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Airworthiness Directive

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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39 [63 FR 35787 No. 126 07/01/98]

Docket No. 97-CE-30-AD; Amendment 39-10637; AD 98-14-03

RIN 2120-AA64

Airworthiness Directives; AlliedSignal Inc. KT 76A Air Traffic Control (ATC) Transponders.

PDF Copy (If Available):

Preamble Information

AGENCY: Federal Aviation Administration, DOT.

ACTION: Final rule.

SUMMARY: This amendment adopts a new airworthiness directive (AD) that applies to certain AlliedSignal Inc. (AlliedSignal) KT 76A ATC transponders that are installed on aircraft. This AD requires incorporating a modification on the affected transponders that consists of replacing two resistor network modules with glass-coated modules. This AD is the result of reports of these ATC transponders transmitting misleading encoding altimeter information to ground-based ATC radar sites and nearby Traffic Alert and Collision Avoidance System (TCAS)-equipped aircraft. The actions specified by this AD are intended to prevent the transmission of misleading encoding altimeter information between affected aircraft caused by the inability of these ATC transponders to coordinate with ground-based ATC radar sites and nearby TCAS-equipped aircraft.

DATES: Effective August 16, 1998.
The incorporation by reference of certain publications listed in the regulations is approved by the Director of the Federal Register as of August 16, 1998.

ADDRESSES: Service information that applies to this AD may be obtained from AlliedSignal Inc., General Aviation Avionics, 400 N. Rogers Road, Olathe, Kansas 66062-1212. This information may also be examined at the Federal Aviation Administration (FAA), Central Region, Office of the Regional Counsel, Attention: Rules Docket No. 97-

CE-30-AD, Room 1558, 601 E. 12th Street, Kansas City, Missouri 64106; or at the Office of the Federal Register, 800 North Capitol Street, NW, suite 700, Washington, DC.

FOR FURTHER INFORMATION CONTACT: Mr. Roger A. Souter, Aerospace Engineer, Wichita Aircraft Certification Office, FAA, 1801 Airport Road, Mid-Continent Airport, Wichita, Kansas 67209; telephone: (316) 946-4134; facsimile: (316) 946-4407.

SUPPLEMENTARY INFORMATION:

Events Leading to the Issuance of This AD

A proposal to amend part 39 of the Federal Aviation Regulations (14 CFR part 39) to include an AD that would apply to certain AlliedSignal KT 76A ATC transponders that are installed on aircraft was published in the **Federal Register** as a notice of proposed rulemaking (NPRM) on February 4, 1998 (63 FR 5763). The NPRM proposed to require replacing two resistor network modules, RM401 and RM402, with new glass-coated parts. Accomplishment of the proposed action as specified in the NPRM would be in accordance with AlliedSignal Service Bulletin SB KT 76A-7, dated July 1996.

The NPRM was the result of reports of these ATC transponders transmitting misleading encoding altimeter information to ground-based ATC radar sites and nearby Traffic Alert and Collision Avoidance System (TCAS)-equipped aircraft.

Interested persons have been afforded an opportunity to participate in the making of this amendment. Due consideration has been given to the comments received.

Comment Issue: The Compliance Time Should Be Extended

Three commenters believe that the proposed compliance time of 6 calendar months is unrealistic. These comments are detailed as follows:

1. One commenter states that, in order to accomplish the work, Allied Signal would have to supply 38 repairmen who would work 8 hours per day for 6 months. The commenter questions whether this commitment will be made.

2. Another commenter agrees with the FAA's decision to state the compliance in calendar time, but believes that a more appropriate and more convenient time would be to require the work at the next annual inspection or transponder system inspection. This would reduce the down-time for the affected aircraft by allowing the work to be accomplished during regularly scheduled maintenance.

3. The third commenter states that many of the affected transponders will be part of a complete pitot-static system that requires biennial calibration in accordance with section 91.413 of the Federal Aviation Regulations (14 CFR 91.413). The commenter proposes that since the unit will already be at the avionics shop for this calibration, then the FAA should write the compliance time to coincide with the biennial pitot-static system calibration.

The FAA partially concurs with the above comments, as follows:

1. After re-evaluating all information related to this subject, the FAA concurs that 6 calendar months is an unrealistic time period to have the work accomplished on all of the affected transponders. The FAA believes that a large number of the affected aircraft already have the proposed modification incorporated on the transponder. Based on all information, the FAA believes that a 12 calendar month compliance time is more realistic.

