



AEROSPACE RECOMMENDED PRACTICE	ARP5446	REV. A
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Safety Instructions for Sight-Impaired Passengers		

RATIONALE

This technical report covers technology, products, or processes which are mature and not likely to change in the foreseeable future.

STABILIZED NOTICE

This document has been declared "Stabilized" by the SAE S-9 Cabin Safety Provisions Committee and will no longer be subjected to periodic reviews for currency. Users are responsible for verifying references and continued suitability of technical requirements. Newer technology may exist.

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1. SCOPE:

These recommendations are provided to aid the international air transport industry by identifying a standard, minimum amount of safety instructions that should be given to sight-impaired passengers. This document is not meant to address problems associated with communicating safety information to sight-impaired passengers who are also hearing impaired or non-conversant in the language(s) used by the cabin crew to disseminate general safety information to passengers. Aircraft operators are encouraged to customize the safety instructions for their own operations in order to ensure that required safety information is provided to sight-impaired passengers.

1.1 Purpose:

The purpose of this SAE Aerospace Recommended Practice (ARP) is to assist airlines, as well as corporate and private operators, in producing safety information presentations that will reinforce and expand the knowledge of sight-impaired passengers relative to safety equipment and procedures, including escape routes and evacuation slides, intended for use by passengers.

2. REFERENCES:

2.1 Applicable Documents:

The following publications form a part of this document to the extent specified herein. The latest issue of SAE publications shall apply. The applicable issue of other publications shall be the issue in effect on the date of the purchase order. In the event of conflict between the text of this document and references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

2.1.1 SAE Publications: Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

ARP1384 Passenger Safety Information Cards
AIR1815 Considerations for the Safe Carriage of Passengers with Special Needs
ARP4192 Passenger Safety Video Briefings
AIR4771 Recommended Brace Positions
AIR5471 Limitations of Braille for Use on Passenger Safety Instruction Cards

2.1.2 U.S. Government Publications: Available from DODSSP, Subscription Services Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.

United States Code of Federal Regulations, Title 14, Parts 91/121/125/135
FAA Advisory Circular No: 121-24B, Passenger Safety Information Briefing and Briefing Cards
FAA Technical Standard Order TSO C72c, Individual Flotation Devices
FAA Technical Standard Order TSO C13f, Life Preservers

2.2 Applicable References:

Reference 1: Tactile Acuity, Aging, and Braille Reading in Long-Term Blindness, Journal of Experimental Psychology: Applied, 1996, Vol. 2, 91-106

Reference 2: Washington Talking Book Library, 2021 9th Ave, Seattle, Washington, 98121

Reference 3: Presentation on November 3, 1999, to SAE S-9 Subcommittee by Takao Kawakita, Chairman, Organizing Committee for IREI Air Safety, 12-13 Hata 1-Chome Ikeda-Shi 563-0021, Osaka-Fu, Japan

Reference 4: AIR5471 Limitations of Braille for use on Passenger Safety Instruction Cards

2.3 Definitions:

2.3.1 Braille: A series of raised dots representing a letter or syllable. Braille is language specific.

2.3.2 Oral Information: Auditory information presented in person or by a recording.

2.3.3 Sight-Impaired Passengers: Those who have partial vision as well as those who are blind. For the purposes of this document, three groups of sight-impaired passengers shall be discussed.

2.3.3.1 Group 1: These people have partial vision but can only read large text and see large details in illustrations. They do not read braille. They are likely to have had a history of seeing and are able to form mental (visual) images, and so may be helped by tactile maps. The percentage of sight-impaired passengers making up Group 1 is unknown.

2.3.3.2 Group 2: These people cannot see at all and have not learned to read braille. Most lost their sight after becoming an adult and so also have a history of seeing. They can probably form mental (visual) images and thus may be helped by tactile maps. Most totally blind passengers are in this category.

2.3.3.3 Group 3: These people cannot see at all but have learned to read braille. People in this group were either born blind or lost their vision later. Some may be able to form accurate mental (visual) images, and so could be helped by tactile maps, while others may not. Passengers in this group make up a small percentage of totally blind passengers.

