Exemption No. 6776

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

In the matter of the petition of **Atlantic Coast Airlines** for an exemption from §§ 25.562(c)(5) and 25.785(a) of Title 14, Code of Federal Regulations	**Regulatory Docket No. 29243**

GRANT OF EXEMPTION

By letter dated May 7, 1998, Mr. Robert F. Silverberg, Attorney, Bagileo, Silverberg & Goldman, L.L.P., Georgetown Place, Suite 120, 1101 30th Street NW, Washington, D.C., 20007, representing Atlantic Coast Airlines, d/b/a United Express (ACA), petitioned the Federal Aviation Administration (FAA) for a temporary exemption regarding the Head Injury Criterion (HIC) of §§ 25.785(a) and 25.562(c)(5) of Title 14, Code of Federal Regulations (14 CFR), for front row passenger seating in one Jetstream Series 4100 airplane, to allow retrofit of that airplane in accordance with a previously issued exemption.

The petitioner requests relief from the following regulations:

Section 25.785(a) 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.

Section 25.562(c)(5) requires that each occupant must be protected from serious head injury under the conditions prescribed in paragraph (b) of this section. Where head contact with seats or other structure can occur, protection must be provided so that the head impact does not exceed a Head Impact Criterion (HIC) of 1,000 units. The level of HIC is defined by the equation:

$$HIC = \left[(t_2 - t_1) \left[\frac{1}{(t_2 - t_1)} \int_{t_1}^{t_2} a(t)\, dt \right]^{2.5} \right]_{max}$$

The petitioner's supportive information is as follows:

"BACKGROUND

"By a series of exemption orders the FAA has waived the requirement of British Aerospace Regional Aircraft, the manufacturer of the J-41 aircraft, to meet FAR sections 25.562(c)(5) and 25.785(b) with respect to the three front row seats of the J-41 aircraft. [Section 25.562 text]. See Exemption Nos. 5587 (January 13, 1993, 5587A (December 29, 1993), 5587B (December 20, 1994), 5587C (December 12, 1995), 5587D (December 23, 1996), 5587E (September 15, 1997) and 5587F (March 31, 1998). (These Exemptions incorrectly refer to Section 25.785(a); the correct regulatory reference is to Section 25.785(b). These regulations state that each seat and safety belt must be designed so that a person making proper use thereof will not suffer serious injury as defined in the regulations, including head injury. Head injury is measured by HIC which is determined in accordance with the regulations. HIC must be measured to be below 1000 units for the FAA to determine that the person occupying the seat does not suffer serious injury.

"At the time the initial and subsequent exemptions were granted by the FAA to British Aerospace, the manufacturer was pursuing the design, development and certification of a front row passenger protection system since it had been determined that occupants of the front row of seats on the J-41 would have HIC's above 1000 units.

"Prior to the issuance of Exemption No. 5587F on March 31, 1998, ACA understood that British Aerospace was continuing to pursue the development of an air bag option, which in Exemption No. 5587E the FAA said it favored because it had the potential to provide a level of safety greater than that required by the rule. However, in Exemption No. 5587E the FAA ordered that the continuing exemption would only apply to aircraft delivered prior to September 30, 1997. (This condition was carried over in Exemption No. 5587F.) Thirty-one of ACA's 29-seat J-41 aircraft were delivered to the carrier prior to that date. One aircraft, N333UE, was delivered to ACA in December 1997. Since the December aircraft was not covered by Exemption No. 5587E, and since British Aerospace had at that time not yet determined a method by which the three front row seats on the J-41 could comply with the HIC requirement, ACA was compelled to place the aircraft in revenue service with only 26 seats open for sale and occupancy. The aircraft continues to be operated in this configuration as of the date of this filing. Hence, ACA has lost over 10 percent of the revenue generating potential of the aircraft as a result of the limits contained in the Exemption Order.

"Although N333UE was delivered to ACA in December of 1997, in fact, the aircraft was to have been delivered to the carrier in June of 1997. However, as a result of a contractual dispute, which was unrelated to the HIC front row seat issue, the delivery of the aircraft to ACA was delayed. ACA submits as a preliminary matter, that the unrelated contractual dispute

which delayed delivery of the aircraft should not control whether the Exemption applies in the case of aircraft N333UE. This aircraft was completely manufactured to ACA's specifications long before the September 30, 1997, exemption cutoff date. Further, but for the business dispute with the manufacturer, the aircraft would have been delivered to ACA before the deadline. As the delivery was delayed for contractual reasons, ACA has and continues to suffer a substantial economic penalty which the manufacturer had hoped its operators could avoid by obtaining Exemption No. 5587 and its subsequent renewals.

