U.S. Department of Transportation
Federal Aviation Administration

Advisory Circular

Subject: Maintenance Review Boards, Maintenance Type Boards, and OEM/TCH Recommended Maintenance Procedures

Date: 8/27/12 **AC No:** 121-22C
Initiated by: AFS-300 **Change:**

This advisory circular (AC) provides guidelines that industry may use to develop and revise the minimum scheduled tasking/interval requirements for derivative or newly type-certificated (TC) aircraft and powerplants for Federal Aviation Administration (FAA) approval. This AC refers to these minimum scheduled tasking/interval requirements as the Maintenance Review Board Report (MRBR), the Maintenance Type Board Report (MTBR), or the Original Equipment Manufacturer (OEM)/type-certificate holder's (TCH) Recommended Maintenance Procedures. After FAA approval, the requirements become a basis upon which operators develop their own individual maintenance programs. The report will become a dynamic report for each TCH.

Use this AC to standardize the development, implementation, and update of FAA-approved minimum scheduled maintenance/inspection requirements.

/s/ for

John M. Allen
Director, Flight Standards Service

CONTENTS

Paragraph Page

CHAPTER 1. CREATING AND USING MAINTENANCE/INSPECTION REQUIREMENTS....1

1-1. Purpose....1
1-2. Cancellation....1
1-3. Related CFR Parts....1
1-4. Audience....1
1-5. Scope....1
1-6. Related Reading Material....2

CHAPTER 2. MAINTENANCE PROGRAM OVERVIEW....5

2-1. Timeline of Maintenance Steering Group (MSG) Actions....5
2-2. MRB Applicability....7
2-3. MRBR....7
2-4. MRBR Proposal Delivery Schedule Guidelines....8
2-5. Validation of Associated Maintenance Procedures....9
2-6. CMRs....9

CHAPTER 3. INDUSTRY PARTICIPATION....11

3-1. Industry Steering Committee (ISC)....11
3-2. ISC Functions....11
3-3. MSG WGs....12
3-4. OEM/TCH Functions....12

CHAPTER 4. FEDERAL AVIATION ADMINISTRATION (FAA) PARTICIPATION....15

4-1. U.S. Original Equipment Manufacturer (OEM)/Type-Certificate Holder (TCH)....15
4-2. Foreign OEM/TCH....17
4-3. MRB....18
4-4. Representatives of Other National Aviation Authorities (NAA)....21

CHAPTER 5. MAINTENANCE REVIEW BOARD REPORT (MRBR) APPROVAL....23

5-1. Initial MRBR Approval Process....23
5-2. National Aviation Authority (NAA) Approval of the MRBR....23
5-3. Proposed Initial MRBR Disapproval Process....23
5-4. MRBR Implementation....23

CONTENTS (continued)

Paragraph Page

CHAPTER 6. MAINTENANCE REVIEW BOARD REPORT (MRBR) REVISIONS, FORMAT, AND CONTENT....27

6-1. MRBR Annual Review....27
6-2. Temporary Revisions....27
6-3. Recommendations for Completing the Report....27

CHAPTER 7. MAINTENANCE REVIEW BOARD POLICY BOARDS (MRBPB)....33

7-1. Federal Aviation Administration (FAA) MRBPB....33
7-2. IMRBPB....33

CHAPTER 8. MAINTENANCE TYPE BOARDS (MTB) PROCESS....35

8-1. General....35
8-2. MTB Process Applicability....35
8-3. MTB Audit Process....35
8-4. MTBR....36
8-5. Policy and Procedures Handbook (PPH)....37
8-6. OEM/TCH Representatives....38
8-7. Regulatory Authorities' Responsibilities....38

CHAPTER 9. ORIGINAL EQUIPMENT MANUFACTURER (OEM)/TYPE-CERTIFICATE HOLDER (TCH) RECOMMENDED MAINTENANCE PROCESS....41

9-1. General....41
9-2. Recommended Maintenance Process Applicability....41
9-3. Recommended Maintenance Process Audits....41
9-4. Scheduled Maintenance Instruction....41

CHAPTER 10. MAINTENANCE REVIEW BOARD REPORT (MRBR)/MAINTENANCE TYPE BOARD REPORT (MTBR) LOW-UTILIZATION MAINTENANCE REQUIREMENTS....43

10-1. General....43
10-2. Applicability....43
10-3. Requirements....43

CHAPTER 11. FLIGHTCREWS ACCOMPLISHING MAINTENANCE....45

11-1. General....45
11-2. Applicability....45

CONTENTS (continued)

Paragraph Page

CHAPTER 12. IMPLEMENTATION AND OPTIMIZATION OF TASKING INTERVALS ...47

12-1. Introduction....47
12-2. Purpose....47
12-3. Policy Description....47
12-4. Responsibilities....49
12-5. Data Quality....50
12-6. Data Integrity....51
12-7. Data Review....52
12-8. Data Correlation....53

APPENDIX 1. ACRONYM/ABBREVIATION LISTING FOR THE MAINTENANCE REVIEW BOARD REPORT (MRBR) (4 Pages) 1
APPENDIX 2. EVOLUTION/OPTIMIZATION DEFINITIONS (2 Pages)....1
APPENDIX 3. POLICY AND PROCEDURES HANDBOOK (PPH) FORMAT (10 Pages) 1
APPENDIX 4. RELEVANT FLOWCHARTS AND LETTERS (6 Pages) 1

LIST OF FIGURES

Figure 2-1. Maintenance Review Board Process Flowchart....8
Figure 4-1. Memo to AFS-300 to Establish a Maintenance Review Board 16
Figure 5-1. Maintenance Review Board Report Letter of Approval 24
Figure 5-2. Maintenance Review Board Report Approval Page 25
Figure 8-1. Maintenance Type Board Flowchart....37

CHAPTER 1. CREATING AND USING MAINTENANCE/INSPECTION REQUIREMENTS

1-1. PURPOSE. This advisory circular (AC) provides guidelines that industry may use to develop and revise the minimum scheduled tasking/interval requirements for derivative or newly type-certificated (TC) aircraft and powerplants for Federal Aviation Administration (FAA) approval. This AC refers to these minimum scheduled tasking/interval requirements as the Maintenance Review Board Report (MRBR), the Maintenance Type Board Report (MTBR) or the Original Equipment Manufacturer (OEM)/type-certificate holder's (TCH) Recommended Maintenance Procedures. After FAA approval, the requirements become a basis upon which operators develop their own individual maintenance programs. The report will become a dynamic report for each TCH; that is, a document subject to periodic revision based on new or changed analysis or requirements.

1-2. CANCELLATION. This AC cancels AC 121-22B, Maintenance Review Board Report, Maintenance Type Board, and OEM/TCH Inspection Program Procedures, dated October 29, 2010.

1-3. RELATED CFR PARTS. Title 14 of the Code of Federal Regulations (14 CFR) parts 21, 23, 25, 27, 29, 33, 35, 43, 91, 119, 121, 129, and 135 apply.

1-4. AUDIENCE. Guidance in this AC pertains to FAA personnel, air operators, air carriers, and OEM/TCHs and their vendors involved in the development of maintenance tasking requirements.

1-5. SCOPE. This AC is not mandatory and is not the only means to comply with the regulations. The FAA issues this AC for guidance and to outline a method of compliance. A person may elect to follow an alternative method, provided that the FAA finds it to be an acceptable means of complying with the applicable requirements of 14 CFR. The material in this AC is primarily designed to provide guidance for the standardized development, implementation, and update of FAA-approved minimum scheduled tasking/interval requirements, and it describes an acceptable means, but not the only means, of showing compliance with the applicable regulations. An MRBR, MTBR or OEM/TCH requirements document will be used by operators as a basis for developing and designing a maintenance program and will be submitted to the local regulatory authority for acceptance or approval. That acceptance or approval process becomes far more complex and potentially impossible if the MRBR or MTBR does not conform to a known standard. Therefore, to generate an MRBR, MTBR or OEM/TCH requirements document using the methods described in this AC, the methods described must be followed in all respects, without deviation. The FAA derived these guidelines from regulatory authorities and aviation industry experience. This AC is primarily designed to provide advice and recommendations for the standardized development, implementation, and update of FAA-approved minimum scheduled maintenance/inspection requirements, unless exceptions that meet the intent of the AC are documented and then approved/accepted in an OEM/TCH Policy and Procedures Handbook (PPH).

> **NOTE: This AC uses the term "must" only in the sense of ensuring the applicability of these particular methods of compliance when operators use**

the acceptable means of compliance described herein. This AC does not change regulatory requirements and does not authorize changes in, or deviations from, regulatory requirements.

1-6. RELATED READING MATERIAL.

a. FAA Orders (current editions).

- Order 1100.5, FAA Organization—Field.
- Order 8100.5, Aircraft Certification Service Mission, Responsibilities, Relationships, and Programs.
- Order 8110.4, Type Certification.
- Order 8110.54, Instructions for Continued Airworthiness Responsibilities, Requirements, and Contents.
- Order 8300.12, Corrosion Prevention and Control Programs.
- Order 8430.21, Flight Standards Division, Aircraft Certification Division, and Aircraft Evaluation Group Responsibilities.
- Order 8900.1, Volume 8, Chapter 2, Section 7, Maintenance Review Boards.

b. FAA ACs (current editions).

- AC 20-107, Composite Aircraft Structure.
- AC 20-136, Aircraft Electrical and Electronic System Lightning Protection.
- AC 20-158, The Certification of Aircraft Electrical and Electronic Systems for Operation in the High-Intensity Radiated Fields (HIRF) Environment.
- AC 23-1309-1, System Safety Analysis and Assessment for Part 23 Airplanes.
- AC 25-19, Certification Maintenance Requirements.
- AC 25-27, Development of Transport Category Airplane Electrical Wiring Interconnection Systems Instructions for Continued Airworthiness Using and Enhanced Zonal Analysis Procedure.
- AC 27-1, Certification of Normal Category Rotorcraft.
- AC 29-2, Certification of Transport Category Rotorcraft.
- AC 33.4-3, Instructions for Continued Airworthiness, Aircraft Engine High Intensity Radiated Fields (HIRF) and Lightning Protection Features.
- AC 120-42, Extended Operations (ETOPS and Polar Operations).

c. Other Technical Documents.

- CMH-17, Composites Materials Handbook. (Available from http://www.cmh17.org.)
- European Aviation Safety Agency (EASA) Document # WI.MRB.00002-001, Maintenance Review Board Team.

- Transport Canada Transport Publication (TP) 13850, Scheduled Maintenance Instruction Development Process Manual.
- ATA MSG-3, Operator/Manufacturer Scheduled Maintenance Development, current edition available from:

Airlines for America (A4A)
1301 Pennsylvania Avenue N.W., Suite 1100
Washington, DC 20004–1707
202-626-4000
http://www.airlines.org

CHAPTER 2. MAINTENANCE PROGRAM OVERVIEW

2-1. TIMELINE OF MAINTENANCE STEERING GROUP (MSG) ACTIONS.

a. History. The development of maintenance programs dates to Aeronautical Bulletin 7E of May 15, 1930. The process of developing maintenance programs for new aircraft and aircraft engines has evolved. In the past, each air carrier proposed its own unique program. Today, the process is a collaborative effort in which the Federal Aviation Administration (FAA), associated foreign regulatory authorities, and industry work together to develop the minimum scheduled maintenance/inspection requirements for new and derivative aircraft, aircraft engines, and propellers. Early experience in the development of initial scheduled maintenance/inspection requirements revealed that, through the use of logical analysis and decision processes, it was possible to develop a program of applicable and effective maintenance tasks. In 1968, the Maintenance Steering Group - 1st Task Force (MSG-1) developed maintenance requirements decision and analysis logic.

b. Role of the MSG. In 2006, the Air Transport Association of America (ATA) MSG was named the Maintenance Programs Industry Group (MPIG), while the latest version of MSG still retained the same original title. The ATA coordinates, and industry chairs, the MPIG, which has assumed the same duties as the original MSG task force. The MPIG meets periodically to review issues submitted by industry and the regulatory authorities affecting the latest version of MSG and to institute improvements or any necessary evolutionary changes due to revised regulatory requirements or advances in industry technology.

c. History of the Maintenance Steering Group Document by Revision.

(1) Handbook—Maintenance Evaluation and Program Development, MSG-1 (July 10, 1968). The FAA and industry used MSG-1 procedures to develop the initial minimum scheduled maintenance/inspection recommendations for the B-747-100 aircraft and its engines.

(2) Specification Maintenance Program Development, Maintenance Steering Group - 2nd Task Force (MSG-2) (January 8, 1970). A task force used the experience gained on the B-747-100 project to update the MSG-1 procedures so that a universal document could be made applicable for future newly type-certificated (TC) aircraft and/or engines. This document was called the MSG-2 document. In the 1970s, the FAA and industry used the MSG-2 procedures to develop the initial minimum scheduled maintenance/inspection recommendations for aircraft and engines.

(3) Airline/Manufacturer Maintenance Program Development Document Maintenance Steering Group - 3rd Task Force (MSG-3), Original Revision (September 30, 1980). In 1980, the combined efforts of the FAA, ATA tasking/interval requirements, U.S. and European aircraft and engine manufacturers, and U.S. and foreign airlines generated new decision logic and analysis procedures contained in a new document called MSG-3.

(4) Airline/Manufacturer Maintenance Program Development Document MSG-3, Revision 1 (March 31, 1988). In 1987, after applying MSG-3 analysis procedures on a number of new aircraft and engines in the first half of the 1980s, the airline industry decided that the

benefits of the experience gained during those years should be used to improve the document for future applications. Thus, Revision 1 to MSG-3 was developed. The FAA and industry began applying MSG-3 Revision 1 in 1988 for the ongoing development of new aircraft and aircraft engine Maintenance Review Board Report (MRBR) documents.

(5) Airline/Manufacturer Maintenance Program Development Document MSG-3, Revision 2 (September 12, 1993). Further refinements made to the MSG-3 Revision 1 analysis resulted in Revision 2 to MSG-3. In 1993, the FAA and industry began applying MSG-3 Revision 2 for development of new and derivative aircraft and engine MRBR documents.

(6) ATA MSG-3 Operator/Manufacturer Scheduled Maintenance Program Development, Revision 2001 (March 2000). This version was reformatted into an electronic document to adapt to the use of computer technology.

(7) ATA MSG-3 Operator/Maintenance Program Development, Revision 2001.1 (February 2001). To include the large corporate aircraft and aging large transport legacy aircraft segment in the MSG-3 process, the FAA and industry began using MSG-3 Revision 2001.1 in 2001. This revision introduced significant changes, including inspection definitions, corrected terminology, and expanded wording on safety/emergency equipment. Also, with the advent in the manufacturer development of more technologically advanced fly-by-wire aircraft, and to improve the safety of legacy transport aircraft, it became necessary to introduce sections on enhanced zonal analysis procedures (EZAP) and Lightning/High Intensity Radiated Field (L/HIRF) protection.

(8) ATA MSG-3 Operator/Manufacturer Scheduled Maintenance Development, Revision 2002.1 (March 2002). Significant changes in this revision included the recording of all assumptions, the consideration of all vendor recommendations, procedures for fault-tolerant systems, Master Minimum Equipment List (MMEL) considerations, and the inclusion of analysis of nonmetallic structures.

(9) ATA MSG-3 Operator/Manufacturer Scheduled Maintenance Development, Revision 2003.1 (March 2003). The most significant changes included adding three-letter task abbreviations/acronyms, further revised fault-tolerant systems procedures, definition changes for fault-tolerant systems, and further clarification of the definition of safety/emergency systems or equipment.

(10) ATA MSG-3 Operator/Manufacturer Scheduled Maintenance Development Revision 2005.1 (March 2005). Changes introduced in this version included adding the need to identify design features that affect fuel tank safety (FTS), defining differentiation of Structural Significant Items (SSI) and Principal Structural Elements (PSE), correcting the relation of fatigue damage (FD) to nonmetallic materials, revising EZAPs to reflect recommendations from the FAA's Aging Transport Systems Rulemaking Advisory Committee (ATSRAC) on aging wiring, and adding a definition for electrical wiring interconnection systems (EWIS).

