U.S. Department of Transportation
Federal Aviation Administration

Advisory Circular

Subject: Use of Child Restraint Systems on Aircraft

Date: 9/17/10 **AC No:** 120-87B

Initiated by: AFS-200 **Change:**

1. PURPOSE. This advisory circular (AC) provides information and practices regarding the use of child restraint systems (CRS) on aircraft. We intend for operators to use this as a resource during the development, implementation, and revision of an air carrier's standard operating procedures (SOP) and training programs regarding the use of CRSs. This AC is one of several Federal Aviation Administration (FAA) initiatives designed to address safety concerns of the National Transportation Safety Board (NTSB). In addition, it is a part of the FAA's ongoing commitment to educate and inform aircraft operators, crewmembers, and airline passengers regarding the use of CRSs on aircraft in order to encourage and increase the use of approved CRSs. For more information, see the following FAA Web site: http://www.faa.gov/passengers/fly_children/crs/.

2. CANCELLATION. AC 120-87A, Use of Child Restraint Systems on Aircraft, dated December 1, 2006, is cancelled.

3. RELATED REGULATIONS. Title 14 of the Code of Federal Regulations (14 CFR) part 21, § 21.305; part 91, §§ 91.107 and 91.1035; part 121, § 121.311; part 125, § 125.211; and part 135, § 135.128.

4. RELATED FAA GUIDANCE (current editions). This AC provides information and suggested practices regarding the use of CRSs on aircraft. This AC also supplements and contains information previously published in the documents listed below.

- AC 91-62, Use of Child Seats In Aircraft,
- FAA-AM-78-12, Child Restraint Systems for Civil Aircraft,
- FAA-AM-94-19, The Performance of Child Restraint Devices in Transport Airplane Passenger Seats, and
- Order 8900.1, Volume 3, Chapter 33, Section 6, Operations-Cabin Safety.

5. AUDIENCE. Air carrier personnel involved in the development of aircraft SOP and training programs, as well as crewmembers and others involved in flight operations under part 121, should be familiar with the contents of this AC. This AC may also be valuable to others associated with operations under parts 91, 125, and 135.

6. HISTORY OF CRS REQUIREMENTS AND APPROVAL STANDARDS.

a. Civil Air Regulations (CAR) Section 40.174. The permissive language that does not require children under the age of 2 to be restrained can be found in the 1953 CAR, § 40.174, which stated in part that "A seat and an individual seatbelt are required for each passenger and crewmember excluding infants."

b. Federal Motor Vehicle Safety Standard (FMVSS) No. 213. In 1982, the Department of Transportation (DOT) had two standards for CRS. CRS for use in motor vehicles were required to be certified as complying with the requirements of FMVSS No. 213. CRS for use in aircraft were required to be certified as complying with the requirements of FAA's Technical Standard Order (TSO) C100. In early 1983, the NTSB considered the safety problems posed for young children traveling in motor vehicles and aircraft and urged that a variety of actions be taken to promote increased use of CRS. One of those recommendations was that DOT simplify its two different standards and set forth requirements for CRSs by combining the standards. The FAA and the National Highway Traffic Safety Administration (NHTSA) agreed upon a single government performance standard that would satisfy both aviation and highway safety requirements for CRSs. The agencies proposed NHTSA as the sole agency responsible for administering the new FMVSS No. 213, which would be applicable to CRSs designed for use in motor vehicles and CRSs designed for use in aircraft (Title 49 of the Code of Federal Regulations (49 CFR) part 571, § 571.213).

c. United Nations Standards or Approval by a Foreign Government. On October 15, 1992, the FAA broadened the categories of CRSs allowed to be used on aircraft to include CRSs meeting the standards of the United Nations or approved by a foreign government (57 Federal Register (FR) 42662).

d. FAA Approval through a Type Certificate (TC), Supplemental Type Certificate (STC) or TSO. On August 26, 2005, the FAA once again broadened the categories of CRSs that aircraft operators may furnish for use on aircraft to include CRSs approved by the FAA through TC, STC, or TSO (70 FR 50902).

e. FAA Approval through Section 21.305(d), or TSO C-100b, or a Later Version. On July 14, 2006, the FAA further broadened the categories of CRSs that both passengers and aircraft operators may furnish and use on aircraft to include CRSs approved under § 21.305(d) or TSO C-100b, Child Restraint System, or a later version (71 FR 40003).

