

Alternative AMC proposed by DGAC France regarding the applicability and level of scrutiny required for the operational evaluation test

(SPA.EFB.100(b))

Regulation reference: Regulation (EU) N°965/2012 - Annex V (Part-SPA) – subpart M - SPA.EFB.100

Subject: applicability of and level of scrutiny required for the operational evaluation test

Summary:

AMC3 SPA.EFB.100(b) "Operational evaluation test" applies to operators seeking an operational approval for the use of a type B application. In its current version, AMC3 does not apply to changes to a type B EFB application whose use has already been approved by the operator's competent authority.

The use of EFBs is now commonplace for many operators and flight crews and these are often the primary means of accessing data required to conduct and support the flight. In addition, organisations applying for a new Air Operator Certificate (AOC) may request starting their activities with partially or fully paperless operations, and some Type-certificate holders (TCH) rely only on EFBs or Ground Tools (in lieu of AFM) to provide critical information or flight performances' calculation. In some cases, the use of a paper back-up may pose additional specific risks for crews and operators who are not accustomed to using paper anymore.

Therefore, the content of current AMC3 pertaining to "operational evaluation test" should be updated to introduce more proportionality in the implementation of this operational evaluation test phase, and its scope extended to cover all possible situations of significant changes related to the use of EFB that could be introduced by an operator, be it the introduction of a new EFB or a modification to an already approved EFB as specified in AMC2 SPA.EFB.100(b).

The purpose of the Altmoc is:

- to clarify the scope of the operational evaluation, and ensure that significant changes to the EFB system, whether it is hardware or software change, are reviewed and covered by such an operational evaluation, if required;
- to allow some flexibility on the simulator LOFT session and demonstration flight for operators already holding an EFB approval that are currently required prior to commencing the operational evaluation period without paper backup.

Implementing rules: SPA.EFB.100

(b) In order to obtain an operational approval from the competent authority for the use of a type B EFB application, the operator shall provide evidence that:

- (1) a risk assessment related to the use of the EFB device that hosts the application and to the EFB application and its associated function(s) has been conducted, identifying the associated risks and ensuring that they are appropriately managed and mitigated;
- (2) the human-machine interfaces of the EFB device and the EFB application have been assessed against human factors principles;
- (3) it has established an EFB administration system and that procedures and training requirements for the administration and use of the EFB device and the EFB application have been established and implemented; these shall include procedures for:
 - (i) operating the EFB;
 - (ii) the management of changes to the EFB;
 - (iii) the management of EFB data;
 - (iv) EFB maintenance; and
 - (v) EFB security;

(4) the EFB host platform is suitable for the intended use of the EFB application.

This demonstration shall be specific to the EFB application and the EFB host platform on which the application is installed.

Existing Acceptable Means of Compliance: AMC3 SPA.EFB.100(b)

(a) The operator should perform an operational evaluation test which should enable verification that the relevant requirements of SPA.EFB have been satisfied before a final decision is made on the operational use of the EFB.

An operational evaluation test should be performed by operators seeking an operational approval for the use of a type B EFB application. This does not apply to changes to a type B EFB application whose use has already been approved by the operator's competent authority.

The operator should notify its competent authority of its intention to perform an operational evaluation test by providing a plan, which should contain at least the following information:

- (1) the starting date of the operational evaluation test;
- (2) the duration of the operational evaluation test;
- (3) the aircraft involved;
- (4) the EFB hardware and type(s) of software including version details;
- (5) the EFB policy and procedure manual;
- (6) their EFB risk assessment; and
- (7) for type B EFB applications that replace the paper documentation without initial retention of a paper backup, and type B EFB applications that do not replace the paper documentation:
 - (i) a simulator line-oriented flight training (LOFT) session programme to verify the use of the EFB under operational conditions including normal, abnormal, and emergency conditions; and
 - (ii) a proposed schedule to allow the competent authority to observe the EFB application use in actual flight operations.

The operational evaluation test should consist of an in-service proving period with a standard duration of 6 months. A reduced duration may be considered after considering the following

criteria:

- (1) the operator's previous experience with EFBs;
- (2) a high number of flights operated monthly;
- (3) the intended use of the EFB system; and
- (4) the mitigation means defined by the operator.

An operator wishing to reduce the duration of the operational evaluation test to less than 6 months should provide its competent authority with the appropriate justification in its operational evaluation plan.

The competent authority may ask for an operational evaluation test lasting more than 6 months if the number of flights operated in this period is not considered sufficient to evaluate the EFB system.

The general purpose of the in-service proving period for type B EFB applications that replaces the paper documentation is for the operator to demonstrate that an EFB system provides at least the levels of accessibility, usability and reliability of the paper documentation.

For all type B EFB applications, the proving period should show that:

- (1) the flight crew members are able to operate the EFB applications;
- (2) the operator's administration procedures are in place and function correctly;
- (3) the operator is capable of providing timely updates to the applications on the EFB, where a database is involved;
- (4) the introduction of the EFB does not adversely affect the operator's operating procedures, and that alternative procedures provide an acceptable equivalent if the EFB system is not available;
- (5) for a system including uncertified elements (hardware or software), that the system operates correctly and reliably; and
- (6) the assumptions used for the risk assessment are not disproved for the type of operations intended (with or without a paper backup).

