

**FEDERAL AVIATION ADMINISTRATION
AIRWORTHINESS DIRECTIVES**

LARGE AIRCRAFT

BIWEEKLY 2018-09

4/16/2018 - 4/29/2018



Federal Aviation Administration
Continued Operational Safety Policy Section, AIR-141
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LARGE AIRCRAFT

AD No.	Information	Manufacturer	Applicability
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Information Key: E - Emergency; COR - Correction; S – Supersedes, R - Replaces

Biweekly 2018-01

2017-26-06		Rolls-Royce Corporation	AE 3007A, AE 3007A1, AE 3007A1/1, AE 3007A1/2, AE 3007A1/3, AE 3007A1P, AE 3007A1E, AE 3007A3, AE 3007C and 3007C1 turbofan engines
2017-26-07		The Boeing Company	757-200, -200CB, and -300 series airplanes
2017-26-08		ATR-GIE Avions de Transport Régional	ATR42-500 and ATR72-212A airplanes
2017-26-09		ATR-GIE Avions de Transport Régional	ATR42-500 and ATR72-212A airplanes
2017-26-10		The Boeing Company	757-200, -200PF, -200CB, and -300 series airplanes,
2018-01-01		The Boeing Company	MD-11 and MD-11F airplanes
2018-01-02	R 2017-02-03	The Boeing Company	767-200, -300, and -400ER series airplanes
2018-01-03		Airbus	A300, A310 airplanes
2018-01-04	R 2011-04-05	Airbus	A340 airplanes
2018-01-05		Fokker Services B.V.	F28 Mark 0070 and 0100 airplanes
2018-01-06		Fokker Services B.V.	F28 Mark 0070 and 0100 airplanes

Biweekly 2018-02

2018-01-07		Airbus	A300 B4-601, B4-603, B4-620, B4-622, B4-605R, B4-622R, F4-605R, F4-622R, and C4-605R Variant F airplanes
2018-01-08		The Boeing Company	737-100, -200, -200C, -300, -400, and -500 series airplanes
2018-01-09	R 95-25-02	Fokker Services B.V.	F28 Mark 0100 series airplanes
2018-01-10	R 2011-14-10	Airbus	A330-342 airplanes
2018-01-11		Airbus	A319-115 and A319-133 airplanes
2018-02-03		Fokker Services B.V.	F28 Mark 0070 and Mark 0100 series airplanes
2018-02-06		Dassault Aviation	FALCON 7X, FALCON 2000EX, FALCON 900EX airplanes

Biweekly 2018-03

2018-02-09	R 2008-06-20 R1	Fokker Services B.V.	F28 Mark 1000, 2000, 3000, and 4000 airplanes
2018-02-10		Pratt & Whitney Division	PW4074, PW4074D, PW4077, PW4077D, PW4084D, PW4090, and PW4090-3 turbofan engines
2018-02-11		Airbus	A330-301, -321, -322 and A330-342 airplanes
2018-02-12	R 2016-02-01	Airbus	A320-211, -212, and -231 airplanes
2018-02-15	S 2007-08-06	British Aerospace Regional Aircraft	HP.137 Jetstream Mk.1, Jetstream Series 200 and 3101, and Jetstream Model 3201 airplanes
2018-02-16		Bombardier, Inc.	DHC-8-400, -401, and -402 airplanes

Biweekly 2018-04

2018-02-17	R 2012-12-12 R 2013-16-26	Airbus	A330, A340 airplanes
2018-02-18		Airbus	A318, A319, A320, A321 airplanes
2018-02-20		The Boeing Company	777-200, -200LR, -300, and -300ER series airplanes
2018-03-02		328 Support Services GmbH	328-300 airplanes
2018-03-04		Rosemount Aerospace, Inc.	Model 851AK pitot probes
2018-03-06	R 2015-02-18	Airbus	A330-201, -202, -203, -301, -302, and -303 airplanes
2018-03-07		Airbus	A330-202, -203, -223, and -243; A340-211, -212, -311, and -313 airplanes
2018-03-08	R 2005-19-28	Airbus	A330-301, -321, -322, and -342; A340-211, -212, -213, -311, -312, and -313 airplanes
2018-03-09		Airbus	A321-211 and -231 airplanes
2018-03-10		The Boeing Company	757-300 series airplanes
2018-03-11		Bombardier, Inc.	CL-600-2C10, -2D15, -2D24, -2E25 airplanes
2018-03-12		Airbus	A318, A319, A320, A321 airplanes
2018-03-13		General Electric Company	CT7-5A2, CT7-5A3, CT7-7A, CT7-7A1, CT7-9B, CT7-9B1, CT7-9B2, CT7-9C and CT7-9C3 model turboprop engines
2018-03-19		Dassault Aviation	FALCON 7X airplanes,
2018-03-20		Airbus	A330-301, -302, -303, -321, -322, -323, -341, -342, and -343 airplanes
2018-03-21		Airbus	A330-202, -203, -223, and -243 airplanes
2018-03-22		GE Aviation Czech s.r.o.	M601D-11, M601E-11, M601E-11A, M601E-11AS, M601E-11S, and M601F turboprop engines
2018-04-01		Airbus	A320-271N, A321-271N, and A321-272N airplanes

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AD No.	Information	Manufacturer	Applicability
Information Key: E - Emergency; COR - Correction; S – Supersedes, R - Replaces			
Biweekly 2018-05			
2017-06-06	R 2012-22-15	Fokker Services B.V.	F28 Mark 0070 and Mark 0100 airplanes
2018-04-03		Fokker Services B.V.	F28 Mark 0100 airplanes
2018-04-04		Bombardier, Inc.	CL-600-2C10, -2D15, -2D24, -2E25 airplanes
2018-04-05		Airbus	A319-112, A319-115, A320-214, A320-232, and A321-211 airplanes
2018-04-06	R 2012-12-05	The Boeing Company	737-100, -200, -200C, -300, -400, and -500 series airplanes
2018-04-07		The Boeing Company	747-100, 747-100B, 747-100B SUD, 747-200B, 747-200C, 747-200F, 747-300, 747-400, 747-400D, 747-400F, 747SR, and 747SP series airplanes
2018-04-08		The Boeing Company	737-100, -200, -200C, -300, -400, and -500 series airplanes
Biweekly 2018-06			
2018-02-17	R 2012-12-12	Airbus	A330, A340 airplanes
2018-04-12		The Boeing Company	737-100, -200, -200C, -300, -400, -500 series airplanes
2018-04-13		Honeywell International Inc.	AS907-1-1A model turbofan engines
2018-05-04		Airbus	A318, A319, A320, A321 airplanes
2018-05-05		Dassault Aviation	MYSTERE-FALCON 900, FALCON 900EX, FALCON 2000, and FALCON 2000EX airplanes
2018-05-06	R 2016-09-12	The Boeing Company	787-8 and 787-9 airplanes
2018-05-07		The Boeing Company	787-8 and 787-9 airplanes
2018-05-11		Airbus	A320-214, -251N, and -271N airplanes
2018-06-03	R 2009-18-16	Airbus	A310-203, -204, -221, -222, -304, -322, -324 and -325 airplanes
2018-06-06		Bombardier, Inc.	CL-600-2B16 (CL-604 Variant) airplanes
2018-06-08		The Boeing Company	757-200 series airplanes
Biweekly 2018-07			
2018-06-01		Airbus	A318, A319, A320, A321 airplanes
2018-06-02		Bombardier, Inc.	CL-600-2B19, -2C10, -2D15, -2D24 airplanes
2018-06-04		Airbus	A318, A319, A320, A321 airplanes
2018-06-05		The Boeing Company	737-300 and -500 series airplanes
2018-06-07		The Boeing Company	757-200, -200CB, and -300 series airplanes
Biweekly 2018-08			
2018-07-05		General Electric Company	CF6-80A, -80A1, -80A2, and -80A3 turbofan engines
2018-07-06		The Boeing Company	747-8 series airplanes
2018-07-07		Dassault Aviation	FAN JET FALCON, FAN JET FALCON SERIES D, E, F, and G; MYSTERE-FALCON 20-C5, 20-D5, 20-E5, and 20-F5 airplanes
2018-07-09		Bombardier, Inc.	CL-600-2C10, -2D15, -2D24, -2E25 airplanes
2018-07-10		Embraer S.A.	EMB-500 and EMB-505 airplanes
2018-07-11		Fokker Services B.V.	F28 Mark 0100 airplanes
2018-07-12		Airbus	A350-941 airplanes
Biweekly 2018-09			
2018-07-18	R 2015-19-12	The Boeing Company	767-200, -300, -300F, and -400ER series airplanes
2018-07-19		The Boeing Company	787-8 and 787-9 airplanes
2018-07-20	R 2014-03-07	The Boeing Company	MD-11 and MD-11F airplanes
2018-07-21	R 2005-12-16	Fokker Services B.V.	F28 Mark 0100 airplanes
2018-08-02		Rolls-Royce plc	Trent 1000-A2, Trent 1000-AE2, Trent 1000-C2, Trent 1000-CE2, Trent 1000-D2, Trent 1000-E2, Trent 1000-G2, Trent 1000-H2, Trent 1000-J2, Trent 1000-K2, and Trent 1000-L2 turbofan engines
2018-08-03		The Boeing Company	787-8 and 787-9 airplanes
2018-09-05		The Boeing Company	787-8 and 787-9 airplanes
2018-09-51		CFM International S.A.	CFM56-7B engines



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AIRWORTHINESS DIRECTIVE

www.faa.gov/aircraft/safety/alerts/
www.gpoaccess.gov/fr/advanced.html

2018-07-18 The Boeing Company: Amendment 39-19249; Docket No. FAA-2017-0769; Product Identifier 2017-NM-054-AD.

(a) Effective Date

This AD is effective May 21, 2018.

(b) Affected ADs

This AD replaces AD 2015-19-12, Amendment 39-18274 (80 FR 58346, September 29, 2015) (“AD 2015-19-12”).

(c) Applicability

(1) This AD applies to The Boeing Company Model 767-200, -300, -300F, and -400ER series airplanes, certificated in any category, as identified in Boeing Alert Service Bulletin 767-53A0251, Revision 1, dated March 7, 2017.

(2) Installation of Supplemental Type Certificate (STC) ST01920SE (rgl.faa.gov/Regulatory_and_Guidance_Library/rgstc.nsf/0/59027F43B9A7486E86257B1D006591EE?OpenDocument&Highlight=st01920se) does not affect the ability to accomplish the actions required by this AD. Therefore, for airplanes on which STC ST01920SE is installed, a “change in product” alternative method of compliance (AMOC) approval request is not necessary to comply with the requirements of 14 CFR 39.17.

