

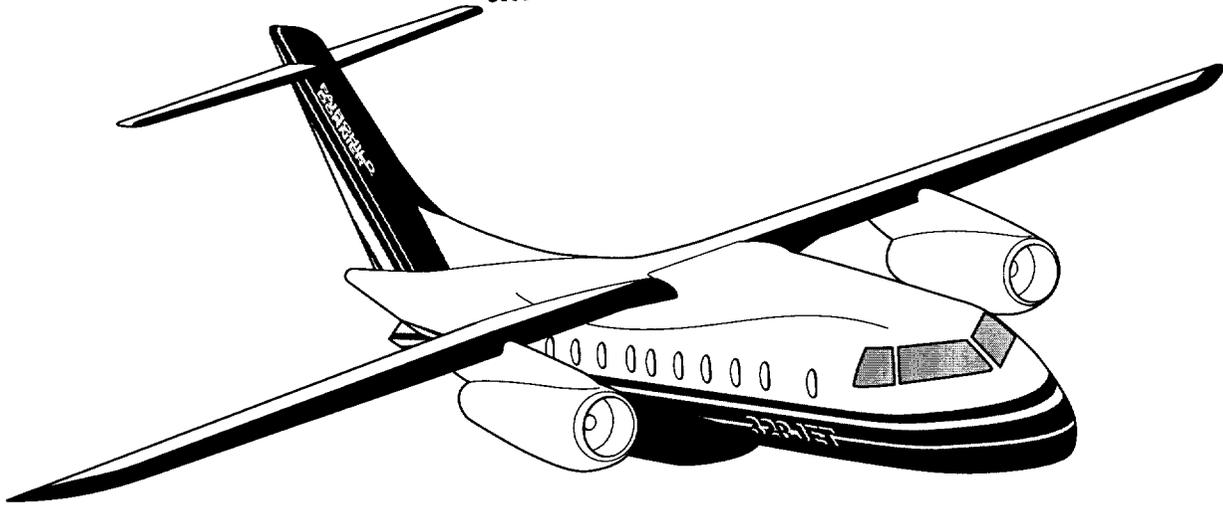
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Issue: A
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DORNIER 328 – 300

FAA - 2003 - 16211-1

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**PETITION FOR TEMPORARY EXEMPTION
FROM FAR 25.1309 (c), Amendment 25-87**

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Airworthiness Office Specialist

Supported by: (see page 1A)
Pat Brady, ACA

Approved by: *F. Maucher*
Franz Maucher, AvCraft Aerospace
Head of Airworthiness Office

Supported by: (see page 1B)
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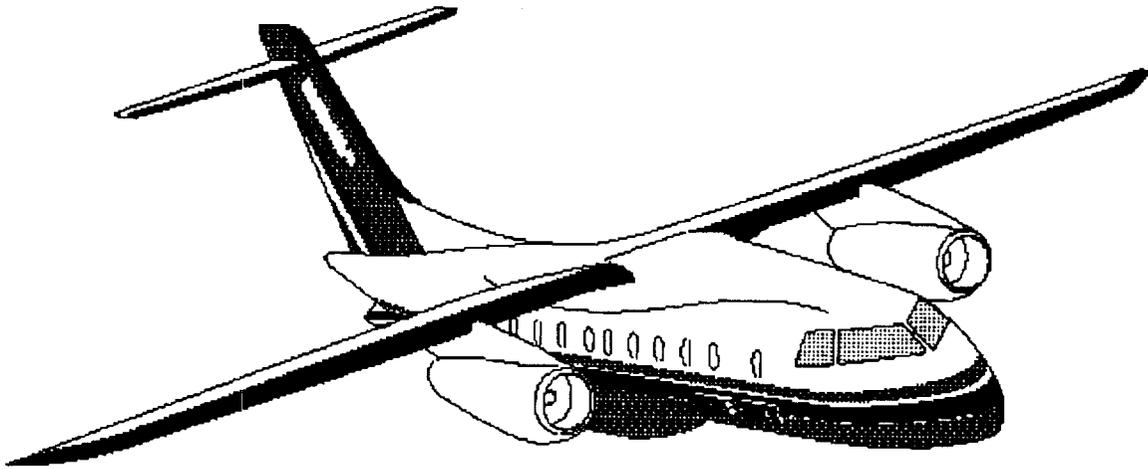
Approved by: *Johannes Mann*
Johannes Mann, AvCraft Aerospace
Head of Engineering

