



U.S. Department
of Transportation
**Federal Aviation
Administration**

Small Airplane Directorate
901 Locust
Kansas City, MO 64106

September 11, 2009

Exemption No. 9933
Regulatory Docket No. FAA-2009-0336

Ms. Elizabeth Williams
Certification Manager
Spectrum Aeronautical LLC
303 West 3000 North
Spanish Fork, UT 84660

Dear Ms. Williams,

This letter is to inform you that we have granted your request for exemption. It transmits our decision, explains its basis, and gives you the conditions and limitations of the exemption.

The Basis for Our Decision

By letter dated April 2, 2009, you petitioned the Federal Aviation Administration (FAA) on behalf of Spectrum Aeronautical, LLC for an exemption from § 23.181(b) of Title 14, Code of Federal Regulations (14 CFR) to the extent necessary to allow Spectrum to certify the Spectrum Aeronautical, LLC Model S-40 at a reduced level of dynamic lateral-directional stability after a yaw damper system failure.

The FAA has determined that good cause exists for not publishing a summary of the petition in the FEDERAL REGISTER because the requested exemption would not set a precedent, and any delay in acting on this petition would be detrimental to Spectrum Aeronautical LLC.

The FAA has issued grants of exemption in circumstances similar in all material respects to those presented in your petition. The FAA finds that, in the case of Dutch Roll, some existing aircraft meet Dutch Roll damping requirements at low altitude and low speed but not at high altitude and high speed. This is the situation with the Spectrum Aeronautical Model S-40. In these cases, the FAA has allowed continued flight following a yaw damper failure provided the airplane is controllable and can safely transition to a reduced flight envelope in which Dutch Roll damping requirements are met.

Regarding public interest, we believe that granting the exemption is in the public interest. To require the airframe to be modified to inherently provide the required damping would result in a much larger airplane that would not be as fuel efficient as a design that was optimized for the high altitude, high speed environment. To require a less efficient design when the necessary level of safety can otherwise be provided is not in the public interest. Likewise, to require a more complex and expensive yaw damper system design is not in the public interest.

Having reviewed your reasons for requesting an exemption, I find that—

- They do not differ materially from those presented by the petitioners in other grants of exemption;
- The reasons stated by the FAA for granting other exemptions also apply to the situation you present; and
- A grant of exemption is in the public interest.

Our Decision

Under the authority contained in 49 U.S.C. 40113 and 44701, as amended, which the FAA Administrator has delegated to me, I hereby grant Spectrum Aeronautical, LLC an exemption from 14 CFR § 23.181(b) to the extent necessary to permit type certification of the Model S-40 airplane, subject to the conditions and limits described below.

Conditions and Limitations

1. All combined lateral-directional oscillations must be damped to $1/10^{\text{th}}$ amplitude in 13 cycles with primary controls free, and in the fixed position. The current standards in § 23.181(b) apply below 18,000 feet.
2. A limitation will be added to the Aircraft Flight Manual to restrict operation to altitudes below that altitude where the airplane meets the minimum damping of $1/10^{\text{th}}$ amplitude in 13 cycles if a yaw damper fails.
3. A FAA pilot evaluation must be made to verify that no unsafe condition exists with the airplane's handling characteristics with the yaw damper disabled during landing and takeoff. Also, a pilot evaluation must be made to verify that no unsafe conditions exists during the descent from maximum certificated altitude to the maximum altitude for yaw damper failure as published in the AFM limitations.

Issued in Kansas City, Missouri on September 11, 2009.

Sincerely,

s/ Scott Horn
for
Kim Smith
Manager, Small Airplane Directorate
Aircraft Certification Service

Project No.: ACE-09-344-E
Docket No.:FAA-2009-0336
Project Officer: Lowell Foster

ACE111:PNININGE\exemptio\Spectrum\Spectrum 23.181 exempt letter-v1.doc