

Exemption No. 9301

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

In the matter of the petition of

GROB AEROSPACE GmbH

for an exemption from § 23.3(d)
of Title 14, Code of
Federal Regulations

Regulatory Docket No. FAA-2006-26428-1

GRANT OF EXEMPTION

By letter dated October 23, 2006, Dr. Andreas Strohmayer, Managing Director, GROB Aerospace GmbH, (GROB), Lettenbachstrasse 9, 86874 Tussenhausen-Mattsies, Germany petitioned the Federal Aviation Administration (FAA) on behalf of GROB for an exemption from § 23.3(d) of Title 14, Code of Federal Regulations (14 CFR). The proposed exemption, if granted, would allow the GROB G180A, a two engine turbojet airplane to be type certified in the commuter category. Under 14 CFR part 23, § 23.3(d), the commuter category is currently limited to propeller driven multiengine aircraft.

The petitioner requires relief from the following regulation:

Section 23.3(d) prescribes that "The commuter category is limited to propeller-driven, multiengine airplanes"

The petitioner supports its request with the following information:

(NOTE: The following is from the petitioner's letter of October 23, 2006.)

"The petitioner states the G180A airplane is a business jet, with a typical seating configuration of eight, excluding pilot seats, and a projected maximum takeoff weight of 13,890 lbs. The G180A is powered by twin turbofan engines positioned at the rear fuselage. The airplane has a conventional layout, which is comparable to propeller driven, multiengine aircraft described in part 23, § 23.3(d). The structure of the G180A

is made of Carbon Fiber Reinforced Plastics (CFRP), manufactured in GROB's wet lay-up procedure. GROB has more than 35 years experience in composite aircraft design and manufacturing. During that time more than 3,500 aircraft (gliders, trainer aircraft, high altitude research aircraft) have been built.

“The project was launched in January 2004. The first prototype had its maiden flight in July 20, 2005. First flight of the second prototype was in September 29, 2006. EASA Type Certification for the model G180A airplane is scheduled for the third quarter of 2007. GROB applied for European Aviation Safety Agency (EASA) Certification in August 2004, for certification of the G180A in accordance with the Certification Specification (CS) 23 according to EASA Decision No. 2003/14/RM dated November 14, 2003. The application for validation of the G180A in the United States was submitted to FAA on December 19, 2005.

“GROB’s intention to certify the G180A in the Commuter Category is addressed in the EASA Certification Review Item CRI A-01, which specifies the EASA Certification Basis. EASA does not use the term “Exemption” in its Implementing Regulation part 21. In addition, in this particular case, an exemption is not appropriate, since CS-23.1, the complement to 14 CFR part 23, § 23.3, is not a requirement; it only defines the applicability of CS-23. Therefore, EASA will comply with part 21, using a Special Condition to address the certification of the G180A in the Commuter Category instead of an exemption. A favorable ruling on this petition would allow GROB to offer the public a turboprop business aircraft, built to a level of safety, exceeding that defined in the existing FAR 23 regulations for the normal category. By granting this petition for exemption, the G180A will be built to a level of safety consistent with the technical requirements for commuter category aircraft in the 12,500 to 19,000 lbs. weight category, which are allowed to carry up to 19 passengers.

“While 14 CFR part 23, § 23.3(d) clearly states that commuter category only applies to “propeller driven, multiengine airplanes”, the application of commuter category requirements to the GROB G180A aircraft, along with any possible special conditions, would have no impact on the power plant installation of the aircraft. The current 14 CFR part 23 rules clearly cover turbine powered installations, including turboprop, turbojet and turboprop engines. There is no technical reason to exclude turboprop powered aircraft from certification in the commuter category. There are substantial reliability and safety design differences and demonstrated history to permit their inclusion. A turboprop is an inherently simpler mechanical device than a turboprop, having neither propellers nor propeller drive speed reduction gear boxes and their related mechanical and electrical controls, actuators and sensors that are needed to control speed, permit feathering and unfeathering with the associated failure modes and effects. The turboprop is simpler and less work-intensive to operate because there are fewer systems to control, monitor and manage. Pilot workload is reduced. Worldwide service history has demonstrated that turboprops are inherently safer than turboprops

because of their reduced mechanical and operational complexity and result in reduced potential for mechanical failure or crew error.

