



U.S. Department
of Transportation
**Federal Aviation
Administration**

Transport Airplane Directorate
1601 Lind Avenue, S.W.
Renton, Washington 98057-3356

March 10, 2016

Exemption No. 11086A
Regulatory Docket No. FAA-2013-0767

Mr. Bruce Groenewegen
Program Manager
The Boeing Company
PO Box 3707
Seattle, Washington, 98124

Dear Mr. Groenewegen:

This letter is to inform you that we have granted your request for an amended exemption. It transmits our decision and explains its basis.

By letter RA-15-00662, posted in the Federal Docket September 17, 2015, and proprietary letter RA-15-00973, dated July 30, 2015, received at the FAA Northwest Mountain Headquarters in Renton, WA, Mr. Bruce Groenewegen, on behalf of The Boeing Company, petitioned the Federal Aviation Administration (FAA) for an amendment to exemption no. 11086. That exemption provides relief from the requirements of § 25.961(a)(5) of Title 14, Code of Federal Regulations (14 CFR) as it relates to fuel-system hot-weather operation on Boeing Model 767-2C airplanes. This recent petition to amend exemption no. 11086 requests that JP-4 fuel be allowed in the center and body fuel tanks.

Boeing requests an amendment on the grounds that the 767-2C can monitor the fuel temperature in all tanks, and requests that the FAA modify the 767-2C temperature-limitation-versus-altitude chart as it is incorporated by reference from exemption no. 7790. Boeing submits their petition to allow these changes from the original exemption.

Boeing's petition states that they seek an amended exemption for the following reasons:

1. It is in public interest. The customer for the 767-2C requires their aircraft be able to operate with JP-4 and Jet B fuels. A maximum temperature of 85°F will meet their operational requirements.
2. The 767-2C will demonstrate fuel feed performance under normal and abnormal conditions with JP-4 at the maximum temperature allowed under this exemption.
3. The 767-2C will demonstrate fuel feed performance under normal and abnormal conditions to cover all other approved fuels to temperatures in excess of 110°F.

4. The 767-2C will be certified with a [fuel] inerting system in all tanks that will limit flammability below the levels required by 14 CFR 25.981(b).
5. The proposed limitations on fuel temperature and maximum altitude for cruise provide a level of safety equal to that intended by 14 CFR 25.961(a)(5).
6. The FAA has granted similar exemptions in the past:
 - a. for the Rolls Royce-powered 757-300 (FAA Exemption No. 6867, issued 2/12/1999)
 - b. for the Pratt & Whitney-powered 757-300 (FAA Exemption No. 7790, issued 6/3/2002)
 - c. for the Rolls Royce-powered 747-400/400F (FAA Exemption No. 7496, issued 4/12/2001)
 - d. the Rolls Royce-powered 757-200 has had an 85°F temperature limitation for JP-4 and Jet B fuels since entry into service in 1983.

The Basis for Our Decision

The FAA has issued grants of exemption, with operational limits, in circumstances similar to those presented in your petition, including for Boeing Model 747-400 and 757 series airplanes using JP-4 and Jet B fuel. However, the intent of those exemptions was to allow limited operation of the airplanes for one flight to reach a maintenance base following a diversion that causes a landing at a location that only had JP-4 or Jet B fuel available. Prior to dispatch of the flight, the airplane maximum altitude was established based upon the fuel-temperature limitations. No dedicated warning was provided to the flightcrew because this was considered an infrequent operating condition for commercial 747-400 and 757 operations.

Boeing has requested that this exemption be applied to the Model 767-2C, which is a commercial derivative of the Model 767-200. The Model 767-2C is being developed as a civilian freighter, but is intended to be modified into an aerial refueling platform, i.e., a military KC-46 tanker via a subsequent FAA supplemental type certificate (STC). In the KC-46 configuration, continuous day-to-day operation with these fuels would be allowed to support the unique fuel-type requirements and system needs associated with military operations. Because the 767-2C does not provide any warnings to the flightcrew when they are approaching the limit as defined in the flight-manual, the FAA considers that this design is inconsistent with the two-crew display-and-warning philosophy implemented on previously approved two-crew flightdeck designs. In consideration of the plan to repurpose the 767-2C as the precursor to the KC-46 configuration, the FAA has determined that it is acceptable for military operations to be conducted in this manner, with this system. However, the FAA does not allow this same consideration for commercial operations.

Having reviewed Boeing's reasons for requesting an amended exemption, I find that—

- they don't differ materially from those Boeing presented in the enclosed grant of exemption no. 7790;
- the reasons stated by the FAA for granting this exemption also apply to the reasons Boeing presented in their petition; and
- a grant of amended exemption is in the public interest.

Federal Register Publication

The FAA has determined that good cause exists for not publishing a summary of the petition in the *Federal Register* for public comment because the requested exemption amendment would not set a precedent, the FAA has not received public comments on other exemption requests for relief from § 25.961(a)(5), fuel-system hot-weather operation, and any delay in acting on this petition would be detrimental to The Boeing Company.

Our Decision

Under the authority contained in 49 U.S.C. 40113 and 44701, which the FAA Administrator has delegated to me, I hereby grant The Boeing Company an exemption from the requirements of 14 CFR 25.961(a)(5) as it relates to fuel-system hot-weather operation on Boeing Model 767-2C airplanes deployed as military KC-46 tankers, and not in commercial operations.

The following conditions apply:

1. The 767-2C fuel-system feed performance, under normal and abnormal conditions, must be demonstrated during certification flight testing with JP-4 fuel at the maximum fuel temperature this exemption allows.
2. The following altitude and fuel-temperature limitations table for operating with JP-4, or any fuel mixture containing JP-4, must be incorporated in the Airplane Flight Manual to keep fuel pressure and the vapor/liquid (V/L) ratio within the engine manufacturer's limitations at the engine fuel-pump inlet.

If dispatch fuel is this temperature (°F)	Then altitude is limited to (feet)
65 to 85	32,000
45 to 65	36,000
25 to 45	39,000
25 or Lower	40,100

Fuel-temperature altitude limitations

3. The fuel tanks must be de-fueled to sump level (i.e. level at which the fuel-pump low-pressure lights illuminate) following operations with JP-4 or Jet B fuel. If the fuel tanks are not de-fueled, and a mixture of JP-4 is present in the fuel tanks, the JP-4 fuel usage limitations continue to apply.
4. The maximum fuel temperature of the left main tank, center wing tank, forward body tank, and aft middle body tank must be indicated in the flightdeck to allow the flightcrew to operate within the limitation, including when the center or body tanks contain JP-4 or Jet B fuel.

5. For airplanes dispatched using JP-4 fuel, the Airplane Flight Manual must include procedures and guidelines that enable the operator to comply with the temperature limitations required in this exemption.
6. The Airplane Flight Manual and airplane type certificate must include a limitation that restricts this exemption to Model 767-2C airplane military operation only.

This exemption amendment supersedes exemption no. 11086.

Sincerely,

/s/

Michael Kaszycki
Acting Manager, Transport Airplane Directorate
Aircraft Certification Service