(11) ATA MSG-3 Operator/Manufacturer Scheduled Maintenance Development Revision 2007.1 (April 2007). Changes introduced in this version expanded the text to better define and consider structural wear damage. This change expanded the text and added a

flowchart to better explain the Certification Maintenance Requirements (CMR) versus the Maintenance Review Board (MRB) task and interval determination procedure. This revision also added text and revised flowcharts to clarify the FD logic. It was a major rewrite of the L/HIRF protection systems.

(12) ATA MSG-3 Operator/Manufacturer Scheduled Maintenance Development Revision 2009.1 (December 2009). Changes introduced in this version added structural health monitoring and scheduled structural health monitoring concepts and revised FD analysis. This change added a note requiring that General Visual Inspections (GVI) developed from Category 5 or 8 logic be retained as system and powerplant tasks and not become covered by zonal inspections.

(13) ATA MSG-3 Operator/Manufacturer Scheduled Maintenance Development Revision 2011.1 (September 2011). This change clarified definitions for SSI and Maintenance Significant Items (MSI), clarified analysis for Environmental Deterioration (ED)/Accidental Damage (AD) and structural degradation of MSIs, updated the definition of fault-tolerant systems, clarified flightcrew duties, updated L/HIRF, and revised wording dealing with line replaceable unit (LRU)-level L/HIRF issues.

2-2. MRB APPLICABILITY.

a. Uses of the MRB Process. The MRB process should be used for:

(1) Transport category airplanes designed to carry 10 or more people or having a maximum weight of 33,000 lb or more,

(2) Transport category "A" helicopters, or

(3) Powered-lift aircraft.

b. Optional Uses of the MRB Process. Additionally, an MRB may be used for any aircraft by choice of the Original Equipment Manufacturer (OEM)/type-certificate holder (TCH). Refer to Appendix 4, Figure 1, Maintenance Program Development Process Selection Flowchart.

2-3. MRBR.

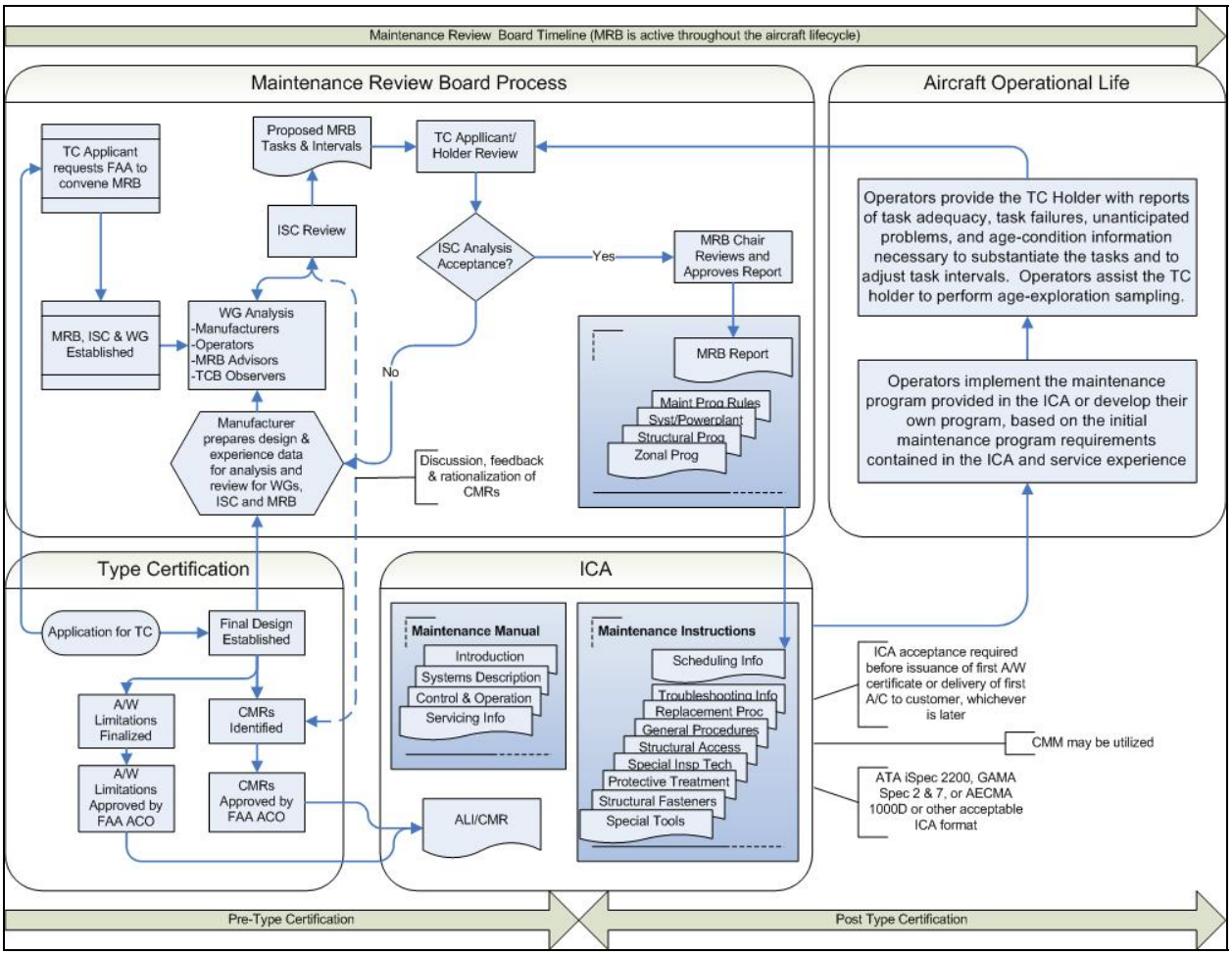
a. Purpose of an MRBR. Industry and regulatory authorities generate an MRBR as a coordinated effort of achieving timely compliance with the applicable certification regulatory requirements and the minimum scheduled maintenance requirements. An MRBR contains the minimum scheduled tasking/interval requirements for a particular aircraft and on-wing engine maintenance programs. Develop the MRBR in accordance with the guidelines in this advisory circular (AC). Do not confuse the MRBR requirements with an operator maintenance program. After FAA approval, the requirements become a base or framework around which each operator can develop its own individual aircraft maintenance program.

b. Use of the MSG Analysis Process. You must use the latest version of the ATA MSG analysis process and procedures for the development of an MRBR for all new aircraft or engines. For development of derivative designs (amended TC), the applicant should apply the most

current version of MSG-3 logic to those systems or structures that have changed. Reapplication for a TC after an expired TC application requires using the most recent version of the MSG logic process. The FAA no longer supports MSG-2 at the committee or working group (WG) level. Each OEM/TCH is responsible for supporting the regulatory requirements for their MSG-2 aircraft.

c. Approval of an Operator's Program Performance. Aircraft/engine design and performance form the MRBR requirements. An operators' program performance is the responsibility of the operator, with oversight by the local regulatory authority. The appropriate certificate-holding district office (CHDO) must initially approve and thereafter accept changes to an operator's aircraft maintenance program and methods used to implement these MRBR requirements. Refer to Figure 2-1.

FIGURE 2-1. MAINTENANCE REVIEW BOARD PROCESS FLOWCHART



2-4. MRBR PROPOSAL DELIVERY SCHEDULE GUIDELINES. The OEM/TCH may concurrently build the MRBRP. Portions of the MRBRP may be submitted for consideration when the design is frozen and applicable minimum scheduled tasking/interval requirements have become mature and complete. This will improve the quality of the proposal by reducing discrepancies at the end of the process. The OEM/TCH Policy and Procedures Handbook (PPH)

must be approved by the Industry Steering Committee (ISC) and accepted by the MRB chairperson before the start of any WG meetings. Deliver all WG data packages and documents to the regulatory authorities 30 calendar-days before scheduled meetings. Deliver the final MRBR proposal and any supporting documents to the MRB chairperson 90 calendar-days before expected approval of the document.

2-5. VALIDATION OF ASSOCIATED MAINTENANCE PROCEDURES. The OEM/TCH must develop internal instructions and guidelines to enable the validation of all maintenance procedures written to support MRBR tasks, and then the OEM/TCH must validate them. The objective of the validation is to ensure that the procedure can be performed as written and that the procedure meets the intent of the MRBR task. At minimum, the OEM/TCH must make available a completed aircraft and the necessary qualified maintenance personnel where and when requested by the FAA. The OEM/TCH must demonstrate to the FAA that Failure Effect Category (FEC) 5 and 8 safety tasks can be adequately performed and that the procedure meets the intent of the MRB task. Additional tasks may be validated at FAA's discretion.

> **NOTE: Figure 2-1 outlines the relationships between the various documents involved in the creation of the minimum scheduled tasking/interval requirements, including the MRBR.**

2-6. CMRs. During aircraft design certification and concurrent with the MRB process, leading up to the type certification process, the OEM/TCH accomplishes an analysis, in accordance with Title 14 of the Code of Federal Regulations (14 CFR) part 23, § 23.1309; part 25, § 25.1309; part 27, § 27.1309; and part 29, § 29.1309. The analysis intends to detect any safety-significant latent failures that would, in combination with one or more other specific failures or events, result in a hazardous or catastrophic condition. This system safety assessment leads to a design decision to create candidate Certification Maintenance Requirements (CCMR).

a. Additional Information. For further information regarding this subject, please see the current editions of AC 23.1309-1, System Safety Analysis and Assessment for Part 23 Airplanes; AC 25.1309-1, System Design and Analysis; AC 25-19, Certification Maintenance Requirements; AC 27-1, Certification of Normal Category Rotorcraft; and AC 29-2, Certification of Transport Category Rotorcraft.

b. Limitations. If a CCMR may be satisfied by an MSG-3 task, the following limitations apply:

(1) Only MSG-3 Category 5 and 8 tasks may take credit for a CCMR.

(2) If certification transfers a CCMR to the ISC based on a balancing MRB task, the ISC manages that task from that point forward (see subparagraph 6-3(n)(7)).

CHAPTER 3. INDUSTRY PARTICIPATION

3-1. INDUSTRY STEERING COMMITTEE (ISC). The Original Equipment Manufacturer (OEM)/type-certificate holder (TCH) will work with the expected participating operators of the aircraft, the engine OEM/TCH, and other product vendors to form an ISC to address the minimum scheduled tasking/interval requirements for the aircraft and engines. Representatives from aircraft, engine, propeller, and appliance manufacturers and intended operators normally comprise the ISC. Representatives of maintenance organizations may also be part of the ISC, subject to coordination with the Maintenance Review Board (MRB) chairperson. The ISC chairperson will work with the Federal Aviation Administration (FAA) MRB chairperson. The MRB chairperson is responsible for coordinating with other participating regulatory authorities. The ISC chairperson is responsible for (1) developing and establishing a Policy and Procedures Handbook (PPH) for the development of the Maintenance Review Board Report (MRBR) proposal; and (2) directing the activities of the working groups (WG) and preparing the MRBR. Under the direction of the selected ISC chairperson, the ISC will perform the functions in the PPH, as listed in subparagraph 3-2a of this chapter. As applicable, the following information should be in each PPH. A typical format for the PPH is provided in Appendix 3, Policy and Procedures Handbook (PPH) Format. This example contains all of the necessary elements for a PPH, but the format may vary for legacy products. Deviation from Appendix 3 will be negotiated between the ISC and MRB chairpersons.

3-2. ISC FUNCTIONS. Perform these functions:

a. Approve the PPH and forward it to the MRB chairperson for review and acceptance. During the MRB PPH review process, the FAA MRB chairperson will direct comments to the OEM/TCH. The ISC must approve the initial PPH and all subsequent revisions; the FAA must accept the initial PPH before any WG meetings can begin.

b. Determine the number and type of each WG that will be necessary and then organize and manage those groups. The ISC should ensure that a representative number of operators attend each WG meeting. The ISC goal should be a minimum of three operators.

c. Provide the MRB chairperson with a list of the number and types of each WG, the name and affiliation of each member, and any subsequent personnel changes.

d. Arrange for required aircraft technical/MSG training for all ISC and WG members and FAA/regulatory authorities.

e. Invite the MRB chairperson and selected MRB members to ISC meetings.

f. Invite other regulatory authorities to ISC and WG meetings, with concurrence and coordination of the MRB chairperson.

g. Attend ISC meetings. ISC chairpersons/co-chairpersons may attend internal MRB meetings when invited by the MRB chairperson.

h. Review and accept all final WG analyses and presentations, returning those that are unacceptable to the WG.

i. Establish a tracking system for issues that are identified from WG analyses and will resolve all open actions.

j. Provide complete and accurate meeting minutes for all ISC and WG meetings. Establish a method of distributing and tracking all meeting minutes.

k. Establish a tracking system to ensure resolution of all maintenance issues and open action items or concerns. Document and resolve all maintenance issues and open action items or provide a plan for closure before presenting an MRBR proposal to the MRB chairperson.

l. Provide to the appropriate MRB members all supporting technical data/analysis for the proposed MRBR.

m. Review and provide comments on proposed MRBR.

3-3. MSG WGs. Appropriate representatives of the OEM/TCH (aircraft/engine), vendors, operators, maintenance organizations and regulatory authorities must comprise WGs. An industry representative will chair the WG; he or she is selected by the WG and accepted by the ISC. WG responsibilities include the following functions in addition to those included in subparagraph 3-2a:

a. Develop minimum scheduled tasking/interval requirements for new or derivative aircraft/engine using the latest revision of the MSG process and the latest approved PPH.

b. Establish sampling requirements when an analysis determines that such sampling is applicable and effective in the identification of the failure cause. These failures could have an adverse effect on the continued airworthiness or safety of the aircraft.

c. Produce a set of meeting minutes for each WG activity.

3-4. OEM/TCH FUNCTIONS. The OEM/TCH will perform the following functions:

a. Develop and prepare a draft PPH for ISC approval.

b. Provide required aircraft technical/MSG training for all ISC and WG members and FAA/regulatory authorities before holding the first WG meeting.

c. Provide the ISC with a comprehensive candidate Maintenance Significant Items (MSI) and Structural Significant Items (SSI) list and a list of the items precluded from the candidate MSI/SSI list before beginning any ISC/WG meeting.

d. Arrange for the required attendance of the appropriate OEM/TCH design personnel at each ISC/WG meeting.

e. Provide WG members with current technical data to support the analysis of each MSI, SSI, and zones of the aircraft for analysis by each WG. The data are required 30 days before the ISC/WG meeting.

f. Arrange for technical support and access to the aircraft, appropriate OEM/TCH, and/or vendor facility, as required for the development of analysis and tasks.

g. During each ISC/MRB meeting, provide the ISC/MRB and appropriate WG members, with an updated report of all airworthiness limitation items (ALI), Certification Maintenance Requirements (CMR), and design changes that impact the MSG-3 analysis.

h. Ensure that the OEM/TCH manuals contain information and procedures for accomplishing all on-aircraft systems/structures/zonal tasks covered in the MRBR.

i. Participate in all ISC and WG activities in support of the development of the MRBR.

j. Record all ISC and WG activity and discussion in meeting minutes, and record unresolved open actions/open issues in a formal ongoing action list or report.

k. Provide the MRB chairperson a copy of all supporting technical data/analysis for the proposed MRBR at the conclusion of the project.

l. Submit the MRBR proposal to the MRB chairperson at least 90 calendar-days before scheduled approval.

m. When the OEM/TCH conducts sampling and analytical inspections of the aircraft, powerplant, or systems/components on an opportunity basis, the OEM/TCH will provide timely notification to the MRB chairperson (or representative) regarding the time and location of the inspection to permit MRB chairperson (or representative) participation. When the attendance of the MRB Chairperson (or representative) is not possible, the OEM/TCH must provide a copy of the complete inspection report to the MRB chairperson.

