

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. 2000-CE-73-AD; Amendment 39-13493; AD 2004-05-01]

RIN 2120-AA64

Airworthiness Directives; Bombardier Inc. Model Otter DHC-3 Airplanes

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: The FAA adopts a new airworthiness directive (AD) for certain Bombardier Inc. (formerly deHavilland Inc.) Model Otter DHC-3 airplanes that have turbine engines installed per one of three supplemental type certificates (STC). This AD prohibits you from operating any affected airplane with these engine and propeller configurations unless a new STC for an elevator servo-tab with a redundant control linkage is installed. This AD is the result of reports of the control rod to the elevator servo-tab system detaching from the elevator servo-tab, which caused the elevator servo-tab to flutter on airplanes with a turbine engine installed. We are issuing this AD to prevent a single failure of the elevator servo-tab system, which could cause severe tab flutter. This failure could lead to possible loss of control of the airplane.

DATES: This AD becomes effective on April 20, 2004.

As of April 20, 2004, the Director of the Federal Register approved the incorporation by reference of certain publications listed in the regulation.

ADDRESSES: You may get the service information identified in this AD from:

- For STC No. SA3777NM: A.M. Luton 3025 Eldridge Avenue, Bellingham, Washington 98225; telephone (360) 671-7817; facsimile (360) 671-7820.
- For STC No. SA09866SC: Texas Turbine Conversions, Inc., 8955 CR 135, Celina, Texas 75009; telephone: (972) 382-4402; facsimile: (972) 382-4402.
- For STC No. SA09857SC: Canada Turbine Conversions, Inc., Lot 16, 105081 Highway 11, Pine Falls MB ROE 1MO, Canada.
- For STC No. SA01059SE: American Aeromotives, Inc. (American Aeromotives), 3025 Eldridge Avenue, Bellingham, Washington 98225, telephone: (360) 671-7817; facsimile: (360) 671-7820.

You may view the AD docket at FAA, Central Region, Office of the Regional Counsel, Attention: Rules Docket No. 2000-CE-73-AD, 901 Locust, Room 506, Kansas City, Missouri 64106. Office hours are 8 a.m. to 4 p.m., Monday through Friday, except Federal holidays.

FOR FURTHER INFORMATION CONTACT:

- For STC No. SA3777NM or STC No. SA01059SE: Richard Simonson, Aerospace Engineer, FAA, Seattle Aircraft Certification Office (ACO), 1601 Lind Avenue, SW., Renton, Washington 98055; telephone: (425) 917-6507; facsimile: (425) 917-6590.
- For STC No. SA09866SC: Richard Karanian, Aerospace Engineer, Special Certification Office, FAA, Rotorcraft Directorate, Special Certification Office, 2601 Meacham Boulevard, Fort Worth, Texas 76193-0190; telephone: (817) 222-5195; facsimile: (817) 222-5959.
- For STC No. SA09857SC: Peter W. Hakala, Aerospace Engineer, FAA, Special Certification Office, Rotorcraft Directorate, 2601 Meacham Boulevard, Fort Worth, Texas 76193-0190; telephone: (817) 222-5145; facsimile: (817) 222-5785.

SUPPLEMENTARY INFORMATION:

Discussion

What events have caused this AD? The FAA has received several reports of situations where pilots of Bombardier Inc. Model Otter DHC-3 airplanes with installed turbine engines have experienced buffeting of the elevators. All pilots declared an emergency and safely landed their aircraft.

Investigation found that the control rod to the elevator servo-tab system detached from the elevator servo-tab and caused the elevator servo-tab to flutter. In all cases, the aircraft had been modified with a Pratt and Whitney PT6A-135 or a PT6A-34 turbine engine per STC No. SA3777NM.

The certification basis for STC SA3777NM includes freedom from flutter and control reversal and divergence, required by 14 CFR 23.629(f)(1). Further review reveals that this requirement was not complied with when the STC was issued. Subsequent to the issuance of the STC, single failures of the control system for the servo-tab began causing the servo-tab to flutter. The failures were attributed to the increased velocity and airflow over the servo-tab caused by the turbine conversion.

As a method of compliance with 14 CFR 23.629(f)(1), American Aeromotives has identified the installation of STC No. SA01059SE (a new elevator servo-tab and redundant control linkage) on aircraft modified with a Pratt and Whitney PT6A-34/-135 turbine engine per STC No. SA3777NM.

