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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 25

[Docket No. FAA–2017–0544; Special Conditions No. 25–692–SC]

Special Conditions: LifePort, Inc.: Boeing Model 747–8 Airplane; Single- and Multiple-Occupant Side-Facing Seats

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final special conditions; request for comments.

SUMMARY: These special conditions are issued for the Boeing Model 747–8 airplane. This airplane, as modified by LifePort Inc. (LifePort), will have novel or unusual design features when compared to the state of technology envisioned in the airworthiness standards for transport-category airplanes. These design features are single- and multiple-occupant side-facing seats (*i.e.,* seats positioned in the airplane with the occupant facing 90 degrees to the direction of airplane travel). The applicable airworthiness regulations do not contain adequate or appropriate safety standards for these design features. These special conditions contain the additional safety standards that the Administrator considers necessary to establish a level of safety equivalent to that established by the existing airworthiness standards.

DATES: This action is effective on LifePort on August 1, 2017. Send your comments by September 15, 2017.

ADDRESSES: Send comments identified by docket number FAA–2017–0544 using any of the following methods:

- *Federal eRegulations Portal:* Go to *http://www.regulations.gov/* and follow the online instructions for sending your comments electronically.
- *Mail:* Send comments to Docket Operations, M–30, U.S. Department of Transportation (DOT), 1200 New Jersey Avenue SE., Room W12–140, West Building Ground Floor, Washington, DC 20590–0001.
- *Hand Delivery or Courier:* Take comments to Docket Operations in Room W12–140 of the West Building Ground Floor at 1200 New Jersey Avenue SE., Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.
- *Fax:* Fax comments to Docket Operations at 202–493–2251.

Privacy: The FAA will post all comments it receives, without change, to *http://www.regulations.gov/,* including any personal information the commenter provides. Using the search function of the docket Web site, anyone can find and read the electronic form of all comments received into any FAA docket, including the name of the individual sending the comment (or signing the comment for an association, business, labor union, etc.). DOT's complete Privacy Act Statement can be found in the **Federal Register** published on April 11, 2000 (65 FR 19477–19478).

Docket: Background documents or comments received may be read at *http://www.regulations.gov/* at any time. Follow the online instructions for accessing the docket or go to Docket Operations in Room W12–140 of the West Building Ground Floor at 1200 New Jersey Avenue SE., Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

FOR FURTHER INFORMATION CONTACT: Alan Sinclair, FAA, Airframe and Cabin Safety, ANM–115, Transport Airplane Directorate, Aircraft Certification Service, 1601 Lind Avenue SW., Renton, Washington 98057–3356; telephone 425–227–2195; facsimile 425–227–1320.

SUPPLEMENTARY INFORMATION: The FAA has determined that notice of, and opportunity for prior public comment on, these special conditions is impracticable because these procedures would significantly delay issuance of the design approval and thus delivery of the affected airplane.

In addition, the substance of these special conditions has been published in the **Federal Register** for public comment in several prior instances with no substantive comments received. The FAA therefore finds good cause that prior public notice and comment are unnecessary and impracticable, and finds that good cause exists for making these special conditions effective upon publication in the **Federal Register**.

Comments Invited

We invite interested people to take part in this rulemaking by sending written comments, data, or views. The most helpful comments reference a specific portion of the special conditions, explain the reason for any recommended change, and include supporting data.

We will consider all comments we receive by the closing date for comments. We may change these special conditions based on the comments we receive.

Background

On September 28, 2016, LifePort applied for a supplemental type certificate for single- and multiple-occupant side-facing seats in the Boeing Model 747–8 airplane. The Boeing Model 747–8 airplane is a wide-body, four-engine, extended-range jet with a stretched upper deck. This airplane is configured as a private executive jet, not for hire, not for common carriage. The maximum takeoff weight is 987,331 pounds.

Type Certification Basis

Under the provisions of Title 14, Code of Federal Regulations (14 CFR) 21.101, LifePort must show that the Boeing Model 747–8 airplane, as changed, continues to meet the applicable provisions of the regulations listed in Type Certificate No. A20WE or the applicable regulations in effect on the date of application for the change, except for earlier amendments as agreed upon by the FAA.

