Airworthiness Directive 93-07-15

AD 93-07-15 is the regulation currently in effect for large transport category airplanes equipped with Class B cargo compartments. This AD offered operators four options (paragraphs (b)(1), (b)(2), (b)(3), and (b)(4). Following issuance of the AD, operators of 747 combi airplanes favored the option described in (b)(4), and operators of narrow-body combis, like the 727 and 737, tended to favor the option described in (b)(3).

93-07-15 BOEING AND MCDONNELL DOUGLAS: Amendment 39-8547. Docket No. 92- NM-67-AD. Supersedes AD **91-10-02**, Amendment 39-6986.

Applicability: Boeing Models 707, 727, 737, 747, and 757 series airplanes and McDonnell Douglas Models DC-8, DC-9, and DC-10 series airplanes; equipped with a main deck Class B cargo compartment, as defined by Federal Aviation Regulations (FAR) 25.857(b) or its predecessors, with a volume exceeding 200 cubic feet; certificated in any category.

Compliance: Required as indicated, unless accomplished previously.

To minimize the hazard associated with a main deck Class B cargo compartment fire, accomplish the following:

(a) Within one year after May 3, 1990 (the effective date of Amendment 39-6557, AD 89-18-12 R1), or prior to carrying cargo in a Class B cargo compartment, whichever occurs later, accomplish the following in accordance with the appropriate technical data approved by the Manager, Seattle Aircraft Certification Office (for affected Boeing series airplanes), FAA, Transport Airplane Directorate; or the Manager, Los Angeles Aircraft Certification Office (for affected McDonnell Douglas series airplanes), FAA, Transport Airplane Directorate:

(1) Revise the Limitations Section of the FAA-approved Airplane Flight Manual (AFM) to include the following: "FOR EACH FLIGHT IN WHICH CARGO IS TRANSPORTED IN THE CLASS B CARGO COMPARTMENT: Prior to flight, a flight deck crewmember must make a visual inspection throughout the Class B cargo compartment to verify access to cargo and the general fire security of the compartment after the cargo door is closed and secured."

NOTE 1: This visual inspection is in no manner intended to relieve the pilot of his/her responsibility to ensure safe operation of the airplane, as required by FAR 91.3.

(2) Incorporate the following systems and equipment:

(i) Provide a minimum of 48 lbs. Halon 1211 fire extinguishant, or its equivalent,

in portable fire extinguisher bottles readily available for use in the cargo compartment. At least two bottles must be a minimum of 16 lb. capacity.

(ii) Provide at least two Underwriters Laboratories (UL)2A (2-1/2 gallon) rated water portable fire extinguishers, or its equivalent, adjacent to the cargo compartment entrance for use in the compartment.

(iii) Provide a means for two-way communication between the flight deck and the interior of the cargo compartment.

(iv) Install placards in conspicuous place(s) within the cargo compartment clearly defining the cargo loading envelope and limitations that provide sufficient access of sufficient width for firefighting along the entire length of at least two sides of a loaded pallet or container. Amend the appropriate Weight and Balance and loading instructions by description and diagrams to include this information.

(3) Incorporate the following systems and equipment:

(i) Provide appropriate protective garments stored adjacent to the cargo compartment entrance.

(ii) Provide a minimum of 30 minutes of protective breathing. This equipment must meet the requirements of Technical Standard Order (TSO) C-116, Action Notice 8150.2A, or equivalent, and be stored adjacent to the cargo compartment entrance.

(b) Within 42 months after the effective date of this AD, or prior to carrying cargo in a Class B cargo compartment, whichever occurs later, accomplish the requirements of either paragraph (b)(1), (b)(2), (b)(3), or (b)(4) of this AD:

(1) **OPTION 1**: Modify the Class B cargo compartment to comply with the requirements for a Class C cargo compartment, as defined in FAR 25.855 (Amdt. 25-60), 25.857(c), and 25.858 (Amdt. 25-54).

(2) **OPTION 2**: Modify all main deck Class B cargo compartments to require the following placard installed in conspicuous locations approved by the Manager, Seattle Aircraft Certification Office, FAA, Transport Airplane Directorate (for affected Boeing series airplanes), or the Manager, Los Angeles Aircraft Certification Office, FAA, Transport Airplane Directorate (for affected McDonnell Douglas series airplanes), throughout the compartment: "Cargo carried in this compartment must be loaded in an approved flame penetration-resistant container meeting the requirements of FAR 25.857(c) with ceiling and sidewall liners and floor panels that meet the requirements of FAR 25, Appendix F, Part III, (Amdt. 25-60)."

(3) **OPTION 3**: In addition to the requirements of paragraph (a)(2) of this AD,

accomplish the following in accordance with technical data approved by the Manager, Seattle Aircraft Certification Office (for affected Boeing series airplanes), or the Manager, Los Angeles Aircraft Certification Office (for affected McDonnell Douglas series airplanes):

(i) Carriage of all cargo in Class B cargo compartments must meet the requirements of either paragraph (b)(3)(i)(A) or (b)(3)(i)(B) of this AD:

(A) Cover cargo with fire containment covers.

