

**Special Conditions for Transport
Airplanes; Seats With Non-Traditional,
Large, Non-Metallic Panels**

**Apply Heat Release and
Smoke Density test
requirements**

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**Federal Aviation
Administration**



Background

- At the time the applicable rules were written, seats were designed with a metal frame covered by fabric, not with large, non-metallic panels.
- With the seat design being mostly fabric and metal, the contribution to a fire in the cabin had been minimized and was not considered a threat.
- For these reasons, seats did not need to be tested to heat release and smoke emission requirements.



Examples of Seats without Large Panels



Background, cont.

- Seat designs have now evolved to occasionally include non- traditional, large, non-metallic panels. Taken in total, the surface area of these panels is on the same order as the sidewall and overhead stowage bin interior panels.



Examples of Seats with Large Panels



Background, cont.

- To provide the level of passenger protection intended by the airworthiness standards, these non-traditional, large, non-metallic panels in the cabin must meet the standards of Title 14 Code of Federal Regulations (CFR), part 25, Appendix F, parts IV and V, heat release and smoke emission requirements.



Originally Implemented by Policy

- Seats with associated furniture designs were evolving to include large non-metallic panels with surface areas that would impact survivability during a cabin fire event, comparable to partitions or galleys.
- In the late 1990s, the FAA issued Policy Memorandum 97-112-39, Guidance for Flammability Testing of Seat/Console Installations.
- At the time, the focus of the policy was on the associated shells and surround panels that some have called ‘pod seats’.



Policy, cont.

- The memo noted that large surface area panels must comply with heat release and smoke emission requirements, even if they were attached to a seat.
- If the FAA had not issued such policy, seat designs could have been viewed as a loophole to the airworthiness standards that would result in an unacceptable decrease in survivability during a cabin fire event.



More Seat Design Evolution

- In October of 2004, an economy class seat design (seatback) that incorporated non-traditional, large, non-metallic panels in lieu of the traditional metal covered by fabric.
- FAA review determined that it represented the kind and quantity of material that should be required to pass the heat release and smoke emissions requirements.
- Initially, the FAA applied the 1997 policy.



Transition from policy to Special Conditions

- Based on a legal review, special conditions would be promulgated to apply the standards defined in 14 CFR 25.853(d) to seats with large, non-metallic panels in their design.



Special conditions tied to Research Test Results

- In 1993, the FAA published a report (DOT/FAA/CT-TN93/13) documenting the results of full-scale testing using panels on seats that did, or did not, comply with heat release and smoke emissions requirements.
- Those test results showed that limited quantities of material on seats that did not meet heat release and smoke emissions requirements did not raise a safety issue.



Special Conditions development

- Amendment 25-83 states that, based on this testing, components with exposed- surface areas greater than one square foot, but less than two square feet, must be considered in conjunction with the areas of the cabin in which they are installed before a determination can be made regarding whether or not they have to meet the heat release and smoke density regulations.
- Based on that information we determined that 1.5 feet of non-metallic material per seat is appropriate.



Special Conditions

- **Beginning in 2007, Special conditions mandated the heat release and smoke density testing for these non traditional parts.**



