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1.0 Purpose and Background

- 1.1 The International Maintenance Review Board Policy Board (IMRBPB) issues this standard for guidance to outline the processes and procedures used during the Maintenance Review Board (MRB) and Maintenance Type Board (MTB) processes.
- 1.2 This document is primarily designed to standardize the development of scheduled maintenance requirements. Certifying Authorities (CA) who are members of the IMRBPB should adopt or reference this standard as part of their documentation framework in order to establish their National Standard.
- 1.3 Regulatory authorities who accept this standard as the basis for their National Standard should be able to accept a CA's approved MRB Report (MRBR), when developed using an MRB process also based on this document. In such a scenario the level of involvement in the MRB process in order to accept an MRBR will be determined as part of the validation activity, which will typically be defined by the applicable regulatory authority(s).
- 1.4 This document has been written in compliance with the ICAO MRB requirements as detailed in the ICAO Airworthiness Manual, Document 9760.
- 1.5 The initial issue of the IMPS developed by the IMRBPB is based on the following guidance:
 - FAA Advisory Circular (AC) 121-22C;
 - EASA Document WI.CSERV.00007.002;
 - TCCA Publication (TP) 13850;
 - CAAC AC-91-26;
 - JCAB Circular 1-317;
 - HKAR-1 1.5-2.
- 1.6 Normally the IMPS will be revised on a three-year cycle by the IMRBPB, which should be followed by a revision of the applicable CA's MRB guidance, when based on this document.
- 1.7 The IMRBPB will identify all IP's affecting the IMPS. These IP's will be incorporated into this document on the three-year revision cycle to reflect the positions taken by the IMRBPB. Member authorities should highlight in their guidance material the need for the TCH to review IP's classified as "active", which may be adopted by the Member Authorities in their guidance in-between IMPS revisions.



2.0 IMRBPB General Process

- 2.1** Function of the IMRBPB: The IMRBPB develops, maintains, and reviews, the continuing development of policies, procedures, and guidance for the use of personnel working as part of an MRB or MTB process. The IMRBPB provides a process of promoting harmonization with other regulatory authorities throughout the world and 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, and for development of the MSG-3 methodology. The Maintenance Programs Industry Group (MPIG) and Rotorcraft Maintenance Programs Industry Group (RMPIG) working under the Airlines for America (A4A) Airworthiness Committee represent the industry at the IMRBPB meeting. The board is also open to input from other parties within the aviation industry.
- 2.2** Composition of the IMRBPB: The IMRBPB is made up of members from Regulatory Authorities who have signed the IMRBPB charter. The IMRBPB convenes once a year. Industry/regulatory discussions are a portion of the meeting. Industry representation is open to the appropriate representatives. The meeting venue will normally rotate among the IMRBPB members.
- 2.3** 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 process and the application of MSG-3.



3.0 General Application Rules

- 3.1** To generate an MRBR/MTBR, it is recommended to follow in all respects the process described in this document. Any deviations should be identified in the TCH Policy and Procedures Handbook (PPH) and accepted by the Regulatory Authority.
- 3.2** MRB Applicability - The MRB process is recommended for:
- (1) Transport category airplanes having a maximum weight of 33,000 lb or more, (use MSG-3 Volume 1)
 - (2) Transport category helicopters certificated to carry 10 or more people or having a maximum weight of 20,000 lb or more, (use MSG-3 Volume 2), or
 - (3) Powered-lift aircraft (use MSG-3 Volume 2).
- 3.3** MTB Applicability - The Maintenance Type Board (MTB) process is recommended for all other transport category aircraft (airplanes less than 33,000lbs or helicopters certificated to carry less than 10 people or less than 20,000lbs). The MRB process may be used for these aircraft, at the applicant's option.
- 3.4** Type Certificate Holders of Part 23 (or equivalent) airplanes and Part 27 (or equivalent) helicopters may also apply for MRB or MTB processes at their own discretion.
- Type Certificate Holders of electric or hybrid Vertical Take-Off and Landing (VTOL) aircraft may also apply for MTB processes on a case-by-case basis. Since VTOL aircraft designs can differ substantially and have significantly different certification basis, existing MTB processes and MSG-3 methodology would need to be adapted to suit the specific needs.
- 3.5** The MSG-3 revision valid at time of TC application is the minimum standard to be used for the development of an MRBR/MTBR for a new aircraft type. MSG-3 analysis should be applied to the complete certified aircraft, including the engines and propellers.
- When using the MRB/MTB process to develop schedule maintenance for design changes as part of an amended Type Certificate (TC) the applicant should apply the MSG-3 revision valid at time of amendment application (or a later revision) to those systems or structures that have changed. Deviations to this policy may be justified to avoid unacceptable inconsistencies within the MRBR/MTBR, and documented in the PPH, as agreed to by the TCH and the CA.
- When using the MRB/MTB process to develop schedule maintenance for design changes that do not amend the Type Certificate (TC) the applicant should apply the version of MSG-3 stated in the PPH during the initial development. If this is not an acceptable approach, a PPH revision should be developed to identify the version of MSG-3 that the TCH and CA have agreed to use.
- 3.6** Aircraft type certificate holders that have developed an MRBR shall maintain records of the MSG-3 analysis performed in a manner such that the CA or Validating



Authority (VA) may conduct a review of the completed initial analysis, including subsequent analysis, that are used to develop or amend the MRBR.

- 3.7** The type certificate holder has the responsibility to develop a methodology to validate the maintenance procedures written to support the completion of MRBR tasks. The objective of the validation is to ensure the maintenance procedure can be performed and that the intent of the MRBR task is also complied with. The results of the validation shall be made available to the CA or VA upon request. If task validation finds that the intent of the MRB task cannot be met, this should be fed back to the ISC. They should review the analysis for possible errors and correct as required.
- 3.8** Representatives of guest NAA's should only participate in the MRB, ISC, and/or WG activities as provided by the letter of confirmation. Representatives of guest NAA's may attend ISC meetings if agreed to by the ISC Chairperson/Co-Chairperson, based on the invitation from the MRB Chairperson. A guest NAA is normally neither a CA nor a VA but could be representing a country who is, or may become, an operator of the aircraft. See Section 10 for further details.
- 3.9** Throughout this document, the term "meeting" may refer to either a physical and/or a virtual meeting, and in addition, may reflect defined periods during which group activity is performed continuously using interactive tools.
- 3.10** IP Incorporation Policy.
- 3.10.1** When IMRBPB Issue Papers are agreed upon and classified as "Active" or "Incorporated" and "Not retroactive" in the IP (and IP Index), they then may be (but are not required to be) incorporated into an existing MRB/MTB program after MRB/MTB date of application. They should be agreed by all parties in a revision to the PPH prior to such use.
- 3.10.2** With the exception of "archived" IP's, when IMRBPB Issue Papers are agreed upon and classified as "Retroactive" in the IP (and IP Index), they are to be incorporated into any existing MRB/MTB program, where applicable. They are then to be implemented into a revision to the PPH within a maximum timeframe of one year after IP effective date.
- 3.10.3** When IMRBPB Issue Papers are agreed upon and classified as "Active" in the IP (and IP Index), they are to be incorporated into any new initial MRB/MTB program if the IP effective date has been reached on or before MRB/MTB date of application, even if the IP is not yet incorporated in MSG-3/IMPS. They are then to be implemented into the PPH.
- 3.10.4** Once an IP is incorporated into a PPH, and the IP is then later listed as "Incorporated" by the IMRBPB, the IP content can continue to be used, unless the program implements a change to incorporate the new version of the document that the IP affected (in which case, the new document would supersede the IP.)



3.10.5 If an IP is listed as “Archived” by the IMRBPB, the MRB/MTB program should remove the IP content from the PPH via the next revision. It is not expected that existing analysis based on these IP’s be reopened.



4.0 Maintenance Review Board (MRB) Process Specification

4.1 Maintenance Review Board (MRB) Organizational Rules

- 4.1.1** MRBRs are developed as a joint exercise involving the type certificate applicant, CA, air operators, as well as other participating regulatory authorities. The MRB process consists of a number of specialist working groups who use MSG-3 logic to develop and propose maintenance inspections tasks for a specific aircraft type. The proposed tasks are presented to an Industry Steering Committee (ISC) who, after considering the working group proposals, prepare a recommendation for the MRBR. The proposed MRBR is then reviewed by the MRB and approved by the MRB Chairperson. It is then published as the MRBR.
- 4.1.2** The Certifying Authority (CA) will be notified by the TCH of its intention to develop a Maintenance Review Board Report (MRBR) proposal.
- 4.1.3** The appropriate CA manager will assign a qualified individual as the MRB Chairperson to manage the specific MRB process for the CA. The MRB Chairperson selects and manages additional experienced and qualified MRB members to participate as working group (WG) advisors in each WG. Acceptance to participate is usually considered a commitment for the duration of the project.
- 4.1.4** The MRB Chairperson may assign additional CA advisors to each WG if necessary. The CA should ensure the participation of qualified personnel, which may include representatives from the Certification Branch or Directorate office, however these additional advisors would not normally be considered to be MRB members.
- 4.1.5** The MRB Chairperson is responsible for coordination on all issues of concern with the CA Certification Branch. The MRB Chairperson should ensure standardization and harmonization of the MRB processes and associated activities with the international MRB process.
- 4.1.6** The MRB Chairperson will provide the TCH with a list of all MRB members including names, affiliations, assignments, and changes in personnel as they occur.
- 4.1.7** The MRB Chairperson will coordinate MRB activities, issues, and associated matters with the ISC, as required.
- 4.1.8** The MRB Chairperson will:
- Ensure that the TCH provides the necessary aircraft familiarization/technical training, including MSG-3 training, to all MRB members;
 - Ensure that the training requirements are stated in the PPH for all MRB members;



- Validate that the training provided is adequate, and, if not, advise the TCH as to needed revisions.

