), that the inspection is performed by whichever interval occurs first. This compensates for differences or changes in the operator's operational environment.

(b) Those operators that do not have calendar time requirements must equate the current aircraft utilization in hours to a calendar date. For example, an operator has operated 3,000 hours in the past 12 months and has a 3,000 hour inspection interval. The inspection requirement should therefore be 3,000 hours or 12 months, whichever comes first.

(2) Scheduled Maintenance. This area concerns maintenance tasks performed at prescribed intervals.

(a) Some scheduled maintenance tasks are accomplished concurrently with inspection tasks, i.e., Airworthiness Directive (AD) notes and service bulletins, that are a part of the inspection element and may be included on the same form. Scheduled tasks include such items as:

- Replacement of life-limited items
- Replacement of components for periodic overhaul or repair
- Special inspection such as x-rays
- Checks or tests for on-condition items
- Lubrication

(b) Segmented Inspections and Built-In Inspection Tolerances (WINDOWS).

i. Principal Maintenance Inspectors (PMI) assigned to operators that have CAMPs during the course of normal surveillance will review their operator's program to ensure that the inspection completion times average at or before the approved time/due date.

ii. PMIs will ensure that the use of WINDOWS in their operators' CAMPs do not allow the accumulation of time resulting in an overall escalation in the inspection interval.

iii. Operators/air carriers that are authorized short-term escalation will not be eligible for WINDOWS.

NOTE: This guidance supersedes any other orders, memorandums, or letters on this subject.

(c) Special work forms can be provided for accomplishing these tasks, or they can be specified by a work order or other document. Instructions and standards for accomplishing each task must be provided to ensure that the work is done in accordance with established procedures and is properly recorded.

(d) Special emphasis should be placed on recordkeeping requirements of a scheduled maintenance program, since past inspections have found that the status of a scheduled maintenance activity was not supported by adequate records. This has caused considerable problems in determining the current status of life-limited parts, AD requirements, overhaul records, etc., since the 14 CFR requires each operator to keep accurate maintenance records.

(3) Unscheduled Maintenance. This area provides procedures, instructions, and standards to accomplish maintenance tasks generated by the inspection.

(a) A continuous aircraft maintenance record can be used for occurrences and the resulting corrective actions between scheduled inspections. Inspection discrepancy forms (non-routine coupons) process unscheduled maintenance tasks in conjunction with scheduled maintenance.

(b) Instructions and standards for unscheduled maintenance are provided in the operator's technical manuals, consisting of the aircraft structural repair manual and manufacturer's maintenance manuals for aircraft, engine, propeller, and appliances. These manuals are a part of the approved CAMP, and must be used when performing maintenance.

(c) When there is no technical information available and maintenance is required, the operator must develop or acquire the data needed to perform the maintenance. This maintenance data must be evaluated as major or minor, according to the operator's procedures.

(d) Past inspections have revealed that procedures for determining major and minor repairs have

been deficient, and that some repairs have been improperly categorized. As a result, major repairs have been performed without FAA-approved data. Special emphasis must be made by ASIs to ensure that operators properly classify repairs.

(4) Repair/Overhaul of Engine, Propeller, and Appliances. This area concerns shop operations which, although they encompass scheduled and unscheduled tasks, are remote from the maintenance performed on the aircraft as a unit.

(a) Aircraft engine and propeller manuals containing instructions for installation, operation, servicing, and maintenance are accepted by the FAA. These manuals are accepted as part of type certification and are incorporated as part of the operator's manual system. They require no further review by the FAA.

(b) The appliance manufacturer's manual that the operator chooses to incorporate as a part of its maintenance manual is not formally approved. It is considered by the administrator to be acceptable data for accomplishing major or minor repairs.

(c) If the airframe, engine, or propeller manufacturer's instructions require special procedures, tolerances, or specifications, these instructions must prevail over the appliance manufacturer's instructions.

(d) The FAA can formally issue supplemental information, including ADs, that supersede all manufacturer's specifications.

(5) Structural Inspection/Airframe Overhaul. Most of the information required to develop an initial structural inspection program will be developed by the manufacturer.

(a) The scheduled inspection program provides the framework for all the scheduled maintenance packages. Structural inspections are normally integrated throughout the operator's scheduled maintenance program.

(b) The various levels of inspection must be clearly defined in the operator's program. For example, the area under consideration may require a visual inspection during pre-flight, where a higher inspection such as "B" or "C" check may require more than a visual inspection of the same area. A comprehensive inspection or airframe overhaul is usually referred to as a "D" check, and may include all, or nearly all, of the scheduled tasks in a maintenance program.

(6) Structural Inspection Document Requirements. When the operator has aircraft that are identified in a particular structural inspection document, the operator must incorporate these additional age-related structural inspections into its scheduled inspection program.

(7) Required Inspection Items (RII). This area concerns maintenance work which, if improperly accomplished, could endanger the safe operation of the aircraft. RII items appear in all elements of the operator's CAMP. They receive the same consideration regardless of whether or not they are related to scheduled or unscheduled tasks. The fact that an RII requirement arises at an awkward time or inconvenient location has no bearing on the need to accomplish it properly.

(a) The operator must designate those items that need to be inspected, and must develop methods for performing the required inspections. The operator should consider the following when determining what tasks to designate as RII items:

- Installation, rigging, and adjustments of flight controls and surfaces
- Installation and repair of major structural components
- Installation of an aircraft engine, propeller or rotor, and the overhaul or calibration of certain components, such as engines, propellers, transmissions, and gearboxes, or navigational equipment, the failure of which would affect the safe operation of the aircraft

(b) It is the responsibility of the operator to evaluate the work program and identify RII items in a suitable manner. The ASI must evaluate the proposed list of RII items to determine if it is adequate.

(c) RII item findings consistently represent a major portion of an inspection. The following are examples of these findings:

- No specific training programs developed for RII personnel
- No authorization list of RII inspectors
- RII items not accomplished
- RIIs performed by unauthorized persons
- Failure to comply with RII procedures
- Contract personnel not properly trained/ qualified/authorized
- Lack of proper RII-designated items
- Failure to have countermand procedures

E. Special Maintenance/Safety Considerations.

(1) There exists, in transport category aircraft, a potential hazard consisting of fires in inaccessible areas of the aircraft and the resulting hazards to cabin occupants.

(a) During original certification of the aircraft, clean or uncontaminated material, such as insulation blankets, will not readily support combustion. However, after extended periods of service they have been found to be contaminated with lint, dirt, oily films, lubricant, fuel, and corrosion inhibitors that are conducive to ignition by low intensity ignition sources. Low intensity ignition sources can consist of the following:

- Arc tracking of aircraft wiring and/or fluorescent light ballasts

- Arcing light sockets and/or battery ground cables

(b) It is recommended that each ASI review the operator's CAMP to determine if an effective quality control procedure is in place that would discover these insulation breakdowns. In addition, ASIs should ensure that the program addresses the periodic inspection of aircraft wiring and the removal of contaminants, especially in inaccessible areas.

(c) ASIs should also be aware of the conditions associated with Kapton insulation breakdown. Operators should be advised to exercise caution in exposing the aircraft wiring to the adverse conditions under which they have control, notably:

- Increased strain (tighter wire bends)
- Water
- Exposure to high pH content cleaning compounds

(2) Emergency and Flotation Equipment. Air carriers are not allowed to deviate from compliance with 14 CFR sections 121.309(b)(1) and 135.421 (a) and (b), pertaining to the regular inspection of emergency and flotation equipment. The frequency of inspection is the interval defined in the air carrier's OpSpecs-controlled maintenance program.

(a) Specific guidance on frequency of inspection and life-limits are contained in the respective manufacturer's maintenance manuals. Most life vest manufacturer's manuals address the age issue of life preservers. The manuals state that if the vests are over 10 years old and cannot pass the leakage test or require repair or replacement parts, that they are non-repairable. If a particular operator is experiencing failure rates at periods shorter than 10 years, that operator's inspection interval should be changed to adjust for certain environmental conditions or unique handling situations.

(b) ASIs should review their operator's maintenance program to ensure the effectiveness of the inspection intervals for emergency and flotation equipment and to ensure regulatory compliance. The ASI should also review the operator's failure rate to determine if an adjustment to the inspection interval should be considered.

(3) ASIs should audit the oral and written changeover procedures between arriving and departing maintenance shifts, required by their applicable manuals, to ensure that the exact status of all phases of "maintenance in progress" is accurately transferred between shifts.

(4) ASIs should insure that a lightning/High Intensity Radiated Fields (HIRF) protection maintenance program is submitted to the CHDO. Operators of older generation aircraft with mainly analog electrical/electronic (non-digital) controls and displays must ensure that their maintenance programs include lightning inspection tasks. An integral part of this program is a developed sequence of inspections that are required in the event of exposure to lightning and/or HIRF environment, as well as maintenance/inspection due to aging and environmental degradation of aircraft or during heavy zone inspections. The program should address protection features such as structural shielding, insulation degradation, and electrical bonding integrity. The lightning and HIRF protection maintenance program should be prepared within the existing framework of maintenance activities such as AC 121-22A, Maintenance Review Board. As a minimum this plan should:

(a) Identify aircraft flight critical systems and equipment, associated wiring, and locations on aircraft.

(b) Identify aircraft systems and/or line replaceable units (LRU) that may be affected by exposure to lightning/HIRF, and whose proper operation is critical to the operation of the aircraft. Determine equipment locations within the aircraft and the routing of wiring between LRUs.

(c) Determine if any of the critical systems and equipment are mounted outside the protective structure of the aircraft. The assurance program should provide information on assessing the protection level of these components and assemblies.

(d) Identify specific lightning and HIRF protection features, including wire shields, connectors, bonding jumpers, structural shielding, and terminal protection devices.

(e) The plan should identify and detail the type and frequency of inspections and maintenance. The plan should include requirements for test and inspection of electromagnetic protection installed within the equipment, if identified and required by the equipment manufacturer.

(f) Identify items which rely on shield and connector bonding, sealing materials, ground jumpers, structural field foil liners, etc., for electromagnetic protection. Provide a program for evaluation and determination that proper protection is provided. Maintenance efforts should make sure that these items are properly identified to preclude the possibility of degradation or accidental removal during normal aircraft maintenance that could negate or eliminate the designed protection.

(g) Identify devices which may degrade in time due to corrosion, fretting, flexing cycles or other causes.

(h) The results of the tests made during the performance of the inspection program should be evaluated to ascertain if the maintenance program needs additions/deletions, escalation or reduction in inspection intervals, and the impact on scheduled/unscheduled maintenance programs.

SECTION 2. PROCEDURES

1. PREREQUISITES AND COORDINATION REQUIREMENTS.

A. Prerequisites:

- Knowledge of the regulatory requirements of 14 CFR parts 121, 129 and 135, as applicable
- Successful completion of the Airworthiness Inspectors Indoctrination course or previous equivalent
- Familiarity with the operator's maintenance procedures manual and operations specifications
- Familiarity with the type of aircraft being inspected

B. Coordination. This task requires coordination between the assigned Principle Maintenance Inspector (PMI), the Principle Avionics Inspector (PAI), and FAA supervisory personnel.

3. REFERENCES, FORMS, AND JOB AIDS.

A. References:

- 14 CFR sections 43.13(a) and 43.13(c)
- Advisory Circular (AC) 120-16, Continuous Airworthiness Maintenance Programs, as amended
- Maintenance Steering Group (MSG) 2 and 3 documents
- Operator's OpSpecs (Part D)
- Operator's maintenance procedures manual

B. Related Reading Material. A comprehensive discussion of issues relating to lightning and HIRF environment can be found in the following:

- AC 20-53, Protection of Airplane Fuel Systems Against the Fuel Vapor Ignition Due to Lightning, current edition
- AC 20-136, Protection of Aircraft Electrical/ Electronic Systems Against the Indirect Effects of Lightning, current edition
- RTCA Document DO-160, Environmental Conditions and Test Procedures for Airborne Equipment, current edition
- DOT/FAA/CT-89/22, Aircraft Lightning Protection Handbook, F. A. Fisher, J. A. Plumer, and R. A. Perala

C. Forms. None.

D. Job Aids. None.

5. PROCEDURES.

A. Review the Operator's OpSpecs. Determine what the applicable maintenance program requirements are.

B. Review the Operator's Manual System. Ensure that the manual system includes procedures for accomplishing the following:

(1) Aircraft Inspection Requirements.

(a) Ensure that the maintenance manual contains detailed instructions for accomplishing required inspections and checks.

(b) Compare a scheduled check (lettered, phased, numbered, etc.) work package to the OpSpecs inspection requirements to ensure that all items are included and are scheduled at the appropriate inspection intervals.

(c) Sample items identified for inspection/check and ensure that the work packages have been developed to accomplish these items. The work packages must be appropriate to the identified maintenance process, e.g., visual inspections, detailed inspections, functional checks.

NOTE: A "C" check work package is preferred due to its size and complexity.

(d) Ensure that work packages include provisions for the accountability and recording of these inspection tasks.

(e) Ensure that there are provisions for accountability and recording of non-routine maintenance resulting from the findings of the scheduled inspection.

(2) Scheduled Maintenance Requirements.

(a) Sample items requiring scheduled maintenance to ensure the following:

- Work forms, job cards, and other methods have been developed
- Work forms, cards, and/or methods provide detailed instructions and standards for performing the scheduled maintenance, i.e., servicing/lubrication tasks, restoration tasks, replacement of parts or components with hard-time limitations

NOTE: When performing a sampling review of a revision to the maintenance instructions, job cards/ tasks, lubrication change, etc., if there is any doubt as to the soundness of the request, the ASI should coordinate the request with the appropriate Aircraft Certification Office (ACO).

(b) Ensure that there are provisions for the accountability and recording of the following:

- Scheduled maintenance tasks

- Non-routine maintenance resulting from the scheduled maintenance

(3) Unscheduled Maintenance Requirements.

(a) Ensure that the operator has procedures, instructions, and standards to accomplish maintenance that results from inspection findings, operational malfunctions, abnormal operations (hard landings, lightning strikes, etc.) or other indications of the need for maintenance, such as corrective action from failure analysis.

(b) Ensure that the operator has procedures for evaluating repair requirements to properly classify the repair as major or minor.

NOTE: All repairs categorized by the operator as major require FAA-approved repair data.

(c) Ensure that the operator has provisions for accounting and recording all unscheduled maintenance activity, i.e., manual sections for handling unscheduled maintenance activity.

(4) Repair and Overhaul of Engines, Propellers, and Appliances.

(a) Ensure that the operator has provided instructions and standards to accomplish repair and overhaul tasks for those items requiring repair and overhaul.

(b) Identify and select several aircraft components from the OpSpecs or controlling documents with overhaul requirements. These components will be used during the on-site inspection to ensure that the operator has repair/overhaul specifications available.

(c) Ensure that the operator has provisions for certifying and recording the work.

(d) Document those items selected for future on-site inspection.

(5) Structural Inspection/Airframe Overhaul.

(a) Ensure that the operator has instructions and standards for performing structural inspections and airframe overhauls.

(b) Sample selected scheduled structural inspection/airframe overhaul items to ensure that work forms, job cards, and/or other methods are available for performing these tasks.

(c) Ensure that the operator has established provisions for accountability and recording of these tasks.

(6) Structural Inspection Document Requirements, if applicable.

(a) Ensure that the operator has identified those aircraft required to be included in a structural inspection program. Compare the operator's aircraft serial numbers with the serial numbers in the structural inspection document to ensure that all required aircraft are included.

(b) Ensure that the operator has instructions and standards for performing inspections on those aircraft subject to supplemental structural inspections as identified in the structural inspection document.

(c) Ensure that the operator has provisions for accounting and recording the work.

(d) Identify and document any aircraft not being maintained according to the Supplemental Structural Inspection Document (SSID) requirements.

(7) Required Inspection Item (RII) Requirements. Ensure the following:

(a) That the operator has designated those maintenance tasks requiring additional inspections (RII inspections).

(b) That the operator has developed procedures to meet the certification, training, qualification, and authorization requirements for RII personnel.

(c) That the operator has procedures for ensuring the accomplishment of RII items.

(d) That the operator has procedures for the buy-back of items that failed the RII inspection and require re-inspection after additional corrective action.

(e) That the operator has procedures and standards for accepting or rejecting RII items.

(f) That the operator has procedures that prevent any person who performs an item of work from performing a RII inspection of that work.

(g) That the operator has procedures for ensuring that the persons performing RII inspections are under the control and supervision of the inspection unit.

(h) That the operator has procedures for ensuring a current list of RII inspectors is maintained, including all names, occupational titles, and inspections they are authorized to perform.

(i) That the operator has procedures to prevent any inspector's decision regarding a required inspection from being countermanded. Exceptions include supervisory personnel of the inspection unit or a person at the level of administrative control that has overall responsibility for the management of the required inspection function and other maintenance.

(j) That the operator has shift-change procedures for RII items to include designating the individual responsible for briefing the arriving shift's supervisors and personnel of the exact status of maintenance in progress. These procedures must also include accounting for the in-progress maintenance status in the operator's work packages.

C. Significant Differences Between Flight Cycle and Flight Time Relationship Affecting Airplane Maintenance Programs. PMIs review existing and future maintenance requirements to verify their operators conform to the following:

(1) An operator's inspection or maintenance program must provide for timely detection of both flight time- and flight cycle-related deficiencies. Operators that have a flight hour maintenance program also must take into consideration flight cycle and calendar inspection and maintenance tasks.

(2) For airplanes that accumulate numerous flight cycles (landing and pressurization) per flight hour, the maintenance or inspection program must cover all flight cycle-related items (systems and structure), and ensure that no adverse trend (high component removal rate or early fatigue cracking in primary structure) is occurring. If adverse trends are occurring, then a program change may be needed. If early fatigue cracking is occurring, the PMI will consult with the FAA ACO before a program change is considered.

(3) For airplanes that accumulate more flight hours per flight cycle, the inspection and maintenance program must consider all structures that are sensitive to gust and maneuvering loads (wings and empennage). If a structure is experiencing fatigue cracking at current inspection intervals, then a program change may be needed. If early fatigue cracking is occurring, the PMI will consult with the ACO before a program change is considered.

(4) SSID programs are mandated by AD. The SSID inspection interval cannot be increased or decreased without FAA ACO approval.

(5) Airplanes that are designed to damage tolerance requirements must have an FAA-approved Airworthiness Limitations Section as part of the Instructions for Continued Airworthiness. The inspections contained in the Airworthiness Limitations Section cannot be increased or decreased without FAA ACO approval.

D. Perform the Inspection at the Operator's Facility.

From the components selected during the review of the repair/overhaul requirements, accomplish the following:

(1) Ensure that the shop performing the repair/overhaul of these components has the overhaul manual available. Review this manual to ensure the following:

- The manual is appropriate to the make and model of the components being repaired/overhauled
- The manual is part of the operator's manual system
- The manual is current

NOTE: For manufacturer's manuals, contact the manufacturer to verify the date and contents of last revision.

- Special tool/test equipment requirements are appropriate to the work being accomplished

(2) Ensure that the shops have the specialized tools/test equipment as required by the manuals.

(3) Determine if personnel are properly trained to perform the maintenance by reviewing the training records. These records may be found in the shop or in other locations established by the operator.

(4) Ensure that the operator's procedures for approval for return to service and any other recordkeeping requirements are being followed.

NOTE: If any discrepancies are noted in any of the above procedures, notify the appropriate supervisory/management personnel to initiate corrective action.

(5) Ensure that the operator has procedures that designate the individual responsible for briefing the arriving shift's supervisors and personnel of the exact status of maintenance in progress. These procedures must also include accounting for the in-progress maintenance status in the operator's work packages.

E. Coordinate The Findings. Due to the seriousness of any finding from this job task, discuss any deficiencies with the appropriate FAA supervisory personnel to verify the inspection findings.

7. TASK OUTCOMES.

A. File PTRS Data Sheet.

B. Completion of this task may result in the following, as applicable:

- A follow-up letter informing the operator of all inspection findings and corrective actions, as required
- Initiation of an FAA Form 2150.5, Enforcement Investigation Report

C. Document Task. File all supporting paperwork in the operator's office file.

9. FUTURE ACTIVITIES. Follow up on corrective actions taken by the operator, as applicable.

CHAPTER 125. MONITOR OPERATOR DURING STRIKE/LABOR UNREST/ FINANCIAL STRESS

SECTION 1. BACKGROUND

1. PROGRAM TRACKING AND REPORTING SUBSYSTEM (PTRS) ACTIVITY CODES.

A. Maintenance: 3644

B. Avionics: 5644

3. OBJECTIVE. This chapter provides information and guidance to be used by Flight Standards managers and inspectors when conducting surveillance of an operator before, during, and after a strike, labor dispute, or financial crisis. Operators that are financially distressed or are having operational difficulties may attempt to curtail certain necessary maintenance and operational activities, thereby adversely impacting safety. Such operators fall into the following categories: approaching economic failure (sustained periods when revenues do not cover costs), insolvency (unable to meet obligations when due), bankruptcy (Chapter Seven (7) and Chapter Eleven (11)), and ongoing labor issues such as strikes and labor disputes. The Federal Aviation Administration (FAA) must ensure that public safety is not jeopardized when operators become financially distressed.

5. BACKGROUND. Continued airworthiness is of particular concern where a strike, labor unrest, or financial stress might cause disruption or inconsistency in an operator's maintenance program. Regional Flight Standards Division (RFSD) managers and Principal Inspectors (PI) must be alert to events that may raise questions about an air carrier's ability to safely conduct operations based on financial distress, labor unrest, or airline strikes. In addition, the Flight Standards Safety Analysis Information Center (FSAIC) maintains a system to analyze financial data reported to the Department of Transportation (DOT) by Title 14 of the Code of Federal Regulations (14 CFR) part 121 air carriers. When the RFSD managers and the PIs determine that an air carrier may have to compromise safe passenger operations due to financial distress, labor unrest, or airline strikes, they shall initiate a program of increased surveillance and coordinate with the Flight Standards Certification and Surveillance Division, AFS-900, prior to implementation of the surveillance plan.

