

## **Airworthiness Directive**

### **Federal Register Information**

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### **Header Information**

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39 [62 FR 1041 NO. 5 01/08/97]

[Docket No. 95-ANE-66; Amendment 39-9863; AD **96-25-20**]

RIN 2120-AA64

Hamilton Standard 14RF and 14SF Series, and Hamilton Standard/British Aerospace Model 6/5500/F Propellers

**PDF Copy (If Available):**

### **Preamble Information**

AGENCY: Federal Aviation Administration, DOT.

ACTION: Final rule.

SUMMARY: This amendment adopts a new airworthiness directive (AD), applicable to Hamilton Standard 14RF and 14SF series, and Hamilton Standard/British Aerospace Model 6/5500/F propellers, that requires initial and repetitive inspections of critical control components, and removal and replacement with serviceable parts those critical control components that do not meet the return to service criteria. This amendment is prompted by failure modes effects analysis (FMEA), certification test data, engineering analysis, and repair actions performed at overhaul depots. The actions specified by this AD are intended to prevent loss of propeller control due to failure of critical control components, which could result in loss of control of the aircraft.

DATES: Effective February 7, 1997.

ADDRESSES: The service information referenced in this AD may be obtained from Publication Distribution, Hamilton Standard, One Hamilton Road, Windsor Locks, CT 06096-1010; fax (860) 654-6906. This information may be examined at the Federal Aviation Administration (FAA), New England Region, Office of the Assistant Chief Counsel, 12 New England

Executive Park, Burlington, MA; or at the Office of the Federal Register, 800 North Capitol Street, NW., suite 700, Washington, DC.

FOR FURTHER INFORMATION CONTACT: Frank Walsh, Aerospace Engineer, Boston Aircraft Certification Office, FAA, Engine and Propeller Directorate, 12 New England Executive Park, Burlington, MA 01803-5299; telephone (617) 238-7158, fax (617) 238-7199.

#### SUPPLEMENTARY INFORMATION:

A proposal to amend part 39 of the Federal Aviation Regulations (14 CFR part 39) to include an airworthiness directive (AD) that is applicable to Hamilton Standard Models 14RF-9, 14RF-19, 14RF-21; 14SF-5, 14SF-7, 14SF-11, 14SF-11L, 14SF-15, 14SF-17, 14SF- 19, 14SF-23; and Hamilton Standard/British Aerospace 6/5500/F propellers was published in the Federal Register on December 13, 1995 (60 FR 63988). That action proposed to require initial and repetitive inspections of critical aspects of the transfer tube assembly, actuator assembly, and propeller control unit (PCU) for wear. This AD would also require, prior to further flight, removing and replacing with serviceable parts those critical components that do not meet the return to service criteria.

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

Three commenters state that the initial AD inspection interval for the transfer tube should be 10,500 hours time in service (TIS) as noted in the appropriate Hamilton Standard Service Bulletin (SB) and supported by the manufacturer's wear data. The commenters also indicated that the time interval of 10,500 hours TIS is significant since it coincides with the Major Inspection Interval (MII) that many operators adhere to on certain propeller installations. In addition, the commenters requested that credit be given to MII inspections that have been done recently that meet the inspection requirements of the appropriate SBs.

The FAA concurs in part. Although the wear data supports an inspection interval by more than 3 times the 10,500 hour TIS interval, the FAA has determined that the initial inspection should be accomplished within 6,000 hours TIS, or 3 years, whichever occurs first, after the effective date of this AD. The initial inspection compliance time was selected because the transfer tubes have not been time tracked. The 6,000 hours TIS initial inspection compliance time will result in all transfer tubes to be inspected within a time interval supported by the wear data. Also, credit cannot be given to components inspected during the MII unless the components were inspected in accordance with the appropriate critical parts inspection SBs.

The FAA intends to give credit for critical parts inspections performed in accordance with the appropriate SBs that have already been performed within the 10,500 hours TIS interval.