4.1.9 The MRB Chairperson should schedule an MRB meeting before attendance in ISC meetings, as required.

4.1.10 The MRB Chairperson will attend all ISC meetings and be prepared to address any previous open issues that developed during WG or ISC meetings. This may require additional support from WG CA regulatory advisors.

4.1.11 The MRB Chairperson will ensure that the appropriate MRB members and advisors attend WG and ISC meetings.

4.1.12 The MRB Chairperson will offer information, guidance, and assistance to the ISC and each WG regarding regulatory requirements, the development of the PPH, compliance and process management, MSG-3 application, and other related issues.

4.1.13 The MRB Chairperson will review reports from previous ISC meetings (if applicable) and from the WG MRB members with regard to open issues or concerns in order to provide assistance to close the open items and address concerns.

4.1.14 The MRB Chairperson may discuss issues within the CA to bring them forward as CIP's to the IMRBPB in order to review MSG-3 and the IMPS for possible changes.

4.1.15 The MRB Chairperson shall be aware of the current status of the IMRBPB and CA MRB policy issues and communicate these changes to the MRB and ISC for consideration for implementation into the TCH program.

4.1.16 MRB Chairperson will direct MRB WG advisors regarding compliance with the PPH and current regulatory and policy requirements.

4.1.17 MRB members will attend MRB meetings to review and discuss ISC proposals and all significant problems and open issues, as required.

4.2 Type Certificate Holder (TCH) Organizational Rules

4.2.1 The TCH should make an application for MRB process to the CA, and VA's (as necessary), and assign a representative as the ISC Co-Chairperson.

The TCH should develop a Policy and Procedures Handbook (PPH) for presentation to the ISC and MRB. The TCH should provide ISC and MRB with the initial WG/ISC meeting schedule. The TCH should provide aircraft technical, PPH and MSG-3 training for all ISC and WG members, including regulatory authorities before holding the first WG meeting for that subject matter.



- 4.2.2** The TCH should provide the ISC with a candidate Maintenance Significant Items (MSI), Lightning/HIRF Significant Items (LHSI), and Structural Significant Items (SSI) list and a list of the items not selected to be candidate MSI/LHSI/SSI. The generated lists should not be influenced by National requirements. The candidate list should also be supported by the applicable MSG-3 analysis. This is recommended to happen 30 calendar days prior to the beginning of the applicable WG meeting.
- 4.2.3** The TCH should arrange for the attendance of the appropriate TCH personnel at each ISC/WG meeting as needed to support the topics addressed, which includes vendor/supplier personnel as required. Typically, TCH representatives will also be identified as Co-Chair for the ISC and WG meetings.
- 4.2.4** The TCH should arrange for technical support and access to the aircraft, including components thereof and vendor facilities, if required for the development of analysis and tasks.
- 4.2.5** The TCH should during the MRB process provide the ISC/MRB, including appropriate WG members, with details of design changes that will impact the MSG-3 analysis, which may include changes due to potential Airworthiness Limitation Items (ALI) and Candidate Certification Maintenance Requirements (CCMRs).
- 4.2.6** The TCH should ensure that their manuals contain information and procedures for accomplishing all on-aircraft maintenance tasks covered in the MRBR. If Aircraft Health Monitoring (AHM) alternatives are proposed by the TCH, all steps necessary for operators to perform system health assessment off-aircraft, including instructions when monitoring becomes unavailable, must be published in their maintenance manuals. The TCH should also provide procedures which allow switching between the classic tasks and AHM procedures throughout the service life of the aircraft.
- 4.2.7** The TCH should participate in all ISC and WG activities in support of the development of the MRBR.
- 4.2.8** The TCH should 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.
- 4.2.9** The TCH should make available to the MRB Chairperson a copy of all supporting final analysis for the proposed MRBR at the conclusion of the MRB process.

4.3 Industry Steering Committee (ISC) Organizational Rules

- 4.3.1** The TCH will work with the expected operators, the aircraft, the engine, and if applicable propeller manufacturers, and at TCH invitation major suppliers, to



form an ISC to address the initial minimum scheduled task/interval requirements for the aircraft and components thereof.

- 4.3.2** Representatives of maintenance organizations may also be part of the ISC subject to acceptance by the ISC Chairperson/Co-Chairperson.
- 4.3.3** The ISC Chairperson will work with the MRB Chairperson and is normally an operator of the aircraft or similar model from the TCH.
- 4.3.4** In conjunction with the TCH, the ISC Chairperson is responsible for directing the activities of the working groups and preparing the MRBR.
- 4.3.5** The ISC will review and approve the Policy and Procedures Handbook (PPH) and forward it to the MRB Chairperson for review and acceptance. The ISC will follow the procedures identified in the PPH.
- 4.3.6** The ISC should 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 or maintenance organizations attend and support each WG meeting. The ISC goal should be a minimum of three operators or maintenance organization representatives.
- 4.3.7** The ISC Chairperson/Co-Chairperson should 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.
- 4.3.8** The ISC Chairperson/Co-Chairperson should invite the MRB Chairperson to the ISC meetings and the MRB Chairperson will invite selected MRB members to support regulatory and policy requirements.
- 4.3.9** The ISC Chairperson/Co-Chairperson should invite other VA representatives to ISC and WG meetings, with concurrence and coordination of the MRB Chairperson.
- 4.3.10** The ISC should review and accept all final WG analyses conclusions and presentations, returning those that are unacceptable back to the WG with the rationale for not accepting the final analyses.
- 4.3.11** The ISC should establish a tracking system for issues that are identified from their review of WG analysis conclusions and will resolve all open actions.
- 4.3.12** The ISC should review and accept meeting minutes for all ISC meetings and establish a method of distributing and tracking all ISC and WG meeting minutes.
- 4.3.13** The ISC should establish a tracking system to ensure resolution of all open action items or concerns. Document and resolve all open action items or provide a plan for closure before presenting an MRBR proposal to the MRB Chairperson.



4.3.14 The ISC Chairperson should review and accept initial issue and proposed revisions to the MRBR prior to submission to the MRB Chairperson.

4.4 Working Group (WG) Organizational Rules

4.4.1 Appropriate representatives of the TCH (aircraft/engine/propeller), vendors, operators, and maintenance organizations comprise a WG as members, with regulatory participation in the advisor capacity. It is recommended that a minimum of three operators, or their representatives, support each WG meeting.

4.4.2 The WG Chairperson is selected by the WG and accepted by the ISC. Normally the WG Chairperson will be an operator, or their representative, not an employee of a TCH, however depending on the TCH and the number of operators participating in the WG, the WG could be chaired by a representative of the TCH.

4.4.3 The WG should develop initial minimum scheduled tasking/interval requirements for new or derivative aircraft/engine using the latest accepted PPH procedures and the revision of the MSG-3 document referenced in the PPH.

4.4.4 The WG should ensure a set of meeting minutes is produced for each WG activity.

4.4.5 MRB WG advisors will attend WG meetings in order to provide guidance and feedback to the WG members and update the MRB Chairperson as required.

4.4.6 MRB WG advisors will ensure that the WG follows the MSG-3 document and PPH guidelines. Deviations from the MSG-3 document /accepted PPH procedures shall be reported to the MRB chairperson.

4.4.7 The WG will review technical data, MSG-3 analysis, and PPH revisions provided by the TCH before each WG meeting, as required. The TCH should provide the data 30 calendar days before each meeting unless the ISC and MRB mutually agree otherwise.

4.4.8 MRB WG advisors will review WG meeting minutes and provide progress reports to the MRB chairperson after each WG meeting, but no later than the next scheduled ISC meeting. This review will contain an assessment of WG activities, including minimum scheduled tasking/interval requirements, notification of any controversy, potential problem areas, or issues affecting the application of MSG-3.

4.4.9 If not participating in the WG, the VA should 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.



4.5 MRB Policy and Procedures Handbook (PPH) Rules

- 4.5.1** The TCH is responsible for developing and establishing a Policy and Procedures Handbook (PPH) for the development of the initial minimum scheduled maintenance/inspection requirements in the form of a Maintenance Review Board Report (MRBR) proposal. The PPH should be a “living” document and updated as required from the initial MRBR development throughout the aircraft service life.
- 4.5.2** The PPH sections related to a specific WG, as well as any required interfaces to other groups (e.g., transfer to zonal, action items, meeting minutes, etc.) shall be completed and approved by the ISC Chairperson. 30 calendar days will typically be required in order to complete the approval process of the PPH procedures.
- 4.5.3** The ISC Chairperson is responsible for ensuring that the ISC approved PPH is forwarded to the MRB Chairperson and VA (when applicable) for review and acceptance. During the MRB PPH review process, the MRB Chairperson will direct comments to the ISC Chairperson/Co-Chairperson. The initial PPH must be found acceptable by the MRB Chairperson and VA (when applicable) before any WG meetings can begin however, sections of the PPH may be approved after the initial approval so long as the WG’s affected by the unapproved sections have not begun.
- 4.5.4** The MRB Chairperson will submit comments to the ISC within 30 calendar days of receipt. Once acceptable the MRB Chairperson will accept the PPH as previously mentioned above.
- 4.5.5** The PPH should contain a statement requiring the TCH to deliver all WG data packages and analysis documents to the representatives 30 calendar days’ before scheduled meetings, or as agreed to between ISC, MRB and WG members.
- 4.5.6** A typical format for the PPH is provided in Appendix 1. This example contains all of the necessary elements for a PPH, but the format may vary. Deviation from this format will be proposed by the ISC and TCH and approved by the MRB Chairperson.
- 4.5.7** The PPH should contain the details of the ISC and WG management governance criteria.
- 4.5.8** The PPH should contain a statement requiring that the scheduled maintenance development process shall not be unduly influenced by National requirements.

