[4910-13-P]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2006-25738; Directorate Identifier 2006-NE-27-AD]

RIN 2120-AA64

Airworthiness Directives; General Electric Company (GE) CF6-80C2B Series Turbofan Engines

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of proposed rulemaking (NPRM).

SUMMARY: We propose to supersede an existing airworthiness directive (AD) that applies to all GE CF6-80C2B series turbofan engines. The existing AD currently requires installing software version 8.2.Q1 to the engine electronic control unit (ECU), which increases the engine's margin to flameout. Since we issued that AD, we have received reports of additional engine events. This proposed AD would require the removal of the affected ECUs from service. We are proposing this AD to prevent engine flameout or un-commanded engine in-flight shutdown (IFSD) of one or more engines, leading to an emergency or forced landing of the airplane.

DATES: We must receive comments on this proposed AD by [INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: You may send comments, using the procedures found in 14 CFR 11.43 and 11.45, by any of the following methods:

• Federal eRulemaking Portal: Go to http://www.regulations.gov. Follow the instructions for submitting comments.

• Fax: 202-493-2251.

• Mail: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE., Washington, DC 20590.

• Hand Delivery: Deliver to Mail address above between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

Examining the AD Docket

You may examine the AD docket on the Internet at http://www.regulations.gov; or in person at the Docket Management Facility between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this proposed AD, the regulatory evaluation, any comments received, and other information. The street address for the Docket Office (phone: 800-647-5527) is in the ADDRESSES section. Comments will be available in the AD docket shortly after receipt.

FOR FURTHER INFORMATION CONTACT: Tomasz Rakowski, Aerospace Engineer, Engine Certification Office, FAA, Engine & Propeller Directorate, 12 New England Executive Park, Burlington, MA 01803; phone: 781-238-7735; fax: 781-238-7199; e-mail: tomasz.rakowski@faa.gov.

SUPPLEMENTARY INFORMATION:

Comments Invited

We invite you to send any written relevant data, views, or arguments about this proposed AD. Send your comments to an address listed under the ADDRESSES section. Include “Docket No. FAA-2006-25738; Directorate Identifier 2006-NE-27-AD” at the beginning of your comments. We specifically invite comments on the overall regulatory, economic, environmental, and energy aspects of this proposed AD. We will consider all comments received by the closing date and may amend this proposed AD because of those comments.

We will post all comments we receive, without change, to http://www.regulations.gov, including any personal information you provide. We will also post a report summarizing each substantive verbal contact we receive about this proposed AD.

Discussion

On May 30, 2007, we issued AD 2007-12-07, Amendment 39-15085 (72 FR 31174, June 6, 2007), for all GE CF6-80C2B series turbofan engines. That AD requires installing software version 8.2.Q1 to the ECU, which increases the engine's margin to flameout. That AD was prompted by multiple reports of flameout events during flight on engines with an ECU software version preceding version 8.2.Q1, including reports of events where all engines simultaneously experienced a flameout. Investigation showed that exposure to ice crystals during flight was associated with these flameout events. That AD action was intended to minimize the potential of an engine flameout event caused by ice accretion and shedding during flight.

Actions Since Existing AD Was Issued

Since we issued AD 2007-12-07 (72 FR 31174, June 6, 2007), we received two reports of ice crystal condition flameouts on engines equipped with ECU software version 8.2.Q1. Prompted by these reports, GE developed ECU software version 8.2.R with improved inclement weather capability, and enhanced fuel metering valve (FMV) fault handling logic to reduce the risk of engine IFSD caused by intermittent FMV feedback signals.

Subsequently, we received reports of eight engine IFSD events and four engine flameout ground events. These events were caused by ignition system induced noise creating dual-channel faults in the CPU. The event engines were operating with 8.2.Q1 and 8.2.R versions of ECU software and equipped with the new generation of front panel assembly (FPA) and pressure subsystem (PSS) circuit boards. Prompted by these reports,

GE developed an ECU hardware fix to eliminate the potential for dual-channel CPU faults due to ignition system-induced noise. This proposed AD supersedure removes the affected ECUs from the fleet. These ECUs, if not corrected, could result in flameout or un-commanded IFSD of one or more engines, leading to an emergency or forced landing of the airplane.

FAA's Determination

We are proposing 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.

Proposed AD Requirements

This proposed AD would require the removal from service of certain affected ECU part numbers (P/Ns) with software version 8.2.Q1 and prior, which are susceptible to engine flameouts due to inclement weather, and those with the new generation FPA/PSS circuit boards, which are susceptible to IFSD. The proposed compliance times for removal are based on the ECU's degree of susceptibility to engine flameout or IFSD. This proposed AD would also prevent airplanes from having more than one ECU with P/N 2121M37P02, 2121M38P02, or 2121M41P02, installed.

Costs of Compliance

We estimate that this proposed AD would affect 697 GE CF6-80C2B series turbofan engines installed on airplanes of U.S. registry. We also estimate that it would take about 4 work-hours per engine to perform a removal and replacement of the ECU, and that the average labor rate is $85 per work-hour. A replacement ECU costs about $4,600. Based on these figures, we estimate the total cost of the AD to U.S. operators to be $3,443,180.

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.