“These statements are supported by accident reports of turboprops and turbofans over the last 41 years. While turboprops as well as turbofans have both demonstrated extraordinary safety, the existing data favors the turbofan. In the five year period from 2001 to 2005, the U.S. fleet of business jet aircraft experienced an accident rate of 0.55 per 100,000 hours of operation and a fatal accident rate of 0.13 fatal accidents per 100,000 hours of operation. During the same period, the U.S. fleet of business turboprop aircraft experienced an accident rate of 1.71 accidents per 100,000 hours of operation and a fatal accident rate of 0.57 fatal accidents per 100,000 hours of operation. During the 41 years from 1964 to 2005, the U.S. fleet of business jet aircraft experienced an accident rate of 0.98 accidents per 100,000 hours of operation and a fatal accident rate of 0.27 fatal accidents per 100,000 hours of operation. By comparison, during the same period, the U.S. fleet of business turboprop aircraft experienced an accident rate of 2.17 accidents per 100,000 hours of operation and a fatal accident rate of 0.76 fatal accidents per 100,000 hours of operation. (These data were compiled by Robert E. Breiling Associates.)

“These data clearly illustrate that the granting of this exemption, enabling the use of turbofan engines on commuter category aircraft, instead of adversely affecting safety, would increase the safety of the business fleet. One area where turbofan aircraft offers a significant safety advantage over propeller driven aircraft is the realm of rotor burst failures versus catastrophic failure of a propeller blade.

“Turbine powered aircraft have well defined criteria for rotor burst protection. However, the challenge of developing a (propeller) blade containment strategy has been largely held to be technologically unfeasible. The loss of a propeller blade can result in human injury from uncontained debris and damage to airframe integrity due to an unbalanced propeller condition. A turbofan is largely free of these issues. The G180A has the engines mounted on the aft fuselage and behind the pressure vessel, supporting the development of non-containment criteria used for design. It should be further noted that turbofans are inherently safer than propeller driven aircraft in ground operations, where the rotating large diameter propeller creates a lethal hazard to people in proximity to the aircraft. An idling turbofan, by contrast, does not present this hazard.

“It is the opinion of GROB that granting this petition is very much in the public interest. The technological development of new, smaller turbofan engines has created the potential for simple, low-cost aircraft with greater utility and a higher level of safety than ever before. The commuter category, as initially created, was a means to certify aircraft intended for regional airline operations. This category soon took on a second and equally important role. The first two aircraft ever certified to commuter category, the Beech Starship and the Beech King Air B300, were used primarily as business

aircraft and in the on-demand-charter segment of 14 CFR part 135. The fact that the first two commuter category airplanes certified were not intended to be regional airliners demonstrates clearly that commuter category is a term used to define a level of certification and safety, not the end use of the airplanes.

“Based on these facts, it is our opinion that the G180A intended mission as a business jet, not as a regional airliner, is not germane for consideration of this exemption. The Beech Starship and the Beech King Air B300 have performed successfully and safely throughout the decade of the 1990s, demonstrating the appropriateness for commuter category aircraft. These aircraft have also benefited the public by serving in the roles of business transport and on-demand-charter. If, for instance, the King Air B300/350 had been limited to normal category, they could not have given the public service that these airplanes provide today. Because of the commuter category, these airplanes have been able to provide services, otherwise unavailable at comparable costs, largely because of their expanded capabilities, due to their certification in the commuter category. Granting this petition would give the public access to more reliable and safe turboprop powered aircraft in this category.