4.6 Maintenance Review Board Report (MRBR) Proposal

- 4.6.1** The TCH prepares the MRBR proposal and forwards it to the ISC Chairperson to confirm it correctly records the WG/ISC agreed results. After ISC acceptance, the TCH formally submits the MRBR proposal to the MRB



Chairperson for review and approval, at least 90 calendar days before the expected approval date. The MRB Chairperson will provide MRB comments as early as possible during the review to provide time for corrective action. The MRB Chairperson will coordinate with each VA the expected MRBR approval date and resolve harmonization issues as per the Letter of Confirmation prior to the approval letter being issued, as required.

- 4.6.2** In cases where the ISC has accepted and released a partial package of work, after the design is considered final and applicable minimum scheduled tasking/interval requirements have been completed, the TCH may submit these packages to the MRB Chairperson for review. The MRB Chairperson will however only approve the complete proposal when all the packages have been received and reviewed.
- 4.6.3** When the MRBR is found to be acceptable the MRB Chairperson sends a letter of approval, and/or a signed approval page of the MRBR to the ISC Chairperson/Co-Chairperson. A CA letter of approval, or a CA signature on an MRBR Approval Page, may be used by the TCH, but at least one must appear in the MRBR and be available to an operator of the aircraft. If the MRBR is found to be unacceptable the MRB Chairperson will return the report to the ISC Chairperson/Co-Chairperson for corrections and re-submittal. The TCH is responsible for publishing and distributing the approved initial and revised MRBR and any supporting documents in a format acceptable to the CA.
- 4.6.4** For MRBR discard tasks that have a corresponding safe-life limit or life limitation, that interval (which is controlled by the airworthiness limitation section of the ICA) may be incorporated by reference within the MRBR (in other words, a reference to the document controlling the limitation is allowed, rather than restating the limit in the MRBR). Extensions or deletions to safe-life limits or life limitations following initial MRBR approval should subsequently be reviewed by the ISC/WG to ensure that the MRBR discard tasks remain applicable and effective.
- 4.6.5** When a vendor recommendation is selected as a task interval in the MRBR, the TCH should either publish the vendor recommendations as actual intervals expressed in hours, cycles, calendar time (or other relevant exposure unit) in the interval block; or have the MRBR incorporate a separate Appendix for tasks with intervals selected in line with vendor recommendations. The Appendix would list the part numbers and vendor recommended intervals for each applicable task, and the main MRBR would state "See Appendix" in the interval column. Changes to the vendor recommended intervals would need to be accepted as per MSG-3 criteria and incorporated as part of the normal MRBR revision process.

Each signing authority is required to state which Appendices of the MRBR (if any) are covered by their approval letter. Approval letters of all signing authorities shall be included within the envelope of the published MRBR. If



any historic MRBRs contain an Appendix listing CMRs, the approval letters should clearly indicate that this Appendix is not covered by the Approval letter, as CMR approval is performed by the Certification Office.

4.6.6 If Temporary Revisions (TRs) are needed, the TCH, ISC and MRB will coordinate in a timely manner to evaluate any proposed changes.

4.6.6.1 Temporary Revision Usage

4.6.6.1.1 When there is an effect on the current operating fleet, TRs can only be used for the following two reasons:

- There is an effect on safety, and publication cannot wait until the next planned MRBR revision and/or the normal WG/ISC approval process has not been followed.

OR

- There is a need for implementation of new/revised tasks and/or related intervals with significant operational / economic impact and either publication is desired before the next planned MRBR revision or the normal WG/ISC approval process has not been followed. The “significant operational/economic impact” should be evaluated by the TCH based on the benefits of the new MRBR task immediate application compared to the existing MRBR task.

The TR approval process should be expedited, with approval by the regulatory authorities expected within 15 calendar days after receipt of the TR and supporting documentation.

4.6.6.1.2 When there is no effect on the current operating fleet, TRs can only be used when there is the need for the TCH to comply with regulation for timely issuance of ICA at aircraft delivery, and either the publication cannot wait until the next planned MRBR revision and/or the normal WG/ISC process has not been followed.

The TR approval process should be expedited, with approval by the regulatory authorities expected within 30 calendar days after receipt of the TR and supporting documentation.

This scenario should be used on an exceptional basis.

4.6.6.1.3 In the particular case of the need for a TR, while the MRB is reviewing a MRB Report revision proposal, the CA MRB chairperson should coordinate with the VAs (as applicable) and decide if the proposed TR should be incorporated in the revision (which would require that the revision be returned to the TCH for immediate incorporation) or may be incorporated during the next MRB Report revision cycle.



4.6.6.2 Post Temporary Revision Activity

Unless the TR content followed the normal WG/ISC approval process, the following should be initiated by the TCH:

- The complete TR dossier should be reviewed by the appropriate WG at the first WG meeting opportunity (if any WG activity is still in place for the specific program),

OR

- If no WG activity is in place for the specific program, the complete TR dossier should be presented at the next ISC or periodic review meeting.

4.7 Specific Considerations for System/Powerplant

- 4.7.1 The MRBR should indicate the MSIs with no tasks identified as a means to identify all MSIs that were subjected to an analysis.
- 4.7.2 MSG-3 logic may take credit for Engine Condition Monitoring (ECM). This could include tasks for monitoring, for example, engine fuel, oil, and controlling systems.
- 4.7.3 It should be understood by the applicable WG that maintenance systems (or maintenance functions of systems) are those systems or functions that are solely designed to provide for maintenance (for example, a function to depressurize a hydraulic reservoir for maintenance, or provisions for lighting in a service area.) These, as long as installed on the aircraft, should be treated like any other system and addressed by MSG-3.
- 4.7.4 It should be understood by the applicable WG that, for landing gear MSG-3 analysis, MSI/SSI selection at the highest manageable level is the preferred approach. However, MSG-3 analysis for the landing gear may be more efficient below the highest manageable level. If analysis goes below the highest manageable level, the resulting task(s) must be identified in the MRBR within a single high-level task, or reference made within the MRBR to another document that controls those tasks.
- 4.7.5 It should be understood by the applicable WG that failures can only be considered evident if apparent before the next day (or flight day) and normally within 24 hours, otherwise the analysis must consider it a hidden failure.
- 4.7.6 Credit for Centralized Maintenance Computer (CMC) data may only be used for FEC 9 tasks and provided the necessity of a task to verify the CMC is performing to its intended function is considered.
- 4.7.7 The powerplant certification requirements for Full Authority Digital Engine Control (FADEC) propulsion system, dispatch with faults present, is Time Limited Dispatch (TLD). These TLD intervals for short time and long-time



faults, can be considered by the working group when determining task intervals for hidden FADEC faults in accordance with MSG-3.

4.7.8 It should be understood by the applicable WG that Aircraft Health Monitoring (AHM) capabilities report data used to monitor the health status of aircraft components/functions. The MRBR should reflect the understanding that credit may be taken for the existence of AHM capabilities, within their certification limits, when applying MSG-3 logic. This approach is meant to provide more flexibility to operators' scheduled maintenance.

4.7.9 The MSI selection process should include the engine, the APU and/or propellers as applicable. That is to say, the MSG-3 logic should be followed completely, which includes MSI selection at the highest manageable level, with a top-down approach. No exceptions are allowed for the engine, the APU and/or propellers when performing the MSI selection. AHM should be considered in the MSI selection process.

4.8 Specific Considerations for Structures

4.8.1 The MRBR should contain information which requires a routine reporting of CPCP corrosion exceeding Level 1 to the TCH. These reports should be used to assess whether the current CPCP baseline scheduled maintenance requirements remain adequate.

4.9 Specific Considerations for Zonal

4.9.1 The zonal section within the MRBR 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 zonal section. Zonal inspection requirements apply only to zones.

4.9.2 Within the MRBR, an MSI/SSI task that is fully covered by a zonal section task must be cross referenced indicating that an MSI/SSI task is being accomplished by one or more zonal tasks. Likewise, the zonal inspection must be cross referenced as covering an MSI/SSI task to ensure content and accountability.

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

4.9.4 For traceability during future changes, all EZAP-derived stand-alone tasks (GVI, DET, RST) must be individually identified in the MRBR as arising from EZAP analysis. 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.



4.9.5 The MRBR should contain a listing of zones that do not contain system installations but receive adequate surveillance from other maintenance or structural inspection tasks and are accordingly not contained in the zonal section.

4.10 Specific Considerations for L/HIRF

4.10.1 L/HIRF tasks should reside in the Systems/Powerplant section of the MRBR. However, the MRBR may include a section for unique L/HIRF requirements rules when deemed necessary by MRB/ISC/TCH.

4.10.2 The MRBR should identify L/HIRF tasks in a manner mutually acceptable to the MRB/ISC/TCH and this shall be documented in the PPH.

