

DCA24LA330

OPERATIONAL FACTORS

Attachment 8

Southwest Airlines Postincident Guidance

April 24, 2025

From: [REDACTED]
To: [REDACTED]
Subject: RBF 24-03 || LEAP-1B Severe Engine Damage with Associated Smoke and Fumes
Date: Wednesday, February 14, 2024 4:24:18 PM



REF #24-03

TO: All Pilots
FROM: Grant Morris, Managing Director Compliance, Operations & Procedures; 119 Certificate Chief Pilot
DATE: February 14, 2024
RE: LEAP-1B Severe Engine Damage with Associated Smoke and Fumes

Event

Southwest Airlines has experienced two incidents of LEAP-1B engine failure/severe damage following large bird ingestion during the takeoff. These engine failures occurred during a critical phase of flight and were further compounded by the immediate presence of smoke and fumes (associated with the severe engine damage) entering either the flight deck or the cabin through the air conditioning system.

In both incidents, the Crews exercised RRM, assessed each situation, and used existing non-normal checklists (NNCs) appropriately. They performed as trained, methodically maintained aircraft control, donned oxygen masks when necessary, and executed the ENGINE FIRE or Severe Damage or Separation NNC and the Smoke, Fire or Fumes NNC as required.

Pilot Action

The presence of smoke in the flight deck or cabin associated with an engine failure should be considered engine severe damage.

Background

The LEAP-1B engine incorporates a Load Reduction Device (LRD). The LRD allows the fan rotor to rotate freely and reduces the transmission of unbalanced dynamic loads to engine structures and pylon in case of fan blade loss or damage. In the two bird strike incidents, the LRD was activated due to fan blade damage. Additionally, there was damage to the engine oil sump allowing oil to enter the core compressor upstream of the pneumatic bleed ports, which supply bleed air to the pneumatic system.

Oil ingested into the engine core compressor section is exposed to temperatures that may result in smoke and fumes in the Flight Deck or Cabin. The left bleed and pack primarily supply air to the Flight Deck while the right bleed and pack supply air to the Cabin. Selecting the engine start lever to cutoff and pulling the engine fire switch, in accordance with the ENGINE FIRE or Engine Severe Damage or Separation NNC, closes the engine bleed air valve and eliminates the source of smoke to the flight deck or cabin.

Additional Information

- An upcoming revision to the *FRM B737MAX* will include information regarding the LRD.
- *AOM 5.5.4 Engine Failure or Shutdown* will be updated with the bold verbiage below:

If an engine failure is accompanied by a fire warning, N1 indicating zero, an abnormal engine vibration, **or smoke in the flight deck or cabin**, accomplish the ENGINE FIRE or Severe Damage or Separation quick

reference steps from the Quick Reference Card and *QRH NNC 8 Fire Protection*.

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