Federal Aviation Administration

Memorandum

Date: July 23, 2015

To: Manager, International Branch, ANM-116

From: Manager, Transport Airplane Directorate, ANM-100

Prepared by: Robert Hettman, ANM-112

Subject: INFORMATION: Equivalent Level of Safety (ELOS) Finding for High Altitude Takeoff and Landing Operation for the Dassault Aviation Model Falcon7X, FAA Project #AT10266IB-T

ELOS Memo #: AT10266IB-T-SE-13

Regulatory Ref: §§ 21.21(b)(1), 25.841(a) and (b)(6)

This memorandum informs the certificate management aircraft certification office of an evaluation made by the Transport Airplane Directorate (TAD) on the establishment of an equivalent level of safety (ELOS) finding for the Model Falcon 7X airplanes.

Background

In accordance with the provisions of Title 14 Code of Federal Regulations (14 CFR) 21.21(b)(1), Dassault Aviation submitted a request for an ELOS to the requirements of 14 CFR 25.841(a) and (b)(6). Dassault Aviation wishes to obtain approval for takeoff and landing operations at airports with elevations up to 15,000 feet and to do so without activation of the 10,000 feet cabin altitude warning. Dassault Aviation designed a multiple limit cabin altitude warning system that they believe will provide an ELOS to the requirements of § 25.841(a) and (b)(6).

Dassault Aviation requested and received an ELOS finding for the basic Model Falcon 7X for takeoff and landing operations up to 14,000 feet. This ELOS is documented in Memorandum TC0030IB-T-SE-13, dated November 13, 2006. This new memorandum addresses subsequent changes to enable takeoffs and landings at airport elevations up to 15,000 feet.

Dassault Aviation requested and received an exemption from the § 25.1447(c)(1) requirement to automatically present oxygen dispensing units to occupants before the cabin pressure altitude exceeds 15,000 feet for takeoff and landing operations at airports with elevations up to 15,000

feet. The § 25.1447(c)(1) exemption and this ELOS finding are both necessary for takeoff and landing operations at airports with elevations up to 15,000 feet. Refer to Regulatory Docket No. FAA-2014-1007, Exemption 11182, for the approved exemption.

Applicable regulation(s)

§ 25.841(a) and (b)(6) – Pressurized Cabins

Regulation(s) requiring an ELOS finding

§ 25.841(a) and (b)(6) – Pressurized Cabins

Description of compensating design features or alternative standards which allow the granting of the ELOS finding (including design changes, limitations or equipment need for equivalency)

Dassault Aviation proposes the equivalent safety finding to § 25.841(b)(6) by showing compliance with the following :

1. The landing or the takeoff modes (normal or high altitude) is clearly indicated to the flightcrew.

2. The use of the high altitude mode is prohibited for operation into airport below 8,000 feet.

3. In high altitude mode and for operation over 25 000 feet, the warning altitude setting is such that corrective actions can be taken in time to insure that cabin pressure altitude cannot exceed 15,000 feet "in the event of any reasonably probable failure" of the Pressurization System.

4. The amount of time the cabin is above 8,000 feet while the aircraft is above flight level 250 is minimized thanks to an increase of the maximum cabin altitude climb and dive rates for high airfields operation.

5. Under all other conditions, § 25.841(a)&(b)(6) requirements apply. The Pressurization System performs identically to that found on the standard airplane. In particular, the flight crew retains the capability to control the pressurization system manually in the event of a system failure.

6. When operating on a High Elevation Airfield, at least one pilot will be required to use oxygen continuously until cabin altitude is down below 8,300 feet after take-off and from beginning of descent until arrival during landing.

Explanation of how design features or alternative standards provide an ELOS to that intended by the regulation

The FAA has previously granted an ELOS to other airplanes with similar operating characteristics and features. The system as described by the applicant is similar to other previous designs. However, like other previous designs, the pressure control design itself cannot

compensate for the flight crew's ability to react and perform critical functions at 15,000 feet the same as would be expected at 10,000 feet and below. As part of the compensating factors to provide an ELOS, Dassault has provided:

1. An indicator to alert the flightcrew that the cabin high altitude warning has shifted,

2. Airplane Flight Manual (AFM) procedures for operations in the high altitude landing or takeoff mode, and

3. One pilot should wear and use an oxygen mask when the cabin altitude warning has been shifted from 8,300 feet to 15,000 feet.

FAA approval and documentation of the ELOS finding

The FAA has approved the aforementioned equivalent level of safety finding in project issue paper SE-13, titled High Altitude Takeoff and Landing Operations. This memorandum provides standardized documentation of the ELOS finding that is non-proprietary and can be made available to the public. The Transport Airplane Directorate has assigned a unique ELOS Memorandum number (see front page) to facilitate archiving and retrieval of this ELOS finding. This ELOS Memorandum number should be listed in the Type Certificate Data Sheet under the Certification Basis section. An example of an appropriate statement is provided below.

Equivalent Level of Safety Findings have been made for the following regulations:
14 CFR 25.841(a) and (b)(6) – Pressurized cabins (documented in ELOS memo AT10266IB-T-SE-13)

Original signed by Victor Wicklund — July 23, 2015

Transport Airplane Directorate
Aircraft Certification

Date

ELOS Originated by Propulsion and Mechanical Systems Branch	Project Engineer Robert Hettman	Routing Symbol: ANM-112