CHAPTER 4. FEDERAL AVIATION ADMINISTRATION (FAA) PARTICIPATION

4-1. U.S. ORIGINAL EQUIPMENT MANUFACTURER (OEM)/TYPE-CERTIFICATE HOLDER (TCH). The OEM/TCH formally notifies the responsible Aircraft Evaluation Group (AEG) manager of its intention to develop a Maintenance Review Board Report (MRBR) proposal.

a. Assigning a Maintenance Review Board (MRB) Chairperson. The appropriate AEG manager will assign a qualified individual as MRB chairperson to manage the specific MRB process for the FAA. The MRB chairperson selects and manages additional MRB members. Through the appropriate division/office manager, the MRB chairperson will formally invite experienced and qualified FAA working group (WG) advisors to participate in each WG. Acceptance to participate is considered a commitment for the duration of the project.

b. Notification of MRB Composition. The MRB chairperson will provide formal written notification to the Aircraft Maintenance Division, AFS-300, of the MRB's composition. Refer to Figure 4-1, Memo to AFS-300 to Establish a Maintenance Review Board. The MRB chairperson will also invite the manager of AFS-300, or his or her representative, to participate in the MRB process.

c. Coordination with Aircraft Certification Service (AIR). The FAA MRB chairperson is also responsible for coordination on all issues of concern with FAA certification within the appropriate AIR project manager and engineering staff. This may require developing issue papers and responding to AIR issue papers or seeking consultation on new technological issues that may arise during the design and development process of the aircraft.

d. Assignment of MRB Members. The MRB chairperson will assign an FAA MRB member to each WG. The MRB chairperson may assign additional FAA advisors to each WG if necessary. The MRB should include, and the chairperson should ensure the participation of, qualified Flight Standards Service (AFS) inspector personnel and AEG personnel, and the chairperson should also encourage the participation of engineering representatives from the controlling FAA certification/directorate office.

FIGURE 4-1. MEMO TO AFS-300 TO ESTABLISH A MAINTENANCE REVIEW BOARD

Federal Aviation
Administration

Memorandum

Date: XX/XX/XXXX

To: Manager, Aircraft Maintenance Division, AFS-300

From: Manager, XXX Aircraft Evaluation Group

Prepared by: XXXXXXXXXX

Subject: ACTION: Establishment of a Maintenance Review Board for the ABC Aviation Model 500 Aircraft

The Aircraft Certification Offices (ACO) and the Flight Standards Divisions each have responsibility for specific tasks in the aircraft certification process. Within the Flight Standards Divisions, the Aircraft Evaluation Group (AEG) has a variety of responsibilities including: the development, acceptance and revision of the minimum scheduled tasking/interval requirements for derivative or newly type certificated aircraft and powerplants. These minimum scheduled tasking/interval requirements are contained in the Maintenance Review Board (MRB) Report and are part of the requirements of Title 14 of the Code of Federal Regulations (14 CFR) part 25, § 25.1529 and Appendix H. These functions are accomplished through the establishment of technical boards as provided by Federal Aviation Administration (FAA) Order 8900.1.

Order 8900.1 sets forth responsibilities and guidelines for Flight Standards Divisions and the AEGs in accomplishing certain aircraft certification and operation evaluation responsibilities. Composition and functions of the MRB are contained in the current edition of Advisory Circular (AC) 121-22. Other pertinent Federal Aviation Administration (FAA) policy letters, orders, and advisory material may also apply.

The FAA aircraft certification and the MRB Maintenance Steering Group - 3rd Task Force (MSG-3) analysis of the ABC Aviation Model 500 aircraft will be conducted concurrently with (insert name of participating National Aviation Authority (NAA) here.)

FIGURE 4-1. MEMO TO AFS-300 TO ESTABLISH A MAINTENANCE REVIEW BOARD (CONTINUED)

We anticipate the following schedule:

- The MRB will first meet in January, 2013.
- The MRB MSG-3 working group analyses will take place between March 2013 and September 2014.
- Aircraft maintenance task validation will occur during the flight test program.
- First aircraft delivery should occur in September 2015.

Identified below are the proposed MRB members. Please advise me if you wish to include a representative from AFS-300.

Maintenance Review Board Members:

Chairperson – Alan Able, XXX AEG
Powerplants/Air/Auxiliary Power Unit (APU) – Bob Baker, XXX AEG
Avionics/Electrical – Cynthia Clinton, XXX AEG
Mechanical Systems – David Delkin, ASO ATL FSDO-11
Structural – Edward Elkins, XXX AEG
Zonal/High Intensity Radiated Fields (HIRF) – Fredrick Fox, AGL CHI FSDO-31

The chairperson of this board is responsible for planning the board functions, coordinating with the aircraft manufacturer and other concerned FAA offices and resolving any technical deficiencies. The chairperson will be guided by established processes and procedures in accomplishing assigned tasks. The members of the board will be responsible for technical input, consultation and development of technical recommendations in support of accomplishing assigned objectives. Technical guidance and direction to the board is available through the appropriate AEG office manager and the Manager, Aircraft Maintenance Division (AFS-300).

4-2. FOREIGN OEM/TCH.

a. MRB Chairperson for Certification of Foreign Aircraft. During the certification process of a foreign-manufactured aircraft, the applicant will formally request FAA participation from the appropriate AEG. The AEG office manager will assign a qualified FAA MRB chairperson who will perform the duties as the FAA representative on the international MRB/Industry Steering Committee (ISC).

b. Responsibilities of FAA MRB Chairperson.

(1) This FAA MRB chairperson is the counterpart to the international MRB chairperson in all matters concerning MRB activities and Maintenance Steering Group (MSG) processes. The MRB chairperson is the sole authority regarding FAA requirements. The chairperson also provides the collective input from all the FAA advisors regarding WG activities. The primary duty is to ensure compliance with the applicable Title 14 of the Code of Federal Regulations (14 CFR) minimum tasking/interval requirements/FAA regulatory requirements. Also, to the

extent possible, the chairperson ensures standardization and harmonization of the domestic and foreign MRB activities within the international MRB process.

(2) Regarding all issues of concern, the FAA MRB chairperson is also responsible for coordination with FAA certification within the appropriate aircraft directorate project manager and engineering staff. This may require developing issue papers and responding to certification issue papers or seeking consultation on new technological issues that may arise during the design and development process of the aircraft.

(3) The FAA WG advisors provide assistance and guidance to WG members regarding the Policy and Procedures Handbook (PPH), the latest version of the MSG process, FAA policy, and regulatory requirements. The FAA advisors report directly to the FAA MRB chairperson on all matters regarding assigned WG activities, actions, results, and controversial issues.

4-3. MRB.

a. MRB Personnel. The MRB supports the development of an industry MRBR proposal containing the minimum scheduled tasking/interval requirements for a newly FAA type-certificated (TC) or derivative aircraft and its aircraft engines. The membership of the MRB should include (as the MRB chairperson deems appropriate):

(1) AEG specialists,

(2) Qualified AFS inspector personnel, and

(3) Engineering representatives from the controlling FAA certification/directorate office.

b. MRB Chairperson Functions. The MRB chairperson will initiate the development of an MRB, obtaining a complete schedule of all MSG process activities from the OEM/TCH. The MRB chairperson assigns MRB members or other qualified FAA personnel to work as advisors to each applicable industry WG. It is also the responsibility of the MRB chairperson to perform the functions identified in the PPH, as described in Chapter 3, including the following:

(1) Determine the number and type of qualified FAA personnel that are necessary, and assign them to their respective WG by specialty (e.g., systems, engines, avionics, structures, zonal, Lighting/High Intensity Radiated Field (L/HIRF)).

(2) Provide the ISC chairperson with a list of FAA personnel’s names, affiliations, and assignments, and changes in personnel as they occur.

(3) At the discretion of the MRB chairperson, invite the ISC chairperson or other persons to the MRB meetings, as needed to discuss specific issues.

(4) Invite other regulatory authorities, in coordination with the AEG manager and the OEM/TCH, to participate in the MRB; coordinate the activities with regulatory authorities through their representatives.

(5) Obtain letters of confirmation between the FAA and each participating regulatory authority. Refer to the example in Appendix 4, Figure 5, Letter of Confirmation Template.

(6) Inform the ISC chairperson of all participating regulatory authorities.

(7) Establish and maintain a file of all MRB proceedings in the MRB historical file.

(8) Establish the extent of other regulatory authority participation and assignment as WG advisors.

(9) Keep other regulatory authorities informed regarding any changes to MRB policy and procedures before and during the MRB process.

(10) Accept the ISC-approved PPH, following a review by all participating regulatory authorities, within 30 calendar-days of receipt.

(11) Coordinate all MRB activities and associated matters with the ISC chairperson.

(12) Ensure that the OEM/TCH provides the necessary aircraft familiarization/technical training, including MSG training, to all MRB members and WG advisors. Ensure that the training requirements are stated in the PPH for both FAA and non-FAA personnel. Validate that the training provided is adequate, and, if not, advise the OEM/TCH as to needed revisions.

(13) Schedule the MRB meeting before attendance of ISC meetings, as required.

(14) Attend all ISC meetings, and be prepared to address any previous open issues that develop during WG or ISC meetings.

(15) Ensure that the appropriate FAA and other regulatory authorities attend WG meetings.

(16) Ensure the participation of FAA personnel assigned to the MRB.

(17) Offer information, guidance, and assistance to the ISC and each WG regarding regulatory requirements, PPH, compliance and process management, MSG noncompliance, and other related issues.

(18) Review reports from previous ISC meetings (if applicable) and from the WG members with regard to open issues or concerns.

(19) Provide oversight of the OEM/TCH validation of maintenance tasks performed under Chapter 2, paragraph 2-5.

(20) Discuss potential problem areas of controversy with other regulatory authority participants and decide if FAA Maintenance Review Board Policy Board (MRBPB) guidance is needed. If required, draft an appropriate issue paper for submittal to the MRBPB for resolution.

(21) Discuss items of new technological developments and issues not previously addressed in the MSG-3 document with the FAA MRBPB and International Maintenance Review Board Policy Board (IMRBPB).

(22) Remain aware of the current status of IMRBPB and FAA MRBPB issues and communicate these changes to the MRB and ISC for consideration for implementation into the OEM/TCH program.

(23) Approve the MRBR, and revisions, in accordance with established MRBR revision procedures.

c. MRB Members. MRB members perform the following functions:

(1) Provide guidance and feedback to the FAA WG advisors and WG members.

(2) Direct FAA WG advisors in assigned WGs regarding compliance with the PPH and current regulatory and policy requirements.

(3) Attend MRB meeting to review and discuss all significant quality problems and open issues, as required.

(4) Attend ISC meetings, as invited by the ISC chairperson to support regulatory and policy requirements.

(5) Attend WG meetings to review and discuss all significant quality problems and open issues, as required. Ensure that the WG follows the MSG process and PPH guidelines. Report any deviations from the MSG process/approved PPH procedures to the MRB chairperson.

(6) Review technical data, MSG analysis, and PPH revisions provided by the OEM/TCH before each WG meeting, as required. The OEM/TCH must provide and deliver the data 30 calendar-days before each meeting.

(7) Provide oversight of the OEM/TCH validation of the associated maintenance procedures.

(8) Review WG meeting minutes and provide progress reports to the MRB chairperson within 2 weeks after each WG meeting, but no later than the next scheduled ISC meeting. This review will contain an assessment of WG activities, including a notification of any controversy, potential problem areas, or issues affecting the MSG process.

(9) Provide the MRB chairperson with highlights, including minimum scheduled tasking/interval requirements and any unresolved WG concerns or issues.

d. FAA Maintenance WG Advisors. An FAA WG advisor is any person assigned to the WG by the MRB chairperson to provide assistance or technical guidance to that WG, but may (or may not) be a member of the MRB. This person may be in addition to the MRB member assigned to that WG. FAA WG advisors perform the following functions:

(1) Attend WG meetings and provide technical information, assistance, and guidance to the WG members.

(2) Attend MRB meetings if asked to by the MRB chairperson.

(3) Act as an MRB member for the WG when requested by the MRB chairperson. Perform all the functions of an MRB member while acting as an MRB member.

4-4. REPRESENTATIVES OF OTHER NATIONAL AVIATION AUTHORITIES (NAA). NAA representatives should perform the following functions:

a. Participate in the MRB, ISC, and/or WG activities, as provided by the letter of confirmation between the regulatory authority and the FAA.

b. Attend ISC meetings by invitation from the ISC chairperson and with the concurrence of the MRB chairperson.

c. Notify the ISC chairperson, via the MRB chairperson, of any national regulatory differences requirements before compiling the MRBR proposal.

d. Acknowledge approval of the MRBR in the manner outlined in the letter of confirmation and in the PPH.

e. Review WG meeting minutes and provide to the MRB chairperson an assessment or notification of controversial or potential problem areas before the next scheduled ISC meeting.

NOTE: If the participation of multiple regulatory authorities is necessary, do so with common standards and joint authority representation.

NOTE: When the lack of personnel or other factors limit the role of the host authority, the MRB chairperson may seek more involvement of other regulatory authorities as MRB members/WG advisors.

NOTE: Use generic terminology when dealing with various regulatory operating rule requirements (e.g., "regulations or other national regulatory requirements").

CHAPTER 5. MAINTENANCE REVIEW BOARD REPORT (MRBR) APPROVAL

5-1. INITIAL MRBR APPROVAL PROCESS.

a. MRBR Proposal. The Industry Steering Committee (ISC) chairperson forwards the MRBR proposal to the Original Equipment Manufacturer (OEM)/type-certificate holder (TCH)'s representative(s) and may invite the OEM/TCH to discuss the comments or findings. The OEM/TCH must present the ISC-proposed MRBR, as recommended, to the Federal Aviation Administration (FAA) for review as part of the instructions for continued airworthiness (ICA). Following ISC final review, the OEM/TCH submits a formal letter and the MRBR proposal to the Maintenance Review Board (MRB) chairperson for review and approval.

b. FAA Approval Process. Concurrent with MRBR approval, the MRB chairperson will forward a copy of the MRBR with an approval recommendation to the Aircraft Maintenance Division, AFS-300, for their concurrence. The AFS-300 representative concurs with or rejects the MRBR and returns it to the assigned Aircraft Evaluation Group (AEG). If AFS-300 concurs, the MRB chairperson sends a letter of approval, along with the signed approval page of the MRBR to the OEM/TCH (ISC cochair). Refer to Figures 5-1, Maintenance Review Board Report Letter of Approval, and 5-2, Maintenance Review Board Report Approval Page, below. Should AFS-300 reject the MRBR, the assigned AEG MRB chairperson will return the report to the OEM/TCH for corrections and resubmit. The chairperson returns the corrected report to AFS-300 for their concurrence. Normally, the entire FAA approval process occurs within 90 calendar-days, unless corrections are required. Approval by foreign regulatory authorities will normally occur concurrently with FAA approval. The OEM/TCH is responsible for publishing and distributing the initial and revised MRBR and any supporting documents in a format acceptable to the Administrator.

5-2. NATIONAL AVIATION AUTHORITY (NAA) APPROVAL OF THE MRBR. There may be a need to identify national regulatory differences that are not compatible with, acceptable to, or applicable to all regulatory authorities. In this case, use an appendix to or specified section of the MRBR to list these differences, with the respective regulatory authority approving each difference. If the FAA is the validating authority for a foreign MRB, then a separate appendix to or specified section of the MRBR will identify regulatory differences.

5-3. PROPOSED INITIAL MRBR DISAPPROVAL PROCESS. The OEM/TCH must coordinate disapproval of an MRBR proposal with the MRB chairperson so that the ISC chairperson receives written notification of such action. The disapproval letter will include the specific reason(s) for the disapproval and suggested guidance to make the MRBR proposal approvable.

