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European Union Aviation Safety Agency

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2019 EASA – FAA International Aviation Safety Conference

Panel 6 – Aircraft Maintenance – Evolution of the MRB Process

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Welcome

Moderator – **Tony Harbottle**

(Expert – Maintenance Programs, Airbus)

Introduction and Round the Table

→ **Ralf Erckmann**

Deputy Flight Standards Director,

Head of Maintenance and Production Department, EASA

→ **Tim Shaver**

Director, Office of Safety Standards, Flight Standards Office, FAA

→ **Jeffrey Phipps**

Chief, Operational Airworthiness, Standards Branch, TCCA

→ **Kayode Ariwodola**

Manager, Maintenance Programs Engineering – Customer Support Engineering, Boeing

→ **Christina Ruckhaber**

Project Manager Maintenance Programs, Lufthansa Technik

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MRB Process General Info

Moderator – **Tony Harbottle**

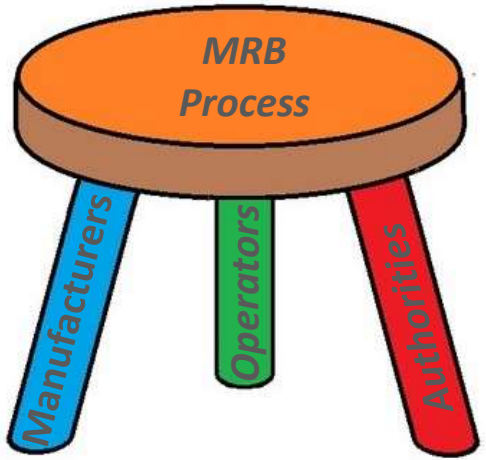
MRB Process – General Info

The **Maintenance Review Board (MRB) Process** is an internationally recognized process used by Type Certificate applicants **to comply** with the part of the 2x-1529 & Appendix H / Appendix A "Instructions for Continued Airworthiness" requirement relating to **scheduled maintenance**.

The resultant MRB Report (together with Airworthiness Limitations) provides operators with the minimum set of requirements to establish their initial maintenance program and contributes to **maintaining continued airworthiness**.

Involving **Authorities, Manufacturers and Operators**, the MRB process considers **economic** and **operational aspects** in addition to **safety aspects**.

This is often referred to as a three-legged-stool approach: through its own specific contribution, each of the three actors ensures a good balance permitting a stable and robust product. Missing or insufficient contribution could compromise the result.



MRB Process – General Info

Under the regulatory environment of the worldwide air transportation industry, the **MRB process**, **using MSG-3 as a tool,** has been the de facto **industry standard for almost 40 years**.

MSG-3 is **successfully used by all major civil A/C manufacturers** *(Airbus, Airbus Helicopters, ATR, Bell Helicopters, Boeing, Bombardier, Cessna, Comac, Embraer, Gulfstream, Irkut, Leonardo Helicopters, Mitsubishi, Sukhoi, etc…)* to establish aircraft level scheduled maintenance requirements including on-wing engine tasks.

MRB Process and MSG-3 are **maintained up-to-date** through the **effective and continued participation** of the major Regulatory Authorities and Industry (TCHs and Operators) to the **International MRB Policy Board** activity.

Alternative methods (processes and tools) to develop scheduled maintenance **may be acceptable** as long as it can be **demonstrated** that they provide the **same level of safety, operational and economic** performance.

MRB Process – Areas of Improvement

- ***Evolution of activities and working methods:***
  - Implementation of Bilateral Agreements
  - TCH's autonomy
  - Operator's involvement
  - Update of MRB Process, related Guidance Material and Applicable Standards (MSG-3)
  - New ways of working
- **Consequences *:***
  - Less duplication of efforts
  - More collaboration with Bilateral Partners
  - More trust on TCH's autonomy
  - More inputs from the Operator's world
  - More efficient tools
  - Anticipating future technological enhancements

Panel 6 Goal:

TO COLLECT INPUTS FOR CONTINUOUS OPTIMIZATION OF THE MRB PROCESS

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EASA Perspective

Panellist – **Ralf Erckmann**

(Head of Maintenance and Production Department, EASA)

EASA Commitment to the MRB Process

- Upon Industry request, EASA has taken over since its early days the former JAA's support to MRB Processes

- Since then EASA has:
  - Worked on about 100 MRB projects with 23 TCHs worldwide, approving 700+ MRB Reports Revisions / Temporary Revisions
  - Played a leading role to the IMRBPB activities, promoting to the continuous evolution of the MRB and the MSG-3
  - Implemented the International MRB Process Standard into a Certification Memoranda (CM-MRB-001)
  - Agreed on reciprocal acceptance with bilateral partners