7. FAA APPROVAL PROCESSES USED FOR APPROVED CRSs ON AIRCRAFT. The TC, STC, TSO, and § 21.305(d) approval processes address differences in CRS design and performance as follows.

a. TC Process. A TC is an FAA design approval in which an applicant applies for, and if approved, receives a TC for a product or a major design change to a product. A product is defined as an aircraft, an aircraft engine, or an aircraft propeller. The TC process is appropriate if a CRS is incorporated into the original design of the aircraft.

b. STC Process. The STC process allows a specific CRS meeting FAA established testing and evaluation criteria to be used on a specific type of aircraft.

(1) Under the STC process, a CRS manufacturer would submit an application for his or her product to be used on specific type of aircraft. This allows the FAA to deal with novel and unusual design features associated with any new type of CRS not addressed by current regulations and safety standards. The STC process is appropriate for a CRS not meeting FMVSS No. 213.

(2) When the FAA considers granting an STC for a CRS, it may publish proposed special conditions in the FR for notice and comment. These proposed special conditions discuss the additional safety standards the FAA deems necessary for the CRS to comply with existing regulations. It also discusses the required performance of the CRS, and the capability of the CRS to be installed and used without creating safety concerns. See 70 FR 18271, for an example of special conditions that were part of an STC which the FAA granted to a manufacturer for a CRS.

c. TSO Process.

(1) A TSO is a minimum performance standard issued by the FAA for specified materials, parts, processes, and appliances used on aircraft. These minimum performance standards must be used for an applicant to receive TSO authorization or a letter of design approval (LODA) in the case of manufacturers located outside the United States. TSO C-100b contains minimum performance standards for the testing and evaluation of CRS. The minimum performance standard references Society of Automotive Engineers (SAE) Aerospace Standard (AS) 52761. It also requires the manufacturer to provide operating instructions, equipment limitations, installation procedures and limitations, as well as instructions for continued airworthiness (ICA) and maintenance of the CRS.

(2) A TSO is a minimum performance standard similar to FMVSS No. 213. However, TSO C100b provides more realistic CRS testing regarding performance in an aviation environment. The TSO process is appropriate if a CRS is similar in design to a CRS meeting FMVSS No. 213 requirements, as well as designed to meet the specific aviation performance standards contained in TSO C-100b.

d. Section 21.305(d) Process.

(1) Under the FAA's certification rules, § 21.305(d) allows a material, part, process, or appliance to be approved in any manner approved by the Administrator. One of the reasons that the FAA included this provision in § 21.305 was to address the unique challenges presented by certain types of equipment for use on aircraft.

(2) When approving a CRS under the provisions of § 21.305(d), the FAA must ensure the CRS meets an equivalent level of safety (ELOS) to other approval processes. For a CRS, the FAA's technical experts look at the benchmark (current edition of TSO C-100b) and identify safety-critical features. The technical experts ensure that each of these features meet an ELOS adequately. This ensures a CRS approved by the FAA under § 21.305(d) will meet a high level of safety regarding testing, quality, and performance standards.

8. AVIATION CHILD SAFETY DEVICES (ACSD).

a. Avoiding Consumer Confusion. The FAA recognizes that the term "child restraint system" was originally used to refer to child restraints meeting the requirements of FMVSS No. 213 and designed to perform effectively in motor vehicles. However, in recent rulemakings, the FAA uses the term "child restraint system" to describe any approved seat or device used to restrain children on aircraft regardless of whether or not it complies with the requirements of FMVSS No. 213. To reduce consumer confusion between CRSs meeting the requirements of FMVSS No. 213 (safe for use in motor vehicles) and CRSs designed only for use in aircraft (not safe for use in motor vehicles), the FAA has introduced a new term referring to CRSs only approved for aviation use. The FAA will call these aviation-only restraints Aviation Child Safety Devices (ACSD). Regulations regarding the use of CRS in aircraft also apply to ACSDs. Below is an example of an ACSD (also shown in paragraph (13)).