(B) Carry cargo in fire containment containers.

(ii) Provide a smoke or fire detection system in the Class B cargo compartment that meets the requirements of FAR 25.858 (Amdt. 25-54) and also provides an aural and visual warning to the crewmembers in the passenger compartment.

(iii) Provide a barrier between the Class B cargo compartment and the passenger compartment to prevent the penetration of smoke or flames from the cargo compartment into the passenger compartment. The barrier must extend from the cargo compartment floor to the upper crown area of the fuselage, and from the right sidewall to the left sidewall of the cargo compartment, completely isolating the cargo compartment from the passenger compartment. The barrier and associated seals/interfaces must meet the requirements of FAR 25, Appendix F, Part III (Amdt. 25-60).

(iv) Provide illumination of the Class B cargo compartment as specified in paragraphs (b)(3)(iv)(A) and (b)(3)(iv)(B) of this AD:

(A) General area illumination of the cargo with an average illumination of 0.1 foot-candle measured at 40-inch intervals both at one-half the pallet or container height, and at the full pallet or container height, or as approved by the FAA.

(B) Illumination of the longitudinal access pathways, required by paragraph (a)(2)(iv) of this AD, with an average illumination of .05 foot-candle when measured at 40-inch intervals along a line that is within 2 inches of and parallel to the floor centered on the pathway, or illumination under visibility conditions likely to occur in the cargo compartment in the event of a fire.

(v) Establish FAA-approved procedures and training as specified in paragraphs (b)(3)(v)(A) and (b)(3)(v)(B) of this AD:

(A) Use and maintenance of items required by paragraph (b)(3)(i).

(B) Responding to alarms, and monitoring and controlling Class B cargo compartment fires.

(vi) Provide a viewport into the Class B cargo compartment from the passenger compartment. The viewport must be located such that a crewmember can readily identify the overall smoke conditions in the compartment prior to entering it.

(vii) Demonstrate the following features and functions, specified in paragraphs (b)(3)(vii)(A), (b)(3)(vii)(B), and (b)(3)(vii)(C) of this AD:

(A) Smoke or Fire Detection System, required by paragraph (b)(3)(ii) of this AD, by flight test.

(B) Prevention of smoke penetration into occupied compartments [refer to FAR 25.857(b)(2) and 25.855(e)(2)], by flight test.

(C) Cargo accessibility, as specified in paragraph (a)(2)(iv) of this AD.

(viii) Provide the following systems and equipment:

(A) Provide appropriate protective garments for two persons stored in the passenger compartment, adjacent to the Class B cargo compartment entrance.
(B) Provide a minimum of 120 minutes of protective breathing for one person, and an additional 30 minutes of protective breathing for an additional person. This equipment must meet the requirements of Technical Standard Order (TSO) C-116, Action Notice 8150.2A, or equivalent, and at least 30 minutes of the total protective breathing must be stored adjacent to the Class B cargo compartment entrance. All protective breathing equipment must be located outside the cargo compartment.

(ix) Revise the Limitations Section of the FAA-approved Airplane Flight Manual (AFM) to include the following:

"FOR EACH FLIGHT IN WHICH CARGO IS TRANSPORTED IN THE CLASS B CARGO COMPARTMENT:
Prior to flight, a crewmember who is assigned firefighting responsibility for the flight must make a visual inspection throughout the Class B cargo compartment for familiarization, after the cargo door is closed and secured."

NOTE 2: This visual inspection is in no manner intended to relieve the pilot of his/her responsibility to ensure safe operation of the airplane, as required by FAR 91.3.

(4) **OPTION 4**: In addition to the requirements of paragraph (a)(2) of this AD, accomplish the following in accordance with technical data approved by the Manager, Seattle Aircraft Certification Office (for affected Boeing series airplanes), or the Manager, Los Angeles Aircraft Certification Office (for affected McDonnell Douglas series airplanes):

(i) Provide a cargo compartment fire extinguishing system in the Class B cargo compartment that provides an initial fire extinguishant concentration of at least 5 percent of the empty compartment volume of Halon 1301 or equivalent, and a fire suppression extinguishant concentration of at least 3 percent of the empty compartment volume of Halon 1301 or equivalent, for a period of time not less than 90 minutes.

(ii) Provide a smoke or fire detection system in the Class B cargo compartment that meets the requirements of FAR 25.858 (Amdt. 25-54) and also provides an aural and visual warning to the crewmembers in the passenger compartment.

(iii) Provide a means from the flight deck to shut off ventilation system inflow to the Class B cargo compartment.

