

UNITED STATES OF AMERICA
DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
RENTON, WASHINGTON 98057-3356

In the matter of the petition of

Dassault Aviation

for an exemption from § 25.1447(c)(1) of
Title 14, Code of Federal Regulations

Regulatory Docket No. FAA-2014-1007

GRANT OF EXEMPTION

By letter dated October 23, 2014, , Mr. Rémy Lamelot, Certification Manager, Dassault Aviation, 54 Avenue Marcel Dassault - BP 24, 33701 Mérignac Cedex, France, petitioned the Federal Aviation Administration (FAA) for an exemption from the requirements of § 25.1447(c)(1) of Title 14, Code of Federal Regulations (14 CFR). This exemption, if granted would permit relief from the requirement for passenger oxygen masks to be automatically presented before the cabin-pressure altitude exceeds 15,000 feet for the Falcon 7X series airplanes.

The petitioner requests relief from the following regulation(s):

Section 25.1447(c)(1) requires, in pertinent part, that there must be an oxygen-dispensing unit connected to oxygen-supply terminals immediately available to each occupant, wherever seated. If certification for operation above 30,000 feet is requested, the dispensing units providing the required oxygen flow must be automatically presented to the occupants before the cabin-pressure altitude exceeds 15,000 feet, and the crew must be provided with a manual means to make the dispensing units immediately available in the event of failure of the automatic system.

The petitioner supports its request with the following information:

This section quotes the relevant information from the petitioner's request, with minor edits for clarity. The complete petition is available at the Department of Transportation's Federal Docket Management System, on the Internet at <http://regulations.gov>, in Docket No. FAA-2014-1007.

Summary

In accordance with the provisions of 14 CFR 11.81, Dassault Aviation respectfully petitions for a permanent exemption from § 25.1447(c)(1) to allow the installation of a passenger oxygen system which, when operating into or out of an airfield with a pressure altitude greater than 14,000 ft but lesser than 15,000 ft, ensures the automatic presentation of oxygen dispensing units to occupants before cabin altitude exceeds 16,000, rather than 15,000 ft, as required per § 25.1447(c)(1).

Background/Extent of Relief Sought

The Falcon 7X Series is designed to meet the requirements of 14 CFR part 25 for transport category aircraft. These rules were written at a time when all airfields accessible to such aircraft were located below 14,000 ft. As a result, the aircraft cabin altitude was never supposed to reach 15,000 ft under normal circumstances, and having an oxygen system that automatically presents oxygen masks when cabin altitude reaches 15,000 feet was an adequate compromise between occupants' safety and the conduct of operations on high-altitude airfields.

The Falcon 7X is already certified for high landing field elevation (LFE) operations, with a maximum airfield pressure altitude of 14,000 ft. However, a few airfields with an LFE between 14,000 ft and 15,000 ft above mean sea level exist in the Chinese regions of Tibet and Sichuan. This means that under standard atmospheric conditions, pressure altitude on these airfields will be between 14,000 ft and 15,000 ft. These airfields are accessible to transport category aircraft.

When operating out of or into such airfields, the cabin altitude may thus reach values close to or even equal to 15,000 ft before takeoff or after landing. This could result in unwanted presentation of oxygen masks and the need for a maintenance operation in order to store them back into their boxes, plus a possible cancellation or delay of the planned flight.

The change proposed is designed to maintain an equivalent level of safety while minimizing the possibility of such unwanted deployment of oxygen masks.

The current design of the passenger oxygen system has one pressure altitude setpoint of 14,500 feet \pm 500 ft (accounting for sensor tolerance), thus ensuring automatic presentation of oxygen masks before cabin altitude reaches 15,000 ft.

In the proposed design, a second setpoint of 15,500 ft, \pm 500 ft, is implemented in the oxygen system. The cabin pressure control system automatically commands the oxygen system to use this second setpoint when aircraft pressure altitude is below 24,800 ft and one of the following conditions is true:

- Aircraft is on ground and aircraft pressure altitude is above 14,000 ft, OR

- Aircraft is in climb and the pressure altitude at take off was above 14,000 ft, OR
- Aircraft is in descent and the selected LFE is above 14,000 ft.

