

**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 § 25.979(d) and (e)
of Title 14, Code of Federal Regulations

Regulatory Docket No. FAA-2014-0661

GRANT OF EXEMPTION

By letter dated August 19, 2014, 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 § 25.979(d) and (e) of Title 14, Code of Federal Regulations (14 CFR). This exemption, if granted, would permit the use of industry standard pressure loads for onload and offload fueling installations on supplemental type certificate (STC) modified 767-2C tanker airplanes instead of the regulatory requirement of an ultimate pressure of 2.0 times the limit load at maximum pressures, including surge. The requested exemption would apply to military use only and would ensure consistency within the current military fleet.

The petitioner requests relief from the following regulations:

Section 25.979 – Pressure fueling system

For pressure fueling systems, the following apply:

(d) The airplane pressure fueling system (not including fuel tanks and fuel tank vents) must withstand an ultimate load that is 2.0 times the load arising from the maximum pressures, including surge that is likely to occur during fueling. The maximum surge pressure must be established with any combination of tank valves being either intentionally or inadvertently closed.

(e) The airplane defueling system (not including fuel tanks and fuel tank vents) must withstand an ultimate load that is 2.0 times the load arising from the maximum permissible defueling pressure (positive or negative) at the airplane fueling connection.

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-2014-0661.

STC Modified 767-2C

The baseline 767-2C certified pressures are sufficient for ground refueling and defueling of aircraft in the commercial environment. During onload and offload operations, receiver top-offs generate high surges in the receiving aircraft that are reflected back in to the tanker. These surge pressures on other legacy refueling systems (KC-135, KC-10, and the 767 Global Tanker Transport Aircraft [GTTA]) can approach 240 pounds per square inch gage (PSIG). The onload and offload systems and its operations of the 767-2C STC are similar to the aforementioned legacy tanker airplanes.

The current fleet of Air Force tankers and large body receivers are built to the following industry standards for fuel pressure consistent with the Joint Service Specification Guide (JSSG), Joint Service Board (JSB), Standardization Agreements (STANAGs), Mil-Specs, and Aerial Refueling Systems Advisory Group (ARSAG) specifications:

Operating (normal/working) pressure	120 PSIG
Proof (limit) pressure	240 PSIG (2x operating)
Burst (ultimate) pressure	360 PSIG (3x operating, 1.5x proof)

FAA regulations in 14 CFR address civil operational use of the aircraft. These regulations do not envision civil aircraft being modified for in-flight onload and offload fueling operations (a non-civil function). In order to meet § 25.979(d) and (e), the 767-2C would be required to meet a burst pressure of 480 PSIG (2 x 240 PSIG).

The 767-2C fuel system as modified by the STC will add additional functionality to the existing baseline fuel system. The certified 767-2C amended type certificate (ATC) fuel systems are designed for a max burst pressure of 360 PSIG. Increasing the burst pressure to 480 PSIG to the baseline 767-2C fuel system would require redesign, requalification, and recertification at the system level. Additional component level requalification and recertification will be required to pump shutoff valves, check valves, nozzle, reception couplings, receptacles, plumbing, hose, interconnects, etc. It is impractical and not economically viable to make the design changes to increase the burst pressure to 480 PSIG.

Historical operation of tankers (KC-135, KC-10, and GTTA) and large body receiver aircraft (C-5, C-17, E-3, B-52, and B-1) indicate no event of fuel system leaks with surge pressures that may approach 240 PSIG. This stellar operational record incorporates fuel system design features carried forward to the 767-2C onload and offload installations.

The 767-2C onload and offload installations have the ability of withstanding 240 PSIG surges and 240 PSIG in a steady state condition indefinitely. Testing will be done simulating normal operations and single failures that generate high surge pressures to

verify that all surges experienced on the 767-2C during onload and offload operations remain below 240 PSIG.

Statement of Public Interest

The single aspect of § 25.979(d) and (e) that the 767-2C onload and offload installations do not meet is the 2.0 times the load arising from the maximum pressures. The regulations are specifically written for ground refueling operations and not onload and offload installations. Maintaining the industry standards for onload and offload installations utilized on programs such as the KC-135, KC-10, and the GTTA will provide for the most economical option for the STC modified 767-2C and provide consistency within the industry for onload and offload installations.

Both the baseline 767-2C and the STC modified 767-2C maintain a 360 PSIG burst pressure maximum. Any change to the 767-2C baseline fuel system 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 767-2C to the United States Air Force (USAF) at a critical time of need. It remains in the public's interest to agree with The Boeing Company decision to utilize industry standards for onload and offload operating pressures which ensure consistency within the current military fleet.

Statement of No Adverse Effect on Safety

The ground refueling installations on the 767-2C will be certified in accordance with § 25.979(d) and (e). The STC modified 767-2C onload and offload refueling installations will meet industry standards for fuel pressure. Both elements of the operations shall assure that the aircraft will not exceed the maximum burst pressure of 360 PSIG and to operate safely within the design standards.

The 767-2C must be operationally compatible with other tanker airplanes for onload and offload with current receivers and tankers which operate with surge pressures up to 240 PSIG. Along with meeting industry standards for onload and offload refueling installations, the STC modified 767-2C will add an operating limitation in the airplane flight manual (AFM) that states that onload and offload operations are limited to military use only as allowed by Order 8110.101. This will prohibit civil in-flight onload and offload system operations. Additionally, due to the aforementioned limitation and other limitations as a result of the STC alterations, the aircraft will not be permitted to carry commercial passengers.

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 6, 2015 (80 FR 38505). 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.

In addition, Boeing will demonstrate that the maximum surge pressure during failure conditions will maintain a safety factor of 1.5. This safety factor margin has been adequate on previous military refueling aircraft and the proposed fuel system burst pressure limits provide the capability proven in other military aerial refueling airplanes. Granting this exemption will not adversely impact public safety. 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 25.979(d) and (e). The exemption is granted to the extent necessary to allow The Boeing Company to use industry-standard design pressures that have a lower factor of safety than is required by § 25.979 on STC modified 767-2C military tanker airplanes.

This exemption is subject to the following condition(s):

1. The fuel onload and offload installations on the STC modified 767-2C must withstand an ultimate load that is 1.5 times the load arising from the maximum pressures, including surge that is likely to occur during onload and offload fueling operations.
2. The STC modified 767-2C must add an operating limitation in the AFM that states that onload and offload operations are limited to military use only as allowed by FAA Order 8110.101. This will prohibit civil in-flight onload and offload system operations.

Issued in Renton, Washington, on September 2, 2015.

/s/

Michael Kaszycki
Acting Manager, Transport Airplane Directorate
Aircraft Certification Service