Implementation of Bilateral Agreements

Strategy

- Use existing BASAs
- Reciprocal Acceptance of findings & approvals
  - MRB processes and procedures are substantially identical
  - Minimal differences among the two Authorities
  - Full confidence in each other's approval / acceptance system
- Transition period provisions for ongoing initial Reports and living exercises
- Set of underlying conditions for Reciprocal Acceptance

EASA - FAA → Amendment introduced in TIP rev 5.1, signed on 24 Mar 2017 and then embodied into TIP rev 6, signed on 22 Sept 2017

EASA - TCCA → Amendment introduced in TIP rev 4, signed on 10 Dec 2018

Vision for the future

- Continuous support to the IMRBPB activities with the goal of a continued harmonisation and standardisation of the MRB process at international level
- Cooperation with TCHs to improve MRB efficiency by working on:
  - New working methods and digitalisation
  - Data module concepts
  - More TCH autonomy on routine tasks at project level
- Introduction of new maintenance technologies
- Risk Based Approach to identify, at single MRB project level, critical areas where improvements can lead to a more efficient and effective process
- Fostering cooperation with Operators
- Further BASAs amendments (e.g. Brazil, Japan, China…) under evaluation, pending the continuation and positive results of confidence building

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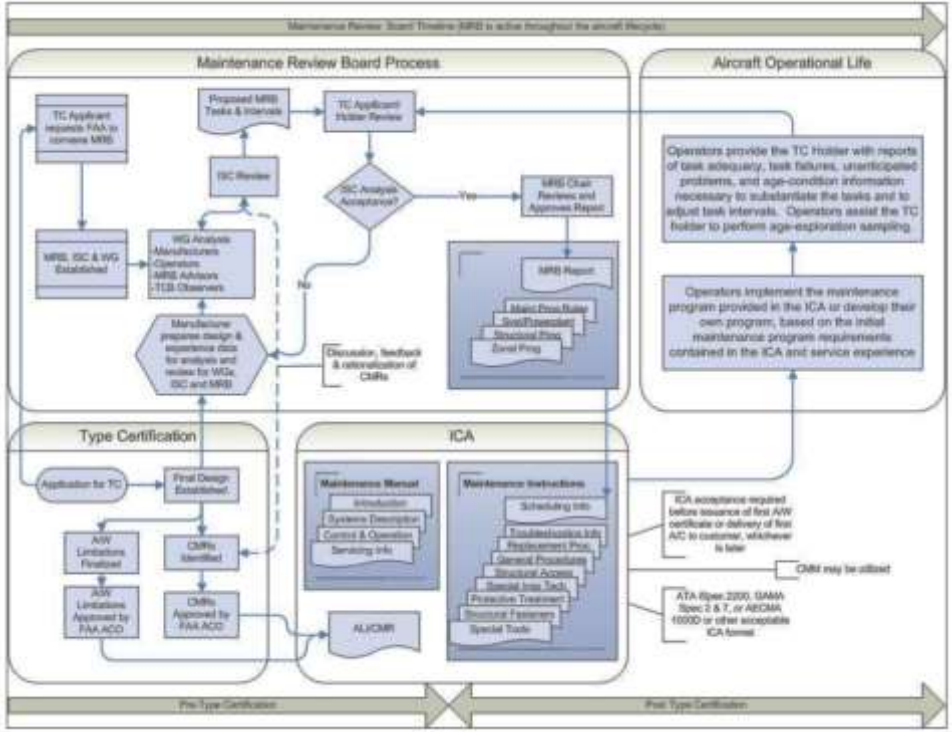
FAA Perspective

Panellist – **Tim Shaver**

(Director, Office of Safety Standards, Flight Standards Office, FAA)

Aircraft Maintenance - Overview



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IMRBPB - Global Collaboration and Industry Concerns

- ***Issue Identified: To further improve communication between industry and regulatory authorities***
  - Proposal: a communication initiative. The IMRBPB and MPIG / RMPIG will host a once a year, face to face meeting, outside of the yearly IMRBPB meeting, comprised of only the IMRBPB and MPIG / RMPIG Leadership Teams to keep costs at a minimum
    - Also, additional Web-Ex meetings will be incorporated into this communication initiative, as needed
    - Communication Initiative will increase: understanding, efficiency, robustness and process optimization

- ***Conclusions:***
  - IMRBPB will move forward with a communication initiative with industry
  - Work together to facilitate the introduction and maturing of Integrated Aircraft Health Monitoring (IAHM)

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TCCA Perspective

Panellist – **Jeffrey Phipps**

(Chief, Operational Airworthiness, Standards Branch, TCCA)

