

SAFETY INFORMATION COMMUNICATION (SIC)**No. 7****Operations Division**

Subject: Information on findings and recommendations related to the use of an Electronic Flight Bag (EFB).

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1. INTRODUCTION

This SIC is promulgated in order to alert flight crew to the findings of a recent accident report, which concerns the use of an Electronic Flight Bag (EFB). In this instance, the EFB had been used to provide both weight and balance information and also take-off and landing performance data.

Aircraft manufacturers provide operators with performance data and, also, weight and balance data, both of which can be built into the EFB software. An operator's software administrator will be responsible for the setting up of a weight and balance page for each specific aircraft and also, the installation of an aerodrome database in the EFB. However, the aircraft manufacturer neither reviews nor approves this work. The operator's software administrator also has the option to disable the weight and balance page in the EFB to prevent crews from using it, but some operators choose to leave the weight and balance page available in order to provide a cross-check against the loadmaster's manual calculations.

The weight and balance feature allows the flight crew to perform basic operations, including, for example, the calculation of stabiliser trim settings for take-off. In the weight and balance summary page, the user can enter passenger weights, cargo zone weights and fuel load. When this information is entered, the take-off and projected landing weights are automatically updated and may be passed across to the planned weight field on the main input dialogue screen, where they may be programmed to overwrite some or all of the entries in this field without further notification to the user.

Many of the performance applications installed on EFB systems include a feature which retains the environmental parameters when the application is shut down, and even when the EFB is switched off. Additionally, the take-off mass to be used may also be retained; the purpose of this being to allow the pilot to perform a re-calculation without having to re-enter data in all the fields.

As a consequence, it is possible for a user to fail to notice an inappropriate item of data on switching on, as all required fields will be populated with data from the previous calculation.

The primary finding in the accident report to which this SIC refers concludes that the wrong take-off weight was used to determine the V speeds and take-off thrust required. As a consequence, the aircraft was destroyed when it failed to achieve flying speed, and all aboard were killed.

This SIC is published in addition to TGL (Temporary Guidance Leaflet) No. 36: "Approval of Electronic Flight Bags (EFBs)", which gives detailed guidance with respect to the use of portable or aircraft installed EFB computing devices.

2. SCOPE

All operators, both commercial and non-commercial, should consider the advice contained within this Communication, as it applies to their operations when using Electronic Flight Bags

For aeroplane and helicopter commercial transport operators this SIC N°7 is published in addition to the Temporary Guidance Leaflet No. 36: "Approval of Electronic Flight Bags (EFBs)".

For aeroplane and helicopter non-commercial operators this SIC N° 7 should be considered in addition to the Flight Manual content.

3. GUIDANCE MATERIAL

Attention is drawn to the following:

JAR-OPS 1.104 (m) allows an operator to use an EFB to replace traditional paper sources of information if, "an acceptable level of accessibility, usability and reliability can be assured". Implicit in this rule is the need to provide adequate levels of cross-checking and a methodology that ensures the identification of gross errors when using an electronic system, which is comparable to the industry best practice established for manual systems.

Crew procedures for the use of traditional paper performance charts often include practices that recognise basic human factors principles associated with the influence of decisions and acceptance of the validity of information and these should be carried over to the use of electronic calculation and the presentation of this kind of data.

The use of a single EFB on the flight deck poses the same risks with regard to the acceptance of data output as do those posed by having only one pilot on a multi-crew aeroplane determining performance data from a paper chart. Standard Operating Procedures for the use of an EFB should include procedures that utilise independent calculation by each crew member, provide for effective cross-checking and facilitate the trapping of gross errors.

4. RECOMMENDATION

4.1 Operators are recommended to modify EFB software so as to prevent:

- (i) Other applications from inputting data into any field on the performance application feature when this is used to derive operational performance for a critical phase of flight, and
- (ii) Any field in the performance application which is used to derive operational performance for a critical phase of flight from remaining populated after the EFB is shut down.

Where these actions cannot be achieved by means of software modification, operators should ensure that crew procedures include the requirement, before any calculation is conducted, to enter or re-enter data manually in any fields in the performance application that are used to derive operational performance for a critical phase of flight,

4.2 Operators are recommended to establish and provide training on EFB operating procedures as detailed below:

4.2.1 Crew procedures should ensure that calculations are conducted independently by each crew member before data outputs are accepted for use.

4.2.2 Crew procedures should ensure that a formal cross-check is made before data outputs are accepted for use. Such cross-checks should utilise the independent calculations described in 4.2.1 above, together with the output of the same data from other sources on the aircraft.

4.2.3 Crew procedures should ensure that a gross-error check is conducted before data outputs are accepted for use. Such a gross-error check may use either a “rule of thumb” or the output of the same data from other sources on the aircraft.

4.2.4 Crew procedures should ensure that, in the event of loss of functionality by an EFB through either the loss of a single application, or the failure of the device hosting the application, an equivalent level of security of data output can be maintained by the use of alternative procedures.

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