The final rule will reflect this change.

2. The 12 calendar month compliance time will allow the modification to be incorporated during the airplane's next annual inspection, as requested by the commenter.

3. Because the silver migration process is affected by environmental factors as well as occurring over time, the FAA cannot predict when a particular transponder could fail. A transponder could work well one day and then fail the next day. With this in mind, the FAA does not concur that the compliance time should be written to coincide with the next pitot-static system biennial calibration in accordance with section 91.413 of the Federal Aviation Regulations (14 CFR 91.413). This could allow the condition defined in this AD to go undetected for up to 24 months.

Comment Issue: Problem Occurs Only on Aircraft Operating Above 10,000 Feet and the AD Should Be Limited to Only Those Aircraft Operating in Instrument Flight Rule (IFR) Conditions

Two commenters believe that the condition specified in the NPRM is associated with "at altitude" operations over time. The commenters state that one could imply that:

> "aircraft in the high altitude structure may be more likely to experience this problem than one operating below 10,000 feet and using the Allied Signal KT 76A ATC transponder simply because the aircraft operates within Class B or C airspace or within a 30 nautical miles "veil" for a class B airport. The problem with an erroneous altitude report from a high speed aircraft operating in the IFR airspace system is significantly different than a small airplane flying in visual flight rules (VFR) conditions."

Both commenters recommend different actions than are already proposed based on the above information and both believe that the private operator (who is mostly a Sunday pilot) would remove the equipment from the aircraft since aircraft in VFR operation outside of the B and C airspace do not need to have a transponder unit. Both believe that removing the transponder would reduce safety. These recommendations are as follows:

1. One commenter suggests that those operating in only VFR conditions fabricate and install a placard with the words "For VFR Use Only". If or when these aircraft's transponders no longer comply with the 125-foot error requirement of part 43, Appendix E, of the Federal Aviation Regulations (14 CFR part 43, Appendix E), then the commenter proposes that the AD require immediate replacement or modification of the transponder equipment. The commenter feels that this would allow thousands of small aircraft to fly legally and safely within the 30 nautical mile veils associated with Class B airports, without incurring an additional expense to their flying activities.

2. The other commenter recommends that the FAA not issue the proposed AD as a final rule, or if issued, limit the Applicability of the AD to only turbine-powered or "10-or-more seats" aircraft. This commenter feels that replacing equipment that meets performance standards because of a "maybe" malfunction (which will simply cause an error in altitude reporting) is wrong when it comes to private aircraft (used mostly for pleasure). The commenter also suggests a possible mandatory replacement or modification of the equipment if a certain error is detected.

The FAA does not concur with the proposed alternatives presented by the commenters. The altitude at which an aircraft equipped with one of the affected transponders is flown and the amount of time flown at this altitude do not affect the probability of the unit failing.

The "silver migration" process occurs regardless of the altitude or the time "at altitude". This "silver migration" process is slow and is affected by environmental factors as well. The FAA cannot assure that any given unit would not be affected by this condition during any given 2 year period. A unit could pass on one day and then fail the next day. Aircraft that are operated in VFR conditions are interrogated by TCAS-equipped aircraft in the areas. The ATC system and misleading aircraft altitude information could represent a hazard to the aircraft in VFR conditions. The FAA has determined that safety would be compromised if the AD allowed, for aircraft operating in VFR conditions, the system to fail before mandating replacement or modification.

Comment Issue: Limit the AD to Only Those Aircraft Exhibiting Problems
In addition to the comments above proposing replacement or modification of the Allied Signal KT 76A ATC transponder upon condition for aircraft operating in VFR conditions, one commenter proposes that the AD only apply to those transponders that exhibit problems during the 24 calendar month pitot-static system calibration in accordance with section 91.413 of the Federal Aviation Regulations (14 CFR 91.413). This would be for all transponders regardless of the type of operation in which the aircraft is involved. The commenter believes that this would accomplish the intent of the AD without burdening operators already in good working order.

The FAA does not concur. As discussed earlier, the FAA cannot predict when a particular transponder could fail. A transponder could work well one day and then fail the next day. The FAA has determined that safety would be compromised if the AD allowed the system to fail before mandating replacement or modification.