Under all other conditions, the mask deployment setpoint remains at the current value, i.e., 14,500 ft, \pm 500 ft.

The manual mask deployment control (“Override” position of the oxygen control rotactor) is unchanged and remains available at any moment whatever the setpoint value.

Note that the maximum cabin pressure altitude reached in flight under normal operating conditions is not modified compared to current certified design, which was found compliant with § 25.841(a). When takeoff airfield pressure altitude is between 14,000 ft and 15,000 ft, the cabin pressure control system will pre-pressurize the aircraft before takeoff and set the cabin pressure altitude to 13,542 ft (same value as today when operating from a 14,000 ft airfield). During climb, the cabin pressure control system (CPCS) will let the cabin pressure increase, ensuring that a cabin altitude not more than 7,950 ft is reached before the aircraft climbs above 25,000 ft pressure altitude. This behavior is identical to current design already certified for operations up to 14,000 ft airfield altitude.

As a result, the setpoint for the cabin high altitude warning CAS [crew alerting system] message is unchanged and remains set at 14,200 ft for high LFE operations. The high cabin altitude warning is inhibited on ground in order to avoid nuisance warnings. The high cabin altitude warning setpoint is reset to the normal value of 8,000 ft when the aircraft altitude climbs above 24,800 ft. This feature (changing the setpoint of the cabin altitude warning message) is already part of the existing design for high LFE operations.

Conversely, when LFE is between 14,000 ft and 15,000 ft, the CPCS will keep cabin pressure altitude below 7,950 ft until the aircraft descends below 24,800 ft pressure altitude. At that point, the high altitude warning threshold will be shifted from 8,000 ft to 14,200 ft, and the CPCS will let the cabin pressure altitude increase until it reaches 13,542 ft. The CPCS will keep the aircraft pressurized at 13,542 ft cabin pressure altitude until landing is completed. This behavior is identical to the existing aircraft when landing at an airfield with LFE equal to 14,000 ft.

As a result, this proposed design change does not degrade the level of safety as far as § 25.841(a) is concerned. It will be demonstrated by system safety analysis that cabin pressure altitude always remains below 15,000 ft under any reasonably probable failure condition.

Public Interest

Dassault Aviation performs the completion and interior refurbishing of most of the aircraft it produces in Dassault Falcon Jet manufacturing plant of Little Rock, AR. Falcon aircraft are fitted with many products such as avionics, auxiliary power units,

environmental control systems, from several suppliers based in the United States. The exemption will directly impact the utility of the Falcon 7X for high-altitude operations and will allow fulfilling an explicit request from customers for such capability, thus having a direct effect on sales. These extra sales will benefit the economy in all communities where Dassault Falcon Jet and its suppliers are located, which is in the public interest.

Reasons why granting the exemption will not adversely affect safety

The safety features described above will ensure the avoidance of unwanted oxygen mask deployment during operations on high altitude airports, while still providing for automatic deployment in case of cabin depressurization or lack of pressurization (the highest possible cabin altitude for mask deployment being 16,000 ft), and for manual deployment in case of failure of the automatic mode.

It will be demonstrated by system safety analysis that proposed design for pressurization and passenger oxygen systems meets or exceeds all failure probability requirements.

The exemption requested would thus have no adverse impact on current level of safety for the Falcon 7X aircraft.

Additional Information

In the scope of this petition, Dassault Aviation takes benefit from previous grant of exemptions issued by FAA dealing with the setting of oxygen mask deployment setpoint above 15,000 ft for high airfield operations. Please note that FAA has previously granted such exemptions to several models with much larger passenger capacity than the Dassault Falcon 7X Series.

