[4910-13-P]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2014-0780; Directorate Identifier 2014-NM-168-AD; Amendment 39-18207; AD 2015-14-09]

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 The Boeing Company Model 747 airplanes equipped with a main deck side cargo door (MDSCD). This AD was prompted by recent testing that indicates that intermodal containers, when loaded as cargo, under certain flight-load conditions, can shift and impact the adjacent fuselage frames. This AD requires revising the airplane flight manual (AFM) to incorporate limitations for carrying certain payloads. We are issuing this AD to prevent intermodal containers loaded in the offset method from shifting during flight gust loads and damaging fuselage frames, which could lead to the structural failure of the aft fuselage in flight and subsequent in-flight breakup of the airplane.

DATES: This AD is effective [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

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-2014-0780; 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 AD, 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.

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SUPPLEMENTARY INFORMATION:

Discussion

The FAA issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 by adding an AD that would apply to The Boeing Company Model 747 airplanes equipped with an MDSCD. The NPRM published in the Federal Register on December 1, 2014 (79 FR 71037). The NPRM was prompted by recent testing, which indicates that intermodal containers, when loaded as cargo, under certain flight-load conditions, can shift and impact the adjacent fuselage frames. The NPRM proposed to require revising the AFM to incorporate limitations for carrying certain payloads. We are issuing this AD to prevent intermodal containers loaded in the offset method from shifting during flight gust loads and damaging fuselage frames, which could lead to the structural failure of the aft fuselage in flight and subsequent in-flight breakup of the airplane.

Background

Intermodal containers are common in the cargo shipping industry and transported by ships, trains, and trucks. The focus of this final rule is an intermodal container that is nominally 20 feet long, 8 feet wide, and 8.5 feet tall. This nominally sized intermodal

container includes the dimensions of an International Organization for Standardization (ISO) container ISO 668-1CC. Because the intermodal containers themselves do not meet the requirements of FAA Technical Standard Order TSO-C90D, "Cargo Pallets, Nets and Containers (Unit Load Devices)," the lower surface on these intermodal containers is incompatible with most airplane cargo-loading systems (CLSs). These intermodal containers, however, can be concentrically loaded on an FAA-approved TSO-C90D pallet with a certified net combination and loaded in the center of the airplane, restrained by the CLS or a series of straps connected to the aircraft structure in accordance with the airplane's FAA-approved Weight and Balance Manual (WBM) procedures for cargo that is not a Unit Load Device (ULD).

The WBM is part of the Operating Limitations section of the Airplane Flight Manual (AFM). In accordance with 14 CFR 21.41, the Operating Limitations are part of the airplane type certificate and, therefore, can be modified only by changing that certificate; that is, by obtaining an amended or supplemental type certificate. Revisions to the AFM are approved as AFM supplements, and the approval is based on a finding that, with the AFM revisions, the airplane continues to meet the applicable airworthiness standards. Operators are required to comply with the Operating Limitations by 14 CFR 91.9(a).

The FAA has become aware that some operators, both domestic and foreign, are not loading these containers in the center of the airplane, but rather in the standard left and right pallet positions. When loaded in this manner, the 8-foot, 6-inch, height of the intermodal container interferes with the fuselage, so some operators have been transporting these intermodal containers shifted inboard, off of the FAA-approved TSO pallets, and attached to the pallet only with a net and/or straps. This method of transport is referred to as the "offset method." The practice of offsetting the intermodal containers results in the certified pallet-net combination having slack in the net by the amount of the

offset. FAA observations have found the offset for intermodal containers is as much as 9 inches, with the corresponding 9 inches of slack in the TSO pallet net.

Although additional cargo straps have been used to restrain the intermodal containers to the pallets, the FAA determined that these straps are not effective, and the intermodal container can shift in flight. In 2013, a U.S. cargo operator requested permission from the FAA to carry intermodal containers on Boeing Model 747 airplanes using the offset method—similar to procedures used by other U.S. and non-U.S. air carriers. Based on the FAA's review of the offset method, it denied the operator's request.

Industry Testing of the Offset Method

In March 2014, some U.S. cargo operators and Boeing conducted a series of full-scale tests, witnessed by the FAA, to demonstrate that carrying intermodal containers by the offset method could be shown safe and compliant to the applicable regulations. The test procedures were developed by engineers from Boeing and some U.S. cargo operators, and were intended to show compliance for flight loads on Model 747 airplanes only. The results produced CLS failures and excessive deflections. The preliminary test results confirmed the FAA's safety concerns.

U.S. operators and Boeing conducted additional testing to demonstrate that carrying intermodal containers by the offset method could be shown to be safe and compliant with applicable regulations. This testing used methods from National Aerospace Standard (NAS) 3610, with maximum payloads that were reduced from those tested previously. The intent was for Boeing to use the test data to develop an appropriate loading method that could be incorporated into the Boeing Model 747 WBMs. The certified pallet net was not used because previous testing showed it ineffective in restraining the ISO container as the offset of the container on the pallet introduces slack in the net, with the container essentially free to move laterally in the airplane by the amount of the offset.

