International Maintenance Review Board Policy Board (IMRBPB)
Issue Paper (IP)

Initial Date: 28/Apr/2017
IP Number: IP167
Revision / Date: R0 / 28/Apr/2017

Title: Electronic Signature Standards and Approval of MRB "Data Blocks"

Applies To:	
MSG-3 Vol 1	
MSG-3 Vol 2	
IMPS	X

Submitter: FAA

Issue: Technology has evolved since the original creation of the first MRB documents. When once an MRB Report would have been typed and signed by all parties (by hand), now MRBR's are routinely created electronically and used/retained in an electronic way. Additionally, OEM's wish to provide MRB tasking data in a pre-formatted electronic method, allowing for tasks to be imported into an operator's maintenance software system automatically.

Problem: While wanting to encourage the adoption of new technology, this use of electronic data presents new challenges for the MRB process. Within a "virtual" environment where there may no longer be a physical ISC meeting, there may be a need to get a document signed by an ISC chair (or OEM employee) electronically. Additionally, regulators have a responsibility to the MRB process to clearly show approval (or acceptance, depending on the system/context) of whatever MRB product is provided to the operator – with the current IMPS Paragraph 5.17, this may be approval of "modular data". Finally, there are potential legal issues at play – the validity of an electronically approved MRB task may someday be questioned if a reasonable policy for electronic approval(s) is not established.

Our experience has shown that there are three important concepts underlying digital signatures, and generally, compliance with all three is required for a digital signature to be considered valid. First, the signature must be difficult to replicate. Secondly, the signature must be traceable back to the person who authorized it. Finally, 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 concern is that as a "new" concept, individual end users might not be familiar with these ideas, and the use of inadequate methods may occur. For example, a scanned picture of a person's signature that then can be "cut-and-pasted" into a document may "look ok", but does not meet the above concepts. Additionally, with the concept of providing MBR tasking in "modular" form, the question becomes how an individual operator may determine that each module provided has regulatory acceptance.

Examples of practical standards for digital signatures can now be found in:

- regulatory guidance (see FAA Order 8900.1 V3, C31, S2, ¶ 3-3006),
- the legal system (see the American Bar Association's "Digital Signature Guidelines" document)

- the computer industry (see "XML Signature Syntax and Processing" at https://www.w3.org/TR/xmldsig-core/) and
- the aviation industry (see ATA iSpec 2200 ¶ 2-2-5 "Electronic Signature Functional Requirements")

Fortunately, software systems have now reached the point where these requirements can reasonably be met without excessive cost. Programs such as Adobe Acrobat and Microsoft Word, as well as information interchange specifications such as XML, routinely support the use of robust electronic signatures.

We also know that technology can change rapidly – far more rapidly than we can implement guidance to reflect the technological advancements. Therefore, we would submit that while it is time to reflect what appears to be a growing industry/government consensus standard in IMPS, we do not think it is appropriate to create specific requirements for digital signatures within MRB policy. We feel this is best handled "by reference" to the existing ATA document, while allowing for reasonably equivalent methods to arise.

Recommendation (including Implementation):

We would recommend modifying IMPS paragraph 5.17 and add paragraph 5.18 as follows (additions in blue):

5.17 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.

5.18 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.

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IMRBPB Position:

Date: 28/Apr/2017
Position: IMRBPB agrees to CIP FAA-2017-06 with the changes implemented at the IMRBPB Meeting 2017, which becomes IP167

Date:
Position:

Status of Issue Paper and date:
Active 28/Apr/2017

Recommendation for implementation:
IP167 will be included into the next revision of the IMPS document

Retroactive: NO

Important Note: The IMRBPB IPs are not policy. An IP only becomes policy when the IP is adopted into the processes of the appropriate National Aviation Authority. However, before formal adoption, the IP content may be incorporated by the MRB applicant on a voluntary basis with the agreement of all parties as detailed in the program PPH.