Date: September 12, 2003

Filed at:
U.S. Department of Transportation
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400 7th Street, SW.,
Room PL 401
Washington, DC 20591-0001

Cc: Mr. Tom Groves, FAA Seattle

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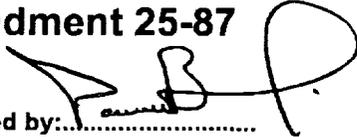


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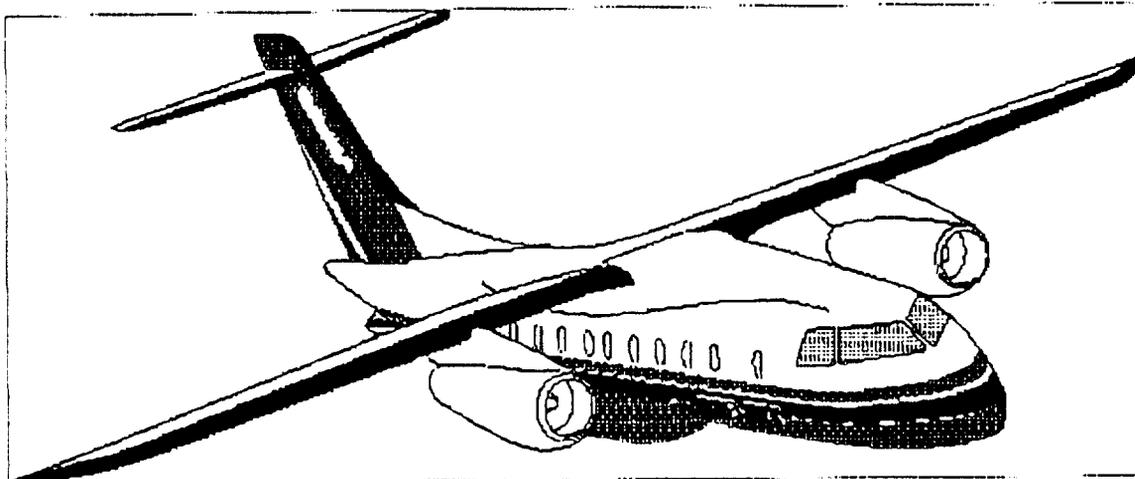
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0.0 General (FAR 11.81(a))

Pursuant to the Federal Aviation Administration procedures for processing petitions for exemptions (Code of Federal Regulations Title 14 CFR PART 11, Subpart B, Section 11.61), AvCraft Aerospace GmbH, Postfach 1252, 82231 Wessling, GERMANY, TC-Holder of the Dornier 328 - 300 model aircraft, hereby files for the subject temporary exemption. The following information is provided in support of this petition. Your prompt attention and response is requested.

1.0 The specific rule from which relief is sought (FAR 11.81(b))

The applicable part of FAR 1309(c) from which relief is temporarily sought requires:
" . . . Systems, controls, and associated monitoring and warning means must be designed to minimize crew errors which could create additional hazards."

2.0 The extent of relief and the reason why relief is sought (FAR 11.81(c))

AvCraft seeks a temporary exemption for an inconsistent flight phase indication occurring during takeoff in the remote case of an engine failure below 1000 ft lift-off height when using Reduced-Thrust-Takeoff Operation. For more details see also chpt. 4 below. Operators and engine manufacturer have strongly voiced their interest in the Reduced-Thrust-Takeoff operation. Early availability has a substantial economic impact.

3.0 Description of aircraft covered:

On October 30, 1996, Dornier Luftfahrt GmbH filed an application for a Joint Certification for the DORNIER 328 - 300 to the JAA and on November 14, 1996 to the FAA. The DORNIER 328 -300 is a twin-jet, high wing transport category airplane and has a maximum seating capacity of 33 passengers. It is equipped with a digital EFIS/EICAS 5 tube system cockpit and has a conventional flight control system.

4.0 Information provided in support of petition:

4.1 Issue

The 328-300 Flight phase annunciation differs with left and right engine failures for the Reduced Power Takeoff option (Option # 040F036). The AAs did not accept, as a matter of principle, a design feature which leads to different flight phase indications appearing in the same flight phase, depending on which engine has failed. This was based on the argument that such a behaviour has an unacceptable potential for causing crew confusion and distraction during a high workload phase of flight. The affected requirement is FAR 25.1309(c).