The initial inspection also coincides with the installation of the new major alteration feature, Secondary Drive Quill (SDQ) that is mandated by AD 95-22-12 to be completed prior to June 30, 1998. This coordination effort will give a smooth phase-in of all requirements with a minimal impact on record keeping and operational commitments. To conclude, the FAA has determined that an initial inspection within 6,000 hours TIS, or 3 years whichever occurs first, after the effective date of this AD will safely introduce the transfer tube into a repetitive inspection at 10,500 hours TIS intervals thereafter

Two commenters state that at present there is no tracking of time in service for these components and that tracking will be unduly burdensome. The FAA concurs that there is no current requirement to track component time in service, but disagrees that adding the requirement to track time would be unduly burdensome since time tracking is currently conducted on other propeller components. Systems to track time on propeller components have already been established. The FAA program to introduce these components to time tracking begins with an initial phase in interval of 6,000 hours TIS, or 3 years, whichever occurs first, after the effective date of this AD, followed by a repetitive inspection of these components at a 10,500 hours TIS interval that was not required at certification.

Two commenters state that the total economic impact of the proposed rule has been underestimated because the FAA did not include costs such as loss of revenue from having aircraft sit idle while awaiting the required inspections. The FAA does not concur. The cost impact of this AD was calculated using data from the industry as to the time and parts needed to accomplish the required actions. The FAA does not include the costs of secondary effects of performing the actions required by the AD in its economic analysis. As a matter of law, in order to be operated in commercial service, an aircraft must conform to its type design and be in a condition for safe flight. The type design of the affected propellers was certificated only after the FAA found that the design complied with all applicable airworthiness requirements. In adopting those certification requirements, the FAA already determined a level of safety that is cost beneficial. With this AD, the FAA has determined that an unsafe condition exists, that means that a cost-beneficial level of safety is no longer achieved, and that additional requirements must be performed in order to restore that level of safety. Because that level of safety was already determined to be cost-beneficial, a full cost analysis is not required for each AD, and the costs of the secondary effects of performing the actions required by the AD are not added to the cost analysis of the AD.

In addition the FAA has increased the initial inspection compliance time to 6,000 hours TIS, or 3 years, whichever occurs first, after the effective date of this AD. The increase in initial inspection compliance time will smooth the transition to the 10,500 hours TIS repetitive inspection program and minimize the impact on aircraft operation.

Three commenters state that, to date, there is no evidence of in-service wear of the affected components. The FAA concurs in part. The engineering and repair data indicate wear does exist but at an extremely low level. Since wear does occur on these critical components they must be inspected periodically and these components must be removed from an unspecified repair status to a defined inspection interval category.

Two commenters state that the PCU inspection is already required by another AD. The FAA concurs in part. The purpose of this new AD is to integrate inspection items not covered by AD 95- 22-12 into a comprehensive coordinated inspection requirement for the propeller control system. Airworthiness directive 95-22-12 only addresses inspection of the PCU servo ballscrew internal spline, installation of a secondary drive quill, and a torque check inspection of the primary ballscrew quill.

One commenter states that the repetitive inspection interval should be reduced from 10,500 hours TIS to 2,500 hours TIS. The FAA does not concur. Engineering investigation, analysis, and field and laboratory testing reveal these components can operate safely within the 10,500 hours TIS inspection interval so the interval does not need to be reduced further.

Two commenters state that credit should be given for Critical Parts Inspections (CPIs) that have already been performed within the previous 10,500 hours TIS MII. The FAA concurs in part. This final rule increases the initial inspection interval from 1,000 hours TIS to 6,000 hours TIS, or 3 years, whichever occurs first, after the effective date of this AD, for these CPI items, and thereafter requires inspection at intervals of 10,500 hours TIS in accordance with the applicable SBs. The FAA intends to give credit for those CPIs conducted in accordance with the SBs applicable to this AD.