4.10.3 The MRBR should contain information that L/HIRF dedicated tasks typically reside in ATA 20 of the Systems /Powerplant section of the MRBR and do not have an FEC.

4.10.4 During the L/HIRF task development if an Assurance Plan is required to support the MSG-3 analysis, the details of the Assurance Plan should be referenced in the MRBR.



5.0 MRBR Content and Format

- 5.1 The MRBR is produced by the TCH, accepted by the ISC and approved by the CA. The MRBR provides scheduled maintenance requirements and is part of the ICA requirements for the aircraft.
- 5.2 The MRB Chairperson will approve the MRBR, and revisions, in accordance with established MRBR revision procedures provided in the applicable PPH.
- 5.3 The MRBR requirements are not an operator maintenance program. After approval, the requirements become a baseline or framework around which each operator can develop its own individual aircraft maintenance program, based on the regulatory requirements of the applicable state of registration.
- 5.4 The MRBR should contain a title page and a table of contents.
- 5.5 The MRBR should contain a summary of changes for the most recent revision.
- 5.6 The MRBR should contain a record of all revision numbers and corresponding dates.
- 5.7 The MRBR should contain an 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 MSG-3 (applicable volume and revision to be identified).
- 5.8 The MRBR should contain a list of MRB/ISC/WG members who participated in the development of the initial MRBR. The personnel listing for a revision to the MRBR needs to include, as a minimum, the MRB Chairperson, the MRB representative of each VA, and the ISC Chairperson (including their organizational affiliations).
- 5.9 The MRBR should contain a preamble with the following information: "This report, together with the Airworthiness Limitations Section, provides the minimum scheduled tasking/interval requirements to be used in the development of a maintenance/inspection program for the *Make/Model/Series* aircraft. These MRBR requirements are a basis from which each operator develops its own maintenance/inspection program. Additional procedures may be required for periods of non-operation of the aircraft, e.g., parking/storage/etc."
- 5.10 The MRBR should define all acronyms used.
- 5.11 The MRBR shall include definitions of technical terms used. Whenever possible, use industry accepted definitions, such as those found in the Air Transport Association of America's (ATA), also known as Airlines for America (A4A), latest version of the MSG document and the Common Support Data Dictionary (CSDD).
- 5.12 The MRBR must identify the specific aircraft and engines make, model and series for which it is applicable.



- 5.13** The MRBR should contain information that task interval parameters expressed in the MRBR may be converted to an individual operator's desired units, provided that, in their initial program, this conversion does not result in the operator exceeding the MRBR requirements.
- 5.14** The MRBR should contain information 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.
- 5.15** The MRBR should contain a restriction that Failure Effect Category (FEC) 5 or 8 safety tasks cannot be deleted from the Operators maintenance program.
- 5.16** Task and interval requirements quoted in the MRB Report are identified from application of MSG-3 logic and shall not be unduly influenced by National Requirements coming from the Airworthiness Authority/Agency or any other body within the Country of the signing MRB member (e.g., DOT in the USA).
- 5.17** A section (or appendix) within an MRB Report may be created to identify national differences in MRB requirements. Such sections should only be required when either agreement cannot be reached between CA/VA on the outcome of the application of MSG-3 logic or there is a regulatory reason why the result must be managed in a different way by carriers operating under the registry of the signing MRB state (e.g., FAA requirements on handling Fuel Tank Safety and EWIS tasks).
- 5.18** Each signing authority is required to state which Appendices of the MRBR (if any) are covered by their approval letter. Approval letters of all signing authorities shall be included within the envelope of the published MRBR. If any historic MRBRs contain an Appendix listing CMRs, the approval letters should clearly indicate that this Appendix is not covered by the Approval letter, as CMR approval is performed by the Certification Office.
- 5.19** The section (or appendix) dedicated to specific national differences in MRB requirements may include MRB requirements from both the CA and VA. These shall be included in sub-parts to permit the Approval Letter to clearly identify their approval status. The intent is that the main body of the MRB Report is valid for all carriers irrespective of where they operate.
- 5.20** All MRBRs should include a clear statement that National Requirements are not included in the MRBR. MRBR tasks should only be derived using MSG-3 logic. The responsibility for determining if a National Requirement or an MSG-3 derived task takes priority rests with the National Authority of the state of registration.
- 5.21** In this document, all references to MRBR or revisions equally apply to modular MRB data, as long as the method to process and approve that data is described in the PPH. This process must include a method to ensure that the approval status of each piece of MRB data can be determined by an operator/end-user either within the "modules" provided, or via a summary on an approval page.



- 5.22** In this document, all references to signatures may refer to either physical signatures or electronic signatures. The use of electronic signatures may also include electronic approval of modular MRB data (as described in 5.17 above). If electronic signatures are used, the system should ensure the signature must be difficult to replicate; the signature must be traceable back to the person who authorized it; and the application of the signature must protect the document/product from later changes (or if made, the signature must automatically be shown to be invalid). The method used (if any) should be documented in the PPH and the MRBR preamble, so that the validity of a signature can be verified by an end-user of the MRBR.



6.0 Maintenance Type Board (MTB) Specifications

6.1 Maintenance Type Board (MTB) Requirements

6.1.1 The MTB process permits OEM/TCH applicants to develop scheduled tasking/interval requirements using MSG-3 when operators may not be available to participate in the process. The MTB and MRB processes are similar, except that with the MTB process one or more of the following conditions exists:

- There is no (or very limited) operator participation; or
- Operator participation is deemed to be inconsistent.

6.1.2 The use of a MTB in lieu of an MRB should be limited to smaller aircraft that are typically less complex and present fewer design/maintenance challenges. Large aircraft designed in accordance with a Transport Category Design Standard should normally use a MRB. Additionally, the use of a MTB may be restricted in specific situations by the NAA(s) involved, in which case a MRB should be used.

6.1.3 Operator participation, while not required in a MTB, should still be encouraged to the greatest practical extent. Additionally, the OEM/TCH should still solicit field input in any way appropriate.

6.1.4 Generally, if there is no specific guidance in the MTB differences section (Section 6.2), the rest of this document (the default MRB rules) will automatically apply. The MTB process is an allowable deviation from the MRB process, appropriate to the reduced scope of smaller aircraft. However, the MTB process should follow the MRB process as closely as practical.

6.2 MTB Considerations and Differences from a MRB process

6.2.1 In a MTB, the group that would be the ISC in an MRB is typically referred to as the “Steering Committee” (SC).

6.2.2 If one or more operators are available, one should serve as the SC Chair. When there is no operator participation, the OEM/TCH will name the SC Chair and Co-Chair. In this case, and when practical, the SC chair should be organizationally separate from the group that accomplished the analyses.

6.2.3 Similarly, the OEM/TCH will name WG chairs, or may combine that responsibility with the SC chair/co-chair positions.

6.2.4 Representatives of the OEM/TCH (and any operators) who will be engaged in performing or approving MSG-3 analyses for an MTB must have undergone MSG-3 training.

6.2.5 The OEM/TCH will select, whenever possible, representatives with maintenance and/or field support experience on a similar aircraft type,



system, or component as appropriate to the analyses that will be accomplished.

- 6.2.6** The TCH will assign qualified personnel to compose the WGs and perform the analyses.
- 6.2.7** The TCH will ensure that engineering and other appropriate technical support is available to the SC and WGs to support the analyses being reviewed.
- 6.2.8** At the OEM's option, the WG's may meet separately from, or concurrent with the SC. There still must be a process described in the PPH to show WG review and acceptance of an analysis prior to SC approval.
- 6.2.9** The MTB Chairperson will discuss the scope of the MTB with the OEM/TCH and decide on the number and type of regulatory personnel needed to meet the planned scope. This level of involvement will be recorded in the PPH, and may (or may not) include advisors at the WG level, at the MTB Chairperson's option.
- 6.2.10** At a minimum, the MTB chairperson will attend all SC meetings and be provided documentation of other activities (WG minutes, completed analyses, action items etc.)
- 6.2.11** Any MRB practice/form/approval elsewhere in this document may be adapted to the use by a MTB with letter substitution – a MRBR simply becomes a MTBR, and so on.
- 6.2.12** Finally, and similar to standard MRB practice, the entire process should be agreed to in advance by all parties and documented in the PPH for later review as needed.



7.0 MRBR/MTBR Utilization Considerations

- 7.1** The PPH and MRBR/MTBR should specify the aircraft utilization envelope considered in the development of the tasking requirements. Task intervals identified in the MRBR/MTBR are valid for this utilization envelope.

- 7.2** The TCH is responsible for developing a separate set of maintenance recommendations for operations outside the MRBR/MTBR utilization envelope such as low utilization maintenance programs. This is not part of the MRB/MTB process.



8.0 Evolution/Optimization of Task Intervals

8.1 Refer to Appendix 3 of this document for evolution and optimization guidelines.



9.0 Periodic Review

9.1 The MRBR is intended to be an up-to-date document and, as a consequence, the ISC Chairperson/Co-Chairperson, and the MRB Chairperson should conduct a joint review periodically, preferably annually, to determine the need and the scope for revisions.

