

**UNITED STATES OF AMERICA  
DEPARTMENT OF TRANSPORTATION  
FEDERAL AVIATION ADMINISTRATION  
RENTON, WASHINGTON 98055-4056**

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| <p>In the matter of the petition of</p> <p><b>K-C Aviation Inc.</b></p> <p>for an exemption from §§ 25.562(a),(b) and (c) of the Federal Aviation Regulations</p> | <p><b>Regulatory Docket No. 28208</b></p> |
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**PARTIAL GRANT OF EXEMPTION**

By letter dated April 26, 1995, David Elsner, Manager, Quality Control, K-C Aviation, Inc., petitioned for an exemption from § 25.562(a), (b) and (c) of the Federal Aviation Regulations (FAR), to allow installation of "executive seating" in Jetstream Model 4100 airplanes, until such time as design solutions are available.

**Section of the FAR affected:**

Section 25.562(a) requires that each occupant must be protected from serious injury under emergency landing conditions. Section 25.562(b) specifies the dynamic test conditions under which injury protection must be demonstrated. Section 25.562(c) provides the pass/fail criteria for both seat and restraint system performance and human injury parameters.

**Related Section of the FAR:**

Subpart O of part 21 contains the procedural requirements for the issue of Technical Standard Orders (TSO). A TSO contains minimum performance standards for a specified article. "Articles" refers in this context to materials, parts, processes or appliances. Articles found to meet the standards of a specific TSO are granted design and production approval under that TSO accordingly. TSO authorization, in essence, acknowledges that an article meets the standards of the TSO. Assuming that the standards of the TSO equal or exceed the applicable type certification standards (in this case §§ 25.561 and 25.562), the testing required by the type certification standards need not be repeated, thereby facilitating the installation and approval of the article in the aircraft.. An applicant may choose instead to install an article that does not have TSO authorization and perform the tests and inspections required by the type certification standards.

Section 25.561 contains standards that airplane structure, including seats and their supporting structure, must meet. In particular, § 25.561(b) states that each occupant must be given every reasonable chance of escaping serious injury under specified static load conditions. Section 25.561(d) further states, in part, that seats and their supporting structure must not deform under those conditions in any manner that would impede subsequent rapid evacuation of occupants. The dynamic testing requirements of § 25.562 were adopted to supplement rather than replace the static test requirements of this section.

Section 25.785(a) (currently § 25.785(b)) requires that each seat, berth, safety belt, harness, and adjacent part of the airplane at each station designated as occupiable during takeoff and landing, must be designed so that a person making proper use of those facilities will not suffer serious injury in an emergency landing as a result of inertia forces specified in §§ 25.561 and 25.562.

**The petitioner's supportive information is as follows:**

"K-C Aviation Inc. petitions under the provisions of the Federal Aviation Regulations Part 11, Section 11.25 for a temporary exemption to the requirements of FAR Part 25, Section 25.562(a), (b) and (c) as applicable to the Jetstream Aircraft Limited Model 4101 aircraft.

"K-C Aviation Inc. requests that this temporary exemption be granted for a period of twelve calendar months from the date of pending FAA approval of this exemption.

"Section 11.25(b) (1) states that the petition for exemption be submitted at least 120 days before the effective date of the exemption. K-C Aviation Inc. requests that the

120 day requirement be waived and that this petition for exemption be acted upon immediately. K-C Aviation Inc. will show good cause for this request at the conclusion of this petition.

"The Jetstream Model 4101 aircraft is certificated in the United States in accordance with Type Certificate Data Sheet No. A41NM dated April 9, 1993, which includes Amendment 25-64 to the regulations."

"On May 4, 1994, K-C Aviation Inc. entered into a contract with Jetstream Aircraft, Inc. to install a "CORPORATE" style interior into a new Jetstream Model 4101 aircraft serial number 41030 with delivery of the completed aircraft back to the customer on September 20, 1994. The interior installation was to be approved by means of a Supplemental Type Certificate (STC) issued by the Chicago Aircraft Certification Office in accordance with the FAA Project Number ST768CHT prior to the September 20, 1994 aircraft delivery date.

