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## DEPARTMENT OF TRANSPORTATION

### Federal Aviation Administration

#### 14 CFR Part 39

[Docket No. 2001-NE-49-AD; Amendment 39-13020; AD 2003-02-04]

RIN 2120-AA64

#### Airworthiness Directives; CFM International CFM56-5 and -5B Series Turbofan Engines

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

**ACTION:** Final rule.

**SUMMARY:** This amendment adopts a new airworthiness directive (AD), that is applicable to CFM International CFM56-5 and -5B series turbofan engines. This amendment requires the establishment of an exhaust gas temperature (EGT) baseline and trend monitoring using the System for Analysis of Gas Turbine Engines (SAGE), or equivalent, as an option to EGT harness replacement, and if necessary, replacement of certain EGT harnesses and EGT couplings as soon as a slow and continuous EGT drift downward is noticed after the effective date of this AD. This amendment is prompted by reports of erroneous EGT readings. The actions specified by this AD are intended to prevent unexpected deterioration of critical rotating engine parts due to higher than desired engine operating EGT's.

**DATES:** Effective February 27, 2003. The incorporation by reference of certain publications listed in the regulations is approved by the Director of the Federal Register as of February 27, 2003.

**ADDRESSES:** The service information referenced in this AD may be obtained from CFM International, Technical Publications Department, 1 Neumann Way, Cincinnati, OH 45215; telephone (513) 552-2800; fax (513) 552-2816.

This information may be examined, by appointment, at the Federal Aviation Administration (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:** James Rosa, Aerospace Engineer, Engine Certification Office, FAA, Engine and Propeller Directorate, 12 New England Executive Park, Burlington, MA 01803-5299; telephone (781) 238-7152; fax (781) 238-7199.

**SUPPLEMENTARY INFORMATION:** A proposal to amend part 39 of the Federal Aviation Regulations (14 CFR part 39) to include an AD that is applicable to CFM International CFM56-5, -5A, and -5B series turbofan engines was published in the **Federal Register** on June 13, 2002 (67 FR 40626). That action proposed to require establishment of an exhaust gas temperature (EGT) baseline and trend monitoring using the System for Analysis of Gas Turbine Engines (SAGE), or equivalent, as an option to EGT harness and coupling replacement, and if necessary, replacement of certain EGT harnesses and EGT couplings as soon as a slow and continuous EGT drift downward is noticed after the effective date of this AD. These actions must be done in accordance with CFM International service bulletins CFM56-5 S/B 77-0020, dated March 4, 2002, and CFM56-5B S/B 77-0008, dated March 4, 2002.

#### Comments

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

#### Add a Compliance Time

Four commenters request that 100 to 250 flight hours be allowed to replace the EGT harness after it has been determined that EGT harness hardware is defective. The commenters state that the NPRM implies that compliance is required immediately because it does not prescribe a set compliance time.

The FAA agrees. Immediate compliance is unnecessary. The FAA has determined that two to three weeks, or 100 flight hours are the maximum reasonable compliance times after it has been determined that the EGT harness

components are faulty. The final rule is revised to reflect this change.

#### Change Determination of an Unsafe Condition and Proposed Actions Statement

One commenter requests a change to the FAA's Determination of an Unsafe Condition and Proposed Actions statement. The commenter requests that " \* \* \* EGT harnesses manufactured between September 1998 and July 2000 \* \* \*" be replaced with " \* \* \* EGT harnesses manufactured between September 1998 and December 2001 \* \* \*". The requested change is the result of updated information from the manufacturer.

The FAA agrees. The change includes manufacturing dates for the entire population of parts. However, the FAA's Determination of an Unsafe Condition and Proposed Actions section in the NRPM preamble does not appear in the final rule.

#### Remove -5A Model

One commenter requests the removal of the -5A model from the AD, the FAA's Determination of an Unsafe Condition and Proposed Actions, and the Compliance section. The -5A model should not be listed as an engine model type certificate configuration.

The FAA agrees. The -5A model is removed from the final rule.

#### Increase Replacement Time

The same commenter requests an increase in replacement time of parts not being trend monitored from 250 hours to 500 hours. The commenter states that this would follow the manufacturer's recommended replacement time and be consistent with current Airbus documentation (A check).

