

UNITED STATES OF AMERICA
DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
RENTON, WASHINGTON 98055-4056

In the matter of the petition of

Omega Air

for an exemption from SFAR No. 88 of Title
14, Code of Federal Regulations

Regulatory Docket No. FAA-2004-18020

PARTIAL GRANT OF EXEMPTION

By letter dated May 27, 2004, Mr. Kevin O'Neill, Omega Air, 9023 Wetmore Road, San Antonio, Texas, 78216, petitioned for an exemption from the requirements of Special Federal Aviation Regulation (SFAR) No. 88, "Fuel Tank System Fault Tolerance Evaluation Requirements" of Title 14, Code of Federal Regulations (14 CFR). In this petition, the petitioner refers to supplemental type certificate (STC) No. ST0088LA. In a letter dated December 21, 2004, Omega Air corrects the STC reference number to read STC No. ST00888LA. This exemption, if granted, would allow Omega Air, as the holder of STC No. ST00888LA, for Boeing Model 707-300B airplane, to substantially meet the intent of SFAR No. 88 without conducting a complete safety review of the airplane fuel tank system, as required by SFAR No. 88.

The petitioner requests relief from the following regulations:

Part 21, SFAR No. 88, requires each STC holder to develop a report no later than June 6, 2003, that must:

- (a) Provide a fuel tank system safety review that contains substantiation that the airplane fuel tank design, including all necessary design changes, meets the requirements of §§ 25.901 and 25.981(a) and (b) as amended by Amendment 25-102; and
- (b) Contain all maintenance and inspection (M&I) instructions established by the fuel tank system safety review. The instructions are necessary to maintain the fail-safe design features required to preclude the existence or development of an ignition source within the fuel tank system throughout the operational life of the affected airplanes.

Operators are obligated by the amendments to parts 91, 121, 125, and 129 of the operating rules to have an approved maintenance program for the fuel tank systems on their affected airplanes by December 16, 2008. That maintenance program will incorporate the M&I instructions created by the affected TC and STC holders from their SFAR 88 fuel tank system safety review(s), as well as address the actual configuration of the airplane.

The petitioner's supportive information is as follows:

Background Information

Omega Air “. . . learned of a requirement by the US Navy for big wing Aerial Refuelling tankers to support their air warfare efforts. However, due to budget restraints it was apparent that outright purchase of these aircraft was not possible. With this information in mind Omega Air modified one of its Boeing 707 aircraft with the necessary equipment and offered it to the Government on a cost per hour basis.”

“The aircraft is operated under a United States Government contract in the ‘Public Use’ category to provide Aerial Refuelling services to the U.S. Navy. Typical operations consist of ‘Dragging’ aircraft to/from maintenance/operational bases, pilot training and qualification, on-shore exercises as well as carrier battle group (CVBG) support. We have been supporting U.S. Naval operations since June 2001 with great success having completed over 700 missions to date.”

“Presently Omega Air operates one Boeing 707-300B, which is modified to accommodate the Aerial Refuelling system. Due to the success of this program (both technically and cost) and at the customer’s request, we are beginning this same modification to another Boeing 707 and we expect to modify a number of other 707 aircraft in the coming years.”

“Granting the exemption will not adversely affect safety. Both the pumps and the aerial refuelling system incorporate a number of safety features . . . When carrying out its missions for the customer, the aircraft is operated in the ‘Public Use’ category and therefore only the persons directly involved with the aerial refuelling mission fly onboard the aircraft. Aerial refuelling operations are carried out either over the sea or in low populated areas called ‘refuelling tracks’ as laid down by the U.S. government.”

Operations outside the United States

“On occasion the aircraft is required by the customer to operate outside the United States. As per CFR Part 11.81(h), Omega Air will want to exercise the privileges of an exemption (if granted) outside the United States to continue supporting the customer overseas.”

