



DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2022-1314; Project Identifier AD-2021-00811-E; Amendment 39-22579; AD 2023-21-07]

RIN 2120-AA64

Airworthiness Directives; General Electric Company Engines

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: The FAA is superseding Airworthiness Directive (AD) 2018-03-13 for certain General Electric Company (GE) Model CT7-5A2, CT7-5A3, CT7-7A, CT7-7A1, CT7-9B, CT7-9B1, CT7-9B2, CT7-9C, and CT7-9C3 engines. AD 2018-03-13 required initial and repetitive visual inspections and fluorescent penetrant inspections (FPIs) of the main propeller shaft. This AD was prompted by an in-flight failure of a main propeller shaft on a GE Model CT7-9B engine, resulting in the loss of the propeller. This AD requires initial and repetitive visual inspections, FPIs, and ultrasonic inspections (USIs) of the main propeller shaft. Depending on the results of these inspections, this AD requires replacement of the main propeller shaft. As an optional terminating action to these inspections, this AD requires revising the airworthiness limitations section (ALS) of the existing maintenance manual (MM) and the operator's existing approved maintenance program or inspection program, as applicable, to incorporate incorporating the tasks and reduced inspection thresholds for the main propeller shaft. The FAA is issuing this AD to address the unsafe condition on these products.

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

The Director of the Federal Register approved the incorporation by reference of a certain publication listed in this AD as of [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES:

AD Docket: You may examine the AD docket at [regulations.gov](https://www.regulations.gov) under Docket No. FAA-2022-1314; or in person at Docket Operations between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this final rule, any comments received, and other information. The address for Docket Operations is U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE, Washington, DC 20590.

Material Incorporated by Reference:

- For GE service information identified in this final rule, contact General Electric Company, 1 Neumann Way, Cincinnati, OH 45215; phone: (513) 552-3272; email: aviation.fleetsupport@ae.ge.com; website: [ge.com](https://www.ge.com).

- You may view this service information at the FAA, Airworthiness Products Section, Operational Safety Branch, 1200 District Avenue, Burlington, MA 01803. For information on the availability of this material at the FAA, call (817) 222-5110. It is also available at [regulations.gov](https://www.regulations.gov) under Docket No. FAA-2022-1314.

FOR FURTHER INFORMATION CONTACT: Sungmo Cho, Aviation Safety Engineer, FAA, 2200 South 216th Street, Des Moines, WA 98198; phone: (781) 238-7241; email: Sungmo.D.Cho@faa.gov.

SUPPLEMENTARY INFORMATION:**Background**

The FAA issued a supplemental notice of proposed rulemaking (SNPRM) to amend 14 CFR part 39 to supersede AD 2018-03-13, Amendment 39-19186 (83 FR 6125, February 13, 2018) (AD 2018-03-13). AD 2018-03-13 applied to certain GE Model CT7-5A2, CT7-5A3, CT7-7A, CT7-7A1, CT7-9B, CT7-9B1, CT7-9B2, CT7-9C and CT7-9C3 engines. The SNPRM published in the *Federal Register* on July 11, 2023 (88 FR 44068). The SNPRM was prompted by a comment from GE Aerospace on the notice of proposed rulemaking (NPRM). GE Aerospace stated that certain engine models were included in incorrect Figures within the Required Actions paragraph of the NPRM, which would attribute inaccurate inspection thresholds to those engine models. Therefore, the

FAA issued the SNPRM with a revision to Figures 1 and 2 to include the correct engine models. The FAA also updated the affected engine models listed in paragraphs (g)(1) and (g)(2) of the SNPRM to correspond with the corrected engine models referenced in Figures 1 and 2.

In the SNPRM, the FAA proposed to require initial and repetitive visual inspections, FPIs, and USIs of the main propeller shaft. Depending on the results of these inspections, the SNPRM proposed to require replacing the main propeller shaft. As an optional terminating action to these inspections, the SNPRM proposed to require revising the ALS of the existing MM and the operator's existing approved maintenance program or inspection program, as applicable, to incorporate the tasks and reduced inspection thresholds for the main propeller shaft. The FAA is issuing this AD to address the unsafe condition on these products.

Discussion of Final Airworthiness Directive

Comments

The FAA received comments from one commenter, GE Aerospace. The following presents the comment received on the SNPRM and the FAA's response to that comment.

Request to Remove Typographical Error from SNPRM

GE noted that there is a typographical [typographical] error in the "Proposed AD Requirements in This SNPRM" paragraph of the SNPRM in which the words "at least" are repeated in succession.