Example of a CRS (ACSD)

b. Warning Label. ACSDs only meeting the aviation peformance standards contained in TSO C-100b or approved under § 21.305(d) are not safe for use in motor vehicles. The FAA worked closely with NHTSA to ensure that labeling on ACSDs clearly illustrate that ACSDs are not safe for use in motor vehicles. The FAA also plans to require a similar warning label on ACSDs approved by the FAA through the STC process.

FIGURE 1. REQUIRED WARNING LABEL FOR AVIATION CHILD SAFETY DEVICES WITHOUT FMVSS NO. 213 APPROVAL

c. Consumer Education. The FAA is taking steps to educate consumers regarding the difference between devices safe for use in both motor vehicles and aircraft vs. those safe only for use in aircraft. The FAA revised the information on its Web site for passengers traveling with children (http://www.faa.gov/passengers/fly_children/crs/), and put additional educational material on the site to remind people that ACSDs are not safe for use in motor vehicles. The FAA also encourages airline personnel, especially Flight Attendants (F/A), to take advantage of opportunities to educate parents and guardians who use ACSDs on aircraft regarding the differences between those "aviation only" ACSDs and devices that can be used safely in both aircraft and motor vehicles.

NOTE: Unless indicated otherwise, any information regarding CRSs and pertinent regulations also apply to ACSDs.

9. LABELING ON CRSs APPROVED FOR USE DURING GROUND MOVEMENT, TAKEOFF, AND LANDING. Current operating rules in parts 91, 121, 125, and 135 require that CRSs used on aircraft during ground movement, takeoff, and landing meet one of the following labeling or marking requirements:

a. Required Labels. The CRS must bear two labels. However, typically the text for these two required labels is merged onto one label. The labeling must include the text "This child restraint system conforms to all applicable Federal Motor Vehicle Safety Standards" and "This Restraint is Certified for Use in Motor Vehicles and Aircraft," in red lettering. The following is an example of this required labeling:

b. Approval Labels. The CRS must bear either a label showing approval of a foreign government or a label showing that the CRS was manufactured under the standards of the United Nations. The following is an example of the required labeling for a CRS manufactured under the standards of the United Nations (the "E" is consistently used in the label, but the number to the right of the "E" can change because it is the distinguishing number of the country that has granted approval):

c. FAA Approval Label. The CRS must bear a label or markings showing FAA approval through an STC. The following is an example:

Conforms To:
PAT NO.
STC STO10781LA

APPROVED FOR AIRCRAFT USE ONLY

d. TSO Label. CRSs approved under TSO C-100b, must be permanently and legibly marked "TSO C-100b."

e. Approval under § 21.305(d) Label. The CRS must be clearly marked showing FAA approval under § 21.305(d) and bear the label "FAA Approved in Accordance with 14 CFR § 21.305(d)." The following is an example:

FAA APPROVED IN ACCORDANCE WITH 14 CFR 21.305 (d) APPROVED FOR AIRCRAFT USE ONLY

10. REGULATORY REQUIREMENTS REGARDING THE USE OF CRSs ON AIRCRAFT.

a. Children Under the Age of Two. Under the provisions in parts 121, 125, and 135 during takeoff, landing, and movement on the surface, each person on board shall occupy an approved seat or berth with a separate seatbelt properly secured about him/her. However, a person who has not reached his/her second birthday may be held by an adult occupying a seat or berth. During takeoff, landing and, movement on the surface, a child under the age of two may be held in an adult's lap or be placed in a regular passenger seat and use a standard seatbelt.

b. Proper Use of CRS. If a child occupies a CRS, a parent/guardian must accompany the child and the aircraft operator must comply with the requirements that the child is properly secured in the CRS, the CRS is properly secured in a forward-facing seat, the child does not exceed the weight limits of the CRS, and the CRS is approved and has the proper labels or markings.

c. CRS Restrictions. No aircraft operator may permit a child to occupy a booster-type, vest-type, harness-type, or lap-held CRS during takeoff, landing, and movement on the surface, except when the CRS has been approved by the FAA through a TC, STC, TSO, or under § 21.305(d). Booster-type, vest-type, and harness-type CRSs approved by the FAA through a TC, STC, TSO, or under § 21.305(d), may be used during all phases of flight.

