

## DEPARTMENT OF TRANSPORTATION

### Federal Aviation Administration

#### 14 CFR Part 39

[Docket No. 2002-NE-44-AD; Amendment 39-13016; AD 2003-01-05]

RIN 2120-AA64

#### Airworthiness Directives; General Electric Co. CF6-80A Series Turbofan Engines

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

**ACTION:** Final rule; request for comments.

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**SUMMARY:** This amendment adopts a new airworthiness directive (AD) that is applicable to General Electric Co. (GE) CF6-80A series turbofan engines. This action requires the following initial and repetitive inspections of certain part number (P/N) stage 1 high pressure turbine (HPT) rotor disks for cracks:

- Etch preparations and fluorescent penetrant inspections.
- Visual inspections.
- Eddy current inspections.

This amendment is prompted by a Boeing 767 airplane recently experiencing a stage 1 HPT rotor disk separation resulting in uncontained engine failure. The actions specified in this AD are intended to detect cracks in the bottoms of the dovetail slots that could propagate to failure of the disk and cause an uncontained engine failure.

**DATES:** Effective January 28, 2003. The incorporation by reference of certain publications listed in the rule is approved by the Director of the Federal Register as of January 28, 2003.

Comments for inclusion in the Rules Docket must be received on or before March 14, 2003.

**ADDRESSES:** Submit comments in triplicate to the Federal Aviation Administration (FAA), New England Region, Office of the Regional Counsel, Attention: Rules Docket No. 2002-NE-44-AD, 12 New England Executive Park, Burlington, MA 01803-5299. Comments may be inspected at this location, by appointment, between 8 a.m. and 4:30 p.m., Monday through Friday, except Federal holidays. Comments may also be sent via the Internet using the following address: "[9-ane-adcomment@faa.gov](mailto:9-ane-adcomment@faa.gov)". Comments sent via the Internet must contain the docket number in the subject line.

The service information referenced in this AD may be obtained from General Electric Company via Lockheed Martin Technology Services, 10525 Chester Road, Suite C, Cincinnati, Ohio 45215, telephone (513) 672-8400, fax (513) 672-8422. This information may be examined, by appointment, at the FAA, New England Region, Office of the Regional Counsel, 12 New England Executive Park, Burlington, MA; or at the Office of the Federal Register, 800 North Capitol Street, NW., suite 700, Washington, DC.

**FOR FURTHER INFORMATION CONTACT:** Anthony W. Cerra Jr., Aerospace Engineer, Engine Certification Office, FAA, Engine and Propeller Directorate, 12 New England Executive Park, Burlington, MA 01803-5299; telephone: (781) 238-7128, fax: (781) 238-7199.

**SUPPLEMENTARY INFORMATION:** On December 8, 2002, a Boeing 767-200 equipped with GE CF6-80A series engines experienced an uncontained failure of a stage 1 HPT rotor disk during climb. The results of the investigation indicate that the stage 1 HPT rotor disk failure was the result of a crack that initiated in an aft corner edge of the bottom of a dovetail slot. The crack propagated in fatigue to critical crack size, and subsequently resulted in disk rupture and separation.

In September 2000, a U.S. operator experienced a similar uncontained failure of the stage 1 HPT rotor disk during a ground maintenance run of a CF6-80C2 engine. The investigation of that failure had indicated that a crack initiated in the dovetail slot bottom aft edge. The root cause of the crack initiation remains unknown. However, cracks, burrs, or damage sustained in the dovetail slot bottom corner radii from improper handling and processing during new part manufacture and/or during maintenance were suspect for the September 2000 event. AD 2001-10-07, which became effective on June 28, 2001, was issued to mandate inspections of the CF6-80C2 stage 1 HPT rotor disk dovetail slot bottoms.

Since 1995, shop level inspections have found eleven stage 1 HPT rotor disks from CF6-80A series engines and CF6-80C2 series engines with crack-like indications in the dovetail slot bottoms. These indications resulted from material inclusions, toolmarks, broach burrs, and unknown causes. Of these eleven disks, three have been CF6-80A series engine stage 1 HPT rotor disks, with cracks in the dovetail slot bottom aft corner radius. Of the three that have been -80A series engine disks, two indications were associated with non-propagating broaching burrs occurring during manufacture, while no root cause was identified for the third. Only the third disk had crack propagation.

The failure of the disk involved in the recent CF6-80A series engine event was also caused by a crack that initiated in the dovetail slot bottom aft edge. This event is still under investigation. Therefore, this final rule; request for comments is an interim action until a root cause is established for the crack initiation and/or additional corrective actions are identified. The actions specified by this AD are intended to detect cracks in the bottoms of the dovetail slots that could propagate to failure of the disk and cause an uncontained engine failure. This condition, if not corrected, could result in stage 1 HPT rotor disk separation resulting in uncontained engine failure.