Regulatory Findings

We have determined that this proposed AD would not have federalism implications under Executive Order 13132. This proposed AD 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.

For the reasons discussed above, I certify that the proposed regulation:

(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),

(3) Will not affect intrastate aviation in Alaska, and

(4) 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 Proposed Amendment

Accordingly, under the authority delegated to me by the Administrator, the FAA proposes to amend 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 removing airworthiness directive (AD) 2007-12-07, Amendment 39-15085 (72 FR 31174, June 6, 2007), and adding the following new AD:

General Electric Company: Docket No. FAA-2006-25738; Directorate Identifier 2006-NE-27-AD.

(a) **Comments Due Date**

The FAA must receive comments on this AD action by [INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

(b) **Affected ADs**

This AD supersedes AD 2007-12-07, Amendment 39-15085 (72 FR 31174, June 6, 2007).

(c) **Applicability**

This AD applies to General Electric Company (GE) CF6-80C2B1F, CF6-80C2B1F1, CF6-80C2B1F2, CF6-80C2B2F, CF6-80C2B3F, CF6-80C2B4F, CF6-80C2B5F, CF6-80C2B6F, CF6-80C2B6FA, CF6-80C2B7F, and CF6-80C2B8F turbofan engines, including engines marked on the engine data plate as CF6-80C2B7F1.

(d) **Unsafe Condition**

This AD results from:

(1) Two reports of engine flameout events during flight in inclement weather conditions; and

(2) Eight reports of engine in-flight shutdown (IFSD) events caused by dual-channel central processing unit (CPU) faults in the electronic control unit (ECU); and

(3) Four reports of engine flameout ground events.

(e) We are issuing this AD to prevent engine flameout or un-commanded engine IFSD of one or more engines, leading to an emergency or forced landing of the airplane.

(f) **Compliance**

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

(g) **ECU Removal**

(1) Remove from service ECUs with part numbers (P/Ns) listed in Table 1 of this AD, within 6 months or 450 engine flight cycles after the effective date of this AD, whichever occurs first.

Table 1 - Affected ECU P/Ns

1471M63P01	1471M63P02	1471M63P03	1471M63P04	1471M63P05
1471M63P06	1471M63P07	1471M63P08	1471M63P09	1471M63P10
1471M63P11	1471M63P12	1471M63P13	1471M63P14	1471M63P15
1471M63P16	1471M63P17	1471M63P18	1471M63P23	1471M63P24
1471M63P25	1471M63P26	1471M63P27	1471M63P28	1471M63P29
1471M63P30	1471M63P31	1471M63P32	1471M63P33	1471M63P34
1471M63P35	1471M63P36	1519M89P01	1519M89P02	1519M89P03
1519M89P04	1519M89P05	1519M89P06	1519M89P07	1519M89P08
1519M89P09	1519M89P10	1519M89P13	1519M89P14	1519M89P15
1519M89P16	1519M89P17	1519M89P18	1519M89P19	1519M89P20
1519M89P21	1519M89P22	1519M89P23	1519M89P24	1519M89P25
1519M89P26	1820M33P01	1820M33P02	1820M33P03	1820M33P04
1820M33P05	1820M33P06	1820M33P07	1820M33P08	1820M33P09

(2) Remove from service ECUs with P/N 2121M37P01, 2121M37P02, 2121M38P01, 2121M38P02, 2121M41P01 and 2121M41P02, within 14 months or 1,050 engine flight cycles after the effective date of this AD, whichever occurs first.

(3) Remove from service ECUs with P/Ns listed in Table 2 of this AD, within 60 months or 4,500 engine flight cycles after the effective date of this AD, whichever occurs first.

Table 2 - Affected ECU P/Ns

1471M63P37	1471M63P38	1471M63P39	1471M63P40	1471M63P42
1519M89P27	1519M89P28	1519M89P29	1519M89P30	1519M89P32
1820M33P10	1820M33P11	1820M33P12	1820M33P13	1820M33P15
2121M25P01	2121M25P02	2121M26P01	2121M26P02	2121M29P01
2121M29P02	2121M37P03	2121M38P03	2121M41P03	

(h) **Installation Prohibition**

(1) After the effective date of this AD, do not install any ECU P/N listed in Table 1 of this AD onto any airplane.

(2) After the effective date of this AD, do not operate any airplane with more than one ECU, P/N 2121M37P02, 2121M38P02, or 2121M41P02, installed.

(i) **Alternative Methods of Compliance (AMOCs)**

The Manager, Engine Certification Office, FAA, may approve AMOCs for this AD. Use the procedures in 14 CFR 39.19 to make your request.

(j) **Related Information**

For more information about this AD, contact Tomasz Rakowski, Aerospace Engineer, Engine Certification Office, FAA, Engine & Propeller Directorate, 12 New England Executive Park, Burlington, MA 01803; phone: 781-238-7735; fax: 781-238-7199; e-mail: tomasz.rakowski@faa.gov.

Issued in Burlington, Massachusetts, on November 3, 2011.

Peter A. White,
Manager, Engine & Propeller Directorate,
Aircraft Certification Service.

[FR Doc. 2011-29228 Filed 11/10/2011 at 8:45 am; Publication Date: 11/14/2011]