If the Administrator finds that the applicable airworthiness regulations (*i.e.,* 14 CFR part 25) do not contain adequate or appropriate safety standards for the Boeing Model 747–8 airplane, because of a novel or unusual design feature, special conditions are prescribed under the provisions of § 21.16.

Special conditions are initially applicable to the model for which they are issued. Should the applicant apply for a supplemental type certificate to modify any other model included on the same type certificate to incorporate the same novel or unusual design feature, these special conditions would also apply to the other model under § 21.101.

In addition to the applicable airworthiness regulations and special conditions, the Boeing Model 747–8 airplane must comply with the fuel-vent and exhaust-emission requirements of 14 CFR part 34, and the noise-certification requirements of 14 CFR part 36.

The FAA issues special conditions, as defined in 14 CFR 11.19, in accordance with § 11.38, and they become part of the type certification basis under § 21.101.

Novel or Unusual Design Features

The Boeing Model 747–8 airplane, as modified by LifePort, will incorporate the following novel or unusual design features:

Single- and multiple-occupant side-facing seats positioned in the airplane with the occupant facing 90 degrees to the direction of airplane travel.

Discussion

Side-facing seats are considered a novel design for transport-category airplanes that include §§ 25.562 and 25.785 at Amendment 25–64 in their certification basis, and were not considered when those airworthiness standards were issued. The FAA has determined that the existing regulations do not provide adequate or appropriate safety standards for occupants of side-facing seats. To provide a level of safety that is equivalent to that afforded to occupants of forward- and aft-facing seats, additional airworthiness standards in the form of special conditions are necessary.

On June 16, 1988, 14 CFR part 25 was amended by Amendment 25–64 to revise the emergency-landing conditions that must be considered in the design of transport-category airplanes. Amendment 25–64 revised the static-load conditions in § 25.561, and added a new § 25.562 that required dynamic testing for all seats approved for occupancy during takeoff and landing. The intent of Amendment 25–64 was to provide an improved level of safety for occupants on transport-category airplanes. However, because most seating on transport-category airplanes is forward-facing, the pass/fail criteria developed in Amendment 25–64 focused primarily on these seats. For some time, the FAA granted exemptions for the multiple-place side-facing-seat installations because the existing test methods and acceptance criteria did not produce a level of safety equivalent to the level of safety provided for forward- and aft-facing seats. These exemptions were subject to many conditions that reflected the injury-evaluation criteria and mitigation strategies available at the time of the exemption issuance.

The FAA also issued special conditions to address single-place side-facing seats based on the data available at the time the FAA issued those special conditions. Continuing concerns regarding the safety of side-facing seats prompted the FAA to conduct research to develop an acceptable method of compliance with §§ 25.562 and 25.785(b) for side-facing seat installations. That research has identified injury considerations and evaluation criteria in addition to those previously used to approve side-facing seats (see published report DOT/FAA/AR–09/41, July 2011).

One particular concern that was identified during the FAA's research program, but not addressed in the previous special conditions, was the significant leg injuries that can occur to occupants of both single- and multiple-place side-facing seats. Because this type of injury does not occur on forward- and aft-facing seats, the FAA determined that, to achieve the level of safety envisioned in Amendment 25–64, additional requirements would be needed as compared to previously issued special conditions. Nonetheless, the research has now allowed the development of a single set of special conditions that is applicable to all fully side-facing seats.

On November 5, 2012, the FAA released policy statement PS–ANM–25–03–R1, ''Technical Criteria for Approving Side-Facing Seats,'' to update existing FAA certification policy on §§ 25.562 and 25.785(a) at Amendment 25–64 for single- and multiple-place side-facing seats. This policy addresses both the technical criteria for approving side-facing seats and the implementation of those criteria. The FAA methodology detailed in PS–ANM–25–03–R1 has been used in establishing a new set of proposed special conditions. Some of the conditions issued for previous exemptions are still relevant and are included in these new special conditions. However, others have been replaced by different criteria that reflect current research findings.

