



[4910-13-P]

**DEPARTMENT OF TRANSPORTATION**

**Federal Aviation Administration**

**14 CFR Part 39**

**[Docket No. FAA-2012-1293; Directorate Identifier 2012-NE-45-AD; Amendment 39-18700; AD 2016-22-11]**

**RIN 2120-AA64**

**Airworthiness Directives; Engine Alliance Turbofan Engines**

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

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

**SUMMARY:** We are superseding airworthiness directive (AD) 2013-02-06 for all Engine Alliance (EA) GP7270 and GP7277 turbofan engines with certain part number (P/N) high-pressure turbine (HPT) stage 2 nozzle segments installed. AD 2013-02-06 required initial and repetitive borescope inspections (BSI) and removal from service of these nozzles before further flight if one or more burn holes were detected in any HPT stage 2 nozzle segment. AD 2013-02-06 also required removal from service of these HPT stage 2 nozzle segments at the next engine shop visit. This AD requires the same inspections as AD-2013-02-06, requires removal of affected HPT stage 2 nozzles at next piece-part exposure, and adds certain P/Ns to the applicability. This AD was prompted by another report of inadequate cooling of the HPT stage 1 shroud and stage 2 nozzle, leading to damage to the HPT stage 2 nozzle, burn-through of the turbine case, and in-flight shutdown. We are issuing this AD to prevent HPT stage 2 nozzle failure, uncontrolled fire, in-flight shutdown, and damage to the airplane.

**DATES:** This AD is effective [INSERT DATE 15 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

We must receive any comments on this AD by [INSERT DATE 45 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: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE., Washington, DC 20590, 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> by searching for and locating Docket No. FAA-2012-1293; 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 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:** Martin Adler, Aerospace Engineer, Engine & Propeller Directorate, FAA, 1200 District Avenue, Burlington, MA 01803; phone: 781-238-7157; fax: 781-238-7199; email: [martin.adler@faa.gov](mailto:martin.adler@faa.gov).

## **SUPPLEMENTARY INFORMATION:**

### **Discussion**

On January 15, 2013, we issued AD 2013-02-06, Amendment 39-17327 (78 FR 5710, January 28, 2013), (“AD 2013-02-06”), for all Engine Alliance GP7270 and GP7277 turbofan engines with an HPT stage 2 nozzle, P/N 2101M24G01, 2101M24G02, or 2101M24G03, installed. AD 2013-02-06 required initial and repetitive BSIs and removal from service of these nozzles before further flight if any burn holes were detected in the affected nozzles. AD 2013-02-06 also required removal from service of the affected nozzles at the next engine shop visit. AD 2013-02-06 resulted from a report of inadequate cooling of the HPT stage 2 nozzle, leading to damage to the HPT stage 2 nozzle, burn-through of the turbine case, and in-flight shutdown. We issued AD 2013-02-06 to prevent HPT stage 2 nozzle failure, uncontrolled fire, in-flight shutdown, and damage to the airplane.

### **Actions Since AD 2013-02-06 was Issued**

Since we issued AD 2013-02-06, we received another report of inadequate cooling of the HPT stage 1 shroud and stage 2 nozzle, leading to damage to the HPT stage 2 nozzle, burn-through of the turbine case, and in-flight shutdown. This event occurred with HPT stage 2 nozzle, P/N 2101M24G04, 2101M24G05, or 2101M24G06 installed. Investigation revealed that the event was caused by damage to the HPT stage 2 nozzle due to inadequate part cooling. We are issuing this AD to prevent HPT stage 2 nozzle failure, uncontrolled fire, in-flight shutdown, and damage to the airplane.

### **Related Service Information**

We reviewed EA Service Bulletins EAGP7-72-190, dated December 6, 2012 and EAGP7-72-262, Revision No. 5, dated December 18, 2015. This service information describes procedures for inspecting the HPT stage 2 nozzle segments.

### **FAA's Determination**

We are issuing 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.

### **AD Requirements**

This AD requires initial and repetitive BSIs of the HPT stage 1 shroud and HPT stage 2 nozzle segments and removal from service of these nozzle segments before further flight if one or more burn holes are detected on the HPT stage 2 nozzle or if the HPT stage 1 shroud is found distorted. This AD also requires removal from service of any HPT stage 2 nozzle segment, P/N 2101M24G01, 2101M24G02, 2101M24G03, 2101M24G04, 2101M24G05, or 2101M24G06, at next piece-part exposure.

### **FAA's Justification and Determination of the Effective Date**

No domestic operators use this product. Therefore, we find that notice and opportunity for prior public comment are unnecessary and that good cause exists for making this amendment effective in less than 30 days.

### **Comments Invited**

This AD is a final rule that involves requirements affecting flight safety, and we did not provide you with notice and an opportunity to provide your comments before it becomes effective. However, we invite you to send any written data, views, or arguments about this AD. Send your comments to an address listed under the ADDRESSES section. Include the docket number FAA-2012-1293 and Directorate Identifier 2012-NE-45-AD at the beginning of your comments. We specifically invite comments on the overall regulatory, economic, environmental, and energy aspects of this AD. We will consider all comments received by the closing date and may amend this 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 AD.