Implementation

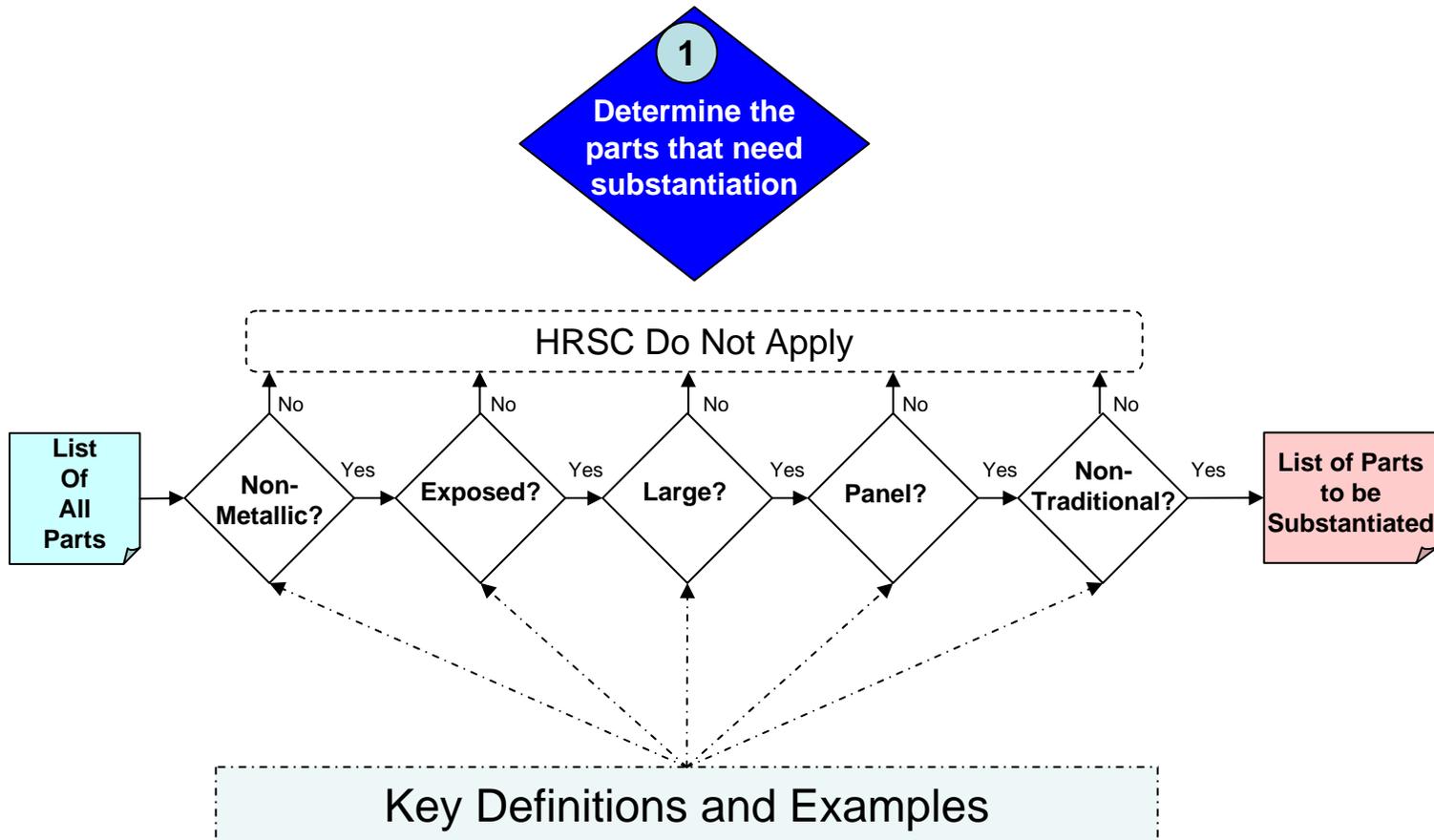
- **Challenges with implementation**
 - Applicability “previously approved”
 - Definitions
 - Exposed, Large, Non-traditional, Non-metallic, Panel
 - **Panel** = The surface of single or multiple components that may be attached to or be integral to seat structure.
- **Industry has worked to present a method of compliance to address the complexities.**

Applicability concept

	New Customer	Same Customer, New A/C Model (new family or new derivative)	Same Customer, New Block of A/C	Same Customer, Same Block, New seat count
Same Seat P/N				
New Seat P/N, no change to large panels	✓			
New Seat P/N, changes to large panels	✓	✓	✓	✓
New Seat Model	✓	✓	✓	✓



Definitions concept



All criteria must be met in order to require a part to be substantiated
All decisions are evaluated independently

Traditional?

- **Definitions for Traditional or Non-Traditional are specific to different features of a seat.**

Head Rests

Privacy Dividers

Center Consoles

Arm Rests and Armrest Closeouts

End Bays

Rub Strips / Bumpers

Leg Rests

Foot Bars

Line Replaceable Units



Seat Pans

Shrouds

Seat Primary Structure

Life Vest Containers

Seat Backs

Food Trays

Shells

Monitors and Bezels

Literature Pockets

Kick Panels

Foot Wells

Independent Furniture

Safety Features

Future Rule Making Project

- **Project underway to perform a major re-write to 14CFR 25.853.**
- **It is likely that the provisions in the special conditions such as traditional will be dropped.**



Questions?

- **FAA, along with other authorities, continue to work out the details of compliance to the special conditions with industry.**