Significant engineering resources were applied, and a complex method of strapping installation and procedures and sequence for tightening the straps was developed to preclude the excessive deflections experienced during earlier tests. While a few load cases were successful, some had very small margins (precluding any reduction of the complexity of the nearly 100 straps required). The testing was halted after attempts to substantiate vertical loading repetitively overloaded the forward and aft CLS restraint locks, and the proposed cargo restraining method was deemed unviable.

FAA engineering from the Transport Airplane Directorate has been extensively involved in the testing of offset loading methods for intermodal containers with the objective to determine and document a safe and compliant methodology that could be the basis for a Boeing Model 747 Weight and Balance Supplement for airline use worldwide. Testing to date indicates this objective has not been met.

When positioned in accordance with the WBMs, an intermodal container is secured to the CLS pallet along its entire length by straps and netting. Offsetting the container has the effect of creating slack in the net and straps, except at the ends of the container. As a result, when gust loads are encountered, most of the loads are transferred to the locks at the ends of the container and are not shared with the locks in the middle. This uneven loading has the effect of exceeding the structural capability of the locks at the ends of the container. This phenomenon quickly failed the forward and aft CLS locks during vertical testing, as confirmed by both sets of industry testing.

At this time, there is no offset method for restraining intermodal containers that has been demonstrated to be safe and compliant.

Safety Issue

The current practice of carrying an intermodal container by the offset method is not currently permitted by the Boeing Model 747 WBMs. A series of tests has verified that an intermodal container, under certain flight-load conditions, can shift in both the outboard and vertical directions. This shift by the intermodal container can damage as

many as ten fuselage frames per container position during flight, leading to the structural failure of the aft fuselage in flight, and subsequent in-flight breakup of the airplane.

Normally, the FAA does not issue ADs to address non-compliance with existing regulations. But because of the widespread nature of these practices, the FAA has determined that issuing an AD is the most effective means of addressing this unsafe condition.

This final rule, therefore, revises the Operating Limitations section of the FAA-approved AFM to incorporate limitations on carrying certain payloads. As revised, the AFM expressly states the pre-existing prohibition on carriage of either (1) intermodal containers nominally sized at 20 feet long, 8 feet wide, and 8.5 feet tall, or (2) ISO 668-1CC containers, if those containers are not concentrically loaded on a pallet and restrained to the aircraft in accordance with the FAA-approved WBMs or WBM supplement.

Explanation of Changes to the Final Rule

Since issuing the NPRM (79 FR 71037, December 1, 2014), the FAA has learned that some operators might regard changes that they make to the Boeing Weight and Balance Manual to be "FAA approved," even though the operators have not sought FAA approval through the supplemental type certificate process, as described in the NPRM. To clarify that only changes made through the type certificate process are considered "FAA approved," we have revised the language of the final rule to specifically reference the FAA-approved Boeing type certificate Weight and Balance Manual or a Supplemental Weight and Balance Manual approved through the supplemental type certificate process. Given the comments opposing the proposed AD discussed below, it is apparent that the commenters were not confused on this point. Nevertheless, this clarification will prevent confusion for any operator in the future.

Comments

We gave the public the opportunity to participate in developing this AD. The following presents the comments received on the NPRM (79 FR 71037, December 1, 2014) and the FAA's response to each comment.

Support for the NPRM (79 FR 71037, December 1, 2014)

The Air Line Pilots Association, International (ALPA), stated that they fully support the intent of the NPRM (79 FR 71037, December 1, 2014).

Request to Withdraw NPRM (79 FR 71037, December 1, 2014): Intermodal Containers are Permitted by WBMs

The Cargo Airline Association, Atlas Air, International Air Transport Association (IATA), National Air Carrier Association (NACA), Kalitta Air, LLC (Kalitta), and the Michigan Senate requested that we withdraw the NPRM (79 FR 71037, December 1, 2014). The commenters asserted that offset intermodal containers are permitted by the Boeing Model 747 WBMs. The commenters also asserted that the Boeing Model 747 WBMs permit the restraint of an intermodal container and pallet assembly with cargo restraint straps only to the pallet (and not the airplane itself), whether or not the container is offset. The commenters concluded that the NPRM statement indicating that "the current practice of carrying an intermodal container by the offset method is not permitted by the Boeing Model 747 Weight and Balance Manual" is incorrect and completely at odds with Boeing's WBMs. The commenters limited their views to only those Model 747 WBMs created by Boeing.

We disagree with the request. Since the commenters did not address any supplemental WBMs produced by holders of supplemental type certificates (STCs), our response is limited to a discussion of the Boeing Model 747 WBMs. As explained below, contrary to the commenters' assertions, the Boeing Model 747 WBMs do not permit loading of either offset intermodal containers or intermodal containers strapped only to the pallet.