"NEED FOR THE EXEMPTION

"It is beyond dispute that the elimination of three seats on the 29-seat aircraft represents a substantial loss of productivity. Since December 1997, ACA has attempted to minimize the impact of the seat sale and use restriction to the extent possible by holding aircraft N333UE as a spare aircraft to be used only when necessary to replace a line aircraft that may suffer a mechanical malfunction that requires a longer period of time to repair than the carrier's schedule will allow. However, because calling on the spare aircraft is typical and necessary to avoid passenger inconvenience, aircraft N333UE has been regularly used in revenue service by ACA. And even though ACA has attempted to isolate the aircraft to routes where passenger demand is not as great as on other portions of the route network, this has not always been possible. This means that passengers who booked flights on ACA are often involuntarily bumped within the meaning of the DOT's denied boarding regulations, 14 C.F.R. Part 250. Passengers fail to understand why their reservations are not being honored when the aircraft is configured with 29 seats, three of which cannot be occupied. The logic of ACA's position, as viewed by its passengers, is even more difficult to explain when the seat restriction applies to only one of the 32 identical aircraft. Passengers travel for any number of reasons; some for leisure, others for personal or other business. Most passengers, especially those traveling on business value their time, and expect to be accommodated based on their reservation status. Passengers who, through no fault of their own are turned away have a legitimate basis to complain, and they do. Unfortunately, despite ACA's attempt to manage the situation, it has had the [sic] pay significant compensation to passengers who were involuntarily "bumped" from aircraft N33UE because the three seats cannot be occupied.

"In short, the economic viability of the aircraft is destroyed if it cannot not accommodate a passenger load of 29 passengers -- a configuration for which it was specifically designed. In its several petitions for exemption, British Aerospace observed that unless operators of the J-41 can utilize all 29 seats that the financial returns of the operators would be suboptimal.

"The FAA, by the grant of Exemption No. 5587, gave the manufacturer time to design and certificate a passenger restraint system that would protect front row passengers. Further, the FAA noted its preference for a system that would exceed the requirements of the regulations and identified the air bag restraint system as the one showing the most promise. See Exemption No. 5587E. While British Aerospace has used the time made possible by the Exemption to

develop a restraint system, it has failed to design one that is useful in commercial operations. The only restraint system the manufacturer pursued to completion was a lap/shoulder belt combination for installation in connection with the three front row seats. The shoulder harness attach points are on the side wall (in the case of the window seats) and on the service panel in the case of the aisle seat. The shoulder harnesses dangle from their attachments presenting an unsightly arrangement. Based on the design, ACA fully expects passengers will resist being seated in the front row not wanting to endure the extra confinement resulting from the use of the shoulder harness. (Passenger resistance to the shoulder harness could make mandatory seat belt usage compliance more difficult to achieve. ACA, like many carriers, is going to adopt a policy of requiring seat belt use at all times. Especially in this environment, passengers will likely resist being seated in the front row.)

"The parts, instructions and authority to install the shoulder harness has just been made available to ACA in the form of a Service Bulletin Kit. The required Service Bulletin Kit approvals granted by the U.K. CAA to the manufacturer were obtained without consultation with ACA and, presumably, other world wide operators of the J-41. This is unfortunate since had British Aerospace contacted ACA and asked for the operator's advice it would have voiced its strong objection to the installation of front row shoulder harnesses for several reasons. First, ACA will have to train flight and cabin crews on the different ditching positions to be assumed by occupants of the first row required by their use of the shoulder harness. Passengers in other than the first row will brace themselves by leaning forward. First row occupants will have to be instructed differently by the flight crew. These passengers will be advised to sit upright. The Service Bulletin assumes that these differentiated instructions will be comprehended by passengers at a time that they may well be experiencing a very stressful situation. The manufacturer has not considered this safety-related factor in adopting the shoulder harness solution. Grant of this exemption request will avoid any passenger confusion regarding the correct brace position.

