

**DEPARTMENT OF TRANSPORTATION****Federal Aviation Administration****14 CFR Part 39**

[Docket No. 98-ANE-41-AD; Amendment 39-11697; AD 2000-08-11]

RIN 2120-AA64

**Airworthiness Directives; General Electric Company CF6-6, CF6-45, and CF6-50 Series Turbofan Engines**

**AGENCY:** Federal Aviation Administration, DOT.

**ACTION:** Final rule.

**SUMMARY:** This amendment supersedes an existing airworthiness directive (AD), applicable to General Electric Company (GE) CF6-6, CF6-45, and CF6-50 series turbofan engines, that requires revisions to the Time Limits Section of the manufacturer's Instructions for Continued Airworthiness (ICA) to include required enhanced inspection of selected critical life-limited parts at each piece-part exposure. This action would add additional eddy current inspections (ECI) for the high pressure turbine rotor (HPTR) Stage 1 and 2 disks. This action is prompted by additional focused inspection procedures that have been developed by the manufacturer. The actions specified by this AD are intended to prevent critical life-limited rotating engine part failure, which could result in an uncontained engine failure and damage to the airplane.

**DATES:** Effective date October 23, 2000.

**ADDRESSES:** The information referenced in this AD may be examined at the Federal Aviation Administration (FAA), New England Region, Office of the Regional Counsel, 12 New England Executive Park, Burlington, MA.

**FOR FURTHER INFORMATION CONTACT:** Karen Curtis, Aerospace Engineer, Engine Certification Office, FAA, Engine and Propeller Directorate, 12 New England Executive Park, Burlington, MA 01803-5299; telephone (781) 238-7192, fax (781) 238-7199.

**SUPPLEMENTARY INFORMATION:** A proposal to amend part 39 of the Federal Aviation Regulations (14 CFR part 39) by superseding AD 99-08-18, Amendment 39-11124 (64 FR 17958, April 13, 1999) which is applicable to General Electric Company (GE) CF6-6, CF6-45, and CF6-50 series turbofan engines was published in the **Federal Register** on October 7, 1999 (64 FR 54587). That action proposed to require disk bore eddy current inspections (ECI) for the high pressure turbine rotor (HPTR) Stage 1 and 2 disks.

**New Inspection Procedures**

Since the issuance of that AD, additional focused inspection procedures for other critical life-limited rotating engine parts have been developed by GE. This AD will require modification of the airworthiness limitations section in the manufacturers manual and an air carrier's approved continuous airworthiness maintenance program to incorporate these inspection procedures.

Interested persons have been afforded an opportunity to participate in the making of this amendment. Due consideration has been given to the comments received.

**Objection to the Term "Unsafe Condition" in the Preamble of the NPRM**

Two commenters object to the language in the preamble of the NPRM superseding for the second phase of enhanced inspections which includes a finding of an "unsafe condition." The commenters asks that the term "unsafe condition" be deleted and replaced with the justification language from the original NPRM. The FAA does not agree. The commenter does not disagree with the proposed rule itself but rather with the term "unsafe condition" that is contained in the preamble to the NPRM. It is not the intent of the FAA to completely change the enhanced disk inspection program established by the current AD, which evolved as a cooperative effort between the FAA and industry. This intervention strategy was designed to reduce the number of uncontained engine failures by mandating enhanced nondestructive inspections of critical rotating components that could most likely result in a hazard to the airplane in the event of a failure. Since the engine maintenance manuals did not mandate these enhanced inspections, the current AD was necessary to establish the inspection program as an airworthiness limitation. Regardless of the fact that it was not stated explicitly in the original NPRM, the FAA determined that an "unsafe condition" existed because the engine maintenance manuals did not contain enhanced inspections as an airworthiness limitation. There was no intent to imply any defect in the actual engine hardware, but simply to state that the maintenance manuals, that form part of the approved engine design, must be revised to mandate the enhanced inspections. The superseding repeats that finding with respect to the additional parts being added to the enhanced inspection program. Because a finding of an "unsafe condition" is

required for the FAA to issue an AD, future NPRM's adding parts to the program will also include that finding.