### **Costs of Compliance**

We estimate that this AD will affect no engines installed on airplanes of U.S. registry. We also estimate that it will take about two hours per engine to perform a BSI of the HPT stage 2 nozzle. The average labor rate is \$85 per hour. Required parts cost about \$504,486 per engine. Based on these figures, we estimate the cost of this AD to U.S. operators to be \$0.

### **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**

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) Is not a “significant rule” under DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979),
- (3) Will not affect intrastate aviation in Alaska to the extent that it justifies making a regulatory distinction, 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.

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

Accordingly, under the authority delegated to me by the Administrator, the FAA 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. The FAA amends § 39.13 by removing airworthiness directive (AD) 2013-02-06, Amendment 39-17327 (78 FR 5710, January 28, 2013) and adding the following new AD:

2016-22-11 **Engine Alliance**: Amendment 39-18700; Docket No. FAA-2012-1293; Directorate Identifier 2012-NE-45-AD.

#### **(a) Effective Date**

This AD is effective [INSERT DATE 15 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

**(b) Affected ADs**

This AD replaces AD 2013-02-06, Amendment 39-17327 (78 FR 5710, January 28, 2013).

**(c) Applicability**

This AD applies to all Engine Alliance GP7270 and GP7277 turbofan engines with a high-pressure turbine (HPT) stage 2 nozzle segment, part number (P/N) 2101M24G01, 2101M24G02, 2101M24G03, 2101M24G04, 2101M24G05, or 2101M24G06, installed.

**(d) Unsafe Condition**

This AD was prompted by a report of inadequate cooling of the HPT stage 1 shroud and stage 2 nozzle, leading to damage to the HPT stage 2 nozzle, burn-through of the turbine case, and in-flight shutdown. We are issuing this AD to prevent HPT stage 2 nozzle failure, uncontrolled fire, in-flight shutdown, and damage to the airplane.

**(e) Compliance**

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

(1) Perform a 360 degree borescope inspection of the HPT stage 1 shroud and stage 2 nozzle as follows:

(i) For engines with nozzles installed at a shop visit that did not include full engine overhaul, borescope inspect the HPT stage 1 shroud and stage 2 nozzle as follows:

(A) If the nozzle has fewer than 1,050 cycles-since-new (CSN) or cycles-since-repair (CSR) on the effective date of this AD, before the nozzle has accumulated 1,100 CSN or CSR.

(B) If the nozzle has 1,050 or more CSN or CSR on the effective date of this AD, within the next 50 cycles.

(ii) For all other engines, borescope inspect the HPT stage 1 shroud and HPT stage 2 nozzle as follows:

(A) If the nozzle has fewer than 1,450 CSN or CSR on the effective date of this AD, before the nozzle has accumulated 1,500 CSN or CSR.

(B) If the nozzle has 1,450 or more CSN or CSR on the effective date of this AD, within the next 50 cycles.

(iii) Thereafter, repetitively borescope inspect the HPT stage 1 shroud and stage 2 nozzle as follows:

(A) For engines with HPT stage 2 nozzle segments, P/N 2101M24G01, 2101M24G02, or 2101M24G03, within every 150 additional cycles-in-service (CIS).

(B) For engines with HPT stage 2 nozzle segments, P/N 2101M24G04, 2101M24G05, or 2101M24G06, within every 300 additional CIS.

(2) If any burn holes are detected through the surface of the nozzle or if the shroud is distorted radially inward with evidence of blade tip rubs, remove the HPT stage 1 shroud and HPT stage 2 nozzle from service before further flight.

**(f) Mandatory Terminating Action**

Replace HPT stage 2 nozzle segments, P/N 2101M24G01, 2101M24G02, 2101M24G03, 2101M24G04, 2101M24G05, and 2101M24G06, at the next piece-part exposure, with parts eligible for installation.

**(g) Definition**

For the purpose of this AD, piece-part exposure is when the HPT stage 2 nozzle is removed from the engine and completely disassembled.

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

The Manager, Engine Certification Office, FAA, may approve AMOCs for this AD. Use the procedures found in 14 CFR 39.19 to make your request. You may email your request to: ANE-AD-AMOC@faa.gov.

**(i) Related Information**

For more information about this AD, contact Martin Adler, Aerospace Engineer, Engine & Propeller Directorate, FAA, 1200 District Avenue, Burlington, MA 01803; phone: 781-238-7157; fax: 781-238-7199; email: martin.adler@faa.gov.

**(j) Material Incorporated by Reference**

None.

Issued in Burlington, Massachusetts, on October 25, 2016.

Colleen M. D'Alessandro,  
Manager, Engine & Propeller Directorate,  
Aircraft Certification Service.

[FR Doc. 2016-26280 Filed: 10/31/2016 8:45 am; Publication Date: 11/1/2016]