"Apart from these operational considerations, the Service Bulletin possess [sic] other challenges to the operators. This is a result of the passenger height and age requirement that is made a part of the Service Bulletin. British Aerospace's Service Bulletin provides for an amendment of the Airplane Flight Manual ("AFM") which states that passenger seats equipped with the shoulder harness restraint system must not be occupied by adults less than 4 feet 9 inches in height or by children less than 16 years of age no matter what their height. If ACA were to install the Service Bulletin Kit it would be compelled to amend the AFM accordingly. This would mean that ACA would have to devise methods to determine a passenger's age and height -- characteristics that are not necessarily apparent simply by observing the passenger. Beyond the need to make these determinations, the imposition of the seat restrictions will place ACA in jeopardy of violating the Air Carrier Access Act of 1986 (49 U.S.C. 1374(c)) and Part 382 of the DOT's Regulations which state carriers may not exclude any qualified individual with a disability from any seat or require such an individual to sit in any particular seat except to comply with the requirements of any FAA safety regulation. Since the seat restrictions

contained in the manufacturer's voluntary Service Bulletin is not a "FAA safety regulation," ACA cannot comply simultaneously with its obligations under the Air Carrier Access Act and the limitations of the Service Bulletin.

"An example of the conflict that the application of the seat restrictions will have on ACA as it seeks to accommodate its passengers would be when a qualified disabled person of less than 4 feet 9 inches requests a seat in the front row. ACA cannot require such passenger to take another seat under the Air Carrier Access Act but, at the same time, cannot refuse to meet the seating restriction in the AFM. Similarly, a passenger with a fused or immobilized leg must be provided a bulkhead seat (the front row of the J-41 offers the only bulkhead seating) if so requested in accordance with Section 382.38 of the DOT's Regulations. Again, depending on the height and age of such passenger, ACA may or may not be able to comply with the rules designed to protect the rights of disabled passengers and, at the same time, honor the limitations in the AFM.

"In addition to placing ACA in conflict with its common carrier obligations, the installation of the unwieldy shoulder harness will result in over 20 percent of the seats on ACA's J-41 being restricted based on age or physical characteristics, or both. This is because section 121.585 of the FAR's (which is an FAA safety rule to which the Air Carrier Access Act is subordinate in accordance with section 382.37 of the DOT's Regulations) restricts exit row seating on the J-41 consisting of three seats to individuals of at least 15 years of age and who have the capacity to perform the functions identified in section 121.585(d) of the FAR's. These functions include removing and stowing the overwing emergency exit door and selecting and following a safe escape route. To the best of ACA's knowledge, no other aircraft has so much of its seating capacity (6 out of 29 seats) limited to those passengers who are of a minimum age or have certain physical characteristics. It is antagonistic to ACA's obligations as a common carrier to have to screen its passengers based on their physical characteristics or chronological age. (The possibility of transporting a full planeload of individuals who would not meet the Service Bulletin and FAR requirements is not remote. For example, ACA typically books groups of summer campers on its flights to Maine, New Hampshire and Vermont. These campers are usually accompanied by one adult. Instead of booking the flight up to the 29 seat capacity of the aircraft, ACA could only offer to carry a group with a maximum size of 24 passengers, assuming the adult is over 4 feet 9 inches in height. However, ACA will have no knowledge of the height of the chaperon until the adult checks in for the flight since no airline requests passengers provide age or height information as a condition to accepting a reservation.) On the other hand, with the development of a better restraint system, such as the air bag or integrated shoulder harness arrangement (which when fully developed may exceed the HIC requirement), neither ACA nor any other J-41 carrier will be put to the burden of so limiting those who may lawfully utilize their services. (ACA understands that the Donier 328 aircraft has a HIC compliant front seating utilizing a shoulder harness which is integrated into the passenger seat and that no age or height restriction is associated with the shoulder harness. ACA is very interested in pursuing this or other alternatives to the British Aerospace Service Bulletin Kit.)