A. Identification and Monitoring of Financially Distressed Operators by AFS-900. AFS-900 receives information from DOT, Aviation Safety Inspectors (ASI), and other sources to identify operators that appear to have become financially distressed. The FSAIC within AFS-900 is tasked with monitoring part 121 operators who conduct domestic, flag, or supplemental operations. When the PIs become concerned that a part 121 operator may be experiencing sustained financial difficulty, this information should also be communicated to the FSAIC through the respective RFSD and the Certificate-Holding District Office (CHDO). The FSAIC will assist the RFSD and the CHDO to determine if the operator is financially distressed, and the RFSD will determine if additional surveillance is needed. The regional office shall establish a point of contact for coordination.

B. Indicators of Financial Distress. Some conditions and events that could be indicative of financial distress are as follows:

- Significant layoffs of personnel due to loss of business
- Major changes in route structures
- Increase in repeat maintenance logbook discrepancies
- Increase in short-term escalations and FAA Minimum Equipment List (MEL) requests
- Major increases in turnover rate among employees/ management
- Delays in meeting payrolls
- Increase in the frequency of complaints against the operator
- Reorganizations/mergers/buy-outs/strikes
- High-risk credit rating in the Safety Performance Analysis System (SPAS)
- National emergency

C. Under these circumstances, the FAA emphasizes maintenance surveillance from anticipation of the crisis through the final settlement. When AFS-900 or the RFSD manager decides to initiate a program of increased surveillance, the RFSD and the CHDO must develop the surveillance program in conjunction with the FSAIC. The details of the surveillance plan should include advanced statistical analysis provided by the FSAIC, specified work activities to be accomplished within the geographic environment, guidance for accomplishing the surveillance program, and a time frame for completing and tracking the surveillance program.

D. Reporting. Strikes and labor disputes generate many inquiries, complaints, and opinions from the general public, Congress, labor unions, and other sources. Therefore, it is imperative that the regional offices and Washington headquarters be kept informed at all times.

NOTE: In the course of conducting special surveillance, an inspector inevitably acquires special knowledge about the operator and forms private opinions. Inspectors and managers should not, however, express their personal opinions or discuss any findings with the press or any members of the public. Inspectors should refer all public inquiries regarding the status of FAA activities to the appropriate regional public affairs office.

E. Resumption of Activities After Strike/Labor Unrest/ Financial Stress. Develop a follow-up surveillance plan once the strike, labor dispute, or period of financial stress has been settled. The PIs shall decide upon a plan of surveillance that will ensure that the operator is able to operate while maintaining the highest level of safety. The CHDO shall notify the regional office and AFS-900 of the follow-up surveillance plan.

SECTION 2. PROCEDURES

1. PREREQUISITES AND COORDINATION REQUIREMENTS.

A. Prerequisites (Inspector Qualifications):

- Successful completion of Airworthiness Inspectors Indoctrination Course for General Aviation and Air Carrier Inspections, or previous equivalent
- Experience with the involved operation
- Knowledge of the regulatory requirements of parts 121, 135, and/or 145
- Knowledge of the equipment involved

B. Coordination. This task requires coordination with the CHDO, other regional offices, and AFS-900.

3. REFERENCES, FORMS, AND JOB AIDS.

A. References:

- 14 CFR parts 121, 135, and 145

B. Forms. None

C. Job Aids:

- Figure 125-1, Job Aid for Airline Strikes, Labor Unrest, and Financial Distress (Non-ATOS Air Carriers)
- Figure 125-1A, Job Aid for Airline Strikes, Labor Unrest, and Financial Distress (ATOS Air Carriers)
- Figure 125-2, Financial Surveillance Plan Checklist
- Figure 125-3, Financial Surveillance Plan Worksheet

5. PROCEDURES.

A. Notify Regional and Washington Offices.

(1) When news is received that a possible strike, labor dispute, or financial emergency could occur, accomplish the following:

(a) Immediately inform AFS-900, FSAIC through the regional office;

(b) Report the extent of the possible work stoppage; and

(c) Report any tentative plans for surveillance during the crisis.

(2) When the strike, labor dispute, or financial emergency actually occurs, immediately inform AFS-900 by e-mail.

(3) Advise the regional office by telephone of any newsworthy events or significant developments.

B. Surveillance Program. The CHDO shall develop a surveillance program that is specific to the requirements of the air carrier. It must show those areas in which surveillance activity will be changed and how such activity differs from planned surveillance. All FAA surveillance inspections shall be closed out using the appropriate PTRS activity codes. A separate FAA Form 8000-36, PTRS Data Sheet, should be completed for each FAA surveillance activity. Geographic units may be tasked to perform additional surveillance activities as required. The program must address those significant areas of concern outlined in figure 125-2, Financial Surveillance Plan Checklist (Program Tracking and Reporting Subsystem Data Sheet). The surveillance program will be published by the CHDO each month that the air carrier appears to be in financial distress. The CHDO will forward the Financial Surveillance Plan Worksheet, figure 125-3 to the RFSD for coordination. The RFSD will ensure geographic manpower resources are available to accomplish the plan. In addition, an information copy (cc) should be forwarded to the FSAIC for continued tracking and analysis. In an effort to maintain continuity with the DOT, an informational copy will be forwarded by the FSAIC via e-mail to the Office of the Secretary of Transportation (OST), Norman.Mineta@OST.dot.gov or faxed to the DOT Air Fitness Office.

C. Surveillance Program (ATOS Air Carriers). The Certificate Management Team (CMT) shall, based upon identified risks, retarget the Comprehensive Surveillance Plan (CSP). The CMT will accomplish those inspections identified within the CSP and evaluate the data collected to determine what future actions, if any, are required. A formal analysis along with figure 125-3 must be forwarded from the CMT to the RFSD and the FSAIC for coordination. In an effort to maintain continuity with the DOT, an informational copy will be forwarded by the FSAIC via e-mail to the OST, or faxed to the DOT Air Fitness Office.

D. Resource Management. FAA resources are often strained to meet the increased level of surveillance required during these periods of operating stress. Regional offices and Flight Standards District Offices (FSDO) having certificate management oversight for the operator therefore must develop a plan for accomplishing the necessary work. FSDO managers may be required to defer normal surveillance activity to accomplish the special requirements. This situation may exist for an extended period of time; therefore, FSDO managers should coordinate priorities with their regional manager.

E. Resumption of Activities After Strike/Labor Unrest/ Financial Stress. After the strike, labor unrest, or financial distress has been resolved, normal operations may not be resumed for several weeks. During the transition to normal operations, however, it may be desirable for the FAA to revise the level of surveillance of the operator. It is important that the internal FAA coordination be maintained to ensure implementation of the appropriate level of surveillance. The PI, CHDO, RFSD, and FSAIC will determine when normal surveillance of the operator will resume.

NOTE: When developing the follow-up surveillance plan, the PI should consider monitoring elements of the certificate holder's storage program with regard to bringing the aircraft out of storage.

7. TASK OUTCOMES. The types of reporting mechanisms that are required to be used as a result of an increased surveillance.

A. Report Functions (Non-CMT Members). Daily data entry into the PTRS to record the inspection activity and the results of the inspection activity.

(1) PTRS Activity Reporting. During a period of increased surveillance, inspectors should record in the PTRS system any surveillance activity that is conducted on the affected operator. The inspector shall enter activity code 3644/5644 in the tracking field, which distinguishes the activity as being part of a group of increased surveillance. The inspectors should pay close attention to the guidance distributed with the increased surveillance program for any special tracking that is identified for use in creating the PTRS transmittals. All PTRS activities must be entered on a daily basis.

(2) Specific Inspection Activities. Inspectors shall record each specific surveillance activity, such as a ramp inspection (code 3627/5627) or an en route inspection (code 3629/5629), by using the appropriate PTRS activity code in the activity field and code 3644/5644 in the tracking field.

(3) Non-Specific Surveillance. The inspectors will record general surveillance activities not otherwise identified with a specific activity code will be recorded by the inspectors by entering activity code 3644/5644 in the activity field and in the tracking field.

(4) Immediate Notification. Inspectors shall notify the PI directly by telephone when surveillance reveals the existence of discrepancies that directly affect safety.

(5) ATOS CMT members shall follow established ATOS reporting procedures.

B. Analysis Functions. A monthly status report to the FSAIC from each affected region that describes the types and numbers of inspection activities and any significant findings. Each ATOS CMT will provide a monthly formal analysis report to the affected FSDM and the FSAIC.

(1) Weekly Status Report (Non-ATOS Air Carriers). The weekly status report is a summary of surveillance activity that is provided to the FSAIC by the RFSD and CHDO. The weekly status report should be sent by cc:Mail to the FSAIC for distribution to the other FAA headquarters' divisions. The guidance provided for reporting the results of the increased surveillance program should include specific details and deadlines.

(2) Format. Airworthiness surveillance activities should be reported by using a table format listing the PTRS activity numbers, description of the activity number, and statistical summary. Please see the example on the next page.

Sample: Weekly Report Format

PTRS	DESCRIPTION	CHDO	OTHERS	TOTAL
3627/5627	Ramp	3	0	3
3629/5629	Cockpit-En Route	8	4	12
3619/5619	Facility	1	6	7
TOTAL		12	10	22

(3) Comments. In addition to the numerical data, the monthly status report (Non-ATOS Air Carriers) and the monthly analysis report for ATOS CMTs should include significant comments pertaining to any area of concern that the originator feels is appropriate. Significant comments may include the following:

(a) Aircraft/route acquisitions;

(b) Status of reorganizations/mergers/buy-outs;

(c) Changes in management personnel and equipment;

(d) Changes in financial condition;

(e) Current compliance status;

(f) Any pending enforcement cases;

(g) Other areas reflecting a change in the carrier status; and

(h) Newsworthy items.

NOTE: For Non-ATOS Air Carriers. Each time a monthly surveillance program is published, FAA Form 8000-36, PTRS Data Sheet, and Financial Surveillance Plan Worksheet (figure 125-3) shall be completed by the CHDO or PIs. Use the appropriate PTRS activity code as required by the inspectors' specialty: Maintenance 3644 or Avionics 5644. Significant comments should be annotated in section 4. Enter the specific primary area, keyword code, opinion (I) code, and comments for each item. The FSAIC will conduct analysis of the surveillance data to identify national trends that may have an effect on aviation safety. The results of this analysis will aid Flight Standards in targeting surveillance activities to those areas identified as needing a change in surveillance activity based on observed trends. All inspection activities conducted on the affected air carrier should be entered into PTRS on a daily basis in order to provide accurate weekly summary information to be used for analysis of the air carrier until the stress and urgency of the air carrier's situation is resolved. The RFSD and the PIs, in conjunction with the FSAIC, shall announce the termination of increased surveillance activities for the affected air carrier.

9. FUTURE ACTIVITIES. Schedule follow-up surveillance. Accomplish tasks for post-crisis surveillance as indicated in the final report. File all supporting paperwork in the operator's office file.

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FIGURE 125-1. JOB AID FOR AIRLINE STRIKES, LABOR UNREST, AND FINANCIAL DISTRESS (NON-ATOS AIR CARRIERS)

Monthly Report

This job aid contains activities which should be considered when developing a surveillance program concerning an operator experiencing a strike, labor unrest, or financial distress. Due to the variable nature of these situations, this job aid is not all-inclusive or mandatory.

PHASE I. INITIAL FAA COORDINATION CHDO____, RFSD____, AFS-900_____

PHASE II. IDENTIFY SURVEILLANCE ACTIVITIES

1. OPERATOR FACILITY INSPECTIONS	PTRS CODE
• MAIN BASE	3619
2. OPERATOR SPECIFIC INSPECTIONS	
• MANUAL/PROCEDURES	3626
• RAMP	3627
• COCKPIT EN ROUTE	3629
• CABIN EN ROUTE	3630
• TRAINING PROGRAMS	3633
• AIRCRAFT RECORDS	3634
• CONT. ANALA SURVELLIANCE	3635
• STRIKE/LABOR/FINANCIAL	3644
• RELIABILITY PROGRAM	3636
• INSPECTION PROGRAM	3637
• CONTRACT MAINTENANCE FACILITY	3640

FIGURE 125-1. JOB AID FOR AIRLINE STRIKES, LABOR UNREST, AND FINANCIAL DISTRESS (NON-ATOS AIR CARRIERS) (Continued)

PHASE III. SURVEILLANCE PROGRAM

1. APPROVAL

    • CHDO____

    • RFSD____

    • AFS-900____

2. DISTRIBUTION

3. IMPLEMENTATION

PHASE IV. REPORTING AND ANALYSIS

PHASE V. TERMINATION

    • CHDO____

    • RFSD ____

    • AFS-900____

FIGURE 125-1A. JOB AID FOR AIRLINE STRIKES, LABOR UNREST, AND FINANCIAL DISTRESS (ATOS AIR CARRIERS)

NOTE: ATOS CMTs should use the following procedures.

A. *Background.* Financial distress surveillance is almost like labor unrest or strike surveillance - it may indicate increased risk for the air carrier and for the FAA. The Principal Inspector needs to identify what those risks are and be proactive to ensure the air carrier's systems are being adapted to the changing situation and that they have sufficient systems in place to mitigate or reduce those risks to acceptable levels.

B. *Developing Constructed Dynamic Observation Reports (ConDOR)s.* Principal Inspectors (PI) must, within the first seven (7) days of being notified that a possible strike, labor dispute, or financial emergency could occur, develop a minimum of five (5) ConDORs targeting specific areas of the carrier and distribute them to the appropriate CMT members.

C. The purpose of the ConDOR is to collect an initial data set to determine any increase in risk to the current situation. ConDORs should not be used as a substitute for continuing surveillance using Element Performance Inspections (EPI) and Safety Attribute Inspections (SAI) through retargeting. To effectively develop the ConDOR, the PIs should review the risk indicators included within the Air Carrier Assessment Tool (ACAT) and assess the applicable elements to determine which specific elements may be most impacted.

D. There may be several different systems, subsystems, and elements that are applicable to each situation. These could include:

- 1.1 Aircraft
- 1.2 Records and Reporting Systems
- 1.3 Maintenance Organization
- 2.1 Manual Management
- 4.1 Maintenance Personnel Qualifications
- 4.2 Training Programs
- 5.1 Approved Routes and Areas
- 6.2 Maintenance Personnel
- 7.1 Key Personnel

E. A ConDOR may be developed using questions from one or more elements in a single subsystem, or a combination of element questions from different subsystems. PIs should review the applicable Data Collection Tools (DCT) to determine what questions, when answered, will provide the information needed to determine the need to retarget the Comprehensive Surveillance Plan (CSP).

Each ConDOR must consist of:

1) Specific instructions to the Inspector describing the precise purpose of the inspection and directing their surveillance activities (i.e., location, type of equipment, time of day, or a carrier's particular process or program);

2) A requested completion date NLT 21 days after being notified that a possible strike, labor dispute, or financial emergency could occur; and

3) Appropriate questions from A/W EPI elements.

F. *Tracking of Activities.* The PI shall enter a unique identifier in the Local/Regional/National field when developing a ConDOR for each particular occurrence.

FIGURE 125-1A. JOB AID FOR AIRLINE STRIKES, LABOR UNREST, AND FINANCIAL DISTRESS (ATOS AIR CARRIERS) (Continued)

G. *Analysis of Inspection Results.* The PI must review results of the completed ConDORs within 30 days after being notified that a possible strike, labor dispute, or financial emergency could occur and determine if additional surveillance is required and if further action is necessary. If the completed observation reports contain negative responses, the PI must reevaluate and retarget the CSP to direct resources at the identified risks. This retarget may include accomplishing the appropriate SAIs. Further actions that may be required include convening a System Analysis Team (SAT), initiating an enforcement investigation, or reevaluating the air carrier's programs, approvals, or OpSpecs.

Sample ConDOR

The sample ConDOR below is focused on the carrier's aircraft. It is comprised of questions from a single subsystem.

1.1.1 Aircraft Airworthiness

Were the following performance measures met?:

1.1 The observed Air Carrier aircraft appeared to be maintained in an airworthy condition (visual inspection or observation of the aircraft).
1.2 The observed Air Carrier aircraft appeared to be maintained in an airworthy status (review of aircraft airworthiness status and compliance records).
1.3 Were the aircraft airworthiness requirements, maintenance program procedures followed?
1.4 Were the aircraft airworthiness requirements, maintenance program controls followed?
1.5 Did all observed maintenance records comply with procedures for the Aircraft Airworthiness Requirements?

1.1.2 Appropriate Operational Equipment

Were the following performance measures met?:

1.1 The observed aircraft was equipped with the appropriate operational equipment for its intended route.
1.2 All NAV/COM equipment required for the intended route of flight was onboard the aircraft and functioned properly.

NOTE: Additional questions may be applicable due to the specific operations of an air carrier.

Instructions for the Completion of Section IV for 3644/5644 Activity Codes

There are 27 line items in Section IV of the attached PTRS Data Sheet, Figure 125-2. *All 27 line items must appear in Section IV when completing a transmittal record for a 3644 or 5644 inspection.*

For each line item, do the following:

a) Enter F for the Primary Area.
b) Enter the appropriate key word for the line item. Line item key words are shown on the attached data sheet, Fig. 125-2.
c) Enter I for the Opinion Code. *Do not use a U or P for the Opinion Code.*
d) In the comment section, enter the appropriate line item number (1.1, 2.3, etc.), followed by a single space.
e) If the line item requires a response to a Yes/No question, type Yes or No following the line item number and single space (see examples below).
f) If the line item requires a numeric entry, enter the number following the item number and single space (see examples below).

Examples:

Item 1.1 asks whether the air carrier is undergoing reorganization. Appropriate responses to this line item are as follows:

Primary Area	Key Word	Opinion Code	Comment
F	901	I	1.1 Yes
F	901	I	1.1 No

or

Item 2.1 asks for the monthly total of Ramp Inspections. If, for example, a total of 10 ramp inspections have been conducted within the last month, the line item should be completed in Section IV of the transmittal form as follows:

Primary Area	Key Word	Opinion Code	Comment
F	615	I	2.1 10

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FIGURE 125-2. FINANCIAL SURVEILLANCE PLAN CHECKLIST (PTRS DATA SHEET)

PROGRAM TRACKING AND REPORTING SUBSYSTEM DATA SHEET (One PTRS Record Required for Each Unit of Work as Defined in the PPM)				
SECTION I - Transmittal				
Inspector Name Code:				
Record ID:		**Activity Number: 3644/5644**		**CFR: 121**
Start Date:		**Status (POC):**		**Callup Date:**
Designator:		**Results (ACEFI):**		**Closed Date:**
		Location:		
SECTION II - AS REQUIRED				
SECTION III - AS REQUIRED				
SECTION IV - COMMENTS (UNLIMITED)				
Primary Area	**Key Word**	**Opinion Code (I)**	**Financial Surveillance Plan Checklist. There must be a response to each line item. This report is for the last 30 days (start on the First and end on the Last day of the month).**	
			1.0. External Stress Issues	
F	**901**	**I**	**1.1.** Is the air carrier undergoing **Reorganization?**	**YES___ NO___**
F	**901**	**I**	**1.2.** Is the air carrier undergoing a **Merger?**	**YES___ NO___**
F	**901**	**I**	**1.3.** Is the air carrier undergoing a **Buy-Out?**	**YES___ NO___**
F	**901**	**I**	**1.4.** Changes in management	**YES___ NO___**
F	**901**	**I**	**1.5.** Significant changes in personnel	**YES___ NO___**
F	**801**	**I**	**1.6.** Significant changes in equipment (office type / ground support / aircraft, etc.)	**YES___ NO___**
F	**199**	**I**	**1.7.** Labor issues (Precontract) slow downs / work disruptions / unfounded AC logbook discrepancies / refusal to work overtime / etc.)	**YES___ NO___**
F	**901**	**I**	**1.8.** Management issues (Lock outs / refusal to negotiate)	**YES___ NO___**
F	**199**	**I**	**1.9.** Strikes / Pending strikes	**YES___ NO___**

FIGURE 125-2. FINANCIAL SURVEILLANCE PLAN CHECKLIST (PTRS DATA SHEET) (Continued)

Primary Area	Key Word	Opinion Code (I)	Financial Surveillance Plan Checklist. There must be a response to each line item. This report is for the last 30 days (start on the First and end on the Last day of the month).	
			2.0. FAA Surveillance	**Monthly Total___**
F	**615**	**I**	**2.1.** Number of **Ramp inspections**	**Monthly Total___**
F	**615**	**I**	**2.2.** Number of **Spot inspections**	**Monthly Total___**
F	**615**	**I**	**2.3.** Number of **En route inspections**	**Monthly Total___**
F	**615**	**I**	**2.4.** Number of **Enforcement cases opened**	**Monthly Total___**
			3.0. Logbook review	
F	**607**	**I**	**3.1.** Number of Minimum Equipment List (MEL) items opened	**Monthly Total___**
F	**607**	**I**	**3.2.** Number of MEL items closed	**Monthly Total___**
F	**607**	**I**	**3.3.** Number of MEL items granted FAA extensions during the past 30 days	**Monthly Total___**
			4.0. Substantial Maintenance Contractors	
F	**621**	**I**	**4.1.** Number of new substantial maintenance contractors added to Operations Specifications, D091	**Monthly Total___**
F	**802**	**I**	**4.2.** Number of substantial maintenance contractors used in the last month	**Monthly Total___**
			5.0. Maintenance Program	
F	**802**	**I**	**5.1.** Has the air carrier requested changes to an approved aircraft maintenance program?	**YES___ NO___**
F	**802**	**I**	**5.2.** In accordance with Operations Specifications D076, Short-term Escalation, the number of short-term escalations requested in the past 30 days	**Monthly Total___**

FIGURE 125-2. FINANCIAL SURVEILLANCE PLAN CHECKLIST (PTRS DATA SHEET) (Continued)

F	**802**	**I**	**5.3.** The number of short-term escalations approved in the past 30 days	**Monthly Total___**
			6.0. Operations Training	
F	**401**	**I**	**6.1.** Has the air carrier requested to change the pilot training program at any time this month?	**YES___ NO___**
F	**499**	**I**	**6.2.** Has the air carrier requested to change the pilot training contract provider at any time this month?	**YES___ NO___**
			7.0. Ops Traffic Statistics (This information must be obtained from the air carrier)	
F	**615**	**I**	**7.1** Total fleet block hours for the last 30 days	**Monthly Total___**
F	**615**	**I**	**7.2.** Total available seat miles for the last 30 days	**Monthly Total___**
F	**615**	**I**	**7.3.** What is the total number of flight hours flown in the past 30 days?	**Monthly Total___**
F	**615**	**I**	**7.4.** Total revenue passenger miles for the last 30 days	**Monthly Total___**
			Notes:	

Date:	**Originator: (if required)**	**Office:**
Inspector Signature: (if required)		**Supervisor: (if required)**
Initials: (if required)		

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FIGURE 125-3. FINANCIAL SURVEILLANCE PLAN WORKSHEET

Designator ___________________________ **Date** __________

PTRS Activity Code	PTRS Descriptions	CHDO	GEOGRAPHIC	TOTAL# INSPECTIONS
Total				

APPENDIX 5. AIRLINE/MANUFACTURER MAINTENANCE PROGRAM DEVELOPMENT DOCUMENT

This appendix has been provided by the Air Transport Association of America (ATA) for official FAA use only. This information gives a detailed analysis of the Maintenance Steering Group process and is intended to be the primary guidance on this subject.