As discussed in the NPRM, in accordance with section 21.41 of the Federal Aviation Regulations (14 CFR § 21.41), the operating limitations are part of the airplane's type certificate (TC). The operating limitations specified in the Boeing Model 747 WBMs are established by the TC holder at the time of type certification as necessary to demonstrate that the airplane, when properly loaded, will comply with all applicable airworthiness requirements. One of these requirements is to demonstrate the capability of the airplane to continue safe operation when subjected to a range of structural loads that may be encountered during operations (14 CFR 25.1519). The Boeing Model 747 WBMs provide operators with detailed instructions, including restrictions, on how the airplane may be loaded such that after loading and during flight the airplane still is in compliance with the operating limitations.

The Boeing Model 747 cargo airplanes are equipped with a cargo loading system, which is part of the airplane's type design and consists of roller trays, guides, latches, and locks that restrain the cargo to the airplane for flight loads. A Unit Load Device (ULD) is a device for grouping and retaining cargo for transit. The Boeing Model 747 WBMs include, as part of the operating limitations, instructions that identify which ULDs may be loaded into the airplane's cargo loading system on the main cargo deck of the airplane without additional restraint to the airplane's structure.

Although the actual wording in these manuals varies slightly, all Boeing Model 747 WBMs require that, to be carried on the main deck without additional restraints, "certified" ULDs must conform to FAA Technical Standard Order (TSO) TSO-C90, "Cargo Pallets, Nets, and Containers," or to National Aerospace Standard (NAS) 3610 ("Cargo Unit Load Devices – Specification For"), the document the TSO references as a requirement. NAS 3610 is an industry standard used to define the required configuration and certification testing for various ULDs.

The types of certified ULDs identified in the Boeing Model 747 WBMs are NAS 3610-compliant containers) and pallet-net combinations. Containers identified in NAS

3610 are attached directly to the airplane's cargo loading system. Intermodal containers, which are the subject of this AD, do not meet the standard for NAS 3610 containers. For the pallet-net combinations, the cargo is restrained to the pallet by a net that attaches to the pallet on all four sides and covers the cargo. Under the Boeing Model 747 WBMs, an intermodal container may be loaded into a certified pallet-net combination ULD as long as the intermodal container is located within the perimeter of the pallet. However, as explained in the NRPM, an intermodal container offset from its pallet introduces slack in the corresponding net and, therefore, does not meet the requirements of NAS 3610 and is not allowed as a certified ULD under the Boeing Model 747 WBMs.

The Boeing Model 747 WBMs require that all cargo other than the identified ULDs be restrained to the airplane by straps in accordance with instructions specified in the WBMs. The Boeing Model 747 WBMs provide detailed instructions that define the specific locations where straps must be attached to the airplane structure, as well as other information such as maximum weights to be restrained at each location. With one recently approved exception,[1] nothing in the Boeing Model 747 WBMs or in NAS 3610 allows for the use of straps to restrain cargo to the ULD pallet itself.

Therefore, contrary to the commenters' assertions, the Boeing Model 747 WBMs do not permit loading of either offset intermodal containers or intermodal containers strapped only to the pallet. Furthermore, neither Boeing nor any of the commenters have shown that the airplane, when loaded with offset containers, complies with the applicable airworthiness standards of part 25. As discussed in the NPRM, any such showing would have to be done by a change to the type certificate in accordance with FAA Order 8110.4C.

We have not changed this final rule regarding this issue.

[1] The FAA recently approved a supplement to the Boeing Model 747 WBMs that allows strapping of cargo to a pallet under limited circumstances that are not relevant to this rulemaking.

Opposition to NPRM (79 FR 71037, December 1, 2014): History of Safety

IATA, Kalitta, and the Michigan Senate opposed the NPRM (79 FR 71037, December 1, 2014), stating that it does not refer to any incident or accident. The commenters reported that for more than 40 years, intermodal containers loaded as offset cargo have been carried with no damage to frames.

We disagree with the commenters' conclusion. As discussed in the NRPM, industry and Boeing testing have shown that offset loading of intermodal containers can allow the cargo to shift, which would be unsafe under certain flight load conditions. (The AD docket contains a Boeing presentation summarizing these test results.) The purpose of this AD, and all ADs, is to correct an unsafe condition regardless of whether that condition has caused accidents in the past.

Furthermore, in general, the shifting of cargo in flight has resulted in numerous incidents and accidents. For example, on August 7, 1997, Fine Air Flight 101 crashed shortly after takeoff from Miami because cargo shifted. Similarly, all evidence indicates that on April 29, 2013, National Airlines Flight 102 crashed shortly after takeoff from Bagram, Afghanistan, because cargo shifted. We have not changed this final rule regarding this issue.

Request to Withdraw NPRM (79 FR 71037, December 1, 2014): Proposal Based on Unfounded Principles

Atlas Air, the Cargo Airline Association, Kalitta, NACA, and United Parcel Service (UPS) requested that we withdraw the NPRM (79 FR 71037, December 1, 2014) because it misstates an important principle. The commenters noted that the NPRM stated that "the Weight and Balance Manual is part of the Operating Limitations section of the Airplane Flight Manual (AFM)." The commenters asserted that a reader could infer from this that all content in an airplane manufacturer's WBMs is part of the Operating Limitations section of the AFM. The commenters contended that since Boeing's Model 747 WBMs contain operating procedures in addition to operating limitations, only

portions of the WBMs are part of the Operating Limitations section of the AFM. The commenters also noted that Boeing frequently revises the WBMs, and when Boeing does so, Boeing does not amend the type certificate, which the commenters assert would be "a laborious process."

