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## **DEPARTMENT OF TRANSPORTATION**

### **Federal Aviation Administration**

#### **14 CFR Part 39**

**[Docket No. FAA-2014-0164; Directorate Identifier 2014-NE-02-AD; Amendment 39-17973; AD 2014-19-05]**

**RIN 2120-AA64**

#### **Airworthiness Directives; Turbomeca S.A. Turboshaft Engines**

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

**ACTION:** Final rule.

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**SUMMARY:** We are adopting a new airworthiness directive (AD) for all Turbomeca S.A. Arriel 1A1, 1A2, 1B, 1C, 1C1, 1C2, 1D, 1D1, 1E2, 1K1, 1S, 1S1, 2B, 2B1, 2C, 2C1, 2C2, 2S1, and 2S2 turboshaft engines. This AD requires an initial one-time vibration check of the engine accessory gearbox (AGB) on certain higher risk Arriel 1 and Arriel 2 model engines. This AD also requires repetitive vibration checks of the engine AGB for all Arriel 1 and Arriel 2 engines at every engine shop visit. This AD was prompted by reports of uncommanded in-flight shutdowns on Turbomeca S.A. Arriel 1 and Arriel 2 engines following rupture of the 41-tooth gear forming part of the 41/23-tooth bevel gear located in the engine AGB. We are issuing this AD to prevent failure of the engine AGB, which could lead to in-flight shutdown and damage to the engine, which may result in damage to the aircraft.

**DATES:** This AD becomes effective November 5, 2014.

The Director of the Federal Register approved the incorporation by reference of certain publications listed in this AD as of November 5, 2014.

**ADDRESSES:** For service information identified in this AD, contact Turbomeca, S.A., 40220 Tarnos, France; phone: 33 (0)5 59 74 40 00; telex: 570 042; fax: 33 (0)5 59 74 45 15. You may view this service information at the FAA, Engine & Propeller Directorate, 12 New England Executive Park, Burlington, MA. For information on the availability of this material at the FAA, call 781-238-7125.

#### **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-2014-0164; 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 mandatory continuing airworthiness information (MCAI), the regulatory evaluation, any comments received, and other information. The address for the Docket Office (phone: 800-647-5527) is Document Management Facility, U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE., Washington, DC 20590.

**FOR FURTHER INFORMATION CONTACT:** Mark Riley, Aerospace Engineer, Engine Certification Office, FAA, Engine & Propeller Directorate, 12 New England Executive Park, Burlington, MA 01803; phone: 781-238-7758; fax: 781-238-7199; email: mark.riley@faa.gov.

## **SUPPLEMENTARY INFORMATION:**

### **Discussion**

We issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 by adding an AD that would apply to the specified products. The NPRM was published in the Federal Register on June 4, 2014 (79 FR 32195). The NPRM proposed to correct an unsafe condition for the specified products. This AD results from an MCAI originated by an aviation authority of another country to identify and correct an unsafe condition on an aviation product. The MCAI states:

Several cases of uncommanded in-flight shut-down (IFSD) have been reported on ARRIEL 1 or ARRIEL 2 engines following rupture of the 41-tooth gear forming part of the 41/23 tooth bevel gear located in the accessory gearbox (AGB) within engine module M01.

Results of subsequent investigations showed that the meshing quality of the bevel gear may have contributed to tooth rupture.

The rupture of the AGB 41-tooth gear may lead to loss of driving of equipment essential to engine operation.

This condition if not detected and corrected, could lead to an uncommanded engine in-flight shut-down and may ultimately lead to an emergency landing.

### **Comments**

We gave the public the opportunity to participate in developing this AD. We considered the comment received.

### **Request To Provide Sufficient Compliance Time**

One commenter requested that we provide sufficient time to comply with the AD. The commenter indicated that special tooling, to be supplied by Turbomeca, is necessary to comply with the AD. The vibration check itself is also performed by Turbomeca representatives.

We do not agree. Our analysis has confirmed that 32 months is sufficient time for operators to complete the actions required by this AD. We did not change this AD.

### **Conclusion**

We reviewed the available data, including the comment received, and determined that air safety and the public interest require adopting this AD as proposed.