5-4. MRBR IMPLEMENTATION. Operators of the aircraft type should implement the initial MRBR in accordance with established procedures. The MRBR requirements are not an operator maintenance program. After FAA approval, the requirements become a baseline or framework around which each operator can develop its own individual aircraft maintenance program. Aircraft/engine design and performance help form the MRBR requirements. The oversight of an operator's program is the responsibility of the local regulatory authority. MRBR revisions are encouraged but are not mandatory inclusions in an operator's approved maintenance program.

The FAA recommends that the operator's program incorporate MRBR revisions associated with type design changes. The local regulatory authority must approve and/or accept all maintenance program revisions.

FIGURE 5-1. MAINTENANCE REVIEW BOARD REPORT LETTER OF APPROVAL

U.S. Department of Transportation
Federal Aviation Administration

XXX Region
Flight Standards Division
XXX Aircraft Evaluation Group, XXX-AEG

345 Regulation Alley
Anytown, ST 12345-6789

XX/XX/XXXX

Mr. Gary Gordon
Model 500 ISC Co-Chairman
The ABC Aviation Company
123 Airport Avenue
Anytown, ST 12345-6789

Dear Mr. Gordon:

The Federal Aviation Administration (FAA) has reviewed and approved the ABC Aviation Model 500 Maintenance Review Board Report (MRBR), original issue, dated Dec 10, 2013.

This report outlines the minimum scheduled tasking/interval requirements to be used in the development of an airworthiness maintenance/inspection program for the airframe, engines, systems and components of the ABC Aviation Model 500 aircraft. The exception to this approval is appendix XXX, Airworthiness Limitations, which is the responsibility of the appropriate Aircraft Certification Office (ACO).

The requirements in this report have been developed using Maintenance Steering Group - 3rd Task Force (MSG-3) Version 2011.1.

The FAA hereby approves that this report be used by U.S. certificated air carriers and U.S.-certificated operators of the Model 500 aircraft.

Sincerely,

//s//
Alan Able
FAA Model 500 MRB Chairman
XXX Aircraft Evaluation Group

cc:
Howard Hughes, Industry Steering Committee (ISC) Chairperson, FlyByNight Airline, Inc.
Ida Innes, European Aviation Safety Agency (EASA) Model 500 MRB Chairperson
Jacob Jefferies, Transport Canada Civil Aviation (TCCA) Model 500 MRB Chairperson

FIGURE 5-2. MAINTENANCE REVIEW BOARD REPORT APPROVAL PAGE

Model 500 Maintenance Review Board Report (MRBR)

Federal Aviation Administration (FAA) Approval Page

This report outlines the minimum scheduled tasking/interval requirements to be used in the development of an airworthiness maintenance/inspection program for the airframe, engines, systems and components of the ABC Aviation Model 500 aircraft.

The requirements in this report have been developed using Maintenance Steering Group -3rd Task Force (MSG-3) Version 2011.1.

The FAA hereby approves that this report be used by U.S.-certificated air carriers (and/or U.S.-certificated operators) of the Model 500 aircraft.

Signed:_____ Date:_____

Alan Able, FAA Model 500 Maintenance Review Board (MRB) Chairperson
XXX Aircraft Evaluation Group (AEG)
Federal Aviation Administration

CHAPTER 6. MAINTENANCE REVIEW BOARD REPORT (MRBR) REVISIONS, FORMAT, AND CONTENT

6-1. MRBR ANNUAL REVIEW. Because the MRBR is intended to be an up-to-date, dynamic document, the Original Equipment Manufacturer (OEM)/type-certificate holder (TCH), Industry Steering Committee (ISC), and the Maintenance Review Board (MRB) chairperson should annually conduct a joint MRBR review to determine any need for a revision. The MRB chairperson should document results of these reviews for inclusion in the MRB historical file.

a. Proposed Changes. If needed, the OEM/TCH, ISC and MRB will convene to evaluate any proposed changes. Submit all proposed changes with supporting data to the MRB chairperson. Approval or disapproval of the proposed changes will be processed in the same manner as outlined for the MRBR approval/disapproval process.

b. Aircraft Maintenance Division, AFS-300, Review. AFS-300 review/concurrence of all revised MRBRs is required when changed text matter of the report affects Federal Aviation Administration (FAA) policy. If there is any doubt, submit the MRBR for review and concurrence by AFS-300. Technical changes to revised MRBRs do not need to be submitted for AFS-300 concurrence.

c. Multiple Approvals. If more than one regulatory authority approves an MRBR, each approving authority will evaluate proposed changes (per Appendix 4, Figure 5, Letter of Confirmation Template) before approval by the FAA. If the FAA is the validating authority, the MRB chairperson will provide a letter of confirmation (per Appendix 4, Figure 5) to the host National Aviation Authority (NAA).

6-2. TEMPORARY REVISIONS. If temporary revisions are needed, the OEM/TCH, ISC and MRB will convene in a timely manner to evaluate any proposed changes. Submit all proposed changes with supporting data to the MRB chairperson. Temporary revisions should be processed expeditiously, but in the same manner as outlined for the MRBR approval/nonapproval process. Specifically identify and incorporate all temporary revisions during the next MRBR review process. If the need for a temporary revision arises while the FAA is reviewing an MRBR revision proposal, the MRB chairperson should review the temporary revision and decide if it should be incorporated in the major revision (which would require that the major revision be returned to the OEM/TCH for incorporation) or may be incorporated during the next major revision cycle.

6-3. RECOMMENDATIONS FOR COMPLETING THE REPORT. Each MRBR should be entitled, “Maintenance Review Board Report (MRBR) OEM name, aircraft model #,” and, at minimum, should contain the following, as appropriate:

a. Title Page. Containing the title of the MRBR and the report number, if any.

b. Table of Contents.

c. Approval Page. Containing the following statements:

(1) "This report outlines the minimum scheduled tasking/interval requirements to be used in the development of an airworthiness maintenance/inspection program for the airframe, engines, systems and components of the (aircraft make, model, and series (M/M/S))."

(2) "The requirements in this report have been developed using (the current MSG revision or an alternative procedure, as agreed upon by the FAA, ISC, or WG)."

(3) "The FAA hereby approves that this report be used by U.S.-certificated air carriers (and/or U.S.-certificated operators) of the (aircraft M/M/S) aircraft." (Insert page for each foreign regulatory authority approval, as applicable.)

NOTE: Chapter 5 of this advisory circular (AC) contains sample approval letters.

d. Record of Revisions.

e. Summary of Changes.

f. List of Effective Pages (LEP). Including the revision status and corresponding dates.

g. ISC/MRB Personnel Listing. Both a list of those persons who initially developed the MRBR and a current listing of personnel serving on the ISC/MRB should be provided (including their organizational affiliations and the capacity in which they serve).

h. The MRBR Preamble. The following information should be included in the preamble of each MRB report: "This report outlines the minimum scheduled tasking/interval requirements to be used in the development of a maintenance/inspection program for the airframe, engines (on-aircraft), systems, components, and appliances, of (aircraft M/M/S). These MRBR requirements are a basis from which each operator develops its own maintenance/inspection program."

i. Acronyms. Define all acronyms in the MRBR. Appendix 1, Acronym/Abbreviation Listing for the Maintenance Review Board Report (MRBR), contains a reference list of acronyms that may appear in the MRBR, but this list is not comprehensive or complete.

j. Definitions. Include definitions of technical terms in the MRBR. Whenever possible, use industry-accepted definitions, such as those found in the Air Transport Association of America's (ATA) latest version of the MSG document and the Common Support Data Dictionary (CSDD).

k. Applicability. The MRBR must identify the specific aircraft M/M/S. New options/modifications that cause changes to the MSG analysis will be added to the MRBR.

l. Analysis of Maintenance Significant Items (MSI) and Structural Significant Items (SSI). Analyze all MSIs and SSIs and select intervals without regard for established inspections. If a task is determined to be a safety task or applicable cost-effective task, select the appropriate tasking interval.

m. Checks and Intervals. Once the analysis of the tasks is complete, the OEM/TCH may choose to group tasks into checks performed at various intervals.

(1) The MRBR will provide guidance regarding the means to optimize the minimum scheduled tasking/interval requirements to a level higher than that provided by initial requirements in the MRBR. This guidance will be unique to the aircraft model.

(2) Optimization guidance should consider the content of like checks or other related inspections and their repetitive intervals. A determined series or sequence of specified checks or other related inspections must be completed and the resultant data found satisfactory before optimization of that type of check/inspection. Include in this section of the MRBR the description, type of checks/inspections, and their intervals.

n. Maintenance Requirement Rules. Include the following general requirements in the MRBR:

(1) The OEM/TCH optimization procedures of the MRBR, as described in the OEM/TCH Policy and Procedures Handbook (PPH). (Refer to Chapter 12, Implementation and Optimization of Tasking Intervals, for details on requirements.)

(2) That an operator's maintenance/inspection program, based on the MRBR, can then be escalated, based on satisfactory substantiation by the operator and review and approval by its appropriate regulatory authority, or in accordance with the operator's FAA-approved reliability program.

(3) That task interval parameters expressed in the MRBR may be converted to an individual operator's desired units, provided that this conversion does not result in the operator exceeding the initial requirements of the MRBR.

(4) That the use of nondestructive inspection (NDI) methods, such as X-ray, ultrasonic, eddy current, and radioisotope, or alternative processes that the manufacturer approves, can provide an alternative to the methods this report prescribes. Each operator should notify its regulatory authority of the use of an acceptable alternative method.

NOTE: Within this report, the terms "check" and "inspection" are not intended to imply a level of skill required to accomplish a task.

(5) That life-limited items must be retired in accordance with the limits established in the engine or aircraft Type Certificate Data Sheets (TCDS) or the airworthiness limitations (AL) section of the engine or aircraft OEM/TCH instructions for continued airworthiness (ICA).

(6) A provision that, after the accumulation of industry service experience, either the ISC or MRB chairperson may request changes to the requirements of this MRBR.

(7) A restriction that Failure Effect Category (FEC) 5 or 8 safety tasks cannot be deleted or escalated without the approval of the MRB chairperson. Additionally, those Category 5 and 8 tasks involving either fuel tank safety (FTS) or the electrical wiring

interconnection system (EWIS)/enhanced zonal analysis procedure (EZAP) programs may not be deleted or escalated without approval from the Aircraft Certification Office (ACO).

o. System/Powerplant Requirement Rules. The FAA recommends that the following requirements be addressed in the system/powerplant requirement rules section of the MRBR.

(1) A statement that MSG-3 logic (specifying the revision) was used to develop an on-aircraft minimum scheduled tasking/interval requirement. With the exception of life-limited items, this process does not normally include detailed shop maintenance procedures.

(2) That the OEM/TCH provides a listing of identified candidate MSIs as the start of the analysis process. Those identified MSIs for which no task was selected must be included as part of the MRBR.

(3) A requirement that each candidate MSI that the OEM/TCH identifies is subjected to MSG analysis. This process results in the identification of maintenance tasks that are contained in this report. Provide a listing, or other record, as specified in the PPH, for MSIs with no tasks identified.

p. Structural Program Rules. The OEM/TCH develops structural inspection requirement rules to meet the inspection requirements for damage-tolerance (DT). The types of damage considered during structural requirement development are Environmental Deterioration (ED) (corrosion, stress corrosion), Accidental Damage (AD), and fatigue damage (FD). Some forms of ED are age-related; therefore, calendar intervals control inspections for this type of deterioration. The required structural requirements section incorporates these calendar inspections, plus the requirements for detecting other types of ED, AD, and FD. The structural requirement rules section of the MRBR recommends the following contents:

(1) All aircraft in an operator's fleet, or group of operators' fleets, are subject to the provisions of this report. These requirements include external and internal inspections; structural sampling and age-exploration programs; corrosion prevention and control programs; and additional supplemental structural inspections that may be required for fatigue-related items. The initial check intervals for the Structural Inspection Program (SIP) may be expressed in terms of calendar time, flight cycles, or flight-hours. Do not optimize a repeat inspection interval until at least one aircraft in an operator's fleet or group of operators' fleets has been inspected within the initially defined interval listed in the MRBR.

(2) All changes to structural inspection items listed in the AL section require FAA engineering approval. Structural inspection limitations listed in the OEM/TCH's AL section will be referenced in an MRBR appendix by document number.

(3) The Structural Program should include requirements to maintain composite structural details, elements, or assemblies whose failure could affect the structural integrity necessary for the safety of the aircraft. These requirements should take into account that composite structures may be damaged by accidental impact or aging deterioration, and that those composite structures degrade in a different way than metallic structures. Composite structure will be analyzed to create a minimum initial scheduled maintenance/inspection requirements. All structural items will be categorized as either an SSI or an "Other Structure." (The SSI/Principal Structural Elements (PSE) list is provided by the OEM/TCH in a separate specified document.)

(4) SSIs must not be confused with PSEs (as described in Title 14 of the Code of Federal Regulations (14 CFR) part 25, § 25.571); however, the SSIs must address all PSEs.

q. Zonal Program Rules. The Zonal Inspection Program (ZIP) provides for the consolidation of a number of General Visual Inspection (GVI) tasks for each zone. A zonal inspection may include GVI tasks derived from MSI and SSI lists. An MSI/SSI task that is in the ZIP must be cross-referenced with supporting documentation and located in the appendix of the MRBR, indicating that an MSI/SSI is being accomplished by one or more zonal tasks. Likewise, the zonal item must be cross-referenced as an MSI/SSI task to ensure content and accountability. Include the following contents of the Zonal Procedure Rules section of the MRBR:

NOTE: FEC 5 or 8 safety tasks are not candidates for zonal requirements.

(1) The ZIP contains a series of GVI tasks generated from standard zonal analysis procedures. Detailed inspection (DET) and Special Detailed Inspection (SDI) are not to be contained in the ZIP. Zonal inspection requirements apply only to zones.

(2) The ZIP contains GVI tasks derived from EZAPs as well as standard zonal analysis procedures.

(a) Identify zones that both contain electrical wiring and may contain combustible material. For those zones, perform an enhanced zonal analysis that permits the identification of stand-alone inspection tasks that allow appropriate attention to be given to deterioration of installed wiring and EWISs.

(b) EWIS tasks derived during the EZAP process will be identified as GVI, DET, or restoration (RS) tasks. The ZIP will not contain stand-alone EWIS tasks. These special, dedicated tasks reside in ATA 20 of the Systems/Powerplant section of the MRBR, and do not have an FEC.

(c) Uniquely identify all EZAP-derived stand-alone tasks as GVI, DET, or RST in the EZAP analysis for traceability during future changes. This prevents inadvertent deletion or escalation of an EZAP-derived stand-alone task without proper consideration of the risk basis for the task and its interval. All escalations must go through the appropriate FAA oversight office.

(d) The latest version of the MSG analysis develops Lightning/High Intensity Radiated Field (L/HIRF) tasks. The ZIP will not contain stand-alone L/HIRF tasks. These special, dedicated tasks should reside in a separate section of the MRBR. Uniquely identify all L/HIRF tasks.

(3) Access to zones should be easy to accomplish and should not require the use of special tools. Normally, the inspection aids include a flashlight and/or inspection mirror. Inspect the entire visible contents of the zone for obvious damage, security of installation, and general condition, including corrosion and leaks. Refer to the latest version of the MSG document for a definition of GVI.

(4) The following zones do not contain system installations but receive adequate surveillance from other maintenance or structural inspections tasks. Accordingly, the inspection requirements in the ZIP do not specify these zones. (Insert listing of the zones not specified in the ZIP or in other document as specified.) (Insert aircraft zone diagram sheets or in other document as specified.)

r. Appendices. The following is a list of possible appendices that may apply to MRBRs.

- Identification of aircraft zones.
- Extended Operations (ETOPS) requirements.
- All acronyms/abbreviations used in the MRBR.
- Definitions of specific terms, processes, and inspections identified in the MRBR.
- NAA Requirements. An appendix (or appendices), as needed, for each regulatory authority will identify national differences, as mandated by the respective authorities (and approved or accepted by them).
- Other items, as applicable.