This appendix will be updated as ATA updates their document.

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ATA MSG3

Operator/Manufacturer Scheduled Maintenance Development

Revision 2001.1

Air Transport Association of America, Inc.
1301 Pennsylvania Ave., N.W., Suite 1100
Washington, D.C. 20004-1707

Important Information About This Document

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Transmittal Letter

Oct. 07, 1993

AIRLINE/MANUFACTURER MAINTENANCE PROGRAM DEVELOPMENT DOCUMENT (MSG-3)

Mr. Michael F. Rioux
Vice President, Engineering,
Maintenance and Materiel
Air Transport Association of America
Washington, DC 20004-1707
Dear Mr. Rioux

The Maintenance Review Board (MRB) Policy Board chairman has reviewed the Airline/Manufacturer Maintenance Program Development Document MSG-3, Revision 2, dated September 12, 1993. Minor discrepancies have been discussed with Mr. Dave Nakata.

The Federal Aviation Administration's Flight Standards Service, hereby, accepts MSG-3, Revision 2, dated September 12, 1993, as the guideline document for the development of future MRB reports.

Sincerely,

Frederick J. Leonelli
Manager, Aircraft Maintenance Division

Highlights

Prepared By:

Maintenance Steering Group - 3 Task Force

Air Transport Association of America

Release History

Revision 2001.1: March, 2001

Revision 2000.1: March 2000 (reformatted into an electronic document)

Revision 2: September 12, 1993

Revision 1: March 31, 1988

Originally Issued September 30, 1980

Revision 2001.1 (Revised March, 2001)

Location	Description of Change
All	Corrected all appropriate textual references from "scheduled maintenance program" to simply "scheduled maintenance."
Heading 2-3-4.1	Expanded guidance to cover acceptable assumptions as to the flight crew "normal duties" in determining whether or not a functional failure is evident.
Heading 2-3-5.2	Deletion of requirement to forward Category 6 items without task to the ISC/MRB.
Subject 2-3-7	Significantly expanded the guidance of this entire Section on Task Interval Determination.
Section 2-5	Section rewritten to incorporate enhanced zonal analysis.
Section 2-6	New section to describe analysis for Lightning/High Intensity Radiated Field (L/HIRF).
Appendix A.	Added use of a mirror and a distance reference to the definition of General Visual Inspection, removed "visual" from the definition of Detailed Inspections, enhanced the definition of Functional Failure, and added a number of new terms to the Glossary.

Preface

Airline and manufacturer experience in developing scheduled maintenance for new aircraft has shown that more efficient programs can be developed through the use of logical decision processes.

In July, 1968, representatives of various airlines developed Handbook MSG-1, "Maintenance Evaluation and Program Development," which included decision logic and inter-airline/manufacturer procedures for developing scheduled maintenance for the new Boeing 747 aircraft.

Subsequently, it was decided that experience gained on this project should be applied to update the decision logic and to delete certain 747 detailed procedural information so that a universal document could be made applicable for later new type aircraft. This was done and resulted in the document, entitled, "Airline/ Manufacturer Maintenance Program Planning Document," MSG-2. MSG-2 decision logic was used to develop scheduled maintenance for the aircraft of the 1970's.

In 1979, a decade after the publication of MSG-2, experience and events indicated that an update of MSG procedures was both timely and opportune in order for the document to be used to develop maintenance for new aircraft, systems or powerplants.

An ATA Task Force reviewed MSG-2 and identified various areas that were likely candidates for improvement. Some of these areas were the rigor of the decision logic, the clarity of the distinction between economics and safety, and the adequacy of treatment of hidden functional failures. Additionally

A. The development of new generation aircraft provided a focus, as well as motivation, for an evolutionary advancement in the development of the MSG concept.

B. New regulations which had an effect on maintenance programs had been adopted and therefore needed to be reflected in MSG procedures. Among those were new damage tolerance rules for structures and the Supplemental Structural Inspection program for high time aircraft.

C. The high price of fuel and the increasing cost of materials created trade-off evaluations which had great influences on maintenance program development. As a result, maintenance programs required careful analysis to ensure that only those tasks were selected which provided genuine retention of the inherent designed level of safety and reliability, or provided economic benefit.

MSG-3, Original Revision

Against this background, ATA airlines decided that a revision to existing MSG-2 procedures was both timely and appropriate. The active participation and combined efforts of the FAA, CAA/UK, AEA, U.S. and European aircraft and engine manufacturers, U.S. and foreign airlines, and the U.S. Navy generated the document, MSG-3. As a result there were a number of differences between MSG-2 and MSG-3, which appeared both in the organization/presentation of the material and in the detailed procedural content. Howe ver, MSG-3 did not constitute a fundamental departure from the previous version, but was built upon the existing framework of MSG-2 which had been validated by ten years of reliable aircraft operation using maintenance based thereon.

The following reflects some of the major improvements and enhancements generated by MSG-3 as compared to MSG-2.

1. Systems/Powerplant Treatment:

   MSG-3 adjusted the decision logic flow paths to provide a more rational procedure for task definition and a more straightforward and linear progression through the decision logic.

   MSG-3 logic took a "from the top down" or consequence of failure approach. At the outset, the functional failure was assessed for consequence of failure and was assigned one of two basic categories:

   A. SAFETY

   B. ECONOMIC

   Further classification determined sub-categories based on whether the failure was evident to or hidden from the operating crew. (For structures, category designation was "significant" or "other" structure, and all functional failures were considered safety consequence items).

   With the consequence category established for systems/powerplants, only those task selection questions pertinent to the category needed to be asked. This eliminated unnecessary assessments and expedited the analysis. A definite applicability and effectiveness criteria was developed to provide more rigorous selection of tasks. In addition, this approach helped to eliminate items from the analytical procedure whose failures had no significant consequence.

   Task selection questions were arranged in a sequence such that the most preferred, most easily accomplished task, was considered first. In the absence of a positive indication concerning the applicability and effectiveness of a task, the next task in sequence was considered, down to and including possible redesign.

2. Structures Treatment:

   Structures logic evolved into a form which more directly assessed the possibility of structural deterioration processes. Considerations of fatigue, corrosion, accidental damage, age exploration and others, were incorporated into the logic diagram and were routinely considered.

3. MSG-3 recognized the new damage tolerance rules and the supplemental inspection programs, and provided a method by which their intent could be adapted to the **Maintenance Review Board (MRB)** process instead of relying on type data certificate restraints. Concepts such as multiple failures, effect of failure on adjacent structure, crack growth from detectable to critical length, and threshold exploration for potential failure, were covered in the decision logic of the procedural material.

4. The MSG-3 logic was task-oriented and not maintenance process oriented (MSG-2). This eliminated the confusion associated with the various interpretations of **Condition Monitoring (CM)**, **On-Condition (OC)**, **Hardtime (HT)** and the difficulties encountered when attempting to determine what maintenance was being accomplished on an item that carried one of the process labels.

   By using the task-oriented concept, one would be able to view the MRB document and see the initial scheduled maintenance reflected for a given item (e.g., an item might show a lubrication task at the "A" frequency, and inspection/functional check at the "C" frequency and a restoration task at the "D"

frequency).

5. Servicing/Lubrication was included as part of the logic diagram to ensure that this important category of task was considered each time an item was analyzed.

6. The selection of maintenance tasks, as output from the decision logic, was enhanced by a clearer and more specific delineation of the task possibilities contained in the logic.

7. The logic provided a distinct separation between tasks applicable to either hidden or evident functional failures; therefore, treatment of hidden functional failures was more thorough than that of MSG-2.

8. The effect of concurrent or multiple failure was considered. Sequential failure concepts were used as part of the hidden functional failure assessment (Systems/Powerplant), and multiple failure was considered in structural evaluation (Structures).

9. There was a clear separation between tasks that were economically desirable and those that were required for safe operation.

10. The structures decision logic no longer contained a specific numerical rating system. The responsibility for developing rating systems was assigned to the appropriate manufacturer with approval of the Industry Steering Committee.

MSG-3, Revision 1

In 1987, after using MSG-3 procedures on a number of new aircraft and powerplants in the first half of the 1980's, it was decided that the benefits of the experience so gained should be used to improve the document for future application; thus, Revision 1 was undertaken.

This revised document includes changes developed by American and European airframe manufacturers, American and European airworthiness authorities, supplemented and agreed to by the Air Transport Association of America and other airline representatives.

The major improvements and enhancements reflected in items one through nine above were basically unchanged and remain applicable to this revised document.

The following are some of the more noteworthy revisions that have been incorporated:

1. Table of Contents and a List of Effective Pages: ADDED.

2. Clarification that MSG-3 is used to develop an "initial scheduled maintenance program."

3. The task - "Operating Crew Monitoring": DELETED.

4. Section addressing "Threshold Sample": REVISED.

5. Section addressing "Program Development Administration": DELETED.

6. "Top-down approach" - explanation of process: ADDED.

7. "Visual Check" added to "Operational Check" task.
8. System/Powerplant and Structures logic diagrams: REVISED.
9. Task selection criteria table: ADDED.
10. Inspections:

    Detailed Inspection - REVISED.

    Directed Inspection - DELETED.

    External Surveillance Inspection - DELETED.

    General Visual Inspection - REVISED.

    Internal Surveillance Inspection - DELETED.

    Special Detailed Inspection - UNCHANGED.

    Walk Around Check Inspection - DELETED.

11. Clarification of hidden functional failure: "one additional failure."
12. Inspection/Functional Check task question revised.
13. Reference to a "User's Guide" for procedures related to administration and forms added.
14. Reference to "off-aircraft" deleted.
15. Operating Crew Normal Duties - "Normal Duties" revised to delete pre-flight and post-flight check list; added "on a daily basis" for frequency of usage with respect to normal crew duties.
16. Added that procedures for handling composite of other new materials may have to be developed.
17. Reference to specific U.S. Federal Air Regulations: DELETED.
18. Definition of "Operating": REVISED.
19. Defined logic for failures which may affect dispatch capability or involve the use of abnormal or emergency procedures. Failure-effect Category 6 is now identified as "Operational - Evident".
20. Noted that each MSI and SSI should be recorded for tracking purposes whether or not a task was derived therefrom.

MSG-3, Revision 2

In 1993, MSG-3 Revision 2 was incorporated. The most significant changes introduced were:

1. To adapt MSG-3 logic procedures to assure development of tasks/intervals associated with the aircraft's certificated operating capabilities.
2. To provide guidelines which ensure that a consistent approach be taken with respect to tasks/intervals

required to maintain compliance with Type Certification requirements.

3. To provide guidelines on the development of Corrosion Prevention and Control Programs.

4. To introduce procedures to determine the appropriate scheduled maintenance requirements for composite structure.

5. To revise inspection task definitions.

MSG-3 [Section 2-4] and its respective logic diagrams have been revised to add an evaluation process to insure the **Corrosion Prevention and Control Program (CPCP)** is considered in the evaluation of each **Structural Significant Item (SSI)** and every zone.

Damage Sources [Heading 2-4-3.1] now includes a discussion of non-metallic materials (composites).

Procedures [Heading 2-4-4.1] has been revised to add Procedure and Decision blocks for the CPCP evaluation and edited to produce a more ordered flow of the Procedure and Decision block numbers.

The Glossary - [Appendix A] Inspection Level Definitions have been revised to apply to Systems, Powerplants and Structures, and definitions related to CPCP have been added.

It is suggested, in order to fully comprehend the MSG-3 concept, that the entire MSG-3 document be reviewed and considered prior to accepting or modifying its approaches to maintenance development. A User's Guide or Policies and Procedures Handbook may be adopted with guidance and approval of the Industry Steering Committee.

MSG-3, Revision 2001

In 2001, MSG-3 Revision 2001 was incorporated. The most significant changes introduced were:

1. Added distance requirement and use of a mirror to definition of General Visual Inspection (GVI).

2. Deleted "visual" from definition of Detailed Inspection, and substituted the term "used" for the word "necessary."

3. Corrected terminology throughout the document to change the product of MSG-3 from a "maintenance program" to simply "maintenance."

4. Guidance was added to [Heading 2-3-4.1]. to cover acceptable assumptions as to the flight crew "normal duties" in determining whether or not a functional failure is evident.

5. Expanded the wording on hidden functions of safety/emergency systems or equipment [Heading 2-3-4.3].

6 Deletion of the requirement to forward FEC 6 items without task to the ISC/MRB for review..

7. Significantly expanded the wording on "Interval Determination" [Subject 2-3-7].

8. Rewrote [Section 2-5] to incorporate enhanced zonal analysis.

9. Added a section [Section 2-6] on analysis for Lightning/High Intensity Radiated Field (L/HIRF).

10. Added many more terms to the Glossary.

Chapter 1. General

1-1. Objective

It is the objective of this document to present a means for developing the scheduled maintenance tasks and intervals which will be acceptable to the regulatory authorities, the operators, and the manufacturers. The scheduled maintenance task and interval details will be developed by coordination with specialists from the operators, manufacturers, and the Regulatory Authority of the country of manufacture. Specifically, this document outlines the general organization and decision processes for determining scheduled maintenance requirements initially projected for the life of the aircraft and/or powerplant.

Historically, the initial scheduled maintenance tasks and intervals have been specified in **Maintenance Review Board (MRB)** Reports. MSG-3 is intended to facilitate the development of initial scheduled maintenance. The remaining maintenance, that is, non-scheduled or non-routine maintenance, consists of maintenance actions to correct discrepancies noted during scheduled maintenance tasks, other non-scheduled maintenance, normal operation, or data analysis.

This document addresses the development of scheduled maintenance using the MSG-3 analysis procedure. Any additional requirements developed, using different ground rules and procedures from MSG-3, must be submitted with selection criteria to the Industry Steering Committee for consideration and inclusion in the MRB Report recommendation.

1-2. Scope

For the purpose of developing an MRB report, MSG-3 is to be used to determine initial scheduled maintenance requirements. The analysis process identifies all scheduled tasks and intervals based on the aircraft's certificated operating capabilities.

1-3. Organization

The organization to carry out the scheduled maintenance development for a specific type aircraft shall be staffed by representatives of the airline operators purchasing the equipment, the prime manufacturers of the airframe and powerplant, and the Regulatory Authority.

1-3-1. Industry Steering Committee

The management of the scheduled maintenance development activities shall be accomplished by an **Industry Steering Committee** composed of members from a representative number of operators and representatives of the prime airframe and engine manufacturers. It shall be the responsibility of this committee to establish policy, set initial goals for scheduled maintenance check intervals, direct the activities of working groups or other working activity, carry out liaison with the manufacturer and other operators, prepare the final

recommendations and represent the operators in contacts with the Regulatory Authority. The ISC should see that the MSG-3 process identifies 100% accountability for all **Maintenance Significant Items (MSI's)** and **Structural Significant Items (SSI's)**, whether or not a task has been derived from the analysis.

1-3-2. Working Groups

One or more Working Groups, consisting of specialist representatives from the participating operators, the prime manufacturer, and the Regulatory Authority, may be constituted. The Industry Steering Committee, alternatively, may arrange some other means for obtaining the detailed technical information necessary to develop recommendations for scheduled maintenance in each area. Irrespective of the organization of the working activity, written technical data must be provided that supports its recommendations to the Industry Steering Committee. After approval by the Industry Steering Committee, these analyses and recommendations shall be consolidated into a final report for presentation to the Regulatory Authority.

Chapter 2. Development of Scheduled Maintenance

2-1. General

It is necessary to develop scheduled maintenance for each new type of aircraft prior to its introduction into airline service.

2-1-1. Purpose

The primary purpose of this document is to develop a proposal to assist the Regulatory Authority in establishing initial scheduled maintenance tasks and intervals for new types of aircraft and/or powerplant. The intent is to maintain the inherent safety and reliability levels of the aircraft. These tasks and intervals become the basis for the first issue of each airline's maintenance requirements to govern its initial maintenance policy. Initial adjustments may be necessary to address operational and/or environmental conditions unique to the operator. As operating experience is accumulated, additional adjustments may be made by the operator to maintain efficient scheduled maintenance.

2-1-2. Approach

It is desirable, therefore, to define in some detail

a) The objectives of efficient scheduled maintenance.

b) The content of efficient scheduled maintenance.

c) The method by which efficient scheduled maintenance can be developed.

1. Scheduled Maintenance Objectives

The objectives of efficient aircraft scheduled maintenance are

a) To ensure realization of the inherent safety and reliability levels of the aircraft.

b) To restore safety and reliability to their inherent levels when deterioration has occurred.

c) To obtain the information necessary for design improvement of those items whose inherent reliability proves inadequate.

d) To accomplish these goals at a minimum total cost, including maintenance costs and the costs of resulting failures.

These objectives recognize that scheduled maintenance, as such, cannot correct deficiencies in the inherent safety and reliability levels of the aircraft. The scheduled maintenance can only prevent deterioration of such inherent levels. If the inherent levels are found to be unsatisfactory, design modification is necessary to

obtain improvement.

2. Scheduled Maintenance Content

The content of the scheduled maintenance itself consists of two groups of tasks

a) A group of scheduled tasks to be accomplished at specified intervals. The objective of these tasks is to prevent deterioration of the inherent safety and reliability levels of the aircraft. The tasks in scheduled maintenance may include:

(1) Lubrication/Servicing (LU/SV)

(2) Operational/Visual Check (OP/VC)

(3) Inspection/Functional Check (IN/FC)

(4) Restoration (RS)

(5) Discard (DS)

and

b) A group of non-scheduled tasks which result from:

(1) The scheduled tasks accomplished at specified intervals.

(2) Reports of malfunctions (usually originated by the operating crew).

(3) Data analysis.

The objective of these non-scheduled tasks is to restore the aircraft to an acceptable condition.

An efficient program is one which schedules only those tasks necessary to meet the stated objectives. It does not schedule additional tasks which will increase maintenance costs without a corresponding increase in reliability protection.

3. Method for Scheduled Maintenance Development

This document describes the method for developing the scheduled maintenance . Non-scheduled maintenance results from scheduled tasks, normal operation or data analysis.

Scheduled maintenance will be developed via use of a guided logic approach and will result in a task-oriented program. The logic's flow of analysis is failure-effect oriented.

Items that, after analysis, have no scheduled task specified, may be monitored by an operator's reliability program.

2-2. Divisions of MSG-3 Document

The working portions of MSG-3 are contained in the next four (4) sections. Systems/Powerplant, including components and APU's, are considered in [Section 2-3]. Aircraft Structures is considered in [Section 2-4], Zonal Inspections in [Section 2-5] and L/HIRF is considered in [Section 2-6]. Each section contains its own explanatory material and decision logic diagram (as appropriate); therefore, it may be used independently of other MSG-3 sections.