4.2 Petitioner's position

AvCraft Aerospace accepts the AAs' position and has scheduled a FADEC software design change which is aimed to cure the inconsistency in the Flight Phase Annunciation which occurs below 1000ft AGL only. Until the software change is implemented in the aircraft fleet a temporary exemption is requested within a period from July 2003 to December 2004. This time period will be controlled by the Airworthiness Limitation Document (TR ALD-039).

4.3 Compensating Factors

The design shortfall will be compensated by the following factors:

(a) An update of the description of the flight phase annunciation in the FCOM such that the today's logic is presented.

(b) An additional Flight Operational Information (FOI) aimed to make the crew aware of the difference in flight phase annunciation with left and right engine failures.

(c) A Reduced Thrust Takeoff - Risk Assessment for an uncommanded inflight shutdown below 1000ft as follows:

In order to validate the remaining time frame between July 2003 and December 2004, in which the flight phase annunciation provides different indications during an uncommanded in-flight shutdown below 1000ft above airport altitude, the following assessment is provided:

The 328 JET-fleet has accumulated 358235 flight cycles between November 1998 and May 2003.

During that time frame no uncommanded IFSD below 1000ft occurred.

Based on the monthly rate of 6513 flight cycles the 328 JET fleet will accumulate between July 2003 and December 2004 additional 117240 flight cycles.

The max. exposure time (single engine lift-off up to 1000ft) is calculated to be 156sec in an extreme corner of the WAT-limit conditions, where the flight phase annunciation provides different indications.

A very conservative calculation of a total maximum exposure time of 117240 future cycles times 156 sec results in 5080.4 hrs.

This total exposure time multiplied with the actual PWC-IFSD-rate of 1.62×10^{-5} and the number of two engines per aircraft results in (maximum) estimated 0.1646 fleet-wide in-flight shut downs in the derogation time frame.

The above numbers are deemed sufficiently low to warrant safe operation of the fleet for the envisaged time-frame.

(d) Flight Crew Training

For the interim period the crew will have to learn that the flight phase is announced differently depending on which engine failed.

However, because of the strong other cues pertaining to a take off, a trained crew would anyway be aware which flight phase the aircraft is in and is unlikely to be misled. The effect the current discrepancy in flight phase information bears on the crew's ability to perform a takeoff correctly should therefore be minimal.

5.0 The reasons why granting the exemption would be in the public interest; that is, how it would benefit the public as a whole (FAR 11.81(d))

The petition is in the public interest on three main points:

First, by reducing the amount of thrust used during the takeoff phase of flight the PW306B would produce less noise. Although the Dornier 328Jet meets stage III noise requirements, any time the noise level is reduced the local public is served. Although further analysis and testing will be required, the level of noise may be reduced enough to bring the level below the more restrictive < 72 dBA 2200 DCA curfew, thereby potentially allowing the Dornier 328Jet to provide service to the residents of Washington DC more travel options.

Second, reducing the amount of thrust produced by the PW306B reduces the amount of fuel consumed during the takeoff phase (the highest consumption rate of all phases of flight), thereby reducing the consumption of this non-renewable resource and having as well as extending the range of the Dornier 328Jet potentially increasing the number of city pairs available to consumers. This is accompanied by a equivalent reduction of exhaust emissions. Smoke reduction is even more pronounced.

Third, with the PW306B power plant, like all mechanical devices, the less stress is exerted on the device the longer it will last. By extending the life of the engine without reducing the time between required maintenance and inspections the amount of time between potential failures increases and further reduces the potential the traveling public could be exposed to an engine failure.

By receiving the authority to conduct reduced thrust takeoffs in the Dornier 328Jet, both the operators and consumers are served and are hence in the public interest.

6.0 Reasons how the exemption would provide a level of safety at least equal to that provided by the rule from which exemption is sought (FAR 11.81(e))

The indication inconsistency in this context is benign and together with the compensating factors and the risk exposure analysis given in chpt. 4.3 above we show that the same level of safety is reached for the limited time period as with the rule from which we seek exemption.

7.0 AvCraft does not seek operation under exemption outside the US (FAR 11.83)

8.0 Publication of Summary would affect us adversely (FAR 11.87(c))

On the good cause grounds that a publication with the ensuing delay would adversely affect the operators and the engine manufacturer, we request that a summary will not be published.

Therefore we do not provide a summary for that purpose.