CHAPTER 7. MAINTENANCE REVIEW BOARD POLICY BOARDS (MRBPB)

7-1. FEDERAL AVIATION ADMINISTRATION (FAA) MRBPB.

a. Purpose of the MRBPB. The MRBPB advocates the standardization of Maintenance Review Board (MRB) policy and procedures and provides a structured forum for discussions leading to the development of national and international recommendations regarding all MRB activities. The MRBPB develops FAA/Aircraft Evaluation Group (AEG) positions for standardized guidance on issues that arise from the MRB/Air Transport Association of America (ATA) latest version of the Maintenance Steering Group (MSG) process. Continued development of standardized MRB policies, procedures, and guidance promotes harmonization within the respective FAA AEG offices and participating industry groups.

b. Meetings. Membership includes a designee from the Aircraft Maintenance Division, AFS-300, and one designee from each AEG office. The MRBPB normally meets at least twice a year, with one meeting just before the International Maintenance Review Board Policy Board (IMRBPB). Additional meetings may be held via electronic media. It is the responsibility of the MRBPB to develop harmonized issue papers, procedures, and guidance. It also produces FAA guidance for issue papers recommended for implementation by the IMRBPB. The MRBPB participates in international meetings on MRB policy issues with other regulatory authorities.

7-2. IMRBPB.

a. Function of the IMRBPB. The IMRBPB is a system for the continuing development of policies, procedures, and guidance for the use of personnel operating under the purview of various MRBs. The IMRBPB provides a process of promoting harmonization with other regulatory authorities throughout the world; the IMRBPB advocates the standardization of MRB policy and procedures. The IMRBPB also provides a structured forum for discussions leading to the development of national and international policy regarding all MRB activities. The ATA and the Maintenance Programs Industry Group (MPIG) under the ATA Airworthiness Committee represent the industry at the IMRBPB meeting. The committee is also open to input from the aviation industry.

b. Composition of the IMRBPB. The IMRBPB convenes once a year. Industry/regulatory discussions are a portion of the meeting. Industry representation should be limited to appropriate representatives dealing with the discussion topics. The meeting venue will normally rotate among the IMRBPB members.

c. IMRBPB Documents. The IMRBPB maintains an issue paper list with associated documents, such as minutes of meetings, action item lists, substantiation documents, and associated IMRBPB policy decisions. The IMRBPB only addresses issues related to the MRB/MSG processes and uses the latest revisions of the following guidance.

- Advisory Circular (AC) 121-22;
- European Aviation Safety Agency (EASA) Document # WI.MRB.00002-001, Maintenance Review Board Team; and
- Transport Canada Transport Publication (TP) 13850, Scheduled Maintenance Instruction Development Process Manual.

CHAPTER 8. MAINTENANCE TYPE BOARDS (MTB) PROCESS

8-1. GENERAL. The MTB process permits type certificate (TC) applicants to develop minimum scheduled tasking/interval requirements when air operators are not available to participate in the process. The MTB and Maintenance Review Board (MRB) processes are similar, except that with the MTB process, there is limited or no operator participation. MTB maintenance instructions are developed using current Air Transport Association of America (ATA) Maintenance Steering Group (MSG) analytic logic. The minimum scheduled tasking/interval requirements are published as manufacturer recommendations.

8-2. MTB PROCESS APPLICABILITY. The MTB process applies to airplanes originally TC'd for nine or fewer passengers and less than 33,000 lb maximum weight, or helicopters originally TC'd for nine or fewer passengers or less than 20,000 lb maximum weight. Refer to the flowchart in Appendix 4, Figure 1, Maintenance Program Development Process Selection Flowchart. Original Equipment Manufacturers (OEM)/type-certificate holders (TCH) for these aircraft also have the option of using the MRB process.

a. Where the United States Is the State of Design. Where the Federal Aviation Administration (FAA) is the primary type certification authority, the applicant who is seeking a TC for a new or a derivative aircraft for which this chapter is applicable may develop their scheduled maintenance instructions in accordance with an MTB or request that the Aircraft Evaluation Group (AEG) convene an MRB.

b. Where the United States Is Not the State of Design. A foreign applicant who is seeking, or intending to seek, an FAA TC for a new or a derivative aircraft for which this chapter is applicable will invite the FAA AEG to discuss the process under which the scheduled maintenance instructions have been or will be developed and how the FAA might accept that process.

c. Analytic Logic to Use for Scheduled Maintenance Task Development. Use the most current version of the MSG logic when initiating a new MTB. Electrical wiring interconnection system (EWIS)/enhanced zonal analysis procedure (EZAP) analysis may be necessary if applicable by certification rule.

8-3. MTB AUDIT PROCESS.

a. Audit of the Completed Analytical Process. All OEM/TCHs of TC'd aircraft for which a Maintenance Type Board Report (MTBR) has been developed must maintain records of the analysis performed in a manner such that the FAA may conduct an audit of the complete initial analytic process, and any subsequent analytic process, that has led to an amendment of the initial MTBR.

b. Validation of the Associated Maintenance Procedures. The OEM/TCH must develop internal instructions and guidelines to enable the validation of all maintenance procedures written to support MTBR tasks, and then the OEM/TCH must validate those maintenance procedures. The objective of the validation is to ensure that the procedure can be performed and that the procedure meets the intent of the MTBR task. Where and when requested by the FAA, the OEM/TCH must make available a completed aircraft and the necessary qualified maintenance

personnel to demonstrate to the FAA that Failure Effect Category (FEC) 5 and 8 safety tasks, at minimum, can be adequately performed and that the procedure meets the intent of the MTBR task. Additional tasks may be validated at the FAA's discretion.

8-4. MTBR.

a. General. The MTBR contains the minimum scheduled tasking/interval requirements necessary for a transport category aircraft. MTBRs are dynamic documents that must be reviewed annually to ensure that they reflect the current lessons learned from aircraft operational experience. In this manner, the continuing airworthiness of an aircraft fleet is ensured, and only those tasks that are applicable and effective are performed.

b. MTBR Review and Approval. The OEM/TCH applicant is responsible for developing a proposed MTBR and presenting it to the AEG for approval. The MTBR format and content criteria should be aligned with the criteria used for the Maintenance Review Board Report (MRBR), as found in Chapter 6, Maintenance Review Board Report (MRBR) Revisions, Format, and Content. Once approved, the OEM/TCH holder publishes the MTBR as part of the aircraft's instructions for continued airworthiness (ICA). It is a means of complying, in part, with the maintenance instruction requirements of Title 14 of the Code of Federal Regulations (14 CFR) part 25, appendix H, and 14 CFR part 29, appendix A, as required by §§ 25.1529 and 29.1529. The AEG must approve the MTBR, as well as subsequent changes, before it becomes available for use by U.S. operators.

NOTE: MTBR tasks will be identified as such in the ICA and can only be changed through the MTB process.

c. Disapproval of Proposed MTBRs or MTBR Revisions. The MTB chairperson will notify the OEM/TCH in writing of the disapproval of the MTBR or of any subsequent revision. The letter will include the specific reason(s) for the disapproval.

d. Publication of the MTBR. When an MTBR has been produced, the OEM/TCH will publish it as part of the ICA for the aircraft.

e. MTBR Annual Review.

(1) The MTBR is intended to be an up-to-date document, and, as a consequence, the OEM/TCH and the MTB chairperson should conduct a joint review, at least annually, to determine the need for revisions. Results of these reviews are to be documented by the MTB chairperson for inclusion in the MTB historical file.

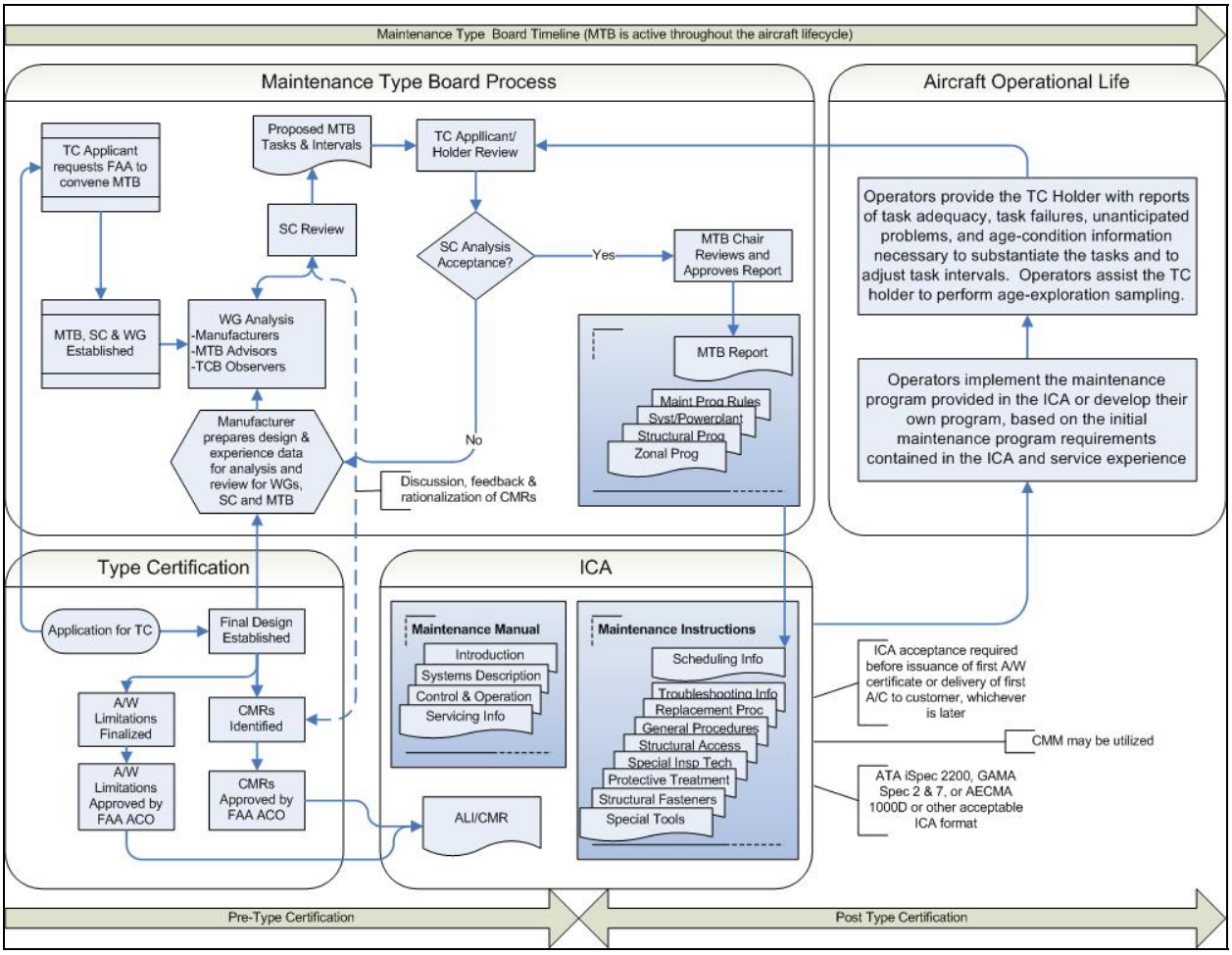
(2) The OEM/TCH and the MTB will convene and evaluate proposed changes to the MTBR. Proposed changes and their supporting data are submitted to the MTB chairperson. Approval or disapproval of the proposed changes must be processed in the same manner as outlined for the initial MTBR approval/disapproval. Any changes to the MTBR must follow the optimization process in Chapter 12, Implementation and Optimization of Tasking Intervals.

8-5. POLICY AND PROCEDURES HANDBOOK (PPH).

a. General. The OEM/TCH must develop an internal policy and procedures document or handbook for the purpose of managing the MTB process. The FAA recommends that the format and content of the PPH outline be adopted for the MTB process (refer to Appendix 3, Policy and Procedures Handbook (PPH) Format). Present a copy of the PPH to the MTB chairperson for AEG review and acceptance before beginning any task development work. All participants in the MTB process are to use the PPH as the standard to conduct the MTB process. Regulatory authority and industry experience have indicated that the following information is expected in each PPH for the successful latest version of MSG process and development of an MRBR.

b. Process Flowchart. A process flowchart (see Figure 8-1, Maintenance Type Board Flowchart) describes the MTBR scheduled maintenance task development and minimum tasking/interval requirements process and its relationship to the development of ICAs.

FIGURE 8-1. MAINTENANCE TYPE BOARD FLOWCHART



8-6. OEM/TCH REPRESENTATIVES. Representatives of the OEM/TCH who are engaged in performing the analysis for an MTB process must meet the following criteria.

a. Experience. Representatives must have relevant maintenance engineering experience on an equivalent aircraft type, system, or component.

b. Training. Representatives must have undergone training in the analytic logic process to be used.

8-7. REGULATORY AUTHORITIES' RESPONSIBILITIES. When the OEM/TCH formally notifies the AEG of the intention to develop an MTB proposal, the AEG manager will assign a qualified person as MTB chairperson to establish and manage the MTB. The MTB chairperson selects MTB members/working group (WG) advisors.

a. MTB Chairperson. The MTB chairperson is responsible for performing the following functions:

(1) Determine the number and type of FAA personnel that are necessary, and then organize them into an MTB.

(2) Provide the OEM/TCH with the names of FAA/AEG MTB personnel, their affiliations and assignments, and changes, as they occur.

(3) Establish and maintain a file of all MTB proceedings for the MTB historical file.

(4) Establish the extent of regulatory authority participation and assignment of WG advisors.

(5) Ensure that the OEM/TCH provides the necessary aircraft familiarization/technical training, including MSG training, to all MTB members and WG advisors. Ensure that the training requirements are stated in the PPH for both FAA and non-FAA personnel. Validate that the training provided is adequate and, if it is not, advise the OEM/TCH as to the needed revisions.

(6) Attend steering committee meetings.

(7) Offer advice to the steering committee and the WGs.

(8) Provide oversight of the OEM/TCH validation of the associated maintenance procedures.

(9) Review reports from previous steering committee meetings (if applicable) and from the WG members.

(10) Approve the MTBR, and revisions.

b. MTB Members. MTB members are expected to meet or have the equivalent of the experience and training this chapter requires. In addition, the MTB members are expected to perform the following functions:

(1) Attend WG meetings and provide guidance to the WG members.

(2) Review WG meeting minutes and provide progress reports to the MTB chairperson before the next scheduled steering committee meeting. This review will contain an assessment of WG activities, including a notification of any controversy or potential problem areas.

(3) Attend steering committee meetings, as invited by the MTB chairperson, in coordination with the OEM/TCH.

(4) Attend MTB meetings.

(5) Provide oversight of the OEM/TCH validation of the associated maintenance procedures.

c. Experience and Training Requisites. MTB members must meet the following levels:

(1) Experience:

(a) Valid FAA aircraft mechanic certificate;

(b) Practical experience and theoretical training that is equivalent;

(c) Practical training and experience on an equivalent aircraft type or system; or

(d) Practical industry experience as an aircraft maintenance inspector.

(2) Training:

(a) Aircraft-specific training; and

(b) MSG training.

CHAPTER 9. ORIGINAL EQUIPMENT MANUFACTURER (OEM)/TYPE-CERTIFICATE HOLDER (TCH) RECOMMENDED MAINTENANCE PROCESS

9-1. GENERAL. OEM/TCHs of airplanes that are less than 12,500 lb or helicopters that are to be type-certificated (TC) in the normal category and are less than 7,000 lb may develop their scheduled tasking/interval requirements in accordance with OEM/TCH internal processes. The OEM/TCH must meet the requirements of the current edition of Federal Aviation Administration (FAA) Order 8110.54, Instructions for Continued Airworthiness Responsibilities, Requirements, and Contents, in addition to the criteria below. OEM/TCHs for these aircraft have the option of using the Maintenance Type Board (MTB) process or Maintenance Review Board (MRB) process.