d. Regulations. Under the provisions in parts 121, 125, and 135, no certificate holder may prohibit a child from using an approved CRS when the parent/guardian purchases a ticket for the child. (Certificate holders are encouraged to allow the use of empty seats to accommodate CRS; however, they are not required to allow unticketed children to occupy empty passenger seats, even if the child uses a CRS.)

e. Approved CRSs. The regulations allow aircraft operators to provide approved CRSs for use.

f. Operators Prohibiting CRS Use. No aircraft operator may prohibit a child from using an approved CRS when the parent/guardian purchases a seat for the child. If an approved CRS, for which a ticket has been purchased, does not fit in a particular seat on the aircraft, the aircraft operator has the responsibility to accommodate the CRS in another seat in the same class of service. The regulations also permit an aircraft operator to use its discretion in identifying the most appropriate forward-facing passenger seat location, considering safe operating practices. For example:

(1) A CRS with a base that is too wide to fit properly in a seat with rigid armrests can be moved to a seat with moveable armrests that can be raised to accommodate the CRS.

(2) An aft-facing CRS that can not be installed properly, because of minimal pitch (distance between seats) between rows, can be moved to a bulkhead seat or a seat in a row with additional pitch.

(3) A harness type CRS (approved under § 21.305(d)) with an upper strap unable to encircle some sleeper seats, or very large first class seats, can be moved to another seat that can accommodate the strap.

NOTE: An aircraft operator may have policies, based on safe operating practices, that establish certain seat locations for passengers who use a CRS on a specific aircraft. However, prohibiting the use of a CRS (if a ticket has been purchased), when there are seats on the aircraft where the CRS could be used safely, is not consistent with the requirements in parts 121, 125, and 135.

11. WORN OR UNREADABLE LABELS. When an approved CRS is labeled or marked by the manufacturer, it certifies the CRS meets a set of safety standards (FMVSS No. 213, the standards of a foreign government, the standards of the United Nations, or approval by the FAA through a TC, STC, TSO, or under § 21.305(d)). Current operating rules require the CRS used on an aircraft during ground movement, takeoff, and landing must bear labels or markings to indicate to the aircraft operator that the CRS meets safety standards. When a parent/guardian presents an approved CRS for use on aircraft with a worn off or unreadable label, the CRS must be furnished with a letter or document from the manufacturer that specifically ties the CRS (through a detailed description or specific make and model number) to approval for use on aircraft. An owner's manual is also acceptable as proof of safety standards, as these booklets contain pictures or illustrations of the CRS and information that the CRS meets FMVSS 213.

12. TYPES OF CRSs MEETING THE CRITERIA OF FMVSS NO. 213, STANDARDS OF A FOREIGN GOVERNMENT, OR STANDARDS OF THE UNITED NATIONS. Basic design features for the majority of approved CRSs for use on aircraft have remained fairly constant, although some changes and innovations in the design of CRSs have occurred as a result of FAA approval of CRSs through a TC, STC, TSO, or under § 21.305(d). An aircraft operator's personnel, specifically F/As, should be aware of the following items pertaining to CRSs meeting the criteria of FMVSS No. 213, the standards of a foreign government, or the United Nations. The criteria include:

- The CRS should have a solid back and seat.
- The CRS should have internal restraint straps installed to securely hold the child in the CRS.
- The CRS must have a label showing approved for aviation use.

Example of a Forward-facing CRS with Internal Harness

Example of an Aft-facing CRS with Internal Harness

13. TYPES OF CRSs APPROVED BY A TC, STC, TSO, OR UNDER SECTION 21.305(d). Typically, a CRS approved by the FAA through the TSO process will be similar in

design to a CRS meeting the requirements of FMVSS No. 213. However, CRSs approved by the FAA through a TC, STC, or under § 21.305(d), may contain novel and unusual design features. In addition, the regulations allow the use of booster-type or vest- and harness-type CRSs, if the FAA has approved them through a TC, STC, TSO, or under § 21.305(d) (§§ 121.311(b)(2)(ii)(C)(3), 121.311(b)(2)(ii)(C)(4), and 121.311(c)(1). The aircraft operator is responsible for ensuring that crewmembers have proper training and information regarding the use of CRSs approved for use on aircraft through a TC, STC, TSO, or under § 21.305(d). The following is an example of a CRS that has been approved by the FAA through a STC, as well as under § 21.305(d):