#### **Manufacturer's Service Information**

The FAA has reviewed and approved the technical contents of GE Service Bulletin (SB) CF6-80A S/B 72-0779, dated March 20, 2002 that describes procedures for etch preparation, fluorescent penetrant, visual, and eddy current inspections of the following stage 1 HPT rotor disks P/N's used on CF6-80A, -80A1, -80A2, and -80A3 series turbofan engines:

9234M67G22	9234M67G24	9234M67G25	9234M67G26
9362M58G02	9362M58G06	9362M58G07	9362M58G09
9367M45G02	9367M45G04	9367M45G09	N/A

## **Differences Between This AD and the Manufacturer's Service Information**

SB CF6-80A S/B 72-0779, dated March 20, 2002, only requires a one-time inspection at the next exposure of disks that have accumulated operating cycles, and requires no inspection of new disks that have not yet accumulated operating cycles. This AD requires initial and repetitive inspections of the affected P/N's of stage 1 HPT rotor disks, as specified in the following paragraph.

## **FAA's Determination of an Unsafe Condition and Required Actions**

Since an unsafe condition has been identified that is likely to exist or develop on other GE CF6-80A, -80A1, -80A2, and -80A3 series turbofan engines of the same type design, this AD is being issued to detect cracks in the bottoms of the dovetail slots that could propagate to failure of the disk and cause an uncontained engine failure. This AD requires:

- For stage 1 HPT rotor disks not currently installed in engines, before further flight, inspection of disk dovetail slot bottoms. Any disk that meets or exceeds the reject criteria of SB CF6-80A S/B 72-0779, dated March 20, 2002, is not to be installed into any engine.
- For stage 1 HPT rotor disks that have been inspected in accordance with SB CF6-80A S/B 72-0779, dated March 20, 2002, before the effective date of this AD, inspection of the disk dovetail slot bottoms at each piece-part exposure of the disk, and replacement of disks as necessary.
- For stage 1 HPT rotor disks that have not been inspected in accordance with SB CF6-80A S/B 72-0779, dated March 20, 2002, before the effective date of this AD, inspection of the disk dovetail slot bottoms at next engine shop visit, and each piece-part exposure of the disk, and replacement of disks as necessary.
- A mandatory reporting requirement which mandates that within 5 calendar days of an inspection, any results that equal or exceed the reject criteria be reported to the FAA's Engine and Propeller Directorate, Engine Certification Office.

The actions are required to be done in accordance with the service bulletin described previously.

## **Interim Actions**

The actions specified in the AD are considered interim actions and further action is anticipated based on the continuing investigation of the stage 1 HPT rotor disk cracking.

## **Immediate Adoption of This AD**

Since a situation exists that requires the immediate adoption of this regulation, it is found that notice and opportunity for prior public comment hereon are impracticable, and that good cause exists for making this amendment effective in less than 30 days.

## **Comments Invited**

Although this action is in the form of a final rule that involves requirements affecting flight safety and, thus, was not preceded by notice and an opportunity for public comment, comments are invited on this rule. Interested persons are invited to comment on this rule by submitting such written data, views, or arguments as they may desire. Communications should identify the Rules Docket number and be submitted in triplicate to the address specified under the caption ADDRESSES. All communications received on or before the closing date for comments will be considered, and this rule may be amended in light of the comments received. Factual information that supports the commenter's ideas and suggestions is extremely helpful in evaluating the effectiveness of the AD action and determining whether additional rulemaking action would be needed.

Comments are specifically invited on the overall regulatory, economic, environmental, and energy aspects of the rule that might suggest a need to modify the rule. All comments submitted will be available, both before and after the closing date for comments, in the Rules Docket for examination by interested persons. A report that summarizes each FAA-public contact concerned with the substance of this AD will be filed in the Rules Docket.

Commenters wishing the FAA to acknowledge receipt of their comments submitted in response to this action must submit a self-addressed, stamped postcard on which the following statement is made: "Comments to Docket Number 2002-NE-44-AD." The postcard will be date stamped and returned to the commenter.

## **Regulatory Analysis**

This final rule does not have federalism implications, as defined in Executive Order 13132, because it would 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.

The FAA has determined that this regulation is an emergency regulation that must be issued immediately to correct an unsafe condition in aircraft, and is not a "significant regulatory action" under Executive Order 12866. It has been determined further that this action involves an emergency regulation under DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979). If it is determined that this emergency regulation otherwise would be significant under DOT Regulatory Policies and Procedures, a final regulatory evaluation will be prepared and placed in the Rules Docket. A copy of it, if filed, 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, Incorporation by reference, 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 adding the following new airworthiness directive:

# AIRWORTHINESS DIRECTIVE



Aircraft Certification Service  
Washington, DC

U.S. Department  
of Transportation  
**Federal Aviation  
Administration**

*We post ADs on the internet at "www.faa.gov"*

The following Airworthiness Directive issued by the Federal Aviation Administration in accordance with the provisions of Title 14 of the Code of Federal Regulations (14 CFR) part 39, applies to an aircraft model of which our records indicate you may be the registered owner. Airworthiness Directives affect aviation safety and are regulations which require immediate attention. You are cautioned that no person may operate an aircraft to which an Airworthiness Directive applies, except in accordance with the requirements of the Airworthiness Directive (reference 14 CFR part 39, subpart 39.3).