**Requests To Add an Explanation to the Preamble of This AD, of When the Inspections Are Not Required**

Several commenters request that the FAA change the preamble that was published in the NPRM to state when the enhanced inspections are not required. The commenters note that the preamble to this NPRM does not contain an explanation as to when the enhanced disk inspections are not required and express concern that the inspection program has been changed from the current AD. The FAA does not agree. The inspection program established by the current AD has not been changed. The NPRM adds additional parts to the list of parts that must be inspected, and does not change how air carriers must manage the inspection program. Future AD's may be issued to introduce additional intervention strategies in order to further reduce uncontained engine failures. These may include AD's to add new parts to the list of parts to be inspected. The inspection program established by the current AD will remain unchanged unless specifically changed in a future proposal.

**Request to Change All References From "Time Limits Section" to "Airworthiness Limitations Section"**

One commenter, the engine manufacturer, asks that we change references to the "Time Limits Section" to read instead the "revision to the Airworthiness Limitations Section." The commenter feels that it is more accurate to refer to the Airworthiness Limitation Section since this section, Chapter 5, now contains two subsets; 05-11 for Time Limits and 05-21 for the mandatory inspections. The FAA does not agree. The manufacturer's current engine manual does not include the heading "Airworthiness Limitations" for Chapter 05-00-00 for these engine models, and the AD directs that changes be made to the current manual. Should the manufacturer revise the section headings in the manual, any future AD's could then reference the revised section headings.

**Request for Clarification of When FAA Approval or AMOC Is Required**

One commenter requests clarification be added to this AD on when equivalent substitutes for tools, equipment, or procedures used for performing the mandatory enhanced inspections require FAA approval or an approved alternate method of compliance (AMOC).

The FAA does not agree that further clarification is necessary in the AD. When allowed for in an AD, an AMOC provides a method by which an operator may secure FAA approval for complying with the requirements of that AD in a manner or at a time other than specified by the AD. This AD, and other similar AD's issued as part of the so-called Disk Inspection Initiative of the Safer Skies Program, are intended to address the need to include mandatory detail inspections in the FAA approved portion of the engine maintenance manual. This portion of the engine maintenance manual is sometimes referred to as the Airworthiness Limitations Sections (ALS) of the Instructions for Continued Airworthiness. The FAA does not intend that this AD specify the exact method or tools with which to conduct the inspection. Rather, the AD requires only that the ALS be revised to include a mandatory opportunistic inspection. The FAA also does not intend that this AD change the manner in which operators seek approval to use tools or methods of inspections other than those provided for in the engine manufacturer's manual. Operators, particularly air carriers, should follow the procedures already in place to secure FAA review and approval to use such substitutes, if needed, and to document that approval if necessary. Therefore, the AMOC paragraph in the AD will remain as proposed.

#### **Request To Extend the Comment Period**

One commenter requests that the NPRM comment period be extended until after the proposed inspections are published to allow time for the operators to review the specific inspections that will be required. The FAA does not agree. The FAA believes that the nature and scope of the added inspections will not be significantly different from existing inspections. In addition, the effective date of this AD has been extended to 180 days after publication to allow time for the specific procedures to be published. Operators may submit comments on the specific procedures once they are published and the FAA will consider extending the effective date further or additional rulemaking, as necessary. The FAA does not believe, however, that this final rule need be delayed pending the publication of the inspection procedures.

#### **Request To Allow a Later Effective Date**

Several commenters request that the effective date of the AD be set to allow sufficient time for publication of the procedures, equipment procurement

and training necessary to perform the mandatory inspection. The FAA agrees. The effective date for the Final rule has been extended to 180 days after publication to allow sufficient time for the publication of the inspection procedures and for operators to prepare.

#### **Request to Remove "of This Chapter" From Paragraph (e) of the Compliance Section**

One commenter requests that the FAA remove the statement "of this chapter" from the first sentence of paragraph (e) of this AD. The commenter feels that removing the statement will improve the clarity of the paragraph. The FAA agrees. The statement "of this chapter" has been removed from the first sentence of paragraph (e).

#### **Economic Analysis**

No comments were received on the economic analysis contained in the proposed rules. The FAA has determined that the annual cost of complying with this AD does not create a significant economic impact on small entities.