The FAA agrees. The final rule reflects this change.

#### Increase Amount of Allowable Temperature Change

Four commenters request an increase in the amount of allowable temperature change during trend monitoring from 10°C to 20°C or 30°C. Based on experience reported from several operators who use SAGE trend monitoring, a 10°C shift from baseline may not be enough to detect a fault by EGT readings.

The FAA agrees. The final rule reflects this change.

### Economic Analysis Recommendations

One commenter requests that the Economic Analysis be changed to more accurately reflect the number of engines affected and associated cost. The commenter states that the NPRM did not accurately account for the number of affected engines per the service bulletins.

The FAA agrees that the service document and NPRM do not agree. The service bulletins did not account for the entire population of suspect parts. However, the spare parts listed in CFM International service bulletins CFM56-5 S/B 77-0020, dated March 4, 2002, and CFM56-5B S/B 77-0008, dated March 4, 2002, are more critical than the remaining population because they will be installed on engines with lower EGT margins. The number of affected engines worldwide remains the same as the NPRM. The number of U.S. operated engines requires a change in the final rule.

Another commenter requests that the economic analysis be changed to reflect work required to determine the serial numbers of the parts. The commenter states that an additional two hours per engine or a total of 520 person-hours of work, will be required for one operator to determine the serial numbers of EGT harnesses and couplings.

The FAA does not agree. Research of logbooks and paperwork are not used to determine the economic analysis figure.

Another commenter requests a change to the economic analysis to reflect an additional 3 person hours for replacement time. The commenter states that it will take more time to accomplish replacement than stated in the NPRM.

The FAA partially agrees. Most of the work could be done during scheduled maintenance (the FAA has attempted to facilitate this in the AD), which would provide an opportunity to remove and replace hardware, when it is already exposed. Some operators indicate that their current system will not allow this advantage consistently; however, per accepted FAA practice, the figure is based on replacement of accessible hardware. No change is required in the final rule.

### Engines Which Have Accumulated More Than 3,000 Flight Hours

One commenter states that engines which have accumulated more than 3,000 flight hours since part installation are not defective. The commenter believes that this problem exhibits infant mortality. If false readings are not registered after 3,000 hours, parts are not defective. The commenter asks that the rule be changed accordingly.

The FAA agrees. The final rule reflects this change.

### Allow Two Week Waiting Period for Failure Confirmation

One commenter requests that the AD provide for a two week waiting period after the temperature shift of 20°C in order to confirm that an EGT harness failure is the cause and not some other anomaly.

The FAA partially agrees. Sufficient evidence must be provided to assure that a shift in EGT reading is caused by defective EGT hardware/harnesses, and not some anomaly. However, a 30°C shift will be the criteria, not 10°C or 20°C. This should provide sufficient margin to assure that the reading does not indicate some other cause.

### AD Not Needed

One commenter states that an AD is not needed for this problem. The commenter feels that current industry practice will suffice.

The FAA does not agree. Industry practice is not mandatory; therefore, there is no requirement for all operators to comply.

### Specify Terminating Action

Two commenters state that the NPRM does not specify any terminating action and request that the FAA specify a terminating action.

The FAA agrees. Terminating action is included in the final rule.

### Reidentify Reworked Harnesses

One commenter requests that the manufacturer reidentify reworked harnesses for traceability.

The FAA agrees. The manufacturer has added the letter "W" following the part serial number to reidentify reworked harnesses and couplings. The addition of the letter "W" following the part serial number is addressed in the final rule in (a)(3).

### Monitoring Shifts From the Current EGT Trend

One commenter requests monitoring shifts from the current EGT trend rather than an arbitrary baseline. As engines degrade, there may not be an appreciable change in other parameters but normal (within 10°C) degradation in EGT, forcing unnecessary removal.

The FAA agrees. The final rule reflects this change.

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.