The FAA agrees, however, the "Proposed AD Requirements in This SNPRM" paragraph is not included in this Final Rule. The FAA did not change this AD as a result of this comment.

Conclusion

The FAA reviewed the relevant data, considered any comments received, and determined that air safety requires adopting the AD as proposed. Accordingly, the FAA is issuing this AD to address the unsafe condition on these products. Except for minor editorial changes and any other changes described previously, this AD is adopted as

proposed in the SNPRM. None of the changes will increase the economic burden on any operator.

Related Service Information under 1 CFR Part 51

The FAA reviewed GE Service Bulletin (SB) CT7-TP 72-0541 R01, dated November 18, 2021 (GE SB CT7-TP 72-0541). This service information specifies procedures for performing initial and repetitive visual inspections, FPIs, and USIs of the main propeller shaft.

This service information is reasonably available because the interested parties have access to it through their normal course of business or by the means identified in the ADDRESSES section.

Costs of Compliance

The FAA estimates that this AD affects 176 engines installed on airplanes of U.S. registry.

The FAA estimates the following costs to comply with this AD:

Estimated costs

Action	Labor Cost	Parts Cost	Cost per product	Cost on U.S. operators
Visually inspect, FPI, and USI the main propeller shaft	2 work-hours x \$85 per hour = \$170	\$0	\$170	\$29,920

The FAA estimates the following costs to perform the optional terminating action or to do any necessary replacement that would be required based on the results of the inspections. The agency has no way of determining the number of operators that will perform the optional terminating action or engines that might need this replacement:

On-condition costs

Action	Labor Cost	Parts Cost	Cost per product
Replace the main propeller shaft	8 work-hours x \$85 per hour = \$680	\$48,360	\$49,040
Revise the ALS of the MM	1 work-hour x \$85 per hour = \$85	\$0	\$85

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.

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

Regulatory Findings

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

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

- (1) Is not a "significant regulatory action" under Executive Order 12866,
- (2) Will not affect intrastate aviation in Alaska, and
- (3) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

List of Subjects in 14 CFR Part 39

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

The Amendment

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

PART 39 - AIRWORTHINESS DIRECTIVES

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

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

§ 39.13 [Amended]

2. The FAA amends § 39.13 by:

a. Removing Airworthiness Directive 2018-03-13, Amendment 39-19186 (83 FR 6125, February 13, 2018); and

b. Adding the following new airworthiness directive:

2023-21-07 General Electric Company: Amendment 39-22579; Docket No. FAA-2022-1314; Project Identifier AD-2021-00811-E.

(a) Effective Date

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

(b) Affected ADs

This AD replaces AD 2018-03-13, Amendment 39-19186 (83 FR 6125, February 13, 2018).

(c) Applicability

This AD applies to General Electric Company (GE) Model CT7-5A2, CT7-5A3, CT7-7A, CT7-7A1, CT7-9B, CT7-9B1, CT7-9B2, CT7-9C, and CT7-9C3 engines.

(d) Subject

Joint Aircraft System Component (JASC) Code 7210, Turbine Engine Reduction Gear.

(e) Unsafe Condition

This AD was prompted by an in-flight failure of a main propeller shaft on a GE Model CT7-9B model engine, resulting in the loss of the propeller. The FAA is issuing this AD to prevent failure of the main propeller shaft. The unsafe condition, if not addressed, could cause in-flight loss of the propeller, loss of engine thrust control, and damage to the airplane.

(f) Compliance

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

(g) Required Actions

(1) For affected CT7-5A2, CT7-5A3, CT7-9B, CT7-9B1, and CT7-9B2 model engines, using the compliance times specified in Figure 1 to paragraph (g)(1) of this AD,

perform initial and repetitive visual inspections, fluorescent penetrant inspections (FPIs), and ultrasonic inspections (USIs) of the main propeller shaft.

Figure 1 to Paragraph (g)(1) – Compliance Times for CT7-5A2, CT7-5A3, CT7-9B, CT7-9B1, and CT7-9B2 Model Engines

Inspection Type	Initial inspection of the main propeller shaft	Repeat inspection interval of main propeller shaft
Cleaning and visual inspection	During first propeller removal after the effective date of this AD	During every propeller removal
FPI	Before exceeding 20,000 cycles since new (CSN) or within 2,100 flight hours (FHs) after the effective date of this AD, whichever occurs later	During every propeller removal or within 2,100 FHs from performance of the previous FPI, whichever occurs later
USI	Before exceeding 20,000 CSN or within 1,600 FHs after the effective date of this AD, whichever occurs later	Before exceeding 5,000 FHs from performance of the previous USI

(2) For affected CT7-7A, CT7-7A1, CT7-9C, and CT7-9C3 model engines, using the compliance times specified in Figure 2 to paragraph (g)(2) of this AD, perform initial and repetitive visual inspections, FPIs, and USIs of the main propeller shaft.