Figure 2-2.1. Systems Powerplant Logic Diagram (Part 1 of 2)

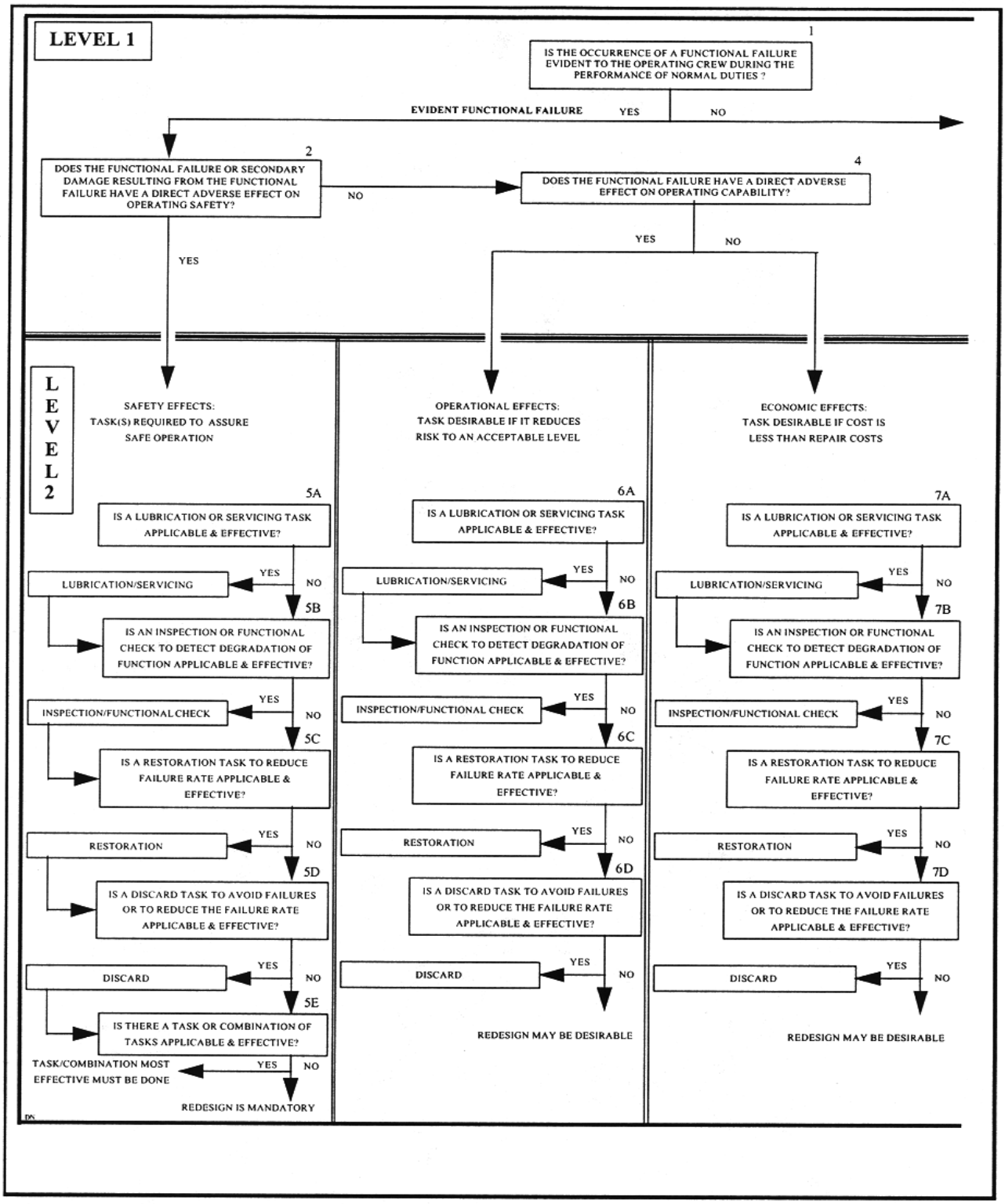
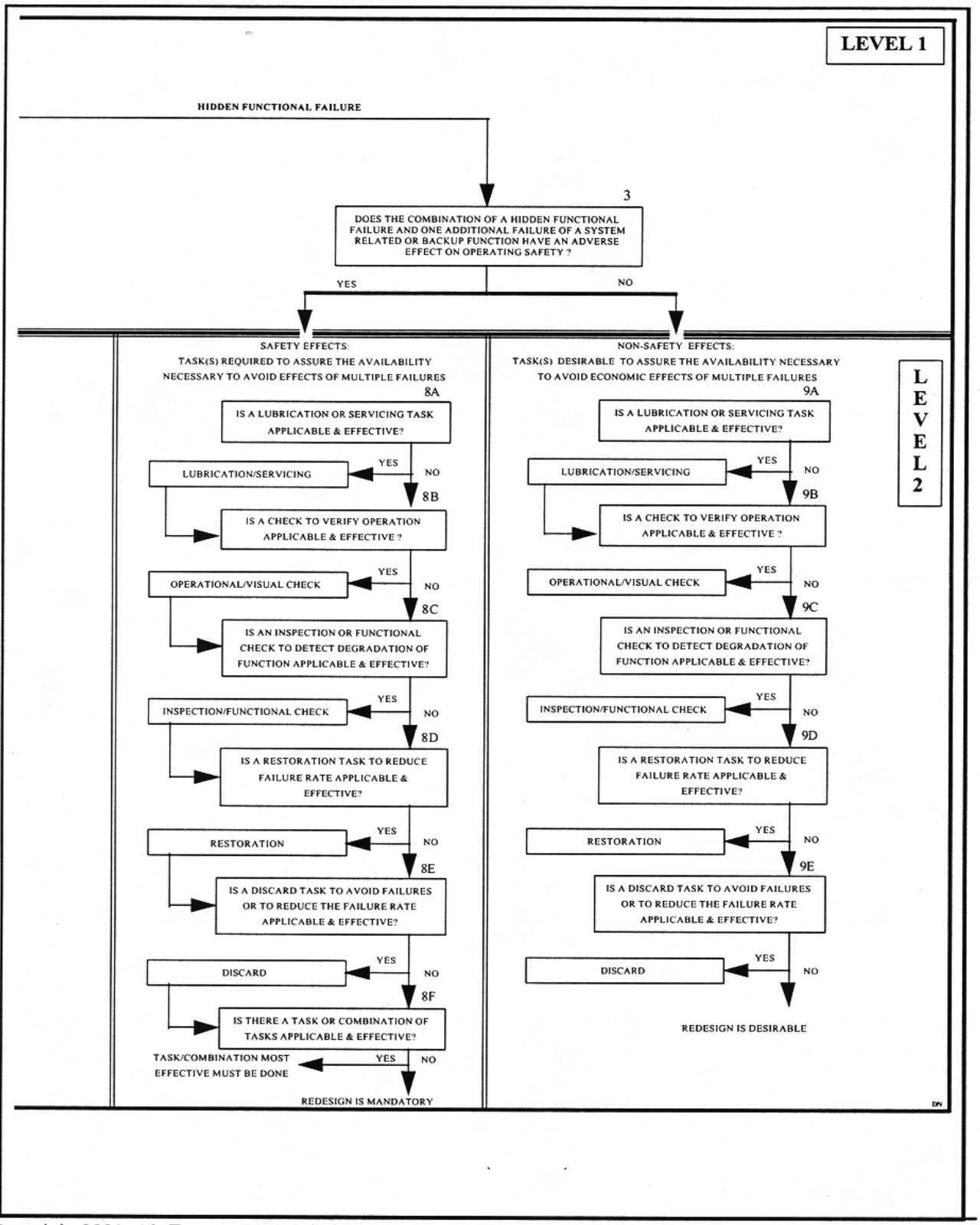


Figure 2-2.1. Systems Powerplant Logic Diagram (Part 2 of 2)



2-3. Aircraft Systems/Powerplant Analysis Procedure

The method for determining the scheduled maintenance tasks and intervals for systems/powerplant, including components and APU's, uses a progressive logic diagram. A glossary of terms and definitions used in the logic diagram is listed in Appendix A. This logic is the basis of an evaluation technique applied to each maintenance significant item (system, sub-system, module, component, accessory, unit, part, etc.), using the technical data available. Principally, the evaluations are based on the item's functional failures and failure causes.

Before the actual MSG-3 logic can be applied to an item, the aircraft's significant systems and components must be identified. This process of identifying Maintenance Significant Items (MSI's) is a conservative process (using engineering judgment) based on the anticipated consequences of failure.

MSI's are those items identified by the manufacturer whose failure

a) could affect safety (on ground or in flight), and/or,

b) could be undetectable or are not likely to be detected during operations, and/or,

c) could have significant operational impact, and/or,

d) could have significant economic impact.

The initial list of MSI's is prepared by the manufacturer and submitted to the ISC for distribution to the appropriate Working Groups.

The top-down approach is a system of identifying the significant items on the aircraft. An acceptable process follows:

a) Partition the aircraft into major functional areas: ATA Systems and Sub-Systems.

b) Continue the process until sub-components which are not replaced on-aircraft are identified.

c) A candidate MSI is usually a system or sub-system and is, in most cases, one level above the lowest (on-aircraft) level identified in step "b." This level is considered the highest manageable level, i.e., one which is high enough to avoid unnecessary analysis, but low enough to be properly analyzed and ensure that all functions, failures, and causes are covered.

After the MSI's have been selected, the following must be identified for each MSI:

a) Function(s) - the normal characteristic actions of an item

b) Functional Failure(s) - Failure of an item to perform its intended function within specified limits

c) Failure Effect(s) - what is the result of a functional failure

d) Failure Cause(s) - why the functional failure occurs

Defining some functional failures may require a detailed understanding of the system and its design principles.

For example, for system components having single element dual load path features, such as concentric tubes or back-to-back plates, the function of both paths should be analyzed individually. The degradation and/or failure of one path may not be evident.

When listing functions, functional failures, failure effects, and failure causes, care should be taken to identify the functions of all protective devices. These include devices with the following functions:

a) to draw the attention of the operating crew to abnormal conditions

b) to shut down equipment in the event of a failure

c) to eliminate or relieve abnormal conditions which follow a failure

d) to take over from a function that has failed

Protective function statements should describe the protective function itself, and should also include the words "if" or "in the event of" followed by a brief description of the events or circumstances that would activate or require activation of the protection. For example, "To open the relief valve to atmosphere in the event of system X pressure exceeding 300 psi."

Tasks and intervals required in the scheduled maintenance are identified using the procedures set forth herein. Both the economic and safety related tasks are included so as to produce initial scheduled maintenance tasks/intervals.

2-3-1. Task Analysis Procedure

Prior to applying the MSG-3 logic diagram to an item, a preliminary work sheet will be completed that clearly defines the MSI, its function(s), functional failure(s), failure effect(s), failure cause(s) and any additional data pertinent to the item; e.g., ATA chapter reference, fleet applicability, manufacturer's part number, a brief description of the item, expected failure rate, hidden functions, need to be on M.E.L., redundancy (may be unit, system or system management), etc. This work sheet is to be designed to meet the user's requirements and will be included as part of the total MSG-3 documentation for the item.

The approach taken in the following procedure is to provide a logic path for each functional failure. Each functional failure and failure cause must be processed through the logic so that a judgment will be made as to the necessity of a task. The resultant tasks and intervals will form the initial scheduled maintenance .

2-3-2. Logic Diagram

The decision logic diagram (Ref. [Figure 2-2.1]) is used for analysis of systems/powerplant items. The logic flow is designed whereby the user begins the analysis at the top of the diagram, and answers to the "YES" or "NO" questions will dictate direction of the analysis flow.

1. Levels of Analysis

The decision logic has two levels (Ref. [Figure 2-2.1])

a) Level 1 (questions 1, 2, 3 and 4) requires the evaluation of each FUNCTIONAL FAILURE for determination of the Failure Effect Category; i.e., safety, operational, economic, hidden safety or hidden non-safety.

b) Level 2 (questions 5, 6 ,7, 8 and 9, "A" through "F", as applicable) then takes the FAILURE CAUSE(S) for each functional failure into account for selecting the specific type of task(s).

At level 2, the task selection section, paralleling and default logic have been introduced. Regardless of the answer to the first question regarding "Lubrication/Servicing", the next task selection question must be asked in all cases. When following the hidden or evident safety effects path, all subsequent questions must be asked. In the remaining categories, subsequent to the first question, a "YES" answer will allow exiting the logic.

NOTE:	At the user's option, advancement to subsequent questions after deriving a "YES" answer is allowable, but only until the cost of the task is equal to the cost of the failure prevented.

Default logic is reflected in paths outside the safety effects areas by the arrangement of the task selection logic. In the absence of adequate information to answer "YES" or "NO" to questions in the second level, default logic dictates a "NO" answer be given and the subsequent question be asked. As "NO" answers are generated the only choice available is the next question, which in most cases provides a more conservative, stringent and/or costly task.

2-3-3. Procedure

This procedure requires consideration of the functional failures, failure causes, and the applicability/ effectiveness of each task. Each functional failure processed through the logic will be directed into one of five Failure Effect categories.

2-3-4. Consequences of Failure (First Level)

The decision logic diagram (Ref. [Figure 2-2.1]) facilitates the identification of the tasks required. There are four first level questions.

1. Evident or Hidden Functional Failure

QUESTION 1: IS THE OCCURRENCE OF A FUNCTIONAL FAILURE EVIDENT TO THE OPERATING CREW DURING THE PERFORMANCE OF NORMAL DUTIES?

This question asks if the operating crew will be aware of the loss (failure) of the function during performance of normal operating duties. Question 1 must be asked for each functional failure of the item being analyzed. The intent is to segregate the evident and hidden functional failures. The operating crew consists of qualified flight compartment and cabin attendant personnel who are on duty. Normal duties are those duties associated with the routine operation of the aircraft on a daily basis. Ground crew is not part of the operating crew. Flight crew "normal duties" are described (in part) in the Regulatory Authority approved sections of the Airplane Flight Manual (AFM) and must be accomplished by the flight crew. Working groups may consider

these flight crew checks part of the operating crew's "normal duties" for the purpose of categorizing failures as evident in the MSG-3 analysis. It should be documented in the analysis whenever credit is taken for such flight crew checks.

Since the approved AFM is not available during the initial MSG-3 analysis, working groups should document all Level 1 failure analysis that is based on flight crew checks assumed to be included in the AFM. Once the AFM is approved, all Level 1 analyses based on such assumptions must be verified to ensure that these checks are included in the approved AFM. Level 1 analysis must be redone for any assumed flight crew check not included in the approved AFM. System failures which are indicated to the operating crew when performing their normal duties shall be considered as evident.

NOTE: Evidence of AFM tasks which are assumed in the MSG-3 Level 1 analysis submitted to the MRB must be available prior to the MRB Report approval; otherwise, the MSG-3 Level 1 analysis submitted to the MRB must be based on the assumption that these tasks are not part of the crew's normal duties.

A "YES" answer indicates the functional failure is evident; proceed to Question 2 (Ref. [Heading 2-3-4.2]).

A "NO" answer indicates the functional failure is hidden; proceed to Question 3 (Ref. [Heading 2-3-4.3]).

2. Direct Adverse Effect on Safety

QUESTION 2: DOES THE FUNCTIONAL FAILURE OR SECONDARY DAMAGE RESULTING FROM THE FUNCTIONAL FAILURE HAVE A DIRECT ADVERSE EFFECT ON OPERATING SAFETY?

For a "YES" answer the functional failure must have a direct adverse effect on operating safety.

Direct: To be direct the functional failure or resulting secondary damage must achieve its effect by itself, not in combination with other functional failures (no redundancy exists and it is a primary dispatch item).

Adverse Effect on Safety: Safety shall be considered as adversely affected if the consequences of the failure condition would prevent the continued safe flight and landing of the aircraft and/or might cause serious or fatal injury to human occupants.

Operating: This is defined as the time interval during which passengers and crew are on board for the purpose of flight.

A "YES" answer indicates that this functional failure must be treated within the Safety Effects category and task(s) must be developed in accordance with [Heading 2-3-5.1].

A "NO" answer indicates the effect is either operational or economic and Question 4 (Ref. [Heading 2-3-4.4]) must be asked.

3. Hidden Functional Failure Safety Effect

QUESTION 3: DOES THE COMBINATION OF A HIDDEN FUNCTIONAL FAILURE AND ONE ADDITIONAL FAILURE OF A SYSTEM RELATED OR BACK-UP FUNCTION HAVE AN ADVERSE EFFECT ON OPERATING SAFETY?

This question is asked of each hidden functional failure which has been identified in Question 1.

The question takes into account failures in which the loss of the one hidden function (whose failure is unknown to the operating crew) does not of itself affect safety; however, in combination with an additional functional failure (system related or intended to serve as a back-up) has an adverse effect on operating safety.

For hidden functions of safety/emergency systems or equipment (see Glossary), the additional failure is the event for which this function of the system or equipment is designed, and in these cases, a FEC 8 is to be selected. This applies irrespective of whether the function is required by regulation or is carried as an operator option.

If a "YES" answer is determined, there is a safety effect and task development must proceed in accordance with [Heading 2-3-5.4].

A "NO" answer indicates that there is a non-safety effect and will be handled in accordance with [Heading 2-3-5.5].

4. Operational Effect

QUESTION 4: DOES THE FUNCTIONAL FAILURE HAVE A DIRECT ADVERSE EFFECT ON OPERATING CAPABILITY?

This question asks if the functional failure could have an adverse effect on operating capability:

a) requiring either the imposition of operating restrictions or correction prior to further dispatch; or

b) requiring flight crew use of abnormal or emergency procedures.

This question is asked of each evident functional failure not having a direct adverse effect on safety. The answer may depend on the type of operation.

If the answer to this question is "YES", the effect of the functional failure has an adverse effect on operating capability, and task selection will be handled in accordance with [Heading 2-3-5.2].

A "NO" answer indicates that there is an economic effect and should be handled in accordance with [Heading 2-3-5.3].

2-3-5. Failure Effect Categories (First Level)

Once the analysts have answered the applicable first level questions, they are directed to one of the five Effect Categories

a) Evident Safety (Category 5)

b) Evident Operational (Category 6)

c) Evident Economic (Category 7)

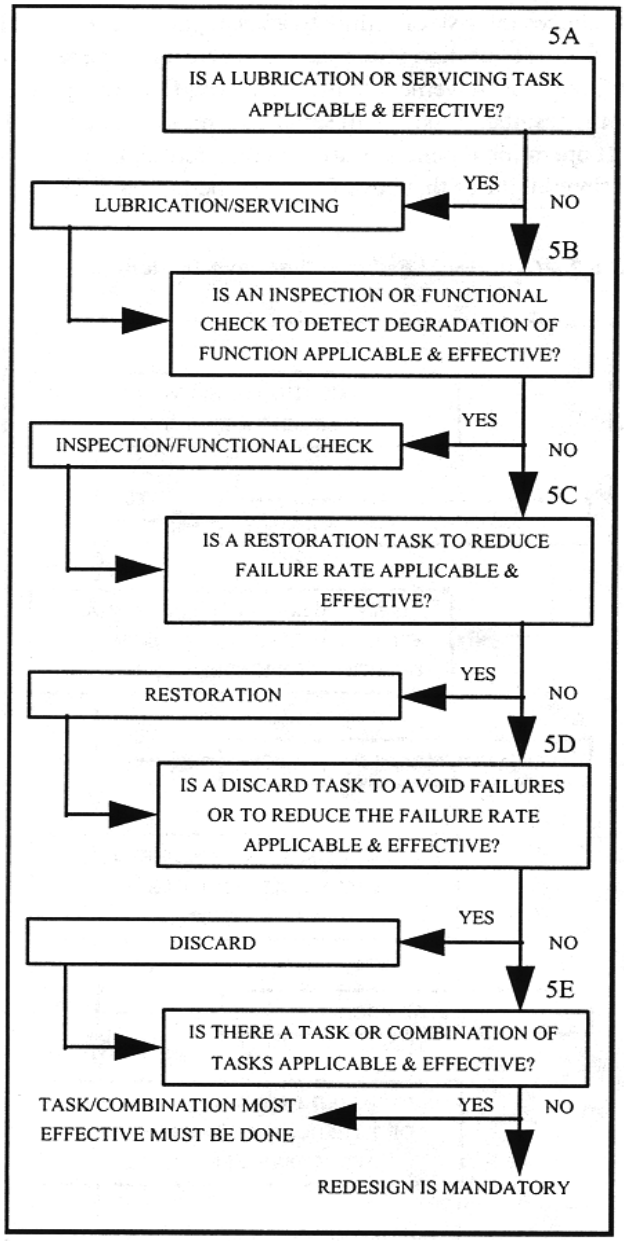
d) Hidden Safety (Category 8)

e) Hidden Non-Safety (Category 9)

1. Evident Safety Effects (Category 5)

The Evident Safety Effect category must be approached with the understanding that a task is required to assure safe operation. All questions in this category must be asked. If no effective task(s) results from this category analysis, then redesign is mandatory. The following is the logic progression for functional failures that have Evident Safety Effects.

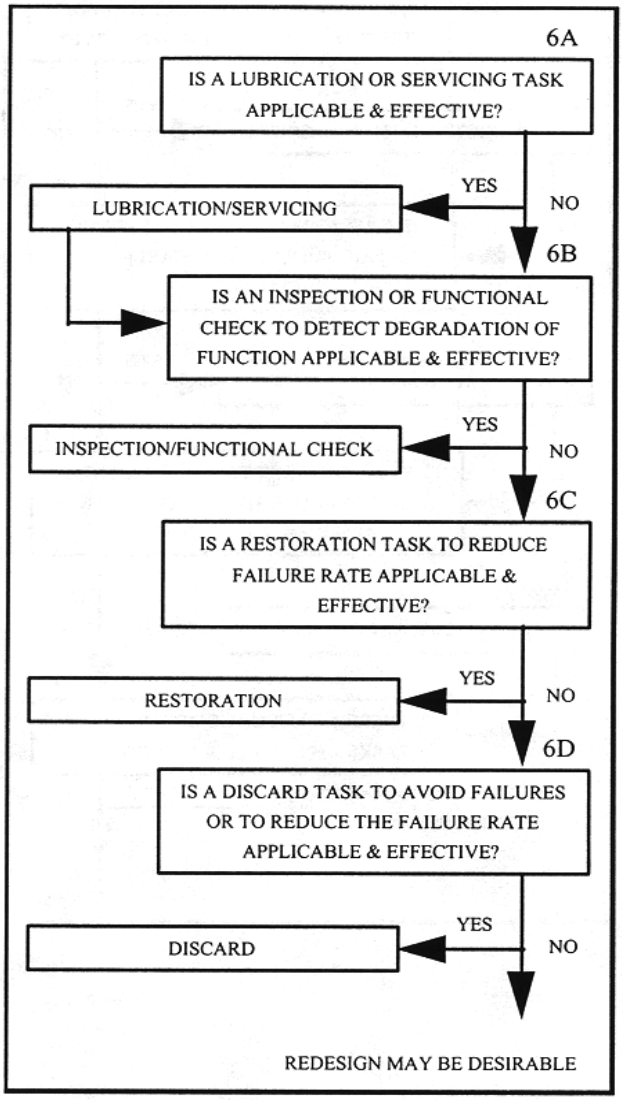
Figure 2-3-5.1. Functional Failures that have Evident Safety Effects



2. Evident Operational Effects (Category 6)

A task(s) is desirable if it reduces the risk of failure to an acceptable level. Analysis of the failure causes through the logic requires the first question (Lubrication/Servicing) to be answered. Either a "YES" or "NO" answer of question "A" still requires movement to the next level; from this point on, a "YES" answer will complete the analysis and the resultant task(s) will satisfy the requirements. If all answers are "NO", then no task has been generated. If operational penalties are severe, a redesign may be desirable. The following is the logic progression for functional failures that have Evident Operational Effects.