9-2. RECOMMENDED MAINTENANCE PROCESS APPLICABILITY.

a. The United States Is the State of Design. The FAA is the primary type certification authority, and the OEM/TCH who is applying for a TC for a new or a derivative aircraft for which this chapter is applicable may develop its scheduled maintenance instructions in accordance with a recommended maintenance process.

b. The United States Is Not the State of Design. A foreign applicant who is applying for an FAA TC for a new or a derivative aircraft for which this chapter is applicable will invite the FAA Aircraft Evaluation Group (AEG) to discuss the process by which the scheduled maintenance instructions will be developed and how the FAA may accept that process.

9-3. RECOMMENDED MAINTENANCE PROCESS AUDITS.

a. Audit of the Completed Analytical Process. All OEM/TCHs must maintain records of the analysis to develop their scheduled maintenance instructions. OEM/TCHs must keep the records in such a manner that the FAA may readily audit the analytic process and any subsequent analytic processes that may lead to an amendment of the minimum scheduled tasking/interval requirements.

b. Validation of the Associated Maintenance Procedures. The OEM/TCH must develop internal instructions and guidelines to enable the validation of all maintenance procedures written to support scheduled maintenance tasks; the OEM/TCH must then validate those maintenance procedures. The objective of the validation is to ensure that it is possible to perform the procedure and that the procedure meets the intent of the scheduled maintenance instruction. Where and when requested by the FAA, the OEM/TCH must make available a completed aircraft and the necessary qualified maintenance personnel to demonstrate to the FAA that any particular maintenance procedure can be adequately performed and that the procedure meets the intent of the scheduled maintenance task.

9-4. SCHEDULED MAINTENANCE INSTRUCTION.

a. Scheduled Maintenance Instruction Review and Approval. The instructions for continued airworthiness (ICA), as published by the OEM/TCH, must contain a statement for the scheduled maintenance instruction development that states that the scheduled maintenance

instructions and their associated procedures have been reviewed and approved for use by operators, and must identify any limitations applicable when implementing the instructions.

b. Scheduled Maintenance Instruction Publication. The OEM/TCH must publish the scheduled maintenance instructions as part of the aircraft's ICA. It is the responsibility of the OEM/TCH to issue amendments to the ICA as required.

c. Scheduled Maintenance Instruction Development as a Dynamic Document. Before FAA acceptance of the scheduled maintenance instructions as part of the aircraft's OEM/TCH process, the OEM/TCH must develop an auditable system for continuing analysis of all tasks included within the maintenance instructions. As part of the continuing analysis system, the OEM/TCH should address the following:

(1) A system for acquiring from operators reports related to the adequacy of tasks, failures, failure frequencies, and the consequences of each failure.

(2) An age exploration system for the continuous evaluation of age condition information for the substantiation of current task intervals and for the adjustment of task intervals.

(3) A system for controlling the addition of new scheduled tasks to ensure that they are applicable and effective.

(4) A system for the periodic evaluation of all tasks in the program to eliminate those that are no longer applicable and effective.

(5) A system for evaluating unanticipated problems and determining the appropriate action.

CHAPTER 10. MAINTENANCE REVIEW BOARD REPORT (MRBR)/MAINTENANCE TYPE BOARD REPORT (MTBR) LOW-UTILIZATION MAINTENANCE REQUIREMENTS

10-1. GENERAL. A logic process is necessary to ensure that minimum scheduled tasking/interval requirements are met for low-utilization aircraft. This will ensure early detection of deterioration in areas that are sensitive to time rather than cycles or flight-hours.

10-2. APPLICABILITY. These requirements apply to aircraft that have an MRBR or an MTBR or have been analyzed under the Maintenance Steering Group (MSG) to define the minimum scheduled tasking/interval requirements.

10-3. REQUIREMENTS. The OEM/TCH should specify utilization parameters in its Policy and Procedures Handbook (PPH)/MRBR/MTBR. The intervals for tasks identified in the MRBR/MTBR are based on normal utilization. Operators operating outside the parameters listed in the PPH/MRBR/MTBR should consider the application and employment of a utilization program based on alternate criteria. Tasking requirements will be addressed on a task-by-task basis to ensure the proper utilization parameters.

a. MSG Logic. When the aircraft has been analyzed using MSG logic, it is not necessary to revisit the analysis before applying the proper low-utilization parameter for a task.

b. Operations Outside the PPH. The OEM/TCH is responsible for developing a set of recommendations for operations outside the PPH utilization parameters. This should be a stand-alone program, and not a supplement to the MRBR/MTBR.

CHAPTER 11. FLIGHTCREWS ACCOMPLISHING MAINTENANCE

11-1. GENERAL. This section addresses flightcrews performing maintenance tasks. Title 14 of the Code of Federal Regulations (14 CFR) defines people authorized to accomplish maintenance. Flightcrews may not perform any task that is used to fulfill Maintenance Review Board Report (MRBR)/Maintenance Type Board Report (MTBR) tasking requirements.

11-2. APPLICABILITY. Inspections are considered maintenance. This is based on 14 CFR part 43, § 43.7(f), which states: "A person holding at least a private pilot certificate may approve an aircraft for return to service after performing preventive maintenance under the provisions of § 43.3(g)." Flightcrews are not permitted to accomplish any maintenance accomplished outside the scope of preventive maintenance as defined in part 43, appendix A(c).
Air carriers/commercial operators are not allowed to accomplish maintenance/preventive maintenance tasks without an exemption to perform those tasks. The only exception to this is rotorcraft under 14 CFR § 43.3(h).

CHAPTER 12. IMPLEMENTATION AND OPTIMIZATION OF TASKING INTERVALS

12-1. INTRODUCTION. The guidance in this document is intended for use by Original Equipment Manufacturers (OEM), type-certificate holders (TCH), and Maintenance Review Board (MRB)/Industry Steering Committee (ISC) members who are involved with the evolution/optimization of tasks in an initial/current Maintenance Review Board Report (MRBR). Apply this guidance for evolution/optimization or deletion/addition activities where no official correspondence has been forwarded to the airworthiness authorities. The following is guidance for developing and assessing proposals for changes to the MRBR.

a. The initial MRBR for any new aircraft is developed in the absence of actual in-service experience. As a result, the tendency is to be conservative in the decisionmaking process. As service experience is accumulated, task intervals (thresholds/repeats) should be adjusted to reflect the results of actual in-service data.

> **NOTE: Additional Federal Aviation Administration (FAA) guidance for development of evolution/optimization may be found in FAA Order 8900.1, Volume 8, Chapter 2, Section 7, Maintenance Review Boards.**

b. The OEM/TCH evolution/optimization process does not assume any operational control over an operator's maintenance program.

c. Definitions for use with this program can be found in Appendix 2, Evolution/Optimization Definitions.

> **NOTE: When intervals are stated in this document, they include both threshold and repeat values.**

> **NOTE: If this chapter is not followed, the OEM/TCH will be limited to no more than 10 percent escalation with approved data. Further escalation is not allowed until a task is repeated and sufficient data are available.**

12-2. PURPOSE. While this guidance is not exhaustive, use it as the basis for a Policy and Procedures Handbook (PPH) procedure when the OEM/TCH, MRB, and ISC wish to proceed with evolution/optimization regarding the MRBR. Evolution/optimization or deletion/addition of a task through the management of data is a means to assure the continued applicability and effectiveness of the task, while simultaneously improving the integrity of the MRB process. This policy allows the OEM/TCH to develop and use a process that serves as a continuous analysis and evolution/optimization or deletion/addition for the MRBR. It is based on performance data and experience for model-specific fleets flown by multiple operators under a variety of operating conditions and environments.

12-3. POLICY DESCRIPTION. The OEM/TCH must meet the policy requirements defined by the regulatory authorities of the country of origin and will define further details and procedure clarifications in the PPH. As the PPH is a dynamic document, a response by the MRB chairperson must be given within 60 days after ISC acceptance/OEM submission. The following should occur:

a. The ISC approves, and the MRB chairperson accepts, PPH revisions.

b. Evaluation of in-service data, both scheduled and unscheduled maintenance findings related to the intent of the Maintenance Steering Group (MSG) task.

c. Weighing of the relevance and significance of findings.

d. Standardization of the data format and content (Air Transport Association of America (ATA) Specification (SPEC) 2000 Chapter 11 or equivalent).

e. Ensuring of data quality, integrity, completeness, and clarity.

f. Consideration of each task individually.

g. A review of original design and engineering specifications, as required.

h. A review of all information related to continuing airworthiness (e.g., Airworthiness Directives, Service Bulletins (SB), in-service reports/letters, and modifications/repairs).

i. Basing MRBR task evolution/optimization or deletion/addition on worldwide representative samples that span the operating environment and age groupings of the aircraft.

j. Basing interval evolution/optimization or deletion/addition on risk management (RM). RM is the systematic application of management policies, procedures, and practices to the tasks of identifying, analyzing, evaluating, treating, and monitoring risk.

k. The use of safety management principles at the OEM level. Safety management is the application of engineering and management principles, criteria and techniques to optimize safety. It is an integrated and comprehensive engineering effort.

l. Application of statistical models to support the evolution/optimization or deletion/addition exercise. In a data-driven statistical decisionmaking process, data size is determined based on the level of confidence. Confidence level refers to the likelihood that the overall fleet performance lies within the range specified by the sample fleet performance. The confidence level is usually expressed as a percentage. For example, a 95 percent confidence level implies that the probability that the fleet parameter lies within the confidence interval is 0.95. For a given confidence level, data size may vary depending on the fleet size and variability of in-service data.

m. The OEM/TCH collects data sufficient to support the expected confidence level. However, engineering judgment will remain a part of the evaluation. Statistical analysis should be supported and validated by engineering judgment.

n. Measurement of task effectiveness should be measured and demonstrated, including the ability to:

(1) Detect and prevent defects before loss of function/structural integrity.

(2) Mitigate risk of exposure to hidden defects.

o. Recording of and response to operators' and regulators' feedback.

p. Ensuring the effectiveness and integrity of the process by:

(1) Collecting in-service data in an ATA SPEC 2000 Chapter 11 format or equivalent;

(2) Analyzing it; and

(3) Comparing the results with existing MRBR task requirements.

NOTE: This policy allows for evolution/optimization or deletion/addition of MRBR, scheduled maintenance tasks, intervals, and enhances the use of reliability-driven maintenance analysis processes.

q. Adjustment of the MRBR based on performance data and analysis processes. However, operator reliability programs should continue to ensure continuous evolution/optimization of their maintenance programs.

NOTE: The OEM/TCH evolution/optimization process does not assume any operational control over an operator's maintenance program.

12-4. RESPONSIBILITIES. The OEM/TCH applicant must notify the approving authorities in writing of their intent to begin an evolution/optimization or deletion/addition process. This will be in the form of an official correspondence, as defined by the approving authorities.

NOTE: Approving authorities are those authorities that approve the MRBR. The approving authorities will respond, in writing, to inform the OEM/TCH of their intent to participate in the evolution/optimization or deletion/addition exercise for a given fleet or model.

a. OEM/TCH (PPH Amendment and ISC/MRB Acceptance/Approval). The OEM/TCH will include within the PPH the policy requirements and criteria contained within this document. The OEM/TCH will further define the details and procedural actions necessary to conduct the evolution/optimization or deletion/addition exercise. The MRB/ISC will coordinate and approve this plan. When documents that support the evolution/optimization or deletion/addition are incorporated by reference within the PPH, the current document number and revision number must be stated.

b. OEM/TCH Data Collection. The OEM/TCH system must include a data quality, data integrity, data quantity, audit system, and historical data tool, as defined in the next steps.

c. Data Format. The OEM/TCH will use in-service data in a standardized format (ATA SPEC 2000 Chapter 11 format or equivalent), as deemed acceptable by the regulatory authority, to ensure data quality and integrity. ATA SPEC 2000 Chapter 11 is an industry-sanctioned maintenance reliability data communication format. In order to use this

format, operators would have to transition to this type of format, or the OEM/TCH would have to convert the operator data into this standardized format.

d. Regulatory Authorities. It is incumbent upon the OEM/TCH to demonstrate to the regulatory authorities compliance with these guidelines.

12-5. DATA QUALITY. The OEM/TCH should have a system in place that allows for the collection of data found during the operator's accomplishment of tasks to be delivered to the OEM/TCH and then entered in a standardized format into their data collection system. The data collected and used by the OEM/TCH regarding evolution/optimization will include the following information:

a. Aircraft Age. Aircraft age (since delivery) is measured in calendar-days, flight-hours, or flight cycles, as applicable. MRB task evolution will be based on in-service data collected from a representative sample of older and newer aircraft incorporating more current production standards and modifications. Fleet age representation will be summarized in the analysis report.

b. Geographical or Operational Environment Representation. MRB task interval adjustments will be based on in-service data collected from a representative sample that spans all operating environments. The data will be in proportion to the specific model fleet size of each geographical area; however, it is not necessary to sample all geographical regions, nor is it required to collect data from all extreme operating conditions (e.g., extremely hot and sandy (desert), extremely cold (arctic)). A brief summary of the operating environments of the sampled aircraft will be provided in the report.

c. Number of Tasks Accomplished. The number of times the task has been accomplished, including "nil/no findings," will be captured and used in the evaluation. Participating operators should provide task findings and non-routine writeups for the related tasks of the sample fleet for the evolution/optimization or deletion/addition exercise reporting period.

d. Interval of Tasks Findings Applied. The actual task interval of each participating operator will be captured and evaluated.

> **NOTE: The actual intervals may vary between operators and may be different from MRBR requirements. The impact of these variations will be assessed and accounted.**

e. Component Data (Shop Findings, No-Fault-Found Removals and Failures). Information regarding component removal and replacement activity and vendor repair documents should be evaluated, as applicable and when available. This information provides the data necessary to perform component failure-mode and life-cycle analysis, which is necessary to support the evolution/optimization or deletion/addition of the tasks associated with the component.

f. Correct Mapping to the MRBR Task. Non-routine writeups and in-service findings should be linked to appropriate MRBR tasks, as applicable. Only findings related to the Maintenance Steering Group - 3rd Task Force (MSG-3) task intent are relevant.

g. Failure Effect Category (FEC) Considerations. MRBR task interval optimization is based on principles that reflect the criticality of airplane systems components identified during MSG analysis. Account for FECs during the analysis.

h. Operational Representation—Flight-Hour vs. Cycles, Calendar Time. Aircraft utilization (flight-hours or cycles, as applicable) should be captured and evaluated. Include a summary of fleet-wide service experience, high-time aircraft (hours, cycles, years), time in service, daily utilization (high, low, average), etc. in the analysis report.

i. Consecutive Tasking Requirements. To the extent possible, capture consecutive task check data to assess reliability of aircraft systems, components, or structural elements related to the MRBR task.

NOTE: This requirement may be applied to lower interval tasks. Consecutive check data can be impractical for higher interval tasks.

j. Unscheduled Maintenance Findings. Mechanical irregularities and the resulting corrective actions captured from pilot reports (PIREP) and maintenance reports should be reviewed, as applicable. Unscheduled maintenance is a prime indicator of the effectiveness of the scheduled maintenance program.

k. Scheduled Maintenance Findings.

(1) Routine Maintenance Tasks That Generate No Findings. Tasks that generate no findings are as important as are tasks that generate findings in determining failure-mode and life-cycle analysis.

(2) Routine Maintenance Tasks That Generate Non-Routine Cards. These findings, which require corrective action, involve structures, aircraft zones, and aircraft systems categorized by ATA chapter.

l. Unrelated Significant Findings (If Applicable). Operators should capture significant non-routine writeups generated in the course of an unrelated maintenance task, if applicable. These findings, which require corrective action, may not correlate to a routine maintenance task.

m. Four-Digit ATA Code (If Available). To the extent possible, operators should provide four-digit ATA codes for scheduled/unscheduled maintenance writeups to facilitate transfer of findings to appropriate MRBR tasks.

n. Serial Numbers of Aircraft. The operator should provide an aircraft manufacturer serial number that uniquely identifies each aircraft in the sample fleet.