(d) Subject

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

(e) Unsafe Condition

This AD was prompted by reports indicating that certain fasteners were not installed in the stringer 37 (S-37L and S-37R) lap splice between body stations 428 and 431 on certain airplanes. We are issuing this AD to detect and correct missing fasteners, which could result in cracks in the fuselage skin that could adversely affect the structural integrity of the airplane.

(f) Compliance

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

(g) Required Actions

Except as required by paragraph (h) of this AD: At the applicable times specified in paragraph 1.E., “Compliance,” of Boeing Alert Service Bulletin 767-53A0251, Revision 1, dated March 7, 2017, do all applicable actions identified as “RC” (required for compliance) in, and in accordance

with, the Accomplishment Instructions of Boeing Alert Service Bulletin 767-53A0251, Revision 1, dated March 7, 2017.

(h) Exceptions to Service Information Specifications

(1) Where Alert Service Bulletin 767-53A0251, Revision 1, dated March 7, 2017, specifies contacting Boeing, and specifies that action as RC: This AD requires repair using a method approved in accordance with the procedures specified in paragraph (j) of this AD.

(2) For purposes of determining compliance with the requirements of this AD: Where Boeing Alert Service Bulletin 767-53A0251, Revision 1, dated March 7, 2017, uses the phrase “the Revision 1 date of this service bulletin,” this AD requires using “the effective date of this AD.”

(i) Credit for Previous Actions

For Group 1 airplanes as defined in Boeing Alert Service Bulletin 767-53A0251, Revision 1, dated March 7, 2017: This paragraph provides credit for the actions specified in paragraph (g) of this AD, if those actions were performed before the effective date of this AD using Boeing Alert Service Bulletin 767-53A0251, dated August 7, 2013.

(j) Alternative Methods of Compliance (AMOCs)

(1) The Manager, Seattle ACO Branch, 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 certification office, send it to the attention of the person identified in paragraph (k)(1) 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.

(3) An AMOC that provides an acceptable level of safety may be used for any repair, modification, or alteration required by this AD if it is approved by the Boeing Commercial Airplanes Organization Designation Authorization (ODA) that has been authorized by the Manager, Seattle ACO Branch, to make those findings. To be approved, the repair method, modification deviation, or alteration deviation must meet the certification basis of the airplane, and the approval must specifically refer to this AD.

(4) AMOCs approved previously for AD 2015-19-12 are approved as AMOCs for the corresponding provisions of paragraph (g) of this AD.

(5) Except as required by paragraph (h)(1) of this AD: For service information that contains steps that are labeled as Required for Compliance (RC), the provisions of paragraphs (j)(5)(i) and (j)(5)(ii) of this AD apply.

(i) The steps labeled as RC, including substeps under an RC step and any figures identified in an RC step, must be done to comply with the AD. If a step or substep is labeled “RC Exempt,” then the RC requirement is removed from that step or substep. An AMOC is required for any deviations to RC steps, including substeps and identified figures.

(ii) Steps not labeled as RC may be deviated from using accepted methods in accordance with the operator's maintenance or inspection program without obtaining approval of an AMOC, provided the RC steps, including substeps and identified figures, can still be done as specified, and the airplane can be put back in an airworthy condition.

(k) Related Information

(1) For more information about this AD, contact Wayne Lockett, Aerospace Engineer, Airframe Section, FAA, Seattle ACO Branch, 2200 South 216th St., Des Moines, WA 98198; phone and fax: 206-231-3524; email: wayne.lockett@faa.gov.

(2) Service information identified in this AD that is not incorporated by reference is available at the addresses specified in paragraphs (l)(3) and (l)(4) of this AD.

(l) Material Incorporated by Reference

(1) The Director of the Federal Register approved the incorporation by reference (IBR) of the service information listed in this paragraph under 5 U.S.C. 552(a) and 1 CFR part 51.

(2) You must use this service information as applicable to do the actions required by this AD, unless the AD specifies otherwise.

(i) Boeing Alert Service Bulletin 767-53A0251, Revision 1, dated March 7, 2017.

(ii) Reserved.

(3) For service information identified in this AD, contact Boeing Commercial Airplanes, Attention: Contractual & Data Services (C&DS), 2600 Westminister Blvd., MC 110-SK57, Seal Beach, CA 90740-5600; telephone 562-797-1717; internet <https://www.myboeingfleet.com>.

(4) You may view this service information at the FAA, Transport Standards Branch, 2200 South 216th St., Des Moines, WA 98198. For information on the availability of this material at the FAA, call 206-231-3195.

(5) You may view this service information that is incorporated by reference at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to: <http://www.archives.gov/federal-register/cfr/ibr-locations.html>.

Issued in Des Moines, Washington, on March 30, 2018.

Chris Spangenberg,
Acting Director, System Oversight Division,
Aircraft Certification Service.



2018-07-19 The Boeing Company: Amendment 39-19250; Docket No. FAA-2017-0553; Product Identifier 2016-NM-208-AD.

(a) Effective Date

This AD is effective May 21, 2018.

(b) Affected ADs

None.

(c) Applicability

This AD applies to all The Boeing Company Model 787-8 and 787-9 airplanes, certificated in any category.

(d) Subject

Air Transport Association (ATA) of America Code 32; Landing gear.

(e) Unsafe Condition

This AD was prompted by a report that the parking brake and alternate pitch trim module (PBM) may unintentionally disengage. We are issuing this AD to prevent an unintended parking brake release, which could result in damage to the airplane and be a hazard to persons or property on the ground.

(f) Compliance

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

(g) Inspection and Replacement

For airplanes on which the original airworthiness certificate or the original export certificate of airworthiness was issued on or before the effective date of this AD: Within 60 months after the effective date of this AD, inspect the PBM to determine the part number. A review of airplane maintenance or delivery records is acceptable in lieu of the inspection if the part number of the PBM can be conclusively determined from that review.

(1) If the PBM is Rockwell Collins part number (P/N) 4260-0037-5: No further action is required by this paragraph.

(2) If the PBM is Rockwell Collins P/N 4260-0037-3 or -4: Within 60 months after the effective date of this AD, install PBM P/N 4260-0037-5 and do the PBM installation test, in accordance with the Accomplishment Instructions of Boeing Service Bulletin B787-81205-SB320028-00, Issue 001, dated October 31, 2016. Where Boeing Service Bulletin B787-81205-SB320028-00, Issue 001, dated

October 31, 2016, specifies accomplishing an action “in accordance with 787 AMM 32-44-01,” for this AD “refer to 787 AMM 32-44-01” for that action. If the installation test fails, before further flight, do all applicable corrective actions and repeat the test until the test is passed.

(h) Parts Installation Prohibition

As of the effective date of this AD, no person may install, on any airplane, a PBM having Rockwell Collins P/N 4260-0037-3 or -4.

(i) Alternative Methods of Compliance (AMOCs)

(1) The Manager, Seattle ACO Branch, 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.

(3) An AMOC that provides an acceptable level of safety may be used for any repair, modification, or alteration required by this AD if it is approved by the Boeing Commercial Airplanes Organization Designation Authorization (ODA) that has been authorized by the Manager, Seattle ACO, to make those findings. To be approved, the repair method, modification deviation, or alteration deviation must meet the certification basis of the airplane, and the approval must specifically refer to this AD.

(4) For service information that contains steps that are labeled as Required for Compliance (RC), the provisions of paragraphs (i)(4)(i) and (i)(4)(ii) of this AD apply.

(i) The steps labeled as RC, including substeps under an RC step and any figures identified in an RC step, must be done to comply with the AD. If a step or substep is labeled “RC Exempt,” then the RC requirement is removed from that step or substep. An AMOC is required for any deviations to RC steps, including substeps and identified figures.

(ii) Steps not labeled as RC may be deviated from using accepted methods in accordance with the operator's maintenance or inspection program without obtaining approval of an AMOC, provided the RC steps, including substeps and identified figures, can still be done as specified, and the airplane can be put back in an airworthy condition.

(j) Related Information

For more information about this AD, contact Sean Schauer, Aerospace Engineer, Systems and Equipment Section, FAA, Seattle ACO Branch, 2200 South 216th St., Des Moines, WA 98198; phone and fax: 206-231-3547; email: Sean.Schauer@faa.gov.

(k) Material Incorporated by Reference

(1) The Director of the Federal Register approved the incorporation by reference (IBR) of the service information listed in this paragraph under 5 U.S.C. 552(a) and 1 CFR part 51.

(2) You must use this service information as applicable to do the actions required by this AD, unless the AD specifies otherwise.

(i) Boeing Service Bulletin B787-81205-SB320028-00, Issue 001, dated October 31, 2016.

(ii) Reserved.

(3) For Boeing service information identified in this AD, contact Boeing Commercial Airplanes, Attention: Contractual & Data Services (C&DS), 2600 Westminister Blvd., MC 110-SK57, Seal Beach, CA 90740-5600; telephone: 562-797-1717; internet: <https://www.myboeingfleet.com>.

(4) You may view this service information at the FAA, Transport Standards Branch, 2200 South 216th St., Des Moines, WA. For information on the availability of this material at the FAA, call 206-231-3195.

(5) You may view this service information that is incorporated by reference at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to: <http://www.archives.gov/federal-register/cfr/ibr-locations.html>.

Issued in Des Moines, Washington, on March 30, 2018.

Chris Spangenberg,
Acting Director, System Oversight Division,
Aircraft Certification Service.



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2018-07-20 The Boeing Company: Amendment 39-19251; Docket No. FAA-2017-0770; Product Identifier 2017-NM-030-AD.

(a) Effective Date

This AD is effective May 21, 2018.

(b) Affected ADs

This AD replaces AD 2014-03-07, Amendment 39-17744 (79 FR 9392, February 19, 2014) (“AD 2014-03-07”).

(c) Applicability

This AD applies to The Boeing Company Model MD-11 and MD-11F airplanes, certificated in any category, as identified in Boeing Service Bulletin MD11-28-126, Revision 6, dated July 1, 2016.

(d) Subject

Air Transport Association (ATA) of America Code 28, Fuel.