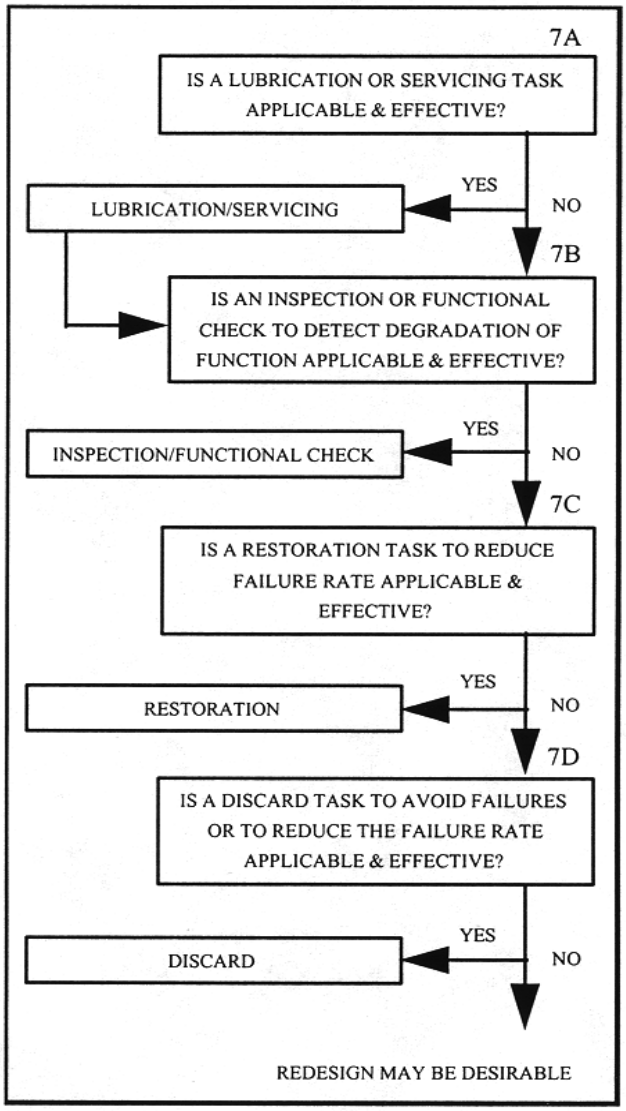
Figure 2-3-5.2. Functional Failures that have Evident Operational Effects



3. Evident Economic Effects (Category 7)

A task(s) is desirable if the cost of the task is less than the cost of repair. Analysis of the failure causes through the logic requires the first question (Lubrication/Servicing) to be answered. Either a "YES" or "NO" answer to question "A" still requires movement to the next level; from this point on, a "YES" answer will complete the analysis and the resultant task(s) will satisfy the requirements. If all answers are "NO", no task has been generated. If economic penalties are severe, a redesign may be desirable. The following is the logic progression for functional failures that have Evident Economic Effects.

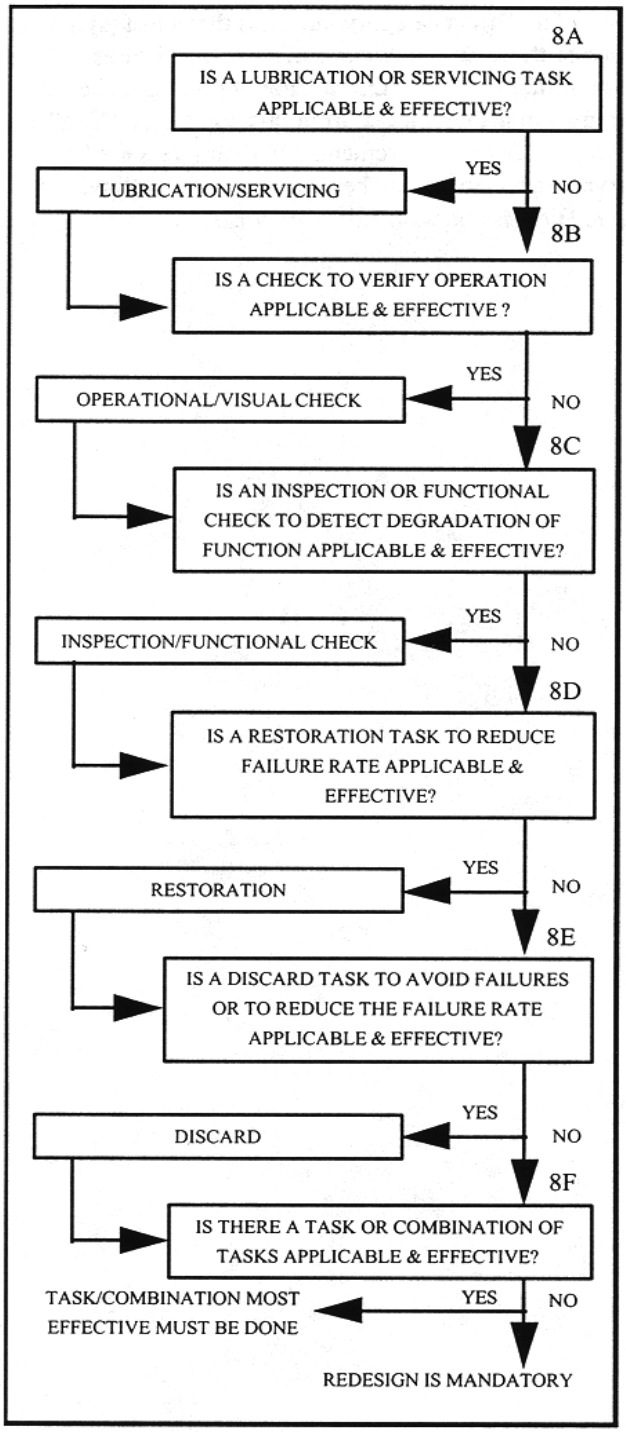
Figure 2-3-5.3. Functional Failures that have Evident Economic Effects



4. Hidden Function Safety Effects (Category 8)

The Hidden Function Safety Effect requires a task(s) to assure the availability necessary to avoid the safety effect of multiple failures. All questions must be asked. If there are no tasks found effective, then redesign is mandatory. The following is the logic progression for functional failures that have Hidden Function Safety Effects.

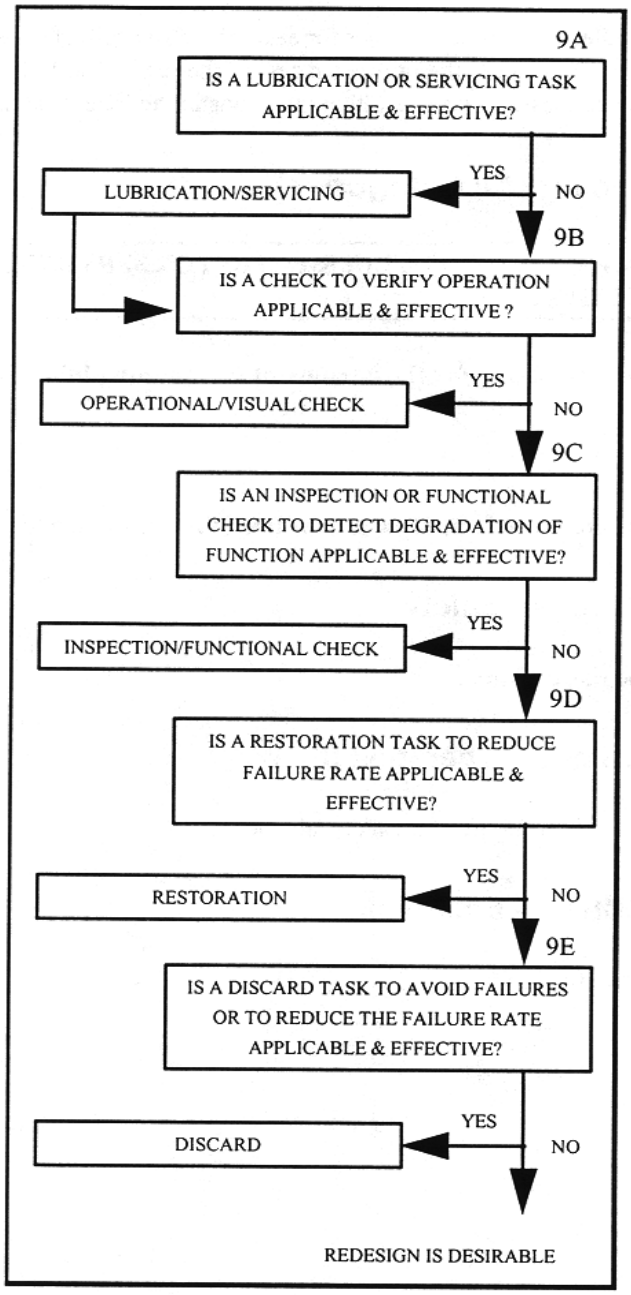
Figure 2-3-5.4. Functional Failures that have Hidden Function Safety Effects



5. Hidden Function Non-Safety Effects (Category 9)

The Hidden Function Non-Safety Effect category indicates that a task(s) may be desirable to assure the availability necessary to avoid the economic effects of multiple failures. Movement of the failure causes through the logic requires the first question (Lubrication/Servicing) to be answered. Either a "YES" or "NO" answer still requires movement to the next level; from this point on, a "YES" answer will complete the analysis and the resultant task(s) will satisfy the requirements. If all answers are "NO", no task has been generated. If economic penalties are severe, a redesign may be desirable. The following is the logic progression for functional failures that have Hidden Function Non-Safety Effects.

Figure 2-3-5.5. Functional Failures that have Hidden Function Non-Safety Effects



2-3-6. Task Development (Second Level)

Task development is handled in a similar manner for each of the five Effect categories. For task determination, it is necessary to apply the failure causes for the functional failure to the second level of the logic diagram. There are six possible task resultant questions in the Effect categories as follows

1. Lubrication/Servicing (All Categories)

QUESTION 5A, 6A, 7A, 8A, 9A: EFFECTIVE?	IS A LUBRICATION OR SERVICING TASK APPLICABLE AND

Any act of lubrication or servicing for the purpose of maintaining inherent design capabilities.

1.1. Applicability Criteria

The replenishment of the consumable must reduce the rate of functional deterioration.

1.2. Effectiveness Criteria - Safety

The task must reduce the risk of failure.

1.3. Effectiveness Criteria - Operational

The task must reduce the risk of failure to an acceptable level.

1.4. Effectiveness Criteria - Economic

The task must be cost-effective.

2. Operational/Visual Check (Hidden Functional Failure Categories Only)

QUESTION 8B & 9B. IS A CHECK TO VERIFY OPERATION APPLICABLE AND EFFECTIVE?

An operational check is a task to determine that an item is fulfilling its intended purpose. The check does not require quantitative tolerances. This is a failure finding task.

A visual check is an observation to determine that an item is fulfilling its intended purpose. The check does not require quantitative tolerances. This is a failure finding task.

2.1. Applicability Criteria

Identification of failure must be possible.

2.2 Effectiveness Criteria - Safety

The task must ensure adequate availability of the hidden function to reduce the risk of a multiple failure.

2.3. Effectiveness Criteria - Economic

The task must ensure adequate availability of the hidden function in order to avoid economic effects of multiple failures and must be cost-effective.

3. Inspection/Functional Check (All Categories)

QUESTION 5B, 6B, 7B, 8C & 9C. IS AN INSPECTION OR FUNCTIONAL CHECK TO DETECT DEGRADATION OF FUNCTION APPLICABLE AND EFFECTIVE?

An inspection is:

A. DETAILED INSPECTION

An intensive examination of a specific item, installation or assembly to detect damage, failure or irregularity. Available lighting is normally supplemented with a direct source of good lighting at an intensity deemed appropriate. Inspection aids such as mirrors, magnifying lenses, etc. may be necessary. Surface cleaning and elaborate access procedures may be required.

OR

B. GENERAL VISUAL INSPECTION

A visual examination of an interior or exterior area, installation or assembly to detect obvious damage, failure or irregularity. This level of inspection is made from within touching distance, unless otherwise specified. A mirror may be necessary to ensure visual access to all surfaces in the inspection area. This level of inspection is made under normally available lighting conditions such as daylight, hangar lighting, flashlight or drop-light and may require removal or opening of access panels or doors. Stands, ladders or platforms may be required to gain proximity to the area being checked.

OR

C. SPECIAL DETAILED INSPECTION

An intensive examination of a specific item, installation, or assembly to detect damage, failure or irregularity. The examination is likely to make extensive use of specialized Inspection Techniques and/or equipment. Intricate cleaning and substantial access or disassembly procedure may be required.

A functional check is a quantitative check to determine if one or more functions of an item performs within specified limits.

3.1. Applicability Criteria

Reduced resistance to failure must be detectable, and there exists a reasonably consistent interval between a deterioration condition and functional failure.

3.2. Effectiveness Criteria - Safety

The task must reduce the risk of failure to assure safe operation.

3.3. Effectiveness Criteria - Operational

The task must reduce the risk of failure to an acceptable level.

3.4. Effectiveness Criteria - Economic

The task must be cost-effective; i.e., the cost of the task must be less than the cost of the failure prevented.

4. Restoration (All Categories)

QUESTION 5C, 6C, 7C, 8D, & 9D. IS A RESTORATION TASK TO REDUCE FAILURE RATE APPLICABLE AND EFFECTIVE?

That work necessary to return the item to a specific standard.

Since restoration may vary from cleaning or replacement of single parts up to a complete overhaul, the scope of each assigned restoration task has to be specified.

4.1. Applicability Criteria

The item must show functional degradation characteristics at an identifiable age and a large proportion of units must survive to that age. It must be possible to restore the item to a specific standard of failure resistance.

4.2. Effectiveness Criteria - Safety

The task must reduce the risk of failure to assure safe operation.

4.3. Effectiveness Criteria - Operational

The task must reduce the risk of failure to an acceptable level.

4.4. Effectiveness Criteria - Economic

The task must be cost-effective: i.e., the cost of the task must be less than the cost of the failure prevented.

5. Discard (All Categories)

QUESTION 5D, 6D, 7D, 8E, 9E IS A DISCARD TASK TO AVOID FAILURES OR TO REDUCE THE FAILURE RATE APPLICABLE AND EFFECTIVE?

The removal from service of an item at a specified life limit.

Discard tasks are normally applied to so-called single celled parts such as cartridges, canisters, cylinders, engine disks, safe-life structural members, etc.

5.1. Applicability Criteria

The item must show functional degradation characteristics at an identifiable age and a large proportion of units must survive to that age.

5.2. Effectiveness Criteria - Safety

A safe-life limit must reduce the risk of failure to assure safe operation.

5.3. Effectiveness Criteria - Operational

The task must reduce the risk of failure to an acceptable level.

5.4. Effectiveness Criteria - Economic

An economic-life limit must be cost-effective: i.e., the cost of the task must be less than the cost of the failure prevented.

6. Combination (Safety Categories Only)

QUESTION 5E. IS THERE A TASK OR COMBINATION OF TASKS APPLICABLE AND EFFECTIVE?

Since this is a safety category question and a task is required, all possible avenues must be analyzed. To do this, a review of the task(s) that are applicable is necessary. From this review the most effective task(s) must be selected.

7. Task Selection Criteria

Table 2-3-6.1. Criteria for Task Selection

TASK	APPLICABILITY	SAFETY EFFECTIVENESS	OPERATIONAL EFFECTIVENESS	ECONOMIC EFFECTIVENESS
LUBRICATION OR SERVICING	The replenishment of the consumable must reduce the rate of functional deterioration.	The task must reduce the risk of failure.	The task must reduce the risk of failure to an acceptable level.	The task must be cost effective.
OPERATIONAL OR VISUAL CHECK	Identification of failure must be possible.	The task must ensure adequate availability of the hidden function to reduce the risk of a multiple failure.	Not applicable.	The task must ensure adequate availability of the hidden function in order to avoid economic effects of multiple failures and must be cost effective.
INSPECTION OR FUNCTIONAL CHECK	Reduced resistance to failure must be detectable, and there exists a reasonably consistent interval between a deterioration condition and functional failure.	The task must reduce the risk of failure to assure safe operation.	The task must reduce the risk of failure to an acceptable level.	The task must be cost effective; i. e., the cost of the task must be less than the cost of the failure prevented.
RESTORATION	The item must show functional degradation characteristics at an identifiable age, and a large proportion of units must survive to that age. It must be possible to restore the item to a specific standard of failure resistance.	The task must reduce the risk of failure to assure safe operation.	The task must reduce the risk of failure to an acceptable level.	The task must be cost effective; i.e., the cost of the task must be less than the cost of the failure prevented.

TASK	APPLICABILITY	SAFETY EFFECTIVENESS	OPERATIONAL EFFECTIVENESS	ECONOMIC EFFECTIVENESS
DISCARD	The item must show functional degradation characteristics at an identifiable age and a large proportion of units must survive to that age.	The safe life limit must reduce the risk of failure to assure safe operation.	The task must reduce the risk of failure to an acceptable level.	An economic life limit must be cost effective; i.e., the cost of the task must be less than the cost of the failure prevented.

2-3-7. Systems/Powerplant Task Interval Determination

1. General

As part of the MSG-3 Logic-Analysis, the MWG (Maintenance Working Group) determines the interval of each scheduled maintenance task that satisfies both the applicability & effectiveness criteria. The MWGs should select the most appropriate interval for each maintenance task based on available data and good engineering judgement. In the absence of specific data on failure rates & characteristics, intervals for systems tasks are largely determined based on service experience with similar systems/components.

The information needed to determine optimum intervals is ordinarily not available until after the equipment enters service. In many cases previous experience with the same or a similar item serves as a guide. The difficulty of establishing "correct" intervals for maintenance tasks is essentially an information problem and one that continues throughout the operating life of the equipment.

A task should not be done more often than experience or other data suggests simply because it is easily accomplished (doing tasks more often than necessary increases the chance for maintenance-induced errors and may have an adverse effect on reliability and safety).

2. Sources of Information

The MWG should consider the following in determining the most appropriate task interval:

- manufacturer's tests and technical analysis
- manufacturer's data and/or vendor recommendations
- customer requirements
- service experience gained with comparable or identical components and subsystems
- 'best engineering estimates'

In order to arrive at the 'best initial' maintenance interval for each task, each MWG must assess the interval based on all relevant data that is available. As part of this assessment, the MWG should consider answering the following questions in order to determine the most appropriate interval:

- What service experience is available for common/similar parts/components/systems on other aircraft that defines an effective task interval?
- What design improvements have been incorporated that warrant a longer interval between checks?
- What task interval is recommended by the vendor/manufacturer based on test data or failure analysis?

3. Task Interval Parameters

Task intervals are established in terms of the measure of exposure to the conditions that cause the failure at which the task is directed. The most widely used usage parameters are:

- calendar time
- flight hours
- flight cycles
- Engine/APU hours/cycles.

Task interval determination consists of identifying the correct usage parameter and its associated numerical interval or the appropriate letter check. Both intervals expressed in usage parameters and/or letter checks are acceptable and may be used in line with specific procedures established for a given program. If an interval is to be expressed in a usage parameter, interval determination consists of the following steps:

- The first step is to define the predominant (governing) usage parameter(s). For many Systems/Powerplant tasks, flight hours is the predominant usage parameter; however, for some tasks, flight cycles or calendar time may be the predominant usage parameter. Intervals may also be expressed in terms of more than one usage parameter.
- The second step is to determine the interval in terms of the selected usage parameter subject to the criteria discussed below.

As a matter of convenience, usage of letter checks for individual tasks and the establishment of a check interval framework may be considered by the ISC; e.g., if no predominant usage parameter can be identified.

For some tasks, it may be appropriate for the MWG to consider specifying an initial interval that is different from the repeat interval.

4. Task Interval Selection Criteria

In addition to the general guidelines included in [Heading 2-3-7.1], the following detailed recommendations should be considered:

Lubrication/Servicing (failure prevention):

- The interval should be based on the consumable's usage rate, the amount of consumable in the storage container (if applicable) and the deterioration characteristics.
- Typical operating environments and climatic conditions are to be considered when assessing the deterioration characteristics.

Operational Checks & Visual Checks (failure-finding):

- Consider the length of potential exposure time to a hidden failure and the potential consequences if the hidden function is unavailable.

- Task intervals should be based on the need to reduce the probability of the associated multiple failure to a level considered tolerable by the MWG.
- The failure-finding task and associated interval selection process should take into account any probability that the task itself might leave the hidden function in a failed state.

Inspections & Functional checks (potential failure finding):

- There should exist a clearly defined potential failure condition.
- The task interval should be less than the shortest likely interval between the point at which a potential failure becomes detectable and the point at which it degrades into a functional failure. (If the specific failure data is available, this interval may be referred to as the P to F interval.)
- It should be practical to do the task at this interval.
- The shortest time between the discovery of a potential failure and the occurrence of the functional failure should be long enough for an appropriate action to be taken to avoid, eliminate or minimize the consequences of the failure mode.

Restoration and Discard (failure avoidance):

- Intervals should be based on the "identifiable age" when significant degradation begins and where the conditional probability of failure increases significantly.
- Vendor recommendations based on in-service experience of similar parts should also be taken into consideration.
- A sufficiently large proportion of the occurrences of this failure should occur after this age to reduce the probability of premature failure to a level that is tolerable.

5. "Access-Defined" Inspection Intervals

Occasionally, it is impossible to accomplish a task until a component/system is removed/displaced; the interval of such a task should be coordinated with the removal/displacement of that component/system.

If the component/system is removed/displaced at intervals shorter than what is required for the task, then the task interval should be defined by the MWG as the removal/displacement interval (scheduled or unscheduled). If the task interval is shorter than the removal/displacement interval, then an access-defined interval is not appropriate.

NOTE:	If the MWG selects an access-defined interval, consideration should be given to defining a minimum interval between tasks. For example, if "Engine Change" is the access-defined interval, and the engine is removed soon after the last engine change due to an unscheduled event, the task should not be repeated unless a minimum number of hours have elapsed.

6. Certification Maintenance Requirements (CMRs)

In addition to those tasks and intervals established through MSG-3 analysis, scheduled maintenance tasks may arise within the FAR 25.1309 certification process.