12-6. DATA INTEGRITY. Data integrity is the quality of correctness, completeness, and compliance with the intention of the creators of the data. It is the condition in which data are identically maintained during any operation, such as transfer, storage, and retrieval. Data integrity is achieved by preventing accidental or deliberate but unauthorized insertion, modification, or destruction of data in a database.

a. Data Validation. An OEM/TCH must have a data validation process that does the following:

(1) Verifies that operator data are converted to ATA SPEC 2000 Chapter 11 or an equivalent standard format.

(2) Ensures that all required data elements and attributes are satisfied for submitted data.

b. Audit System. The audit system must ensure that all data be traceable to the original task.

12-7. DATA REVIEW.

a. Analysis Schedule—Evolution/Optimization or Deletion/Addition Timeline. MRB task interval adjustments should be considered after sufficient service experience is accumulated since entry into service. Subsequent task interval adjustments should be considered after additional service experience has been accumulated and since the last interval adjustment. In both cases, data sufficiency is measured by the level of confidence, as stipulated in these guidelines.

b. Statistical Analysis. The OEM/TCH will develop and implement a statistical analysis system to provide justification that a 95 percent confidence level has been achieved for the evolution/optimization or deletion/addition exercise on a task-by-task basis. Exceptions can be presented to, and may be approved by, the MRB chairperson.

c. Engineering Analysis. Engineering analysis will verify that findings are relevant to the scheduled task under evaluation. Non-routine writeups will be evaluated to determine the significance or severity of findings. PIREPs and component reliability reports will also be examined to account for line maintenance activities that may be relevant to the task under evaluation. The severity of the findings must be considered and evaluated.

> **NOTE: Scheduled servicing (e.g., lubrication/oil replenishment) task data do not result in reported related findings; therefore, an engineering assessment must be conducted to support an evolution/optimization or deletion/addition. Negative long-term effects (e.g., corrosion) resulting from inappropriate servicing intervals must be considered.**

d. Modification Status, Airworthiness Directives, SBs, Service Letters (SL), etc. Review all information related to the task (SBs, Airworthiness Directives, SLs, and other in-service reports/resolutions, as applicable). Also assess fleet configuration.

e. Internal Review. The OEM/TCH will develop and implement internal quality procedures to review and validate the MRBR revision process, as defined in the PPH. The OEM/TCH will develop and implement internal processes to validate MRBR revised tasks and/or intervals resulting from evolution or will demonstrate that an equivalent, written internal process already exists to reach the same intent.

12-8. DATA CORRELATION. Correlate mean time between unscheduled removals, failures, PIREPs, non-routines, technical followups on open technical issues, and all other pertinent data, as applicable.

a. Working Group (WG) Activity—Interval Recommendation to the ISC. Examples include increasing, decreasing, remaining the same, introduction of a new task, and deletion of a task.

(1) MRB task intervals can be escalated based on the results of in-service experience. In addition, tasks should be de-escalated when in-service data support interval reductions. A task may also be deleted when it is determined that it is ineffective or when the failure mode for which the task was selected never developed due to effective design provisions.

(2) Task deletion, addition, or modification of intent requires new/revised/amended MSG-3 analysis. However, complete reanalysis of the MSG package is not required. Any decision, together with justification, will be recorded and traceable in the associated MSG-3 analysis. Applicable and effective criteria, as specified in MSG-3, will be observed.

(3) The intervals of potential failure-finding tasks (i.e., those looking for degradation) 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 are available, this interval may be referred to as the “P to F” interval. Assess consecutive task accomplishments to show that failures are not occurring before the new initial interval.

(4) Interval determination should be validated with a maintenance engineering analysis based on consideration of all the items listed in the quality and quantity of data. The process will be referred to or mentioned in the PPH for ISC and regulatory acceptance.

APPENDIX 1. ACRONYM/ABBREVIATION LISTING FOR THE MAINTENANCE REVIEW BOARD REPORT (MRBR)

The following is a recommended listing of acronyms and abbreviations that may be contained in each MRBR.

AC	Advisory Circular
ACO	Aircraft Certification Office
AD	Accidental Damage
ADR	Accidental Damage Rating
AEG	Aircraft Evaluation Group
AEP	Age Exploration Program
AFRP	Aramid Fiber Reinforced Plastic
AFS	Flight Standards Services
ALI	Airworthiness Limitation Item
ALS	Airworthiness Limitation Section
AMM	Aircraft Maintenance Manual
AMOC	Alternative Method of Compliance
ATA	Air Transport Association of America, Inc.
BOS-AEG	Boston-AEG, Engines, Propellers
CAA	Civil Airworthiness Authority
CAM	Canadian Airworthiness Manual
CFR	Code of Federal Regulations
CFRP	Carbon Fiber Reinforced Plastic
CMCC	Certification Maintenance Coordination Committee
CMM	Component Maintenance Manual
CMO	Certificate Management Office
CMR	Certification Maintenance Requirement
CP	Corrosion Program
CPCP	Corrosion Prevention and Control Program
DAH	Design Authority Holder
DET	Detailed Inspection
DFW-AEG	Dallas Ft. Worth-AEG, Rotorcraft
DIS	Discard
DSO	Design Service Objective
DTA	Design Tolerance Assessment
DTR	Damage-Tolerance Rating
DY	Daily
EAPAS	Enhanced Airworthiness Program for Airplane Systems
EASA	European Aviation Safety Agency
ECO	Engine Certification Office
ED	Environmental Deterioration
EDR	Environmental Deterioration Rating
EICAS	Engine Indicating and Crew Alerting System

EROPS	Extended Range Operations
ETOPS	Extended Operations
EWIS	Electrical Wiring Interconnection System
EZAP	Enhanced Zonal Analysis Procedure
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulation
FC	Functional Check
FCK	Functional Check
FD	Fatigue Damage
FEC	Failure Effect Category
FH	Flight-Hours
FLT	Flight
FMEA	Failure Mode and Effects Analysis
FOEB	Flight Operations Evaluation Board
FSDO	Flight Standards District Office
FTS	Fuel Tank Safety
GFRP	Glass Fiber Reinforced Plastic
GV	General Visual
GVI	General Visual Inspection
HIRF	High Intensity Radiated Fields
ICA	Instructions for Continued Airworthiness
ICAO	International Civil Aviation Organization
IMRBPB	International Maintenance Review Board Policy Board
IP	Issue Paper
ISC	Industry Steering Committee
JAA	Joint Aviation Authority
JAR	Joint Airworthiness Requirement
JOEB	Joint Operations Evaluation Board
LGB-AEG	Long Beach-AEG, Transport Aircraft
L/HIRF	Lightning/High Intensity Radiated Field
LU	Lubrication Task
MEA	Maintenance Engineering Analysis
MEL	Minimum Equipment List
MFG	Manufacturer
MKC-AEG	Kansas City-AEG, Small Airplane
MMEL	Master Minimum Equipment List
MPD	Maintenance Planning Data Document
MPIG	Maintenance Program Industry Group
MPP	Maintenance Program Proposal
MRB	Maintenance Review Board
MRBPB	Maintenance Review Board Policy Board
MRBR	Maintenance Review Board Report
MSC	Maintenance Steering Committee
MSG-1	Maintenance Steering Group - 1st Task Force

MSG-2	Maintenance Steering Group - 2nd Task Force
MSG-3	Maintenance Steering Group - 3rd Task Force
MSI	Maintenance Significant Item
MTB	Maintenance Type Board
MTBF	Mean Time Between Failure
MTBR	Maintenance Type Board Report
MTBUR	Mean Time Between Unscheduled Removal
MWG	Maintenance Working Group
NAA	National Aviation Authority
NDI	Nondestructive Inspection
NDT	Nondestructive Test
OEM	Original Equipment Manufacturer
OPC	Operational Check
PI	Principal Inspector
PMMEL	Proposed Master Minimum Equipment List
PPH	Policy and Procedures Handbook
PSE	Principal Structural Element
RF	Radiated Frequency
R/I	Remove and Install
RMP	Recommended Maintenance Process
RS	Restoration
RST	Restoration
SATO	Statistical Analysis Tasking Optimization
SDI	Special Detailed Inspection
SEA-AEG	Seattle-AEG, Transport Aircraft
SFAR	Special Federal Aviation Regulation
SID	Supplemental Inspection Document
SIP	Structural Inspection Procedure
SSA	System Safety Assessment
SSI	Structural Significant Item
SSID	Supplemental Structural Inspection Document
STWG	Structures Working Group
SVC	Service Task
SWG	Structures Working Group
TBD	To Be Determined
TCDS	Type Certificate Data Sheet
TCH	Type-Certificate Holder
UV	Ultraviolet
VC	Visual Check
VCK	Visual Check
WG	Working Group
ZA	Zonal Analysis
ZIP	Zonal Inspection Program
ZLWG	Zonal Working Group
ZWG	Zonal Working Group

APPENDIX 2. EVOLUTION/OPTIMIZATION DEFINITIONS

a. Confidence Level. The likelihood that the overall fleet performance lies within the range specified by the sample fleet performance. The confidence level is usually expressed as a percentage.

b. Evolution/Optimization. Task performed through the management of data as a means to assure the continued applicability and effectiveness of the task, while improving the integrity of the process.

c. Line Maintenance. Routine check, inspection, and malfunction rectification performed en-route and at base stations during transit, turn-around, or night stop.

d. Nonmetallics. Any structural material made from fibrous or laminated components bonded together by a medium. Materials such as graphite epoxy, boron epoxy, fiberglass, kevlar epoxy, acrylics, and the like are nonmetallics. Nonmetallics include adhesives used to join other metallic or nonmetallic structural materials.

e. Non-Routine Task. A task is non-routine when it is not a planned/scheduled task coming from the operator's/manufacturer's maintenance program.

f. Pilot Report (PIREP). Suspected or known malfunctions or unsatisfactory conditions that are entered by the flightcrew into the aircraft log and require maintenance action.

g. Qualified Federal Aviation Administration (FAA) Maintenance Review Board (MRB) Chairperson. An airworthiness inspector with working knowledge of the MRB process must have system/structures training on particular aircraft and have Maintenance Steering Group—3rd Task Force (MSG-3) formal training.

h. Risk Management (RM). The systematic application of management policies, procedures, and practices to the tasks of identifying, analyzing, evaluating, treating, and monitoring risk.

i. Safety Management. The application of engineering and management principles, criteria, and techniques to optimize safety. It is an integrated and comprehensive engineering effort.

j. Structural Significant Item (SSI). Any detail, element, or assembly that 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.

k. Unscheduled Maintenance. Maintenance performed to restore an item to a satisfactory condition by correcting a known or suspected malfunction and/or defect.

APPENDIX 3. POLICY AND PROCEDURES HANDBOOK (PPH) FORMAT

This appendix intends to provide standardized and harmonized policy in the development of a PPH for a new product. It is encouraged that all industry applicants' PPH documents be developed containing the same basic data and information, as applicable, to provide for a complete, consistent, and quality process. It is not required that existing PPHs be revised to meet these standards.

Regulatory authorities and industry experience have indicated that the following information is expected in each PPH, as applicable, for the successful latest version of the Maintenance Steering Group (MSG) process and development of a Maintenance Review Board Report (MRBR).

SCHEDULED MAINTENANCE DEVELOPMENT

Contents of PPH

I Approval and Acceptance Letters or Signature Page

II Record of Revisions

III List of Effective Pages (LEP)

IV History of Changes

Table of Contents

List of Figures

List of Tables

Highlights of Significant PPH Changes

1. Introduction

1.1 Purpose

1.2 Background

1.3 Scope and Objective

1.4 Regulatory Requirements

1.5 MSG Guidelines

1.6 Revision Process Policy

1.7 Temporary Revisions Process

1.8 Program Organization Program Work Schedule

1.9 Main Principles and Design Standards

1.10 Aircraft Utilization Assumptions

1.11 Establishing Task Intervals (Frequencies)

1.11.1 Systems and Powerplants Task Interval Determination

1.11.2 Zonal Inspection Task Interval Determination

1.11.3 Structures Task Interval Determination

1.11.4 Task Review Procedures

1.11.4.1 General

1.11.4.2 Factors to Be Considered

1.11.4.3 Industry Steering Committee (ISC) and Maintenance Review Board (MRB) Responsibilities

1.11.4.4 Manufacturer Responsibilities

1.11.4.5 Evaluation Criteria

1.11.4.6 Lubrication Tasks

1.11.4.7 Servicing Tasks

1.11.4.8 Operational Check

1.11.4.9 Inspection Tasks (General Visual, Detailed, Special Detailed)

1.11.4.10 Functional Check

1.11.4.11 Restoration or Discard

1.11.4.12 Structure/Zonal Inspections

1.11.4.13 Task Interval Review Report

1.12 Issue Paper (IP) 44, MRB Evolution/Optimization Guidelines

2. Organization and Administration

2.1 Industry Participation

2.1.1 General

2.1.2 Intellectual Property Management

2.1.3 Communications, Internal and External

2.1.4 Industry Steering Committee (ISC)

2.1.5 Working Groups (WG)

2.1.6 Original Equipment Manufacturer (OEM)/Type-Certificate Holder (TCH)

2.1.7 Partners, Suppliers, and Vendors

2.1.8 Certification and Design Personnel

2.2 Federal Aviation Administration (FAA) and Other Regulatory Authority Participation and Functions

2.2.1 General

2.2.2 Regulatory Authority MRB

2.2.3 Regulatory Authority Members and Advisors

2.2.4 Foreign Regulatory Authorities

2.2.5 Aircraft Certification Office (ACO) Personnel

2.3 Documentation

2.3.1 MRBR Revisions Prior to Entry into Service

2.3.2 Latest Version of MSG Analysis Procedure

2.4 Organization of Meetings

2.4.1 ISC and WG Meeting Reports

2.4.2 ISC and WG Action Item Lists

2.4.2 Acceptance and Timely Distribution of Reports and Lists

2.5 Meeting Reports

2.5.1 Standardization and Harmonization of Required Data for WG Meeting Reports

2.5.2 Standardization and Harmonization of Required Data for ISC Meeting Reports

2.6 Supplemental Presentations

3. Systems and Powerplant Analysis Procedures

3.1 General

3.1.1 Handling and Tracking of Task Transfers to Zonal

3.1.2 Handling and Tracking of Task Transfers amongst Systems and Powerplant WGs

3.2 Procedural Steps

3.2.1 Maintenance Significant Item (MSI) List (Appendix E)

3.2.2 Maintenance Significant Item Selection Form

3.2.3 The Systems Functional Description (SDF) Form

3.2.4 Component Supplier and Maintainability and Reliability Data (MDR) Form

3.2.5 Design Features

3.2.6 The Functional Failure Analysis (FFA) Form

3.2.7 The Failure Effect Questions (FEQ) Form

3.2.8 The Task Selection Questions (TSQ) Form

3.2.9 Task Summary

3.3 Analysis Forms

3.4 Responsibilities

3.4.1 OEM/TCH

3.4.2 Partners, Suppliers, and Vendors

3.4.3 WGs

3.4.4 ISC

3.5 Analysis Guidelines

3.6 Lightning/High Intensity Radiated Field (L/HIRF) Protection System Analysis Procedures

3.6.1 Introduction

3.6.2 Proposal for Consideration of Process Revision

3.6.3 Revised Process Overview

3.6.4 Proposed Process

3.6.4.1 L/HIRF Working Group (LHWG) Process for Connector

3.6.4.2 LHWG Process for Connector Analysis–Fuselage

3.6.4.3 Maintenance Inspection of Wing Tanks

3.6.5 L/HIRF Forms

3.6.6 Preliminary Level A (Catastrophic), B (Hazardous), and C (Major) Items

3.7 Certification Maintenance Requirements (CMR)

3.7.1 CMR Process

3.7.2 Certification Maintenance Coordination Committee (CMCC)

3.7.3 Documentation and Handling of CMRs

3.7.4 ISC and MRB CMR Policy and Procedures

4. Structural Analysis Procedures

4.1 General

4.2 Procedural Steps

4.3 Identification of Structural Significant Item (SSI) or Other Structural Selection

4.4 Environmental Deterioration (ED)

4.4.1 Timely Detection Matrix

4.4.2 Susceptibility Matrix

4.4.3 Ground Rules for Environmental Deterioration Rating (EDR)

4.4.4 Use of ED Analysis Process

4.4.5 Galvanic Corrosion Procedures and Charts

4.4.6 Corrosion Protection and Control Program

4.5 Accidental Damage (AD) Analysis Process

4.5.1 Timely Detection Matrix

4.5.2 Susceptibility and Residual Strength Matrix

4.5.3 Ground Rules for Accidental Damage Rating (ADR)

4.5.4 Use of AD Analysis Process

4.6 Fatigue Damage (FD) Analysis Process

4.6.1 Type Certification Interface

4.6.1.1 Airworthiness Limitation Items (ALI)

4.6.2 Crack Growth Rate

4.6.3 Residual Strength

4.6.4 Crack Detectability

4.6.5 FD Inspection Threshold

4.6.6 Feasibility of an FD Sampling Program

4.6.7 Selecting Inspection Intervals for FD

4.7 Composite Structure (Nonmetallic)

4.7.1 Nonmetallic Materials

4.7.2 Structural Composition

4.7.3 Accidental Damage

4.7.4 Environmental Deterioration

4.7.5 Fatigue Damage

4.7.6 Analysis Forms (Nonmetallic)

4.8 Program Implementation Guidelines

4.9 Analysis Forms

4.9.1 Structure Rating Form

4.10 Responsibilities

4.11 Analysis Considerations

4.12 Glossary

5. Zonal Analysis Procedures

5.1 General

5.2 Zonal Analysis Procedures – General

5.3 Zonal Analysis General Rules

5.3.1 Enhanced Zonal Analysis Ground Rules (Electrical Wiring Interconnection System (EWIS)/Enhanced Zonal Analysis Procedure (EZAP))