We agree with the commenters' proposition that not all of a manufacturer's WBM is necessarily part of the AFM operating limitations, but we disagree with their assertion that FAA-approved loading instructions are not operating limitations. We also disagree with the commenters' request to change the rule as originally proposed. As provided in 14 CFR 25.1583(c), the WBM is referenced in the AFM and contains operating limitations approved under that section. Section 25.1583(c)(2) requires that the AFM include loading instructions that are necessary to ensure loading of the airplane within the weight and center of gravity limits, and to maintain the loading within these limits in flight. While the Boeing Model 747 WBMs may include information other than limitations, the loading instructions discussed previously are limitations, and the FAA approved the Boeing Model 747 WBMs based on a determination that, as operating limitations, these instructions were adequate to meet the requirements of 14 CFR 25.1583.

For many years the FAA has recognized that both the weight and balance information and the loading instructions are operating limitations. For example, in FAA Advisory Circular (AC) 25.1581-1, dated July 14, 1997 (http://rgl.faa.gov/Regulatory_and_Guidance_Library/rgAdvisoryCircular.nsf/0/cb7efbdd420bd265862569b3005479d7/$FILE/AC25-1581-1.pdf), the FAA stated, in Section 2b(1), "Any limitations on airplane loading associated with the stated weight limitations must be included in the AFM or addressed in a separate weight and balance document."

These loading instructions are the procedures that Boeing determined were necessary to load and restrain cargo for flight loads; these instructions are used to show compliance with the design requirements for the airplane, including the structural

capabilities of the cargo loading system, airplane floors, and fuselage, and are therefore operating limitations. The types of ULDs and methods to restrain cargo are limitations provided in the Boeing Model 747 WBMs that ensure the airplane structure is not overloaded throughout the airplane's defined flight envelope. For this reason, additions to the approved list of ULDs or deviations to the structural tie-down locations that are not approved through the type certification process result in noncompliant and unknown conditions that could result in the structural overload to the airplane under certain flight loads.

Adopting the commenters' argument that these loading instructions are not limitations and, therefore, not mandatory would lead to the anomalous result that, while the weight and balance limitations are mandatory, the means to ensure they are complied with are not.

Regarding the commenter's statement that Boeing frequently changes the WBMs, those changes are in fact changes to the type certificate, which are approved by the FAA or its designees. We have not changed this final rule regarding this issue.

Opposition to NPRM (79 FR 71037, December 1, 2014): AD Approach is Overly Broad and Burdensome

Kalitta asserted that the NPRM (79 FR 71037, December 1, 2014) appears to assume that the offset configuration is already forbidden because it is not explicitly provided for in the Boeing Model 747 WBMs – i.e., unless the loading of a specific ULD or type of cargo and configuration is specifically defined in the Boeing Model 747 WBMs, it is prohibited. The commenter asserted that this is a novel interpretation and is unduly restrictive, contrary to accepted and normal air carrier operations and contrary to the FAA's own guidance material, and will have a significant and far-reaching operational and economic impact on all U.S. air carriers in the future, no matter what kind of aircraft they operate. The commenter stated that the FAA should carefully consider the ramifications of adopting a policy of "what is not explicitly allowed is

forbidden." The commenter stated that this approach reaches well beyond the particular matter at hand, and can create a regulatory environment that stifles innovation, and requires a manufacturer or the FAA to think in advance of every kind of operation that may possibly arise, and provide for it in the regulatory documents. According to the commenter, this would create an impossible burden on government and industry both.

We disagree with the commenter's assertions. As discussed previously, the Boeing Model 747 WBMs define safe and compliant methods for loading the airplane. The Boeing Model 747 WBMs provide the instructions required by 14 CFR 25.1583, enabling the operators to load and restrain cargo in a manner that does not permit the shifting of cargo during flight, which could cause damage to the airplane or result in a configuration leading to the loss of control of the airplane. As discussed previously, these instructions are considered operating limitations. Operation of the airplane beyond those limits is not permitted by the Boeing Model 747 WBMs. Section 121.135(b)(21) requires operators to include in their manuals methods and procedures for maintaining the aircraft weight and center of gravity within approved limits. The unsafe condition addressed in this AD is a result of operators having adopted methods and procedures that are contrary to the WBM instructions and, as a result, not within the approved limits.

Innovations are acceptable provided they meet the limits specified in the WBMs. Innovations that exceed those limits must be approved as changes to the WBM, as required by subparts D and E of 14 CFR part 21, and as provided in FAA Order 8110.4C, dated March 28, 2007 (http://rgl.faa.gov/Regulatory_and_Guidance_Library/rgOrders.nsf/0/d21193af2d37a8ba862570ab0054c104/$FILE/8110.4C_CHG5_Incorporated.pdf), which describes the process for obtaining FAA approval for changes to the airplane's type certificate. We have not changed this final rule regarding this issue.

