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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2009-0568; Directorate Identifier 2009-NE-20-AD; Amendment 39-16200; AD 2010-04-07]

RIN 2120-AA64

Airworthiness Directives; Turbomeca Arriel 2S1 Turboshaft Engines

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: We are adopting a new airworthiness directive (AD) for the products listed above. This AD results from mandatory continuing airworthiness information (MCAI) issued by an aviation authority of another country to identify and correct an unsafe condition on an aviation product. The MCAI describes the unsafe condition as:

During acceleration up to One Engine Inoperative (OEI) 30-second rating, one event of flight loss of full automatic control occurred on an Arriel 2S1 engine.

The selection of OEI 30-second rating on engine 1 was triggered by the automatic detection of an OEI situation further to a transient deceleration of engine 2. The transient deceleration of engine 2 was caused by the untimely reset of its digital electronic control unit (DECU). Once this reset was completed, engine 2 resumed its nominal operation. Afterwards the aircraft then continued its flight safely with its engine 1 operating in manual control mode.

The loss of full automatic control of engine 1 was caused by loss of steps of the stepper motor controlling the fuel metering valve inside the Hydro-mechanical Unit (HMU).

It has been found that high accelerations, notably up to OEI 30-second rating, increase the risk of loss of steps of the HMU stepper motor.

Therefore, this event has led to the consideration of the following unsafe condition at aircraft level: In-flight loss of full automatic control of the engine induced by the loss

of steps of the stepper motor during acceleration up to OEI 30-second rating, further to an actual OEI situation on the other engine (such as a power loss event).

We are issuing this AD to prevent loss of full automatic control of the engine during acceleration up to the OEI 30-second rating. This condition could result in reduced controllability of the helicopter.

DATES: This AD becomes effective March 23, 2010.

ADDRESSES: The Docket Operations office is located at Docket Management Facility, U.S. Department of Transportation, 1200 New Jersey Avenue, SE., West Building Ground Floor, Room W12-140, Washington, DC 20590-0001.

FOR FURTHER INFORMATION CONTACT: Kevin Dickert, Aerospace Engineer, Engine Certification Office, FAA, Engine and Propeller Directorate, 12 New England Executive Park, Burlington, MA 01803; e-mail: kevin.dickert@faa.gov; telephone (781) 238-7117; fax (781) 238-7199.

SUPPLEMENTARY INFORMATION:

Discussion

We issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 to include an AD that would apply to the specified products. That NPRM was published in the Federal Register on October 28, 2009 (74 FR 55491). That NPRM proposed to correct an unsafe condition for the specified products. The MCAI states:

During acceleration up to OEI 30-second rating, one event of flight loss of full automatic control occurred on an Arriel 2S1 engine.

The selection of OEI 30-second rating on engine 1 was triggered by the automatic detection of an OEI situation further to a transient deceleration of engine 2. The transient deceleration of engine 2 was caused by the untimely reset of its DECU. Once this reset was completed, engine 2 resumed its nominal operation. Afterwards the aircraft then continued its flight safely with its engine 1 operating in manual control mode.

The loss of full automatic control of engine 1 was caused by loss of steps of the stepper motor controlling the fuel metering valve inside the HMU.

It has been found that high accelerations, notably up to OEI 30-second rating, increase the risk of loss of steps of the HMU stepper motor.

Therefore, this event has led to the consideration of the following unsafe condition at aircraft level: In-flight loss of full automatic control of the engine induced by the loss of steps of the stepper motor during acceleration up to OEI 30-second rating, further to an actual OEI situation on the other engine (such as a power loss event).

Comments

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

One commenter, a private citizen, requests that in the applicability paragraph, we change "S-76C+" to "S-76C" which is how it is listed in the helicopter type certificate data sheet.

We agree and changed the AD.

Conclusion

We reviewed the available data, including the comment received, and determined that air safety and the public interest require adopting the AD with the change described previously. We determined that these changes will not increase the economic burden on any operator or increase the scope of the AD.

Differences Between This AD and the MCAI or Service Information

The MCAI requires performing the DECU software upgrade no later than August 31, 2010. This AD requires performing the DECU software upgrade within 350 operating hours after the effective date of the AD.

Costs of Compliance

Based on the service information, we estimate that this AD will affect about 136 products of U.S. registry. We also estimate that it will take about 3 work-hours per product to comply with this AD. The average labor rate is \$80 per work-hour. Required parts will cost about \$3,500 per product. Based on these figures, we estimate the cost of the AD on U.S. operators to be \$508,640.

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); 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.

We prepared a regulatory evaluation of the estimated costs to comply with this AD and placed it in the AD docket.

Examining the AD Docket

You may examine the AD docket on the Internet at <http://www.regulations.gov>; or in person at the Docket Operations office 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 Operations office (telephone (800) 647-5527) is provided in the ADDRESSES section. Comments will be available in the AD docket shortly after receipt.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, 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 AD:



2010-04-07 Turbomeca: Amendment 39-16200. Docket No. FAA-2009-0568; Directorate Identifier 2009-NE-20-AD.

Effective Date

- (a) This airworthiness directive (AD) becomes effective March 23, 2010.

Affected ADs

- (b) None.

Applicability

(c) This AD applies to Turbomeca Arriel 2S1 turboshaft engines that have not incorporated Modification TU 109. These engines are installed on, but not limited to, Sikorsky S-76C twin-engine helicopters.

Reason

(d) This AD results from mandatory continuing airworthiness information (MCAI) issued by an aviation authority of another country to identify and correct an unsafe condition on an aviation product. We are issuing this AD to prevent loss of full automatic control of the engine during acceleration up to the One Engine Inoperative 30-second rating. This condition could result in reduced controllability of the helicopter.

Actions and Compliance

- (e) Unless already done, do the following actions:
- (1) Within 350 operating hours after the effective date of this AD, perform an upgrade of the digital electronic control unit (DECU) software to version 11.01, to implement modification TU 109.
 - (2) Guidance on implementing TU 109 can be found in Turbomeca Mandatory Service Bulletin No. 292 73 2109, Version E, dated September 17, 2008.

Prohibition of Mixed DECU Software Versions on the Same Helicopter

(3) Do not operate an Arriel 2S1-powered twin-engine helicopter with one engine upgraded to modification TU 109 if the other engine is not upgraded to modification TU 109.

FAA AD Differences

- (f) This AD differs from the Mandatory Continuing Airworthiness Information (MCAI) and/or service information as follows:
- (1) The MCAI requires performing the DECU software upgrade no later than August 31, 2010.

(2) This proposed AD would require performing the DECU software upgrade within 350 operating hours after the effective date of the proposed AD.

Alternative Methods of Compliance (AMOCs)

(g) The Manager, Engine Certification Office, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19.

Related Information

(h) Refer to MCAI EASA Airworthiness Directive 2009-0010, dated January 20, 2009, and Turbomeca Mandatory Service Bulletin No. 292 73 2109, Version E, dated September 17, 2008, for related information. Contact Turbomeca, 40220 Tarnos, France; telephone (33) 05 59 74 40 00, fax (33) 05 59 74 45 15 for the service information identified in this AD.

(i) Contact Kevin Dickert, Aerospace Engineer, Engine Certification Office, FAA, Engine and Propeller Directorate, 12 New England Executive Park, Burlington, MA 01803; e-mail: kevin.dickert@faa.gov; telephone (781) 238-7117; fax (781) 238-7199, for more information about this AD.

Material Incorporated by Reference

(j) None.

Issued in Burlington, Massachusetts, on February 8, 2010.
Peter A. White,
Assistant Manager, Engine and Propeller Directorate,
Aircraft Certification Service.