Figure 2 to Paragraph (g)(2) – Compliance Times for CT7-7A, CT7-7A1, CT7-9C, and CT7-9C3 Model Engines

Inspection Type	Initial inspection of the main propeller shaft	Repeat inspection interval of main propeller shaft
Cleaning and visual inspection	During the first propeller removal after the effective date of this AD	During every propeller removal
FPI	Before exceeding 20,000 CSN or within 2,400 FHs after the effective date of this AD, whichever occurs later	During every propeller removal or within 2,400 FHs from performance of the previous FPI, whichever occurs later
USI	Before exceeding 20,000 CSN or within 1,600 FHs after the effective date of	Before exceeding 4,800 FHs from performance of the previous USI

Inspection Type	Initial inspection of the main propeller shaft	Repeat inspection interval of main propeller shaft
	this AD, whichever occurs later	

(3) Perform the visual inspections, FPIs, and USIs required by paragraphs (g)(1) and (2) of this AD as follows:

(i) Prior to performance of the inspections, clean the main propeller shaft flange using the Accomplishment Instructions, paragraph 3.B., of GE Service Bulletin (SB) CT7-TP 72-0541 R01, dated November 18, 2021 (GE SB CT7-TP 72-0541).

(ii) Visually inspect the main propeller shaft for wear, corrosion, and cracking using the Accomplishment Instructions, paragraph 3.C.(1), of GE SB CT7-TP 72-0541.

(iii) Spot-FPI the area on the main propeller shaft flange face using the Accomplishment Instructions, paragraph 3.C.(2)(a), of GE SB CT7-TP 72-0541.

(iv) USI the two dowel pin holes of the main propeller shaft using the Accomplishment Instructions, paragraph 3.C.(3)(a), of GE SB CT7-TP 72-0541.

(4) If a crack or rejectable indication is found during the initial and repetitive visual inspections, FPIs, or USIs required by paragraphs (g)(1) through (3) of this AD, before further flight, remove the main propeller shaft from service and replace it with a part eligible for installation.

(5) For all affected engines, if the main propeller shaft CSN is unknown, use the propeller gearbox (PGB) CSN. If the PGB CSN is unknown, assume the inspection threshold is exceeded.

(h) Optional Terminating Action

Accomplishing the actions in paragraphs (h)(1) through (4) of this AD, as applicable by engine model, constitutes terminating action for the inspections required by paragraphs (g)(1) through (3) of this AD.

(1) For affected CT7-5A2, CT7-5A3, CT7-7A, and CT7-7A1 model engines, revise the airworthiness limitations section (ALS) of the existing maintenance manual (MM) and the operator's existing approved maintenance program or inspection program, as applicable, by incorporating the information in Figure 3 to paragraph (h)(1) of this AD.

Figure 3 to Paragraph (h)(1) - CT7-5/-7 Inspection Threshold and Interval

Inspection / Maintenance	Initial Inspection Threshold (cycles since new (CSN))	Repetitive Inspection Interval	Inspection / Maintenance Requirements	Reference
*** FOR CT7-5				
Visual inspection of the main propeller shaft	--	At every propeller removal	VI	72-10-00, INSPECTION - PROPELLER GEARBOX INSPECTION paragraph 5.A.
Fluorescent penetrant inspection (FPI) of the main propeller shaft	20000 CSN (*)	At every propeller removal or 2100 FH, whichever is greater	FPI	72-10-00. Special Procedure 005
Ultrasonic inspection (UTI) of the main propeller shaft	20000 CSN (*)	5000 FH	UTI	72-10-00. Special Procedure 005
*** FOR CT7-7				
Visual inspection of the main propeller shaft	--	At every propeller removal	VI	72-10-00, INSPECTION - PROPELLER GEARBOX INSPECTION paragraph 5.A.
Fluorescent penetrant inspection (FPI) of the main propeller shaft	20000 CSN (*)	At every propeller removal or 2400 FH, whichever is greater	FPI	72-10-00. Special Procedure 005
Ultrasonic inspection (UTI) of the main propeller shaft	20000 CSN (*)	4800 FH	UTI	72-10-00. Special Procedure 005
NOTE: (*) If the main propeller shaft accumulated time/cycle is unknown, inspection must be done based on the propeller gearbox (PGB) accumulated time/cycle. If the PGB accumulated time/cycle is unknown, threshold must be assumed exceeded.				