Opposition to NPRM (79 FR 71037, December 1, 2014): Unrealistic Cost Estimate

Cargo Airline Association, Atlas Air, IATA, NACA, and Kalitta alleged that the FAA's determination of the estimated costs to comply with the NPRM (79 FR 71037, December 1, 2014) is fundamentally flawed because it is based on an unreasonably narrow view of the AD's costs and, as a result, the FAA's cost estimate is unrealistically low. The commenters concluded that the AD, if issued as proposed, would have significant, multi-million dollar cost consequences and competitiveness implications for all U.S. Model 747 freighter operators, with no appreciable countervailing safety benefits. In particular, the commenters stated that when intermodal containers are carried in the offset manner, additional cargo can be carried in the adjacent cargo pallet positions. The commenters further asserted that if the intermodal containers are required to be restrained to the airplane, the necessary restraint configuration would preclude the carriage of the adjacent positions and that revenue from the adjacent positions would be lost.

We do not agree with the commenters' allegations. As discussed previously and in the NPRM, carriage of offset containers is contrary to the limitations in the Boeing Model 747 WBMs and, therefore, contrary to 14 CFR 91.9(a). The intent of this AD is to require operators to revise their AFMs in a manner that eliminates this already-noncompliant practice, which we have determined creates an unsafe condition. Based on the FAA's determination that this conduct is noncompliant, the FAA has already directed individual operators not to carry intermodal containers using the offset method.[2] Issuance of this AD fulfills the FAA's international obligations of informing foreign airworthiness authorities of the existence of this unsafe condition and of the appropriate means for addressing it, as well as reinforces the determination discussed previously.

[2] For example, a letter dated May 2, 2014, directing Kalitta to discontinue this practice is included in the docket.

Moreover, the cost associated with ceasing noncompliant conduct is not attributable to this AD, regardless of how profitable that conduct may be. The cost information in AD actions describes only the direct costs of the specific action required by the AD – in this case, revising the AFM. We recognize that, in doing the actions required by an AD, operators might incur operational costs in addition to the direct costs. The cost analysis in AD rulemaking actions, however, typically does not include incidental or operational costs such as the time required for planning or other administrative actions. Our analysis also would not include possible revenue lost as a result of ending noncompliant operations. The FAA recognizes that the reason operators carry intermodal containers in violation of the Boeing Model 747 WBM limitations is that it is more profitable. The amount of revenue that could be generated when cargo is carried in a noncompliant manner is almost impossible to calculate.

We have not changed this final rule regarding this issue.

Opposition to NPRM (79 FR 71037, December 1, 2014): Economic Impact on Small Entities

Kalitta and the Michigan Senate stated that the NPRM (79 FR 71037, December 1, 2014) fails to account for impact on small entities because most airlines that would be affected by the NPRM have fewer than 1,500 employees. The commenters stated that this is a significant economic impact by loss of revenue.

As discussed previously, we have determined that there is no significant impact on air carriers in the United States because loading offset intermodal containers is contrary to the limitations of the Boeing Model 747 WBMs, and is therefore already prohibited. That is, whether or not this final rule is issued, the practice of carrying intermodal containers in the offset method is not permitted for U.S. air carriers as it is a noncompliant and unsafe practice.

Opposition to NPRM (79 FR 71037, December 1, 2014): Inadequate Testing

Cargo Airline Association, Atlas Air, NACA, IATA, Kalitta, and the Michigan Senate criticized the tests discussed in the NPRM (79 FR 71037, December 1, 2014) that confirmed the FAA's determination that loading containers in the offset position is an unsafe condition, arguing they were unrealistic or inconclusive. In general, the commenters claimed that the tests used configurations of intermodal containers and their restraints that are different from those used in service and applied pass-fail criteria that were unnecessarily stringent.

We do not agree that the tests were unrealistic or inadequate. A detailed discussion of the commenters' technical concerns regarding the tests is included in the AD docket.

In short, the tests of offset intermodal containers discussed in the NPRM included a range of configurations, including those that the participants, including Boeing and cargo operators, considered necessary to show compliance to the regulations, and even a scenario using empty containers. The tests demonstrated that offset intermodal containers would not be restrained securely for flight loads such as heavy turbulence. As discussed previously, loading offset intermodal containers is already contrary to the limitations of the Boeing Model 747 WBMs. If commenters believe that they can show compliance with the applicable part 25 airworthiness standards using offset containers, they may apply for supplemental type certificates (STCs). Any such STCs, if granted, would also be considered as a possible alternative method of compliance (AMOC) to this AD.

Request to Delay Issuance of AD Pending Acceptance of New Testing

Kalitta, NACA, and the Michigan Senate requested that we delay issuing a final AD because new testing by Kalitta shows that the offset configuration can be used without posing a threat to safety.