"At the same time, K-C Aviation Inc. contracted with ERDA, Inc. to provide fourteen (14) EXECUTIVE" type passenger seats (swivel, recline, track etc.) certified to the 16G requirements of FAR 25.562 and TSO C127. Delivery of the passenger seats by ERDA, Inc. to K-C Aviation Inc. was to be on August 15, 1994. As of this date, ERDA, Inc. has not been able to provide K-C Aviation Inc. with TSO C 127 certified 16G passenger seats. Without TSO C127 seats in the aircraft, the Chicago ACO cannot issue the Supplemental Type Certificate for the Corporate Interior installation. Without an approved Supplemental Type Certificate, K-C Aviation Inc. cannot return the aircraft to service under a standard airworthiness certificate. This problem has also prevented K-C Aviation Inc. from contracting any additional interior completions for this model aircraft.

"On September 20, 1994, K-C Aviation Inc. made application to the Minneapolis MIDO office and was granted an experimental airworthiness certificate to fly the aircraft to "SHOW COMPLIANCE WITH THE FAR's."

"On September 29, 1994 and also for the following listed dates, K-C Aviation Inc. made application to the Minneapolis MIDO office and was granted an experimental airworthiness certificate to fly the aircraft for the purpose of "MARKET SURVEY".

- 1) October 12, 1994
- 2) November 4, 1994
- 3) November 21, 1994
- 4) December 7, 1994
- 5) March 2, 1995
- 6) March 31, 1995

"As of this date, the aircraft has been operating on eight separate experimental airworthiness certificates, either to show compliance with the FAR's or for market survey while awaiting approval of the passenger seats by ERDA, Inc.

"On February 24, 1995, Jetstream Aircraft, Inc. requested that K-C Aviation Inc. also obtain authorization to operate the aircraft in Canada from February 28, 1995 to March 25, 1995 for market survey. K-C Aviation Inc. made application to the Canadian DOT and was granted a "SPECIAL FLIGHT AUTHORIZATION" to operate the aircraft in Canada for that period of time.

"The difficulty of marketing a new model of aircraft in the United States and Canada under these conditions is quite apparent. Attempting to market the aircraft in a foreign country while operating on an experimental airworthiness certificate is out of the question. Jetstream's flexibility in this regard has been greatly curtailed and placed an enormous economic hardship on all concerned: Jetstream Aircraft Limited, Jetstream Aircraft Inc., K-C Aviation Inc., and also with the various government agencies that K-C Aviation Inc. has dealt with.

"K-C Aviation Inc. is aware of the fact that TSO C127 "EXECUTIVE" type seats (swivel, recline, track etc.) have been approved by one other aircraft seat manufacturer but wish to point out that this approval was for a flat floor configuration wherein the inboard and outboard seat tracks are mounted directly to the aircraft floor structure which places both seat tracks on the same level.

"The Jetstream Model 4101 installation is unique in that the inboard and outboard seat tracks are not on the same level. The outboard seat track is mounted to the aircraft sidewall structure 6.67" above the inboard seat track which is mounted flat to the aircraft floor structure. This configuration places the outboard seat track on a higher plane than the inboard seat track by 6.67" with 12.01" between seat track center lines. This has presented ERDA, Inc. with a unique set of engineering problems which has taken more time to resolve than anticipated.

"On April 6, 1995, ERDA, Inc. conducted the most recent of many attempts for dynamic testing of the seats. This, as with previous tests, have been conducted at the MGA Research Corp. test facility and witnessed by the Chicago Aircraft Certification office. Once again the test results were negative.

"As previously stated, K-C Aviation, Inc. will show good cause for requesting that the 120 day requirement as outlined in Section 11.25 (b)(1) of the regulation be waived for the following reasons:

"1) On June 15, 1995 the current experimental airworthiness certificate will expire at which time the aircraft will be grounded.

- 2) All parties concerned have been working for the past year at a high intensity level to resolve the passenger seat certification issues for this aircraft.
- 3) K-C Aviation Inc. cannot contract for any additional interior completions until STC certification is accomplished."

"K-C Aviation Inc. is, therefore, petitioning for temporary relief from Section 25.562 (a)(b) and (c) as applicable to the Jetstream Model 4101 aircraft and to allow the aircraft to operate for a twelve month period of time with TSO C39B passenger seats installed. This exemption, will allow K-C Aviation Inc. to amend it's application for a Corporate Interior Supplemental Type Certificate, FAA Project Number ST768CHT, and to revise the Engineering Drawing List to include TSO C39B passenger seats. Issuance of an approved Supplemental Type Certificate by the Chicago ACO will allow K-C Aviation Inc. to return the aircraft to service under a standard airworthiness certificate.