(2) For affected CT7-9B, CT7-9B1, CT7-9B2, CT7-9C, and CT7-9C3 model engines, revise the ALS of the existing MM and the operator's existing approved maintenance program or inspection program, as applicable, by incorporating the information in Figure 4 to paragraph (h)(2) of this AD.

Figure 4 to Paragraph (h)(2) - CT7-9 Inspection Threshold and Interval

Inspection / Maintenance	Initial Inspection Threshold (cycles since new (CSN))	Repetitive Inspection Interval	Inspection / Maintenance Requirements	Reference

***** FOR CT7-9B**

Visual inspection of the main propeller shaft	--	At every propeller removal	VI	72-10-00, INSPECTION - PROPELLER GEARBOX INSPECTION paragraph 5.A.
Fluorescent penetrant inspection (FPI) of the main propeller shaft	20000 CSN (*)	At every propeller removal or 2100 FH, whichever is greater	FPI	72-10-00. Special Procedure 005
Ultrasonic inspection (UTI) of the main propeller shaft	20000 CSN (*)	5000 FH	UTI	72-10-00. Special Procedure 005

***** FOR CT7-9C/9C3**

Visual inspection of the main propeller shaft	--	At every propeller removal	VI	72-10-00, INSPECTION - PROPELLER GEARBOX INSPECTION paragraph 5.A.
Fluorescent penetrant inspection (FPI) of the main propeller shaft	20000 CSN (*)	At every propeller removal or 2400 FH, whichever is greater	FPI	72-10-00. Special Procedure 005
Ultrasonic inspection (UTI) of the main propeller shaft	20000 CSN (*)	4800 FH	UTI	72-10-00. Special Procedure 005

NOTE: (*) If the main propeller shaft accumulated time/cycle is unknown, inspection must be done based on the propeller gearbox (PGB) accumulated time/cycle. If the PGB accumulated time/cycle is unknown, threshold must be assumed exceeded.

(3) Thereafter, except as provided in paragraph (k) of this AD, no alternative inspection times or intervals may be approved for this main propeller shaft.

(4) The optional terminating actions in paragraphs (h)(1) and (2) of this AD may be performed by the owner/operator (pilot) holding at least a private pilot certificate and must be entered into the aircraft records showing compliance with this AD in accordance with 14 CFR 43.9(a) and 91.417(a)(2)(v). The record must be maintained as required by 14 CFR 91.417, 121.380, or 135.439.

(i) Definition

For the purpose of this AD, a “part eligible for installation” is a main propeller shaft that has been inspected in accordance with paragraphs (g)(1) or (2), and (3) of this AD, and there was no crack or rejectable indication.

(j) Credit for Previous Actions

You may take credit for the initial visual inspection, FPI, and USI required by paragraphs (g)(1) through (3) of this AD if you performed these initial inspections before the effective date of this AD in accordance with GE SB CT7-TP 72-0541 R00, dated September 9, 2021.

(k) Alternative Methods of Compliance (AMOCs)

(1) The Manager, AIR-520 Continued Operational Safety 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 AIR-520 Continued Operational Safety Branch, send it to the attention of the person identified in paragraph (l) of this AD and email it 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) Additional Information

For more information about this AD, contact Sungmo Cho, Aviation Safety Engineer, FAA, 2200 South 216th Street, Des Moines, WA 98198; phone: (781) 238-7241; email: Sungmo.D.Cho@faa.gov.

(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) General Electric Company (GE) Service Bulletin CT7-TP 72-0541 R01, dated November 18, 2021.

(ii) [Reserved]

(3) For GE service information identified in this AD, contact General Electric Company, 1 Neumann Way, Cincinnati, OH 45215; phone: (513) 552-3272; email: aviation.fleetsupport@ae.ge.com; website: ge.com.

(4) You may view this service information at FAA, Airworthiness Products Section, Operational Safety Branch, 1200 District Avenue, Burlington, MA 01803. For information on the availability of this material at the FAA, call (817) 222-5110.

(5) You may view this material at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, visit www.archives.gov/federal-register/cfr/ibr-locations or email fr.inspection@nara.gov.

Issued on October 20, 2023.

Ross Landes, Deputy Director for Regulatory Operations,
Compliance & Airworthiness Division,
Aircraft Certification Service.

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