We disagree with the request. The test process and results have not been submitted to the FAA for approval. However, if the testing is completed and approved, it

may serve as the basis for a new STC, which we would then consider as a possible AMOC to this AD. We have not changed this final rule regarding this issue.

Request to Withdraw NPRM (79 FR 71037, December 1, 2014): Unnecessary Based on New Operating Specifications

Cargo Airline Association, IATA, Kalitta, NACA, and the Michigan Senate requested that we withdraw the NPRM (79 FR 71037, December 1, 2014). IATA recently issued Operating Specification (OS) 6/13 (ULD: Operating Specifications). According to the commenters, IATA OS 6/13 provides guidance for safely handling multiple configurations of offset sea-land (intermodal) containers and ensuring the effectiveness and ultimate load strength of tie-down arrangements. The commenters asserted that offset methods for intermodal containers developed in the 1970s by some airlines had received Boeing support and approval.

We disagree with the request. The commenters did not submit data to show how IATA OS 6/13 complies with the applicable regulations. Further, IATA OS 6/13 documents procedures similar to those found to have failed early on in the testing described in the preamble to the NPRM. For example, these procedures include strapping the intermodal container to the pallet, and not directly to the airplane. In fact, the procedures described in IATA OS 6/13 are contrary to the Boeing Model 747 WBMs for the reasons discussed previously.

The commenters provided no evidence of Boeing support and approval regarding use of offset methods. Boeing's comments did not include any statement that offset carriage of intermodal containers without restraint directly to the airplane complies with the Boeing Model 747 WBMs. Neither the FAA nor Boeing has found any evidence that Boeing was involved in or aware of the carriage of intermodal containers in the 1970s.

We have not changed this final rule regarding this issue, although any operator may request approval of an AMOC for use of an STC WBM supplement. However, in this case, because IATA OS 6/13 is so similar to the documented tested failures, new test

data would be required to show that the IATA method meets the applicable airworthiness requirements to support approval of an STC.

Request to Allow Offset Containers, if Strapped to Airplane

Atlas Air, Boeing, AirbridgeCargo Airlines LLC (AirbridgeCargo), NACA, and UPS requested that the intermodal containers be allowed to be loaded offset on the pallet, provided that the containers are restrained directly to the airplane by retention straps. A number of the commenters stated that this practice is already allowed by the WBMs and that they currently use this method.

We disagree with the request. None of the commenters provided any actual data demonstrating a compliant restraint method to the airplane for an offset intermodal container. Further, none have demonstrated that they currently use a method complying with the Boeing WBMS. The Boeing Model 747 WBMs describe how to restrain cargo, offset or not, as special cargo restrained to the airplane; however, when the cargo is restrained correctly to the airplane, so many straps would be attached to so many locations on the aircraft that no cargo could be carried adjacent to the offset intermodal container. Thus, the benefit of increased capacity gained by installing an offset container would be lost. Therefore, the FAA finds it unlikely that operators are actually using compliant methods to restrain offset intermodal containers.

We have not changed this final rule regarding this issue. However, under the provisions of paragraph (i) of this AD, we will consider requests for approval of an AMOC if sufficient data are submitted to substantiate that the alternative method would provide an acceptable level of safety. These data would need to include the compliant restraint methodology.

Request to Withdraw NPRM (79 FR 71037, December 1, 2014): Unlevel Playing Field with International Carriers

Kalitta and the Michigan Senate requested that we withdraw the NPRM (79 FR 71037, December 1, 2014). They asserted that by issuing this AD we provide their

foreign competitors with a significant competitive advantage. Kalitta stated that while the FAA may believe that incorporation of these restrictions into an AD will solve the competition problem by "leveling the playing field," as they will apply to all U.S. carriers, and will be adopted by many foreign governments, the agency needs to reconsider this position. The commenters added that foreign authorities may or may not adopt the AD as written, but they have wide latitude in what sort of AMOCs they will permit their carriers to use. The commenters also stated that foreign authorities will very likely look to the IATA standards to provide an acceptable AMOC, enabling their carriers to continue to operate in the very manner that will be foreclosed to U.S. air carriers.

Kalitta asserted that this "unexpected gift to foreign airlines" is not necessitated by safety of flight, and is contrary to the policy considerations mandated by Congress in the International Air Transportation Competition Act (49 U.S.C. § 40101), which requires the Secretary of Transportation to strengthen the competitive position of air carriers to ensure at least equality with foreign air carriers, including the attainment of the opportunity for air carriers to maintain and increase their profitability in air foreign transportation. According to the commenters, this obviously does not mean that the FAA should ignore serious safety issues out of concern for U.S. carriers' competitive position, but that the agency must take account of U.S. carriers' financial health and competitive standing, and avoid adopting measures and policies that harm carriers unless they are absolutely necessary.