2.3.4 Tactile Map: An illustration with raised lines.

2.3.5 Text: Information presented in a printed format.

3. GENERAL PRESENTATION REQUIREMENTS:

3.1 Design:

3.1.1 It is the crewmember's responsibility to communicate the safety instructions to sight-impaired passengers. The instructions must be communicated directly by a crewmember or by an aural recording, and may be supplemented with braille, tactile maps, printed cards with large type and large photographs or illustrations. Note: If the information is presented by recording, the passenger shall be advised to stow the headsets, etc., before takeoff and landing.

3.1.2 If safety instructions are to be provided by braille or tactile maps, they shall be designed and produced to meet the appropriate standards for Group 3 passengers (Reference 1). If large print and illustrations are used they shall be designed to be easily read by those passengers in Group 1.

3.2 Content:

The safety instructions shall provide the information described in Section 4. The safety instructions provided shall not be diluted by the inclusion of any service information or advertising.

3.3 Presentation Style:

The safety instructions shall be provided by oral presentation by a crewmember or recording. In addition, large-print text, color illustrations, a tactile map, braille and hands-on familiarization may supplement the information.

3.3.1 Oral Presentation: The safety information outlined in Section 4 shall be presented either in person by a cabin crewmember or by a recording.

3.3.2 Large Printed Card: Large print text with large, preferably colored, illustrations may be used. More specific recommendations for the design of "large printed cards" are provided in Reference 3, and summarized in Appendix A.

- 3.3.3 **Tactile Map:** A tactile map is a raised drawing meant to convey information through the sense of touch.

A tactile map can show different points of view, such as a bird's eye (top down) view of an aircraft cabin, or the side view of a person in a brace position. Tactile maps are meant to give passengers a mental (visual) image of the spatial relationships between such things as the passenger's seat and exits. But since many congenitally and early blind (Group 3) passengers use nonvisual cues (auditory, kinesthetic, and cues from touch) to gain information about their spatial surroundings (see Reference 3), visual images may be of little use to this subgroup of sight-impaired passengers.

Even so, tactile maps can be useful to those passengers having a sighted history (Groups 1, 2 and perhaps some in 3); that is, to most sight-impaired passengers. Care needs to be taken that the maps are constructed and presented such that passengers can readily understand them. They need to be presented in the appropriate orientation and plane of reference; a top-down view of the aircraft, for example, could be placed on the lowered tray table or on the passenger's lap with the nose of the aircraft, as depicted on the tactile map, furthest from a passenger in a forward-facing seat.

A tactile map can be useful to many sight-impaired passengers so long as those passengers have the physical sensitivity in their fingers to "read" it. To ensure the tactile map is understood it is important that the map be supplemented with the necessary information whether it be presented orally, by large text, or by braille (see Reference 1).

- 3.3.4 **Braille:** Safety instructions provided by means of braille shall be presented in such a manner that the majority of sight-impaired passengers who read braille can understand them. Since the great majority of sight-impaired adults cannot read braille, braille shall not be totally relied upon for communicating safety information to sight-impaired passengers (see Reference 4).
- 3.3.5 **Hands-on Familiarization:** Sight-impaired passengers shall be given the opportunity to familiarize themselves with equipment they will most probably use such as the seat belt, tray table and seat back controls. They shall also be given the opportunity to become familiar with that emergency equipment they may have to use with little or no time for assistance from cabin crewmembers; this would include the oxygen mask and any individual means of flotation. Samples of these pieces of equipment could be provided to facilitate their understanding of how to use them.
- 3.3.6 **Suggested Methods of Presentation by Type of Impairment:** The optimal methods of presenting safety information to passengers with various abilities are presented in Table 1.

TABLE 1 - Presentation Methods

Group	Oral Print	Large Map	Tactile	Braille Familiarization	Hands-On
Partial Blind (Group 1)	X	X	X		X
Late Blind (Group 2)	X		X		X
Early Blind (Group 3)	X		X	X	X

4. MINIMUM REQUIREMENTS:

The information in quotation marks throughout Section 4 shall be presented before takeoff orally and may be supplemented with large print, braille, a tactile map or hands-on familiarization, as appropriate. If the same essential information is orally presented in the general preflight briefing it need not be presented an additional time to sight-impaired passengers. The "Optional" portions of these sections provide information to be used in aircraft with different configurations of equipment or by airlines which prefer alternate policies.