(e) Unsafe Condition

This AD was prompted by fuel system reviews conducted by the manufacturer that indicated the need to inspect wire bundles at certain locations of the center upper auxiliary fuel tanks in addition to inspection locations required by AD 2014-03-07. We are issuing this AD to reduce the potential of ignition sources inside fuel tanks, which, in combination with flammable fuel vapors, could result in fuel tank explosions and consequent loss of the airplane.

(f) Compliance

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

(g) Retained Inspection and Corrective Action, With Revised Service Information

This paragraph restates the requirements of paragraph (g) of AD 2014-03-07, with revised service information. For airplanes identified in Boeing Service Bulletin MD11-28-126, Revision 1, dated June 18, 2009: Within 60 months after February 4, 2010 (the effective date of AD 2009-26-16, Amendment 39-16155 (74 FR 69249, December 31, 2009)), do the actions specified in paragraphs (g)(1) through (g)(5) of this AD, and do all applicable corrective actions, in accordance with the Accomplishment Instructions of Boeing Service Bulletin MD11-28-126, Revision 1, dated June 18, 2009; Revision 4, dated November 29, 2011; or Revision 6, dated July 1, 2016; except as required by paragraph (k) of this AD. As of the effective date of this AD, only Boeing Service Bulletin MD11-

28-126, Revision 6, dated July 1, 2016, may be used to accomplish the actions required by this paragraph. Do all applicable corrective actions before further flight.

(1) Do a general visual inspection of the wire bundles between Stations 1238.950 and 1361.000 to determine if wires touch the upper surface of the center upper auxiliary fuel tank, and mark the location, as applicable.

(2) Do a detailed inspection for splices and damage of all wire bundles above the center upper auxiliary fuel tank between Stations 1218.950 and 1381.000.

(3) Do a detailed inspection for damage (burn marks) of the upper surface of the center upper auxiliary fuel tank.

(4) Do a detailed inspection for damage (burn marks) on the fuel vapor barrier seal.

(5) Install a nonmetallic barrier/shield sleeving, new clamps, new attaching hardware, and a new extruded channel.

(h) Retained Additional Inspections and Corrective Action, With Revised Service Information

This paragraph restates the requirements of paragraph (h) of AD 2014-03-07, with revised service information. For airplanes in Group 1, Configuration 2; Group 2, Configuration 2; and Group 5, Configuration 2; as identified in Boeing Service Bulletin MD11-28-126, Revision 4, dated November 29, 2011: Within 60 months after March 26, 2014 (the effective date of AD 2014-03-07), do a detailed inspection of wire bundles for splices and damage (chafing, arcing, and broken insulation) and damage (burn marks) on the upper surface of the center upper auxiliary fuel tank and fuel vapor barrier seal; install barrier/shield sleeving and clamping; and do all applicable corrective actions at the applicable locations specified in paragraphs (h)(1) through (h)(3) of this AD, in accordance with the Accomplishment Instructions of Boeing Service Bulletin MD11-28-126, Revision 4, dated November 29, 2011; or Boeing Service Bulletin MD11-28-126, Revision 6, dated July 1, 2016; except as required by paragraph (k) of this AD. As of the effective date of this AD, only Boeing Service Bulletin MD11-28-126, Revision 6, dated July 1, 2016, may be used to accomplish the actions required by this paragraph. Do all applicable corrective actions before further flight.

(1) For Group 1, Configuration 2 airplanes, between Stations 1238.950 and 1381.000, Stations 1238.950 and 1256.000, and Stations 1238.950 and 1256.800, depending on passenger or freighter configuration.

(2) For Group 2, Configuration 2 airplanes, between Stations 1238.950 and 1275.250, and Stations 1238.950 and 1275.250, passenger configuration only.

(3) For Group 5, Configuration 2 airplanes, between Stations 1381.000 and 1238.950.

(i) New Inspections and Corrective Actions for Certain Airplanes

For Groups 1, 2, and 5 Configuration 2 airplanes, as identified in Boeing Service Bulletin MD11-28-126, Revision 6, dated July 1, 2016: Within 60 months after the effective date of this AD, do the actions required by paragraphs (i)(1) and (i)(2) of this AD, as applicable, in accordance with the Accomplishment Instructions of Boeing Service Bulletin MD11-28-126, Revision 6, dated July 1, 2016.

(1) Do a general visual inspection of the wire bundles at the applicable center upper auxiliary fuel tank locations to determine if wires touch the upper surface of the fuel tank, and mark the location as applicable.

(2) Do a detailed inspection of the wire bundles for splices and damage on the upper surface of the center upper auxiliary fuel tank and fuel vapor barrier seal; install barrier/shield sleeving, clamping, and extruded channels, as applicable; and do all applicable corrective actions before further flight; except as required by paragraph (k) of this AD.

(j) New Requirements for Line Number 579

For airplane Line Number 579: Within 60 months after the effective date of this AD, do the actions specified in paragraphs (g)(1) through (g)(5) of this AD, and do all applicable corrective actions, in accordance with the Accomplishment Instructions of Boeing Service Bulletin MD11-28-126, Revision 6, dated July 1, 2016, except as required by paragraph (k) of this AD. Do all applicable corrective actions before further flight.

(k) Exception to Service Information Specifications

Where Boeing Service Bulletin MD11-28-126, Revision 1, dated June 18, 2009; Boeing Service Bulletin MD11-28-126, Revision 4, dated November 29, 2011; or Boeing Service Bulletin MD11-28-126, Revision 6, dated July 1, 2016; specifies to contact The Boeing Company for repair instructions: Before further flight, repair the auxiliary fuel tank using a method approved in accordance with the procedures specified in paragraph (m) of this AD.

(l) Credit for Previous Actions

(1) This paragraph provides credit for actions required by paragraph (g) of this AD, if those actions were performed before March 26, 2014 (the effective date of AD 2014-03-07), using the service information specified in paragraph (l)(1)(i) or (l)(1)(ii) of this AD.

(i) Boeing Service Bulletin MD11-28-126, Revision 2, dated November 18, 2010.

(ii) Boeing Service Bulletin MD11-28-126, Revision 3, dated June 3, 2011.

(2) This paragraph provides credit for actions required by paragraph (h) of this AD, if those actions were performed before March 26, 2014 (the effective date of AD 2014-03-07), using Boeing Service Bulletin MD11-28-126, Revision 3, dated June 3, 2011.

(m) Alternative Methods of Compliance (AMOCs)

(1) The Manager, Los Angeles ACO Branch, 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 certification office, send it to the attention of the person identified in paragraph (n)(1) of this AD. Information may be emailed to: 9ANM-LAACO-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.

(3) An AMOC that provides an acceptable level of safety may be used for any repair, modification, or alteration required by this AD if it is approved by the Boeing Commercial Airplanes Organization Designation Authorization (ODA) that has been authorized by the Manager, Los Angeles ACO Branch, to make those findings. To be approved, the repair method, modification deviation, or alteration deviation must meet the certification basis of the airplane, and the approval must specifically refer to this AD.

(4) AMOCs approved previously for AD 2014-03-07 are approved as AMOCs for the corresponding provisions of this AD.

(n) Related Information

(1) For more information about this AD, contact Samuel Lee, Aerospace Engineer, Propulsion Section, FAA, Los Angeles ACO Branch, 3960 Paramount Boulevard, Lakewood, CA 90712-4137; phone: 562-627-5262; fax: 562-627-5210; email: samuel.lee@faa.gov.

(2) Service information identified in this AD that is not incorporated by reference is available at the addresses specified in paragraphs (o)(6) and (o)(7) of this AD.

(o) Material Incorporated by Reference

(1) The Director of the Federal Register approved the incorporation by reference (IBR) of the service information listed in this paragraph under 5 U.S.C. 552(a) and 1 CFR part 51.

(2) You must use this service information as applicable to do the actions required by this AD, unless the AD specifies otherwise.

(3) The following service information was approved for IBR on May 21, 2018.

(i) Boeing Service Bulletin MD11-28-126, Revision 6, dated July 1, 2016.

(ii) Reserved.

(4) The following service information was approved for IBR on March 26, 2014 (79 FR 9392, February 19, 2014).

(i) Boeing Service Bulletin MD11-28-126, Revision 4, dated November 29, 2011.

(ii) Reserved.

(5) The following service information was approved for IBR on February 4, 2010 (74 FR 69249, December 31, 2009).

(i) Boeing Service Bulletin MD11-28-126, Revision 1, dated June 18, 2009.

(ii) Reserved.

(6) For service information identified in this AD, contact Boeing Commercial Airplanes, Attention: Contractual & Data Services (C&DS), 2600 Westminister Blvd., MC 110-SK57, Seal Beach, CA 90740; telephone 562-797-1717; internet <https://www.myboeingfleet.com>.

(7) You may view this service information at the FAA, Transport Standards Branch, 2200 South 216th St., Des Moines, WA. For information on the availability of this material at the FAA, call 206-231-3195.

(8) You may view this service information that is incorporated by reference at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to: <http://www.archives.gov/federal-register/cfr/ibr-locations.html>.

Issued in Des Moines, Washington, on March 29, 2018.

Chris Spangenberg,
Acting Director, System Oversight Division,
Aircraft Certification Service.



FAA
Aviation Safety

AIRWORTHINESS DIRECTIVE

www.faa.gov/aircraft/safety/alerts/
www.gpoaccess.gov/fr/advanced.html

2018-07-21 Fokker Services B.V.: Amendment 39-19252; Docket No. FAA-2017-0906; Product Identifier 2017-NM-039-AD.

(a) Effective Date

This AD is effective May 21, 2018.

(b) Affected ADs

This AD replaces 2005-12-16, Amendment 39-14132 (70 FR 34642, June 15, 2005) (“AD 2005-12-16”).

(c) Applicability

This AD applies to Fokker Services B.V. Model F28 Mark 0100 airplanes, certificated in any category, serial numbers 11244 through 11527 inclusive, except those airplanes modified in service as specified in Fokker Service Bulletin SBF100-25-070, or Fokker Service Bulletin SBF100-25-109, or Fokker Modification Report FS-N545 or FS-N571.

(d) Subject

Air Transport Association (ATA) of America Code 25, Equipment/furnishings.

(e) Reason

This AD was prompted by reports of smoke in the passenger compartment during ground operations and in flight, and a determination that the modification actions required by AD 2005-12-16 might not have been implemented correctly. We are issuing this AD to detect and correct overheating of the passenger service unit (PSU) panel due to moisture ingress, which could result in smoke or fire in the passenger cabin.

