



U.S. Department
of Transportation

**Federal Aviation
Administration**

Memorandum

Subject: ACTION: Project No. TC7142SE-A – Cub Crafters
Model CC18 -- Requesting Review of and Concurrence
with Equivalent Level of Safety (ELOS), Federal Aviation
Regulation (FAR) 23.807, Emergency Exits. **ACE-02-11**

Date: October 17, 2002

From: Manager, Seattle Aircraft Certification Office,
ANM-100S

Ref.
No.: 190S-02-625

To: Manager, Small Airplane Directorate, ACE-100
ATTN.: S. M. Nagarajan

Reply to J. Morfitt
Attn. of: (425) 687-4245

Background:

The CC18 is a two passenger, tandem seat, high wing airplane. The design incorporates a main cabin door under the wing on the right side and push-out window used as an emergency exit on the left side. This design complies with all aspects of FAR 23.807 with the exception that the shape of the left side emergency exit approximates a 17 by 29 inch rectangle. The ellipse required by FAR 23.807(b) overlaps this rectangle by approximately 1 inch on the top and bottom (see attached sketch).

Applicable Regulations:

FAR 23.807, Emergency Exits.

Applicant Position:

Cub Crafters would like to submit the following Equivalent Level of Safety proposal:

The overall provisions for emergency exits, while not in strict compliance with the 19 by 26 inch ellipse for the left exit, meets the intent of the rule. The corner spaces and extra length of the rectangle provide additional maneuvering space for an occupant crawling through. The window is located such as to be easily accessible to both the front and rear seat passenger. The area of the window exit is approximately 482 square inches which is greater than the 388 square inches provided by a 19 by 26 inch ellipse. The design provides two exits for a two passenger airplane. In addition, both exits are located such that they can be operated and used from inside or outside the aircraft in any likely crash attitude.

The design provides a level of safety equivalent to or better than that accomplished by strict compliance with the minimum requirements of the rule. This is especially evident when comparing the one-to-one passenger-to-exit ratio of the CC18 design to that of a higher seating capacity airplane with two exits. The fact that the exits are useable in all attitudes, unlike the canopied designs allowed in the rule, also supports the argument for an equivalent or better level of safety.

In addition the left side exit is simple and intuitive to operate with a pushing action required to open it from either inside or outside the aircraft. The exit will be placarded with clear instructions for emergency operation and a test will be performed per FAR Part 23.807(c) to demonstrate proper functioning.

Federal Aviation Administration (FAA) Position:

The proposal detailed above in the applicant position section of this memo provides a level of safety that is equivalent to that provided by strict compliance with FAR 23.807(b). Therefore, the FAA agrees that this equivalent level of safety criteria may be used for showing compliance.

Compensating Features:

As described above, the emergency exit system has been shown to be effective in all probable attitudes, and clearly meets the intent of the regulations. The high exit to passenger ratio and ready accessibility of the exits are compensating features that more than make up for the small deviation in one exit from the 19 by 26 inch ellipse requirement.

Recommendation:

We concur that the Cub Crafters proposal detailed above in the applicant position section of this memo provides an equivalent level of safety as envisioned by the requirements of FAR 23.807.

Recommended by:



Manager, Seattle Aircraft Certification Office, ANM-100S

10/18/02
Date

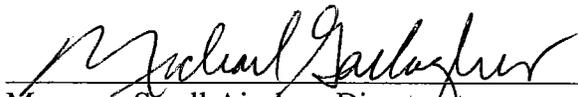
Concurred by:



For Drs Howers

Manager, Standards Office, ACE-110

12-2-02
Date



Manager, Small Airplane Directorate,
Aircraft Certification Services, ACE-100

12/3/02
Date