

**NOTICE OF PROPOSED REGULATION
BRAZILIAN AIRWORTHINESS DIRECTIVES**

**REPÚBLICA FEDERATIVA DO BRASIL
AGÊNCIA NACIONAL DE AVIAÇÃO CIVIL – ANAC
Gerência Geral de Certificação de Produto Aeronáutico**

Reference: NPR/AD 2024-190-01

Date: 26 apr. 2024

In accordance with the provisions of RBAC 11, The Continuing Airworthiness Technical Branch (GTAC) is proposing the issuance of a Brazilian Airworthiness Directive applicable to the aeronautical product referred below.

*All the persons interested may send their comments until the date specified in item 2, indicating the **Reference** above, to the following address or fax-number:*

National Civil Aviation Agency (ANAC) - Continuing Airworthiness Technical Branch (GTAC)

Av. Cassiano Ricardo, 521, Bloco B, 2^o andar, Parque Residencial Aquarius

12246-870 – São José dos Campos - SP - Brazil - Fax: 55 (12) 3797-2330 - E-mail: pac@anac.gov.br

1. Proposer: Continuing Airworthiness Technical Branch (GTAC).

2. Comments: Must be received until 25 jun. 2024.

APPLICABILITY:

(a) This Airworthiness Directive (AD) applies to Embraer S.A. models ERJ 190-300 and ERJ 190-400, all serial numbers.

CANCELLATION / REVISION:

Not applicable.

REASON:

A report was received about a failure of the MAU 3B announced by the AVNX MAU 3B FAIL caution message associated with BRK LH FAULT and BRK RH FAULT advisory messages. During the landing run, the normal brakes were not available and the messages BRK LH FAIL, BRK RH FAIL, BRK PEDL LH SEAT FAIL and BRK PEDL RH SEAT FAIL were also displayed on the Engine Indicating and Crew Alerting System (EICAS) after the pilots pressed the brake pedals.

The investigation has shown that certain failures of the MAU 3B and MAU 1A may lead to an undetected loss of normal brakes scenario until the brake pedals are pressed by the pilots. Therefore, incorrect on ground performance factors may be applied and, due to a short time available for pilots reaction, a runway excursion event may occur.

Since this condition may affect flight safety, sufficient reason exists to request, compliance with this AD in the indicated time limit.

REQUIRED ACTION:

Modification of AFM procedures associated with AVIONICS MAU 1A FAILURE and AVIONICS MAU 3B FAILURE messages.

COMPLIANCE:

(b) AFM procedure modification

Within 10 days from the effectivity date of this AD, revise the Section 4 - Abnormal and Emergency Procedures of the AFM replacing the “AVIONICS MAU 1A FAILURE” and “AVIONICS MAU 3B FAILURE” existing procedures by the following procedures:

“AVIONICS MAU 1A FAILURE

If the A-I WING FAIL message is displayed, exit/avoid icing conditions.

NOTE: – Do not accomplish the SHAKER ANTICIPATED Procedure.

– Do not accomplish the ANTI-ICE WING FAILURE

Verify if the normal brake is available by pressing the left seat pilot brake pedals and the right

seat pilot brake pedals.

If the BRK LH FAIL and BRK RH FAIL messages are displayed:

- NOTE:** – Do not accomplish the BRAKE LH (RH) FAILURE Procedure.
 – Do not accomplish the BRAKE PEDAL LH (RH) SEATFAILURE Procedure.

The emergency/parking brake must be used to stop the airplane.

- CAUTION:** – CORRECT LANDING CONFIGURATION AND LANDING DISTANCE ACCORDING TO THE FOLLOWING TABLES FOR "LANDING IN ABNORMAL CONFIGURATIONS".
 – AVOID LANDING WITH CROSSWIND COMPONENTS ABOVE 10 KT.
 – APPLY THE EMERGENCY/PARKING BRAKEMODERATELY UNTIL AIRPLANE DECELERATION

If the BRK LH FAIL and BRK RH FAIL messages are not displayed:

- NOTE:** Do not accomplish the BRAKE LH (RH) FAULT Procedure.

On ground, apply brakes normally.

- CAUTION:** CORRECT LANDING CONFIGURATION AND LANDING DISTANCE ACCORDING TO THE FOLLOWING TABLES FOR "LANDING IN ABNORMAL CONFIGURATIONS".

If required, steer the airplane using differential braking (if available) and rudder.