## **Costs of Compliance**

We estimate that this AD affects 1,268 engines installed on aircraft of U.S. registry. We also estimate that it will take about 4 hours per engine to comply with the inspection requirement in this AD. The average labor rate is \$85 per hour. Based on these figures, we estimate the cost of this AD on U.S. operators to be \$431,120.

## **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 determined that 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 this AD:

- (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 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 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 adding the following new airworthiness directive (AD):



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**2014-19-05 Turbomeca S.A.:** Amendment 39-17973; Docket No. FAA-2014-0164; Directorate Identifier 2014-NE-02-AD.

**(a) Effective Date**

This AD becomes effective November 5, 2014.

**(b) Affected ADs**

None.

**(c) Applicability**

This AD applies to all Turbomeca S.A. Arriel 1A1, 1A2, 1B, 1C, 1C1, 1C2, 1D, 1D1, 1E2, 1K1, 1S, 1S1, 2B, 2B1, 2C, 2C1, 2C2, 2S1, and 2S2 turboshaft engines.

**(d) Reason**

This AD was prompted by reports of uncommanded in-flight shutdowns on Turbomeca S.A. Arriel 1 and Arriel 2 engines following rupture of the 41-tooth gear forming the 41/23-tooth bevel gear located in the engine accessory gearbox (AGB). We are issuing this AD to prevent failure of the engine AGB, which could lead to in-flight shutdown and damage to the engine, which may result in damage to the aircraft.

**(e) Actions and Compliance**

Unless already done, do the following.

(1) For all Turbomeca S.A. Arriel 1B, 1D, 1D1, 2B, and 2B1 turboshaft engines, perform a one-time vibration check of the AGB 41/23-tooth bevel gear meshing within 32 months of the effective date of this AD, as follows:

(i) For all Turbomeca S.A. Arriel 1B, 1D, and 1D1 engines, except those engines with an AGB installed with a serial number (S/N) listed in Figure 1 of Turbomeca S.A. Mandatory Service Bulletin (MSB) No. 292 72 0839, Version B, dated November 25, 2013, use paragraphs 6.A. through 6.C. of Turbomeca S.A. MSB No. 292 72 0839, Version B, dated November 25, 2013, to perform the vibration check. Turbomeca S.A. MSB No. 292 72 0839 refers to Turbomeca S.A. Arriel 1 Technical Instruction (TI) No. 292 72 0839, Version E, dated February 20, 2014, and Turbomeca S.A. Arriel 1 TI No. 292 72 8, Version A, dated November 29, 2013, which you must also use to do the vibration check.

(ii) The reporting requirements in paragraphs 6.A.(1)(c), 6.A.(2)(b), and 6.B.(1)(c) and the requirement to return module M01 in paragraph 6.B.(2)(b)2 of Turbomeca S.A. MSB No. 292 72 0839, Version B, dated November 25, 2013, are not required by this AD.

(iii) For all Turbomeca S.A. Arriel 2B and 2B1 engines, except those engines with an AGB installed with an S/N listed in Figure 1 of Turbomeca MSB No. 292 72 2849, Version B, dated November 25, 2013, use paragraphs 6.A. through 6.C. of Turbomeca S.A. MSB No. 292 72 2849, Version B, dated November 25, 2013, to perform the vibration check. Turbomeca S.A. MSB No. 292

72 2849 refers to Turbomeca S.A. Arriel 2 TI No. 292 72 2849, Version E, dated February 20, 2014, and Turbomeca S.A. Arriel 2 TI No. 292 72 2850, Version A, dated November 29, 2013, which you must also use to do the vibration check.

(iv) The reporting requirements in paragraphs 6.A.(1)(c), 6.A.(2)(b), and 6.B.(1)(c), and the requirement to return module M01 in paragraph 6.B.(2)(b)2 of Turbomeca S.A. MSB No. 292 72 2849, Version B, dated November 25, 2013, are not required by this AD.

(2) For all affected Turbomeca S.A. engines, during each engine shop visit after the effective date of this AD, perform a vibration check of the AGB 41/23-tooth bevel gear meshing. Guidance on performing the vibration check during an engine shop visit can be found in the service information listed in paragraph (i)(3) in the Related Information section.

