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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2005-21787; Directorate Identifier 2005-CE-34-AD; Amendment 39-14401; AD 2005-25-08]

RIN 2120-AA64

Airworthiness Directives; Shadin ADC-2000 Air Data Computers

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: The FAA adopts a new airworthiness directive (AD) for certain Shadin ADC-2000 air data computers (ADC) installed on airplanes. This AD requires you to replace affected ADC-2000 units with a modified unit. This AD results from reports that certain ADC-2000 units display incorrect altitude information on the Electronic Flight Information System (EFIS) to the pilot. We are issuing this AD to prevent ADC-2000 units, part numbers (P/Ns) 962830A-1-S-8, 962830A-2-S-8, and 962830A-3-S-8, configurations B, C, and D, from displaying incorrect altitude information. This could cause the flight crew to react to this incorrect flight information and possibly result in an unsafe operating condition.

DATES: This AD becomes effective on January 23, 2006.

As of January 23, 2006, the Director of the Federal Register approved the incorporation by reference of certain publications listed in the regulation.

ADDRESSES: To get the service information identified in this AD, contact Shadin, 6831 Oxford Street, St. Louis Park, Minnesota 55426-4412; telephone: (800) 388-2849 or (952) 927-6500; facsimile: (952) 924-1111; e-mail: <http://www.shadin.com>.

To view the AD docket, go to the Docket Management Facility, U.S. Department of Transportation, 400 Seventh Street, SW., Nassif Building, Room PL-401, Washington, DC 20590-0001 or on the Internet at <http://dms.dot.gov>. The docket number is FAA-2005-21787; Directorate Identifier 2005-CE-34-AD.

FOR FURTHER INFORMATION CONTACT: Jeffrey Kuen, Aerospace Engineer, Chicago Aircraft Certification Office (ACO), FAA, 2300 East Devon Avenue, Room 107, Des Plaines, Illinois 60018; telephone: (847) 294-7125; facsimile: (847) 294-7834; e-mail address: jeffrey.kuen@faa.gov.

SUPPLEMENTARY INFORMATION:

Discussion

What events have caused this AD? We received reports that the pressure altitude output of certain Shadin ADC-2000 air data computers (ADC) drift outside Technical Standard Order (TSO) tolerance.

Shadin ADC-2000 units, part numbers (P/Ns) 962830A-1-S-8, 962830A-2-S-8, and 962830A-3-S-8, configurations B, C, and D (labeled with TSO-C106 and TSO-C44a), provide altitude information that is displayed on the Electronic Flight Information System (EFIS) to the pilot. The ADC/EFIS combination is used to display primary altitude information to the pilot.

The maximum altitude error allowed by TSO-C106 and TSO-C44a is 25 feet at ground level. Shadin ADC-2000 units, P/Ns 962830A-1-S-8, 962830A-2-S-8, and 962830A-3-S-8, configurations B, C, and D have shown errors from 100 to 8,000 feet from the correct altitude.

The errors are caused by the ADC-2000 altitude measurement system. A pressure transducer in the ADC measures the altitude from the airplane static pressure system. The pressure transducer converts static pressure to an electrical signal.

We determined that the electrical output from the pressure transducer in the affected ADCs changes over time resulting in the display of misleading altitude information to the pilot.

What is the potential impact if FAA took no action? If this situation occurs while the flight crew is making critical flight decisions, the display of incorrect altitude information could cause the flight crew to react to this incorrect flight information and possibly result in an unsafe operating condition.

Has FAA taken any action to this point? We issued a proposal to amend part 39 of the Federal Aviation Regulations (14 CFR part 39) to include an AD that would apply to certain Shadin ADC-2000 air data computers (ADC) installed on airplanes. This proposal was published in the Federal Register as a notice of proposed rulemaking (NPRM) on August 17, 2005 (70 FR 48333). The NPRM proposed to require you to replace affected ADC-2000 units with a modified unit.

Comments

Was the public invited to comment? We provided the public the opportunity to participate in developing this AD. The following presents the comments received on the proposal and FAA's response to each comment:

Comment Issue No. 1: AD Should Apply to Only Airplanes Operating Under IFR

What is the commenter's concern? The commenter is concerned that 14 CFR 43.7 does not allow part 135 operators to do the preflight check required in paragraph (e)(1) of the proposed AD. This would require a maintenance mechanic to be hired to do the preflight check before each flight.

The commenter requests that airplanes flown under part 135 VFR operations be excluded from complying with the AD by changing the Compliance column from "before each flight" to "before each IFR flight."

What is FAA's response to the concern? We do not agree with the commenter. Under 14 CFR 43.7, paragraph (e), part 135 operators are allowed to return an airplane to service.

To avoid confusion, which could result in unnecessarily grounding some of the affected airplanes, we are removing the reference to 14 CFR 43.7 from the Procedures column in paragraph (e)(1) of the proposed AD.