In Policy Statement PS–ANM–25–03–R1, conditions 1 and 2 are applicable to all side-facing seat installations, whereas conditions 3 through 16 represent additional requirements applicable to side-facing seats equipped with an airbag system in the shoulder belt. Because the applicant's side-facing seats do not have airbag systems, only conditions 1 and 2 are applicable to, and included in, these special conditions.

These special conditions contain the additional safety standards that the Administrator considers necessary to establish a level of safety equivalent to that established by the existing airworthiness standards.

Applicability

As discussed above, these special conditions are applicable to the Boeing Model 747–8 airplane as modified by LifePort. Should LifePort apply at a later date for a supplemental type certificate to modify any other model included on Type Certificate no. A20WE to incorporate the same novel or unusual design feature, these special conditions would apply to that model as well.

Conclusion

This action affects only certain novel or unusual design features on one model of airplane. It is not a rule of general applicability and affects only the applicant who applied to the FAA for approval of these features on the airplane.

List of Subjects in 14 CFR Part 25

Aircraft, Aviation safety, Reporting and recordkeeping requirements.

The authority citation for these special conditions is as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701, 44702, 44704.

The Special Conditions

■ Accordingly, pursuant to the authority delegated to me by the Administrator, the following special conditions are issued as part of the type certification basis for Boeing Model 747–8 airplanes modified by LifePort, Inc.

1. Additional requirements applicable to tests or rational analysis conducted to show compliance with §§ 25.562 and 25.785 for side-facing seats:

a. The longitudinal test(s) conducted in accordance with § 25.562(b)(2), to show compliance with the seat-strength requirements of § 25.562(c)(7) and (8) and these special conditions, must have an ES–2re anthropomorphic test dummy (ATD) (49 CFR part 572, subpart U) or equivalent, or a Hybrid II ATD (49 CFR part 572, subpart B as specified in § 25.562) or equivalent, occupying each seat position and including all items (*e.g.,* armrest, interior wall, or furnishing) contactable by the occupant if those items are necessary to restrain the occupant. If included, the floor representation and contactable items must be located such that their relative position, with respect to the center of the nearest seat place, is the same at the start of the test as before floor misalignment is applied. For example, if

floor misalignment rotates the centerline of the seat place nearest the contactable item 8 degrees clockwise about the airplane x-axis, then the item and floor representations must be rotated by 8 degrees clockwise also, to maintain the same relative position to the seat place, as shown in Figure 1. Each ATD's relative position to the seat after application of floor misalignment must be the same as before misalignment is applied. To ensure proper occupant seat loading, the ATD pelvis must remain supported by the seat pan, and the restraint system must remain on the pelvis and shoulder of the ATD until rebound begins. No injury-criteria evaluation is necessary for tests conducted only to assess seat-strength requirements.

b. The longitudinal test(s) conducted in accordance with § 25.562(b)(2), to show compliance with the injury assessments required by § 25.562(c) and these special conditions, may be conducted separately from the test(s) to show structural integrity. In this case, structural-assessment tests must be conducted as specified in paragraph 1a, above, and the injury-assessment test must be conducted without yaw or floor misalignment. Injury assessments may be accomplished by testing with ES–2re ATD (49 CFR part 572, subpart U) or equivalent at all places. Alternatively, these assessments may be accomplished by multiple tests that use an ES–2re ATD at the seat place being evaluated, and a Hybrid II ATD (49 CFR part 572, subpart B, as specified in § 25.562) or equivalent used in all seat places forward of the one being assessed, to evaluate occupant interaction. In this case, seat places aft of the one being assessed may be unoccupied. If a seat installation includes adjacent items that are contactable by the occupant, the injury potential of that contact must be assessed. To make this assessment, tests may be conducted that include the actual item, located and attached in a representative fashion. Alternatively, the injury potential may be assessed by a combination of tests with items having the same geometry as the actual item, but having stiffness characteristics that would create the worst case for injury (injuries due to both contact with the item and lack of support from the item).

c. If a seat is installed aft of structure (*e.g.,* an interior wall or furnishing) that does not have a homogeneous surface contactable by the occupant, additional analysis and/or test(s) may be required to demonstrate that the injury criteria are met for the area that an occupant could contact. For example, different yaw angles could result in different injury considerations and may require additional analysis or separate test(s) to evaluate.