9.2 Minimum content of a Periodic Review:

After initial issue of the MRBR, the following points have to be addressed preferably on an annual basis by the ISC chair, the MRB chair and the TCH, in a dedicated meeting or at an ISC meeting. The TCH should review significant operator in-service issues it received prior to the periodic review. The TCH should consider inputs for each point:

- WG and ISC Action Item status and previous Minutes of Meeting acceptance status
- Changes in the team
- Planning of future activities
- Design change status impacting MSG-3 analyses
- AFM-RFM revision and impact on the MRBR
- In-service main Issues and potential impact on MRBR
- Review corrosion findings and their potential effect on the baseline CPCP program
- Status and incorporation of Temporary Revisions
- Non-MSG-3 derived requirements (e.g., Inspection Service Bulletin) for their potential impact on MSG-3 analyses
- Changes to the operating environment and/or age of the aircraft fleet
- Changes in the applicability including fleet utilization and type of operation
- Fleet reliability status
- Status of sampling programs & assurance plans (e.g., Landing Gear, L/HIRF and Fatigue)
- Review of new IP's
- Feedback from certification activities impacting the MRBR (e.g., changes in the ALS)
- New interpretations of MSG-3 requirements by the CA
- New retroactive airworthiness requirements (e.g., FAA 14 CFR Part 26, EASA Part-26, EWIS)
- Review of MWGs results
- Review of the open assumptions made during MSG-3 analysis
- Review of non-MSG-3 and non-ALS related tasks coming from ICA for certified products (e.g., Engine, Propeller) for their potential impact on MSG-3 analyses
- Review of the status of Vendor Recommendations and related changes (ref. par. 4.6.5) for their potential impact on MSG-3 analyses



- 9.3** The TCH should document results of reviews for inclusion in their historical file.
- 9.4** If needed, the ISC Chairperson/Co-Chairperson and the MRB Chairperson will evaluate any proposed changes, which would normally be accomplished at an ISC meeting. Approval or non-approval of the proposed changes shall be processed in the same manner as outlined for the initial MRBR approval/non-approval.



10.0 Coordination with Other NAA's & Other Miscellaneous Guidance

- 10.1 The MRB chairperson is responsible for coordinating with other participating regulatory authorities.
- 10.2 The MRB Chairperson will invite other regulatory authorities, in coordination with the TCH, to participate in the MRB, which includes coordinating the MRB activities with those regulatory authorities.
- 10.3 The VA focal person will determine the VA initial and ongoing level of involvement and communicate their needs to the MRB Chairperson. These needs will be agreed to by the letter of confirmation.
- 10.4 The MRB Chairperson will issue letters of confirmation to each VA and guest participating regulatory authority. The letter of confirmation will detail the scope of the agreed VA/guest involvement, CA expectations of the VA/guest, communications procedures, and additional CA responsibilities to ensure that the MRB process meets VA needs (if any). See Appendix 2, Figure 5 for an example.
- 10.5 The MRB Chairperson will inform the ISC Chairperson /Co-Chairperson of all participating regulatory authorities.
- 10.6 The MRB Chairperson will keep other regulatory authorities informed regarding any changes to MRB policy and procedures before and during the MRB process.
- 10.7 Multiple regulatory acceptance and or approvals of the PPH, MRBR/MTBR, including revisions thereof, may or may not be required depending on the validation requirements of the VA.
- 10.8 When a VA MRBR/MTBR approval is required, as part of a joint certification, it is preferred for the CA and VA to simultaneously issue their approvals, including revisions thereof, as coordinated by the MRB Chairperson.
- 10.9 Representatives of the VA should notify the ISC Chairperson/Co-Chairperson, via the MRB Chairperson, of any differences in the application of MSG-3 before compiling the MRBR proposal.



APPENDIX 1

POLICY AND PROCEDURES HANDBOOK (PPH) SUGGESTED CONTENT

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.

While a possible format is suggested below, there is no requirement that all topics be covered in the same order as the example, just a request that these topics should all be considered for inclusion in the PPH. The order and detail of each topic heading will naturally be specific to each project, and should be agreed upon between the TCG, ISC and MRB. 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, in order to successfully apply the latest version of the Maintenance Steering Group (MSG) process in order to development 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 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 IP44, MRB Evolution/Optimization Guidelines
- 1.13 MRBR Periodic Review

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 Certifying Authority MRB 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 Version of MSG Revision Used
- 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
- 2.7 ISC and WG Governance Rules
- 3. Systems and Powerplant Analysis Procedures**
 - 3.1 General
 - 3.1.1 Handling and Tracking of Tasks Covered by Zonal or between WGs.
 - 3.1.2 Handling and Tracking of Task Transfers amongst Systems and Powerplant WGs
 - 3.1.3 Handling and Tracking of the Assumptions made during MSG-3 analysis
 - 3.1.4 Specific Concerns for Rotorcraft Rotor and Drive Systems (if applicable)



- 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 (SFD) Form
 - 3.2.4 Component Supplier and Maintainability and Reliability Data (MRD) 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 The Certification Maintenance Requirements (CMR) Process
 - 3.6.1 CMR Process
 - 3.6.2 Certification Maintenance Coordination Committee (CMCC)
 - 3.6.3 Documentation and Handling of CCMRs
 - 3.6.4 ISC and MRB CCMR 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 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 Stress Engineering Interface (*FD for non-PSE portion of SSIs*)
 - 4.6.2 FD within MSG-3 (*FD for non-PSE portion of SSIs*)
 - 4.6.2.1 Feasibility and Applicability of FD Tasks
 - 4.6.2.2 FD Inspection Threshold
 - 4.6.2.3 Selection of Inspection Intervals
 - 4.6.2.4 Feasibility of an FD Sampling Program
 - 4.7 Composite Structure (Non-metallic)
 - 4.7.1 Non-metallic 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 (Non-metallic)
 - 4.8 Program Implementation Guidelines
 - 4.9 Analysis Forms
 - 4.9.1 Structure Rating Form
 - 4.10 Responsibilities
 - 4.11 Analysis Considerations
- 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 Lightning/High Intensity Radiated Field (L/HIRF) Protection System Analysis Procedures

6.1 Introduction

6.2 L/HIRF Analysis Procedure

6.3 Logic Diagram and L/HIRF Procedural Steps

6.4 Proposed Process

- 6.4.1 L/HIRF Working Group (LHWG) Process for Connector
- 6.4.2 LHWG Process for Connector Analysis—Fuselage
- 6.4.3 Maintenance Inspection of Wing Tanks

