Exemption No. 10923

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

In the matter of the petition of

CIRRUS DESIGN CORPORATION

for an exemption from § 23.177(b) of Title 14, Code of Federal Regulations

Regulatory Docket No. FAA 2013-0795

GRANT OF EXEMPTION

By letter dated August 30, 2013, Mr. Christopher Mitchell, Executive Director, Quality and Airworthiness, Cirrus Design Corporation (Cirrus), 4515 Taylor Circle, Duluth, MN 55811 petitioned the Federal Aviation Administration (FAA) on behalf of Cirrus for an exemption from § 23.177(b) of Title 14, Code of Federal Regulations (14 CFR). The proposed exemption, if granted, would allow the removal of the Rudder-Aileron Interconnect (RAI) from Cirrus Models SR20 (serial numbers 20-1005 through 20-1885, except serial number 20-1878) and SR22 (serial numbers 22-0002 through 22-2437, except serial numbers 22-2334 and 22-2420).

The petitioner requests relief from the following regulation:

Section 23.177(b) prescribes, in pertinent part, that the static lateral stability, as shown by the tendency to raise the low wing in a sideslip, must be positive for all landing gear and flap positions. This must be shown with symmetrical power up to 75 percent of maximum continuous power at speeds above 1.2 V_{S1} in the takeoff configuration(s) and at speeds above 1.3 V_{S1} in other configurations, up to the maximum allowable speed for the configuration being investigated, in the takeoff, climb, cruise, and approach configurations. For the landing configuration, the power must be that necessary to maintain a 3-degree angle of descent in coordinated flight. The static lateral stability must not be negative at 1.2 V_{S1} in the takeoff configuration, or at 1.3 V_{S1} in other configurations. The angle of sideslip for these tests must be appropriate to the type of airplane, but in no case may the constant heading sideslip angle be less than that obtainable with a 10-degree bank, or if less, the maximum bank angle obtainable with full rudder deflection or 150-pound rudder force.

The petitioner supports its request with the following information:

> "Cirrus Design Corporation requests regulatory relief in the form of an exemption to the requirements of 14 CFR §23 177(b) for Cirrus model SR20 aircraft serial numbers 20-1005 through 20-1885 except serial 20-1878 and Cirrus model SR22 aircraft serial numbers 22-0002 through 22-2437 except aircraft serials 22-2334 and 22-2420. These aircraft were manufactured with a wing design that required development of a Rudder-Aileron Interconnect (RAI) to fully comply with the rule. The RAI introduced a higher level of complexity into the flight control system and was the subject of several Service Bulletins as well as an Airworthiness Directive (AD).
>
> Cirrus Design performed flight tests with the RAI removed and was able to show a level of safety at least equal to the intent of the static lateral stability requirements of 14 CFR §23.177(b). An exemption is requested to allow removal of the RAI to simplify maintainability without having a detrimental effect on aircraft operational safety."

Cirrus further states:

> "Cirrus Design Corporation requests this exemption to reduce the complexity of the flight control system by allowing removal of the Rudder-Aileron Interconnect (RAI) in the affected SR20 and SR22 aircraft. This will improve maintainability and reduce the possibility of a miss-rigged condition resulting from a maintenance action."

A summary of the petition was published in the Federal Register on December 9, 2013 (78 FR 73919). No comments were received.

The FAA's analysis is as follows:

The FAA recognizes relief granted in another similar circumstance (Exemption No. 10068) as presented in your petition. Exemption No. 10068 granted relief from § 23.177(b) to an amphibious airplane. Your petition is the first request for similar relief for a land-based airplane. The FAA has reviewed your reasons for requesting an exemption and finds that —

1. Flight tests results show the level of safety provided by § 23.177(b) remains satisfactory. Cirrus Design has demonstrated the use of the electric roll trim control system that is part of the approved type design, for lateral control in the event that the primary roll control system becomes disconnected.
2. Flight tests show that with the RAI removed, all other subpart B rules remain compliant.
3. The reasons stated by the FAA for granting the previous relief also applies to your design; and
4. A grant of exemption is in the public interest.

The FAA's Decision

In consideration of the foregoing, I find that a 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, Cirrus Design Corporation is granted an exemption from 14 CFR 23.177(b) to the extent necessary to allow Cirrus to remove the Rudder-Aileron Interconnect (RAI) from the following Cirrus airplane models.

- SR20 (serial numbers 20-1005 through 20-1885, except serial number 20-1878).
- SR22 (serial numbers 22-0002 through 22-2437, except serial numbers 22-2334 and 22-2420).

This exemption grant is subject to the conditions and limitations listed below.

Conditions and Limitations

1. The Airplane Flight Manual (AFM) Limitations must show that the electric roll trim system must be operational for flight.

Issued in Kansas City, Missouri on January 30, 2014.

//SIGNED//

Earl Lawrence
Manager, Small Airplane Directorate
Aircraft Certification Service