(3) If the AGB does not pass the vibration check required by paragraphs (e)(1) or (e)(2) of this AD, replace the AGB with a part eligible for installation.

#### **(f) Credit for Previous Action**

If you performed a vibration check of the AGB before the effective date of this AD using Turbomeca S.A. MSB No. 292 72 0839, Version A, dated September 9, 2013; or MSB No. 292 72 2849, Version A, dated September 9, 2013, or during an engine shop visit per paragraph (e)(2) of this AD, you met the initial inspection requirement of paragraph (e)(1) of this AD.

#### **(g) Definition**

For the purpose of this AD, an "engine shop visit" is the induction of an engine into the shop for maintenance involving the separation of pairs of major mating engine flanges. The separation of engine flanges solely for the purpose of transportation without subsequent engine maintenance does not constitute an engine shop visit.

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

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

#### **(i) Related Information**

(1) For more information about this AD, contact Mark Riley, Aerospace Engineer, Engine Certification Office, FAA, Engine & Propeller Directorate, 12 New England Executive Park, Burlington, MA 01803; phone: 781-238-7758; fax: 781-238-7199; email: mark.riley@faa.gov.

(2) Refer to MCAI European Aviation Safety Agency AD 2014-0036, dated February 11, 2014, for related information. You may examine the MCAI in the AD docket on the Internet at <http://www.regulations.gov/#!docketDetail;D=FAA-2014-0164>.

(3) Turbomeca Engine Test Bed Acceptance Test Specifications CCT No. 0292009400, Version T; CCT No. 0292019400, Version R; CCT No. 0292019690, Version I; CCT No. 029201530, Version K; CCT No. 0292019610, Version K; CCT No. 0292029450, Version J; CCT No. 0292029490, Version I; CCT No. 0292029440, Version I; CCT No. 0292029480, Version K; CCT No. 0292029520, Version H; CCT No. 0292029410, Version L; CCT No. 0292029530, Version H; or Turbomeca ID No. 383952; or Turbomeca RTD No. X 292 65 327 2, which are not incorporated by reference in this AD, can be obtained from Turbomeca S.A., using the contact information in paragraph (j)(3) of this AD. This service information provides guidance on performing the vibration check during an engine shop visit.

**(j) Material Incorporated by Reference**

(1) The Director of the Federal Register approved the incorporation by reference (IBR) of the service information listed in this paragraph under 5 U.S.C. 552(a) and 1 CFR part 51.

(2) You must use this service information as applicable to do the actions required by this AD, unless the AD specifies otherwise.

(i) Turbomeca S.A. Mandatory Service Bulletin (MSB) No. 292 72 0839, Version B, dated November 25, 2013.

(ii) Turbomeca S.A. MSB No. 292 72 2849, Version B, dated November 25, 2013.

(iii) Turbomeca S.A. Arriel 1 Technical Instruction (TI) No. 292 72 0839, Version E, dated February 20, 2014.

(iv) Turbomeca S.A. Arriel 1 TI No. 292 72 0840, Version A, dated November 29, 2013.

(v) Turbomeca S.A. Arriel 2 TI No. 292 72 2849, Version E, dated February 20, 2014.

(vi) Turbomeca S.A. Arriel 2 TI No. 292 72 2850, Version A, dated November 29, 2013.

(3) For Turbomeca S.A. service information identified in this AD, contact Turbomeca, S.A., 40220 Tarnos, France; phone: 33 (0)5 59 74 40 00; telex: 570 042; fax: 33 (0)5 59 74 45 15.

(4) You may view this service information at FAA, Engine & Propeller Directorate, 12 New England Executive Park, Burlington, MA. For information on the availability of this material at the FAA, call 781-238-7125.

(5) You may view this service information at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to: <http://www.archives.gov/federal-register/cfr/ibr-locations.html>.

Issued in Burlington, Massachusetts, on September 15, 2014.

Colleen M. D'Alessandro,

Assistant Directorate Manager, Engine & Propeller Directorate,  
Aircraft Certification Service.