We disagree with the request. Section 44701 of 49 USC requires the FAA to promote the safe flight of civil aircraft by, among other things, prescribing regulations and minimum standards for aircraft. In addition, the International Civil Aviation Organization (ICAO) Annex 8, Airworthiness of Aircraft (http://www.icao.int/safety/airnavigation/NationalityMarks/annexes_booklet_en.pdf) requires that civil aviation authorities of other countries take appropriate action in response to FAA ADs. Based on the FAA's determination of the unsafe condition

addressed by this AD, we expect foreign authorities to adopt similar requirements. Regarding the potential for other civil aviation authorities to adopt IATA's procedures as an AMOC for their ADs, as discussed previously, the IATA procedures are similar to those that have been tested previously and that the FAA considers to be unsafe. We have no reason to believe other authorities would reach a different conclusion.

We have not changed this final rule regarding this issue.

Request to Withdraw NPRM (79 FR 71037, December 1, 2014) or Delay Issuance of AD Pending WBM Revision

NACA and AirbridgeCargo requested that we delay issuance of the AD until all new testing is completed. Based on its understanding of the current round of testing, NACA stated that there is a strong likelihood the Boeing Model 747 WBMs will be revised. AirbridgeCargo proposed that further research be done to establish a weight limit for intermodal containers. The commenters therefore preferred a revised WBM to an AD, which would also allow U.S. cargo carriers to fully compete with foreign carriers on a level playing field.

We disagree with the request. To date, all testing to support a revision to the Boeing Model 747 WBMs has been unsuccessful. Although there is a current plan for more testing by a U.S. air carrier to support an STC application, it is unclear if the testing will be successful and when it will be completed. If the testing resumes and provides a successful conclusion, and if sufficient data are submitted to substantiate that the products or alternative methods would provide an acceptable level of safety, the FAA could consider new methods or products as acceptable for compliance with the requirements of this AD. We have not changed this final rule regarding this issue.

Request to Change Requirement to Revise AFM

Boeing requested that we revise paragraph (g) of the proposed AD (79 FR 71037, December 1, 2014), which proposed to require revising the Operating Limitations section of the AFM. Boeing stated that airlines are not able to revise a Boeing AFM. Boeing

requested that we change the requirement to "insert a copy of this AD into the Limitations section of the AFM."

We disagree with the request. Paragraph (g) of the proposed AD (79 FR 71037, December 1, 2014) would allow operators to insert a copy of this AD into the Limitations section of the AFM. However, operators may also comply with this AD by revising the operating limitations. Operating limitations are a part of the type certificate for an airplane. For many years, we have imposed operating restrictions that are necessary to address identified unsafe conditions by requiring revisions to the Operating Limitations section of the AFM. For this reason, as stated in the NPRM (79 FR 71037, December 1, 2014), we must engage in rulemaking (i.e., issuance of an AD) in order to make the revisions mandatory for previously type-certificated airplanes. While the Boeing Model WBMs are contained in a "Boeing document" in the sense that Boeing originally produced it, the document, nevertheless, is a part of the airplane flight manual that operators must use to operate the airplane properly. Of course, those operators that have previously revised the required AFM limitations are given credit for having previously accomplished the requirements of this AD, as allowed by paragraph (f) of this AD. The legal effect is the same: The operator is required to comply with the limitations referenced in 14 CFR § 91.9(a). We have not changed this final rule regarding this issue.

Request to Revise Description of Issue Prompting Rulemaking

Boeing requested that we revise the description of the issue that prompted the NPRM (79 FR 71037, December 1, 2014). The NPRM stated that recent testing indicates that intermodal containers, when loaded as cargo, can shift. While implicitly agreeing that loading offset containers is unsafe unless they are restrained directly to the airplane, Boeing requested that we change the wording to explain that the condition is limited to "cargo using a TSO-C90 certified ULD."

We disagree with the requested change. The SUMMARY section of this final rule and paragraph (e) of this AD go on to explain that intermodal containers loaded in the offset method are the subject of this AD, and the type of ULD does not change the unsafe condition. Further, not all Boeing Model 747 WBMs refer to TSO-C90; several refer directly to the TSO-C90-required document NAS 3610. We have therefore not revised this final rule regarding this issue.

Request to Delete Reference to TSO Revision Level

Boeing and UPS stated that the SUPPLEMENTARY INFORMATION section of the NPRM (79 FR 71037, December 1, 2014) referred to a "TSO-C90D" pallet. Revision D is the latest issue of TSO-C90, and per the WBMs applicable to Boeing Model 747 airplanes, approved ULDs for carriage may conform to the TSO-C90 revision to which they were certified. UPS recommends revising the Discussion section of the NPRM to remove the revision level when TSO-C90 is referenced.

We agree that the revision level of TSO-C90 does not matter; an intermodal container conforms to none of the revision levels. However, the Discussion section of the NPRM (79 FR 71037, December 1, 2014) is not repeated in this final rule. No change to this final rule is necessary.

Conclusion

We reviewed the relevant data, considered the comments received, and determined that air safety and the public interest require adopting this AD as proposed–except for minor editorial changes. We have determined that these minor changes:

- Are consistent with the intent that was proposed in the NPRM (79 FR 71037, December 1, 2014) for correcting the unsafe condition; and
- Do not add any additional burden upon the public than was already proposed in the NPRM (79 FR 71037, December 1, 2014).