“Because ACA is operating only one J-41 aircraft that was delivered to it after the September 30, 1997 cut off date as contained in Exemption No. 5587E, the relief requested herein is very limited. In fact, the three seats at issue constitute only .3 percent of ACA’s total J-41 seat capacity. As such, grant of the relief requested herein will impact very few passengers while, at the same time, the incidents of passengers being "bumped" involuntarily will decline. Further, ACA will be relieved of the burden of isolating N333UE from the remainder of the J-41 fleet in terms of its flying status and the need to instruct flight crews on the special limitations associated with this one J-41 aircraft. In addition to permitting ACA to make use of all of the seats on the aircraft, ACA will continue to work with the manufacturer and, if necessary, others to ensure that a less restrictive front row restraint system is developed which is more passive than that so far produced by British Aerospace. Clearly, the public will benefit by the development of passive restraint systems because any system that depends on seat assignment limitations and restrictions is not likely to meet with high carrier or passenger acceptance. The flying experience for many is viewed as unpleasant enough without having to force operators to, at the last minute, reassign seats to passengers within the small confines of the J-41 aircraft. Worse yet, ACA could run out of seats to assign the young passengers or passengers with disabilities or passengers of small stature. If, however, the cabin seating is insensitive to the age or physical characteristics of passengers then the flying experience will be enhanced, as will safety, upon the introduction of a more passive restraint system.

“To summarize, the public interest factors supporting this petition are as follows. First, ACA will continue to pursue an alternative to the manufacturer's unacceptable solution to design of a front row restraint system and the grant of this petition will not alter the willingness of ACA, and perhaps others, to continue to do so. However, the certification of such an alternative that will apply to the entire fleet of J-41's will take some time to accomplish. Allowing ACA to operate N333UE as it does its other 31 J-41 aircraft, while the work on other restraint systems is pursued, will not significantly degrade the level of safety in air transportation. Second, the shoulder harness restraint system will be far more difficult to implement than either the manufacturer or the FAA may have contemplated. Crews will have to be trained to instruct passengers wearing shoulder harnesses different emergency procedures from other passengers. There is no indication this can be successfully accomplished in a high stress environment. Moreover, passenger resistance to the shoulder harness complicate compliance with the requirement for passengers to secure their seat belts when instructed to do so, or even, as they are seated when the seat belt sign is not illuminated.

“With the age and height restrictions and limitations associated with the shoulder harness, operators like ACA are forced to make passenger acceptance decisions based on considerations of available seating and on the age and physical characteristics of the passengers. Moreover, compliance with the shoulder harness restraint system will put ACA at odds with the Air Carrier Access Act. Coupled with the limitations on those passengers that may occupy the three exit row seats, over 20 percent of the J-41 seats would be subject to passenger age and other physical characteristics if ACA were to employ the shoulder harness to achieve

compliance -- a higher percentage of restricted seats then any other aircraft type. Such restrictions are totally inconsistent with the obligations as a common carrier to make its services available to all, including disabled individuals, without discrimination.

"ACA recognizes that eventually a long term solution to the HIC issue will have to be developed with respect to the J-41 fleet. No action taken by the FAA to approve this request will diminish the capacity of ACA to work to develop a transparent (i.e., passive) restraint system that does not discriminate and will not meet with passenger resistance. On the other hand, denial of this request will cause ACA to continue to isolate N333UE from its J-41 fleet and to continue to block the three front row seats from sale and occupancy thereby incurring a significant financial penalty and imposing significant passenger inconvenience. Alternatively, ACA could install the shoulder harness restraint system and apply the exclusionary restrictions for occupancy in the front row and risk violating statutes and regulations designed to eliminate barriers to handicap access to air transportation. On balance, the public interest favors the continued temporary exemption from § 25.562(c)(5) and § 25.785(a) for Aircraft N333UE."

The FAA finds, for good cause, that action on this petition should not be delayed by publication and comment procedures for the following reasons: (1) a grant of exemption would not set a precedent in that it establishes a retrofit time for compliance with a requirement and not permanent relief from the requirement; and (2) a delay in acting on the petition would be disruptive to the flying public and create a major economic burden on the manufacturer and operators.

The FAA's analysis/summary is as follows:

In previously granting temporary exemptions to British Aerospace to allow delivery and retrofit of the Jetstream Series 4100 Model 4101 airplanes, it was the FAA's intent to minimize the number of airplanes with delayed compliance, while at the same time fostering the development of suitable design solutions. For this reason, the FAA established a termination on further deliveries of airplanes that did not fully comply with § 25.562(c)(5), in Exemption 5587E. In so doing, it was the FAA's intent that the size of the non-complying fleet would be limited, although it was recognized that a small number of already manufactured airplanes could be delivered between the time the exemption was issued and the deadline imposed by the exemption, on the condition that these airplanes be brought into compliance no later than December 31, 2000.