A CMR is a required periodic task, established during the design certification of the airplane as an operating limitation of the type certificate. CMRs are a subset of the tasks identified during the type certification process. CMRs usually result from a formal, numerical analysis conducted to show compliance with catastrophic and hazardous failure conditions. A CMR is intended to detect safety significant latent failures that would, in combination with one or more other specific failures or events, result in a hazardous or catastrophic failure condition.

It is important to note that CMRs are derived from a fundamentally different analysis process than the maintenance tasks and intervals that result from MSG-3 analysis. The process for coordinating MSG-3 derived tasks with CMRs is described in detail in AC 25-19 and involves a Certification Maintenance Coordination Committee (CMCC) that may influence the MWG's interval decision.

7. Sampling

Sampling may be established for items defined in the Systems and Powerplant Analysis Procedures.

Sampling is an examination of a specific number of items at defined intervals in order to confirm that there are no unexpected degradation characteristics. Non-sampled items may continue in service until sampling results highlight the need for additional scheduled maintenance.

2-4. Aircraft Structural Analysis Procedure

This section contains guidelines for developing scheduled maintenance tasks for aircraft structure. These are designed to relate the scheduled maintenance tasks to the consequences of structural damage remaining undetected. Each structural item is assessed in terms of its significance to continuing airworthiness, susceptibility to any form of damage, and the degree of difficulty involved in detecting such damage. Once this is established, scheduled structural maintenance can be developed which can be shown to be effective in detecting and preventing structural degradation due to fatigue, environmental deterioration, or accidental damage throughout the operational life of the aircraft. The structural maintenance task(s) developed as part of the scheduled structural maintenance are used to satisfy aircraft type certification and MRB requirements.

Mandatory replacement times for structural safe-life parts are included in the Airworthiness Limitations, required by the regulatory authorities as part of the Instructions for Continued Airworthiness. Some of the items requiring fatigue related inspections may also be included, as well as specific Corrosion Prevention and Control Program (CPCP) tasks which subsequently warrant inclusion, based on the in-service experience of the operators.

Requirements for detecting **Accidental Damage (AD), Environmental Deterioration (ED), Fatigue**

Damage (FD), and procedures for preventing and/or controlling corrosion form the basis for the MRB structural maintenance. However, all FD inspection requirements may not be available when the aircraft enters service. In such cases the manufacturer shall propose, prior to the entry of the aircraft into service, an appropriate time frame for completing the FD inspection requirements.

Procedures should be developed for composite or other new materials because damage characteristics may not follow those accepted for metallic structures.

2-4-1. Scheduled Structural Maintenance

The primary objective of the scheduled structural maintenance is to maintain the inherent airworthiness throughout the operational life of the aircraft in an economical manner. To achieve this, the inspections must meet the detection requirements from each of the AD, ED and FD assessments. Full account may be taken of all applicable inspections occurring in the fleet.

Inspections related to detection of AD/ED are applicable to all aircraft when they first enter service. Changes or adjustments can be made to these inspections based on individual operator experience, when approved by their local regulatory authority.

Additional maintenance tasks (related to ED) to control corrosion to Level 1 or better are applicable at a threshold which is established during the aircraft type certification process. These are based on manufacturer and operator experience with similar aircraft structure, taking into consideration differences in relevant design features e.g. choice of material, assembly process, corrosion protection systems, galley and toilet design etc. See also [Heading 2-4-1.5] entitled Corrosion Prevention and Control Program.

Inspections related to FD detection are applicable after a threshold, which is established during the aircraft type certification process. At the time the fatigue related inspections are implemented, sampling can be used, where it is applicable and effective. The fatigue related inspections are based directly on the manufacturer's approved damage tolerance evaluations and changes or adjustments by the operators require use of an approved procedure.

Where no service experience exists with similar structure, the structural maintenance requirements shall be based on manufacturer's recommendations.

Proposed initial scheduled maintenance checks, to be used as the basis for the structural maintenance, are established for each aircraft type by the Industry Steering Committee on the basis of:

a. Operator experience

b. Manufacturer's proposals

c. Considerations of systems analysis requirements

1. Structural Maintenance Tasks

As part of the structural maintenance development procedure, applicable and effective structural maintenance tasks are selected for each deterioration process of the SSI. To assure a direct correlation between the

structural damage tolerance evaluations and the structural maintenance, it is necessary to describe each task.

To all extents possible, the inspection methods specified in the tasks should use the standard set of definitions included in the MSG-3 glossary. Changes and/or additions to the inspection methods and definitions must be approved by the Industry Steering Committee.

2. Inspection Thresholds

The inspection threshold for each SSI inspection task is a function of the source of damage as follows:

a. **Accidental Damage** - The first inspection (threshold) for accidental damage normally corresponds to a period equal to the defined repeat inspection interval, from the time of first entry into service.

b. **Environmental Deterioration** - The initial inspection thresholds for all levels of inspection are based on existing relevant service experience, manufacturers recommendations, and/or a conservative age exploration process.

c. **Fatigue Damage** - Inspections directly related to fatigue damage detection will occur after a threshold(s) to be established by the manufacturer and approved by the appropriate regulatory authority Thresholds are normally established as part of the damage tolerance certification requirements. These are subject to change as service experience, additional testing, or analysis work is obtained.

3. Repeat Inspection Intervals

After each inspection has been conducted, the repeat interval sets the period until the next inspection:

a. **Accidental Damage** - The repeat interval should be based on operator and manufacturer experience with similar structure. Selected intervals will normally correspond to single or multiple levels of the scheduled maintenance check intervals.

b. **Environmental Deterioration** - The repeat interval for detection/prevention/control of ED (corrosion, stress corrosion, etc.) should be based on existing relevant service experience and/or manufacturers recommendations.

c. **Fatigue Damage** - The repeat intervals for fatigue related inspections are based on the damage tolerance evaluations. These are used to demonstrate that applicable and effective inspections provide sufficient probability of detecting fatigue damage for each SSI.

4. Fatigue Related Sampling Inspections

Transport aircraft with the highest number of flight cycles are most susceptible to initial fatigue cracking in the fleet. This means that adequate inspections on such aircraft will provide the greatest benefits for timely detection of fatigue damage. Such sampling inspections are developed on the basis of appropriate statistical variables, including:

a. The number of aircraft inspected.

b. The inspection methods and repeat intervals.

c. The number of flight cycles completed.

A list of SSIs that are suitable for a fatigue related sampling inspections will be established by the Structures Working Group and submitted to the Industry Steering Committee for approval and inclusion in the MRB report proposal. Full details of the fatigue related sampling inspections will be established by a joint operator/ manufacturer task force, based on the manufacturer's technical evaluations, prior to aircraft exceeding the fatigue damage threshold(s).

5. Corrosion Prevention and Control Programs (CPCP)

A Corrosion Prevention and Control Program should be established to maintain the aircraft's resistance to corrosion as a result of systematic (e.g. age related) deterioration through chemical and/or environmental interaction.

The program is expected to allow control of the corrosion on the aircraft to **Corrosion Level 1** or better. The CPCP should be based on the ED analysis, assuming an aircraft operated in a typical environment. If corrosion is found to exceed Level 1 at any inspection time, the corrosion control program for the affected area must be reviewed by the operator with the objective to ensure Corrosion Level 1 or better.

6. Age Exploration Process

An age exploration process may be desirable to verify the aircraft's resistance to corrosion deterioration before the Corrosion Prevention and Control Program Task Thresholds.

Guidelines for age exploration should be established by the Structures Working Group and submitted to the Industry Steering Committee for approval and inclusion in the scheduled structural maintenance tasks and intervals.

7. Zonal Inspections

Some parts of the inspection requirements for SSIs and most of the items categorized as Other Structure can be provided by the zonal inspections (Ref. [Section 2-5]).

Tasks and intervals included in the zonal inspections should be based on operator and manufacturer experience with similar structure. For structure containing new materials and/or construction concepts, tasks and intervals may be established based on assessment of the manufacturer's recommendations.

8. Inspection Results

The type certificate holder (manufacturer) and the operators will implement a satisfactory system for the effective collection and dissemination of service experience from the scheduled structural maintenance.

This process will supplement the system which is required by existing regulations for reporting occurrences

of failures, malfunctions or defects (e.g. Service Difficulty Reports).

2-4-2. Aircraft Structure Defined

Aircraft structure consists of all load carrying members including wings, fuselage, empennage, engine mountings, landing gear, flight control surfaces and related points of attachment. The actuating portions of items such as landing gear, flight controls, doors, etc. will be treated as systems components and will be analyzed as described in [Section 2-3]. Attachment of the actuators to the airframe will be treated as structure.

1. Significant and Other Structure

Structure can be subdivided into items according to the consequences of their failure to aircraft safety as follows

a. A **Structural Significant Item (SSI)** is any detail, element or assembly, which contributes significantly to carrying flight, ground, pressure or control loads, and whose failure could affect the structural integrity necessary for the safety of the aircraft.

b. **Other Structure** is that which is judged not to be a Structural Significant Item. It is defined both externally and internally within zonal boundaries.

2-4-3. Damage Sources and Inspection Requirements

This section describes the damage sources and inspection requirements to be considered when developing the scheduled structural maintenance.

1. Damage Sources

The assessment of structure for the selection of maintenance tasks should consider the following damage sources

a. **Accidental Damage (AD)**, which is characterized by the occurrence of a random discrete event which may reduce the inherent level of residual strength. Sources of such damage include ground and cargo handling equipment, foreign objects, erosion from rain, hail, lightning, runway debris, spillage, freezing, thawing, etc., and those resulting from human error during aircraft manufacture, operation or maintenance that are not included in other damage sources.

The same sources of accidental damage as those considered for metallic materials are to be considered for non-metallic material such as composites. The consequence of a damage may not be readily apparent and may include internal damage, e.g., disbonding or delamination.

Large size accidental damage, such as that caused by engine disintegration, bird strike or major collision with ground equipment, will be readily detectable and no maintenance task assessment is required.

b. **Environmental Deterioration (ED)**, which is characterized by structural deterioration as a result of a chemical interaction with its climate or environment. Assessments are required to cover corrosion,

including stress corrosion, and deterioration of non-metallic materials. Corrosion may or may not be time/usage dependent. For example, deterioration resulting from a breakdown in surface protection is more probable as the calendar age increases; conversely, corrosion due to galley spillage is a randomly occurring discrete event.

Stress corrosion cracking in a given environment is directly dependent upon the level of sustained tensile stress which may result from heat treatment, forming, fit-up, or misalignment.

In contrast to the environmental deterioration process of metallic structures, non-metallic structures such as composites are not normally susceptible to degradation due to the environment. However, the effect of long-term aging in an operating environment has to be taken into consideration when developing the structural maintenance.

c. **Fatigue Damage (FD)** which is characterized by the initiation of a crack or cracks due to cyclic loading and subsequent propagation. It is a cumulative process with respect to aircraft usage (flight cycles or flight hours).

2. Inspection Requirements

Inspection requirements in relation to the damage sources are as follows:

a. **Accidental Damage (AD)**, stress corrosion and most other forms of corrosion are random in nature and can occur any time during the aircraft service life. In such cases, inspection requirements apply to all aircraft in the fleet throughout their operational lives.

b. Most forms of corrosion are time/usage dependent and more likely to occur as the fleet ages. In such cases, operator and manufacturer experience on similar structure can be used to establish appropriate maintenance tasks (including CPCP tasks) for the control of environmental deterioration.

The deterioration of non-metallic structures such as composites has to be taken into consideration when establishing maintenance tasks. Appropriate inspection levels and frequencies should be based on existing relevant service experience and manufacturer's recommendations.

c. Detectable size fatigue cracking is not normally anticipated in primary airframe structure until the fleet has matured. Thereafter, scheduled structural maintenance may require revision.

For most transport aircraft structure, aircraft with the highest number of flight cycles are more susceptible to initial fatigue cracking in the fleet and are suitable candidates for a fatigue related sampling, should this be applicable and effective.

2-4-4. Scheduled Structural Maintenance Development

The scheduled structural maintenance tasks and intervals are based on an assessment of structural design information, fatigue and damage tolerance evaluations, service experience with similar structure and pertinent test results.

The assessment of structure for selection of maintenance tasks should include the following

a. The sources of structural deterioration:

1. Accidental Damage
2. Environmental Deterioration
3. Fatigue Damage

b. The susceptibility of the structure to each source of deterioration.

c. The consequences of structural deterioration to continuing airworthiness

1. Effect on aircraft (e.g. loss of function or reduction of residual strength).
2. Multiple site or multiple element fatigue damage.
3. The effect on aircraft flight or response characteristics caused by the interaction of structural damage or failure with systems or powerplant items.
4. Inflight loss of structural items.

d. The applicability and effectiveness of various methods of preventing, controlling or detecting structural deterioration, taking into account inspection thresholds and repeat intervals.

1. Procedure

The procedure for developing structural maintenance is shown in the logic diagram (Ref. [Figure 2-4-4.1]) and described by a series of process steps (P1, P2, P3, etc.) and decision steps (D1, D2, D3, etc.) as follows:

a. The structural maintenance includes all aircraft structure which is divided into zones or areas (P1) and structural items (P2) by the manufacturer.

b. The manufacturer categorizes each item (D1) as structurally significant (SSI) (P3) or Other Structure (P4), on the basis of the consequences to aircraft safety of item failure or malfunction.

c. The same procedure is repeated until all structural items have been categorized.

d. Items categorized as Other Structure (P4) are compared to similar items on existing aircraft (d2). Maintenance recommendations are developed by the Structures Working Group (SWG) for items which are similar and by the manufacturer for those which are not, e. g., new materials or design concepts (P5). All tasks selected by the SWG (P6) are included in the scheduled structural maintenance (P15).

e. Inspection requirements for timely detection of Accidental Damage (AD) and Environmental Deterioration (ED) are determined for all SSIs (P7). These can be determined for individual SSIs or groups of SSIs which are suitable for comparative assessments on the basis of their location, boundaries, inspection access, analysis breakdown, etc. The manufacturer's rating systems (Ref. [Subject 2-4-5]) are used to determine these requirements.

f. The process (P7) is repeated until all SSIs are examined.

g. For each SSI, the maintenance requirements are determined (P8) such that the expectations of the CPCP (Ref. [Heading 2-4-1.5]) are fulfilled.

h. The inspection requirement of the ED analysis is compared with the requirement of the CPCP (D9). If they are similar or identical, the ED task will cover the CPCP requirement. If the CPCP task requirement is not met, the ED task has to be reviewed and/or additional and separate CPCP tasks have to be determined (P9).

i. The process (P7, P8, D9) is repeated until all SSIs are examined.

j. All tasks, selected by the SWG, are included in the structural maintenance (P15).

k. The manufacturer categorizes each SSI as damage tolerant or safe-life (D3).

l. For each item categorized as safe-life (P10), the manufacturer determines the safe-life limit which is included in the aircraft Airworthiness Limitations (P14). No fatigue related inspection is required to assure continuing airworthiness.

m. All remaining SSIs are damage tolerant (P11) and the manufacturer determines if timely detection of fatigue damage is dependent on scheduled inspections. Scheduled fatigue related inspection may not be required for SSIs designed to carry the required load with damage that will be readily detectable during routine operation of the aircraft or indicated by safe malfunction (D4).

n. Visual inspections during appropriate scheduled maintenance checks are used, where applicable and effective, to provide the necessary fatigue damage detection opportunities (D5).

o. Applicable nondestructive inspection (NDI) methods, during appropriate scheduled maintenance checks, are used to provide necessary fatigue damage detection opportunities when visual inspections are inadequate (D6).

p. Details of the fatigue related inspection requirements are presented to the SWG who determine if they are feasible (D7). Improved inspection access and/or redesign of the SSI may be required if no practical and effective visual and/or nondestructive inspections are available (D8,P12). If this is not feasible for the manufacturer, the SSI must be categorized as safe-life (P10).

q. Fatigue related inspection requirements selected by the SWG are included in the preliminary Scheduled Structural Maintenance (P15).

r. To support Type Certification, selected SSIs (P13, P14) that will eventually be included in the fatigue related inspection should be listed in the Airworthiness Limitations document.

s. The FD analysis procedure is repeated for all damage tolerant SSIs.

t. Tasks from AD, ED, FD, and other structure analyses are listed in the Scheduled Structural Maintenance (P15).

u. The resulting maintenance requirements for all structure are submitted to the ISC for approval and inclusion in the MRB report proposal.

v. The structural maintenance portion of the Airworthiness Limitations should be included in a separate document and submitted to the appropriate Regulatory Authority (certification) for approval.

