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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2007-28955 Directorate Identifier 2007-CE-067-AD; Amendment 39-15260; AD 2007-23-14]

RIN 2120-AA64

Airworthiness Directives; Diamond Aircraft Industries Model DA 42 Airplanes

AGENCY: Federal Aviation Administration (FAA), Department of Transportation (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:

Recently, a double in-flight engine shut down incident occurred on a DA42 aircraft equipped with TAE125-01 engines. The BFU (German Accident Investigation Body) found the root cause to be a violation of the Airplane Flight Manual procedures (taking-off with an insufficiently charged main aircraft battery) and momentary low voltage in the electrical system of the aircraft when retracting the main landing gear. This has been the subject of Diamond Service Information (SI) 42-040 and a subsequent EASA Safety Information Notice, SIN 2007-08, issued on 18 April 2007.

The TAE125-01 and TAE125-02-99 engines, approved for installation on the DA42, are FADEC (Full Authority Digital Engine Control) controlled and are not totally independent from the aircraft electrical power supply. A significant drop of the voltage causes simultaneously a reset of the FADEC on both engines with subsequent feathering of the propeller blades. In the case of an empty battery this scenario may be considered as catastrophic at the aircraft level.

We are issuing this AD to require actions to correct the unsafe condition on these products.

DATES: This AD becomes effective December 26, 2007.

On December 26, 2007, the Director of the Federal Register approved the incorporation by reference of certain publications listed in this AD.

ADDRESSES: You may examine the AD docket on the Internet at <http://www.regulations.gov> or in person at 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: Peter L. Rouse, Aerospace Engineer, FAA, Small Airplane Directorate, 901 Locust, Room 301, Kansas City, Missouri 64106; telephone: (816) 329-4135; fax: (816) 329-4090.

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 August 27, 2007 (72 FR 48948). That NPRM proposed to correct an unsafe condition for the specified products. The MCAI states:

Recently, a double in-flight engine shut down incident occurred on a DA42 aircraft equipped with TAE125-01 engines. The BFU (German Accident Investigation Body) found the root cause to be a violation of the Airplane Flight Manual procedures (taking-off with an insufficiently charged main aircraft battery) and momentary low voltage in the electrical system of the aircraft when retracting the main landing gear. This has been the subject of Diamond Service Information (SI) 42-040 and a subsequent EASA Safety Information Notice, SIN 2007-08, issued on 18 April 2007.

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The Thielert Aircraft Engines (TAE) Installation Manuals IM-02-01 Issue 4 and IM-02-02 Issue 1 have been revised to address this issue, which is the subject of EASA Airworthiness Directive (AD) 2007-0182.

The present AD, regarding the new specifications introduced by the TAE Installation Manuals, mandates installation of additional Engine Control Unit (ECU) Backup Batteries to supply electrical power to the ECU, preventing high transient power drains from causing a short-term voltage drop when insufficient power from the main battery might exist.

Comments

We gave the public the opportunity to participate in developing this AD. We received no comments on the NPRM or on the determination of the cost to the public.

Revision of Service Bulletin

On October 15, 2007, Diamond Aircraft Industries GmbH (Diamond) issued the revised Optional Service Bulletin (OSB) No. OSB-42-050/1. This revision clarifies that if Diamond Mandatory Design Change (MÄM) No. MÄM 42-240 is installed or if the aircraft is in compliance with Diamond Mandatory Service Bulletin (MSB) No. MSB-42-042, you must first uninstall Diamond MÄM No. MÄM 42-240 or Diamond MSB No. MSB-42-042 when accomplishing Diamond OSB No. OSB-42-050/1, dated October 15, 2007.

This revision also excludes aircraft that have installed Diamond Optional Design Change (OÄM) No. OÄM 42-074. Diamond OÄM No. OÄM 42-074 is a modification that places equipment in the same location as the batteries in Diamond OSB No. OSB-42-050/1, dated October 15, 2007. Aircraft with Diamond OÄM No. OÄM 42-074 installed will not be able to comply with Diamond OSB No. OSB-42-050/1, dated October 15, 2007. However, this AD still applies to aircraft with Diamond OÄM No. OÄM 42-074 installed.

To our knowledge there are currently no aircraft registered in the United States with Diamond OÄM No. OÄM 42-074 installed. Owner/operators seeking to import aircraft with Diamond OÄM No. OÄM 42-074 installed or seeking to install Diamond OÄM No. OÄM 42-074 in a U.S.-registered aircraft will need to contact Diamond for an alternative method of compliance (AMOC) to this AD or develop an AMOC, which must be submitted to the FAA for approval. We have revised the language from the proposed AD to require use of Diamond OSB No. OSB-42-050/1, dated October 15, 2007, and to add language requiring compliance with this AD if Diamond OÄM No. OÄM 42-074 is installed.