**2003-01-05 General Electric Co.:** Amendment 39-13016. Docket No. 2002-NE-44-AD.

## Applicability

This airworthiness directive (AD) is applicable to General Electric Co. (GE) CF6- 80A, -80A1, -80A2, and -80A3 series turbofan engines with the stage 1 high pressure turbine (HPT) rotor disks part numbers (P/N's) listed in the following Table 1:

**Table 1.—Stage 1 HPT Rotor Disks P/N's Affected**

9234M67G22	9234M67G24	9234M67G25	9234M67G26
9362M58G02	9362M58G06	9362M58G07	9362M58G09
9367M45G02	9367M45G04	9367M45G09	N/A

These engines are installed on, but not limited to, Airbus Industrie A310 and Boeing 767 airplanes.

**Note 1:** This 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 (g) 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

Compliance with this AD is required as indicated, unless already done.

To detect cracks in the bottoms of the dovetail slots that could propagate to failure of the disk and cause an uncontained engine failure, do the following in accordance with paragraphs 3.A. through 3.C.(10)(h) of the Accomplishment Instructions of GE Service Bulletin (SB) CF6-80A S/B 72-0779, dated March 20, 2002:

(a) For stage 1 HPT rotor disks not currently installed in engines, before further flight, inspect the disk dovetail slot bottoms. Do not install any disk that meets or exceeds the reject criteria of the above service bulletin, into any engine.

(b) For stage 1 HPT rotor disks that have been inspected in accordance with the above service bulletin before the effective date of this AD, inspect the disk dovetail slot bottoms at each piece-part exposure of the disk, and replace disk as necessary.

(c) For stage 1 HPT rotor disks that have not been inspected in accordance with the above service bulletin before the effective date of this AD, inspect the disk dovetail slot bottoms at next engine shop visit, and each piece-part exposure of the disk, and replace disk as necessary.

## Definitions

(d) An engine shop visit is defined as the induction of an engine into a shop, where the separation of a major engine flange will occur after the effective date of this AD.

(e) Piece-part exposure is defined as:

(1) The part being considered completely disassembled, when done in accordance with the disassembly instructions of the manufacturer's or other FAA-approved engine manual; AND

(2) 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.

## Reporting Requirements

(f) Report within 5 calendar days of inspection the results of inspections that equal or exceed the reject criteria to: Engine Certification Office, FAA, Engine and Propeller Directorate, 12 New England Executive Park, Burlington, MA 01803-5299; telephone (781) 238-7128; fax (781) 238-7199. Reporting requirements have been approved by the Office of Management and Budget (OMB) control number 2120-0056. Be sure to include the following information:

- (1) Engine model in which the stage 1 HPT rotor disk was installed.
- (2) Disk Part Number.
- (3) Disk Serial Number.
- (4) Disk Cycles-Since-New.
- (5) Disk Cycles-Since-Last Inspection.
- (6) Date and Location of Inspection.

**Note 2:** The FAA recommends recording the inspection results on GE Form 1653-1, found in GE SB CF6-80A S/B 72-0779, dated March 20, 2002, and sending the data to GE Airline Support Engineering.

## Alternative Methods of Compliance

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

**Note 3:** Information concerning the existence of approved alternative methods of compliance with this airworthiness directive, if any, may be obtained from the ECO.



## **Special Flight Permits**

(h) Special flight permits may be issued in accordance with §§ 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 done.

## **Documents That Have Been Incorporated by Reference**

(i) The inspections must be done in accordance with General Electric Co. Service Bulletin CF6-80A S/B 72-0779, dated March 20, 2002. This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies may be obtained from General Electric Company via Lockheed Martin Technology Services, 10525 Chester Road, Suite C, Cincinnati, Ohio 45215, telephone (513) 672-8400, fax (513) 672-8422. Copies may be inspected at the FAA, New England Region, Office of the Regional Counsel, 12 New England Executive Park, Burlington, MA; or at the Office of the Federal Register, 800 North Capitol Street, NW., suite 700, Washington, DC.

## **Effective Date**

(j) This amendment becomes effective on January 28, 2003.

Issued in Burlington, Massachusetts, on January 2, 2003.  
Jay J. Pardee,  
Manager, Engine and Propeller Directorate, Aircraft Certification Service.  
[FR Doc. 03-331 Filed 1-10-03; 8:45 am]  
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