Example of a CRS (ACSD) Approved through STC and under § 21.305(d)

14. CRSs NOT APPROVED FOR USE DURING GROUND MOVEMENT, TAKEOFF, AND LANDING. In 1994, the FAA issued a study entitled "The Performance of Child Restraint Devices in Transport Airplane Seats." The research for the study conducted by the FAA Civil Aerospace Medical Institute (CAMI) involved dynamic impact tests with a variety of CRSs installed in transport category aircraft passenger seats. The results of this study were used as the basis for prohibiting the use of the following devices during ground movement, takeoff, and landing. The FAA Office of Aerospace Medicine (AAM) report, "The Performance of Child Restraint Devices in Transport Airplane Passenger Seats," may be found at: http://www.faa.gov/library/reports/medical/oamtechreports/1990s/media/AM94-19.pdf. The CAMI study revealed:

a. Belly Belts. These devices attach the child to the accompanying adult. The child is restrained by an abdominal belt attached to the adult's seatbelt. During dynamic testing, the forward flailing of the adult and the child resulted in severe body impacts against the forward seat. The child Anthropomorphic Test Dummy (ATD) moved forward to impact the forward row seat back, followed by the adult ATD torso striking the child ATD. Then, the adult ATD torso continued to move forward after contact with the child ATD, crushing the child ATD against the seat back.

b. Harness Restraints. The devices tested consisted of a torso harness for the child ATD placed in its own seat with the airplane seatbelt routed through a loop of webbing attached to the

back of the harness. During dynamic testing, the devices allowed excessive forward body excursion, resulting in the test dummy sliding off the front of the seat with a high likelihood of the child's entire body impacting the seat back of the seat directly in front of it. Then, elasticity in the webbing of the harness and seatbelts pulled the ATD rearward and this rebound acceleration presented further risk of injury.

c. Booster Seats. A key concern for backless booster seats used in airplane seats is the combined effect of seat back breakover and impact of an adult seated behind the child. Booster seats may expose the child occupant to potential abdominal injury due to the combined effects of these forces.

d. Prohibition. Except for ACSDs approved by the FAA through a TC, STC, TSO, or under § 21.305(d), the following CRSs continue to be prohibited for use during ground movement, takeoff, and landing:

- Lap-held child restraint (commonly referred to as a belly belt),
- Vest- and harness-type devices that attach the child to the parent, the parent's restraint system, or to the aircraft seatbelt, and
- Booster-type child restraints (even though they may bear appropriate labels showing that they meet applicable United Nations standards or are approved by a foreign government).

15. FAA BOOSTER SEAT DEFINITION. The FAA defines booster seats as those that are a raised platform base on which the child sits. A front shield, over which the lap belts are routed, covers the abdominal area of the child. Booster seats do not have a back or side shell. There are no integral belts to restrain the child. The use of such automotive booster seats is prohibited by the FAA's operating rules during ground movement, takeoff, and landing. A child large enough for a booster seat can also be properly restrained in the normal passenger seat lap belts.

Example of a Backless Booster Seat

16. CRS MANUFACTURERS' BOOSTER SEAT DEFINITION.

a. Overview. Some manufacturers choose to market and label their approved CRSs with backs as "booster seats." These "booster seats" do not meet the FAA definition of a booster seat. However, these "booster seats" fall into two categories, those with and without internal restraints. As per FMVSS No. 213, the manufacturer's labeling will specify that a CRS without internal restraints is not certified for use in aircraft. However, with internal restraints, solid

backs, and the proper labeling, these CRSs marketed as "booster seats" will be labeled as certified for use in motor vehicles and aircraft and may be used for all phases of flight.

b. Approved "Booster Seat." The CRSs in the following image (CRS with Internal Restraint Marketed as a "Booster Seat") would be approved for use during all phases of flight.

c. Non-Approved "Booster Seat." The CRS in the following image (CRS without Internal Restraint Marketed as a Booster Seat) would not be approved for use during all phases of flight.