Comment Issue: Wait for Results of Technical Field Study on Transponders
One commenter agrees with the FAA that the KT 76A ATC transponders have a demonstrated history of inaccurate or misleading data transmission and that corrective action is necessary to address this issue. This commenter goes on to state that the FAA Technical Center in Atlantic City conducted a full-scale field study of transponder performance in general aviation aircraft and determined that a variety of deficiencies exist in a broad range of transponders, including the KT 76A ATC transponders. This commenter suggests that the FAA withhold issuance of this AD until the full scope of the transponder issues can be addressed, including the problems associated with "silver migration" in the KT 76A ATC transponders.

The FAA concurs that the information from the Technical Center Study is very important. However, correspondence received from the Technical Center indicates that resolution of these issues may take a considerable amount of time. As stated earlier, the FAA cannot predict when a particular transponder could fail. A transponder could work well one day and then fail the next day. The FAA has determined that safety would be compromised if the AD was not issued awaiting a resolution from the FAA Technical Center in Atlantic City, regarding the full scope of the transponder issues.

Comment Issue: Certain Aspects Not Covered in the Cost Impact
Four commenters propose changes to the section that describes the cost impact upon the public. These include:

- It will take 2.5 workhours to accomplish the action instead of 2 workhours as presented in the NPRM;

- In addition to providing parts at no charge, Allied Signal is providing warranty credit for up to 2.5 workhours to accomplish the action;

- the cost impact should include the costs of a recalibration of the pitot-static system; and

- the cost impact does not take into account the costs the affected aircraft operators will incur while their aircraft is out-of-service.

The FAA concurs that it will take 2.5 workhours to accomplish the action and that Allied Signal will provide warranty credit for up to 2.5 workhours to accomplish the action. The final rule will incorporate this information.

The FAA does not concur that the cost impact section should account for recalibration costs because the inputs affected by the silver migration are encoding altimeter inputs and are not directly connected to the pitot static system. Therefore, there are no costs associated with pitot static system when complying with this AD.

The FAA believes that the change in the compliance time from 6 calendar months to 12 calendar months will take into account the cost impact of aircraft "out-of-service". This will allow the operator to schedule the replacement and modification to coincide with a regularly schedule maintenance event, thus, the AD will not necessitate any additional downtime. Even if additional downtime is necessary for some airplanes, the FAA does not possess sufficient information to evaluate the number of airplanes that may be so affected or the amount of additional downtime that may be required.

Comment Issue: Include Statistical Data Concerning the Problem in the AD
One commenter states that including statistical data that more fully discusses the origin of the "silver migration" problem would be helpful.

The FAA, in working with the manufacturer, saw a three-fold increase in the usage of spare parts of the Allied Signal KT 76A ATC transponders. Between the last quarter of 1995 and the first quarter of 1996, quarterly usage of spare parts increased from approximately 40 parts per quarter to approximately 120 parts for that quarter. This indicates a significant trend and failure analysis of these transponders. Information submitted to the FAA revealed that this increase in spare parts usage was due to the "silver migration" problem. Within a 3-month period, over 150 of these transponder units were in the repair shops to have "silver migration" problems remedied.

Comment Issue: Concur With the Action
One commenter agrees with the proposal as written and states that accomplishing "this relatively inexpensive and simple repair action will eliminate the potential hazard and enhance general flying safety in the National Airspace System."

The FAA's Determination
After careful review of all available information related to the subject presented above, the FAA has determined that air safety and the public interest require the adoption of the rule as proposed except for the change in the compliance time and minor editorial corrections. The FAA has determined that this change and minor corrections will not change the meaning of the AD and will not add any additional burden upon the public than was already proposed.

Cost Impact
The FAA estimates that 20,000 transponder units could be affected by this AD if all were installed in aircraft of U.S. registry. Approximately 2.5 workhours will be needed to accomplish this action, at an average labor rate of $60 an hour. However, Allied Signal will provide warranty credit for up to 2.5 workhours to accomplish the action, as well as

providing all necessary parts at no cost to the owners/operators of airplanes with the affected transponder units installed. Based on these figures and Allied Signal's warranty program, this AD will impose no cost impact on U.S. operators of the affected aircraft.

Regulatory Impact
The regulations adopted herein will not have substantial direct effects 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. Therefore, in accordance with Executive Order 12612, it is determined that this final rule does not have sufficient federalism implications to warrant the preparation of a Federalism Assessment.

