U.S. Department of Transportation
Federal Aviation Administration

Memorandum

Subject: INFORMATION: Equivalent Level of Safety Finding (ELOS) for the Dassault Aviation Model Falcon 7X FAA Project Number TC0030IB-T

Date:

Reg Ref: § 25.841(b)(6)

From: Manager, Transport Standards Staff
Propulsion/Mechanical Systems, ANM-112

To: Manager, International Branch, ANM-116

Reply to Attn of : Steve Happenny
ANM-112

ELOS Memo #: TC0030IB-T-SE-13

Background

Dassault intends to certify the Falcon 7X for operation into and out of airports that have altitudes in excess of 10,000 feet. Special design features are needed to reset the cabin pressure altitude warning system for this type of operation. Hence, Dassault has incorporated a cabin pressurization control (CPC) system that inhibits the usual cabin pressure altitude warnings and resets the warning threshold for high altitude operations.

Applicable regulation(s)

Section 25.841(b)(6) requires, "Warning indication at the pilot or flight engineer station to indicate when the safe or preset pressure differential and cabin pressure altitude limits are exceeded. Appropriate warning markings on the cabin pressure differential indicator meet the warning requirement for pressure differential limits and an aural or visual signal (in addition to cabin altitude indicating means) meets the warning requirement for cabin pressure altitude limits if it warns the flight crew when the cabin pressure altitude exceeds 10,000 feet."

Regulation(s) requiring an ELOS

§ 25.841(b)(6)

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

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

1. The landing or the take off modes (normal or high altitude) is clearly indicated to the flight crew.

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

3. In high altitude mode and for operation over 25 000 ft, the warning altitude setting is such that corrective actions can be taken in time to insure that cabin pressure altitude can not exceed 15,000 ft "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 FL 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 ft after take-off and from beginning of descent until arrival during landing.

Explanation of how design features or alternative standards provide an equivalent level of safety to the level of safety intended by the regulation

The FAA has previously granted an equivalent level of safety 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 14,500 feet the same as would be expected at 10,000 feet and below. As part of the compensating factors to provide an equivalent level of safety, Dassault has provided:

i. An indicator to alert the flight crew that the cabin high altitude warning has shifted,

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

iii. One pilot should wear and use an oxygen mask when the cabin altitude warning has been shifted from 8,300 feet to 14,000 feet.

FAA approval and documentation of the ELOS

The FAA has approved the aforementioned Equivalent Level of Safety Finding as documented in Issue Paper SE-13. This memorandum provides standardized documentation of the ELOS that is non-proprietary and can be made available to the public. The Transport Directorate has assigned a unique ELOS Memorandum number (see front page) to facilitate archiving and retrieval of this ELOS. This ELOS Memorandum number should be listed in the Type Certificate Data Sheet under the Certification Basis section as stated below:

Equivalent Safety Findings have been made for the following regulation(s):
§ 25.841(b)(6) – Pressurized Cabins (documented in TAD ELOS Memo TC0030IB-T-SE-13)

Manager, TSS, Propulsion/Mechanical Systems ANM-112	Date

ELOS Originated by Standards Staff, Propul/Mech Systems	Project Engineer Steve Happenny	Routing Symbol ANM-112