6.5 L/HIRF Forms

6.6 List of L/HIRF Significant 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 PPH Acronyms and Abbreviations

Appendix B ISC, MRB and WGs

Appendix C MSI and Analysis List Items

Appendix D SSI List or Applicable Document

Appendix E Fuel Tank Safety Guidelines

Appendix F Glossary and Definitions

Appendix G Regulatory Documents

Appendix H Policy Letters and IP's

Appendix I Temporary Revision Process

Appendix J IP44 MRB Evolution/Optimization Process

References



APPENDIX 2

RELEVANT FLOWCHARTS AND LETTERS

FIGURE 1 – MAINTENANCE PROGRAM DEVELOPMENT PROCESS SELECTION

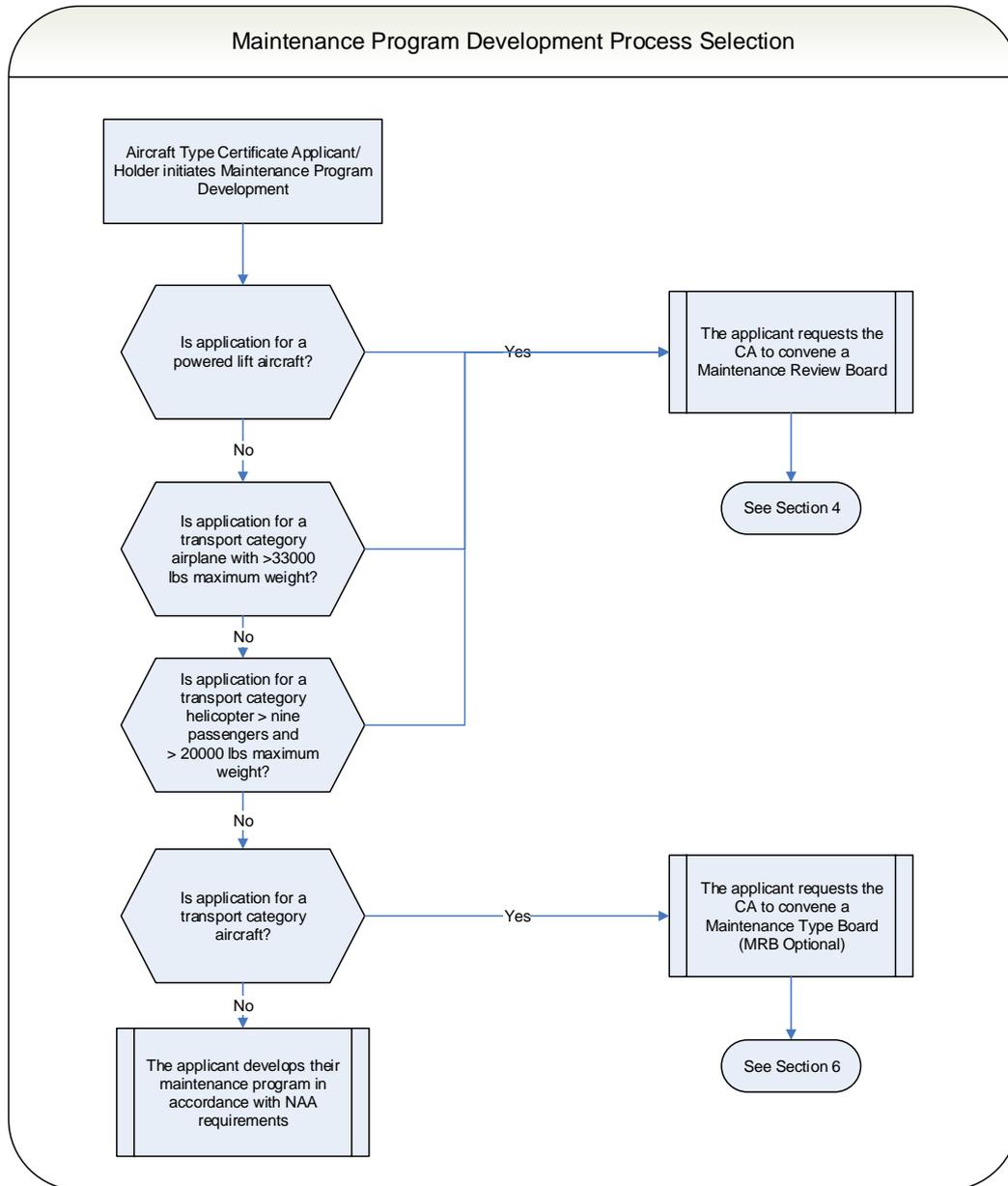




FIGURE 2 – MAINTENANCE REVIEW BOARD PROCESS FLOWCHART

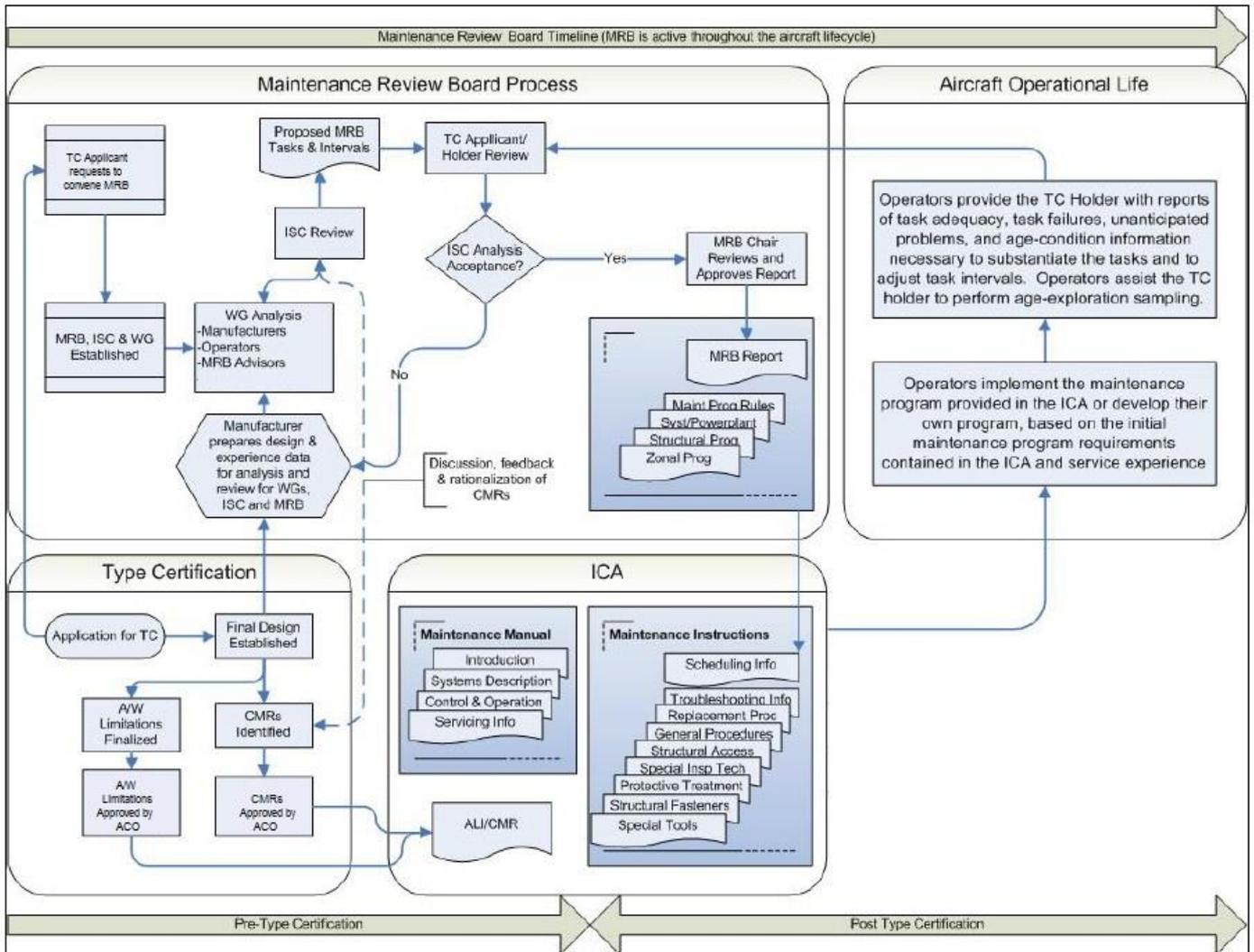




FIGURE 3 – MAINTENANCE TYPE BOARD FLOWCHART

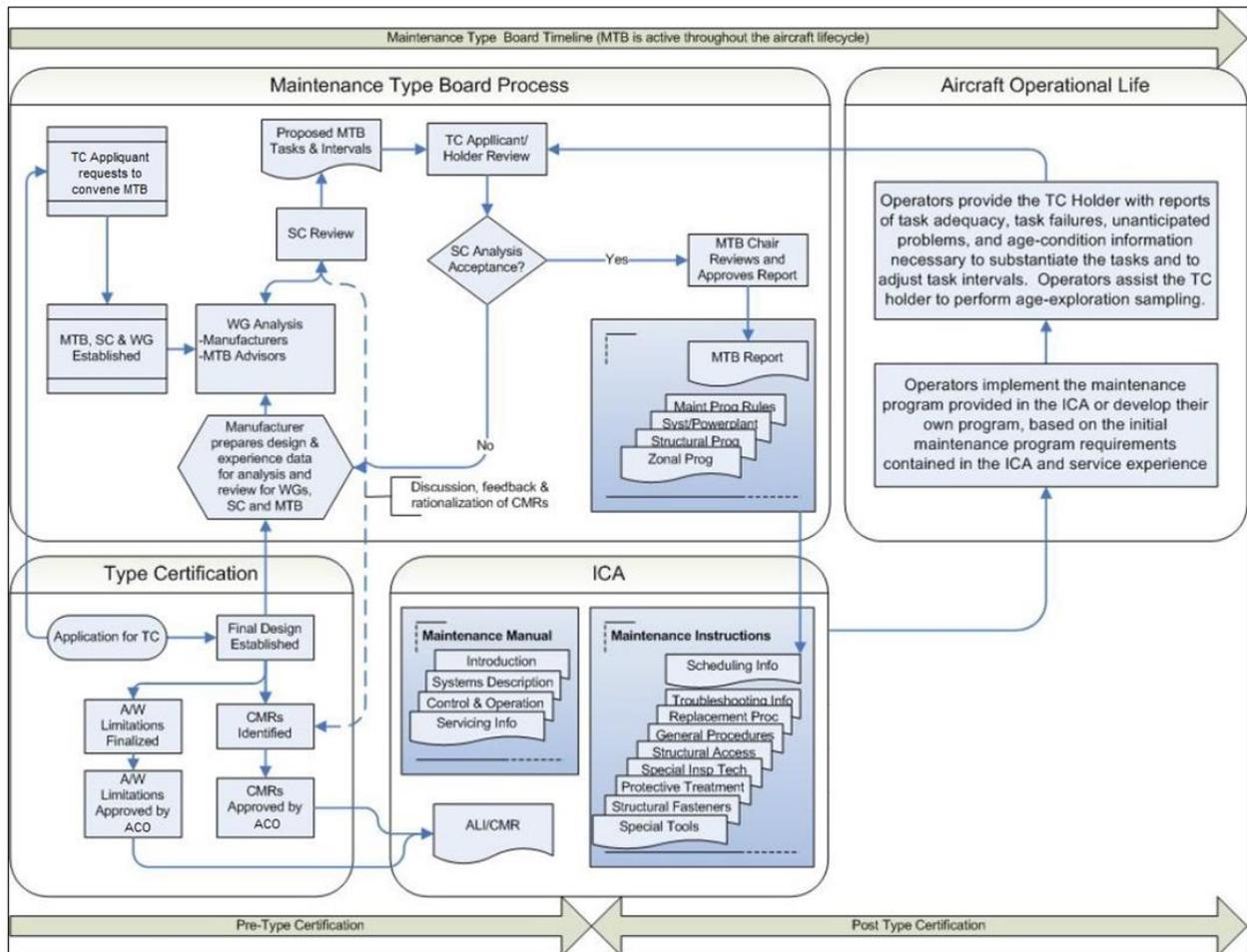


FIGURE 4 – OEM/TCH REQUEST FOR A MAINTENANCE REVIEW BOARD

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 NAA 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 NAA-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 the IMRBPB Process Standard 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 NAA 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 5 – LETTER OF CONFIRMATION EXAMPLE

NOTE: The following is an example of a letter to send to VA Focal showing the agreement between the CA and VA. Copy the Industry Steering Committee (ISC) chairperson, and type-certificate holder (TCH).