(f) Compliance

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

(g) Retained Inspection and Corrective Actions, With Clarified Note

This paragraph restates the requirements of paragraph (f) of AD 2005-12-16, with clarified note. Within 36 months after July 20, 2005 (the effective date of AD 2005-12-16), inspect to determine if Grimes Aerospace PSU panels having part number (P/N) 10-1178-() or P/N 10-1571-() are installed and the PSU modification status if applicable, and do any corrective actions if applicable, by doing all of the actions specified in the Accomplishment Instructions of Fokker Service Bulletin SBF100-25-097, dated December 30, 2003.

Note 1 to paragraph (g) of this AD: Guidance on modifying the PSU panel can be found in Fokker Service Bulletin SBF100-25-097, dated December 30, 2003, which refers to Grimes Aerospace Service Bulletin 10-1178-33-0040, Revision 1, dated March 25, 1996 (for PSU panels having P/N 10-1178-()); and Grimes Aerospace Service Bulletin 10-1571-33-0041, dated October 15, 1993 (for PSU panels having P/N 10-1571-()).

(h) Retained Parts Installation Limitation, With No Changes

This paragraph restates the requirements of paragraph (g) of AD 2005-12-16, with no changes. As of July 20, 2005 (the effective date of AD 2005-12-16), no person may install a PSU panel having P/N 10-1178-() or P/N 10-1571-() on any airplane, unless it has been inspected and any applicable corrective actions have been done in accordance with paragraph (g) of this AD.

(i) New Affected PSU Identification

For the purpose of this AD, Grimes (Honeywell) PSUs having P/N 10-1178-() with a serial number below 4000, and PSUs having P/N 10-1571-() with a serial number below 1000, are referred to as affected PSUs in paragraphs (j) through (l) of this AD.

(j) New Inspections

Within 24 months after the effective date of this AD: Do the actions required by paragraphs (j)(1) and (j)(2) of this AD.

(1) Do a general visual inspection of the panel of each affected PSU for incorrect application of the sealant, in accordance with the Accomplishment Instructions of Fokker Service Bulletin SBF100-25-097, dated December 30, 2003; and, as applicable, Grimes Aerospace Service Bulletin 10-1178-33-0040, dated October 15, 1993 (for PSUs having P/N 10-1178-()); Grimes Aerospace Service Bulletin 10-1178-33-0040, Revision 1, dated March 25, 1996 (for PSUs having P/N 10-1178-()); or Grimes Aerospace Service Bulletin 10-1571-33-0041, dated October 15, 1993 (for PSUs having P/N 10-1571-()).

(2) Do a general visual inspection of the electrical connectors of each affected PSU panel for discrepancies; i.e., uninstalled gaskets, inability to properly lock the connectors, and incorrectly applied sealant on the connectors; in accordance with the Accomplishment Instructions of Fokker Service Bulletin SBF100-25-128, dated July 21, 2016.

(k) Corrective Actions

If, during any inspection required by paragraph (j) of this AD, any discrepancy is found, before further flight, restore the sealing of the affected PSU panels and accomplish all applicable corrective actions to correct the PSU panel interface, in accordance with the Accomplishment Instructions of Fokker Service Bulletin SBF100-25-128, dated July 21, 2016. Do all applicable corrective actions before further flight.

(l) Parts Installation Limitation

As of the effective date of this AD, an affected PSU panel may be installed on any airplane, provided that before further flight after installation, it has been inspected in accordance with paragraph (j) of this AD and all applicable corrective actions have been done in accordance with paragraph (k) of this AD.

(m) Other FAA AD Provisions

The following provisions also apply to this AD:

(1) Alternative Methods of Compliance (AMOCs): The Manager, International Section, Transport Standards Branch, 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 International Section, send it to the attention of the person identified in paragraph (n)(2) of this AD. Information may be emailed to: 9-ANM-116-AMOC-REQUESTS@faa.gov.

(i) 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.

(ii) AMOCs approved previously for AD 2005-12-16 are approved as AMOCs for the corresponding provisions of this AD.

(2) Contacting the Manufacturer: As of the effective date of this AD, for any requirement in this AD to obtain corrective actions from a manufacturer, the action must be accomplished using a method approved by the Manager, International Section, Transport Standards Branch, FAA; or the European Aviation Safety Agency (EASA); or Fokker Services B.V.'s Design Organization Approval (DOA). If approved by the DOA, the approval must include the DOA-authorized signature.

(n) Related Information

(1) Refer to Mandatory Continuing Airworthiness Information (MCAI) EASA Airworthiness Directive 2017-0043, dated March 6, 2017, for related information. This MCAI may be found in the AD docket on the internet at <http://www.regulations.gov> by searching for and locating Docket No. FAA-2017-0906.

(2) For more information about this AD, contact Tom Rodriguez, Aerospace Engineer, International Section, Transport Standards Branch, FAA, 2200 South 216th St., Des Moines, WA 98198; telephone and fax 206-231-3226.

(o) Material Incorporated by Reference

(1) The Director of the Federal Register approved the incorporation by reference (IBR) of the service information listed in this paragraph under 5 U.S.C. 552(a) and 1 CFR part 51.

(2) You must use this service information as applicable to do the actions required by this AD, unless this AD specifies otherwise.

(3) The following service information was approved for IBR on May 21, 2018.

(i) Fokker Service Bulletin SBF100-25-128, dated July 21, 2016.

(ii) Grimes Aerospace Service Bulletin 10-1178-33-0040, dated October 15, 1993.

(iii) Grimes Aerospace Service Bulletin 10-1178-33-0040, Revision 1, dated March 25, 1996.

(iv) Grimes Aerospace Service Bulletin 10-1571-33-0041, dated October 15, 1993.

(4) The following service information was approved for IBR on July 20, 2005 (70 FR 34642, June 15, 2005).

(i) Fokker Service Bulletin SBF100-25-097, dated December 30, 2003.

(ii) Reserved.

(5) For Fokker service information identified in this AD, contact Fokker Services B.V., Technical Services Dept., P.O. Box 1357, 2130 EL Hoofddorp, the Netherlands; telephone +31 (0)88-6280-350; fax +31 (0)88-6280-111; email technicalservices@fokker.com; internet <http://www.myfokkerfleet.com>. For Grimes Aerospace service information identified in this AD, contact Grimes Aerospace Company, Product Support Group, 240 Twain Avenue, Urbana, OH 43078; phone 513-653-5225; fax 513-652-2322.

(6) You may view this service information at the FAA, Transport Standards Branch, 2200 South 216th St., Des Moines, WA. For information on the availability of this material at the FAA, call 206-231-3195.

(7) You may view this service information that is incorporated by reference at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to: <http://www.archives.gov/federal-register/cfr/ibr-locations.html>.

Issued in Des Moines, Washington, on March 30, 2018.

Chris Spangenberg,
Acting Director, System Oversight Division,
Aircraft Certification Service.



2018-08-02 Rolls-Royce plc: Amendment 39-19255; Docket No. FAA-2018-0314; Product Identifier 2018-NE-11-AD.

(a) Effective Date

This AD is effective April 24, 2018.

(b) Affected ADs

None.

(c) Applicability

This AD applies to all Rolls-Royce plc (RR) Trent 1000-A2, Trent 1000-AE2, Trent 1000-C2, Trent 1000-CE2, Trent 1000-D2, Trent 1000-E2, Trent 1000-G2, Trent 1000-H2, Trent 1000-J2, Trent 1000-K2, and Trent 1000-L2 turbofan engines.

(d) Subject

Joint Aircraft System Component (JASC) Code 7230, Turbine Engine Compressor Section.

(e) Unsafe Condition

This AD was prompted by reports of intermediate-pressure compressor (IPC) rotor blade separations resulting in engine failures. We are issuing this AD to prevent failure of the IPC. The unsafe condition, if not addressed, could result in failure of one or more engines, loss of thrust control, and loss of the airplane.

(f) Compliance

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

(g) Required Actions

(1) Inspect the IPC stage 1 rotor blades before exceeding the applicable initial inspection thresholds specified in Table 1 of RR Alert Non-Modification Service Bulletin (NMSB) Trent 1000 72-AK060, dated April 13, 2018, or within 80 flight cycles (FCs) after the effective date of this AD, whichever occurs later. If Direct Accumulation Count cycles, as specified in Table 1 of RR Alert NMSB Trent 1000 72-AK060, are not available, then use FCs, regardless of Engine Health Monitoring alerts. Thereafter at intervals not to exceed 200 FCs, repeat the inspection of the IPC stage 1 rotor blades. Use the Accomplishment Instructions, paragraph 3.A., of RR Alert NMSB Trent 1000 72-AK060, dated April 13, 2018 to perform the inspections.

(2) Perform an initial inspection of the IPC stage 2 rotor blades and IPC shaft stage 2 dovetail posts, using the Accomplishment Instructions, paragraph 3.B., of RR Alert NMSB Trent 1000 72-

AK060, dated April 13, 2018. Perform the initial inspection based on engine operations as specified in the following paragraphs and within the following compliance times:

(i) For engines with less than 300 FCs since new on the effective date of this AD:

(A) For engines that are not operated on ETOPS (extended operations) flights, prior to exceeding 300 FCs or within 50 days after the effective date of this AD, whichever occurs later.

(B) For engines that are operated on ETOPS flights, before exceeding 300 FCs or before the next ETOPS flight, whichever occurs later.

(ii) For engines with 300 or more FCs since new on the effective date of this AD:

(A) For engines that are not operated on ETOPS flights, prior to exceeding 50 days after the effective date of this AD or within 80 FCs since the last inspection performed in accordance with RR Alert NMSB Trent 1000 72-AJ819, whichever occurs later. This inspection is not to exceed 200 FCs since the previous inspection.

(B) For engines that are operated on ETOPS flights, before the next ETOPS flight, or within 80 FCs since the last inspection performed in accordance with RR Alert NMSB Trent 1000 72-AJ819, whichever occurs later.

(3) Thereafter, at intervals not to exceed 80 FCs, repeat the inspections of the IPC stage 2 rotor blades and IPC shaft stage 2 dovetail posts required by paragraph (g)(2) of this AD. Use the Accomplishment Instructions, paragraph 3.B., of RR Alert Trent 1000 72-AK060, dated April 13, 2018, to perform these inspections.

(4) For engines involved in ETOPS operations, inspect the rear face of IPC stage 2 rotor blades, part number KH25730, at each inspection interval defined in paragraph

(g)(3) of this AD in accordance with the Accomplishment Instructions, paragraph 3.C., of RR Alert Trent 1000 72-AK060, dated April 13, 2018.