5.4 Responsibilities

5.4.1 Handling and Tracking of Task Transfers to Zonal

5.4.2 Handling and Tracking of Tasks Rejected by Zonal

5.5 Flow Diagram and Procedural Steps

5.6 Analysis Forms

5.6.1 Form—Title Page and Zonal Task Summary

5.6.2 Form—Transferred MSIs and SSIs

5.6.3 Form—Zone Contents

5.6.4 Form—Panel Access

5.6.5 Form—Zonal Tasks

5.6.6 Form—Zonal Analysis

5.6.7 Form—Enhanced Zonal Analysis

5.6.8 Form—Zonal Task Consolidation

5.7 Zone Diagrams

5.7.1 Aircraft Zones

6. Operator-Purchased Standard Options

6.1 General

6.2 List of Items

7. Training

7.1 Policy and Procedures Training

7.2 MSG Analysis Training

7.3 Airplane General Familiarization Training

7.4 (Aircraft Model) Airplane Detailed Training

8. MRBR—Procedures and Format

8.1 Purpose

8.2 MRBR Proposal

8.2.1 Development of MRBR Proposal Concurrent to MSG Process

8.2.2 Contents

8.3 MRBR

8.3.1 Contents

8.3.2 Multiple Primary Critical Systems

8.3.3 Approval Process

8.4 MRB Item Numbering Scheme Ground Rules

8.4.1 MRB Item Numbering Scheme for Systems, Structures and Zonal Tasks

8.4.1.1 MRB Policy and Rules for Systems/Powerplant Requirements

8.4.1.2 MRB Policy and Rules for Structures Requirements

8.4.1.3 MRB Policy and Rules for Zonal Requirements

Appendix A Air Transport Association of America (ATA) Latest Version of MSG Document (Currently Applied Revision)

Appendix B PPH Acronyms and Abbreviations

Appendix C ISC, MRB and WGs

Appendix D (Aircraft Model) Master Minimum Equipment List (MMEL)

Appendix E MSI and Analysis List Items

Appendix F SSI List or Applicable Document

Appendix G Fuel Tank Safety Guidelines

Appendix H Glossary and Definitions

Appendix I Advisory Circulars (AC) and Regulatory Documents

Appendix J Policy Letters and IPs

Appendix K Temporary Revision Process

Appendix L IP 44 MRB Optimization Process

References

Active Page Record

Revision Record

APPENDIX 4. RELEVANT FLOWCHARTS AND LETTERS

FIGURE 1. MAINTENANCE PROGRAM DEVELOPMENT PROCESS SELECTION FLOWCHART

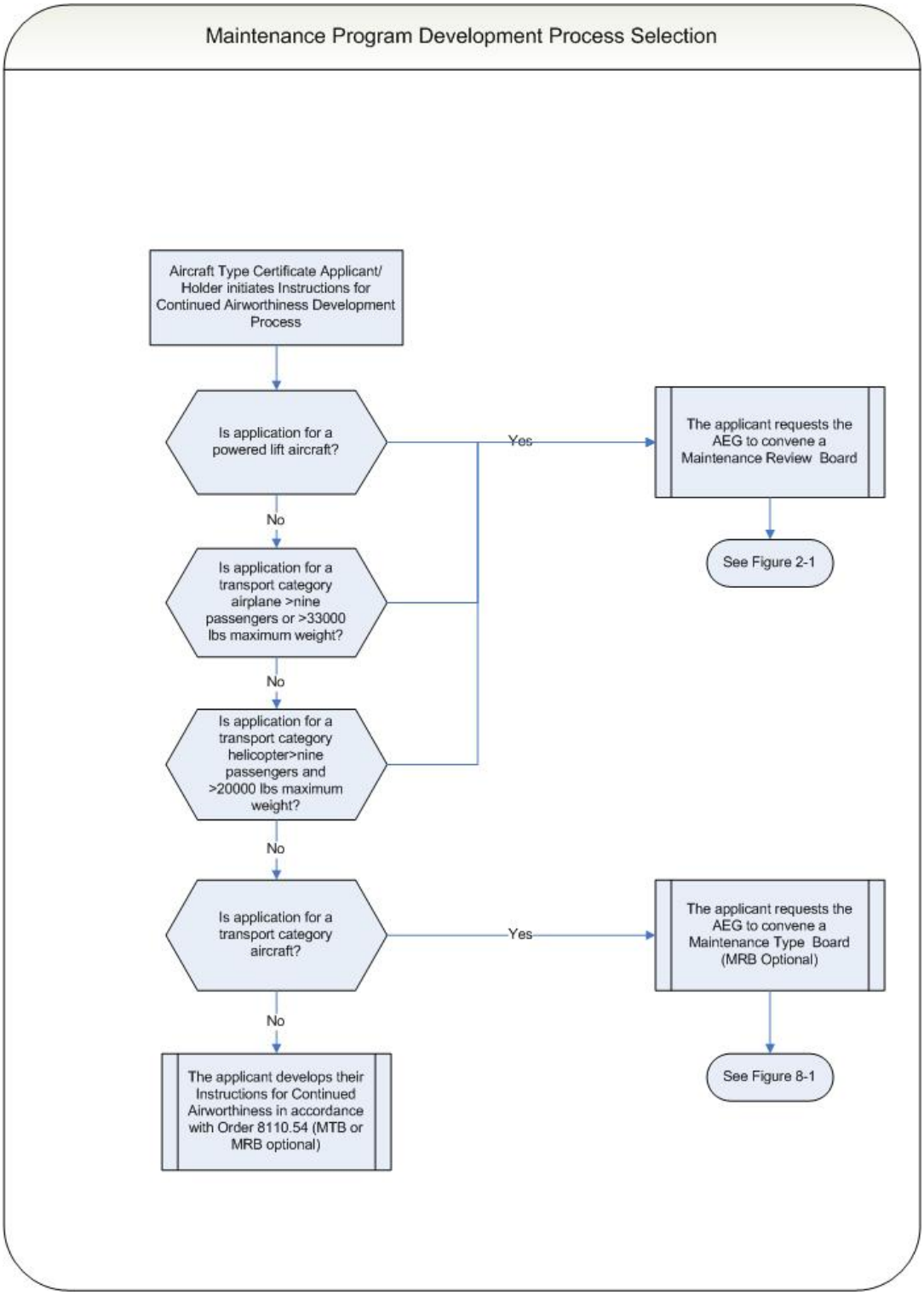


FIGURE 2. OEM/TCH REQUEST FOR A MAINTENANCE REVIEW BOARD

The ABC Aviation Company
123 Airport Avenue
Anytown, ST 12345-6789

November 1st, 2012

Mr. Kenneth King
Manager, XXX Aircraft Evaluation Group (AEG)
345 Regulation Alley
Anytown, ST 12345-6789

Dear Mr. King:

The purpose of this letter is to formally notify the FAA of ABC Aviation's intention to develop a proposal for establishing initial and follow-on aircraft and powerplant scheduled maintenance/inspection requirements for the Model 500 aircraft. This is the initial step for developing an FAA-approved Maintenance Review Board Report (MRBR) in support of Model 500 certification activities.

This process will follow the basic guidelines contained in the current edition of Advisory Circular (AC) 121-22 and the additional processes outlined in the Model 500 Policy and Procedures Handbook (PPH), currently under development. The Model 500 MRBR will be a separate document from the existing Model 400 MRBR.

The initial Industry Steering Committee (ISC)/Maintenance Review Board (MRB) meeting is scheduled for January 11-14, 2013. At this meeting, the Model 500 PPH will be discussed and approved by the ISC. In addition, the Model 500 maintenance program development schedule will be reviewed and the ISC Chairperson will be selected. The meeting will also formally launch the Maintenance Steering Group - 3rd Task Force (MSG-3) analysis and working group (WG) activities. All ISC/MRB activities will be coordinated with the FAA MRB Chairperson, when appointed.

Our goal is to have an FAA-, European Aviation Safety Agency (EASA)-, and Transport Canada Civil Aviation (TCCA)-approved MRBR by the first flight of the Model 500 aircraft (approximately September, 2014).

We look forward to working with yourself, the MRB you appoint, and other FAA, EASA, and TCCA representatives, as well as airline customers and suppliers.

Regards,

/s/
Louis Lincoln
Vice President of Airworthiness
ABC Aviation Company

FIGURE 3. INVITE LETTER TO WORKING GROUP (WG) MEMBERS/ADVISORS

Federal Aviation Administration

Memorandum

Date: XX/XX/XXXX

To: Manager, Atlanta Flight Standards District Office (FSDO)-11

From: Manager, XXX Aircraft Evaluation Group (AEG)

Prepared by: Alan Able, XXX AEG

Subject: INFORMATION: ABC Aircraft Model 500 Mechanical Systems Working Group Advisor

The XXX AEG is requesting the assistance of Mr. David Delkin, currently assigned to your office. We would like him to participate on a Maintenance Review Board (MRB) for the ABC Aircraft Model 500, which is currently in the certification process. He will be serving as the Federal Aviation Administration (FAA) Advisor for the Mechanical Systems Working Group.

This certification process is scheduled for completion in September, 2014. Mr. Delkin would be attending a series of 8 one-week meetings from the period of March 2013 through September 2014, during the development of the MRB report in accordance with the current edition of Advisory Circular (AC) 121-22.

The first scheduled meeting is set for the week of March 12, 2013 in Anytown, USA.

All costs associated with this project will be funded by this office. All travel to and from the meetings should be conducted by en route inspections. For travel performed in support of the Model 500 MRB by non-AEG personnel, a travel charge code will be provided by this office. If a meeting is scheduled outside the United States, your office will be responsible for initiating and obtaining a Country Clearance.

I would like to welcome Mr. Delkin to the Model 500 MRB Team and thank him and you for your support in meeting our Board requirements.

FIGURE 4. REGULATORY LETTER OF PARTICIPATION

U.S. Department
of Transportation
**Federal Aviation
Administration**

XXX Region
Flight Standards Division
XXX Aircraft Evaluation Group, XXX-AEG

345 Regulation Alley
Anytown, ST 12345-6789

XX/XX/XXXX

Ms. Ida Innes
Maintenance Review Board (MRB) Section
European Aviation Safety Agency (EASA)
Postfach 10 12 53
D-50452 Köln, Deutschland

Dear Ms. Innes:

The Federal Aviation Administration (FAA) XXX Aircraft Evaluation Group (AEG), as part of the Type Certification Board for the new ABC Aviation Model 500 aircraft, would like to invite you and your agency to participate in the development of the Maintenance Review Board Report (MRBR). The certification project is scheduled for completion by September 2014.

There will be approximately 60 meetings during the development of the MRB Report in accordance with the current edition of FAA Advisory Circular (AC) 121-22. Most meetings will be conducted at the ABC facility in Anytown, USA, but may also include meetings at supplier facilities in the United States and elsewhere.

The first scheduled meeting of the Industry Steering Committee (ISC) and the MRB will occur the week of January 10, 2013. Mr. Gary Gordon of ABC will present a technical familiarization and Maintenance Steering Group - 3rd Task Force (MSG-3) course for participating regulatory authorities. If you plan to attend, please contact Mr. Alan Able, the FAA MRB Chairperson at the above address, via email at alan.able@faa.gov or via phone at 123-456-7895 for further information or assistance.

Sincerely,

/s/
Alan Able
FAA Model 500 MRB Chairperson
XXX Aircraft Evaluation Group

FIGURE 5. LETTER OF CONFIRMATION TEMPLATE

NOTE: The following is a template of a letter to send to "guest National Aviation Authority (NAA)" chairperson. Copy the Industry Steering Committee (ISC) chairperson, and type-certificate holder (TCH).

IP 83/IMRBPB AI N°05/07

Dear NAA Chairperson:

Per [Host NAA guidance], I would like to offer this letter of confirmation regarding the [TCH aircraft type] aircraft, Maintenance Review Board Report (MRBR), Revision XX.

As the host country for the [TCH aircraft type] aircraft we [Host NAA] would like to define our requirements in accordance with our guidelines, and per the process agreed in the International Maintenance Review Board Policy Board (IMRBPB) IP 83, for guest signatories' regulatory authorities. This letter will serve as the confirmation letter outlining our working relationship with your NAA. The guest signatory's regulatory authorities will perform the following functions regarding the [TCH aircraft type] Aircraft Maintenance Review Board (MRB) activities:

1. Participate in the development and acceptance of the Policy and Procedures Handbook (PPH). Any NAA regulatory differences will be defined in an appendix to the PPH.

2. [Guest NAA] will coordinate all requested PPH changes through the [Host NAA] MRB chairperson.

3. Participate in the MRB working group (WG) activities; inform the [Host NAA] WG advisor of any national regulatory or technical differences. The [Host NAA] advisor will ask for regulatory concurrence. Any non-concurrence will be documented in the meeting minutes. In addition, any regulatory differences between the host country and signatory authorities at the completion of the Maintenance Steering Group - 3rd Task Force (MSG-3) process would be documented in a separate MRBR appendix.

4. The [Host NAA] advisor will ensure the conversation or debate over an issue ends in a timely fashion to ensure the completion of WG activities in the allotted time.

5. Attend Industry Steering Committee (ISC) meetings by invitation from the ISC chairperson released through the TCH in coordination with of the [Host NAA] MRB chairperson.

6. Notify the ISC chairperson, via the [Host NAA] MRB chairperson, of any national regulatory differences before compiling the MRBR proposal.

The final responsibility of the [Guest NAA] will be to coordinate the [Guest NAA] MRBR approval and appendices with the [Host NAA], if applicable.

Sincerely,

Host NAA