Comment Issue No. 2: Remove All Affected ADCs Until Upgraded

What is the commenter's concern? The commenter states that the ADC provides input into the Terrain Awareness and Warning System (TAWS).

To prevent the possibility of incorrect ADC data being input into the TAWS, the commenter wants FAA to require removal of all affected ADCs until they are upgraded.

What is FAA's response to the concern? We do not agree with the commenter. The Shadin ADC altitude error has occurred over a long period of time. We do not have justification to require removing the affected ADCs before further flight.

We use compliance times such as this when we have identified an urgent safety of flight situation. We believe that 25 hours TIS will give the owners or operators of the affected airplanes enough time to have the actions required by this AD done without compromising the safety of the airplanes.

The altimetry system checks provided as an interim solution to the actions required in paragraph (e)(2) is a normal aircraft preflight check.

We are not changing the final rule AD action based on this comment.

Conclusion

What is FAA's final determination on this issue? We have carefully reviewed the available data and determined that air safety and the public interest require adopting the AD as proposed except for the changes discussed above and minor editorial corrections. We have determined that these changes and minor corrections:

- Are consistent with the intent that was proposed in the NPRM for correcting the unsafe condition; and
- Do not add any additional burden upon the public than was already proposed in the NPRM.

Docket Information

Where can I go to view the docket information? You may view the AD docket that contains information relating to this subject in person at the DMS Docket Offices between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The Docket Office (telephone 1-800-647-5227) is located on the plaza level of the Department of Transportation NASSIF Building at the street address stated in ADDRESSES. You may also view the AD docket on the Internet at <http://dms.dot.gov>.

Changes to 14 CFR Part 39—Effect on the AD

How does the revision to 14 CFR part 39 affect this AD? On July 10, 2002, the FAA published a new version of 14 CFR part 39 (67 FR 47997, July 22, 2002), which governs the FAA's AD system. This regulation now includes material that relates to altered products, special flight permits, and alternative methods of compliance. This material previously was included in each individual AD. Since this material is included in 14 CFR part 39, we will not include it in future AD actions.

Costs of Compliance

How many airplanes does this AD impact? We estimate that this AD affects 457 airplanes in the U.S. registry.

What is the cost impact of this AD on owners/operators of the affected airplanes? We estimate the following costs to accomplish the modification:

| Labor cost | Parts cost | Total cost per airplane | Total cost on U.S. operators |
|--------------------------------------|----------------|-------------------------|------------------------------|
| 2 work hours X \$65 per hour = \$130 | Not applicable | \$130 | \$130 X 457 = \$59,410. |

Shadin will reimburse the owner/operators for labor to remove and replace the ADC and shipping costs to Shadin Repair Facility to the extent specified in the service bulletin.

Authority for This Rulemaking

What authority does FAA have for issuing this rulemaking action? 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 AD.

Regulatory Findings

Will this AD impact various entities? We have 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.

Will this AD involve a significant rule or regulatory action? 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 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 summary of the costs to comply with this AD (and other information as included in the Regulatory Evaluation) and placed it in the AD Docket. You may get a copy of this summary by sending a request to us at the address listed under ADDRESSES. Include "Docket No. FAA-2005-21787; Directorate Identifier 2005-CE-34-AD" in your request.

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 Federal Aviation Administration 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. FAA amends § 39.13 by adding a new AD to read as follows:

AIRWORTHINESS DIRECTIVE



Aircraft Certification Service
Washington, DC

U.S. Department
of Transportation
**Federal Aviation
Administration**

We post ADs on the internet at www.faa.gov/aircraft/safety/alerts/

The following Airworthiness Directive issued by the Federal Aviation Administration in accordance with the provisions of Title 14 of the Code of Federal Regulations (14 CFR) part 39, applies to an aircraft model of which our records indicate you may be the registered owner. Airworthiness Directives affect aviation safety and are regulations which require immediate attention. You are cautioned that no person may operate an aircraft to which an Airworthiness Directive applies, except in accordance with the requirements of the Airworthiness Directive (reference 14 CFR part 39, subpart 39.3).

2005-25-08 SHADIN: Amendment 39-14401; Docket No. FAA-2005-21787; Directorate Identifier 2005-CE-34-AD.

When Does This AD Become Effective?

- (a) This AD becomes effective on January 23, 2006.

What Other ADs Are Affected By This Action?

- (b) None.

What Airplanes Are Affected By This AD?