The exact words in quotation marks may be modified so long as the ideas described are presented in a clear and understandable manner. Additional information may be provided.

4.1 "No Smoking":

"Smoking is not allowed at any time on this aircraft. (Optional: "You may smoke after the aircraft takes off. Follow crew instructions. Do not smoke in the aisles.") Do not smoke in the lavatories at any time because of fire danger. All lavatories are equipped with smoke detectors for this reason. Do not attempt to deactivate these smoke detectors."

If there are legal sanctions for tampering with a smoke detector, this information should also be provided.

4.2 "Seat Belt and Seat Environment in General":

Passengers shall be given the opportunity to practice operating the seat belt and other equipment within the seat environment.

"Keep your seat belt fastened whenever you are seated to prevent injury in case of air turbulence.

"Ensure that your seat belt is fastened low and tight across your hips for each take-off and landing. If your seat belt is not tight you could be injured during an emergency landing or even during a hard landing.

"After landing, continue to keep your seat belt fastened until the aircraft is parked at the terminal. Wait for the announcement. To unfasten the seat belt, lift the metal flap."

4.3 "Carry-on Baggage":

Individual operators should customize this part according to their approved allowances.

"Your carry-on baggage must be stowed securely in the over-head compartment or under the seat in front of you. The crew can help if needed.

4.4 "Seat":

"Ensure that your seat back is in the upright position and the tray table is stowed for taxi, take-off and landing. After take-off you may recline your seat and use the tray table. Listen for the announcements."

4.5 "Use of Portable Electronic Devices":

"Some portable electronic devices, such as cell phones, can interfere with the safe flight of the aircraft. If you have any such device which you intend to use ask a crewmember first."

4.6 "Safety Instructions For Inflight Emergencies":

4.6.1 "Always follow crew member commands."

- 4.6.2 "Use Of The Oxygen Mask": "Your oxygen mask is stowed in a small compartment." (Describe location from which mask will deploy and encourage the passenger to reach for and touch the demonstration mask in the location it would be when deployed.)

"If cabin air pressure decreases, masks will automatically drop. Remain seated. Don't smoke. Reach up (or reach out) for the mask. Pulling it firmly to your face starts the flow of oxygen. The mask is a small, soft plastic cup that will fit over your nose and mouth. A plastic bag may be stuffed inside this cup. The bag is attached to the outside of the mask. Take the bag out of the cup and place the cup over your nose and mouth. Place the elastic band around your head to hold the mask in place. Tighten the strap by pulling the loose ends on each side of the cup. Continue to breathe normally.

"At high altitude you may only have a few seconds to do this, so act quickly."

- 4.7 "Safety Instructions For Emergency Landings":

"The Protective Brace Positions": "An unexpected emergency can occur on landing or takeoff. If you hear the command 'Brace' (Optional: provide the command the airline crew is trained to give in an unanticipated impact, such as 'Brace for impact' or 'Bend over, stay down') get into the following position." (Describe the position appropriate for the passenger's specific seat location. If the tactile map shows the protective positions, then say "Please refer to the tactile map on the following page.")

"Stay in this position until the aircraft stops. If you hear an emergency evacuation starting, quickly release your seat belt and go to the nearest emergency exit. Follow crew commands."

- 4.7.1 "Location Of Emergency Exits": "There is one pair of emergency exits at the front of the plane." (Optional: Describe other exit locations on the aircraft.) "You are in row 6 and your closest exits are in front of row 1 and in row 13." (Optional: Describe where passenger is seated and the number of rows or seat backs to the closest exits in front of and behind the passenger.)

- 4.7.2 "Emergency Evacuation Procedures": "Do not bring carry-on baggage or personal items to an exit. They could injure you or others and could slow the evacuation. Follow the crewmember's instructions.

"All emergency exits are ... (Optional: "Some emergency exits are...") equipped with inflatable escape slides. Get onto a slide in the seated position, and slide down to the ground. Move away from the aircraft.

(Optional addition: "Some emergency exits also have hatches that open onto a wing. Step out, leg first, through these openings. [Describe safest way to get to the ground.] Move away from the aircraft.")

(Optional addition: "The exit located (describe location) has a stairway that you can use to get down to the ground. Then move away from the aircraft.")