d. To accommodate a range of occupant heights (5th percentile female to 95th percentile male), the surface of items contactable by the occupant must be homogenous 7.3 in. (185 mm) above and 7.9 in. (200 mm) below the point (center of area) that is contacted by the 50th percentile male size ATD's head during the longitudinal test(s) conducted in accordance with paragraphs a, b, and c, above. Otherwise, additional head-injury criteria (HIC) assessment tests may be necessary. Any surface (inflatable or otherwise) that provides support for the occupant of any seat place must provide that support in a consistent manner regardless of occupant stature. For example, if an inflatable shoulder belt is used to mitigate injury risk, then it must be demonstrated by inspection to bear against the range of occupants in a similar manner before and after inflation. Likewise, the means of limiting lower-leg flail must be demonstrated by inspection to provide protection for the range of occupants in a similar manner.

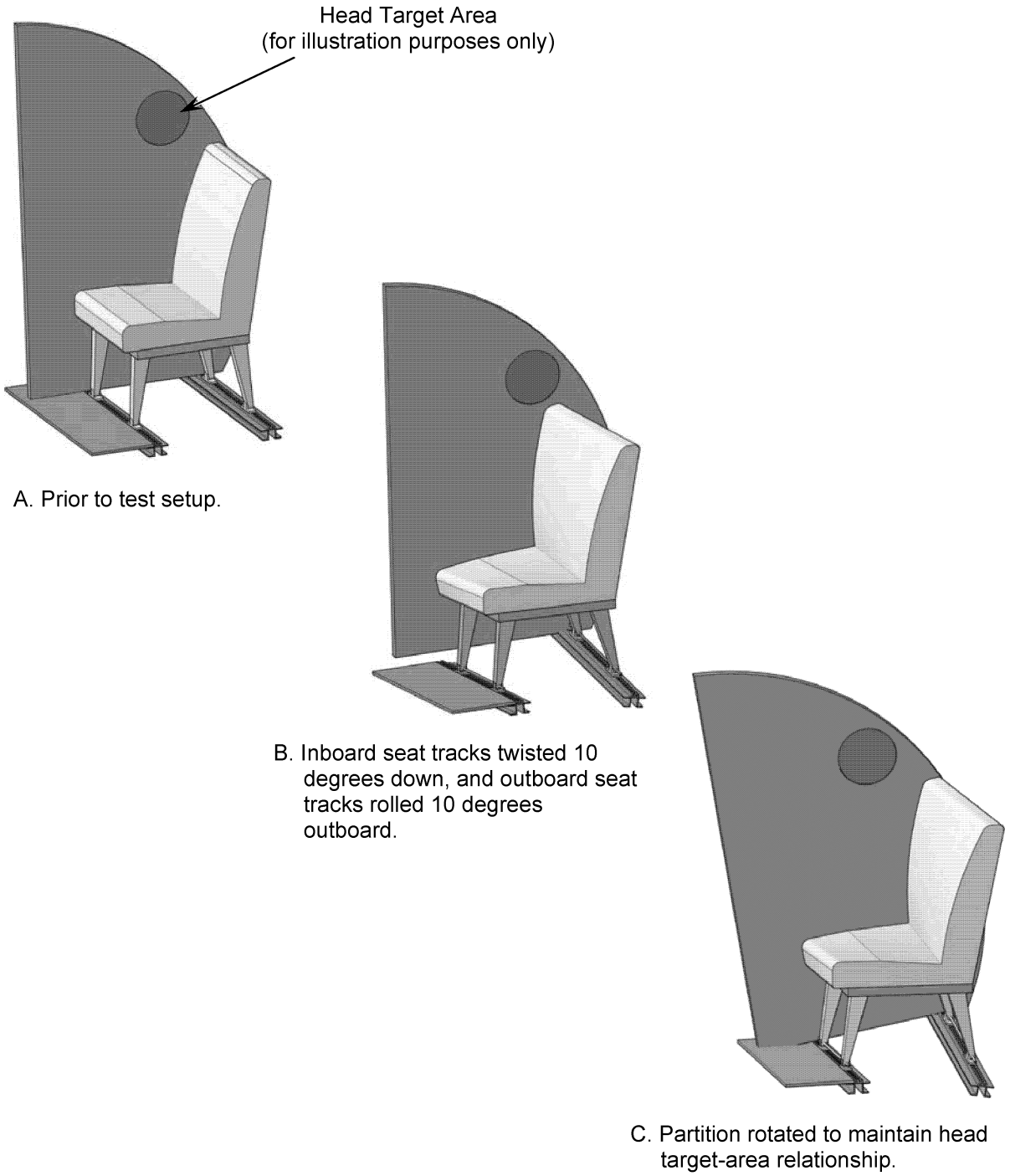
Head Target Area
(for illustration purposes only)
A. Prior to test setup.
B. Inboard seat tracks twisted 10 degrees down, and outboard seat tracks rolled 10 degrees outboard.
C. Partition rotated to maintain head target-area relationship.