(c) This AD affects Shadin ADC-2000 air data computers (ADC), part numbers (P/N) 962830A-1-S-8, 962830A-2-S-8, 962830A-3-S-8, configurations B, C, and D, that are installed in, but not limited to, the following aircraft (all serial numbers), and are certificated in any category:

| Manufacturer | Model |
|-------------------------------|---|
| Alliance Aircraft Group, LLC. | H-250 |
| B-N Group Ltd | BN2A |
| Bombardier Inc | DHC-3, DHC-6 |
| Cessna Aircraft Company. | 172, 180, 180E, 185, 206, 206E, 206F, 206G 208, 210L, 310 |
| deHavilland Inc | DHC-2 |
| The New Piper Aircraft, Inc. | PA-28-180, PA-28-181, PA-31-350, PA-32-300, PA-32-301, PA-32R-300, PA-34-200T |

What is the Unsafe Condition Presented in This AD?

(d) This AD is the result of reports that certain ADC-2000 units display incorrect altitude information on the Electronic Flight Information System (EFIS) to the pilot. The actions specified in this AD are to prevent ADC-2000 units, P/Ns 962830A-1-S-8, 962830A-2-S-8, and 962830A-3-S-8, configurations B, C, and D, from displaying incorrect altitude information. This could cause the flight crew to react to this incorrect flight information and possibly result in an unsafe operating condition.

What Must I do to Address This Problem?

- (e) To address this problem, you must do the following:

| Actions | Compliance | Procedures |
|--|--|---|
| (1) To ensure the air data computer (ADC) and the Electronic Flight Information System (EFIS) altimetry accuracy, do the normal preflight check. If the altitudes, altimeter, and elevation differ by more than 75 feet, do not fly the airplane in Instrument Meteorological Conditions (IMC)/Instrument Flight Rules (IFR). | Within the next 25 hours time-in-service (TIS) after January 23, 2006 (the effective date of this AD) and thereafter before each flight until the ADC is upgraded as specified in paragraph (e)(2) of this AD. | Follow the Interim Procedures contained in Shadin Service Bulletin SB28-05-002, Rev C, dated June 29, 2005. The owner/operator holding at least a private pilot certificate may do the check specified in paragraph (e)(1) of this AD. Make an entry into the aircraft records showing compliance with this portion of the AD following section 43.9 of the Federal Aviation Regulations (14 CFR 43.9). |
| (2) Return all Shadin ADC-2000s, part numbers 962830A-1-S-8, 962830A-2-S-8, 962830A-3-S-8, Configurations B, C, and D, to the Shadin Repair Facility for upgrade. Contact the Shadin Technical Support department for a Return Merchandise Authorization (RMA) number. Until the ADC-2000 is modified, returned, and reinstalled, only fly the airplane if equipment requirements for that airplane are still met. | Within the next 15 months after January 23, 2006 (the effective date of this AD). | Follow Shadin Service Bulletin SB28-05-002, Rev C, dated June 29, 2005. |
| (3) Do not install any Shadin ADC-2000, part number 962830A-1-S-8, 962830A-2-S-8, or 962830A-3-S-8, Configurations B, C, and D, unless it has been upgraded as specified in paragraph (e)(2) of this AD. | As of January 23, 2006 (the effective date of this AD). | Not applicable. |

May I Request an Alternative Method of Compliance?

(f) You may request a different method of compliance or a different compliance time for this AD by following the procedures in 14 CFR 39.19. Unless FAA authorizes otherwise, send your request to your principal inspector. The principal inspector may add comments and will send your request to the Manager, Chicago Aircraft Certification Office (ACO), FAA. For information on any already approved alternative methods of compliance, contact Jeffrey Kuen, Aerospace Engineer, Chicago ACO, FAA, 2300 East Devon Avenue, Room 107, Des Plaines, Illinois 60018; telephone: (847) 294-7125; facsimile: (847) 294-7834; e-mail address: jeffrey.kuen@faa.gov.

Does This AD Incorporate Any Material By Reference?

(g) You must do the actions required by this AD following the instructions in Shadin Service Bulletin SB28-05-002, Rev C, dated June 29, 2005. The Director of the Federal Register approved the incorporation by reference of this service bulletin in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. To get a copy of this service information, contact Shadin, 6831 Oxford Street, St. Louis Park, Minnesota 55426-4412; telephone: (800) 388-2849 or (952) 927-6500; facsimile: (952) 924-1111; e-mail: <http://www.shadin.com>. To review copies of this service information, go to the National

Archives and Records Administration (NARA). For information on the availability of this material at NARA, go to:

http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html or call (202) 741-6030. To view the AD docket, go to the Docket Management Facility, U.S. Department of Transportation, 400 Seventh Street, SW., Nassif Building, Room PL-401, Washington, DC 20590-001 or on the Internet at <http://dms.dot.gov>. The docket number is FAA-2005-21787; Directorate Identifier 2005-CE-34-AD.

Issued in Kansas City, Missouri, on November 30, 2005.

David R. Showers,

Acting Manager, Small Airplane Directorate, Aircraft Certification Service.

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