In the case of charts or in-flight weather (IFW) applications displaying the own-ship position in flight, the in-service proving should allow to confirm the absence of frequent losses of position and to assess the resulting workload for the flight crew.

The operator may remove the paper backup once it has shown that the EFB system is sufficiently robust.

(b) Final operational report

The operator should produce and retain a final operational report, that summarises all the activities performed and the means of compliance that were used, supporting the operational use of the EFB system.

DGAC France Alternative Acceptable Means of Compliance:

(a) An operational evaluation test should be performed by operators seeking an operational approval for the use of a **new EFB system and its associated type B EFB applications or for a significant change to an already approved EFB system as identified in AMC2 SPA.EFB.100(b)**.
~~This does not apply to changes to a type B EFB application whose use has already been approved by the operator's competent authority.~~

~~The operator should perform an operational evaluation test which should enable verification that~~

the relevant requirements of SPA.EFB have been satisfied before a final decision is made on the operational use of the EFB.

The operator should notify its competent authority of its intention to perform an operational evaluation test by providing a plan, which should contain at least the following information:

(1) the starting date of the operational evaluation test;

[...] No changes to the points (2) to (6) of the current AMC.

(7) for type B EFB **applications functions** that replace the paper documentation without initial retention of a paper backup, and type B EFB **applications functions** that do not replace the paper documentation either:

(i) both

- (a)** a simulator line-oriented flight training (LOFT) session programme to verify the use of the EFB under operational conditions including normal, abnormal, and emergency conditions; and
- (b)** a proposed schedule to allow the competent authority to observe the EFB application use in actual flight operations **during the evaluation period**.

or

(ii) for operators already holding an EFB approval, a specific assessment and risk analysis appropriate to the change, demonstrating that:

- (a) appropriate limitations and mitigation procedures will be in place during the evaluation period to ensure that there are no residual risks for the loss and undetected erroneous output of newly introduced functions or,**
- (b) appropriate prevention means and approved digital back-up (avionics system, independent EFB application, robust dispatch conditions) are defined or,**
- (c) for hardware modifications there is no significant change in the intended use of the EFB that was already approved by the authority and that would need a re-evaluation during LOFT session or demonstration flight.**

Past operator experience and performance should be considered.

The provisions of (ii) cannot be used to transition from paper to EFB functions.

The operational evaluation test should consist of an in-service proving period with a standard duration of 6 months. A reduced duration may be considered after taking into account the following criteria:

- (1) the operator's previous experience with EFBs;**
- (2) a high number of flights operated monthly;**
- (3) the intended use of the EFB system; and**
- (4) the mitigation means defined by the operator.**

An operator wishing to reduce the duration of the operational evaluation test to less than 6 months should provide its competent authority with the appropriate justification in its operational evaluation plan.

The competent authority may ask for an operational evaluation test lasting more than 6 months if the number of flights operated in this period is not considered sufficient to evaluate the EFB system.

The general purpose of the in-service proving period for type B EFB applications that replaces the

paper documentation is for the operator to demonstrate that an EFB system provides at least the levels of accessibility, usability and reliability of the paper documentation.

The authority should grant a temporary approval before the evaluation period starts.

For all type B EFB applications, the proving period should show that:

- (1) the flight crew members are able to operate the EFB applications;
- (2) the operator's administration procedures are in place and function correctly;
- (3) the operator is capable of providing timely updates to the applications on the EFB, where a database is involved;
- (4) the introduction of the EFB does not adversely affect the operator's operating procedures, and that alternative procedures provide an acceptable equivalent if the EFB system is not available;
- (5) for a system including uncertified elements (hardware or software), that the system operates correctly and reliably; and
- (6) the assumptions used for the risk assessment are not disproved for the type of operations intended (with or without a paper backup).

In the case of charts or in-flight weather (IFW) applications displaying the own-ship position in flight, the in-service proving should allow to confirm the absence of frequent losses of position and to assess the resulting workload for the flight crew.

The operator may remove the **paper** backup once it has shown that the EFB system is sufficiently robust.

(b) Final operational report

The operator should produce and retain a final operational report, that summarises all the activities performed and the means of compliance that were used, supporting the operational use of the EFB system.

Reasoning of the AltMoC and Assessment by DGAC demonstrating compliance to the IR(s):

Scope of the AMC :

AMC3 SPA.EFB.100(b) "Operational evaluation test" applies to operators seeking an operational approval for the use of a type B application. The current version of AMC3 does not apply to changes to a type B EFB application whose use has already been approved by the operator's competent authority.

Modifications that are considered to be more than minor (i.e. significant changes) to the EFB approval must be reviewed and validated by the authority before they can be incorporated. However, in this case, the AMC3 is ambiguous on the necessity to go through an operational evaluation test for hardware changes and introduction/modification of type B functions to already approved type B applications.

