

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

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 In the matter of the petition of *
 *
 Claudius Dornier SEASTAR GmbH & CO. KG *
 *
 for exemption from §§ 23.807(d)(1) and * Regulatory Docket Nos.
 23.807(d)(1)(i) of the Federal Aviation * 073CE and 074CE
 Regulations *
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GRANT OF EXEMPTION

By letter dated June 22, 1989, Mr. A. Westenberger of Claudius Dornier SEASTAR GmbH & Co. KG, Flugplatz Oberpfaffenhofen, 8031 Wessling, West Germany, petitioned for exemption from § 23.807(d)(1) of the Federal Aviation Regulations (FAR) to permit type certification of the SEASTAR Model CD2 airplane with a passenger entry door that does not qualify as a floor level emergency exit and from § 23.807(d)(1)(i) to permit type certification of the SEASTAR Model CD2 airplane without an emergency exit on the side of the cabin with the passenger entry door.

Sections of the FAR affected:

Section 23.807(d)(1) requires, for commuter category airplanes, that the passenger entry door qualify as a floor level emergency exit. Section 23.807(d)(1)(i) requires that commuter category airplanes with passenger seating capacity of 15 or less have an emergency exit, as defined in § 23.807(b), on each side of the airplane.

The Petitioner's supportive information is as follows:

The Dornier SEASTAR Model CD2 is an amphibious airplane having a short, wide-bodied fuselage design. A high wing is supported by struts attached to two double main frames in the fuselage. Sponsons are mounted on each side of the fuselage. A passenger entry door is located on the left side of the fuselage between the rear double main frame and the cabin rear bulkhead; the door is above the left

sponson. An emergency exit is located forward on the right side of the fuselage above the right sponson. To ensure buoyancy and stability of the airplane on rough water, it is necessary to keep the center of gravity as low as possible. This requires the cabin floor be below the waterline and precludes the passenger entry door being located at cabin floor level. Given the short, wide fuselage of the airplane, the emergency escape path is very short. Even with one exit made inoperable, the longest escape path to the other exit is less than 11 feet and involves passing a maximum of three (3) seat rows.

Granting this exemption is in the public interest because the SEASTAR Model CD2 offers a mission capability not currently available in any other aircraft; viz., the transporting of air commuters at high speed, high efficiency, and with minimum operating expense utilizing land and water terminals.

Dornier offers as compensating features:

a. The passenger entry door is unusually large; viz., 44 inches wide by 38 inches high. This is more than four (4) times the area of a 26 inch x 19 inch ellipse, as required by § 23.807 for emergency exits. The emergency exit is 37 inches wide by 32 inches high with an area more than three (3) times the area of a 26 inch x 19 inch ellipse.

b. The passenger entry door and the emergency exit both open outward and upward, so that passengers can pass through easily.

c. Large sponsons fitted on either side of the aircraft provide a permanent platform for passengers exiting from the entry door or the emergency exit.

d. The upper surface of each sponson is covered with an anti-slip material over an area 141.7 inches long by 19.68 inches wide, providing a safe hold even under wet conditions.

e. At the passenger entry door, there is an internal step located 10.63 inches above the cabin floor and 10.55 inches below the doorsill; there are fixed handles on the door frame to assist occupants leaving the airplane. The step down distance from the doorsill to the sponson varies from 2.75 inches to 8.66 inches (the upper surfaces of the sponsons slope downward to the rear). At the emergency exit, there is an internal step located 14.96 inches above the cabin floor and 15.28 inches below the exit sill; there are fixed handles on the exit frame to assist

occupants. Step down distance from the exit sill to the sponson varies from 2.75 inches to 8.66 inches.

f. Emergency lighting is provided to directly illuminate the door and exit sills, the internal steps, and the area of the sponsons immediately outside the door and exit. This emergency lighting provides sufficient illumination to enable passengers to negotiate the cabin aisle.

As practical proof in support of the petition, Dornier conducted an emergency evacuation demonstration, as required by § 23.803. Fourteen occupants (12 passengers and 2 crewmembers) evacuated the airplane in 27 seconds, compared to 90 seconds required by § 23.803. Because of size and step-up distances involved, the right side emergency exit was deemed to be more critical than the passenger entry door and was used for the demonstration.

Comments on published petition summary:

A summary of this petition was published in the FEDERAL REGISTER for public comment on August 29, 1989 (54 FR 35750). The comment period closed September 18, 1989. No comments were received.