(5) As of the effective date of this AD, before the next flight after each occurrence where engine operation in asymmetric power conditions was sustained for more than 30 minutes at less than 25,000 feet, either resulting from engine power reduction, or from engine in-flight shut-down (IFSD), perform an on-wing borescope inspection of the IPC stage 2 rotor blades and IPC shaft stage 2 dovetail posts on the unaffected engine (no power reduction, no IFSD) installed on the airplane. Use the Accomplishment Instructions, either paragraph 3.B. for engines not involved in ETOPS operations, or paragraphs 3.B. and 3.C. for engines involved in ETOPS operations, of RR Alert NMSB Trent 1000 72-AK060, dated April 13, 2018, to perform this inspection.

(6) If any IPC stage 1 rotor blade, IPC stage 2 rotor blade, or an IPC shaft stage 2 dovetail post is found cracked during any inspection required by this AD, replace the part with a part eligible for installation before further flight.

(h) Definitions

For the purpose of this AD, flight cycles indicated in paragraph (g)(1) of this AD are those accumulated by the engine. FCs indicated in paragraph (g)(2) of this AD are those accumulated by each affected IPC stage 2 rotor blade since first installation on an engine. If FCs accumulated by an affected IPC stage 2 rotor blade are unknown, then engine FCs since new apply.

(i) Credit for Previous Actions

(1) If you performed the initial inspections required by paragraph (g) of this AD before the effective date of this AD, using any of the following you met the initial inspection requirements of paragraph (g) of this AD; however, all of the repetitive actions still apply:

(i) RR Alert NMSB Trent 1000 72-AJ814, Initial Issue, dated August 17, 2017, or Revision 1, dated September 26, 2017; or

(ii) RR Alert NMSB Trent 1000 72-AK058, Initial Issue, dated March 30, 2018;

(iii) RR NMSB Trent 1000 72-AJ819, Revision 1, October 9, 2017, or Initial Issue, dated August 17, 2017.

(2) Reserved.

(j) Special Flight Permits

(1) 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 subject to the requirements of paragraph (j)(1)(i) of this AD.

(i) Operators who are prohibited from further flight due to an IPC stage 1 rotor blade, IPC stage 2 rotor blade, or an IPC shaft stage 2 dovetail post being found cracked, may perform a one-time non-revenue ferry flight to a location where the engine can be removed from service. This ferry flight must be performed without passengers, involve non-ETOPS operation, and consume no more than three FCs.

(ii) Reserved.

(2) Reserved.

(k) Alternative Methods of Compliance (AMOCs)

(1) The Manager, ECO Branch, 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 certification office, send it to the attention of the person identified in paragraph (l)(1) of this AD. You may email your request to: ANE-AD-AMOC@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.

(l) Related Information

(1) For more information about this AD, contact Kevin M. Clark, Aerospace Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803; phone: 781-238-7088; fax: 781-238-7199; email: kevin.m.clark@faa.gov.

(2) Refer to European Aviation Safety Agency (EASA) AD 2018-0084, dated April 13, 2018, for more information. You may examine the EASA AD in the AD docket on the internet at <http://www.regulations.gov> by searching for and locating it in Docket No. FAA-2018-0314.

(m) Material Incorporated by Reference

(1) The Director of the Federal Register approved the incorporation by reference (IBR) of the service information listed in this paragraph under 5 U.S.C. 552(a) and 1 CFR part 51.

(2) You must use this service information as applicable to do the actions required by this AD, unless the AD specifies otherwise.

(i) Rolls-Royce plc (RR) Alert Non-Modification Service Bulletin (NMSB) Trent 1000 72-AJ819, Revision 2, dated April 12, 2018.

(ii) RR Alert NMSB Trent 1000 72-AK060, Initial Issue, dated April 13, 2018.

(3) For RR service information identified in this AD, contact Rolls-Royce plc, Corporate Communications, P.O. Box 31, Derby, England, DE24 8BJ; phone: 011-44-1332-242424; fax: 011-44-1332-249936; email: corporate.care@rolls-royce.com; internet: <https://customers.rolls-royce.com/public/rollsroycecare>.

(4) You may view this service information at FAA, Engine & Propeller Standards Branch, 1200 District Avenue, Burlington, MA. For information on the availability of this material at the FAA, call 781-238-7759.

(5) You may view this service information that is incorporated by reference at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to: <http://www.archives.gov/federal-register/cfr/ibr-locations.html>.

Issued in Burlington, Massachusetts, on April 19, 2018.
Karen M. Grant,
Acting Manager, Engine and Propeller Standards Branch,
Aircraft Certification Service.



2018-08-03 The Boeing Company: Amendment 39-19256; Docket No. FAA-2018-0299; Product Identifier 2018-NM-060-AD.

(a) Effective Date

This AD is effective April 17, 2018.

(b) Affected ADs

None.

(c) Applicability

This AD applies to The Boeing Company Model 787-8 and 787-9 airplanes, certificated in any category, powered by Rolls-Royce plc (RR) Trent 1000-A2, Trent 1000-AE2, Trent 1000-C2, Trent 1000-CE2, Trent 1000-D2, Trent 1000-E2, Trent 1000-G2, Trent 1000-H2, Trent 1000-J2, Trent 1000-K2, and Trent 1000-L2 turbofan engines.

(d) Subject

Air Transport Association (ATA) of America Code 71, Power plant.

(e) Unsafe Condition

This AD was prompted by a report from the engine manufacturer indicating that after an engine failure, prolonged operation at high thrust settings on the remaining engine during an extended-operation (ETOPS) diversion may result in failure of the remaining engine before the diversion can be safely completed. We are issuing this AD to address unrecoverable thrust loss on both engines, which could lead to a forced landing.

(f) Compliance

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

(g) Revision of Limitations Chapter in Airplane Flight Manual (AFM)

Within 3 days after the effective date of this AD, revise the Certificate Limitations chapter of the applicable Boeing AFM Engine Appendix by incorporating the information in figure 1 to paragraph (g) of this AD. Where figure 1 to paragraph (g) of this AD refers to a "Trent 1000 2 engine," this term means all engines identified in paragraph (c) of this AD. This may be accomplished by inserting a copy of this AD into the AFM. When information identical to that in figure 1 to paragraph (g) of this AD has been included in the Certificate Limitations chapter of the general revisions of the AFM, the general revisions may be inserted into the AFM, and the copy of this AD may be removed from the AFM.

Figure 1 to paragraph (g) of this AD – AFM Certificate Limitations

Engine Appendix - Certificate Limitations	(Required by AD 2018-08-03)
ETOPS	
The following information applies to 787-8 and 787-9 airplanes equipped with a RR Trent 1000 series engine that has a numeral “2” at the end of the model number installed on either wing, and that has 300 or more total accumulated engine flight cycles.	
To ensure continued safe flight during ETOPS, planned aircraft gross weight must not exceed those specified in the ETOPS Section of the Performance Chapter prior to operating more than 60 minutes from a suitable airport.	
<u>ETOPS Diversion Speeds and Times</u>	
ETOPS Single Engine Driftdown diversion must be planned and flown at Engine-Out Long Range Cruise speed. Maximum diversion time for single engine driftdown must not exceed 140 minutes.	
ETOPS Decompression diversion at 10,000 feet must be planned and flown at Mach 0.55. For intermediate altitude level offs above 10,000 feet, Long Range Cruise speed must be used.	

(h) Revision of Performance Chapter of AFM

Concurrently with accomplishment of the requirements of paragraph (g) of this AD, revise the Performance chapter of the applicable Boeing AFM Engine Appendix by incorporating the information in figure 2 to paragraph (h) of this AD. This may be accomplished by inserting a copy of this AD into the AFM. When information identical to that in figure 2 to paragraph (h) of this AD has been included in the Performance chapter of the general revisions of the AFM, the general revisions may be inserted into the AFM, and the copy of this AD may be removed from the AFM.

Figure 2 to paragraph (h) of this AD – AFM Performance

Engine Appendix – Performance							
ETOPS							
ETOPS operation of a Model 787-8 or 787-9 airplane equipped with a RR Trent 1000 A2, C2, or E2 series engine is prohibited.							
As outlined in the ETOPs Section of the Certificate Limitations Chapter, the following table must be utilized when planning ETOPS flights.							
(D631Z003-9R64EF) 787-9 Trent 1000-AE2							
		Enroute Diversion Temperature					Above ISA+25 Degrees C
		ISA+0 Degrees C and Below	ISA+10 Degrees C	ISA+15 Degrees C	ISA+20 Degrees C	ISA+25 Degrees C	
Minimum Engine-Out Cruise Altitude (ft)		19,000	19,000	18,800	18,500	18,300	Prohibited
Maximum Planned Weight at ETOPS Entry Point without Forecast Icing	LBS	499,000	497,400	477,500	453,000	428,400	Prohibited
	KGS	226,360	225,650	216,620	205,480	194,350	
Maximum Planned Weight at ETOPS Entry Point with Forecast Icing	LBS	425,900	417,000	396,300	367,300	338,200	Prohibited
	KGS	193,210	189,170	179,800	166,610	153,420	
(D631Z003-9R7072F) and (D631Z003- 9R7072E) 787-9 Trent 1000-D2							
		Enroute Diversion Temperature					Above ISA+25 Degrees C
		ISA+0 Degrees C and Below	ISA+10 Degrees C	ISA+15 Degrees C	ISA+20 Degrees C	ISA+25 Degrees C	
Minimum Engine-Out Cruise Altitude (ft)		19,100	19,100	18,900	18,700	18,500	Prohibited
Maximum Planned Weight at ETOPS Entry Point without Forecast Icing	LBS	510,300	508,400	488,200	465,800	443,400	Prohibited
	KGS	231,500	230,640	221,480	211,310	201,130	
Maximum Planned Weight at ETOPS Entry Point with Forecast Icing	LBS	438,300	429,300	408,400	383,800	359,300	Prohibited
	KGS	198,830	194,760	185,240	174,110	162,970	
(D631Z003-9R74F) and (D631Z003-9R74E) 787-9 Trent 1000-J2							
		Enroute Diversion Temperature					Above ISA+25 Degrees C
		ISA+0 Degrees C and Below	ISA+10 Degrees C	ISA+15 Degrees C	ISA+20 Degrees C	ISA+25 Degrees C	
Minimum Engine-Out Cruise Altitude (ft)		19,300	19,300	19,100	18,800	18,500	Prohibited
Maximum Planned Weight at ETOPS Entry Point without Forecast Icing	LBS	530,400	527,800	507,800	479,500	451,100	Prohibited
	KGS	240,600	239,430	230,370	217,510	204,640	
Maximum Planned Weight at ETOPS Entry Point with Forecast Icing	LBS	455,200	446,600	430,200	401,400	372,500	Prohibited
	KGS	206,470	202,580	195,140	182,070	169,000	