(iv) Provide a barrier between the Class B cargo compartment and the passenger compartment to prevent the penetration of smoke or flames from the cargo compartment into the passenger compartment. The barrier must extend from the cargo compartment floor to the upper crown area of the fuselage, and from the right sidewall to the left sidewall of the cargo compartment, completely isolating the cargo compartment from the passenger compartment. The barrier and associated seals/interfaces must meet the requirements of FAR 25, Appendix F, Part III (Amdt. 25-60).

(v) Provide appropriate protection of the cockpit voice and flight data recorders, and all systems or components required for safe flight and landing of the airplane, unless it can be demonstrated that these systems are not susceptible to damage in the event of a fire in the Class B cargo compartment.

(vi) Provide illumination of the Class B cargo compartment as specified in paragraphs (b)(4)(vi)(A) and (b)(4)(vi)(B) of this AD:

(A) General area illumination of the cargo with an average illumination of 0.1 foot-candle measured at 40-inch intervals both at one-half the pallet or container height, and at the full pallet or container height, or as approved by the FAA.

(B) Illumination of the longitudinal access pathways, required by paragraph (a)(2)(iv) of this AD, with an average illumination of .05 foot-candle when measured at 40-inch intervals along a line that is within 2 inches of and parallel to the floor centered on the pathway, or illumination under visibility conditions likely to occur in the cargo compartment in the event of a fire, as approved by the FAA.

(vii) Establish FAA-approved procedures and training for responding to alarms, and monitoring and controlling cargo compartment fires.

(viii) Provide a viewport into the Class B cargo compartment from the passenger compartment. The viewport must be located such that a crewmember can readily

identify the overall smoke conditions in the compartment prior to entering it.

(ix) Demonstrate the following features and functions:

(A) Fire extinguishant concentration, required by paragraph (b)(4)(i) of this AD, by flight test.

(B) Smoke or fire detection system, required by paragraph (b)(4)(ii) of this AD, by flight test.

(C) Prevention of smoke penetration into occupied compartments [refer to FAR 25.857(b)2 and 25.855(e)2], demonstrated by flight test.

(D) Cargo accessibility, as specified in paragraph (a)(2)(iv) of this AD.
(x) Provide the following systems and equipment:

(A) Provide appropriate protective garments for two persons stored in the passenger compartment, adjacent to the Class B cargo compartment entrance.
(B) Provide a minimum of 120 minutes of protective breathing for one person, and an additional 30 minutes of protective breathing for an additional person. This equipment must meet the requirements of Technical Standard Order (TSO) C-116, Action Notice 8150.2A, or equivalent, and at least 30 minutes of the total protective breathing must be stored adjacent to the Class B cargo compartment entrance. All protective breathing equipment must be located outside the cargo compartment.

(xi) Revise the Limitations Section of the FAA-approved Airplane Flight Manual (AFM) to include the following statement:

"FOR EACH FLIGHT IN WHICH CARGO IS TRANSPORTED IN THE CLASS B CARGO COMPARTMENT:
Prior to flight, a crewmember who is assigned firefighting
responsibility for the flight must make a visual inspection
throughout the Class B cargo compartment for familiarization, after the cargo door is closed and secured."

NOTE 3: This visual inspection is in no manner intended to relieve the pilot of his/her responsibility to ensure safe operation of the airplane, as required by FAR 91.3.

(c) Compliance with paragraph (b)(1) or (b)(2) of this AD constitutes terminating action for the requirements of paragraph (a) of this AD. Compliance with paragraph (b)(3) or (b)(4) of this AD constitutes terminating action for the requirements of paragraphs (a)(1) and (a)(3) of this AD.

(d) An alternative method of compliance or adjustment of the compliance time

that provides an acceptable level of safety may be used if approved by the Manager, Seattle Aircraft Certification Office (ACO), FAA, Transport Airplane Directorate (for affected Boeing series airplanes); or the Manager, Los Angeles Aircraft Certification Office (ACO), FAA, Transport Airplane Directorate (for affected McDonnell Douglas series airplanes). Operators shall submit their requests through an appropriate FAA Principal Maintenance Inspector, who may add comments and then send it to the Manager, of the Seattle ACO, or the Manager of the Los Angeles ACO, as appropriate.

NOTE 4: Information concerning the existence of approved alternative methods of compliance with this AD, if any, may be obtained from the Seattle ACO or the Los Angeles ACO.

NOTE 5: Alternative methods of compliance previously granted for Amendment 39- 6557, AD 89-18-12 R1; or Amendment 39-6986, AD **91-10-02**; continue to be considered as acceptable alternative methods of compliance with this amendment.

(e) Special flight permits may be issued in accordance with FAR 21.197 and 21.199 to operate the airplane to a location where the requirements of this AD can be accomplished.

This AD supersedes AD **91-10-02**, Amendment 39-6986, which superseded AD 89-18- 12 R1, Amendment 39-6557.

(f) This amendment becomes effective on May 2, 1993.