FAA has inspected affected airplanes with STC No. SA09866SC or STC No. SA09857SC installed and confirmed that the same unsafe condition exists. At this time, neither of these two STC holders has identified a method of compliance with 14 CFR 23.629(f)(1).

As a method of compliance with 14 CFR 23.629(f)(1), FAA has identified the installation of STC No. SA01059SE (a new elevator servo-tab and redundant control linkage) on aircraft modified with STC No. SA09866SC or STC No. SA09857SC.

What is the potential impact if FAA took no action? A single failure of the elevator servo-tab system could cause severe tab flutter and lead to possible loss of control of the airplane.

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 Bombardier Inc. (formerly deHavilland Inc.) Model Otter DHC-3 airplanes that have turbine engines installed per one of three supplemental type certificates (STC). This proposal was published in the Federal Register as a notice of proposed rulemaking (NPRM) on November 5, 2003 (68 FR 62454). The NPRM proposed to prohibit you from operating any affected airplane that incorporates STC No. SA3777NM, STC No. SA09866SC, or STC No. SA09857SC without incorporation of STC No. SA01059SE.

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: Remove the Link Between STCs SA01059SE and ST01243NY

What is the commenter's concern? One commenter requests removing the link between STCs SA01059SE and ST01243NY. The STC SA01059SE references STC ST01243NY by permitting a combined installation of both. The STC ST01243NY is an FAA version of the Canadian STC SA99-129.

The STC SA99-129 introduced a mass-balance servo-tab which experienced failures until corrected in STC SA99-129, Revision 3, which required structural modifications to attach the mass-balance servo-tab (which does not exist in that model).

The use of dissimilar actuators increases the risk of "force fighting" and an additional loading unaccounted for in STC SA99-129, Revision 3.

What is FAA's response to the concern? We do not believe it is necessary to remove any link between STCs SA01059SE and ST01243NY since a link is not discussed in the proposed AD. The proposed AD requires only the installation of STC SA01059SE.

During testing, FAA investigated the interaction of STC SA01059SE with STC ST01243NY and found that the STCs are compatible. The link is noted in STC SA01059SE only to assist the installer in establishing the compatibility between the two STCs.

The risk of "force fighting" was addressed during the development of STC SA01059SE. The geometry differences are not significant and, during the flight test program, the mass-balance servo-tab was demonstrated to work smoothly throughout the elevator control travel.

We are not making any changes to the final rule AD action.

Comment Issue No. 2: Identify STC ST01243NY (Canadian STC SA99-129, Revision 3) as an Approved Alternative Method of Compliance

What is the commenter's concern? Two commenters request that FAA identify STC ST01243NY (STC SA99-129, Revision 3) as an approved alternative method of compliance since this STC has been demonstrated to prevent the elevator servo-tab from fluttering when the control rod to the servo-tab system becomes detached.

What is FAA's response to the concern? We agree that Canadian STC SA99-129, Revision 3, is an acceptable method of compliance to the AD. However, FAA has not determined if the latest version of STC ST01243NY (amended March 18, 2002) corresponds to the Canadian STC SA99-216, Revision 3. Aircraft that have been modified under STC ST01243NY will be evaluated under paragraph (f), alternative method of compliance, of the AD and the procedures in 14 CFR 39.19 to determine if the modification corresponds to the Canadian STC SA99-216, Revision 3.

We are not making any changes to the final rule AD action.

Comment Issue No. 3: Inspection and Maintenance of the New Mass-Balance Servo-tab and the Servo-tab System

What is the commenter's concern? One commenter notes that one cause of the problems with the first version of STC ST01243NY (STC SA99-129) was the retrofit of the existing mass-balance servo-tab. Therefore, the use of a completely new mass-balance servo-tab is fundamental. The commenter recommends that maintenance and inspection requirements include the critical points in the design.

What is FAA's response to the concern? We agree with the commenter's suggestion. The STC SA01059SE requires a completely new mass-balance servo-tab, reinforced at the second attachment. In addition, the trailing edge is an extrusion and the outboard end block is one-piece aluminum. The Instructions for Continuing Airworthiness (ICA) for STC SA01059SE require periodic inspection and maintenance of the new mass-balance servo-tab and the servo-tab system.

