SAFETY INFORMATION AND ADVISORY NOTICE (SIAN)		Transport Malta Civil Aviation Directorate Safety and Compliance Unit Transport Malta Centre Triq Pantar Lija LJA 2021 Malta aviationsafety.tm@transport.gov.mt
SIAN Number: **02/23**	Issue Date: **12/06/2023**	
Subject: **Operation in Icing Conditions – Adherence to Standard Operating Procedures. (Special Airworthiness Bulletin BEA-2023-03)**		

1.0 INTRODUCTION

1.1 The Brazilian National Civil Aviation Agency (Agência Nacional de Aviação Civil - ANAC) issued a Special Airworthiness Bulletin (Boletim Especial de Aeronavegabilidade - BEA) to provide information regarding the Embraer EMB-500 ice protection system and to alert owners and operators about the importance of proper adherence to the standard operating procedures established by the airplane manufacturer.

1.2 Bulletin BEA-2023-03 highlights three events whereby ice accretion on critical parts of the airframe surface led to an accident on final approach for the referred aircraft type.

1.3 Regardless of the aircraft type, icing of aircraft surfaces is an operational hazard which contributes to an increase in drag and weight, while decreasing lift and thrust.

1.4 Ice accretion can affect aircraft performances and handling characteristics in different ways depending on the location, amount and kind of accretion. The most common phenomena are:

- Wing stall;
- Icing contaminated tail stall (ICTS);
- Icing contaminated roll upset;
- Ground icing;
- Instrument icing;
- Windshield;

1.5 Ice protection systems are used to protect aircraft components from ice accumulation both in flight and on the ground. Ice protection systems can be classified in de-icing systems and anti-icing systems:

- De-icing systems remove ice from the contaminated surface. Therefore, de-icing systems are usually activated after icing conditions have been encountered.
- Anti-icing systems provide a protection from icing, and therefore are usually used just before or immediately after entering icing conditions.

2.0 APPLICABILITY

This Notice is to be disseminated to all personnel, and people who have interests relating to the safe conduct of flight when operating in icing conditions.

Aerodromes:	Not primarily affected.
Air Traffic:	Not primarily affected.
Airspace:	Not primarily affected.
Airworthiness:	Not primarily affected.
Flight Operations:	All Operators (and as applicable in the Special Airworthiness Bulletin BEA-2023-03)
Licenced/Unlicenced Personnel:	Flight Crew (and as applicable in the Special Airworthiness Bulletin BEA-2023-03)

3.0 RECOMMENDATIONS AND INSTRUCTIONS

3.1 *Flight Planning:* All pilots are responsible for obtaining as much information as possible about all meteorological conditions, including icing conditions, before departure.

3.2 *Operation of Ice Protection Systems:* Care should be taken to operate the wing and tailplane ice protection systems in accordance with the manufacturer's specification.

3.3 *Approach and Landing*: Pilots operating ice-protected aircraft should consider the effects of any residual ice which may be present during approach and landing since it may degrade performance substantially and lead to abnormal responses to configuration changes. Any ice accretion approach speed additive must be kept till landing unless it is clear to the commander that there is no ice accretion on any part of the aircraft.

From Bulletin BEA-2023-03:

3.4 ANAC alerts owners and operators about the importance to adopt the procedures established by the airplane manufacturer, to avoid undetected ice formation that may result in a stall condition without alarm in the EMB-500.

3.5 Ice protection systems must always be activated in low temperatures and visible moisture, according to the airplane flight manual.

3.6 Ice protection systems may be deactivated only after leaving ice conditions and if the pilot is certain that there is no ice formation in any part of the airplane.

3.7 If icing conditions exist or if are forecasted, landing and approach speeds must be consistent with the configuration with ice protection systems activated. After leaving the icing condition and

if the pilot is certain that there is no ice formation in any part of the airplane, the speeds may be reset to the non-icing condition configuration.

3.8 Ice protection systems must not be turned off to avoid a performance penalty.

3.9 ANAC recommends owners and operators be aware of the Embraer informative video. ANAC highlights that EMB-500 airplanes equipped with Garmin 3000 have installed an ice detector as standard equipment. The ice detector is an optional equipment for EMB500 airplanes equipped with Garmin 1000. The ice detection system facilitates ice condition identification, but it is the primary responsibility of the pilot to determine the ice protection system activation and deactivation.

4.0 FURTHER INFORMATION

4.1 EASA Safety Publication Tool website, SIB BEA-2023-03: Operation in Icing Conditions – Adherence to Standard Operating Procedures https://ad.easa.europa.eu/ad/BEA-2023-03

4.2 BEA Report “Stall on short final in icing conditions, hard landing, rupture of main landing gear and nose gear, fire, runway veer-off”, available in https://bea.aero/fileadmin/user_upload/9H-FAM_EN.pdf

4.3 NTSB Report “Aerodynamic stall and loss of control during approach – Embraer EMB-500, N100EQ - Gaithersburg, Maryland – December 8, 2014”, available in https://www.ntsb.gov/investigations/AccidentReports/Reports/AAR1601.pdf

4.4 BFU Report CX001-13, available in https://www.bfuweb.de/EN/Publications/FinalReports/2013/Report_13_CX001_EMB500_Berln-SchF.pdf?__blob=publicationFile&v=1

4.5 Embraer video with orientation to pilots regarding flight in icing conditions. https://www.youtube.com/watch?v=1EftwCgj3VM

4.6 NASA online courses. https://aircrafticing.grc.nasa.gov/index.html

5.0 CANCELLATION

5.1 This SIAN will remain in force until further notice.

Safety and Compliance Unit