### Economic Analysis

There are approximately 886 CFM International CFM56-5 and -5B series turbofan engines of the affected design in the worldwide fleet. The FAA estimates that 562 engines installed on airplanes of U.S. registry would be affected by this AD. The FAA also estimates that it would take approximately one work hour per engine to do the actions, and that the average labor rate is \$60 per work hour. Required parts would cost approximately \$15,645 per engine. Based on these figures, the total cost of the AD on U.S. operators is estimated to be \$8,826,210. CFMI has indicated that this figure may be reduced depending upon warranty agreements.

### 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.

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 the 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 by contacting 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 a new airworthiness directive to read as follows:

**2003-02-04 CFM International:**

Amendment 39-13020. Docket No. 2001-NE-49-AD.

**Applicability**

This airworthiness directive (AD) is applicable to CFM International CFM56-5 and -5B series turbofan engines that have an EGT upper harness part number (P/N) CA170-00, with a serial number (SN) of YC021674 or lower, or an EGT lower harness P/N CA171-00, with a SN of YC026641 or lower, or an EGT coupling P/N CA172-02 with a SN of YC166736 or lower. These engines are installed on, but not limited to Airbus Industrie A318, A319, A320 and A321 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 (d) 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 prevent unexpected deterioration of critical rotating engine parts due to higher than desired engine operating exhaust gas temperatures (EGT's), do the following:

(a) If you have an EGT upper harness, part number (P/N) CA170-00, with serial number (SN) YC021675 or higher, an EGT lower harness, P/N CA171-00, with SN YC026642 or higher, and an EGT coupling, P/N CA172-02, with S/N YC166737 or higher, no further action is required.

(b) For affected EGT harnesses and EGT couplings, with less than 3,000 engine flight hours since installation, do the following:

(1) Replace affected EGT harnesses and EGT couplings, not being trend monitored, with serviceable parts within 500 flight hours after the effective date of this AD, or,

(2) After the effective date of this AD, review the smooth data EGT trend via the System for Analysis of Gas Turbine Engines (SAGE), or equivalent, since the affected components were first installed on the current engine. This trend monitoring must continue for the affected EGT harnesses and couplings to ensure that the system does not show a minimum of 30°C downward (*i.e.* cooler) indication, or more, without a corresponding change in other associated engine parameters such as N1 (LPT rotor speed), N2 (HPT rotor speed), and fuel flow. Provided that there is sufficient, actual EGT margin to do so, replace the EGT harnesses and couplings within 100 flight hours after they have been determined to be defective. Continue to monitor the EGT indications for 3,000 engine flight hours since the first installation on the current engine.

(3) If a harness or coupling has a serial number that is followed by the letter "W", no further action is required.

**Terminating Action**

(c) Any of the following three conditions constitute terminating action for the trend monitoring requirements specified in paragraph (b)(2) of this AD:

(1) Replacing a harness and coupling with a serviceable part, or

(2) Replacing a harness and coupling with a harness and coupling that has a letter "W" following the SN, or

(3) Accumulating 3,000 engine flight hours on a harness and coupling.

**Alternative Methods of Compliance**

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

**Special Flight Permits**

(e) 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 aircraft to a location where the requirements of this AD can be done.

**Documents That Have Been Incorporated by Reference**

(f) The actions must be done in accordance with the following CFM International service bulletins:

Document No.	Pages	Revision	Date
CFM56-5 S/B 77-0020 .....	All .....	Original .....	Mar. 4, 2002.
Total pages: 9			
CFM56-5B S/B 77-0008 .....	All .....	Original .....	Mar. 4, 2002.
Total pages: 9			

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 CFM International, Technical Publications Department, 1 Neumann Way, Cincinnati, OH 45215; telephone (513) 552-2800; fax (513) 552-2816. 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**

(g) This amendment becomes effective on February 27, 2003.

Issued in Burlington, Massachusetts, on January 13, 2003.

**Francis A. Favara,**

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

[FR Doc. 03-1181 Filed 1-22-03; 8:45 am]

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**DEPARTMENT OF TRANSPORTATION**

**Federal Aviation Administration**

**14 CFR Part 73**

[Docket No. FAA-2002-14110; Aerospace Docket No. 02-AEA-23]

**RIN 2120-AA66**

**Change of Controlling Agency for Restricted Areas R-6601 Fort A.P. Hill, VA; and R-6608A, R-6608B, and R-6608C, Quantico, VA**

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Final rule.