E190-E2 – LANDING IN ABNORMAL CONFIGURATION

E190-E2 - DRY RUNWAYS - NO ICE ACCRETION

EMERGENCY/ABNORMAL PROCEDURE		SLAT/FLAP – SPEED	FACTOR	
			DRY	DRY + OVSP
AVIONICS MAU 1A FAILURE	BRK LH FAIL and BRK RH FAIL messages displayed	Slat/Flap FULL - V _{REF} FULL + 17 KIAS	1.43	1.62
	BRK LH FAULT and BRK RH FAULT messages displayed	Slat/Flap FULL - V _{REF} FULL + 17 KIAS	1.90	2.13

E190-E2 - WET RUNWAYS - NO ICE ACCRETION

EMERGENCY/ABNORMAL PROCEDURE		SLAT/FLAP - SPEED	FACTOR	
			WET	WET + OVSP
AVIONICS MAU 1A FAILURE	BRK LH FAIL and BRK RH FAIL messages displayed	Slat/Flap FULL - V _{REF} FULL + 17 KIAS	1.79	2.03
	BRK LH FAULT and BRK RH FAULT messages displayed	Slat/Flap FULL - V _{REF} FULL + 17 KIAS	2.38	2.67

E190-E2 - DRY RUNWAYS – WITH ICE ACCRETION

EMERGENCY/ABNORMAL PROCEDURE		SLAT/FLAP - SPEED	FACTOR	
			DRY	DRY + OVSP
AVIONICS MAU 1A FAILURE	BRK LH FAIL and BRK RH FAIL messages displayed	Slat/Flap FULL - V _{REF} FULL + 17 KIAS	1.42	1.61
	BRK LH FAULT and BRK RH FAULT messages displayed	Slat/Flap FULL - V _{REF} FULL + 17 KIAS	1.93	2.15

E190-E2 - WET RUNWAYS - WITH ICE ACCRETION

EMERGENCY/ABNORMAL PROCEDURE		SLAT/FLAP - SPEED	FACTOR	
			WET	WET + OVSP
AVIONICS MAU 1A FAILURE	BRK LH FAIL and BRK RH FAIL messages displayed	Slat/Flap FULL - V _{REF} FULL + 17 KIAS	1.78	2.02
	BRK LH FAULT and BRK RH FAULT messages displayed	Slat/Flap FULL - V _{REF} FULL + 17 KIAS	2.42	2.69

E195-E2 – LANDING IN ABNORMAL CONFIGURATION**E195-E2 - DRY RUNWAYS - NO ICE ACCRETION**

EMERGENCY/ABNORMAL PROCEDURE		SLAT/FLAP – SPEED	FACTOR	
			DRY	DRY + OVSP
AVIONICS MAU 1A FAILURE	BRK LH FAIL and BRK RH FAIL messages displayed	Slat/Flap FULL - V _{REF} FULL + 17 KIAS	1.43	1.63
	BRK LH FAULT and BRK RH FAULT messages displayed	Slat/Flap FULL - V _{REF} FULL + 17 KIAS	1.94	2.18

E195-E2 - WET RUNWAYS - NO ICE ACCRETION

EMERGENCY/ABNORMAL PROCEDURE		SLAT/FLAP – SPEED	FACTOR	
			WET	WET + OVSP
AVIONICS MAU 1A FAILURE	BRK LH FAIL and BRK RH FAIL messages displayed	Slat/Flap FULL - V _{REF} FULL + 17 KIAS	1.79	2.04
	BRK LH FAULT and BRK RH FAULT messages displayed	Slat/Flap FULL - V _{REF} FULL + 17 KIAS	2.43	2.73

E195-E2 - DRY RUNWAYS – WITH ICE ACCRETION

EMERGENCY/ABNORMAL PROCEDURE		SLAT/FLAP – SPEED	FACTOR	
			DRY	DRY + OVSP
AVIONICS MAU 1A FAILURE	BRK LH FAIL and BRK RH FAIL messages displayed	Slat/Flap FULL - V _{REF} FULL + 17 KIAS	1.43	1.62
	BRK LH FAULT and BRK RH FAULT messages displayed	Slat/Flap FULL - V _{REF} FULL + 17 KIAS	1.97	2.22

E195-E2 - WET RUNWAYS - WITH ICE ACCRETION

EMERGENCY/ABNORMAL PROCEDURE		SLAT/FLAP - SPEED	FACTOR	
			WET	WET + OVSP
AVIONICS MAU 1A FAILURE	BRK LH FAIL and BRK RH FAIL messages displayed	Slat/Flap FULL - V _{REF} FULL + 17 KIAS	1.79	2.03
	BRK LH FAULT and BRK RH FAULT messages displayed	Slat/Flap FULL - V _{REF} FULL + 17 KIAS	2.47	2.78

AVIONICS MAU 3B FAILURE

NOTE: Do not accomplish the APU FAILURE Procedure.

Press the APU emergency stop button.

Verify if the normal brake is available by pressing the left seat pilot brake pedals and the right seat pilot brake pedals.

If the BRK LH FAIL and BRK RH FAIL messages are displayed:

NOTE: Do not accomplish the BRAKE PEDAL LH (RH) SEAT FAILURE Procedure.

Accomplish the BRAKE LH (RH) FAILURE Procedure.

If the BRK LH FAIL and BRK RH FAIL messages are not displayed:

Accomplish the BRAKE LH (RH) FAULT Procedure.”

NOTE: The AFM procedures alteration required by this AD may be accomplished by inserting a copy of this AD into the Aircraft Flight Manual.

(c) Interim action

This AD is considered an interim action. ANAC may consider further mandatory actions.

(d) Alternative Methods of Compliance (AMOC)

A different method or a different compliance time, with the requirements of this AD, may be used if approved by the Manager of the Continuing Airworthiness Technical Branch (GTAC) of ANAC..