"K-C Aviation Inc. believes it is in the public's interest to grant the exemption. This will allow the aircraft manufacturer to freely market the airplane domestically and internationally without undue restrictions.

"In addition to the foregoing, K-C Aviation Inc. believes that there will be no adverse affect on public safety as already evident in the fact that a major portion of the FAR Part 25 transport category aircraft are currently equipped with TSO C39B seats. K-C Aviation Inc. wishes to point out that this request is for a temporary twelve month exemption and taking into account the outstanding safety record established by FAR Part 91 Corporate Operators, public safety would not be jeopardized for that period of time."

The FAA finds, for good cause, that action on this petition should not be delayed by the publication and comment procedures for the following reasons: (1) a partial grant of exemption would not set a precedent in that it is for a time extension from a requirement, and not permanent relief from a requirement, and is similar to exemptions that have been granted previously, and (2) delay on acting on the petition would be disruptive and create a major economic burden in the petitioner and the operator.

**The Federal Aviation Administration's analysis/summary is as follows :**

The petitioner has requested an exemption from the provisions of §§ 25.562(a),(b) and (c) of the Federal Aviation Regulations. This is the entire regulation. The FAA notes that the primary basis for the petition for exemption is the lack of seats approved to Technical Standard Order (TSO) C127. The petitioner states that without the TSO, a Supplemental Type Certificate cannot be issued, which in turn prevents a standard certificate of airworthiness from being issued. The petitioner notes that up to now, the airplane in question has been operating under

experimental certificates of airworthiness, and that the latest certificate will expire on June 15, 1995.

Strictly speaking, there is no requirement that the seats have a TSO authorization in order to be installed in accordance with the requirements of part 25. The seats can be approved as part of the overall modification without a TSO authorization, as was done prior to the issuance of the TSO. In this case, the FAA is aware that there are some specific provisions in the TSO that the seat may not comply with, although it appears that these are not a barrier to compliance with part 25. This is because the TSO is very specification oriented, and any non-conformance with the specification would require a deviation. In this specific instance, the non-conformance with the TSO does not appear to be significant with respect to compliance with part 25. In addition, the TSO applicant has not requested a deviation from the TSO to further that process. Thus, lack of a TSO authorization by itself is not a barrier to issuance of an STC.

Similarly, compliance with the structural standards of TSO-C39B, which was mentioned by the petitioner, is not significant because those standards are encompassed by the requirements of § 25.561.

The petitioner states that the design of the Jetstream 4101 seat tracks make it more difficult to qualify seats under the terms of the TSO, for executive type interiors. Since the seat track installation is a basic part of the airplane structure, and the airplane is type certificated with seats that comply with the requirements of § 25.562, the FAA does agree that this is a major factor. Further, as noted above, the FAA is not aware of any fundamental part 25 compliance problems that are due to the design of the airplane attachment structure. In fact, the FAA is aware of only one issue that affects compliance with part 25. This issue relates to the particular structural capabilities of the seat leg, and requires further discussion. While no finding of compliance has been made for this aspect of the seat performance, the FAA believes that this issue can be resolved, thus permitting the seats to be installed in full compliance with part 25. However, due to the short time available until the airplane's experimental certificate of airworthiness expires, the FAA will grant a temporary exemption for this one issue to allow time for discussion and resolution. Three months is considered an acceptable interval for resolution of this issue.

Although the FAA concurs that relief is warranted to the extent needed to resolve the seat leg structural issues, there is neither need nor justification for relief from compliance with § 25.562 in any other respect. It must also be noted that no relief from the provisions of § 25.561 is granted.

In consideration of the foregoing, I find that a partial grant of exemption is in the public interest, and will not significantly affect the overall level of safety provided by the regulations. Therefore, pursuant to the authority contained in §§ 313(a) and 601(c) of the Federal Aviation Act of 1958, delegated to me by the Administrator (14 CFR 11.53), the petition of K-C Aviation Inc.

to exempt them from compliance with § 25.562 of the FAR is granted, with the following provisions:

1. To the extent necessary to allow issuance of a standard certificate of airworthiness while structural issues regarding the seat legs are resolved.
2. This exemption expires on September 15, 1995.

Issued in Renton, Washington, on

Stewart R. Miller  
Acting Manager  
Transport Airplane Directorate  
Aircraft Certification Service, ANM-100