#### **Adoption of the Proposed Rule**

After careful review of the available data, including the comments noted above, the FAA has determined that air safety and the public interest require the adoption of the rule with the changes described previously. The FAA has determined that these changes will neither increase the economic burden on any operator nor increase the scope of the AD.

#### **Regulatory Impact**

This final rule does not have federalism implications, as defined in Executive Order 13132, because it does 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. Accordingly, the FAA has not consulted with state authorities prior to publication of this final rule.

For the reasons discussed above, I certify that this action (1) Is not a "significant regulatory action" under Executive Order 12866; (2) is not a "significant rule" under DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979); 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. A final evaluation has been prepared for this action and it is contained in the Rules Docket. A copy

of it may be obtained from the Rules Docket at the location provided under the caption **ADDRESSES**.

#### **List of Subjects in 14 CFR Part 39**

Air Transportation, Aircraft, Aviation safety, Safety.

#### **Adoption of the Amendment**

Accordingly, pursuant to the authority delegated to me by the Administrator, the Federal Aviation Administration amends part 39 of the Federal Aviation Regulations (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. Section 39.13 is amended by removing Amendment 39–11124 (64 FR 17958, April 13, 1999), and by adding a new airworthiness directive, Amendment 39–11697, to read as follows:

**AD 2000–08–11 General Electric Company:**  
Amendment 39–11697. Docket No. 98–ANE–41–AD. Supersedes AD 99–08–18, Amendment 39–11124.

#### **Applicable Engines**

General Electric Company (GE) CF6–6, CF6–45, and CF6–50 series turbofan engines, installed on but not limited to Airbus Industrie A300 series, Boeing 747 series, and McDonnell Douglas DC–10 series airplanes.

**Note 1:** This airworthiness directive (AD) applies to each engine identified in the preceding applicability provision, regardless of whether it has been modified, altered, or repaired in the area subject to the requirements of this AD. For engines that have been modified, altered, or repaired so that the performance of the requirements of this AD is affected, the owner/operator must request approval for an alternative method of compliance in accordance with paragraph (c) of this AD. The request should include an assessment of the effect of the modification, alteration, or repair on the unsafe condition addressed by this AD; and, if the unsafe condition has not been eliminated, the request should include specific proposed actions to address it.

#### **Compliance**

Required as indicated, unless accomplished previously.

To prevent critical life-limited rotating engine part failure, which could result in an uncontained engine failure and damage to the airplane, accomplish the following:

#### **Inspections**

(a) Within the next 30 days after the effective date of this AD, revise the manufacturer's Time Limitations Section of the Instructions for Continued Airworthiness

(ICA), and for air carrier operations revise the approved continuous airworthiness maintenance program, by adding the following:

**"MANDATORY INSPECTIONS**

(1) Perform inspections of the following parts at each piece-part opportunity in

accordance with the instructions provided in the applicable manual provisions:

Part nomenclature	Part No. (P/N)	Inspect per engine shop manual chapter
For CF6-6 Engines:		
Disk, Fan Rotor Stage One .....	All .....	72-21-03 Paragraph 2.F. or Paragraph 2.A.B. Fluorescent-Penetrant Inspect, and 72-21-03 Paragraph 3 or 3.A. Eddy Current Inspection.
Disk, HPT Rotor Stage One .....	All .....	72-53-03 Paragraph 1. Fluorescent-Penetrant Inspect, and 72-53-03 Paragraph 4. Eddy Current Inspection of the HPTR Disk Rim Boltholes and 72-53-03 Paragraph 5. Disk Bore Area Eddy Current Inspection.
Disk, HPT Rotor Stage Two .....	All .....	72-53-04 Paragraph 1. Fluorescent-Penetrant Inspect, and Paragraph 4. Eddy Current Inspection of the Stage 2 HPTR Disk Rim Boltholes and 72-53-04 Paragraph 5. Eddy Current Inspection of the Stage 2 Disk Inner Boltholes and 72-53-04 Paragraph 6. Disk Bore Area Eddy Current Inspection
For CF6-45, CF6-50 Engines:		
Disk, Fan Rotor Stage One .....	All .....	Task 72-21-03-230-051 Fluorescent Penetrant Inspection, and Task 72-21-03-250-002-052 Manual Eddy Current Inspection or 72-21-03-250-003-053 Automated Eddy Current Inspection.
Disk, HPT Rotor Stage One .....	All .....	Task 72-53-03-230-001-059 Fluorescent-Penetrant Inspect Disk, and Task 72-53-03-250-052 Eddy Current Inspection of the HPTR Stage 1 Rim Boltholes, and Task 72-53-03-250-060, Disk Bore Area Eddy Current Inspection.
Disk, HPT Rotor Stage Two .....	All .....	Task 72-53-04-230-001-057 Fluorescent-Penetrant Inspect Disk, and Task 72-53-04-250-053 Eddy Current Inspection of the HPTR Stage 2 Rim and/or Inner Boltholes, and Task 72-53-04-250-060, Disk Bore Area Eddy Current Inspection.