17. PASSENGER USE OF NON-APPROVED CRSs ON AN AIRCRAFT.

a. Regulations. The regulations contained in § 121.311 prohibit the use of certain types of CRSs during ground movement, takeoff, and landing. However, during the cruise portion of the flight, there is no regulatory prohibition regarding the use of any type of child restraint, including those prohibited from use during ground movement, takeoff, and landing.

b. Operational Flexibility. Also, there is no regulatory requirement that an aircraft operator permit the use of "non-approved" CRSs during the cruise portion of the flight. If an aircraft operator decides to implement a policy to prohibit the use of non-approved CRSs in-flight, they have the operational flexibility to do so.

18. PLACEMENT OF CRS ON THE AIRCRAFT. CRSs must be installed in forward-facing aircraft seats, in accordance with instructions on the label. This includes placing the CRS in the appropriate forward or aft-facing direction as indicated on the label for the size of the child. A window seat is the preferred location; however, other locations may be acceptable, provided the

CRS does not block the egress of any passenger, including the child's parent or guardian, to the aisle used to evacuate the aircraft. The regulations contained in §§ 91.107, 121.311, 125.211, and 135.128 allow aircraft operators to determine the most appropriate passenger seat location for CRSs based on safe operating practices. In making this determination, an aircraft operator should consider the following.

a. Aisle Seats. CRSs should not be placed in an aisle seat because this placement has the highest risk of slowing down the passenger flow rate during an evacuation. For example, a parent or guardian traveling with the child in a CRS may step out into the aisle to release the child from the CRS or the CRS may impede F/As who may need to climb over the top of aisle seats to get past passengers in the aisle to reach an emergency exit.

b. Rows Forward and Aft of Emergency Exit Rows. Each aircraft operator's specific evacuation procedures should be considered during the development of procedures regarding placement of CRSs on aircraft.

(1) In an evacuation, space has to be rapidly cleared forward or aft of the exit row so that no one would be hurt or trapped if the exit hatch was thrown in this area. A delay may occur as a parent/guardian removes a child from a CRS. If the aircraft operator's crewmember evacuation procedures or instructions to passengers demonstrate the removal and placement of Type III exit hatches (as defined in 14 CFR part 23, § 23.807, part 125, § 25.807, and part 129, § 29.807) in the row forward or aft of the emergency exit row, the aircraft operator should restrict the placement of CRSs accordingly.

(2) Installation of a CRS in the row forward of an exit keeps a seat back from breaking over. Aircraft seats are not required to break over, but if an aircraft operates with this feature and evacuation procedures include breaking over seat backs forward of an exit to create space for a crewmember or to create a wider evacuation path for passengers, the aircraft operator should restrict the placement of CRSs accordingly.

c. Proper Installation.

(1) Some CRSs will not fit into certain aircraft seats. In this instance, the CRS may not be used on those seats. Examples of this include:

- When the base of a CRS with a solid back and seat is wider than an aircraft seat with rigid armrests; or

- When the strap encircling the seat back on a harness-type CRS approved under the provisions of § 21.305(d) does not fit around some sleeper seats or very large first class seats.

(2) Certain aircraft seat models have a recessed tray table cavity with rigid sides into which the tray table fits when closed. If the strap encircling the seat back on a harness-type ACSD is installed underneath the tray table, then this seat back design will not allow the tray table to be properly secured during ground movement, takeoff, and landing. In this case, the strap must be placed completely over both the seat back and stowed tray table during these phases of aircraft operation.

19. TRAVELING WITH MORE THAN ONE CHILD. In the event a parent/guardian is traveling with more than one child in a CRS or is traveling with several small children, only one of whom is occupying a CRS, good judgment should be used regarding placement of the CRSs As long as these conditions below are met, the CRS could be placed in a seat other than a window seat. At a minimum:

- The CRS should be placed so it does not block any passengers (including the parent/guardian) egress to the aisle used to evacuate the aircraft, and

- The CRS should be placed so the parent/guardian can reach the child in the CRS to release and evacuate with the child, should an emergency evacuation be necessary.

20. RESPONSIBILITY FOR ENSURING THE PROPER USE OF CRS. If the CRS is supplied by the parent or guardian, typically he or she will check to ensure that the CRS is approved and that the child is the right size and weight for the CRS. In addition, the parent will usually ensure that the CRS is properly installed in a forward-facing passenger seat. However, aircraft operators still have overall responsibility to ensure that the CRS is properly secured to a forward-facing seat, the child is properly secured in the CRS and does not exceed the weight limit for the CRS, and that the CRS bears appropriate labels or markings (§ 121.311(b)(2)(iii)).