Figure 1

e. For longitudinal test(s) conducted in accordance with § 25.562(b)(2) and these special conditions, the ATDs must be positioned, clothed, and have lateral instrumentation configured as follows:

(1) *ATD positioning:* Lower the ATD vertically into the seat while simultaneously (see Figure 2):

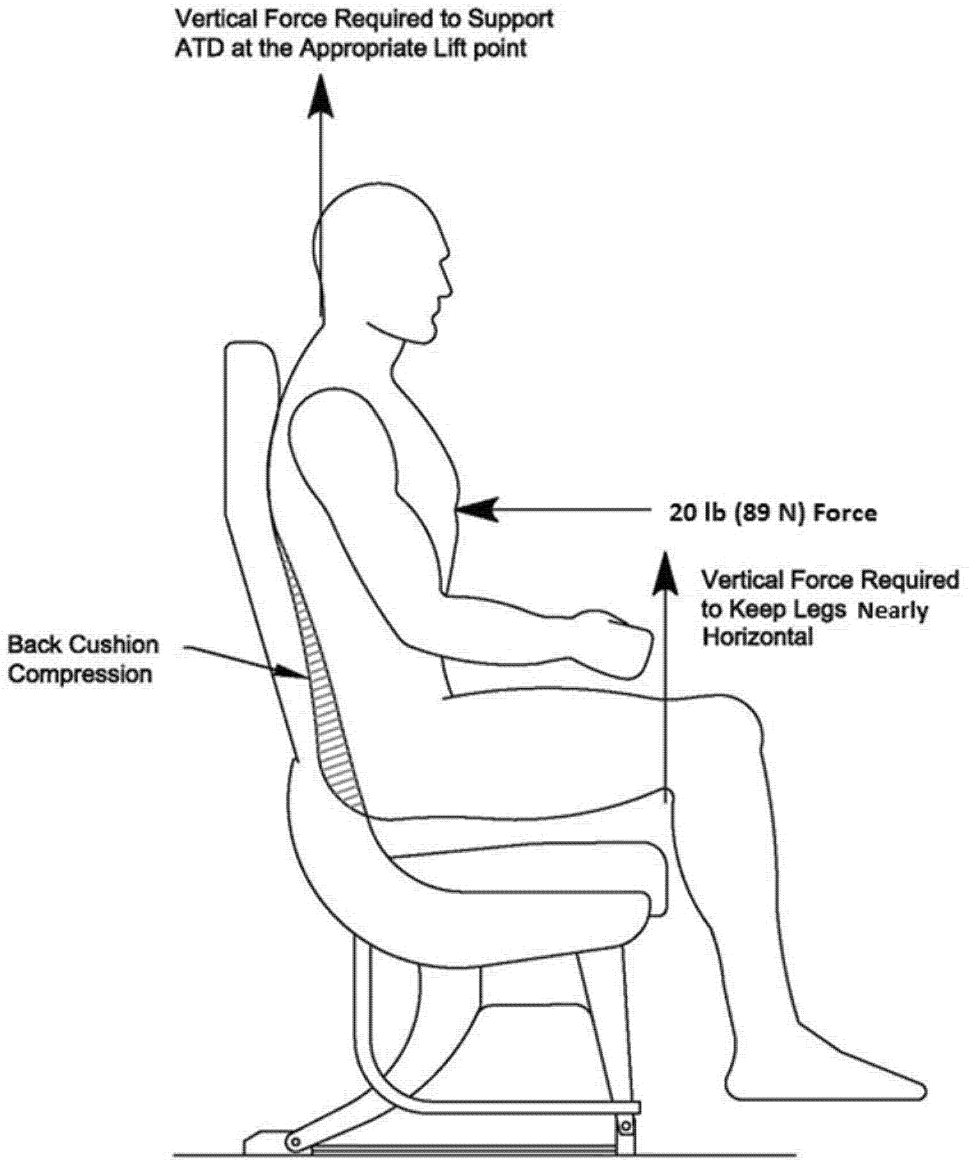

Figure 2

(a) Aligning the midsagittal plane (a vertical plane through the midline of the body; dividing the body into right and left halves) with approximately the middle of the seat place.

(b) Applying a horizontal x-axis direction (in the ATD coordinate system) force of about 20 lb (89 N) to the torso at approximately the intersection of the midsagittal plane and the bottom rib of the ES–2re or lower sternum of the Hybrid II at the midsagittal plane, to compress the seat back cushion.

(c) Keeping the upper legs nearly horizontal by supporting them just behind the knees.

(d) After all lifting devices have been removed from the ATD:

(i) Rock it slightly to settle it into the seat.

(ii) Separate the knees by about 4 in. (100 mm).

(iii) Set the ES–2re ATD's head at approximately the midpoint of the available range of z-axis rotation (to align the head and torso midsagittal planes).

(iv) Position the ES–2re ATD's arms at the joint's mechanical detent that puts them at approximately a 40-degree angle with respect to the torso. Position the Hybrid II ATD hands on top of its upper legs.

(v) Position the feet such that the centerlines of the lower legs are approximately parallel to a lateral vertical plane (in the airplane coordinate system).

(2) *ATD clothing:* Clothe each ATD in form-fitting, mid-calf-length (minimum) pants and shoes (size 11E) weighing about 2.5 lb (1.1 Kg) total. The color of

the clothing should be in contrast to the color of the restraint system. The ES–2re jacket is sufficient for torso clothing, although a form-fitting shirt may be used in addition if desired.

