



U.S. Department  
of Transportation

**Federal Aviation  
Administration**

# Memorandum

Subject: **INFORMATION:** Policy statement on acceptable methods of compliance to § 25.562(c)(5) for front row passenger seats

Date: Proposed

From: Manager, Transport Airplane Directorate,  
Aircraft Certification Service, ANM-100

Reply to: ANM-115-05-14  
Attn. of:

To: See Distribution

Regulatory: §§ 25.562, 25.785  
Reference: AC 25.562-1A

## Summary

The purpose of this memorandum is to clarify Federal Aviation Administration (FAA) certification policy on the acceptable substantiation methods used to provide protection under Title 14 Code of Federal Regulations (CFR) § 25.562(a) when meeting the performance standards in § 25.562(c) for “front row” seats.

Front row seats are those seats which are located directly aft of a partition, monument, or other commodity, including all passenger seats not considered “row-to-row.” The policy is not directed toward other seats. The FAA has determined that the proposed policy provides an acceptable means of protection for front row occupants.

We identify the regulations or requirements referred to in this policy in italics.

## Current Regulatory and Advisory Material

*Title 14 CFR 25.562(c)* provides the performance standards and § 25.562(b) provides test conditions required for compliance with § 25.562(a). Advisory Circular (AC) 25.562-1 contains current policy on the head injury criterion (HIC) performance levels.

*Title 14 CFR 25.785* also requires that any person making proper use of seats will not suffer serious injury in an emergency landing. As a component, seats may be approved under technical standard order (TSO) C-127( ).

In addition, in 1996 the FAA released policy statement, PS-ANM100-1996-00128 (also referred to as TAD-96-02) to simplify the procedures for addressing row-to-row HIC. The process described in this memorandum became known as “HIC Lite.”

## Relevant Past Practice

We issued the “HIC Lite” policy to reduce the regulatory burden and simplify the procedure for showing compliance for the case of row-to-row seats. That policy reduced testing typically performed for repetitive row seats, and captured variation in seat pitch, placement and occupant size.

Compliance for non row-to-row seats (front row) or for seats for which the seat pitch was so large to preclude the possibility of a head impact, has involved the following methods of compliance. These methods will continue to be acceptable.

1. No Contact.
2. Shoulder Harnesses
3. Inflatable Restraints
4. HIC Compliant Bulkhead
5. Head Path Reducing Features

Note: The incorporation of design features such as shoulder harnesses or inflatable restraints or those that reduce the headpath, without dynamic testing is not adequate to show compliance. All the means above involve dynamic test(s).

## Policy

Compliance costs for front row seats are significantly higher when compared to row-to-row seats. This is based on the ‘unique’ designs required of front row seats and the resulting difficulty in meeting the head impact requirements. Since there is a smaller percentage of front row seats when compared to row-to-row seats, there is a significantly higher cost of certification per front row seat.

On October 4, 2002, the FAA published the supplemental notice of proposed rulemaking (SNPRM), “Improved Seats in Air Carrier Transport Category Airplanes” (67 FR 62294). This notice proposed application of the latest crashworthiness standards for all passenger and flight attendant seats.

To reduce the high costs associated with meeting the head impact requirements for front row seats, this policy limits the range of occupant evaluation for the head impact criterion to that strictly covered by the test in § 25.562(b)(1). Using risk management principles, the unequal effort resulting in high costs for a small percentage of seats is not justified. With the combination of this policy and the proposed rule, there would be an overall increase in safety.

In addition, this policy supports the congressional mandate to streamline certification of dynamic seats.

- Specifically, instead of a test for HIC at the front row, place the seats 45 inches or more for ‘premier’ (business, first) class seats or 42 inches or more for economy class seats, based on the relative stiffness and displacement characteristics of these seats, from the potential contact point as measured from the seat reference point to vertical plane located at the aft most potential contact point.

- Alternatively, if you perform the test to determine the head path arc of the hybrid II ATD and the seat is installed such that no contact would occur; no additional analyses would be required.
- Lastly, *when the test is performed and contact does occur the measured HIC value must not exceed of 1000 units.* Additional substantiation would not be needed.

Any of these methods is an acceptable means to demonstrate HIC protection for occupants in front row seats. Neither this policy, nor the regulation on which this policy is based, provides a means to evaluate a specific level of protection for occupants greater in stature than the Hybrid II 50<sup>th</sup> percentile adult male ATD. Accordingly, the FAA has determined that it is sufficient to demonstrate only that there is an undisturbed surface (*no protrusions*) beyond the head strike area traversed by the ATD in a dynamic test condition in order to comply with each occupant criteria of § 25.785.

This policy will increase the ability of manufacturers to implement the proposed rulemaking activity across all aircraft make and models. Together, this will increase the level of safety provided while streamlining the seat approval process by reducing the number of planned or actual tests, reducing efforts needed to support analysis, or eliminating the loss of a row of seats from a particular cabin arrangement.

### **Effect of Policy**

The general policy stated in this document does not constitute a new regulation. The FAA individual that implements policy should follow this policy when applicable to the specific project. Whenever a proposed method of compliance is outside this established policy, it must be coordinated with the policy issuing office. The individual who is considering an alternate method should coordinate their project with the project officer and technical specialists, jointly, to determine if an issue paper is needed or if an item of record is more appropriate. Similarly, if the implementing office becomes aware of reasons that an applicant's proposal should not be approved, the office must coordinate its response with the policy issuing office.

Applicants should expect that the certificating officials will consider this information when making findings of compliance relevant to new certificate actions. Also, as with all advisory material, this statement of policy identifies one means, but not the only means, of compliance.

### **Implementation**

The compliance methods discussed in this policy should be applied to type certificate, amended type certificate, supplemental type certificate, and amended supplemental type certification programs whose application date is on or after the date the policy is finalized. For the certification programs whose date of application precedes the date this policy is effective and the methods of compliance have already been coordinated with and approved by the FAA or their designee, the applicant may continue to follow the previously acceptable methods of compliance or choose to follow the guidance contained in this policy.

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