

Exemption No. 8609

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

In the matter of the petition of

Maryland Air Industries, Inc.

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

Regulatory Docket No. FAA-2003-16770

DENIAL OF EXEMPTION

By letter dated November 28, 2003, Mr. Gil Thurston, Manager, Maryland Air Industries (MAI), Inc., 18450 Showalter Road, Box 102, Hagerstown, MD 21742, petitioned for an exemption from the requirements of Special Federal Aviation Regulations (SFAR) No. 88, "Fuel Tank System Fault Tolerance Evaluation Requirements" of Title 14, Code of Federal Regulations (14 CFR). This exemption, if granted, would allow MAI to substantially meet the intent of SFAR No. 88 without conducting a safety review of the airplane fuel tank system on Fairchild Model F-27 and FH-227 airplanes, as required by SFAR No. 88.

The Transport Airplane Directorate has been informed by the New York Aircraft Certification Office that the address for MAI has changed since the submittal of its petition for exemption. The current contact information is Mr. Barrie Peterson, President, MAI, 13649 Office Place, Suite 101, Woodbridge, VA 22192.

The petitioner requests relief from the following regulations:

Part 21, SFAR No. 88, requires each supplemental type certificate (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.

By December 16, 2008, 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. That maintenance program will incorporate the M&I instructions created by the affected type certificate (TC) and STC holders from their SFAR No. 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:

“Relief is sought from SFAR 88 on the basis that compliance with SFAR 88 is not in the public interest. The economic burden imposed by full compliance with the SFAR will force operators to take the Fairchild Model F-27/FH-227 airplanes out of service. This will deprive the public of the unique services provided by current Fairchild airplane operators. Today, these aircraft are used by a very limited number of operators.

“Granting the requested exemption will not adversely affect safety. The Fairchild Model F-27/FH-227 fuel tank system is a robust design that is maintainable by the operators.

“Background

“The Fairchild Model F-27/FH-227 airplane is a 2-engine turboprop aircraft designed to carry up to 52 passengers. It was designed and built by the Fairchild Airplane Company under a licensing agreement with Fokker Aircraft. Production started in 1955 and continued until 1973. . . .”

“Based on limited, voluntary information provided by operators and owners of these aircraft, MAI estimates that 20-30 aircraft remain in active or inactive flying status throughout the world. Approximately 3 of these aircraft are of United States registry.

“Public Interest Considerations

“The SFAR requires that a safety review be conducted to determine if the subject design meets the latest amendment level of CFR 25.901 and a new set of requirements in CFR 25.981. The Fairchild airplane was certified to the Civil Air Regulations (CAR 4b) which has no requirement similar to CFR 25.981 regarding fuel tank temperatures, or the demonstration that ignition sources will not result from all combinations of failures not shown to be extremely improbable. Compliance with this requirement will require new analysis and possible testing to prove that the design meets the requirement for all operating conditions.

“Demonstrating compliance with CFR 25.901 requires significant resources to determine component failure rates for an acceptable failure analysis. While such analysis may be useful in design and early development of an aircraft, it does not appear to be in the public interest to produce extensive analysis for a design that has over 40 years of operational experience demonstrating safety of the design.

“Significant resources are also required to produce analysis documents acceptable to show compliance with fuel tank temperature requirements of CFR 25.981.”

Compliance with SFAR 88 will exceed the FAA estimate of 3 person-years published in the economic analysis. “For an out-of-production aircraft such as the Fairchild Model F-27/FH-227 airplane, the time to familiarize a new staff with the design, confirm the existence of and locate pertinent files, to relate those files to the long history of the aircraft, and to develop test and compliance documents for new regulations are time consuming tasks that exceed FAA estimates.”

If the current Fairchild Model F-27/FH-227 airplane fuel system design does not meet the new imposed requirements, redesign and modification of aircraft will be necessary. “Wiring systems are particularly susceptible to damage if disturbed during maintenance or modification. Pulling wire bundles apart and disturbing connectors and wire bundle supports could result in damage that would be difficult to observe but could pose serious problems at a later time. Replacing all wiring impacted by modification to existing wiring runs would be extraordinarily expensive.”

“Review of Fairchild/MAI Service Bulletins and Service Information Letters

“Fairchild Aircraft Service Bulletins and Fairchild Aircraft Service Letters have been reviewed. None of these documents have any information indicating that design or procedural changes were needed to correct problems with the fuel system, the fuel quantity indication system, electrical wiring associated with the fuel system, the fuel pumps or fuel lines.

“Conclusion

“MAI respectfully requests that an exemption from the requirements of SFAR 88 be issued for the Fairchild Model F-27/FH-227 aircraft.

“In support of the intent of SFAR 88, if this petition for exemption is approved, MAI would agree to work directly with active U.S. F-27/FH-227 operators in a mutual effort to review the fuel system maintenance performance in their Fairchild airplane fleet. This effort would be used to generate a recommended maintenance practice in the form of a service letter or service bulletin for fuel tank safety that would further enhance safe Fairchild Model F-27/FH-227 airplane operations and support the intent of SFAR 88.”

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:

According to Airclaims records there are 46 Fairchild Model F-27 and FH-227 series airplanes worldwide. Twenty-six are currently in service and twenty are in storage. The FAA finds that the Fairchild Model F-27 and FH-227 series airplanes are similar to Fokker Model F27 series airplanes. Fokker has complied with SFAR 88 and found several non-compliant design features in the fuel system, some of which will likely be classified as unsafe conditions. The FAA anticipates follow-on mandatory action to correct unsafe conditions on the Fokker Model F27 series airplanes. Since the Fairchild and Fokker airplanes are similar, the FAA has determined that the Fairchild F-27 and FH-227 series airplanes may have the same non-compliant design features as the Fokker Model F27 series airplanes. During the last several months the FAA has attempted to contact MAI to evaluate the similarities between the Fairchild and Fokker type designs. Maryland Air Industries has not responded.

Public Interest:

It is not in the public interest to grant this exemption because there are 46 Fairchild Model F-27/FH-227 series airplanes worldwide and it is likely that these airplanes have unsafe conditions that would be identified by the SFAR 88 compliance activities.

In consideration of the foregoing, I find that a grant of exemption would not be in the public interest. Therefore, pursuant to the authority contained in 49 U.S.C. §§ 40113 and 44701, delegated to me by the Administrator, the petition of Maryland Air Industries, Inc., for an exemption from 14 CFR SFAR No. 88 is hereby denied.

Issued in Renton, Washington, on August 23, 2005.

/S/ Ali Bahrami
Ali Bahrami
Manager, Transport Airplane Directorate
Aircraft Certification Service