(3) *ES–2re ATD lateral instrumentation:* The rib-module linear slides are directional, *i.e.,* deflection occurs in either a positive or negative ATD y-axis direction. The modules must be installed such that the moving end of the rib module is toward the front of the airplane. The three abdominal-force sensors must be installed such that they are on the side of the ATD toward the front of the airplane.

f. The combined horizontal/vertical test, required by § 25.562(b)(1) and these special conditions, must be conducted with a Hybrid II ATD (49 CFR part 572, subpart B, as specified in § 25.562), or equivalent, occupying each seat position.

g. Restraint systems:

(1) If inflatable restraint systems are used, they must be active during all dynamic tests conducted to show compliance with § 25.562.

(2) The design and installation of seatbelt buckles must prevent unbuckling due to applied inertial forces, or impact of the hands or arms of the occupant during an emergency landing.

2. Additional performance measures applicable to tests and rational analysis conducted to show compliance with §§ 25.562 and 25.785 for side-facing seats:

a. *Body-to-body contact:* Contact between the head, pelvis, torso, or shoulder area of one ATD with the adjacent-seated ATD's head, pelvis, torso, or shoulder area is not allowed. Contact during rebound is allowed.

b. *Thoracic:* The deflection of any of the ES–2re ATD upper, middle, and lower ribs must not exceed 1.73 in. (44 mm). Data must be processed as defined in Federal Motor Vehicle Safety Standards (FMVSS) 571.214.

c. *Abdominal:* The sum of the measured ES–2re ATD front, middle, and rear abdominal forces must not exceed 562 lb (2,500 N). Data must be processed as defined in FMVSS 571.214.

d. *Pelvic:* The pubic symphysis force measured by the ES–2re ATD must not exceed 1,350 lb (6,000 N). Data must be processed as defined in FMVSS 571.214.

e. *Leg:* Axial rotation of the upper-leg (femur) must be limited to 35 degrees in either direction from the nominal seated position.

f. *Neck:* As measured by the ES–2re ATD and filtered at Channel Frequency Class 600 as defined in SAE J211, ''Instrumentation for Impact Test—Part 1—Electronic Instrumentation.''