(D631Z003-R7475F) and (D631Z003-R7475E) 787-9 Trent 1000-K2							
Enroute Diversion Temperature							
		ISA+0 Degrees C and Below	ISA+10 Degrees C	ISA+15 Degrees C	ISA+20 Degrees C	ISA+25 Degrees C	Above ISA+25 Degrees C
Minimum Engine-Out Cruise Altitude (ft)		19,300	19,300	19,100	18,800	18,500	Prohibited
Maximum Planned Weight at ETOPS Entry Point without Forecast Icing	LBS	530,400	527,800	507,800	479,500	451,100	Prohibited
	KGS	240,600	239,430	230,370	217,510	204,640	
Maximum Planned Weight at ETOPS Entry Point with Forecast Icing	LBS	455,200	446,600	430,200	401,400	372,500	Prohibited
	KGS	206,470	202,580	195,140	182,070	169,000	

(D631Z003-R70EF) 787-8 Trent 1000-CE2							
Enroute Diversion Temperature							
		ISA+0 Degrees C and Below	ISA+10 Degrees C	ISA+15 Degrees C	ISA+20 Degrees C	ISA+25 Degrees C	Above ISA+25 Degrees C
Minimum Engine-Out Cruise Altitude (ft)		19,300	19,300	19,100	18,900	18,600	Prohibited
Maximum Planned Weight at ETOPS Entry Point without Forecast Icing	LBS	525,100	523,100	501,400	476,300	451,100	Prohibited
	KGS	238,200	237,310	227,450	216,040	204,630	
Maximum Planned Weight at ETOPS Entry Point with Forecast Icing	LBS	446,700	438,600	419,400	396,300	373,300	Prohibited
	KGS	202,650	198,970	190,260	179,790	169,330	

(D631Z003-R7072F) and (D631Z003-R7072E) 787-8 Trent 1000-D2							
Enroute Diversion Temperature							
		ISA+0 Degrees C and Below	ISA+10 Degrees C	ISA+15 Degrees C	ISA+20 Degrees C	ISA+25 Degrees C	Above ISA+25 Degrees C
Minimum Engine-Out Cruise Altitude (ft)		19,300	19,300	19,100	18,900	18,600	Prohibited
Maximum Planned Weight at ETOPS Entry Point without Forecast Icing	LBS	525,100	523,100	501,400	476,300	451,100	Prohibited
	KGS	238,200	237,310	227,450	216,040	204,630	
Maximum Planned Weight at ETOPS Entry Point with Forecast Icing	LBS	446,700	438,600	419,400	396,300	373,300	Prohibited
	KGS	202,650	198,970	190,260	179,790	169,330	

(D631Z003-R70LF) 787-8 Trent 1000-L2							
Enroute Diversion Temperature							
		ISA+0 Degrees C and Below	ISA+10 Degrees C	ISA+15 Degrees C	ISA+20 Degrees C	ISA+25 Degrees C	Above ISA+25 Degrees C
Minimum Engine-Out Cruise Altitude (ft)		19,300	19,300	19,100	18,900	18,600	Prohibited
Maximum Planned Weight at ETOPS Entry Point without Forecast Icing	LBS	525,100	523,100	501,400	476,300	451,100	Prohibited
	KGS	238,200	237,310	227,450	216,040	204,630	
Maximum Planned Weight at ETOPS Entry Point with Forecast Icing	LBS	446,700	438,600	419,400	396,300	373,300	Prohibited
	KGS	202,650	198,970	190,260	179,790	169,330	

(D631Z003-R67F) and (D631Z003-R67E) 787-8 Trent 1000-G2							
Enroute Diversion Temperature							
		ISA+0 Degrees C and Below	ISA+10 Degrees C	ISA+15 Degrees C	ISA+20 Degrees C	ISA+25 Degrees C	Above ISA+25 Degrees C
Minimum Engine-Out Cruise Altitude (ft)		19,200	19,200	19,000	18,700	18,400	Prohibited
Maximum Planned Weight at ETOPS Entry Point without Forecast Icing	LBS	512,800	511,100	488,900	461,500	434,100	Prohibited
	KGS	232,600	231,860	221,780	209,340	196,910	
Maximum Planned Weight at ETOPS Entry Point with Forecast Icing	LBS	436,300	426,700	405,700	383,400	361,100	Prohibited
	KGS	197,910	193,550	184,020	173,910	163,810	

(D631Z003-R64EF) and (D631Z003-R64EE) 787-8 Trent 1000-AE2							
Enroute Diversion Temperature							
		ISA+0 Degrees C and Below	ISA+10 Degrees C	ISA+15 Degrees C	ISA+20 Degrees C	ISA+25 Degrees C	Above ISA+25 Degrees C
Minimum Engine-Out Cruise Altitude (ft)		19,200	19,200	19,000	18,700	18,400	Prohibited
Maximum Planned Weight at ETOPS Entry Point without Forecast Icing	LBS	512,800	511,100	488,900	461,500	434,100	Prohibited
	KGS	232,640	231,870	221,770	209,340	196,900	
Maximum Planned Weight at ETOPS Entry Point with Forecast Icing	LBS	436,200	426,600	405,600	383,400	361,100	Prohibited
	KGS	197,860	193,500	184,020	173,910	163,810	

(D631Z003-R58F) 787-8 Trent 1000-H2							
Enroute Diversion Temperature							
		ISA+0 Degrees C and Below	ISA+10 Degrees C	ISA+15 Degrees C	ISA+20 Degrees C	ISA+25 Degrees C	Above ISA+25 Degrees C
Minimum Engine-Out Cruise Altitude (ft)		18,900	18,800	18,600	18,200	17,900	Prohibited
Maximum Planned Weight at ETOPS Entry Point without Forecast Icing	LBS	474,000	471,600	447,400	416,700	386,000	Prohibited
	KGS	215,000	213,940	202,970	189,040	175,100	
Maximum Planned Weight at ETOPS Entry Point with Forecast Icing	LBS	404,400	394,900	371,700	346,700	321,700	Prohibited
	KGS	183,470	179,120	168,630	157,270	145,910	

(i) Alternative Methods of Compliance (AMOCs)

(1) The Manager, Seattle ACO Branch, 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 certification office, 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.

(3) An AMOC that provides an acceptable level of safety may be used for any repair, modification, or alteration required by this AD if it is approved by the Boeing Commercial Airplanes Organization Designation Authorization (ODA) that has been authorized by the Manager, Seattle ACO Branch, to make those findings. To be approved, the repair method, modification deviation, or alteration deviation must meet the certification basis of the airplane, and the approval must specifically refer to this AD.

(j) Related Information

For more information about this AD, contact Tak Kobayashi, Aerospace Engineer, Propulsion Section, FAA, Seattle ACO Branch, 2200 South 216th Street, Des Moines, WA 98198; phone and fax: 206-231-3553; email: Takahisa.Kobayashi@faa.gov.

(k) Material Incorporated by Reference

None.

Issued in Des Moines, Washington, on April 12, 2018.
Jeffrey E. Duven,
Director, System Oversight Division,
Aircraft Certification Service.



2018-09-05 The Boeing Company: Amendment 39-19261; Docket No. FAA-2018-0304; Product Identifier 2018-NM-065-AD.

(a) Effective Date

This AD is effective April 26, 2018.

(b) Affected ADs

This AD affects AD 2018-08-03, Amendment 39-19256 (83 FR 16768, April 17, 2018) (“AD 2018-08-03”).

(c) Applicability

This AD applies to The Boeing Company Model 787-8 and 787-9 airplanes, certificated in any category, powered by Rolls-Royce plc (RR) Trent 1000-A2, Trent 1000-AE2, Trent 1000-C2, Trent 1000-CE2, Trent 1000-D2, Trent 1000-E2, Trent 1000-G2, Trent 1000-H2, Trent 1000-J2, Trent 1000-K2, and Trent 1000-L2 turbofan engines.

(d) Subject

Air Transport Association (ATA) of America Code 71, Power plant.

(e) Unsafe Condition

This AD was prompted by a report from the engine manufacturer indicating that after an engine failure, prolonged operation at high thrust settings on the remaining engine during an extended-operation (ETOPS) diversion may result in failure of the remaining engine before the diversion can be safely completed. We are issuing this AD to address unrecoverable thrust loss on both engines, which could lead to a forced landing.

(f) Compliance

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

(g) Revision of Limitations Chapter in Airplane Flight Manual (AFM)

Within 4 days after the effective date of this AD, revise the Certificate Limitations chapter of the applicable Boeing AFM Engine Appendix by incorporating the information in figure 1 to paragraph (g) of this AD. This may be accomplished by inserting a copy of this AD into the AFM. When information identical to that in figure 1 to paragraph (g) of this AD has been included in the Certificate Limitations chapter of the general revisions of the AFM, the general revisions may be inserted into the AFM, and the copy of this AD may be removed from the AFM.

Figure 1 to paragraph (g) of this AD – AFM Certificate Limitations**Engine Appendix - Certificate Limitations****(Required by AD 2018-09-05)****ETOPS**

The following information applies to 787-8 and 787-9 airplanes equipped with a RR Trent 1000 series engine that has a numeral “2” at the end of the model number installed on either wing, with the following exception. The following information does not apply to an airplane if both engines on that airplane have fewer than either 300 total accumulated engine cycles on the intermediate pressure compressor (IPC) Rotor 2 blades since new or since refurbishment in accordance with the instructions of Parts B, C, D or E in RR NMSB TRENT 1000 72-J871 Original Issue, Revision 1, Revision 2, or Revision 3.

To ensure continued safe flight during ETOPS, planned aircraft gross weight must not exceed those specified in the ETOPS Section of the Performance chapter prior to operating more than 60 minutes from a suitable airport.

ETOPS Diversion Speeds and Times

ETOPS Single Engine Driftdown diversion must be planned and flown at Engine-Out Long Range Cruise (LRC) speed. Planned maximum diversion time for single engine driftdown must not exceed 140 minutes.