Subject: TCH A/C model/type, MRB activity

Dear “Validating Authority (VA) Focal”:

Per “Certifying Authority (CA)” guidance, I would like to offer this letter of confirmation regarding the “TCH aircraft Type” aircraft, MRBR activity.

As the CA authority for the “TCH aircraft Type” Aircraft we “CA” would like to define our requirements in accordance with our guidelines and as per the process agreed by IMPS, which outlines the process for VA approval.

This confirmation letter outlines our working relationship with your authority. VA’s will perform the following functions regarding the “TCH aircraft Type” Aircraft MRB activities:

1. Participate in the development and acceptance of the PPH. Any CA regulatory differences will be defined in an appendix to the PPH.

Any regulatory differences that might lead to multiple versions of an MSG-3 analysis must be elevated to the level of the CA MRB management team for resolution prior to PPH acceptance.

2. “VA’s” will coordinate all requested PPH differences and changes through the “CA” MRB Chairperson.

3. Participate in the MRB WG activities, inform the “CA” WG Advisor of any national regulatory or technical differences. The “CA” Advisor will solicit regulatory concurrence from the other VA’s.

In addition, any regulatory differences between the CA and other VA’s at the completion of the MRB process shall be documented in a separate MRBR appendix/section.

4. The “CA” Advisor will ensure the conversation or debate over an issue ends in a timely fashion to ensure the completion of WG activities in an appropriate timeframe.

“VA” MRB advisors shall write any concerns/comments that they may have to the “CA” MRB advisor. The “CA” will review these comments and discuss them with the “VA” MRB advisor as necessary before providing a consolidated set of comments to the applicant. This compilation shall clearly identify any comment that is specific to one or more NAA.

Conversely, if agreed by all NAA and TCH, comments may be submitted to TCH directly.



5. Attend ISC meetings, by invitation from the ISC Chairperson released through TCH, in coordination with of the “CA” MRB Chairperson.

6. Notify the ISC Chairperson, via the “CA MRB Chairperson”, of any national regulatory differences before compiling the MRBR proposal.

“VA” MRB members shall write any concerns/comments that they may have to the “CA” MRB Chairperson. The “CA” will review these comments and discuss with the “VA” as necessary before providing a consolidated set of comments to the applicant. This compilation shall clearly identify any comment that is specific to one or more NAA.

Conversely, if agreed by all NAA and TCH, comments may be submitted to TCH directly.

The final responsibility of the “VA” will be to coordinate with the “CA”, the MRBR approval and any appendixes/section if applicable.

After agreement has been reached on the content of the MRB Report, the “CA” MRB Chairperson shall coordinate with each signing VA to agree the approval date. Excepted in unique circumstances and in order not to delay the approval, no Approval letter shall be provided to the applicant until all signing NAA are ready to give their approval.

In any case, validating authorities should not issue an approval letter prior the CA.

Sincerely,

“CA”



NOTE: The following is an example of a letter to send to “guest National Aviation Authority (NAA)” focal when the “guest” NAA is planning to attend MRB activities, but *not* approve the MRBR. Copy the Industry Steering Committee (ISC) chairperson, and type-certificate holder (TCH).

Subject: [TCH] [A/C Model Type], MRB activity.

Dear Sir,

Per [CA] procedures, I would like to offer this letter of confirmation regarding the [TCH] [A/C Model Type] MRB activity.

As the CA for the [TCH] [A/C Model Type], we, [CA] would like to define our requirements in accordance with our guidelines and in line with the process agreed by IMPS for guest regulatory authorities.

This letter will serve as the confirmation letter outlining our working relationship with [NAA].

As per e-mail(s) dated [Date], [CA] welcomes [NAA] to participate only in advisory capacity to the [TCH] [A/C Model Type] MRB process and not to approve the MRB Report.

[NAA] will perform the following functions regarding the [TCH] [A/C Model Type] MRB activities:

1. During the PPH development [NAA] might issue comments through the [CA] MRB Chairperson.
2. Participate in the MRB MWG activities, under the coordination of the [CA] MWG Advisor.
3. The [CA] MWG Advisor will ensure the conversation or debate over an issue ends in a timely fashion to ensure the completion of MWG activities in the allotted time.
4. Attend ISC meetings by invitation from the ISC Chairperson released through [TCH] in coordination with the [CA] MRB Chairperson.
5. Notify the [CA] MRB Chairperson of any [NAA] regulatory issue.

Please confirm agreement with this letter.

Sincerely,

“CA”



APPENDIX 3

IP44 Evolution

1.0 Introduction

The guidance in this document is intended for use by those Original Equipment Manufacturer/TC Holder (OEM/TCH) and Maintenance Review Board (MRB)/Industry Steering Committee (ISC) members who are involved with the evolution/optimization of tasks in a current MRB Report (MRBR). This guidance shall be applied for evolution / optimization activities where no official correspondence has been forwarded to the airworthiness authorities or for activities to be finalized (MRBR proposal / MPP submittal) after April 2009. The following framework is provided as guidance within which proposals to amend the MRBR shall be developed and assessed.

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

The OEM/TCH Evolution/Optimization process does not assume any operational control over an operator's maintenance program.

Note: When intervals are stated in this document it includes both threshold and repeat values.

2.0 Purpose

While this guidance is not intended to be exhaustive it shall be utilized 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 process.

Evolution / Optimization of a task through the management of data is a means to assure the continued applicability and effectiveness of the task while at the same time 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 for 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.

3.0 Policy Description

OEM/TCH must meet the policy requirements defined by the regulatory Authorities of the country of origin; and shall define further details and procedure clarifications in the PPH. As the PPH is a living document, a response shall be given within 60 days after ISC acceptance/OEM submission.

Where applicable PPH revisions shall be coordinated and approved by the MRB/ISC.



In-service data both scheduled and unscheduled maintenance findings related to the intent of the MSG-3 task should be evaluated.

Relevance and significance of findings should be weighed.

Data format and content should be standardized (ATA SPEC 2000 chapter 11 or equivalent).

Data quality, integrity, completeness and clarity must be ensured.

Each and every task shall be considered individually.

Original design and engineering specs shall be reviewed as required.

All information's related to continue airworthiness should be reviewed (AD, SB, In-service reports/letters, modifications/repairs, etc.)

MRBR task Evolution / Optimization shall be based on worldwide representative samples that span the operating environment and age groupings of the aircraft.

Interval Evolution / Optimization should be based on risk management. Risk Management is the systematic application of management policies, procedures and practices to the tasks of identifying, analyzing, evaluating, treating and monitoring risk.

Safety management principles shall be used 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.

Statistical models should be applied to support the Evolution / Optimization exercise.

In a data-driven statistical decision-making 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% 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.

Sufficient data shall be collected by the OEM/TCH that would 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.

Task effectiveness should be measured and demonstrated. I.e., ability to:

- detect/prevent defects prior to loss of function/structural integrity
- Mitigate risk of exposure to hidden defects

Operator's and regulator's feedback shall be recorded and dispositioned.



The effectiveness and integrity of the process is ensured by collecting in-service data in an ATA SPEC2000 chapter 11 format or equivalent, analyzing it, and comparing the results with existing MRBR task requirements.

This policy allows for Evolution/Optimization of MRBR, scheduled maintenance tasks, intervals, and enhances the use of reliability-driven maintenance analysis processes.

The MRBR is adjusted based on performance data and analysis processes. However, operator reliability programs should still continue to ensure continuous Evolution/Optimization of their maintenance programs.

The OEM/TCH Evolution/Optimization process does not assume any operational control over an operator's maintenance program.

When a TCH is applying IP44 to MRBR tasks that have been used to cover Candidate CMRs in accordance with a CMCC coordination process, the earlier CMCC decisions shall be revisited to ensure that they are not invalidated by any proposed revision to the MSG-3 task.

4.0 Responsibilities

Approving Authorities shall be notified in writing by the OEM/TCH Applicant of their intent to begin an evolution / optimization 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 the OEM/TCH of their intent to participate in the Evolution/Optimization exercise for a given fleet or model.

4.1 OEM/TCH (PPH Amendment and ISC/MRB Acceptance/Approval)

OEM/TCH shall include within the PPH the policy requirements and criteria as contained within this document. OEM/TCH shall further define the details and procedural actions necessary to conduct the Evolution / Optimization exercise. This plan shall be coordinated with and approved by the MRB/ISC.

Where documents that support the Evolution / Optimization are incorporated by reference within the PPH, the current document number and revision number must be stated.

4.2 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.

4.3 Data Format

The OEM/TCH shall utilize 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 SPEC2000 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.

4.4 Regulatory Authorities

It is incumbent on the OEM/TCH to demonstrate to the Regulatory Authorities compliance with these guidelines for all and any Evolution/Optimization MRB task adjustment.

5.0 Data Quality

The OEM/TCH should have a system in place that allows for the collection of data found during operator's task accomplishment 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 shall include the following information:

5.1 Aircraft Age

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

5.2 Geographical or Operational Environment Representation, as appropriate

MRB task interval adjustments shall be based on in-service data collected from a representative sample which spans all operating environments. The data shall 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 shall be provided in the report.

5.3 Number of Tasks Accomplished

The number of times the task has been accomplished including "nil/no findings" shall be captured and used in the evaluation. Participating operators should provide task findings and non-routine write-ups for the related tasks of the sample fleet for the Evolution / Optimization exercise reporting period.

5.4 Interval of Tasks findings applied

Actual task interval of each participating operator shall be captured and evaluated.