Figure 2-4-4.1. Structural Logic Diagram

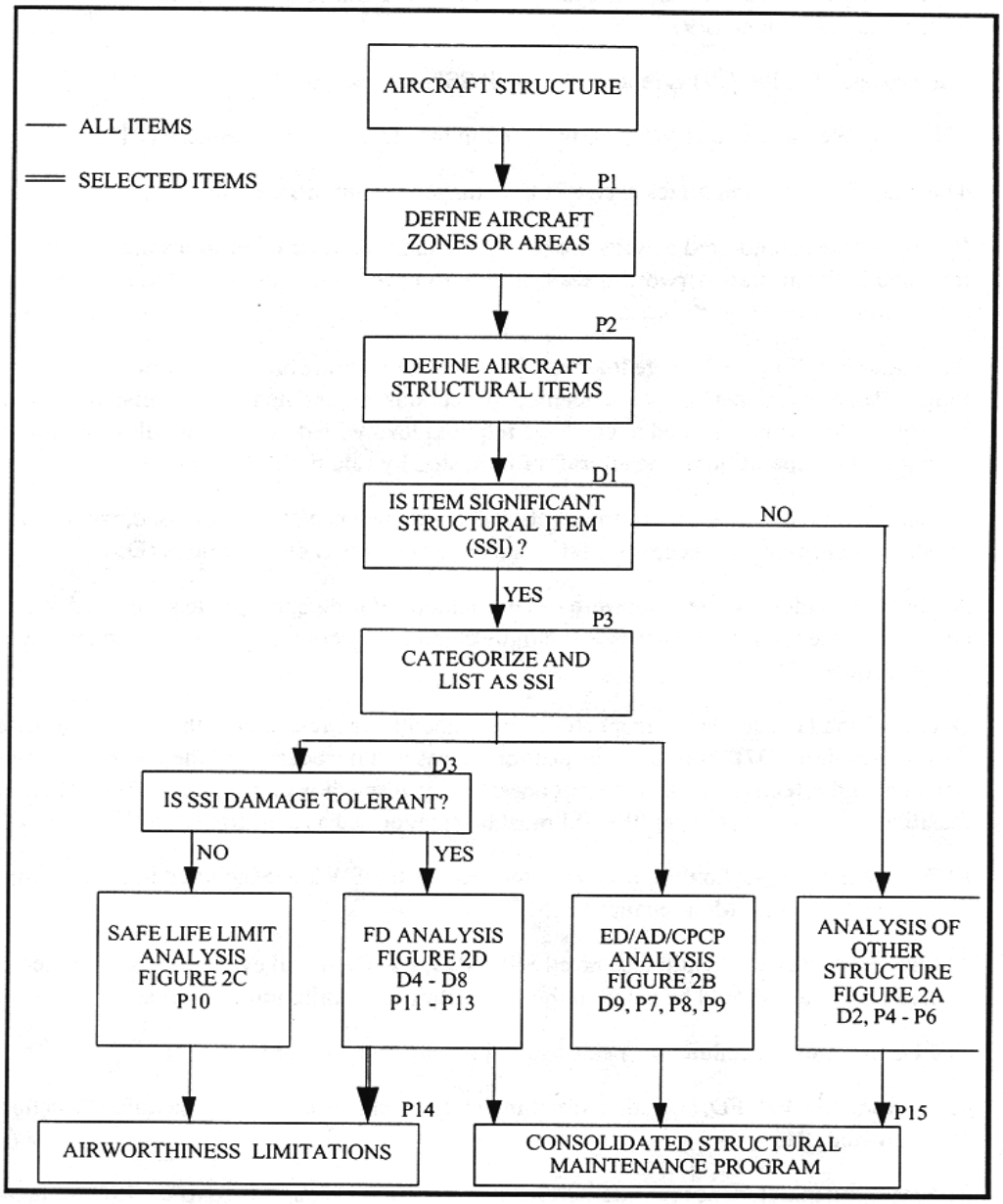


Figure 2-4-4.2. Other Structure Logic Diagram

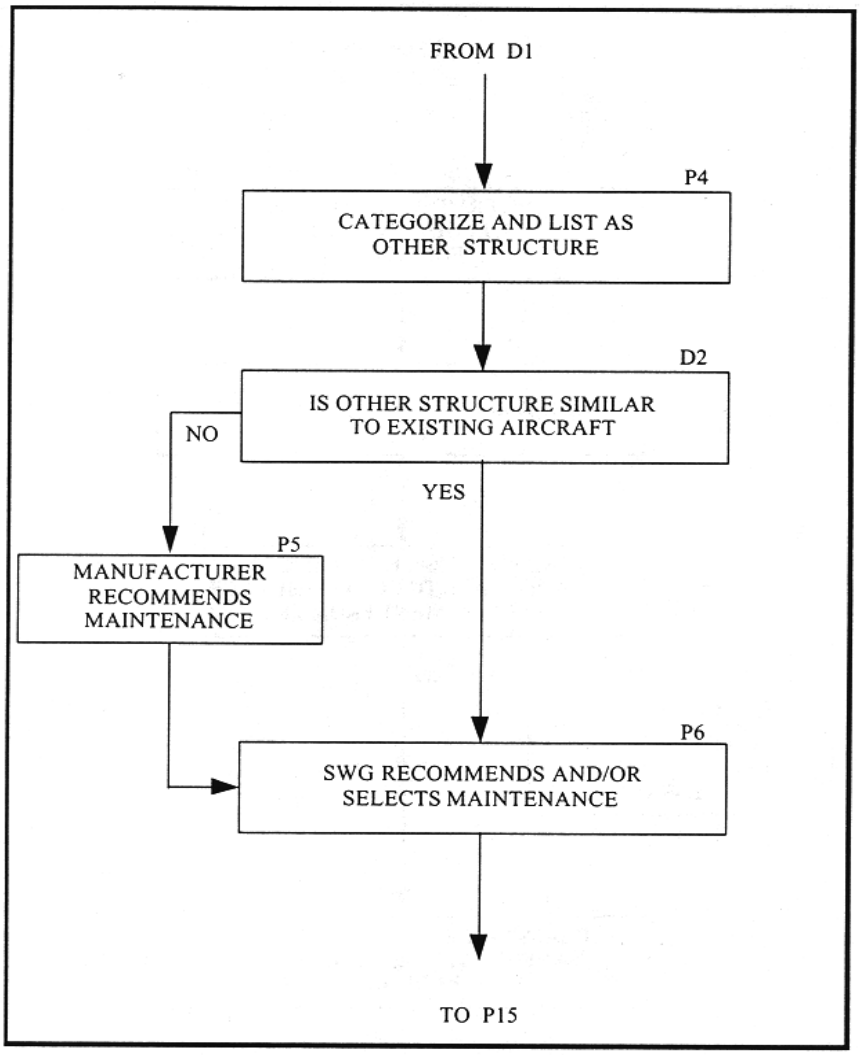


Figure 2-4-4.3. Accidental Damage and Environmental Deterioration Logic Diagram

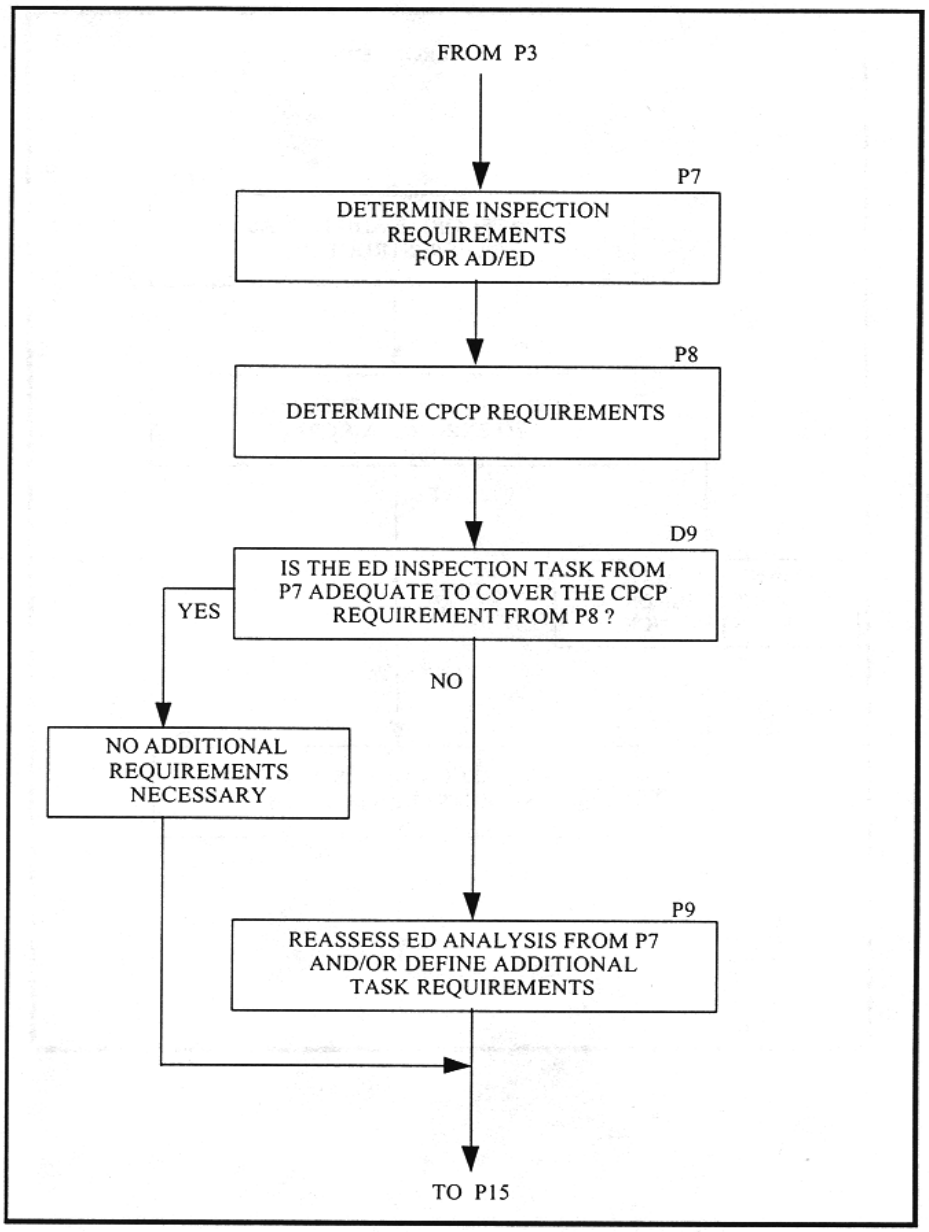


Figure 2-4-4.4. Safelife Limit Analysis Logic Diagram

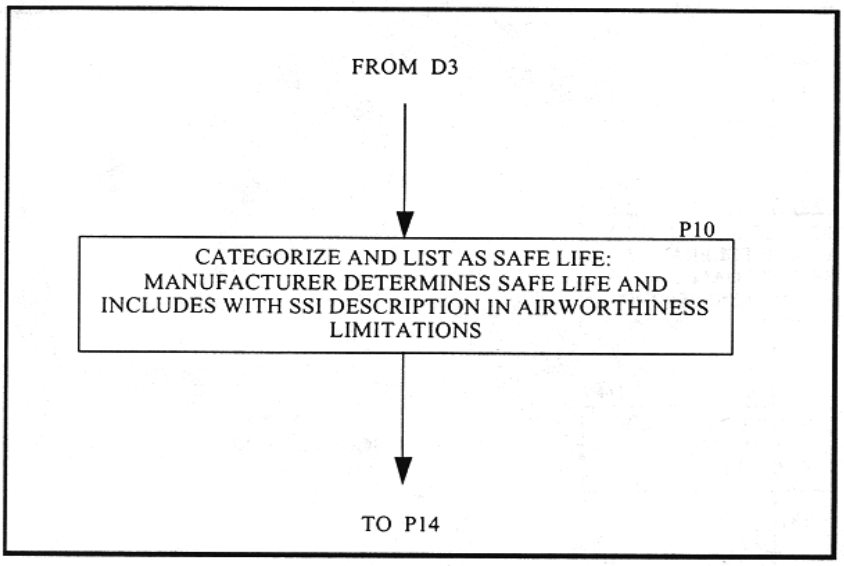
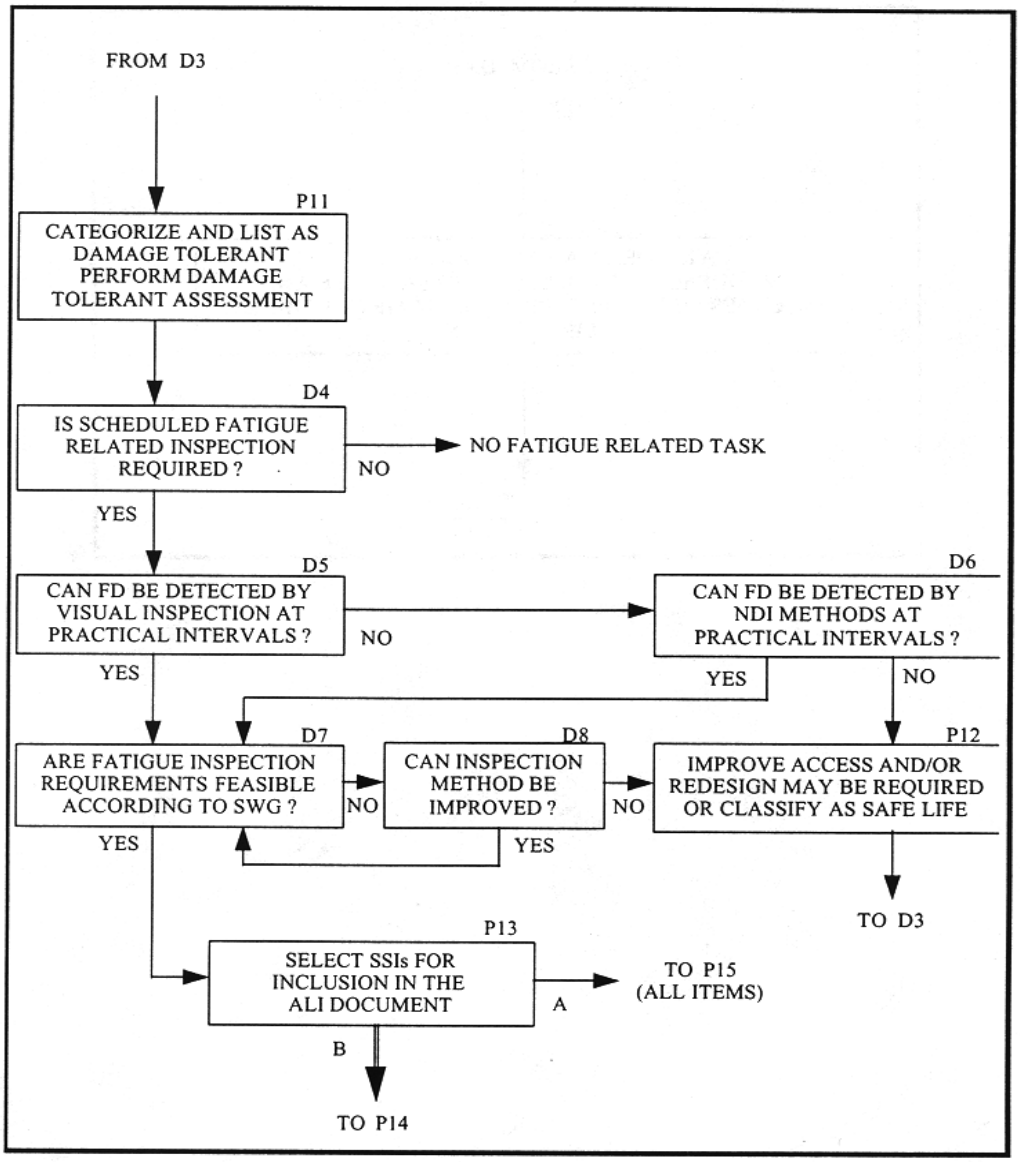


Figure 2-4-4.5. Fatigue Damage Analysis Logic Diagram



2-4-5. Rating Systems for Structural Significant Items

As part of the scheduled structural maintenance development, it is necessary to rate each Structural Significant Item in terms of susceptibility (likelihood of damage) and detectability (timely detection of damage). This section provides guidelines to assist manufacturers in the development of suitable rating systems. The rating system should account for the susceptibility of the SSI to the likely source of damage and the likely type of deterioration of the SSI due to the damage source. Differences between metallic and non-metallic portions of the SSI's must be taken into account.

The scheduled structural maintenance tasks and intervals are developed on the basis of requirements to assure timely detection of Accidental Damage, Environmental Deterioration, and Fatigue Damage. Rating systems for AD and ED should be compatible to allow comparative assessments for each group of SSIs. Emphasis is placed on rating each SSI in relation to other SSIs in the same inspection area, leading to increased inspection emphasis for the most critical SSIs. Manufacturer and operator experience is a key ingredient for these evaluations.

Rating systems for FD should incorporate results from the manufacturer's residual strength and crack growth evaluations. The applicability and effectiveness of various inspection methods, detectable damage sizes and access requirements are key ingredients for these evaluations.

1. Rating Accidental Damage

Accidental damage rating systems should include evaluations of the following

a. Susceptibility to minor (not obvious) accidental damage based on frequency of exposure to and the location of damage from one or more sources, including:

   1. Ground handling equipment
   2. Cargo handling equipment
   3. Those resulting from human error during manufacture, maintenance, and/or operation of the aircraft, that are not included in other damage sources.
   4. Rain, hail, etc.
   5. Runway debris
   6. Lightning strike
   7. Water entrapment

b. Residual strength after accidental damage, normally based on the likely size of damage relative to the critical damage size for the SSI.

c. Timely detection of damage, based on the relative rate of growth after damage is sustained and visibility of the SSI for inspection. Assessments should take into account damage growth associated with non-chemical interaction with an environment, such as disbond or delamination growth

associated with a freeze/thaw cycle.

Rating values should be assigned to groups of SSIs in the same inspection area on the basis of comparative assessments within the group.

2. Rating Environmental Deterioration

Environmental deterioration rating systems should allow for evaluations of susceptibility to and timely detection of corrosion and stress corrosion.

Susceptibility to corrosion is assessed on the basis of probable exposure to an adverse environment and adequacy of the protective system. For example:

a. Exposure to a deteriorating environment such as cabin condensation, galley spillage, toilet spillage, cleaning fluids, etc.

b. Contact between dissimilar materials (potential for galvanic activity).

c. Breakdown of surface protection systems; for example, deterioration of paint, primer, bonding, sealant, corrosion inhibiting compounds and cladding systems with the resulting corrosion of metallic materials or fluid incursion into permeable non-metallic materials, etc.

Material characteristics, coupled with the likelihood of sustained tensile stress, are used to assess susceptibility to stress corrosion.

Timely detection is determined by sensitivity to relative size of damage and visibility of the SSI for inspection.

NOTE:	Rating system evaluations should be made taking into account the requirement for each operator to control the aircraft structure at corrosion Level 1 or better.

3. Rating Fatigue Damage

The rating system must lead to inspections that provides a high probability of detecting fatigue damage in the fleet before such damage reduces any aircraft's residual strength below allowable levels. To achieve this, the rating system should consider the following:

a. Residual strength, including the effects of multiple site fatigue damage, where appropriate.

b. Crack growth rate, including effects of multiple site or multiple element fatigue damage, where appropriate.

c. Damage detection period which corresponds to the interval for the fatigue damage to grow from the threshold of detection (detectable) to the limiting size defined by "a" (critical). This period will vary according to the inspection method used, and may be influenced by structural parts or processes, e.g., sealant obscuring parts of the damage.

d. Detection standards for applicable inspection methods.

NOTE:	Estimated detectable crack lengths can be used for the fatigue damage detection evaluations required as part of aircraft type certification.

e. Applicable inspection levels and methods (e.g., visual, NDI), directions (e.g., external, internal) and repeat intervals (e.g., C, 2C, 4C).

2-5. Zonal Analysis Procedure

Zonal inspections may be developed from application of the Zonal Analysis Procedure. This requires a summary review of each zone on the aircraft and normally occurs as the MSG-3 analyses of structures, systems, and powerplants are being concluded. These inspections may subsequently be included in the Zonal Inspections.

This Zonal Analysis Procedure permits appropriate attention to be given to electrical wiring installations. Thus, as well as determining zonal inspections, the logic provides a means to identify applicable and effective tasks to minimize contamination and to address significant wiring installation discrepancies that may not be reliably detected through zonal inspection. These dedicated tasks may subsequently be included in the Systems and Powerplant tasks.

In top down analyses conducted under MSG-3, many support items such as plumbing, ducting, Other Structure, wiring, etc., may be evaluated for possible contribution to functional failure. In cases where a general visual inspection is required to assess degradation, the zonal inspection is an appropriate method.

2-5-1. Procedure

The following procedures may be used

a. Divide the aircraft externally and internally into zones as defined in [ATA iSpec 2200], (formerly ATA Spec 100).

b. For each zone, prepare a work sheet that identifies data such as: zone location and access, approximate size (volume), type of systems and components installed, typical power levels in any wiring bundles, features specific to L/HIRF protection, etc. In addition, assess potential for the presence of combustible material, either through contamination (e.g., dust and lint) or occurring by design (e.g., fuel vapor).

c. Develop rating tables to determine the repeat interval for a zonal inspection. Rating tables will permit the likelihood of accidental damage, environmental deterioration and the density of equipment in the zone to be taken into account.

d. For all zones containing systems installations, perform a standard zonal analysis using the rating tables from paragraph (c.) to define the extent and interval of zonal inspection tasks. Multiple zonal inspections may be identified for each zone with those having less frequent intervals requiring increased access requirements.

e. Identify zones that both contain electrical wiring and have potential for combustible material being present. For those zones, perform an enhanced zonal analysis that permits the identification of stand-alone inspections and tasks that minimize contamination by combustible materials. Rating tables addressing the potential effects of fire on adjacent wiring and systems, the size of the zone and the density of installed equipment may be used to determine the inspection level. General Visual Inspections may be found effective for the complete zone. Detailed Inspections may be found effective for specific items in a zone. Interval determination may be accomplished using rating tables that consider accidental damage and environment.

f. Detailed Inspections and tasks to minimize contamination should be included in the Systems and Powerplant tasks. Since these are not system specific and do not have a Failure Effect Category, introduction in a dedicated section is suggested, for example, under ATA 20.

g. General Visual Inspections arising from the enhanced zonal analysis (paragraph e.) may be compared with the Zonal Inspections determined from the standard zonal analysis (paragraph d.). The former may be considered fully covered by the zonal inspection if the access requirement is the same and the proposed interval is at least as frequent. Otherwise, a stand-alone GVI should be included with the tasks identified in paragraph (f.).

h. General Visual Inspections arising from the systems, powerplants and structures may be compared with the Zonal Inspections determined from the standard zonal analysis (paragraph d.). Work sheets should record the interval proposed in the originating analysis. These GVIs may be considered fully covered by the zonal inspection if the access requirement is the same and the proposed interval is at least as frequent. Otherwise, a stand-alone GVI should be included within the MSI or SSI from which it was identified.

i. General Visual Inspections arising from the analysis of L/HIRF may be compared with the Zonal Inspections determined from the standard zonal analysis (paragraph d.). These GVIs may be considered fully covered by the zonal inspection if the access requirement is the same and the proposed interval is at least as frequent. Otherwise, a stand-alone GVI should be included within the Systems and Powerplants tasks as described in [Subject 2-6-1].

j. Visual Checks may be considered covered by the Zonal Inspections provided that the Systems Working Group that identified them consider that the failure would be noted and addressed during a zonal inspection. Otherwise, the task should remain in the Systems and Powerplants tasks where specific attention can be drawn to the item.

k. All tasks developed through application of the standard zonal analysis (paragraph d.) should be included in the Zonal Inspections. For accountability purposes, any General Visual Inspection or Visual Check originating from application of systems, powerplant or structures analyses should be referenced in the MRB Report zonal task. To avoid giving unjustified attention to these items, this should not be indicated on task/work cards.

A typical logic diagram is depicted in [Figure 2-5-1.1] and [Figure 2-5-1.2]. This is provided as a guide and may be customized to reflect individual company policies and procedures.

Figure 2-5-1.1. Typical Zonal Analysis Procedure

Figure 2-5-1.1. Typical Zonal Analysis Procedure

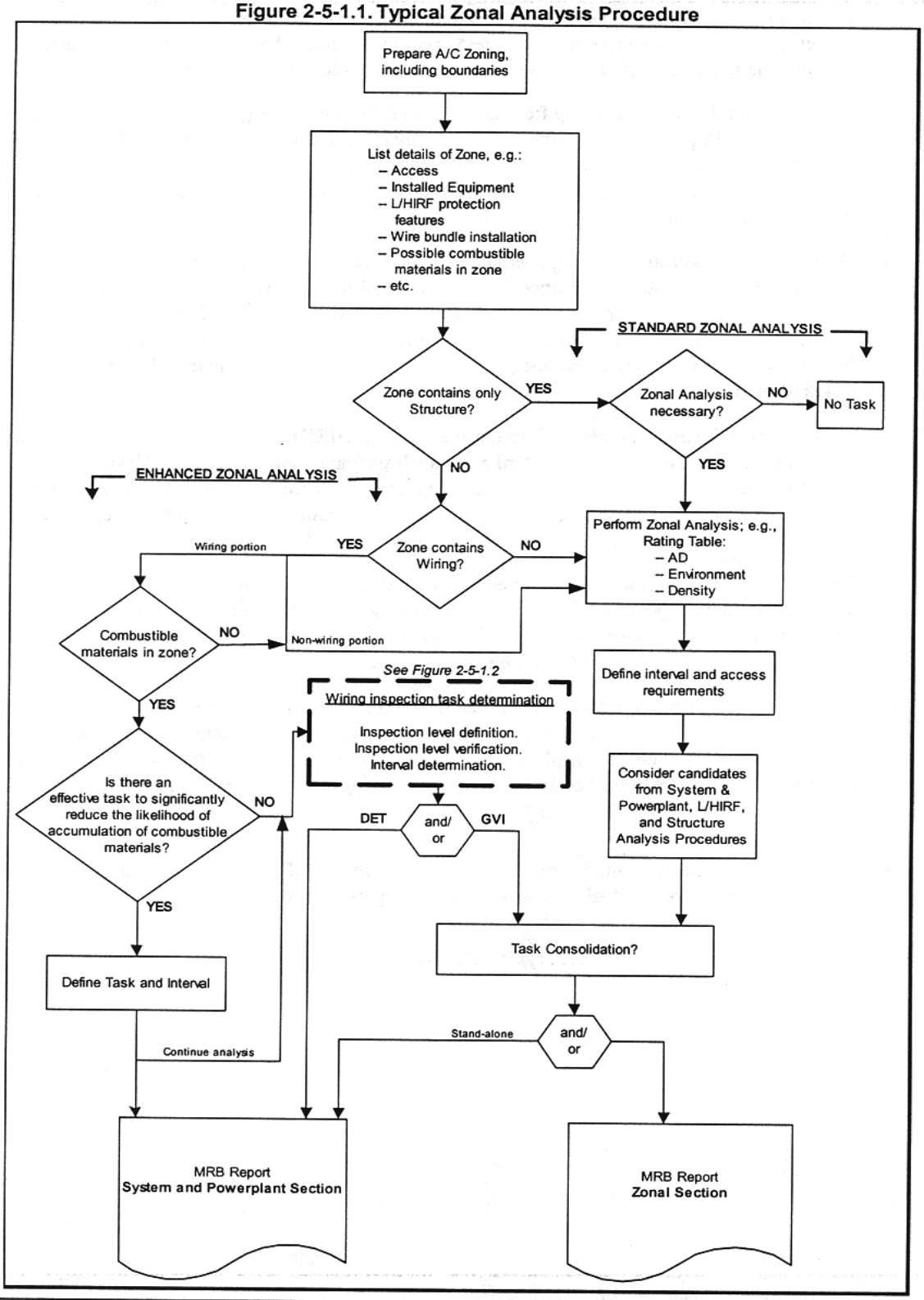
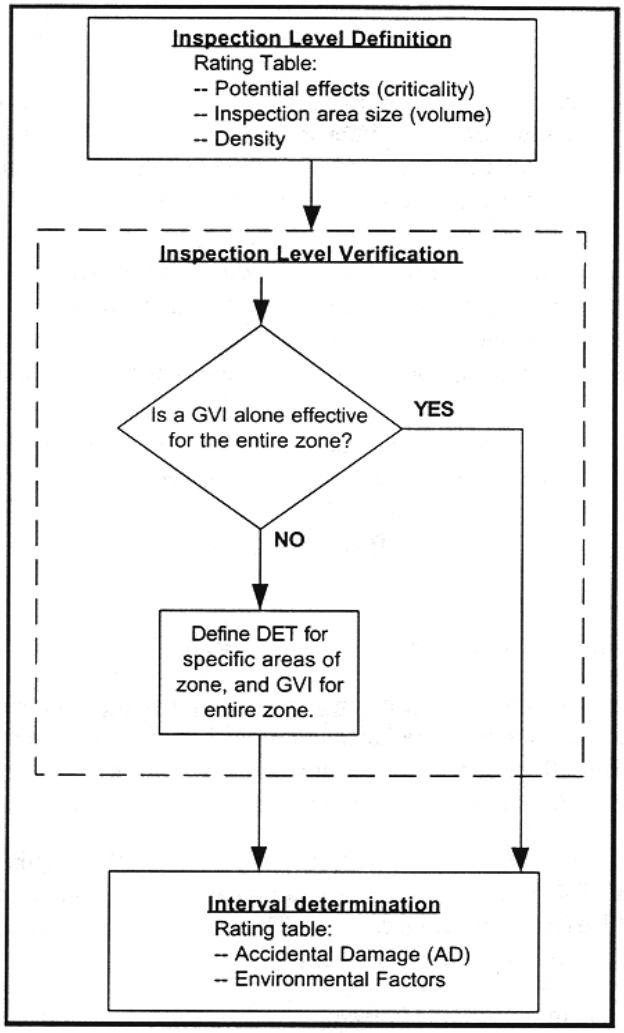


Figure 2-5-1.2. Wiring Inspection Task Determination



2-5-2. Zonal Inspection Task Intervals

Accomplishment intervals are based on hardware susceptibility to damage, the amount of activity in the zone, and operator and manufacturer experience with similar systems, powerplants and structures. When possible, intervals should correspond to those selected for targeted scheduled maintenance checks.

