



# Federal Aviation Administration

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## Memorandum

Date: January 31, 2007

To: Kim Smith, Manager, Small Airplane Directorate, ACE-100

From: Greg Holt, Manager, Anchorage Aircraft Certification Office, ACE-115N

Prepared by: David Swartz, Senior Engineer, Anchorage Aircraft Certification, ACE-115N

Subject: Project No. TC0602AK-A – Super 18 Model S18-180 – Requesting Review of and Concurrence with Equivalent Level of Safety (ELOS), Federal Aviation Regulation (FAR) 23.807, Emergency Exits, ACE-07-02

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### Background:

The Super 18 is a two passengers, tandem seat, and 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 Federal Aviation Regulations (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). This memorandum is virtually identical to the memorandum issued for the Cub Crafters CC-18.

### Applicable Regulations:

FAR 23.807, Emergency Exits

### Applicant Position:

Super 18 would like to submit the following ELOS:

The overall provision for emergency exits, while not in strict compliance with the 19 by 26 inch Eclipse 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 CC-18 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 the inside, or a pulling action from 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 ELOS 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 Super 18 proposal detailed above in the applicant position section of this memo provides an ELOS as envision by the requirements of FAR 23.807.

Attachment: Sketch

Recommended by:

Greg J. Holt  
Manager, Anchorage Aircraft Certification Office, ACE-115N

2/1/07  
Date

Concurred by:

G. Wes Ryan for John Colomy  
Manager, Standards Office, ACE-110

4/9/07  
Date

Charles L. Smalley  
Manager, Small Airplane Directorate,  
for Aircraft Certification Services, ACE-100

4/10/07  
Date

**Equivalent Level of Safety (ELOS)  
Federal Aviation Regulation (FAR) 23.807, Emergency Exits**