ETOPS Decompression diversion at 10,000 feet must be planned and flown at Mach 0.55. For intermediate altitude level offs above 10,000 feet, LRC speed must be used.

(h) Revision of Performance Chapter of AFM

Concurrently with accomplishment of the requirements of paragraph (g) of this AD, revise the Performance chapter of the applicable Boeing AFM Engine Appendix by incorporating the information in figure 2 to paragraph (h) of this AD. This may be accomplished by inserting a copy of this AD into the AFM. When information identical to that in figure 2 to paragraph (h) of this AD has been included in the Performance chapter of the general revisions of the AFM, the general revisions may be inserted into the AFM, and the copy of this AD may be removed from the AFM. Guidance on flight path planning can be found in figure 3 to paragraph (h) of this AD.

Figure 2 to paragraph (h) of this AD – AFM Performance

Engine Appendix – Performance

(Required by AD 2018-09-05)

ETOPS

ETOPS operation of a Model 787-8 or 787-9 airplane equipped with a RR Trent 1000 engine using A2, C2, or E2 thrust rating is prohibited.

As outlined in the ETOPS Section of the Certificate Limitations chapter, the following table must be utilized when planning ETOPS flights.

(D631Z003-9R64EF) 787-9 Trent 1000-AE2

		Maximum Enroute Diversion Temperature*					
		ISA+0 Degrees C and Below	ISA+10 Degrees C	ISA+15 Degrees C	ISA+20 Degrees C	ISA+25 Degrees C	Above ISA+25 Degrees C
Minimum Engine-Out Cruise Altitude (ft)		19,000	19,000	18,800	18,500	18,300	Prohibited
Without Forecast Icing Maximum Planned Weight at ETOPS Entry Points and Equal Time Points	LBS	499,000	497,400	477,500	453,000	422,000	Prohibited
	KGS	226,360	225,650	216,620	205,480	191,410	
With Forecast Icing Maximum Planned Weight at ETOPS Entry Points and Equal Time Points	LBS	425,900	417,000	396,300	367,300	338,200	Prohibited
	KGS	193,210	189,170	179,800	166,610	153,420	

*Interpolation between temperature columns is allowed.

(D631Z003-9R7072F) and (D631Z003-9R7072E) 787-9 Trent 1000-D2

		Maximum Enroute Diversion Temperature*					Above ISA+25 Degrees C
		ISA+0 Degrees C and Below	ISA+10 Degrees C	ISA+15 Degrees C	ISA+20 Degrees C	ISA+25 Degrees C	
Minimum Engine-Out Cruise Altitude (ft)		19,100	19,100	18,900	18,700	18,500	Prohibited
Without Forecast Icing Maximum Planned Weight at ETOPS Entry Points and Equal Time Points	LBS	510,300	508,400	488,200	465,800	441,800	Prohibited
	KGS	231,500	230,640	221,480	211,310	200,390	
With Forecast Icing Maximum Planned Weight at ETOPS Entry Points and Equal Time Points	LBS	438,300	429,300	408,400	383,800	359,300	Prohibited
	KGS	198,830	194,760	185,240	174,110	162,970	

*Interpolation between temperature columns is allowed.

(D631Z003-9R74F) and (D631Z003-9R74E) 787-9 Trent 1000-J2

		Maximum Enroute Diversion Temperature*					Above ISA+25 Degrees C
		ISA+0 Degrees C and Below	ISA+10 Degrees C	ISA+15 Degrees C	ISA+20 Degrees C	ISA+25 Degrees C	
Minimum Engine-Out Cruise Altitude (ft)		19,300	19,300	19,100	18,800	18,500	Prohibited
Without Forecast Icing Maximum Planned Weight at ETOPS Entry Points and Equal Time Points	LBS	528,900	526,800	507,800	479,500	451,100	Prohibited
	KGS	239,900	238,950	230,370	217,510	204,640	
With Forecast Icing Maximum Planned Weight at ETOPS Entry Points and Equal Time Points	LBS	455,200	446,600	430,200	401,400	372,500	Prohibited
	KGS	206,470	202,580	195,140	182,070	169,000	

*Interpolation between temperature columns is allowed.

(D631Z003-R7475F) and (D631Z003-R7475E) 787-9 Trent 1000-K2

		Maximum Enroute Diversion Temperature*					
		ISA+0 Degrees C and Below	ISA+10 Degrees C	ISA+15 Degrees C	ISA+20 Degrees C	ISA+25 Degrees C	
Minimum Engine-Out Cruise Altitude (ft)		19,300	19,300	19,100	18,800	18,500	Prohibited
Without Forecast Icing Maximum Planned Weight at ETOPS Entry Points and Equal Time Points	LBS	528,900	526,800	507,800	479,500	451,100	Prohibited
	KGS	239,900	238,950	230,370	217,510	204,640	
With Forecast Icing Maximum Planned Weight at ETOPS Entry Points and Equal Time Points	LBS	455,200	446,600	430,200	401,400	372,500	Prohibited
	KGS	206,470	202,580	195,140	182,070	169,000	

*Interpolation between temperature columns is allowed.

(D631Z003-R70EF) 787-8 Trent 1000-CE2

		Maximum Enroute Diversion Temperature*					
		ISA+0 Degrees C and Below	ISA+10 Degrees C	ISA+15 Degrees C	ISA+20 Degrees C	ISA+25 Degrees C	
Minimum Engine-Out Cruise Altitude (ft)		19,300	19,300	19,100	18,900	18,600	Prohibited
Without Forecast Icing Maximum Planned Weight at ETOPS Entry Points and Equal Time Points	LBS	502,500	502,500	499,600	476,300	450,100	Prohibited
	KGS	227,930	227,930	226,610	216,040	204,160	
With Forecast Icing Maximum Planned Weight at ETOPS Entry Points and Equal Time Points	LBS	446,700	438,600	419,400	396,300	372,400	Prohibited
	KGS	202,650	198,970	190,260	179,790	168,910	

*Interpolation between temperature columns is allowed.

(D631Z003-R7072F) and (D631Z003-R7072E) 787-8 Trent 1000-D2

		Maximum Enroute Diversion Temperature*					
		ISA+0 Degrees C and Below	ISA+10 Degrees C	ISA+15 Degrees C	ISA+20 Degrees C	ISA+25 Degrees C	Above ISA+25 Degrees C
Minimum Engine-Out Cruise Altitude (ft)		19,300	19,300	19,100	18,900	18,600	Prohibited
Without Forecast Icing Maximum Planned Weight at ETOPS Entry Points and Equal Time Points	LBS	502,500	502,500	499,600	476,300	450,100	Prohibited
	KGS	227,930	227,930	226,610	216,040	204,160	
With Forecast Icing Maximum Planned Weight at ETOPS Entry Points and Equal Time Points	LBS	446,700	438,600	419,400	396,300	372,400	Prohibited
	KGS	202,650	198,970	190,260	179,790	168,910	

*Interpolation between temperature columns is allowed.

(D631Z003-R70LF) 787-8 Trent 1000-L2

		Maximum Enroute Diversion Temperature*					
		ISA+0 Degrees C and Below	ISA+10 Degrees C	ISA+15 Degrees C	ISA+20 Degrees C	ISA+25 Degrees C	Above ISA+25 Degrees C
Minimum Engine-Out Cruise Altitude (ft)		19,300	19,300	19,100	18,900	18,600	Prohibited
Without Forecast Icing Maximum Planned Weight at ETOPS Entry Points and Equal Time Points	LBS	502,500	502,500	499,600	476,300	450,100	Prohibited
	KGS	227,930	227,930	226,610	216,040	204,160	
With Forecast Icing Maximum Planned Weight at ETOPS Entry Points and Equal Time Points	LBS	446,700	438,600	419,400	396,300	372,400	Prohibited
	KGS	202,650	198,970	190,260	179,790	168,910	

*Interpolation between temperature columns is allowed.

(D631Z003-R67F) and (D631Z003-R67E) 787-8 Trent 1000-G2

		Maximum Enroute Diversion Temperature*					Above ISA+25 Degrees C
		ISA+0 Degrees C and Below	ISA+10 Degrees C	ISA+15 Degrees C	ISA+20 Degrees C	ISA+25 Degrees C	
Minimum Engine-Out Cruise Altitude (ft)		19,200	19,200	19,000	18,700	18,400	Prohibited
Without Forecast Icing Maximum Planned Weight at ETOPS Entry Points and Equal Time Points	LBS	502,500	502,500	488,900	461,500	430,400	Prohibited
	KGS	227,930	227,930	221,780	209,340	195,220	
With Forecast Icing Maximum Planned Weight at ETOPS Entry Points and Equal Time Points	LBS	436,300	426,700	405,700	383,400	355,300	Prohibited
	KGS	197,910	193,550	184,020	173,910	161,160	

*Interpolation between temperature columns is allowed.

(D631Z003-R64EF) and (D631Z003-R64EE) 787-8 Trent 1000-AE2

		Maximum Enroute Diversion Temperature*					Above ISA+25 Degrees C
		ISA+0 Degrees C and Below	ISA+10 Degrees C	ISA+15 Degrees C	ISA+20 Degrees C	ISA+25 Degrees C	
Minimum Engine-Out Cruise Altitude (ft)		19,200	19,200	19,000	18,700	18,400	Prohibited
Without Forecast Icing Maximum Planned Weight at ETOPS Entry Points and Equal Time Points	LBS	502,500	502,500	488,900	461,500	430,400	Prohibited
	KGS	227,930	227,930	221,780	209,340	195,220	
With Forecast Icing Maximum Planned Weight at ETOPS Entry Points and Equal Time Points	LBS	436,300	426,700	405,700	383,400	355,300	Prohibited
	KGS	197,910	193,550	184,020	173,910	161,160	

*Interpolation between temperature columns is allowed.

(D631Z003-R58F) 787-8 Trent 1000-H2

		Maximum Enroute Diversion Temperature*					Above ISA+25 Degrees C
		ISA+0 Degrees C and Below	ISA+10 Degrees C	ISA+15 Degrees C	ISA+20 Degrees C	ISA+25 Degrees C	
Minimum Engine-Out Cruise Altitude (ft)		18,900	18,800	18,600	18,200	17,900	Prohibited
Without Forecast Icing Maximum Planned Weight at ETOPS Entry Points and Equal Time Points	LBS	474,000	471,600	447,400	416,700	386,000	Prohibited
	KGS	215,000	213,940	202,970	189,040	175,100	
With Forecast Icing Maximum Planned Weight at ETOPS Entry Points and Equal Time Points	LBS	404,400	394,900	371,700	346,700	321,700	Prohibited
	KGS	183,470	179,120	168,630	157,270	145,910	

*Interpolation between temperature columns is allowed.