The airplane under consideration in this petition is, in fact, one such airplane. The FAA had every expectation that this airplane would be covered under the terms of Exemption 5587, and would therefore be allowed suitable time for retrofit. Nonetheless, the airplane was not delivered prior to the deadline, and therefore is not covered by Exemption 5587E, irrespective of the reason for the delayed delivery. As noted by the petitioner, at the time the airplane was delivered, the manufacturer had not yet finalized the design solution that was intended for the retrofit. Since then, however, the manufacturer has issued service bulletins, providing instruction on installation of upper torso restraints.

The FAA understands that the airplane has been operating since delivery with the front row seats unoccupied, and it is for this reason that they are requesting that the specific airplane be granted a temporary exemption so that the airplane will be treated equally to the other Jetstream Series 4100 Model 4101 airplanes in the petitioner's fleet.

With respect to the limitations referred to for the installation of upper torso restraints, the FAA considers that, while they may be commercially undesirable, appropriate limitations are frequently necessary for safety. In this case, however, the FAA does regard only the limitation on stature as a requirement; the limitation contained in the service bulletin with respect to age of the occupant is not required from a regulatory standpoint. The remaining limitation, then, is considered necessary for the safety of the occupants. While this limitation might be difficult to administer, it is not in conflict with other requirements, as safety regulations take precedence.

In particular, the petitioner's allegation that ACA could be in jeopardy of violating the Air Carrier Access Act of 1986 and part 382 is unfounded since any limitation concerning the stature of the occupants of the front row would be based on a safety consideration. As acknowledged by the petitioner, these documents clearly state that none of their provisions are to take precedence over safety considerations.

While the FAA appreciates the petitioner's position regarding the commercial viability of the manufacturer's design solution, the FAA is concerned that, at present, this is the only solution available for the Jetstream Series 4100 Model 4101, and compliance will be required in accordance with Exemption 5587F, whether or not this petition is granted. In discussing the installation with the manufacturer, it does not appear that the design can be modified to accommodate smaller stature individuals. Thus, if the operator cannot implement the limitation as noted, it will be necessary to comply with the regulation in another manner. The petitioner alludes to this need, and the FAA does not anticipate extending the time for retrofit.

As requested by the petitioner, this exemption simply allows the subject airplane to be operated under the same conditions as the remainder of the petitioner's Jetstream Series 4100 fleet; it does not grant relief regarding the means of compliance with §§ 25.785(a) and 25.562(c)(5) that must be accomplished no later than December 31, 2000.

The granting of this petition will not increase the size of the fleet requiring delayed compliance above that originally intended by the issuance of Exemption 5587E. The FAA imposed a limitation on further deliveries, after an extended period of research and development specifically to both limit the fleet with delayed compliance, and to encourage resolution of the design issues relating to compliance. Granting this exemption will compromise neither of those objectives. The FAA has considered whether the compliance time should be reduced over that currently provided in Exemption 5587F. This exemption allows what the FAA believes is adequate time to accomplish a fleet-wide retrofit. Since the FAA has not specified a

progressive schedule for the retrofit (that is, all airplanes must be in compliance after the expiration date, but no airplane is required to comply before that), imposing a different date here would serve no purpose. In practice, the operator will have to adjust the modification schedule to accommodate an additional airplane, which will have the effect of imposing a shorter compliance date on *some* airplanes.

In consideration of the foregoing, I find that a 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 49 U.S.C. §§ 40113 and 44701, delegated to me by the Administrator (14 CFR 11.53), the petition of Atlantic Coast Airlines regarding the HIC requirements of §§ 25.562(c)(5) and 25.785(a) of the FAR, for front row passenger seats on Jetstream Series 4100 Model 4101, serial number 41101, is granted until December 31, 2000.

Issued in Renton, Washington, on June 2, 1998

/s/ Darrell M. Pederson
Darrell M. Pederson
Acting Manager, Transport Airplane Directorate,
Aircraft Certification Service, ANM-100