(1) The upper-neck tension force at the occipital condyle (O.C.) location must be less than 405 lb (1,800 N).

(2) The upper-neck compression force at the O.C. location must be less than 405 lb (1,800 N).

(3) The upper-neck bending torque about the ATD x-axis at the O.C. location must be less than 1,018 in-lb (115 Nm).

(4) The upper-neck resultant shear force at the O.C. location must be less than 186 lb (825 N).

g. *Occupant (ES–2re ATD) retention:* The pelvic restraint must remain on the ES–2re ATD's pelvis during the impact and rebound phases of the test. The upper-torso restraint straps (if present) must remain on the ATD's shoulder during the impact.

h. Occupant (ES–2re ATD) support:

(1) *Pelvis excursion:* The load-bearing portion of the bottom of the ATD pelvis must not translate beyond the edges of its seat's bottom seat-cushion supporting structure.

(2) *Upper-torso support:* The lateral flexion of the ATD torso must not exceed 40 degrees from the normal upright position during the impact.

Issued in Renton, Washington, on July 13, 2017.

Dionne Palermo,

Acting Manager, Transport Airplane Directorate, Aircraft Certification Service.

[FR Doc. 2017–16099 Filed 7–31–17; 8:45 am]

BILLING CODE 4910–13–P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA–2017–0330; Directorate Identifier 2017–NM–016–AD; Amendment 39–18972; AD 2017–15–12]

RIN 2120–AA64

Airworthiness Directives; The Boeing Company Airplanes

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: We are adopting a new airworthiness directive (AD) for certain The Boeing Company Model 737–300, –400, and –500 series airplanes. This AD was prompted by an evaluation by the design approval holder (DAH) indicating that the lower skin at the skin lap splice lower fastener row is subject to widespread fatigue damage (WFD). This AD requires repetitive inspections for cracking in the skin lap splice at the lower fastener row, and repair if necessary. We are issuing this AD to address the unsafe condition on these products.

DATES: This AD is effective September 5, 2017.

The Director of the Federal Register approved the incorporation by reference of a certain publication listed in this AD as of September 5, 2017.

ADDRESSES: For service information identified in this final rule, contact Boeing Commercial Airplanes, Attention: Contractual & Data Services (C&DS), 2600 Westminster Blvd., MC 110 SK57, Seal Beach, CA 90740–5600; telephone 562–797–1717; Internet *https://www.myboeingfleet.com.* You may view this referenced service information at the FAA, Transport Airplane Directorate, 1601 Lind Avenue SW., Renton, WA. For information on the availability of this material at the FAA, call 425–227–1221. Boeing Alert Service Bulletin 737–53A1365, dated January 23, 2017, is also available on the Internet at *http://www.regulations.gov* by searching for and locating Docket No. FAA–2017–0330.

Examining the AD Docket

You may examine the AD docket on the Internet at *http://www.regulations.gov* by searching for and locating Docket No. FAA–2017–0330; or in person at the Docket Management Facility between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this final rule, the regulatory evaluation, any comments received, and other information. The address for the Docket Office (phone: 800–647–5527) is Docket Management Facility, U.S. Department of Transportation, Docket Operations, M–30, West Building Ground Floor, Room W12–140, 1200 New Jersey Avenue SE., Washington, DC 20590.

FOR FURTHER INFORMATION CONTACT: James Guo, Aerospace Engineer, Airframe Branch, ANM–120L, FAA, Los Angeles Aircraft Certification Office (ACO), 3960 Paramount Boulevard, Lakewood, CA 90712–4137; phone: 562–627–5357; fax: 562–627–5210; email: *james.guo@faa.gov.*

SUPPLEMENTARY INFORMATION:

Discussion

We issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 by adding an AD that would apply to certain The Boeing Company Model 737–300, –400, and –500 series airplanes. The NPRM published in the