Since the commenter's recommendation is in effect, we are not making any changes to the final rule AD action.

Comment Issue No. 4: Carefully Review Any Proposed Structural Modification to the Tab and Elevator

What is the commenter's concern? There have been several reports of servo-tab failures on piston-powered Model DHC-3 airplanes. At least one reported failure involved a severed servo-tab and distressed elevator in the region where the second actuator is installed following STC SA01059SE. Although the failure progression for the severed servo and distressed elevator is not known, one commenter suggests a cautious approach to any proposed structural modifications to the servo-tab and elevator.

What is FAA's response to the concern? The FAA agrees with the suggestion of taking a cautious approach to any proposed structural modifications to the servo-tab and elevator. We considered this failure mode during the design of the completely new servo-tab installed following STC SA01059SE. The structural modifications to the rear spar of the horizontal stabilizer for mounting of the second control rod acts to strengthen the rear spar area. The new servo-tab is designed to handle a conservative aerodynamic load with only the second rod attached. The new servo-tab is considerably stronger in bending than the original servo-tab.

We are not making any changes to the final rule AD action.

Comment Issue No. 5: Lack of a Dual Actuator for the Rudder Tab

What is the commenter's concern? One commenter requests that the proposed AD also address the lack of a dual actuator for the rudder tab. The commenter explains that although only the elevator servo-tab has displayed service difficulties in the past, strict application of 14 CFR 39.13 would also require modifying the rudder tab to either a dual actuator or a mass balanced configuration.

There is no reference to modifying the rudder trim system in STC SA01059SE. In this context, the rudder is less affected by the increased swirl of the propeller stream since the rudder is already in the turbulent body flow region, whereas, the servo-tab actuator is more exposed to the increased propeller tip effects. Therefore, the lack of reference to the rudder trim system is not contentious as there have been no reports of increased difficulties in this area.

What is FAA's response to the concern? We disagree with the recommendation that the proposed AD address the lack of a dual actuator for the rudder tab. Since the rudder is less affected by the increased swirl of the propeller stream and due to the lack of reported service difficulties with the rudder trim system, we will not require a dual actuator for the rudder trim system in this AD.

We are not making any changes to the final rule AD action.

Comment Issue No. 6: Use Correct and Consistent Terminology

What is the commenter's concern? One commenter requests that we change the term "Servo trim tab" to "elevator servo-tab" and "elevator flutter" to "tab flutter". These changes are for consistency and correctness.

What is FAA's response to the concern? We agree and will make these changes throughout the AD.

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.

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 32 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 do the modification (on Model DHC-3 airplanes with a turbine engine) for installing STC No. SA01059SE, a new elevator servo-tab and redundant control linkage. We have no way of determining the number of airplanes that may need such modification:

Labor cost	Parts cost	Total cost per airplane
20 workhours x \$65 per hour = \$1,300	\$3,000	\$1,300 + \$3,000 = \$4,300.

Compliance Time of This AD

What will be the compliance time of this AD? The compliance time of this AD is within 3 calendar months or 250 hours time-in-service (TIS) after the effective date of this AD, whichever occurs first.

Why is the compliance time of this AD presented in both hours TIS and calendar time? A single failure of the elevator servo-tab system is a direct result of airplane operation with a turbine engine installed. For example, a single failure of the elevator servo-tab system could occur on an affected airplane within a short period of airplane operation while you could operate another affected airplane for a considerable amount of time without experiencing a single failure of the elevator servo-tab system. Therefore, to assure that a single failure of the elevator servo-tab system is detected and corrected in a timely manner without inadvertently grounding any of the affected airplanes, we are using a compliance time based upon both hours TIS and calendar time.

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 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 "AD Docket No. 2000-CE-73-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"

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).

2004-05-01 Bombardier Inc.: Amendment 39-13493; Docket No. 2000-CE-73-AD.

When Does This AD Become Effective?

- (a) This AD becomes effective on April 20, 2004.

What Other ADs Are Affected by This Action?

- (b) None.

What Airplanes Are Affected by This AD?