“The traveling public in the United States has overwhelmingly come to view aircraft equipped with propellers as less desirable and less safe than turboprop powered aircraft. Approval of this request for exemption would give consumers the option of choosing a turboprop powered airplane when their travel needs call for an aircraft in the weight and performance category encompassed by the commuter category. The vast majority of the traveling public would regard this as a significant benefit. It should be mentioned that a considerable amount of the G180A design work is subcontracted to U.S. companies and about 70 percent of the aircraft materials are procured on the U.S. market. Granting of that petition for exemption would enhance the value and marketability of the G180A, creating a positive economic influence to these suppliers.”

A summary of the petition was published in the Federal Register on January 31, 2007 (72 FR 4556). No comments were received.

The FAA's analysis is as follows:

To obtain the exemption the petitioner must show, as required by § 11.81 of Title 14, Code of Federal Regulations, that: (1) granting the exemption is in the public interest, and (2) granting the exemption will not adversely affect safety, or that a level of safety will be provided that is equal to that provided by the regulation from which exemption is sought.

The FAA has reviewed the petitioner's supporting information and provides the following:

While not agreeing with the petitioner's every detail, the FAA agrees with the substance of the supporting information and finds no reason to deny the petition. In the interest of efficiency, this analysis addresses substantive issues only. In addition, the substance of this exemption has been subject to the public comment process in prior instances with no substantive comments received.

The FAA finds that granting this petition is in the public interest. The technological development of new smaller turbofan engines has created the potential for simple, low-cost aircraft with greater utility and a higher level of safety than ever before. The GROB G180A is just such an aircraft, featuring advanced aerodynamics and advanced engine efficiency.

Previously, in August of 2004, GROB made application for EASA-Certification of the G180A in accordance with the Certification Specification (CS) 23; EASA Decision No. 2003/14/RM dated November 14, 2003, in the Commuter Category using a Special Condition. EASA does not use the term "Exemption" in its Implementing Regulation part 21. In addition, in this particular case, an exemption is not appropriate, since CS-23.1 is not a requirement; it only defines the applicability of CS-23. Therefore, EASA will comply with 14 CFR part 21, using a Special Condition to address the certification of the G180A in the Commuter Category.

On December 19, 2005, GROB applied for type certification of the G180A airplane under 14 CFR part 23 regulations. Type certification basis will be 14 CFR part 23 through Amendment 23-55 and special conditions. The special conditions, which mainly address airplane performance, in conjunction with part 23 normal category standards, provide a level of safety for the G180A that is above part 23 normal category and is appropriate to a turbofan-powered business jet type certificated in the part 23 normal category.

On October 23, 2006, GROB petitioned for exemption to permit type certification of the G180A in the part 23 commuter category. The commuter category represents an overall higher level of safety than the normal category. This exemption allows the G180A to be certificated in the commuter category and, by applying the foregoing special conditions, the FAA is ensuring the appropriate level of safety.

Notwithstanding technological arguments to the contrary, the traveling public in the United States has increasingly come to view aircraft equipped with propellers as less desirable and less safe than turbofan-powered aircraft. Approval of this request for exemption would give consumers the option of choosing a turbofan-powered airplane when their travel needs call for an aircraft in the weight and performance category encompassed by the commuter category. The vast majority of the traveling public would regard this as a significant benefit.

Regarding public interest, we believe that granting the exemption helps realize the potential public benefit created by the advent of newer smaller turbofan engines. The resultant simpler, lower-cost business jets having weights up to 19,000 lbs. provides the public with greater utility and an extended range of choices.

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, GROB Aerospace GmbH is granted an exemption from 14 CFR § 23.3(d) to the extent necessary to allow GROB to certificate the G180A under the part 23 Commuter Category subject to the conditions and limitations listed below.

Conditions and Limitations

Conditions:

1. The G180A shall not be eligible for operations under 14 CFR part 121. A note to this effect will be placed on the type certificate data sheet.
2. The G180A maximum certificated takeoff weight shall not exceed 19,000 pounds.
3. The G180A shall have a seating configuration, excluding pilot seats, of 19 or fewer.

Issued in Kansas City, Missouri on June 1, 2007



John Colomy
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Aircraft Certification Service