

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

In the matter of the petition of

The Boeing Company

for an exemption from § 25.345(c) of
Title 14, Code of Federal Regulations

Regulatory Docket No. FAA-2015-0469

GRANT OF EXEMPTION

By letter dated February 19, 2015, Mr. David Horn, ODA Lead Administrator, The Boeing Company, 6001 S. Air Depot, Oklahoma City, Oklahoma, 73135, petitioned the Federal Aviation Administration (FAA) for an exemption from the requirements of § 25.345(c) of Title 14, Code of Federal Regulations (14 CFR). This exemption, if granted, would allow deployment of high lift devices during prolonged flight for the purpose of military aerial refueling operations on supplemental type certificate (STC) modified 767-2C tanker airplanes. The requested exemption would apply to military use only and would enable the refueling of all aircraft that are currently refueled by KC-135 and KC-10A tankers.

The petitioner requests relief from the following regulations:

Section 25.345(c) at Amendment 25-91 – If flaps or other high lift devices are to be used in en route conditions, and with flaps in the appropriate position at speeds up to the flap design speed chosen for these conditions, the airplane is assumed to be subjected to symmetrical maneuvers and gusts within the range determined by--

- (1) Maneuvering to a positive limit load factor as prescribed in Sec. 25.337(b);
and
- (2) The discrete vertical gust criteria in Sec. 25.341(a).

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-2015-0469.

Description of Issue

The United States Air Force (USAF) requires that the KC-46A (or 767-2C) be capable of refueling all aircraft that may currently be refueled using KC-135 or KC-10A tankers. Some of these receiver aircraft refuel at low speeds that would require prolonged flight with high lift devices deployed during aerial refueling operations. The intent of the requirement of § 25.345(c) may be satisfied by consideration of the expected usage of the KC-46A airplane, operational procedures, and inherent structural capability.

Note that the KC-10A requires a similar low speed refueling envelope with flaps down operation. The current en route flap requirements of § 25.345(c) were not part of the KC-10A certification basis.

Expected Usage

Low speed refueling should be regarded as a customer required capability and not as common usage as envisioned by the regulation. This capability is expected to be utilized very infrequently as these flaps down refueling events are not part of the KC-X specification mission profiles which form the basis for structural durability evaluation. For any KC-46A, the frequency of low altitude refueling missions, including flaps down refueling, is expected to be less than 10 hours per year, equivalent to 10^{-2} per flight hour.

Flaps down refueling operations are low speed, in the range of 185 to 200 KIAS and below the flaps down maximum altitude limit of 20,000 ft. Flaps will not be deployed during high speed or high altitude flight. Only takeoff flap settings, detents 1, 5, 15, and 20, may be used. Since flaps 1 and 5 are sufficient to perform these missions, flaps 15 and 20 usage is expected to be rare.

This operation is expected to be very infrequent. Therefore, the cumulative lifetime refueling flaps down operation is not significant both from an exposure to elevated maneuver and gust environment and effects on the overall structural durability.

Operational Procedures

For aerial refueling operations, turbulence is avoided and the fuel offload maneuvering limit is 1.5g's. Similar to the KC-10A aerial refueling operations manual, the KC-46A operations manual will instruct the flight crew to terminate refueling if moderate turbulence is encountered.

Situational awareness is high due to proximity of receiver aircraft. When not in preparation or execution of slow receiver offload, the tanker aircraft would operate flaps up to minimize fuel burn during loiter segments. When not offloading, flaps down maneuver limits remain at the current airplane flight manual (AFM) limit, 0g to 2g.

Structural Capability

As discussed in the Amendment 25-46 publication preamble, the current requirement for consideration of en route flaps is intended to address situations where the airplanes are "commonly flown in en route conditions with flaps deployed for purposes other than as

speed brakes, and the airplane structure should be designed for the appropriate loads regardless of the operational reason.” Sufficient and appropriate structural capability for the expected flaps down refueling operations is provided by the existing design both for offload operations and for loading conditions following disconnect.

In the event that severe turbulence is encountered during aerial refueling operations, the KC-46A structural capability is sufficient for the effects of the gust and rapid refueling termination and disconnect. Rapid disconnects and resulting fuel pressure transients are addressed in the basic USAF approved aerial refueling criteria. In the event of a rapid disconnect followed by high maneuvering or severe gusts, the aircraft loads are limited by airplane lift capability to the existing structural capability as described below.

During operation in the low speed refueling regime, the vertical maneuvering and gust loads are naturally limited by airplane maximum lift capability to envelopes comparable to the flaps down envelope required by § 25.345(a). Encounters with severe head on gusts, while not required by § 25.345(c), are also very unlikely to exceed structural capability during these operations.

Since flaps 1 and 5 are expected to be used more often, the maneuvering and gust capabilities are shown for flaps 5, the most critical. Flaps 15 and 20 are available, but refueling operations with these settings is expected to be rare and are not considered.

Statement of Public Interest

The USAF requires that the KC-46A be capable of refueling all aircraft that may currently be refueled using KC-135 or KC-10A tankers. Some of these receiver aircraft refuel at low speeds that would require prolonged flight with high lift devices deployed during aerial refueling operations. Application of § 25.345(c) would cause significant modification to the airplane that would provide no net benefit in the configuration and no commensurate increase in safety. If the relief is not granted, it could lead to delays in the delivery of the STC-modified 767-2C to the USAF at a critical time of need. It remains in the public interest to grant Boeing an exemption to § 25.345(c) for the STC-modified 767-2C airplane.

Statement of No Adverse Effect on Safety

The petitioner requests that this petition for exemption not be delayed by the public process, which includes publication of the subject petition. If this exemption is not granted, it could lead to delays in the delivery of the STC-modified 767-2C to the USAF at a critical time of need. The STC-modified 767-2C approved aircraft will not be eligible to receive a civil airworthiness approval or standard certificate of airworthiness. It is intended that the aircraft will be maintained as a public use aircraft only for the life of the product.

Federal Register publication

Although the petitioner requested that action on its petition not be delayed for publication in the Federal Register, the FAA found that the petition, if granted, would set a precedent. Therefore, to allow an opportunity for the public to comment on the petition, we published a summary of it in the Federal Register on July 10, 2015 (80 FR 39830). No comments were received.

The FAA's analysis

Aerial refueling is not an approved operation of commercial airplanes and the requested exemption only applies to military refueling operations. The 767-2C airplane is not currently commercially available; however, we recognize that future sales or conversions could include airplanes that are the subject of this exemption and these airplanes could be used in commercial service. Boeing addresses this concern by providing operating limitations in the AFM that will prevent aerial refueling operations in commercial service.

The intended use of this airplane is military aerial refueling and not commercial operation. As stated by the petitioner, low speed refueling is not considered common usage for commercial airplanes envisioned by the regulation and also is expected to occur very infrequently. The airplane's design has shown sufficient and appropriate structural capability for the expected flaps down refueling operations, and the operations manual provides appropriate instructions if moderate turbulence is encountered during these operations. This exemption will not adversely impact public safety. We agree that granting this exemption is in the public interest because it will prevent expenditure of taxpayer dollars on unnecessary structural modifications and it will enhance the United States military by replacing older, less efficient tanker airplanes and ensure consistency within the current USAF fleet.

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 The Boeing Company an exemption from 14 CFR 25.345(c). The exemption is granted to the extent necessary to allow deployment of high lift devices during prolonged flight for the purpose of military refueling operations on STC modified 767-2C military tanker airplanes.

Issued in Renton, Washington, on October 30, 2015.

/s/

Michael Kaszycki
Acting Manager, Transport Airplane Directorate
Aircraft Certification Service