- (c) This AD affects any Model Otter DHC-3 airplane (all serial numbers) that:
 - (1) Has a turbine engine installed per:
 - (i) Supplemental Type Certificate (STC) No. SA3777NM (A.M. Luton installation of Pratt and Whitney PT6A-34/-135 engine);
 - (ii) STC No. SA09866SC (Texas Turbines Conversions, Inc. installation of Honeywell TPE-331 engine); or
 - (iii) STC No. SA09857SC (Canada Turbine Conversions, Inc. installation of Walter M601E-11 engine); and
 - (2) Is certificated in any category.

What Is the Unsafe Condition Presented in This AD?

(d) This AD is the result of reports that the control rod to the elevator servo-tab system detached from the elevator servo-tab causing the elevator servo-tab to flutter on airplanes with a turbine engine installed. The actions specified in this AD are intended to prevent a single failure of the elevator servo-tab system causing severe tab flutter. This failure could lead to possible loss of control of the airplane.

What Must I Do To Address This Problem?

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

Actions	Compliance	Procedures
(1) Do not operate any airplane that has a turbine engine installed per: STC No. SA3777NM, SA09866SC, or SA09857SC and DOES NOT have a new elevator servotab and redundant control linkage per STC No. SA01059SE.	As of 3 calendar months or 250 hours time-in-service (TIS) after April 20, 2004 (the effective date of this AD), whichever occurs first.	Not Applicable.
(2) You may install at the same time a turbine engine per STC No. SA3777NM, SA09866SC, or SA09857SC and a new elevator servo-tab and redundant control linkage per STC No. SA01059SE.	Before further flight as of April 20, 2004 (the effective date of this AD).	Follow American Aeromotives, Inc. DHC-3 Otter Service Letter No. AAI-DHC3-01.01, Revision No. IR, dated April 9, 2002.
(3) You may operate an affected airplane installed with a turbine engine per STC No. SA777NM, SA09866SC, or SA09857SC if you install a new elevator servo-tab and redundant control linkage per STC No. SA01059SE.	Within 3 calendar months or 250 hours TIS after April 20, 2004 (the effective date of this AD), whichever occurs first.	Follow American Aeromotives, Inc. DHC-3 Otter Service Letter No. AAI-DHC3-02.01, Revision No. IR, dated April 9, 2002.
(4) Do not install a turbine engine per STC No. SA3777NM, SA09866SC, or SA09857SC, unless you have installed a new elevator servo-tab and redundant control linkage per STC No. SA01059SE.	As of April 20, 2004 (the effective date of this AD).	No 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, Seattle Aircraft Certification Office (ACO), FAA. For information on any already approved alternative methods of compliance, contact:

(1) For STC No. SA3777NM or STC No. SA01059SE: Richard Simonson, Aerospace Engineer, FAA, Seattle Aircraft Certification Office (ACO), 1601 Lind Avenue, SW., Renton, Washington 98055; telephone: (425) 917-6507; facsimile: (425) 917-6590.

(2) For STC No. SA09866SC: Richard Karanian, Aerospace Engineer, Special Certification Office, FAA, Rotorcraft Directorate, Special Certification Office, 2601 Meacham Boulevard, Fort Worth, Texas 76193-0190; telephone: (817) 222-5195; facsimile: (817) 222-5959.

(3) For STC No. SA09857SC: Peter W. Hakala, Aerospace Engineer, FAA, Special Certification Office, Rotorcraft Directorate, 2601 Meacham Boulevard, Fort Worth, Texas 76193-0190; telephone: (817) 222-5145; facsimile: (817) 222-5785.

Does This AD Incorporate Any Material by Reference?

(g) You must do the actions required by this AD following the instructions in American Aeromotives, Inc. DHC-3 Otter Service Letter No. AAI-DHC3-02.01, Revision No. IR, dated April 9, 2002. The Director of the Federal Register approved the incorporation by reference of this service letter in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. You may get a copy from American Aeromotives, Inc., 3025 Eldridge Avenue, Bellingham, Washington 98225, telephone: (360) 671-7817; facsimile: (360) 671-7820. You may review copies at FAA, Central Region, Office of the Regional Counsel, 901 Locust, Room 506, Kansas City, Missouri 64106; or at the Office of the Federal Register, 800 North Capitol Street, NW., suite 700, Washington, DC.

Issued in Kansas City, Missouri, on February 20, 2004.

Dorenda D. Baker,

Manager, Small Airplane Directorate, Aircraft Certification Service.

[FR Doc. 04-4373 Filed 2-27-04; 8:45 am]

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