Figure 3 to paragraph (h) of this AD – *Guidance on flight path planning*

Guidance on flight path planning

1. Utilize the one-engine inoperative LRC speed for the ETOPS engine-out planning speed and establish that the planned maximum diversion time is not greater than 140 minutes. Critical fuel decompression scenarios should utilize the M0.55 speeds for both all engine and engine inoperative scenarios.
2. Determine if forecast icing is expected along the planned flight plan path and in the planned diversionary track(s) between the ETOPS Entry Point(s) (EEP) and the first ETOPS Equal-Time Point (ETP1). Accomplish the same determination for the subsequent ETOPS segment (i.e., between ETP1 and ETP2 or the (ETOPS Exit Point) EXP).
3. Verify the planned maximum weight at the EEP is derived based upon the maximum forecast temperature at FL200 between the EEP and ETP1 and the planned weight at the EEP is no greater than the maximum planned weight corresponding to either the without-forecast icing or with-forecast icing (if icing is probable between the EEP and ETP1 along the flight plan track or along the planned diversionary track at FL200) table values at the appropriate maximum diversion temperature. If the EEP gross weight is less than the table limits, continue with the flight planning. If the EEP maximum planned weight is greater than the appropriate value provided in the table, a takeoff weight reduction will be required to establish that the maximum planned weight at the EEP is equal to or less than the table values.
4. Verify the planned maximum weight at ETP1 is derived based upon the maximum forecast temperature at FL200 between the ETP1 and ETP2 (or the EXP) and the planned weight at the ETP1 is no greater than the maximum planned weight corresponding to either, the without-forecast icing or with-forecast icing (if icing is probable between the ETP1 and ETP2 along the flight plan track or along the planned diversionary track at FL200) table values at the appropriate maximum diversion temperature. If the ETP1 planned maximum weight is less than the table limits, continue with the flight planning. If the ETP1 maximum planned weight is greater than the appropriate value provided in the table, a takeoff weight reduction will be required to establish that the maximum planned weight at the ETPs is equal to or less than the table values.
5. Verify the planned maximum weights at each subsequent ETP are no greater than the appropriate weight provided in the table accounting for the effects of forecast icing, if probable, and the appropriate forecast temperature.
6. Upon verification of the planned maximum weight limits at the EEP and each of the ETPs required to complete the mission, validate the engine inoperative maximum diversion time is no greater than 140 minutes.

(i) Terminating Action for AD 2018-08-03

Accomplishment of the actions required by paragraphs (g) and (h) of this AD terminates all requirements of AD 2018-08-03.

(j) Alternative Methods of Compliance (AMOCs)

(1) The Manager, Seattle ACO Branch, 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 certification office, send it to the attention of the

person identified in paragraph (k) 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.

(3) An AMOC that provides an acceptable level of safety may be used for any repair, modification, or alteration required by this AD if it is approved by the Boeing Commercial Airplanes Organization Designation Authorization (ODA) that has been authorized by the Manager, Seattle ACO Branch, to make those findings. To be approved, the repair method, modification deviation, or alteration deviation must meet the certification basis of the airplane, and the approval must specifically refer to this AD.

(k) Related Information

For more information about this AD, contact Tak Kobayashi, Aerospace Engineer, Propulsion Section, FAA, Seattle ACO Branch, 2200 South 216th St., Des Moines, WA 98198; phone and fax: 206-231-3553; email: Takahisa.Kobayashi@faa.gov.

(l) Material Incorporated by Reference

None.

Issued in Des Moines, Washington, on April 24, 2018.
Jeffrey E. Duven,
Director, System Oversight Division,
Aircraft Certification Service.



DATE: April 20, 2018
AD #: 2018-09-51

Emergency Airworthiness Directive (AD) 2018-09-51 is sent to owners and operators of CFM International S.A. (CFM) Model CFM56-7B engines.

Background

This emergency AD was prompted by a recent event in which a Boeing Model 737-700 airplane powered by CFM56-7B model engines experienced an engine failure due to a fractured fan blade, resulting in the engine inlet cowl disintegrating. Debris penetrated the fuselage causing a loss of pressurization and prompting an emergency descent. Although the airplane landed safely, there was one passenger fatality. Fan blade failure due to cracking, if not addressed, could result in an engine in-flight shutdown (IFSD), uncontained release of debris, damage to the engine, damage to the airplane, and possible airplane decompression.

Relevant Service Information

We reviewed CFM Service Bulletin CFM56-7B S/B 72-1033, dated April 20, 2018. The service information describes procedures for performing an ultrasonic inspection for cracks of the fan blade dovetail, and removal of cracked fan blades from service.

FAA's Determination

We are issuing this AD because we evaluated all the relevant information and determined the unsafe condition described previously is likely to exist or develop in other products of the same type design.

AD Requirements

This AD requires accomplishing the actions specified in the service information described previously, except as discussed under "Differences Between the AD and the Service Information."

Differences Between This AD and the Service Information

CFM Service Bulletin CFM56-7B S/B 72-1033, dated April 20, 2018, provides actions for engines with fewer than 30,000 flight cycles, but this AD does not affect those engines. The service information also specifies repetitive inspections, but this AD does not require that the inspection be repeated. We are considering further rulemaking to address these differences.

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.

This AD is issued in accordance with authority delegated by the Executive Director, Aircraft Certification Service, as authorized by FAA Order 8000.51C. In accordance with that order, issuance of ADs is normally a function of the Compliance and Airworthiness Division, but during this transition period, the Executive Director has delegated the authority to issue ADs applicable to engines, propellers, and associated appliances to the Manager, Engine and Propeller Standards Branch, Policy and Innovation Division.

Presentation of the Actual AD

We are issuing this AD under 49 U.S.C. Section 44701 according to the authority delegated to me by the Administrator.

2018-09-51 CFM International S.A.: Product Identifier 2018-NE-13-AD.

(a) Effective Date

This Emergency AD is effective upon receipt.

(b) Affected ADs

None.

(c) Applicability

This AD applies to all CFM International S.A. (CFM) CFM56-7B20, -7B22, -7B24, -7B26, -7B27, -7B22/B1, -7B24/B1, -7B26/B1, -7B26/B2, -7B27/B1, -7B27/B3, -7B20/3, -7B22/3, -7B24/3, -7B26/3, -7B27/3, -7B22/3B1, -7B24/3B1, -7B26/3B1, -7B26/3B2, -7B26/3F, -7B26/3B2F, -7B27/3B1, -7B27/3B3, -7B27/3F, -7B27/3B1F, -7B20E, -7B22E, -7B24E, -7B26E, -7B27E, -7B22E/B1, -7B24E/B1, -7B26E/B1, -7B26E/B2, -7B26E/F, -7B26E/B2F, -7B27E/B1, -7B27E/B3, -7B27E/F, -7B27E/B1F, -7B20/2, -7B22/2, -7B24/2, -7B26/2, -7B27/2, -7B27A, -7B27AE, and -7B27A/3 engine models, with 30,000 or more total accumulated flight cycles since new, as of the date of receipt of this AD.

(d) Subject

Joint Aircraft System Component (JASC) Code 7200, Engine.

(e) Unsafe Condition

This AD was prompted by a recent event involving an engine failure, resulting in the engine inlet cowl disintegrating, debris penetrating the fuselage causing a loss of pressurization and prompting an emergency descent. There was one passenger fatality as a result of the event. We are issuing this AD to address fan blade failure due to cracking, which could result in an engine in-flight shutdown (IFSD), uncontained release of debris, damage to the engine, damage to the airplane, and possible airplane decompression.

(f) Compliance

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

(g) Inspection

(1) Within 20 days after receipt of this AD, perform a one-time ultrasonic inspection (USI) of all 24 fan blade dovetail concave and convex sides to detect cracking.

(2) Use the Accomplishment Instructions, paragraphs 3.A.(3)(a) through (i), of CFM Service Bulletin CFM56-7B S/B 72-1033, dated April 20, 2018, to perform the inspection required by paragraph (g)(1) of this AD.

(h) Corrective Action

If any unserviceable indication, as specified in CFM Service Bulletin CFM56-7B S/B 72-1033, dated April 20, 2018, is found during any inspection required by this AD, remove the affected fan blade from service before further flight.

(i) No Reporting Required

Although CFM Service Bulletin CFM56-7B S/B 72-1033, dated April 20, 2018, specifies to report findings, this AD does not include that requirement.

(j) Credit for Previous Actions

This paragraph provides credit for the actions specified in paragraph (g)(1) of this AD, if those actions were performed before receipt of this AD using CFM Service Bulletin CFM56-7B S/B 72-1019, dated March 24, 2017; or Revision 1, dated June 13, 2017; or CFM Service Bulletin CFM56-7B S/B 72-1024, dated July 24, 2017.

(k) Alternative Methods of Compliance (AMOCs)

(1) The Manager, ECO Branch, 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 certification office, send it to the attention of the person identified in paragraph (l)(1) of this AD. You may email your request to ANE-AD-AMOC@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.

(3) For service information that contains steps that are labeled as Required for Compliance (RC), the provisions of paragraphs (k)(3)(i) and (k)(3)(ii) of this AD apply.

- (i) The steps labeled as RC must be done to comply with the AD. An AMOC is required for any deviations to RC steps.
- (ii) Steps not labeled as RC may be deviated from using accepted methods in accordance with the operator's maintenance or inspection program without obtaining approval of an AMOC, provided the RC steps can still be done as specified, and the airplane can be put back in an airworthy condition.

(I) Related Information

(1) For further information about this AD, contact Christopher McGuire, Aerospace Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803; phone: 781-238-7120; fax: 781-238-7199; E-mail: chris.mcguire@faa.gov.

(2) For service information identified in this AD, contact CFM International Inc., Aviation Operations Center, 1 Neumann Way, M/D Room 285, Cincinnati, OH 45125; phone: 877-432-3272; fax: 877-432-3329; email: aviation.fleetsupport@ge.com. You may view this referenced service information at the FAA, Engine and Propeller Standards Branch, 1200 District Avenue, Burlington, MA.

Issued in Burlington, Massachusetts, on April 20, 2018.

Original signed by
Karen M. Grant, Acting Manager
Engine and Propeller Standards Branch,
Aircraft Certification Service.