Exemption No. 4413

UNITED STATES OF AMERICA
DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
WASHINGTON, DC 20591

In the matter of the petition of

RILEY AIRCRAFT MANUFACTURING, INC.

for an exemption from § 23.1505(c) of the Federal Aviation Regulations

Regulatory Docket No. 23409

DENIAL OF EXEMPTION

By letter dated August 31, 1982, Mr. Jack M. Riley, 2016 Palomar Airport Road, Carlsbad, California 92008, on behalf of Riley Aircraft Manufacturing, Inc., petitioned for an exemption from § 23.1505(c) of the Federal Aviation Regulations (FAR) to permit Supplemental Type Certification (STC) of the Cessna Model P-210 airplane powered by a Pratt & Whitney PT 6A-112 turbopropeller engine without establishing a V_{MO}/M_{MO} limit speed as required by the applicable FAR.

Section of the FAR affected:

> Section 23.1505(c) provides, in pertinent part, that for turbine airplanes a maximum operating limit speed (V_{MO}/M_{MO} - airspeed or mach number, whichever is critical at a particular altitude) must be established as a speed that may not be deliberately exceeded in any regime of flight (climb, cruise, or descent) unless a higher speed is authorized for flight test or pilot training operations. V_{MO}/M_{MO} must be established so that it is not greater than the design cruising speed V_C/M_C and so that it is sufficiently below V_D/M_D and the maximum speed shown under § 23.251 entitled "Vibration and Buffeting," to make it highly improbable that the latter speeds will be inadvertently exceeded in operations. The speed margin between V_{MO}/M_{MO} and V_D/M_D or the maximum speed shown under § 23.251 may not be less than the speed margin established between V_C/M_C and V_D/M_D under § 23.335(b), or the speed margin found necessary in the flight test conducted under § 23.253, entitled "High-Speed Characteristics."

The petitioner's supportive information is as follows:

> The petitioner contends that based upon considerable experience in converting airplanes from piston engines to turbopropeller engines, the quoted regulations are unduly restrictive and do not contribute to a higher level of safety for these classes of airplanes and

should only be applicable to those airplanes powered by turbo or fan jets. Propeller-driven airplanes do not necessarily know what is driving the propeller and in cases tested by both company pilots and FAA Engineering Test Pilots have not shown a tendency to be more susceptible to upset or inadvertent overspeed because a turbine engine is driving the propeller.

To restrict the operating limit speed makes it appear that something sinister has happened by installing a turbine engine to drive the propeller where, in reality, these provide a far more reliable engine with vastly improved performance which adds up to a much improved level of safety. The petitioner states that pilots operating these airplanes normally at altitudes of up to 23,000 feet need to still have the capability to conduct descents where conditions permit at speeds up to the never-exceed speed, V_{NE}, which has been proven to be satisfactory by the original manufacturer and countless hours of operation. In addition, the petitioner feels that both present and potential Cessna P-210 owners will find it in their best interest to convert their airplanes to turbopropeller power for increased reliability, performance, and economy. Such conversions should not be discouraged by an arbitrary requirement that places unnecessary restrictions on the operation of the aircraft. It is our fullest intention to demonstrate the aircraft's overspeed characteristics as in accordance with those defined in § 23.253 of the FAR.

Comments on published petition:

A summary of this petition for exemption was published in the FEDERAL REGISTER on November 18, 1982 (47 FR 51981), and no comments were received.

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) the exemption would 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 has carefully reviewed the information contained in the petitioner's request for exemption.

The petitioner presented no information or data to support that granting of the exemption would be in the public interest or in the interest of present or potential Cessna P-210 airplane owners. The contention of increased reliability, performance, and economy was not documented nor data furnished in the request for an exemption from § 23.1505(c) of the FAR to support the granting of the exemption.

The petitioner presented no data to support that granting of the exemption would not adversely affect safety. The FAA is of the opinion that operating an airplane above the V_{MO}/M_{MO} limit speed does have an adverse effect on safety. The Cessna P-210 airplane has had established a maximum structural cruising speed, V_{NO}. The conversion to a turbopropeller provides a propulsion system capable of flying considerably above the proven maximum structural cruising speed for extended lengths of time without adverse effect on the propulsion system. The propulsion system for which the airplane was designed did not have this capability, and any attempt to do so would have resulted in unmistakable indications to the pilot that the airplane is being operated outside of its normal intended operating parameters. The Cessna Aircraft Company's Information Manual applicable to the Cessna P-210 airplane states, in pertinent part, relative to V_{MO}, "Do not exceed this speed except in smooth air, and then only with caution."

The petitioner has presented no evidence or argument against substantiating the airplane to a higher maximum operating limit speed nor why the establishment of a V_{MO}/M_{MO} is inappropriate to the turbopropeller conversion.

In consideration of the foregoing, I find that a grant of exemption as requested would not be in the public interest nor maintain the level of safety required by the rule from which the exemption is sought. Therefore, pursuant to the authority of 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), the petition of Riley Aircraft Manufacturing, Inc., for exemption from § 23.1505(c) of the Federal Aviation Regulations is denied.

Issued in Kansas City, Missouri, on MAY - 1983

Original signed by
Murray E. Smith