Note: The actual intervals may vary between operators and may be different from MRBR requirement.

The impact of these variations shall be assessed and accounted.

5.5 Component Data (Shop Findings, No-Fault-Found Removals and Failures), as applicable.

Information regarding component removal and replacement activity and vendor repair documents should be evaluated, as applicable where available. This information provides the data necessary to perform component failure-mode and life-cycle analysis which is necessary to support the Evolution / Optimization of the tasks associated with the component.

5.6 Correct Mapping to the MRBR task, if applicable.

Non-routine write-ups and in-service findings should be linked to appropriate MRBR tasks, as applicable. Only findings related to the MSG-3 task intent are relevant.

5.7 Failure effect category considerations

MRBR task interval optimization is based on principles that reflect the criticality of airplane systems, components, identified during MSG-3 analysis. Failure Effect Categories should be accounted for during the analysis.

5.8 Operational Representation Flight Hour vs. Cycles, Calendar time

Aircraft utilization (flight hours or cycles, as applicable) should be captured and evaluated. Summary of fleet wide service experience high time aircraft (hours, cycles, years), time in-service, daily utilization (high, low, average), etc shall be included in the analysis report.

5.9 Consecutive tasking requirements, if available

To the extent possible, consecutive task check data should be captured 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.

5.10 Unscheduled maintenance findings, as applicable

Mechanical irregularities and the resulting corrective actions captured from pilot reports and maintenance reports should be reviewed, as applicable.

Unscheduled maintenance is a prime indicator of the effectiveness of the scheduled maintenance program.



5.11 Scheduled maintenance findings:

- a. Routine maintenance tasks that generate no findings. Tasks that generate no findings are as important as tasks that generate findings in determining failure-mode and life-cycle analysis.
- b. Routine maintenance tasks that generate non-routine cards. These findings, which require corrective action, involve structures, area/zonal, and aircraft systems categorized by ATA chapter.

5.12 Unrelated significant findings, if applicable

Operators should capture significant non-routine write-ups 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.

5.13 Four digit ATA code, if available

To the extent possible, operators should provide four digit ATA code for scheduled / unscheduled maintenance write-ups to facilitate transfer of findings to appropriate MRBR tasks.

5.14 Serial Number of Aircraft

Aircraft manufacturer serial number that uniquely identifies each aircraft in the sample fleet shall be provided by the operator.

6.0 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. It is achieved by preventing accidental or deliberate, but unauthorized insertion, modification or destruction of data in a database.

6.1 Data Validation

OEM/TCH shall have a data validation which:

- a. Verifies that operator data is converted to ATA SPEC2000 chapter 11 or equivalent standard format
- b. Ensures that all required data elements and attributes are satisfied for submitted data.

6.2 Audit system

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



7.0 Data Review

7.1 Analysis Schedule - Evolution/Optimization 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 since the last interval adjustment. In both cases, data sufficiency is measured by the level of confidence as stipulated in these guidelines.

7.2 Statistical Analysis

OEM/TCH shall develop and implement a statistical analysis system to provide justification that a 95% level of confidence has been achieved for the Evolution /Optimization exercise on a task by task basis. Exceptions can be presented and may be approved at the discretion of the approving Airworthiness Authorities.

7.3 Engineering analysis

Engineering analysis will verify that findings are relevant to the scheduled task under evaluation. Non-routine write-ups will be evaluated to determine the significance or severity of findings. Pilot reports 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 shall be considered and evaluated.

7.4 Modification Status, AD, SB, SL, etc.

All information related to the task (service bulletins, Airworthiness Directives, service letters, and other in-service reports/resolutions, as applicable) should be reviewed.

Fleet configuration, should also be assessed.

7.5 Internal Review

OEM/TCH shall develop and implement internal quality procedures to review and validate MRBR revision process as defined in the PPH.

OEM/TCH shall develop and implement internal process to validate MRBR revised tasks and/or intervals resulting from evolution or demonstrate that an equivalent written internal process already exists to reach the same intent (not required before April 2010).

7.6 Servicing Tasks

Scheduled servicing (e.g., lubrication /oil replenishment) task data will not normally result in reported related findings. For these tasks, Engineering assessment and analysis is the primary method to be used to support an evolution / optimization. The engineering assessment must take into account the negative long-term effects (e.g., corrosion) resulting from inappropriate servicing intervals.



7.7 Restoration/Discard Tasks

For many restoration/discard tasks, fault findings will not typically be recorded in the performance of the task. In these cases, an engineering assessment of shop/teardown data should be performed. This engineering analysis should assess the rate of wear, corrosion, and degradation of lubricants or other included components.

7.8 Tasks having no, or low, on-aircraft accomplishment

Tasks having no, or low, on-aircraft accomplishment should not be automatically excluded from evolution. These tasks may be reassessed using a combination of the data originally considered in the initial analysis and any additional current data to determine if the task and interval remain applicable and effective.

8.0 Data Correlation

MTBUR, MTBF, PIREPS, non-routines, technical follow-up on open technical issue, and all other pertinent data, as applicable, should be correlated.

8.1 Working Group Activity

Interval Recommendation to the ISC (e.g., Increase, decrease, remain the same, introduction of new task, or task deletion).

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 supports interval reductions. Task may also be deleted when it is determined that the task is ineffective or the failure mode for which the task was selected never developed due to effective design provisions.

Task deletion, addition, or modification of intent requires new/revised/amended MSG-3 analysis. However, complete re-analysis of the MSG-3 package is not required. Any decision together with justification shall be recorded and traceable in the associated MSG-3 analysis. Applicability and affectivity criteria as specified in MSG-3 shall be observed.

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 is available, this interval may be referred to as the P to F interval.). Consecutive task accomplishments should be assessed to show that failures are not occurring before the new initial interval.

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 shall be referred or mentioned in the PPH for ISC and Regulatory Acceptance.

- (a) ISC Review Acceptance of MRBR



ISC shall insure all PPH guidance has been followed and applied.

b) MRBR Review Approval Acceptance by MRB

MRB shall insure all PPH guidance has been followed and applied.

c) MRBR Release



APPENDIX 4

List of Abbreviations and Glossary of Terms

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	Aircraft Flight Standards
AHM	Aircraft Health Monitoring
ALI	Airworthiness Limitation Item
ALS	Airworthiness Limitation Section
AMM	Aircraft Maintenance Manual
AMOC	Alternative Method of Compliance
ATA	Air Transport Association of America, Inc.
CAA	Civil Airworthiness Authority
CA	Certifying Authority
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 Approval Holder
DET	Detailed Inspection
DIS	Discard
DSO	Design Service Objective
DTA	Damage Tolerance Assessment
DTR	Damage-Tolerance Rating
DY	Daily
EAPAS	Enhanced Airworthiness Program for Airplane Systems
ECM	Engine Condition Monitoring
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
FADEC	Full Authority Digital Engine Control
FC	Functional Check
FNC	Functional Check
FD	Fatigue Damage
FEC	Failure Effect Category
FH	Flight-Hours



International MRB Policy Board

FLT	Flight
FMEA	Failure Mode and Effects Analysis
FOEB	Flight Operations Evaluation Board
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
L/HIRF	Lightning/High Intensity Radiated Field
LU/LUB	Lubrication Task
MEA	Maintenance Engineering Analysis
MEL	Minimum Equipment List
MFG	Manufacturer
MMEL	Master Minimum Equipment List
MPD	Maintenance Planning 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
RMPIG	Rotorcraft Maintenance Program Industry Group
RS	Restoration
RST	Restoration



SATO	Statistical Analysis Tasking Optimization
SDI	Special Detailed Inspection
SID	Supplemental Inspection Document
SI	Structural Inspection
SSA	System Safety Assessment
SSI	Structural Significant Item
SSID	Supplemental Structural Inspection Document
STWG	Structures Working Group
SVC	Servicing Task
SWG	Structures Working Group
TBD	To Be Determined
TCDS	Type Certificate Data Sheet
TCH	Aircraft Type-Certificate Holder or Applicant
TLD	Time Limited Dispatch
UV	Ultraviolet
VA	Validating Authority
VC	Visual Check
VCK	Visual Check
VTOL	Vertical Take-Off and Landing
WG	Working Group
ZA	Zonal Analysis
ZIP	Zonal Inspection Program
ZWG	Zonal Working Group

Certifying Authority

The regulatory authority responsible for initial certification of an aeronautical product and would typically also be identified as the state of design. Normally the CA provides the MRB Chairperson during the MRB process.

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.

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.

Line Maintenance

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

Non-metallics

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 non-metallics. Non-metallics include adhesives used to join other metallic or non-metallic structural materials.

Non-Routine Task

A task is non-routine when it is not a planned/scheduled task coming from the operator's/maintainer's maintenance program.

Pilot Report (PIREP)

Suspected or known malfunctions or unsatisfactory conditions that are entered by the flightcrew into the aircraft log and require maintenance action.

Maintenance Review Board (MRB) Chairperson

An airworthiness inspector/expert competent in the MRB process, who must have system/structures training on particular aircraft and have Maintenance Steering Group—3rd Task Force (MSG-3) formal training.

Risk Management (RM)

The systematic application of management policies, procedures, and practices to the tasks of identifying, analyzing, evaluating, treating, and monitoring risk.

Safety Management

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

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.

Unscheduled Maintenance

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

Validating Authority

Either an authority that is responsible for validating the initial CA MRBR as defined in the letter of confirmation, or who carries out a post certification validation exercise, whether the validating authority signs the MRBR or not.