Public Interest Considerations

“Relief is sought from this rule because compliance with SFAR88 by Omega Air is not in the public interest. Compliance with the rule will create extra costs, as Omega Air will have to carry out expensive modification to the aircraft. This extra cost will in turn be passed on to the United States Government in the form of increased charges for the Aerial Refuelling services provided by Omega Air to the Department of the Navy.”

“To comply with SFAR88, Omega Air will have to replace the two electrically powered aerial refueling pumps with non-electrically powered pumps (i.e. hydraulically powered). Along with plumbing, extra hydraulic pumps will have to be fitted to the aircraft. This modification will cause extensive engineering and testing changes to the existing STC or possibly a new STC may be required. The extra cost associated with changing the system will in turn prevent Omega Air from providing the Aerial Refuelling services to the United States Navy at current reasonable costs.”

“The Aerial Refuelling System Design

“The two aerial refuelling pumps supply the fuel from the tanks through the fuel supply ducts and valves to the hoses. The two hoses are housed separately in ‘pressure boxes’ outside the pressure hull and are used one at a time.

“The aerial refuelling equipment is split into 2 main parts called A Kit and B Kit. The A Kit is made up of the items that remain permanently installed in the aircraft.

“They include, structural modifications, ducting, piping electrical wiring, hydraulic installations, valves, lights and mounts for the aerial refuelling pumps. The A Kit is approved under the STC. The B Kit is made up of the removable parts such as the hoses, hose reels, pressure boxes and control panels.

“The aerial refuelling pumps are the items of concern with reference to SFAR 88 as they are mounted in the center tank and are electrically powered. A twelve-foot cable supplies electrical energy to them from the aircraft’s normal electrical system. This cable is routed from the fuselage through the front wing spar; it passes through a metal conduit from the inside of the front wing spar to the pump.

“Safety features

“The system incorporates a number of safety features.

- 1 “The electrical supply for each pump is routed through stand-alone circuit breakers in the cockpit to ensure that a short circuit/overload will trip them and shut the pumps down.
- 2 “The type of pumps used in the Omega 707 is same as those used in many military installations and have been in use for over 40 years. A thermal shut down feature is installed to ensure that when a overheat situation occurs, power is shut off from aircraft all the way to the pump. Omega Air’s operations manual requires that 12,000 lbs remain in the tank at all times ensuring that the pumps are

always immersed in fuel, even though the pumps have been tested to run 'DRY' for 100 hours as per their MIL specification.

- 3 "The fuel supply line that passes from the tanks to the hoses is double walled. This ensures that any leakage from the line is contained. The outside line is vented overboard to ensure that any leaking fluid is evacuated from the aircraft.
- 4 "The pressure boxes, which house the hoses, are also vented overboard. This ensures that any leaking fluid is evacuated from the aircraft.
- 5 "The entire aerial refuelling system is monitored by a leak detection system. This system consists of a number of sensors and float switches. If a leak is detected, the system automatically shuts the pumps down. This ensures that no more fuel is lost and the leaked fluid is vented overboard.
- 6 "The fuel supply line and the pressure boxes are also fitted with sumps. These sumps contain float switches, which also shut the system down if activated.
- 7 "If the leak detection system shuts the aerial refuelling system down, it can only be re-set at a panel located at the pressure boxes. This ensures that if the crew suspect a false shut down (i.e., not a fuel leak) the engineer must go and inspect the system in the aft cargo bay before a re-set is possible.

"Maintenance and Inspection

"The aircraft is maintained to Omega Air's FAA approved customized maintenance program. Boeing wrote this program for Omega Air and it was FAA approved in 1999. It is an integrated program based on the MSG3 philosophy.

"The aerial refuelling system is maintained by instructions in the STC." The Instructions for Continuing Airworthiness "include structural inspection and maintenance task items and have been integrated into Omega Air's customized maintenance program. Omega Air is also in contact with Boeing with reference to their requirements in complying with SFAR88 and will incorporate their findings/instructions into our maintenance program."