Exempt. No	Issue Date	Expir. Date	FAA Office	Disp.	Regulation	Petitioner	Aircraft
6076	04/26/1995	(NoExpire)	(NA)	Granted	25.841(a) 25.1447(c)(1)	The Boeing Company	B757
6994	09/16/1999	(NoExpire)	(NA)	Partially Granted	25.1447(c)(1)	Airbus Industrie	A319, A320, A321
8668	12/02/2005	(NoExpire)	(NA)	Granted	25.1447(c)(1)	The Boeing Company	B737
9801	12/12/2008	(NoExpire)	(NA)	Granted	25.1447(c)(1)	The Boeing Company	B787
10044	04/01/2010	(NoExpire)	(NA)	Granted	25.1447(c)(1)	Gulfstream Aerospace Corporation	GIV-X GV-SP

Request for waiver from publication and comments

Considering the above listed exemptions, it is Dassault Aviation's opinion that the requested exemption is identical to exemptions granted previously and that granting this petition would not set a precedent. As a result, Dassault Aviation respectfully requests that action on this petition should not be delayed by publication and comment procedures.

Exercise of exemption privileges and operation outside US

Considering the multitude of countries in which Falcon 7X Series are sold and operated, it is very likely that this exemption should be recognized by some other countries usually agreeing with FAA position. Moreover, all the existing airfields with altitude higher than 14,000 ft are located outside the United States. Dassault Aviation thus requests extension of this exemption outside the United States.

Federal Register publication

The FAA has determined that good cause exists for waiving the requirement for *Federal Register* publication for public comment because the request is identical in all material respects to previously granted exemptions; the exemption, if granted, would not set a precedent; and any delay in acting on this petition would be detrimental to Dassault Aviation.

The FAA's analysis

The FAA considers that granting this petition is in the public interest for the reasons stated by the petitioner, and because this exemption is effectively identical to previously granted exemptions.

The petitioner requests an exemption for the Dassault Aviation Falcon 7X series airplanes and seeks relief from the requirement of § 25.1447(c)(1), which states that oxygen-dispensing equipment for occupants must be automatically presented before the cabin-pressure altitude reaches 15,000 feet. The petitioner's current design of the passenger oxygen system has only one pressure altitude set point of 14,500 feet, \pm 500 feet (accounting for sensor tolerance), thus ensuring automatic presentation of oxygen masks before cabin altitude reaches 15,000 feet. The petitioner's proposed design of the passenger oxygen system provides for a second pressure altitude set point of 15,500 feet, \pm 500 feet. For operation of the Dassault Aviation Falcon 7X series airplane into and out of an airport with a landing field above 14,000 feet, the cabin pressure control system automatically commands the passenger oxygen system to use this second set point when aircraft pressure altitude is below 24,800 feet and any one of the following conditions is true:

- Airplane is on the ground and the airplane pressure altitude is above 14,000 feet; or
- Airplane is in climb and the pressure altitude at takeoff was above 14,000 feet; or
- Airplane is in descent and the selected landing field elevation is above 14,000 feet.

Under all other conditions, the passenger oxygen mask deployment set point remains at the original value (i.e., 14,500 feet, \pm 500 feet).

The FAA's decision

In consideration of the foregoing, I find that a grant of exemption is in the public interest. Therefore, pursuant to the authority contained in 49 U.S.C. §§ 40113 and 44701 delegated to me by the Administrator, I grant Dassault Aviation an exemption from the requirement of 14 CFR 25.1447(c)(1) that the passenger oxygen equipment be automatically presented before the cabin pressure altitude exceeds 15,000 feet. For Dassault Model 7X series airplanes, this grant of exemption will permit passenger oxygen masks to be automatically presented before the cabin pressure altitude exceeds 16,000 feet when operating into and out of airports with altitudes above 14,000 feet. This exemption is granted to the extent necessary to reduce the occurrence of inadvertent deployment of oxygen masks.

Issued in Renton, Washington, on February 19, 2015.

/s/

John P. Piccola, Jr.
Acting Manager, Transport Airplane Directorate
Aircraft Certification Service