21. EFFECTIVE PRACTICES FOR CONSIDERATION. Effective practices may include:

- The aircraft operator's training program and crewmember operating manuals should contain information, policy, and procedures regarding CRS use,

- The CRS should be secured to a regular passenger seat at all times or, if not in use, stowed as carry-on baggage, and

- The child should always be properly secured in the CRS whenever other passengers are required to fasten their seatbelts.

22. AN ADULT AS FOUND IN SECTION 121.311. The word "adult," as it appears in § 121.311, is used in the ordinary sense of the word to denote a person 18 years of age or older (http://www.faa.gov/about/initiatives/cabin_safety/regs/legal/media/age_adult.pdf).

23. USE OF AN APPROVED CRS FOR A CHILD WITH DISABILITIES. The majority of individuals using CRSs on aircraft are young children typically weighing 40 pounds or less. However, there are some people who, because of physical challenges, need the support and security that a restraint system provides in order to travel safely on aircraft. Aircraft operators should ensure F/As are aware that older children (who have not reached their eighteenth birthday) may use a properly approved CRS that is appropriate for that child's size and weight. In this case, the aircraft operator may not prohibit the use of the CRS. There are several companies manufacturing CRSs approved for use on aircraft specifically designed for larger children who are physically challenged.

24. USE OF A NON-APPROVED CRS FOR A CHILD, OR A NON-APPROVED RESTRAINT SYSTEM FOR AN ADULT WITH DISABILITIES. In the case of a person who, because of physical challenges, needs the support and security of a non-approved CRS or restraint system the individual, his or her guardian, or the aircraft operator (on the individual's behalf) may request an exemption to certain operating rules addressing the use of the CRS on the aircraft. Upon application, the FAA will determine whether the exemption request will be granted in order to allow the use of a non-approved restraint system during all phases of flight. While not required, it has been found to be an effective practice for the individual or the parent/guardian to have a copy of the grant of exemption available for the aircraft operator to review when using a non-approved CRS or restraint system on aircraft.

25. HOW TO PETITION FOR EXEMPTION. To find out how to submit a petition for exemption, see http://www.faa.gov/regulations_policies/rulemaking/petition/. To review previously granted exemptions regarding the use of restraint systems, see the FAA's Automated Exemption System at: http://aes.faa.gov/. To view previously granted exemptions regarding the use of specialized restraint for adults, type "12485," or "9364" in the "Docket Search" field. To view previously granted exemptions regarding the use of non-approved restraint for children, type "17184," "29824,", "28630"or "8264", "9834" in the "Docket Search" field.

26. IMPROVING EMERGENCY EVACUATION CAPABILITIES. To improve emergency evacuation capabilities, the CRS should remain attached to the passenger seat during an emergency evacuation, and only the child should be removed from the aircraft. Researchers from CAMI, AAM-600, have completed two studies designed to determine the most favorable methods for the emergency evacuation of infants from aircraft. All CAMI Aerospace Medicine Technical Reports can be found at: http://www.faa.gov/library/reports/medical/oamtechreports/.

a. Slide Evacuation. The purpose of the first study, DOT/FAA/AM-01/18, was to determine the most favorable methods for the evacuation of infants via an inflatable emergency evacuation slide. The results of this study strongly suggest that jumping onto the slide should be the favored boarding maneuver, as opposed to sitting down and sliding which slows the progress of the evacuation. The carrying position that provides the most protection for the child would include cradling the child's head and neck with the hand (for a vertical position) or in the arm (for horizontal positions), keeping the child's arms, legs and feet enfolded as much as possible by the adult's arms.

b. Overwing Exit Evacuation. The purpose of the second study, DOT/FAA/AM-05/02, was to determine the most favorable methods for evacuation of infants through a Type III overwing exit. The results of this study suggest that carrying the infant vertically should be the favored egress maneuver through the Type III exit, as opposed to carrying the child horizontally or passing the child to another passenger on the outside of the Type III exit.

ORIGINAL SIGNED by
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