"Conclusion

- "Safe operations have been carried out for over 40 years using the same equipment as is used by Omega Air. Omega Air has carried out safe operations since June 2001.
- "The Aerial Refuelling system is only used when operating 'public use.' If the aircraft needs to operate under direct FAA control (FAR part 91, 121, 125 etc) the B Kit is removed and the aerial refuelling system is rendered inoperable as per the STC.
- "The system incorporates a number of safety features as listed above.

- “The aircraft and the aerial refuelling system are maintained/inspected by approved procedures.
- “FAA oversight is maintained on the aircraft every 60 days.
- “Granting this exemption is in the public interest.”

A summary of the petition was published in the Federal Register on August 4, 2004 (69 FR 47205). No comments were received.

The FAA’s analysis/summary is as follows:

The FAA has considered the information provided by the petitioner, and has determined there is sufficient merit to warrant a partial grant of exemption.

Nature and Extent of Relief Sought

The petitioner requests an exemption from the requirements of SFAR No. 88 for the aerial refueling modifications associated with STC No. ST00888LA. The airplane modified by this STC is sometimes operated overseas. Consequently, the petitioner requests exercising the privileges of the exemption outside the U.S. in accordance with CFR Part 11.81(h). The FAA finds the petitioner does not need to exercise the privileges of this exemption outside the U.S. because SFAR No. 88 and this exemption only affect the petitioner’s privileges as an STC holder, not as an operator. The privileges of STC holders to obtain airworthiness certificates, as stated in 14 CFR 21.119, are only exercised within the U.S.

Information in Support of the Petition

The airplanes modified by STC No. ST00888LA are limited in the number of aircraft that are affected. They have limited use since they are operated under a U.S. government contract in the “Public Use” category to provide aerial refueling service to the U.S. Navy. The FAA agrees that a petition for exemption is an appropriate avenue to address the petitioner’s concerns supporting the exclusion of STC No. ST00888LA from compliance with SFAR No. 88.

Comments in the Public Interest

The petitioner demonstrates unique circumstances that make granting the exemption in the public interest. Omega Air provides a service to the U.S. Navy by supplying an airplane that is capable of aerial refueling which is an integral part of the U.S. Navy’s operation. A denial will increase the cost charged to the U.S. Government. The FAA concludes that because of the small fleet size and limited operation of these airplanes, the aerial refueling system design of STC No. ST00888LA is acceptable with the restrictions and limitations below.

In consideration of the foregoing, I find that a partial 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, Omega Air is granted a partial exemption from Title 14, Code of Federal Regulations, part 21, SFAR No. 88 (insofar as the SFAR addresses compliance with §§ 25.901 and § 25.981(a) and (b), as amended by Amendment 25-102), to the extent necessary to allow Omega Air, as the holder of STC No. ST00888LA, to meet the obligations of SFAR No. 88 without conducting a complete fuel tank safety review, and without developing the necessary design changes required by that safety review, with the following restrictions and limitations:

1. Omega Air must submit a report to substantiate that the electrical power wires, installed by STC No. ST00888LA, in metal conduits located in the fuel tank are adequately protected from chaffing or provide a design change to modify the metal conduits with electrical power wires. The report must be submitted to the cognizant Aircraft Certification Office (ACO) no later than 18 months from issuance of this exemption.
2. A maintenance and inspection program for these metal conduits and electrical power wires must be developed and submitted to the cognizant ACO no later than 18 months from issuance of this exemption.
3. If the FAA disapproves the reports identified in paragraphs 1 and 2, above, this exemption becomes invalid on the date of the disapproval.
4. This exemption does not provide relief to operators of airplanes modified in accordance with STC No. ST00888LA from the requirements in their respective operating rule (§§ 91.410, 121.370, 125.248, or 129.32). The operator is responsible for developing any necessary changes to their maintenance or inspection program based on data and information approved by the FAA oversight office (Aircraft Certification Office or the office within the Transport Airplane Directorate) responsible for oversight of the STC.

Issued in Renton, Washington, on March 14, 2005.

/s/ Ali Bahrami
Ali Bahrami
Manager
Transport Airplane Directorate
Aircraft Certification Service