Exemption No. 5594

UNITED STATES OF AMERICA
DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
KANSAS CITY, MISSOURI 64106

In the matter of the petition of ADVANCED AERODYNAMICS AND STRUCTURES, INC. for an exemption from a portion of § 23.903(e)(2) of the Federal Aviation Regulations	Regulatory Docket No. 112CE

GRANT OF EXEMPTION

By letter dated November 12, 1992, Mr. William V. Leeds, on behalf of Advanced Aerodynamics and Structures, Inc. (AASI), 10703 Vanowen Street, North Hollywood, California 91605, petitioned for exemption from a portion of § 23.903(e)(2) of the Federal Aviation Regulations (FAR) to permit type certification of the AASI Jetcruzer 450 model airplane without a means of stopping rotation of the turbine engine.

The petitioner requires relief from the following regulation:

> Section 23.903(e)(2) of the FAR requires, in pertinent part, that a means be provided for stopping the rotation of any turbine engine.

The petitioner supports his request with the following information:

> "The AASI Jetcruzer 450 is equipped with a Pratt & Whitney Canada PT6A-27 Turboprop engine equipped with a turbine driving the compressor and a separate turbine driving the output shaft. FAR 23.903(e)(2) requires a means for "stopping combustion and rotation of any engine". For the compressor/turbine assembly on the PT6A-27 there is no means to directly "stop rotation" since it is a free rotating unit. Instead equivalent safety has been demonstrated on all PT6 series installations for the following reasons:

1. Moving condition lever to "cut-off" position stops fuel flow to combustor thereby eliminating energy being supplied to turbines.

2. If condition lever "cut-off" position fails, then pilot can utilize fuel shut-off valve to stop supply of fuel to the engine.

3. The power turbine rotation is stopped by moving the propeller control lever to "feather". The propeller will feather and stop rotation of power turbine.

4. The compressor turbine will automatically decelerate upon cessation of combustion down to a non-hazardous speed. If the airplane is static it will come to a stop; in flight, it will rotate at some low safe speed dependent on the balance of inlet air flow and the parasitic drag of all accessories driven by the compressor turbine assembly.

5. All propeller feathering engine controls and fuel shut-off systems meet FAR Part 23 fire protection requirements. All engine supplied components meet FAR 33 criteria for fire protection.

For the above reasons, AASI requests exception to the literal interpretation of the stop rotation wording of FAR 23.903(e)(2) since the Jetcruzer engine installation complies with the safety intent of this regulatory paragraph."

Comments to published petition summary:

A summary of this petition was published in the FEDERAL REGISTER for public comment on December 21, 1992. The comment period closed January 11, 1993. The sole commenter favors granting the exemption.

The Federal Aviation Administration's (FAA) analysis is as follows:

To obtain the exemption, the petitioner must show, as required by § 11.25(b)(5) of the FAR, that: (1) granting the request is in the public interest, and (2) if appropriate, why the granting of the exemption will not adversely affect safety, or that a level of safety will be provided which is equal to that provided by the rule from which the exemption is sought.

The FAA review of the petition and related data shows that the requirement for stopping turbine engine rotation was

introduced in § 23.903(e)(2) by Amendment 23-14 (38 FR 31816) effective December 20, 1973 as a result of public Notice No. 71-13 (36 FR 8398) dated May 5, 1971.

In Notice No. 71-13, the pertinent wording of proposed § 23.903(e)(2) was as follows:

(2) Means must be provided for stopping combustion and rotation of any individual engine which is hazardous to the completion of flight. . . .

When Part 23 was amended by Amendment 23-14, the pertinent wording of the final rule for § 23.903(e)(2) was as follows:

(2) Means must be provided for stopping combustion and rotation of any engine. . . .

Review of the preamble to Amendment 23-14 indicated that no discussion was included relative to § 23.903(e)(2), nor were any comments addressed that were directed at § 23.903(e)(2). No documentation exists to explain why the final rule was different from the proposal.

Review of the documentation related to Amendment 23-14 does not explain the difference between the proposed rule and the final rule. The certification practices since the promulgation of the current § 23.903(e)(2) have not required literal compliance with the rule and also have not adversely affected safety.

In consideration of the foregoing, I find that a grant of exemption is in the public interest and will not adversely affect safety. Therefore, pursuant to the authority contained in Sections 313(a) and 601(c) of the Federal Aviation Act of 1958, as amended, delegated to me by the Administrator (14 CFR 11.53), AASI is hereby granted an exemption from § 23.903(e)(2) of the FAR to the extent necessary to permit the type certification of its Jetcruzer 450 model airplane without having a means for stopping rotation of the turbine engine provided it can be shown that continued rotation of the engine will not cause a hazard to the airplane.

Barry D. Clements

Issued in Kansas City, Missouri on JAN 2 8 1993

Barry D. Clements, Manager
Small Airplane Directorate
Aircraft Certification Service