For the reasons discussed above, I certify that this action (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. A copy of the final evaluation prepared for this action is contained in the Rules Docket. A copy of it may be obtained by contacting the Rules Docket at the location provided under the caption "ADDRESSES".

List of Subjects in 14 CFR Part 39
Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

Adoption of the Amendment
Accordingly, pursuant to 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. Section 39.13 is amended by adding a new airworthiness directive (AD) to read as follows:

Regulatory Information

98-14-03 ALLIEDSIGNAL INC.: Amendment 39-10637; Docket No. 97-CE-30-AD.

Applicability: AlliedSignal KT 76A Air Traffic Control (ATC) transponders; part number (P/N) 066-1062-00/10/02; serial numbers 93,000 through 109,999, as installed on, but not limited to the following airplanes (all serial numbers), certificated in any category:

- Cessna Aircraft Company: 172, 182, R182, T182, 206, P206, U206, TP206, 210, T210, P210, 310, E310, T310, and 421 series airplanes.
- Twin Commander Aircraft Company: 500, 520, 560, 680, 681, 685, 690, 695, and 720 series airplanes.
- The New Piper Aircraft Corporation: PA-31, PA-32, and PA-34 series airplanes.
- Raytheon Aircraft Company: E33, F33, G33, 35, J35, K35, L35, K35, M35, P35, S35, V35, 36, A26, B36, D55, E55, 56, A56, 58, 58A, 95, B95, D95, and E95 series airplanes.
- Mooney Aircraft Corporation: M20 series airplanes.
- McDonnell Douglas Helicopter Company: Model 500N rotorcraft.

NOTE 1: This AD applies to each aircraft equipped with a transponder that is identified in the preceding applicability provision, regardless of whether it has been modified, altered,

or repaired in the area subject to the requirements of this AD. For aircraft that have been modified, altered, or repaired so that the performance of the requirements of this AD is affected, the owner/operator must request approval for an alternative method of compliance in accordance with paragraph (d) of this AD. The request should include an assessment of the effect of the modification, alteration, or repair on the unsafe condition addressed by this AD; and, if the unsafe condition has not been eliminated, the request should include specific proposed actions to address it.

Compliance: Required within the next 12 calendar months after the effective date of this AD, unless already accomplished.

To prevent the transmission of misleading encoding altimeter information between affected aircraft caused by the inability of the affected ATC transponders to coordinate with ground-based air traffic control (ATC) radar sites and nearby Traffic Alert and Collision Avoidance System (TCAS)-equipped aircraft, accomplish the following:

(a) Replace the two resistor network modules, RM401 and RM402, with new glass-coated parts in accordance with the MODIFICATION PROCEDURE section of AlliedSignal Service Bulletin SB KT 76A-7, dated July 1996. When accomplished, this replacement is referred to as Mod 7.

(b) As of the effective date of this AD, no person may install an AlliedSignal KT 76A ATC transponder; part number (P/N) 066-1062-00/10/02; serial numbers 93,000 through 109,999, in an aircraft without first incorporating Mod 7 as specified in paragraph (a) of this AD.

(c) Special flight permits may be issued in accordance with sections 21.197 and 21.199 of the Federal Aviation Regulations (14 CFR 21.197 and 21.199) to operate the airplane to a location where the requirements of this AD can be accomplished.

(d) An alternative method of compliance or adjustment of the compliance time that provides an equivalent level of safety may be approved by the Manager, Wichita Aircraft Certification Office (ACO), 1801 Airport Road, Room 100, Mid-Continent Airport, Wichita, Kansas 67209. The request shall be forwarded through an appropriate FAA Maintenance Inspector, who may add comments and then send it to the Manager, Wichita ACO.

NOTE 2: Information concerning the existence of approved alternative methods of compliance with this AD, if any, may be obtained from the Wichita ACO.

(e) The replacement required by this AD shall be done in accordance with AlliedSignal Service Bulletin SB KT 76A-7, dated July 1996. This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies may be obtained from AlliedSignal Inc., General Aviation Avionics, 400 N. Rogers Road, Olathe, Kansas 66062-1212. Copies may be inspected at the FAA, Central Region, Office of the Regional Counsel, Room 1558, 601 E. 12th Street, Kansas City, Missouri, or at the Office of the Federal Register, 800 North Capitol Street, NW, suite 700, Washington, DC.

(f) This amendment becomes effective on August 16, 1998.

Footer Information

Comments