The Federal Aviation Administration's (FAA) analysis is as follows:

To obtain this exemption, Dornier must show, as required by § 11.25(b)(5), that: (1) granting the request is in the public interest, and (2) the exemption will not adversely affect safety, or that a level of safety will be provided which is equal to that provided by the rules from which the exemption is sought.

The FAA has reviewed and evaluated the information contained in Dornier's request for exemption. Section 23.807(d)(1), requiring the passenger entry door to qualify as a floor level emergency exit, did not envisage a seaplane configuration wherein the design and stability requirements would dictate that the floor level be below the waterline. The FAA has accepted each of the specific compensating features offered by Dornier as ensuring a level of safety equal to that provided by §§ 23.807(d)(1) and 23.807(d)(1)(i). Further, the FAA accepts Dornier's emergency evacuation demonstration as practical proof that the SEASTAR Model CD2 airplane achieves a level of safety equal to that provided by §§ 23.807(d)(1) and 23.807(d)(1)(i) when compliance is shown with specific conditions set forth as limits herein.

In consideration of the foregoing, I find that a grant of exemption is in the public interest and will not adversely

affect safety. Therefore, pursuant to the authority contained in Sections 313(a) and 601(c) of the Federal Aviation Act of 1958, as amended, delegated to me by the Administrator (14 CFR 11.53), Claudius Dornier SEASTAR GmbH & Co. KG, is granted an exemption from § 23.807(d)(1) of the Federal Aviation Regulations to the extent necessary to allow type certification of the SEASTAR Model CD2 airplane without a passenger entry door that qualifies as a floor level emergency exit and from § 23.807(d)(1)(i) to the extent necessary to allow type certification of the SEASTAR Model CD2 airplane without an emergency exit on the side of the cabin with the passenger entry door. For the Model CD2, this exemption is subject to the following conditions and limitations:

1. An emergency lighting system must be provided.
2. The source of illumination may be common to both the emergency lighting system and any main lighting system that may be installed if the energy supplies for the two systems are independent of each other.
3. The emergency lighting system must be capable of either being armed, or turned on, at any time when power is on in the airplane. There must be a caution light that illuminates in the cockpit when power is on in the airplane and the emergency lighting system control device is not armed.
4. The emergency lighting system must be capable of being turned on either manually from any flight crew station or by a sensor provided for automatic activation. The cockpit control device must have "on", "off", and "armed" positions so that, when armed, the emergency lighting system will activate automatically:

(a) When normal electrical energy is lost; or

(b) When the airplane is subjected to an impact that results in a deceleration in excess of 2g and a velocity change in excess of 3.5 feet-per-second acting along the longitudinal axis of the airplane; or

(c) Under any other condition where automatic activation is necessary to aid occupant evacuation.

The system must be capable of being reset by the flight crew if activated by any occurrence other than a survivable crash.

5. The energy supply to the emergency lighting system must provide the required level of illumination for a minimum

of 10 minutes at the critical ambient condition after emergency landing.

6. If rechargeable batteries are used as the energy supply for the emergency lighting system, the charging circuit must be designed to preclude battery discharge into charging circuit faults. If the emergency lighting system does not include a charging circuit, battery condition monitors are required.
7. All components of the emergency lighting system must be capable of normal operation after having been subjected to the inertia forces listed in § 23.561(b).
8. The emergency lighting system must be such that probable system damage following a survivable crash will not render the entire emergency lighting system inoperative. Single transverse vertical separation of the fuselage is considered a probable event during a survivable crash. The minimum emergency illumination available following a survivable crash must be no less than that available during the emergency evacuation demonstration conducted by Dornier.
9. The passenger entry door shall be a minimum of 44 inches wide by 38 inches high. The emergency exit shall be a minimum of 37 inches wide by 32 inches high.
10. The upper surface of each sponson shall be covered with an anti-slip material to provide a safe hold even under wet conditions.
11. At the passenger entry door, there shall be an internal step located not more than 11 inches above the cabin floor and not more than 11 inches below the doorsill and there shall be fixed handles on the door frame to assist occupants leaving the airplane. The step down distance from the doorsill to the sponson shall not exceed 9.0 inches. At the emergency exit, there shall be an internal step located not more than 15 inches above the cabin floor and not more than 16 inches below the exit sill and there shall be fixed handles on the exit frame to assist occupants. Step down distance from the exit sill to the sponson shall not exceed 9.0 inches.

Issued in Kansas City, Missouri on February 6, 1990.



Don C. Jacobsen, Acting Manager
Small Airplane Directorate
Aircraft Certification Service