TCCA Commitment to the MRB Process

- First authority to allow the use of MSG-3 and the MRB process for Part 25 Business aircraft
- Developed the initial CCMR / CMCC integration process to allow safety route MSG-3 tasks to take credit for CCMR's. This concept was later introduced into MSG-3 in 2007
- TCCA jointly developed the initial HIRF/Lighting MSG-3 analysis with the FAA
- First Certifying Authority to apply MSG to a rotorcraft, which led to the development of MSG-Volume 2

TCCA Support of the International MRB Policy Board

- Approximately 13 TCHs, 7 Operators, as well as IATA and several MRO's, and Consultants, attended this years meeting of the International MRB Policy Board (IMRBPB)
- On-going commitment to adopt MSG-3 with new and emerging technologies in order to maintain efficiency and effectiveness
- Over the past 26 years the IMRBPB has developed approximately 11 revisions to MSG-3, including the development of MSG-3 volume II for Rotorcraft
- The IMRBPB has also recently accepted an amendment to MSG-3 for use with Aircraft Health Monitoring systems that will be part of the next revision planned for 2021

TCCA Future Commitment to the MRB Process

- In 2014 TCCA took the lead role to develop the International MRB Process Standard (IMPS) which is currently being implemented by IMRBPB member authorities and is being used as the basis for mutual recognition of the MRB process between authorities

- Where possible, TCCA is updating international agreements to reflect mutual recognition of the MRB process. Revision 3 to the TCCA / FAA IPA being planned for late 2019, which will include mutual recognition of the MRB process with the FAA

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Manufacturer's involvement

Panellist – **Kayode Ariwodola**

(Manager, Maintenance Programs Engineering – Customer Support Engineering, Boeing)

Manufacturer’s involvement

- Integrate process with airplane development program milestones
- Share aggregated data provided by operators from in-service airplanes
- Technology platform to:
  - document Significant Items & decisions
  - review design features effectively
  - distribute maintenance tasks to end users

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Operator’s involvement

Panellist - **Christina Ruckhaber**

(Project Manager Maintenance Programs, Lufthansa Technik)

Involvement according to specific MRB program needs

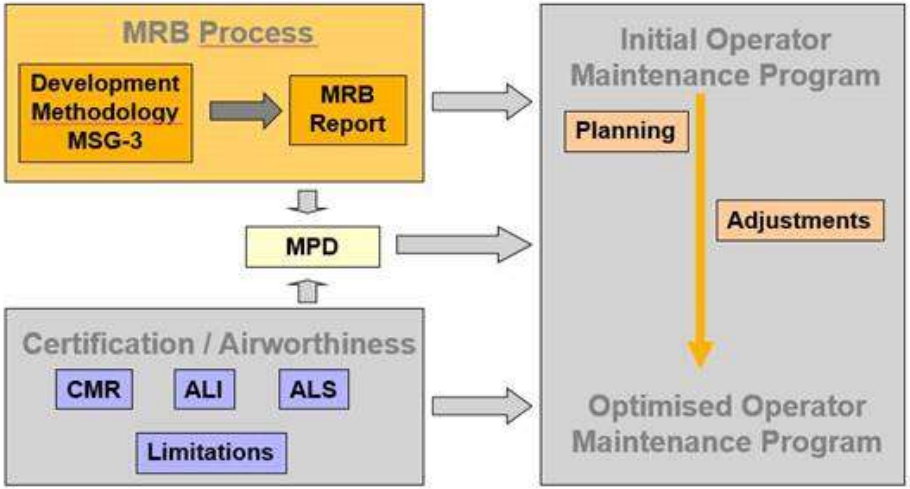
- Interface between ALS Part certification and MRB process
- Missing internal link between ALS and MRBR / MPD
- Digitalization of data

Operators vs Manufacturers specificities

- ***Operators:***
  - Focused on aircraft operation taken into account the safety and economical aspects
  - In-service experience regarding maintenance and downtime
  - Optimized packaging of maintenance tasks
  - Customization of MPD regarding the utilization, environment and suitable downtime

- ***Manufacturers:***
  - No in-service experience, depends on operators involvement regarding reports (findings, utilization, performance)
  - Focused on the worldwide fleet
  - MPD as a non customized document

Continuous harmonization from MRBR to MPD to OMP



- At the moment there are different processes, which are running parallel and only the results are published in the related and applicable documents
- The approval and evaluation of evolution exercises until implementation in the related OMP takes too long → Evaluation /Process task by task?
- Standardization among the MRBs, i.e. Restoration task definition, Rules affecting the MRB process
- Detailed involvement of engine / propeller / component manufacturer in the MRB process
- Standardization / Process between MRB / MPD / CMM (Vendors)
- Procedures to accomplish the task in line with MRB requirements (AMM / NTM etc.)
- STC/ICA influence on MRBR process

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Questions from the audience (Sli.Do)

Moderator and Panellists feedback

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Thank you very much

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