Revision of Work Instruction

On September 10, 2007, Diamond issued revised Work Instruction WI-OSB-42-050, Revision 2. This revision corrects a mistake in the instruction that would have caused a short circuit at the battery relay control. The revision also changes the diode wiring procedure to expose additional safety thread on the screws at the bottom of the instrument panel. Previously each cable had its own ring terminal, but now the two corresponding cables are crimped into one ring terminal. We have revised the language from the proposed AD to require you to use Diamond Work Instruction WI-OSB-42-050, Revision 2, dated September 10, 2007.

Conclusion

We reviewed the available data and determined that air safety and the public interest require adopting the AD with the changes described previously. The change corrects an error in the work instruction, and this change does not increase the scope or the burden beyond that which was proposed in the NPRM.

Differences Between This AD and the MCAI or Service Information

We have reviewed the MCAI and related service information and, in general, agree with their substance. But we might have found it necessary to use different words from those in the MCAI to ensure the AD is clear for U.S. operators and is enforceable. In making these changes, we do not intend to differ substantively from the information provided in the MCAI and related service information.

We might also have required different actions in this AD from those in the MCAI in order to follow FAA policies. Any such differences are highlighted in a NOTE within the AD.

Costs of Compliance

We estimate that this AD will affect 86 products of U.S. registry. We also estimate that it will take about 13 work-hours per product to comply with basic requirements of this AD. The average labor rate is \$80 per work-hour. Where the service information lists required parts costs that are covered under warranty, we have assumed that there will be no charge for these parts. As we do not control warranty coverage for affected parties, some parties may incur costs higher than estimated here.

Based on these figures, we estimate the cost of this AD to the U.S. operators to be \$89,440 or \$1,040 per product.

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 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 Management Facility between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains the NPRM, the regulatory evaluation, any comments received, and other information. The street address for the Docket Office (telephone (800) 647-5527) is 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, 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 AD:



2007-23-14 Diamond Aircraft Industries: Amendment 39-15260; Docket No. FAA-2007-28955; Directorate Identifier 2007-CE-067-AD.

Effective Date

- (a) This airworthiness directive (AD) becomes effective December 26, 2007.

Affected ADs

- (b) None.

Applicability

- (c) This AD applies to DA 42 airplanes, all serial numbers, certificated in any category.

Subject

- (d) Air Transport Association of America (ATA) Code 72: Engine.

Reason

- (e) The mandatory continuing airworthiness information (MCAI) states:

Recently, a double in-flight engine shut down incident occurred on a DA42 aircraft equipped with TAE125-01 engines. The BFU (German Accident Investigation Body) found the root cause to be a violation of the Airplane Flight Manual procedures (taking-off with an insufficiently charged main aircraft battery) and momentary low voltage in the electrical system of the aircraft when retracting the main landing gear. This has been the subject of Diamond Service Information (SI) 42-040 and a subsequent EASA Safety Information Notice, SIN 2007-08, issued on 18 April 2007.

The TAE125-01 and TAE125-02-99 engines, approved for installation on the DA42, are FADEC (Full Authority Digital Engine Control) controlled and are not totally independent from the aircraft electrical power supply. A significant drop of the voltage causes simultaneously a reset of the FADEC on both engines with subsequent feathering of the propeller blades. In the case of an empty battery this scenario may be considered as catastrophic at the aircraft level.

The Thielert Aircraft Engines (TAE) Installation Manuals IM-02-01 Issue 4 and IM-02-02 Issue 1 have been revised to address this issue, which is the subject of EASA Airworthiness Directive (AD) 2007-0182.

The present AD, regarding the new specifications introduced by the TAE Installation Manuals, mandates installation of additional Engine Control Unit (ECU) Backup

Batteries to supply electrical power to the ECU, preventing high transient power drains from causing a short-term voltage drop when insufficient power from the main battery might exist.

Actions and Compliance

(f) Unless already done, do the following actions within the next 100 hours time-in-service after December 26, 2007 (the effective date of this AD) or within 30 days after December 26, 2007 (the effective date of this AD), whichever occurs first:

(1) Modify the engine electrical system by installing additional engine control unit (ECU) backup batteries following Diamond Aircraft Industries GmbH Work Instruction WI-OSB-42-050, Revision 2, dated September 10, 2007, as referenced in Diamond Aircraft Industries GmbH Optional Service Bulletin No. OSB-42-050\1, dated October 15, 2007. If your aircraft has Diamond Aircraft Industries GmbH Optional Design Change No. OÄM 42-074 installed, you will need to show compliance with this paragraph through an alternative method of compliance (AMOC) in accordance with paragraph (g)(1) of this AD.

(2) Incorporate Diamond Aircraft Temporary Revision AMM-TR-OÄM-42-129, dated July 11, 2007, into the FAA-approved maintenance program (e.g., maintenance manual). The owner/operator holding at least a private pilot certificate as authorized by section 43.7 of the Federal Aviation Regulations (14 CFR 43.7) may do this action. Make an entry in the aircraft records showing compliance with this portion of the AD following section 43.9 of the Federal Aviation Regulations (14 CFR 43.9).