Costs of Compliance

We estimate that this AD affects 98 airplanes of U.S. registry. We estimate the following costs to comply with this AD:

Estimated costs

Action	Labor cost	Parts cost	Cost per product	Cost on U.S. operators
AFM revision	1 work-hour X $85 per hour = $85	$0	$85	$8,330

Authority for this Rulemaking

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator. Subtitle VII: Aviation Programs, describes in more detail the scope of the Agency's authority.

We are issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701: "General requirements." Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

Regulatory Findings

This AD will not have federalism implications under Executive Order 13132. This AD will not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify that this AD:

(1) Is not a "significant regulatory action" under Executive Order 12866,

(2) Is not a "significant rule" under DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979),

(3) Will not affect intrastate aviation in Alaska, and

(4) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

Adoption of the Amendment

Accordingly, under the authority delegated to me by the Administrator, the FAA amends 14 CFR part 39 as follows:

PART 39 - AIRWORTHINESS DIRECTIVES

1. The authority citation for part 39 continues to read as follows:

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

§ 39.13 [Amended]

2. The FAA amends § 39.13 by adding the following new airworthiness directive (AD):

2015-14-09 The Boeing Company: Amendment 39-18207; Docket No. FAA-2014-0780; Directorate Identifier 2014-NM-168-AD.

(a) Effective Date

This AD is effective [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

(b) Affected ADs

None.

(c) Applicability

This AD applies to The Boeing Company Model 747-100, 747-100B, 747-100B SUD, 747-200B, 747-200C, 747-200F, 747-300, 747-400, 747-400D,

747-400F, 747SR, 747SP, 747-8F, and 747-8 series airplanes, certificated in any category, equipped with a main deck side cargo door (MDSCD).

(d) Subject

Air Transport Association (ATA) of America Code 53, Fuselage.

(e) Unsafe Condition

This AD was prompted by recent testing that indicates that intermodal containers, when loaded as cargo, under certain flight-load conditions, can shift and impact the adjacent fuselage frames. We are issuing this AD to prevent intermodal containers loaded in the offset method from shifting during flight gust loads and damaging fuselage frames, which could lead to the structural failure of the aft fuselage in flight, and subsequent in-flight breakup of the airplane.

(f) Compliance

Comply with this AD within the compliance times specified, unless already done.

(g) Revision of Airplane Flight Manual (AFM)

Within 14 days after the effective date of this AD, revise the Operating Limitations section of the FAA-approved AFM to include the information in figure 1 to paragraph (g) of this AD. This may be accomplished by inserting a copy of this AD into the Limitations section of the AFM.

Figure 1 to paragraph (g) of this AD – *AFM revision*

Unless approved by the Manager of the Seattle Aircraft Certification Office, the carriage of the following payloads is prohibited:

1) Intermodal containers nominally sized at 20 feet long, 8 feet wide, and 8.5 feet tall that are not concentrically loaded on a pallet and restrained to the aircraft in accordance with the FAA-approved Boeing type certificate Weight and Balance Manual or a supplemental type certificate Weight and Balance Supplement.

2) ISO 668-1CC containers that are not concentrically loaded on a pallet and restrained to the aircraft in accordance with the FAA-approved Boeing type certificate Weight and Balance Manual or a supplemental type certificate Weight and Balance Supplement.

Note: Both payloads 1 and 2 may be concentrically loaded on a pallet and netted in accordance with the FAA-approved Weight and Balance Manual and then loaded in the center of the airplane and restrained to the airplane by the approved center loaded cargo restraint system or restrained directly to the airplane, both as defined in the FAA-approved Weight and Balance Manual.

(h) Special Flight Permits

Special flight permits, as described in Section 21.197 and Section 21.199 of the Federal Aviation Regulations (14 CFR 21.197 and 21.199), are not allowed if any intermodal container prohibited as specified in figure 1 to paragraph (g) of this AD is on board. For special flight permits, carriage of freight is not allowed.

(i) Alternative Methods of Compliance (AMOCs)

(1) The Manager, Seattle Aircraft Certification Office (ACO), FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or local Flight Standards District Office, as appropriate. If sending information directly to the manager of the ACO, send it to the attention of the person identified in

paragraph (j) of this AD. Information may be emailed to: 9-ANM-Seattle-ACO-AMOC-Requests@faa.gov.

(2) Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the local flight standards district office/certificate holding district office.

(j) Related Information

For more information about this AD, contact Steven C. Fox, Senior Aerospace Engineer, Airframe Branch, ANM-120S, FAA, Seattle Aircraft Certification Office (ACO), 1601 Lind Avenue SW., Renton, WA 98057-3356; phone: 425-917-6425; fax: 425-917-6590; email: steven.fox@faa.gov.

(k) Material Incorporated by Reference

None.

Issued in Renton, Washington, on July 7, 2015.

Jeffrey E. Duven,
Manager,
Transport Airplane Directorate,
Aircraft Certification Service.
[FR Doc. 2015-17031 Filed: 7/10/2015 08:45 am; Publication Date: 7/13/2015]