For a given zone, more than one task may be identified. In this case, the frequency of inspection is inversely proportional to the amount of access required; i.e., the more access required, the less the frequency of inspection.

2-6. Lightning/High Intensity Radiated Field (L/HIRF) Analysis Procedure

Lightning/High Intensity Radiated Field (L/HIRF) protection systems have been identified for development of dedicated maintenance. The intent of this maintenance is to reduce the possibility that a single failure cause (such as a lightning strike), and the occurrence of a common failure cause (such as ED or AD) across redundant channels of L/HIRF protection, could impact aircraft airworthiness.

This section contains guidelines for development of scheduled maintenance tasks for aircraft L/HIRF protection systems. Each L/HIRF protective system item is evaluated in terms of its susceptibility to degradation from environmental deterioration and/or accidental damage. The L/HIRF protection system maintenance tasks are developed in support of the aircraft type certification and MRB report development.

Using a logic type analysis, the Working Group determines the type of scheduled maintenance task that is both applicable and effective along with the frequency (interval) of the task.

Lightning/High Intensity Radiated Field (L/HIRF) protection is rated for its criticality with respect to the consequences of the protection's failure.

L/HIRF maintenance is divided into two (2) distinct categories:

1. L/HIRF Protection within LRUs (contained in the Component Maintenance Manual, CMM). L/HIRF protection features are incorporated inside the LRU. Protection devices such as filter pin connectors, discrete filter capacitors and transient protection devices (tranzorbs) are installed within LRUs on one or more of the LRU interface circuits.

   The aircraft manufacturer will work with the suppliers of LRUs requiring L/HIRF protection to ensure that the CMM states the Supplier's maintenance philosophy to ensure the continued effectiveness of L/HIRF protective devices. The maintenance of this type of L/HIRF protection is not developed with the use of this document.

2. L/HIRF Protection on the aircraft (developed during this MSG-3 process, and contained is the subsequent MRB Report).
   All Level A and B L/HIRF protection on the aircraft (any protection not within an LRU) that was identified during L/HIRF certification must be analyzed. Normally this includes items such as shielded wires, raceways, bonding jumpers, connectors, composite fairings with conductive mesh, and the inherent conductivity of the structure, but may include aircraft specific devices, e.g., RF Gaskets.

   Level A systems are electrical and electronic systems whose failure would cause or contribute to a failure of function resulting in a catastrophic-failure condition of the aircraft.

   Level B systems are electrical and electronic systems whose failure would cause or contribute to a failure of function resulting in a hazardous-failure condition of the aircraft.

2-6-1. L/HIRF Maintenance

The scheduled maintenance must cover all identified L/HIRF protection. The majority of this protection will be covered through the Zonal Inspections. Where this Zonal maintenance will not adequately identify degradation of the L/HIRF protection, additional scheduled maintenance may be generated.

1. L/HIRF Protection Analysis Focus

In order to narrow the focus of the analysis, the following concepts are accepted:

1. All visible L/HIRF protection (wires, shields, connectors, bonding straps, or raceways between connectors or termination points) may be covered by the Zonal Inspections.
2. L/HIRF protection within conduit or heatshrink, is covered in the Zonal Inspections by confirming integrity of the protective covering.
3. Inherent conductivity of the aircraft structure is covered by the Zonal Inspections. Corrosion concerns are addressed by the Structural Inspections.
4. Composite fairings with conductive mesh are covered by the Zonal Inspections.
5. Where the Zonal Inspections are not effective, additional analysis may produce other scheduled maintenance tasks.

2. L/HIRF Protection Analysis Ratings

L/HIRF protections require an analysis for the effects of Environmental Deterioration (ED) and Accidental Damage (AD) to determine what maintenance will effectively detect degradation.

Environment - consider the effects of the atmosphere, corrosive products, condensation, temperature, and vibration on the protection, with respect to degradation.

Susceptibility to Damage - consider the likelihood of damage during maintenance or damage during operations. Examples would be areas where connectors could be stepped on, or effects of de-icing fluid on a connector during winter operations.

3. Analysis Approval

Once the analysis is completed, the resulting maintenance tasks and intervals for all L/HIRF systems are submitted to the ISC for approval and inclusion in the MRB Report proposal.

4. Flowchart Description

The following is the intent of each block of the flow chart that follows:

Block 1 - "Title"

Self-explanatory.

Block 2 - "Define Aircraft Zones"
Prior to accomplishment of L/HIRF analysis, it is necessary to have the Zones defined.

Block 3 - "Define Level A and B'
Defining what systems are Level A or Level B is a separate process from MSG-3, and is usually derived from a separate engineering report

Block 4 - Is it a Level A or B?"
Analysis for Level A will follow a separate flow path from Level B.

Block 5 - "Determine Inspection"
L/HIRF analysis will use an ED/AD assessment to determine task and interval for L/HIRF protection maintenance.

Block 6 - "Is it a Zonal Candidate?"
Wherever possible, credit will be taken for Zonal Inspections.

Block 7 - "Covered by Zonal Maintenance"
Assessment shows the Zonal Inspections are effective.

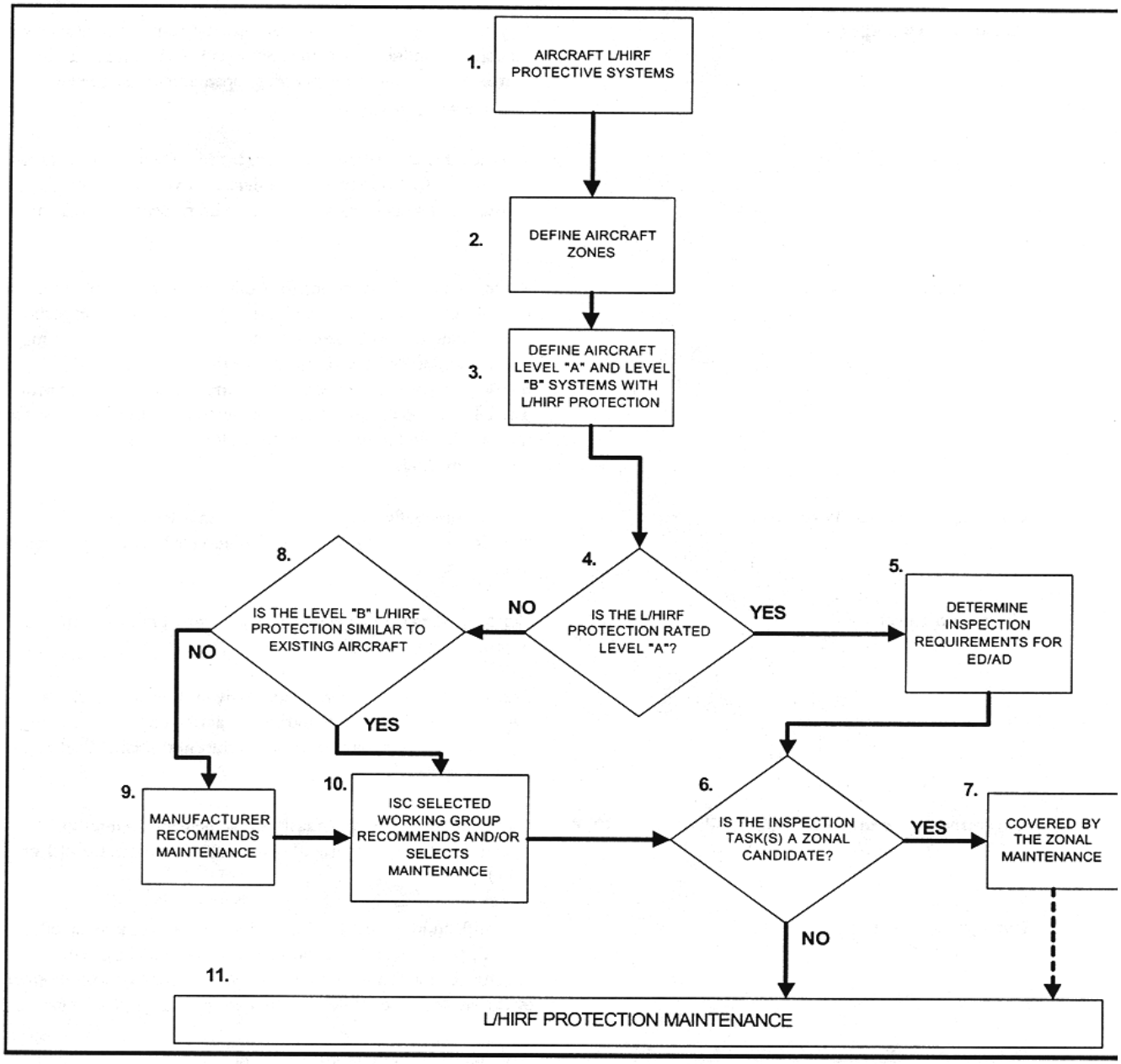
Block 8 - "Is Protection Similar?"
Is it possible to take credit for similar protection that has been evaluated to be effective on similar type aircraft?

Block 9 - "Manufacturer's Maintenance"
If there is no similar protection installed on another aircraft, the manufacturer can choose it's own method for task determination on Level B systems.

Block 10 - Working Group Recommendations"
Incorporation of the Working Group's recommendations.

Block 11 - "L/HIRF Maintenance"
All tasks roll into the L/HIRF Maintenance.

Figure 2-6-2.1. L/HIRF Logic Diagram



Appendix A. Glossary

Accidental Damage (AD)	Physical deterioration of an item caused by contact or impact with an object or influence which is not a part of the aircraft, or by human error during manufacturing, operation of the aircraft, or maintenance practices.
Age Exploration	A systematic evaluation of an item based on analysis of collected information from in-service experience. It verifies the item's resistance to a deterioration process with respect to increasing age.
Airworthiness Limitations	A section of the Instructions for Continued Airworthiness that contains each mandatory replacement time, structural inspection interval, and related structural inspection task. This section may also be used to define a threshold for the fatigue related inspections and the need to control corrosion to Level 1 or better. The information contained in the Airworthiness Limitations section may be changed to reflect service and/or test experience or new analysis methods.
Conditional Probability of Failure	The probability that a failure will occur in a specific period provided that the item concerned has survived to the beginning of that period.
Corrosion Level 1	Corrosion damage that does not require structural reinforcement or replacement. or Corrosion occurring between successive inspections exceeds allowable limit but is local and can be attributed to an event not typical of operator usage of other aircraft in the same fleet (e.g. Mercury spill).
Corrosion Prevention and Control Program (CPCP)	A program of maintenance tasks implemented at a threshold designed to control an aircraft structure to Corrosion Level 1 or better.
Damage Tolerant	A qualification standard for aircraft structure. An item is judged to be damage tolerant if it can sustain damage and the remaining structure can withstand reasonable loads without structural failure or excessive structural deformation until the damage is detected.
Delamination/Disbond	Structural separation or cracking that occurs at or in the bond plane of a structural element, within a structural assembly, caused by in service accidental damage, environmental effects and/or cyclic loading.
Discard	The removal from service of an item at a specified life limit.
Direct Adverse Effect on Operating Safety	

Direct	To be direct, the functional failure or resulting secondary damage must achieve its effect by itself, not in combination with other functional failures (no redundancy exists and it is a primary dispatch item).
Adverse Effect on Safety	Safety shall be considered as adversely affected if the consequences of the failure condition would prevent the continued safe flight and landing of the aircraft and/or might cause serious or fatal injury to human occupants.
Operating	This is defined as the time interval during which passengers and crew are on board for the purpose of flight.
Economic Effects	Failure effects which do not prevent aircraft operation, but are economically undesirable due to added labor and material cost for aircraft or shop repair.
Environmental Deterioration (ED)	Physical deterioration of an item's strength or resistance to failure as a result of chemical interaction with its climate or environment.
Failure	The inability of an item to perform within previously specified limits.
Failure Cause	Why the functional failure occurs.
Failure Condition	The effect on the aircraft and its occupants, both direct and consequential, caused or contributed to by one or more failures, considering relevant adverse operational or environmental conditions.
Failure Effect	What is the result of a functional failure.
Fatigue Damage (FD)	The initiation of a crack or cracks due to cyclic loading and subsequent propagation.
Fatigue Related Sampling Inspection	Inspections on specific aircraft selected from those which have the highest operating age/usage in order to identify the first evidence of deterioration in their condition caused by fatigue damage.
Function	The normal characteristic actions of an item.
Functional Check	A quantitative check to determine if one or more functions of an item performs within specified limits.
Functional Failure	Failure of an item to perform its intended function within specified limits.
Hidden Function	1. A function which is normally active and whose cessation will not be evident to the operating crew during performance of normal duties. 2. A function which is normally inactive and whose readiness to

	perform, prior to it being needed, will not be evident to the operating crew during performance of normal duties.
Inherent Level of Reliability and Safety	That level which is built into the unit and, therefore, inherent in its design. This is the highest level of reliability and safety that can be expected from a unit, system, or aircraft if it receives effective maintenance To achieve higher levels of reliability generally requires modification or redesign.
Inspection - Detailed	An intensive examination of a specific item, installation or assembly to detect damage, failure or irregularity. Available lighting is normally supplemented with a direct source of good lighting at an intensity deemed appropriate. Inspection aids such as mirrors, magnifying lenses, etc. may be necessary. Surface cleaning and elaborate access procedures may be required.
Inspection - General Visual	A visual examination of an interior or exterior area, installation or assembly to detect obvious damage, failure or irregularity. This level of inspection is made from within touching distance unless otherwise specified. A mirror may be necessary to ensure visual access to all surfaces in the inspection area. This level of inspection is made under normally available lighting conditions such as daylight, hangar lighting, flashlight or drop-light and may require removal or opening of access panels or doors. Stands, ladders or platforms may be required to gain proximity to the area being checked.
Inspection - Special Detailed	An intensive examination of a specific item, installation, or assembly to detect damage, failure or irregularity. The examination is likely to make extensive use of specialized Inspection Techniques and/or equipment. Intricate cleaning and substantial access or disassembly procedure may be required.
Inspection - Zonal	A collective term comprising selected general visual inspections and visual checks that is applied to each zone, defined by access and area, to check system and powerplant installations and structure for security and general condition.
Interval (Initial - Repeat)	Initial Interval - Interval between the start of service-life and the first task accomplishment Repeat Interval - The interval (after the initial interval) between successive accomplishments of a specific maintenance task.
Item	Any level of hardware assembly (i.e., system, sub-system, module, accessory, component, unit, part, etc.).
Letter Checks	Letter checks are named collections of tasks (e.g., A-Check, C-Check, etc.) assigned the same interval.
Lubrication and Servicing	Any act of lubricating or servicing for the purpose of maintaining inherent design capabilities.
Maintenance Significant Item - (MSI)	Items identified by the manufacturer whose failure

a. could affect safety (on ground or in flight), and/or
b. is undetectable during operations, and/or
c. could have significant operational impact, and/or
d. could have significant economic impact

Multiple Element Fatigue Damage

The simultaneous cracking of multiple load path discrete elements working at similar stress levels.

Multiple Site Fatigue Damage

The presence of a number of adjacent, small cracks that might coalesce to form a single long crack.

Non-metallics

Any structural material made from fibrous or laminated components bonded together by a medium. Materials such as graphite epoxy, boron epoxy, fiber glass, kevlar epoxy, acrylics and the like are non-metallics. Non-metallics include adhesives used to join other metallic or non-metallic structural materials.

Operating Crew Normal Duties

Operating Crew

Qualified flight compartment and cabin attendant personnel who are on duty.

Normal Duties

Those duties associated with the routine operation of the aircraft, on a daily basis, to include the following:
a. Procedures and checks performed during aircraft operation in accordance with the Aircraft Flight Manual.
b. Recognition of abnormalities or failures by the operating crew through the use of normal physical senses (e.g., odor, noise, vibration, temperature, visual observation of damage or failure, changes in physical input force requirements, etc.).

Operational Check

An operational check is a task to determine that an item is fulfilling its intended purpose. Does not require quantitative tolerances. This is a failure finding task.

Operational Effects

Failure effects which interfere with the completion of the aircraft mission. These failures cause delays, cancellations, ground or flight interruptions, high drag coefficients, altitude restrictions, etc.

Other Structure

Structure which is judged not to be a Structural Significant Item. "Other Structure" is defined both externally and internally within zonal boundaries.

Potential Failure

A defined identifiable condition that indicates that a degradation process is taking place that will lead to a functional failure.

Protective Device

Any device or system that has a function to avoid, eliminate or reduce the consequences of an event or the failure of some other function.

P to F Interval

Interval between the point at which a potential failure becomes detectable and the point at which it degrades into a functional

	failure.
Residual Strength	The strength of a damaged structure.
Restoration	That work necessary to return the item to a specific standard. Restoration may vary from cleaning or replacement of single parts up to a complete overhaul.
Safe Life Structure	Structure which is not practical to design or qualify as damage tolerant. Its reliability is protected by discard limits which remove items from service before fatigue cracking is expected.
Safety (adverse effect)	Safety shall be considered as adversely affected if the consequences of the failure condition would prevent the continued safe flight and landing of the aircraft and/or might cause serious or fatal injury to human occupants.
Safety/Emergency Systems or Equipment	A device or system that enhances the evacuation of the aircraft in an emergency or, if it does not function when required, results in a Failure Condition that might have an adverse effect on safety.
Scheduled Maintenance Check	Any of the maintenance opportunities which are prepackaged and are accomplished on a regular basis.
Structural Significant Item - (SSI)	Any detail, element or assembly, which contributes significantly to carrying flight, ground, pressure or control loads and whose failure could affect the structural integrity necessary for the safety of the aircraft.
Structural Assembly	One or more structural elements which together provide a basic structural function.
Structural Detail	The lowest functional level in an aircraft structure. A discrete region or area of a structural element, or a boundary intersection of two or more elements.
Structural Element	Two or more structural details which together form an identified manufacturer's assembly part.
Structural Function	The mode of action of aircraft structure. It includes acceptance and transfer of specified loads in items (details /elements /assemblies) and provides consistently adequate aircraft response and flight characteristics.
Task Applicability	A set of conditions that leads to the identification of a task type when a specific set of characteristics of the failure cause being analyzed would be discovered and/or corrected as a result of the task being accomplished.
Task Effectiveness	A specific set of conditions that leads to the selection of a task already identified to be applicable. Avoids, eliminates, or reduces the negative consequences of the failure to an extent that justifies

	doing the task at the selected interval.
Tasks - Maintenance	An action or set of actions required to achieve a desired outcome which restores an item to or maintains an item in serviceable condition, including inspection and determination of condition.
Threshold	See "Interval - Initial".
Threshold Period	A period during which no occurrences of the failure can reasonably be expected to occur after the item enters into service.
Visual Check	A visual check is an observation to determine that an item is fulfilling its intended purpose. Does not require quantitative tolerances. This is a failure finding task.

Annex 1. References

[ATA iSpec 2200] *ATA Specification 2200. Information Standards for Aviation Maintenance.* Air Transport Association (www.air-transport.org), Washington, DC.

COMPREHENSIVE INDEX

SUBJECT **LOCATION**

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SUBJECT **LOCATION**

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