(3) Update the airplane flight manual (AFM) by inserting a copy of Diamond Aircraft Temporary Revision TR-OÄM-42-129, dated July 11, 2007, into the AFM. The owner/operator holding at least a private pilot certificate as authorized by section 43.7 of the Federal Aviation Regulations (14 CFR 43.7) may do this action. Make an entry in the aircraft records showing compliance with this portion of the AD following section 43.9 of the Federal Aviation Regulations (14 CFR 43.9).

FAA AD Differences

Note: This AD differs from the MCAI and/or service information as follows:

(1) We believe that the batteries specified in the MCAI do not fully address the unsafe condition for U.S. registered airplanes. The batteries specified in the MCAI only provide approximately 10 minutes of backup electrical power to the engine full authority digital engine controls (FADECs) in the event of an aircraft electrical failure. In accordance with 14 CFR 23.1353(h), the FAA requires a minimum of 30 minutes of backup electrical power for the engine FADECs in the event of an aircraft electrical failure. To fully address the unsafe condition, Diamond Aircraft Industries GmbH has developed different part numbers and procedures for U.S.-registered airplanes. These procedures require the installation of larger capacity batteries than the MCAI required. The batteries specified in Diamond Aircraft Industries GmbH Work Instruction WI-OSB-42-050, Revision 2, dated September 10, 2007, will provide a minimum of 30 minutes of backup electrical power for the engine FADECs when installed in accordance with Diamond Aircraft Industries GmbH Work Instruction WI-OSB-42-050, Revision 2, dated September 10, 2007. We have discussed this difference with EASA, and they accepted that the FAA's view is different to require installation of larger capacity batteries.

(2) Diamond Aircraft Industries GmbH Optional Service Bulletin No. OSB-42-050\1, dated October 15, 2007, excludes aircraft with Diamond Aircraft Industries GmbH OÄM No. OÄM 42-074 installed because Diamond Aircraft Industries GmbH OÄM No. OÄM 42-074 adds equipment that is in the same location as the batteries in Diamond Aircraft Industries GmbH Optional Service Bulletin No. OSB-42-050\1, dated October 15, 2007. The unsafe condition still needs to be addressed in aircraft with Diamond Aircraft Industries GmbH OÄM No. OÄM 42-074 installed. Therefore, this AD does apply to aircraft with Diamond Aircraft Industries GmbH OÄM No. OÄM 42-074 installed

and owners/operators of aircraft with Diamond Aircraft Industries GmbH OÄM No. OÄM 42-074 installed will need to seek an AMOC for those aircraft.

Other FAA AD Provisions

(g) The following provisions also apply to this AD:

(1) Alternative Methods of Compliance (AMOCs): The Manager, Standards Office, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. Send information to ATTN: Peter L. Rouse, Aerospace Engineer, FAA, Small Airplane Directorate, 901 Locust, Room 301, Kansas City, Missouri 64106; telephone: (816) 329-4135; fax: (816) 329-4090. Before using any approved AMOC on any airplane to which the AMOC applies, notify your appropriate principal inspector (PI) in the FAA Flight Standards District Office (FSDO), or lacking a PI, your local FSDO.

(2) Airworthy Product: For any requirement in this AD to obtain corrective actions from a manufacturer or other source, use these actions if they are FAA-approved. Corrective actions are considered FAA-approved if they are approved by the State of Design Authority (or their delegated agent). You are required to assure the product is airworthy before it is returned to service.

(3) Reporting Requirements: For any reporting requirement in this AD, under the provisions of the Paperwork Reduction Act (44 U.S.C. 3501 et seq.), the Office of Management and Budget (OMB) has approved the information collection requirements and has assigned OMB Control Number 2120 0056.

Related Information

(h) Refer to MCAI European Aviation Safety Agency (EASA) AD No. 2007-0183, dated July 2, 2007; Diamond Aircraft Industries GmbH Optional Service Bulletin No. OSB-42-050\1, dated October 15, 2007; Diamond Aircraft Industries GmbH Work Instruction WI-OSB-42-050, Revision 2, dated September 10, 2007; Diamond Aircraft Temporary Revision AMM-TR-OÄM-42-129, dated July 11, 2007; and Diamond Aircraft Temporary Revision TR-OÄM-42-129, dated July 11, 2007, for related information.

Material Incorporated by Reference

(i) You must use Diamond Aircraft Industries GmbH Optional Service Bulletin No. OSB-42-050\1, dated October 15, 2007, and Diamond Aircraft Industries GmbH Work Instruction WI-OSB-42-050, Revision 2, dated September 10, 2007, to do the actions required by this AD, unless the AD specifies otherwise.

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

(2) For service information identified in this AD, contact Diamond Aircraft Industries GmbH, N.A. Otto-Straße 5, A-2700 Wiener Neustadt; telephone: +43 2622 26700; fax: +43 2622 26780; e-mail: office@diamond-air.at.

(3) You may review copies at the FAA, Central Region, Office of the Regional Counsel, 901 Locust, Room 506, Kansas City, Missouri 64106; or 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 Kansas City, Missouri, on November 7, 2007.

John R. Colomy,
Acting Manager, Small Airplane Directorate, Aircraft Certification Service.
[FR Doc. E7-22177 Filed 11-19-07; 8:45 am]