For example, when the LDTA/GRF was introduced on EFBs many operators felt that an operational evaluation test (and associated LOFT and demonstration flights) was not required because they already had an EFB approval for performance calculation applications.

Therefore, to ensure that all changes are properly assessed, the ALTMOC clarifies that any significant change (and not only new type B applications) must undergo an operational evaluation test and should be part of the change analysis.

Therefore, the ALTMOC also clarifies the extent of the evaluations to be conducted depending on the kind of change and operator's previous experience and the authorities should approve the operator's customisation of the evaluation period and associated operational conditions.

Introduction of proportionality for LOFT requirement and Demonstration Flight:

As operator may seek to modify its approved EFB system in a variety of ways, it is unrealistic to define a standard assessment to suit all possible requests and the conditions of the evaluation period. Although any modification requiring an approval should be evaluated, the LOFT requirement and demonstration flight with the authority prior to the start of the evaluation, constitute huge constraints for operators which are not necessarily tailored to the situation. Furthermore without any flexibility, it may lead operators to undermine the classification of changes and consider significant changes as minor changes in order to avoid these constraints.

There is a real risk to have operators put a paper back-up on board to avoid those requirements even if pilots are not trained and OM are no longer customized to cover the use of such back-up which is not mitigating any risk during the evaluation period.

Moreover, for many modern EFB uses, those LOFT and demonstration flights are not relevant to the change and may even be counter intuitive. For example, all EFB applications that relies on Ownship Position are irrelevant to be entirely evaluated in “normal conditions” during a simulator session.

Reasoning and examples detailed below.

- a) appropriate limitations and mitigation procedures will be in place during the evaluation period to ensure that there are no residual risks for the loss and undetected erroneous output of newly introduced functions or,**

Some applications are not required for the flight but may have a minor impact on safety. In this case paper back-up is not available but LOFT and demonstration flights are not relevant, as the EFB application will not be used for many flights under normal conditions. Therefore, robust Design analysis and Risk assessment may be sufficient to start the operational evaluation period if deemed acceptable by the authority.

For example, an operator already approved to use of an EFB for charts consultation may not need a LOFT and a demonstration flight before the start of operations to add Operating Manuals to the EFB documentation.

The residual Risk limitation is a concept from ED-273 and would ensure a high level of maturity in the handling of EFB approvals from the authority and would exclude from the scope EFB functions that require additional prevention to manage residual risk and ensure minor failures (eQRH, performance & W&B calculation, Digital Flight Log, e-CRM,...).

This provision would also allow the oversight of experimental testing for operators who put in place appropriate limitations (identification of Key users and associated specific training, administration limitations, procedures to authorise or not the use of specific modules,...).

- b) appropriate prevention means and approved digital back-up (avionics system, independent EFB application, robust dispatch conditions) are defined or,**

Some operators are already using Type B EFB applications, and the AMC does not allow an approved application to be changed or replaced with another type B application without going back to paper for 6 months. For operators who have not used paper for many years it is not relevant to impose a paper back-up. However some changes can be covered by design analysis and the conservation of an already approved digital means to cover some failure cases (loss of application, wrong administration, HMI & HF issues,...) of the newly introduced functions.

Moreover, some avionics systems can be used as primary mean if a back-up is kept on board. In this case the deployment of an EFB can be mitigated using a certified system during the evaluation.

c) for hardware modifications there is no significant change in the intended use of the EFB that was already approved by the authority and that would need a re-evaluation during LOFT session or demonstration flight.

In the case of a complete hardware change, which is common for EFBs to keep up to date, the evaluation may or may not be required.

For example, a change from IOS to Windows would need to be evaluated during LOFT sessions and/or demonstration flights as the HMI is significantly different.

A significant change in the size of the EFB (10" to 12") may have an impact that would be detected in LOFT or demonstration flights (e.g. narrow cockpit like Beechcraft), but is not a concern when used in airliners.

Limited OS changes may also introduce new features that may require an in-flight evaluation but not LOFT sessions (e.g. the use of split view in recent IOS versions).

Limitations :

Proportionality is not applicable for the following changes which require both the LOFT and the demonstration flight :

- Initial deployment of an EFB,
- Newly introduced type B applications or changes to an existing one that could have a residual safety risk and for which no back-up has been approved or certified,
- Any EFB software change that would replace in-use paper documentation,
- Any EFB hardware change that has a significant human factor impact or changes the intended use of the EFB.

Proportionality requires a dedicated and specific risk analysis.

Proportionality for LOFT and Demonstration Flight must be validated in coordination with a Flight Ops Inspector.

Minor change :

(i)(b) demonstration flights should be scheduled during the evaluation period to ensure flight in actual flight conditions and compliance with CAT.GEN.MPA.141(b) otherwise only non-commercial flights can be used to comply with AMC3 SPA.EFB.100(b) which seems unrealistic.

Formal statement by DGAC : Date 15/01/2025	‘This AltMOC has been assessed by DGAC and it establishes compliance with the IR(s)’
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