(2) For the purposes of these mandatory inspections, piece-part opportunity means:

(i) The part is considered completely disassembled when accomplished in accordance with the disassembly instructions in the manufacturer's engine manual; and

(ii) The part has accumulated more than 100 cycles in service since the last piece-part opportunity inspection, provided that the part was not damaged or related to the cause for its removal from the engine."

(b) Except as provided in paragraph (c) of this AD, and notwithstanding contrary provisions in section 43.16 of the Federal Aviation Regulations (14 CFR 43.16), these mandatory inspections shall be performed only in accordance with the Time Limits Section of the manufacturer's ICA.

**Alternative Methods of Compliance**

(c) An alternative method of compliance or adjustment of the compliance time that provides an acceptable level of safety may be used if approved by the Engine Certification Office (ECO). Operators shall submit their requests through an appropriate FAA Principal Maintenance Inspector, who may add comments and then send it to the ECO.

**Note 2:** Information concerning the existence of approved alternative methods of compliance with this airworthiness directive, if any, may be obtained from the ECO.

**Ferry Flights**

(d) Special flight permits may be issued in accordance with sections 21.197 and 21.199 of the Federal Aviation Regulations (14 CFR 21.197 and 21.199) to operate the airplane to

a location where the requirements of this AD can be accomplished.

**Continuous Airworthiness Maintenance Program**

(e) FAA-certificated air carriers that have an approved continuous airworthiness maintenance program in accordance with the record keeping requirement of § 121.369 (c) of the Federal Aviation Regulations (14 CFR 121.369 (c)) must maintain records of the mandatory inspections that result from revising the Time Limits Section of the ICA and the air carrier's continuous airworthiness program. Alternately, certificated air carriers may establish an approved system of record retention that provides a method for preservation and retrieval of the maintenance records that include the inspections resulting from this AD, and include the policy and procedures for implementing this alternate method in the air carrier's maintenance manual required by § 121.369 (c) of the Federal Aviation Regulations (14 CFR 121.369 (c)); however, the alternate system must be accepted by the appropriate PMI and require the maintenance records be maintained either indefinitely or until the work is repeated. Records of the piece-part inspections are not required under § 121.380 (a) (2) (vi) of the Federal Aviation Regulations (14 CFR 121.380 (a) (2) (vi)). All other Operators must maintain the records of mandatory inspections required by the applicable regulations governing their operations.

**Note 3:** The requirements of this AD have been met when the engine shop manual changes are made and air carriers have

modified their continuous airworthiness maintenance plans to reflect the requirements in the engine shop manuals.

(f) This amendment becomes effective on October 23, 2000.

Issued in Burlington, Massachusetts, on April 14, 2000.

**Jay J. Pardee,**

*Manager, Engine and Propeller Directorate, Aircraft Certification Service.*

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**DEPARTMENT OF TRANSPORTATION**

**Federal Aviation Administration**

**14 CFR Part 39**

**[Docket No. 98-ANE-49-AD; Amendment 39-11698; AD 2000-08-12]**

**RIN 2120-AA64**

**Airworthiness Directives; General Electric Company CF6-80A, CF6-80C2, and CF6-80E1 Series Turbofan Engines**

**AGENCY:** Federal Aviation Administration, DOT.

**ACTION:** Final rule.

**SUMMARY:** This amendment supersedes an existing airworthiness directive (AD), applicable to certain General Electric