One commenter requests clarification on the definition of time in service, TIS. The FAA concurs. The FAA interprets this question that time in service, for the purpose of this AD, is defined as operating time since issuance of this AD or operating time since last inspection in accordance with this AD. The FAA has added this definition to the AD as new paragraph (d).

One commenter states that there is insufficient time to accomplish the inspections based upon limited repair shop capacity. The FAA re-evaluated the overall phase in program and determined that an initial inspection

compliance interval 6,000 hours TIS, or 3 years, whichever occurs first, after the effective date of this AD would safely introduce components to the repetitive inspection program while alleviating the repair shop capacity problem.

Since publication of the NPRM, Hamilton Standard has issued Revision 1, dated April 23, 1996, to the following SBs: 14RF-9-61-64, 14RF-19-61-32, 14RF-21-61-51, 14SF-61-70, and 6/5500/F-61-25. This revision modifies a figure, adds an additional figure, deletes the requirement to inspect the PCU retaining nut, and makes minor editorial changes for clarification only. This final rule references this new revision as well as the original issuances.

After careful review of the available data, including the comments noted above, the FAA has determined that air safety and the public interest require the adoption of the rule with the changes described previously. The FAA has determined that these changes will neither increase the economic burden on any operator nor increase the scope of the AD.

There are approximately 3,280 propellers of the affected design in the worldwide fleet (excluding spares). The FAA estimates that 1,370 propellers installed on aircraft of U.S. registry will be affected by this AD, that it will take approximately 4.3 work hours per propeller to accomplish the required actions, and that the average labor rate is \$60 per work hour. Based on these figures, the total cost impact of the AD on U.S. operators is estimated to be \$353,460 per fleet inspection.

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 final evaluation has been prepared for this action and it is contained in the Rules Docket. A copy of it may be obtained from 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 USC 106(g), 40113, 44701. §39.13 - [AMENDED]

2. Section 39.13 is amended by adding the following new airworthiness directive:

### Regulatory Information

**96-25-20 Hamilton Standard:** Amendment 39-9863. Docket 95-ANE-66.

Applicability: Hamilton Standard Models 14RF-9, 14RF-19, 14RF-21, and 14SF-5, 14SF-7, 14SF-11, 14SF-11L, 14SF-15, 14SF-17, 14SF-19, 14SF-23 and Hamilton Standard/British Aerospace 6/5500/F propellers installed on but not limited to Embraer EMB-120 and EMB-120-RT; SAAB-SCANIA SF 340B; Aerospatiale ATR42-100, ATR42-300, ATR42-320, ATR72; DeHavilland DHC-8-100 series, DHC-8-300 Series; Construcciones Aeronauticas SA (CASA) CN-235 series and CN-235-100; Canadair CL-215T and CL-415; and British Aerospace ATP Airplanes.

Note 1: This airworthiness directive (AD) applies to each propeller 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 propellers 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 (e) 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 as indicated, unless accomplished previously.

To prevent loss of propeller control due to failure of critical components, which could result in loss of control of the aircraft, accomplish the following:

(a) Inspect transfer tube assemblies and propeller control units (PCUs) for wear within 6,000 hours time in service (TIS), or 3 years, whichever occurs first, after the effective date of this AD. Perform inspections of the critical aspects of these components in accordance with the applicable service bulletins (SBs) listed in paragraph (c) of this AD. Thereafter, inspect at

intervals not to exceed 10,500 hours TIS since last inspection. Prior to further flight, remove and replace with serviceable parts those components that do not meet the return to service criteria defined in the applicable SBs. (For PCU's that have a Secondary Drive Quill (SDQ) installed in accordance with AD 95-22-12, it is not necessary to conduct an initial inspection again. They may advance to the repetitive inspection interval based on the TIS since SDQ installation.)

(b) Inspect actuator assemblies for wear within 10,500 hours TIS after the effective date of this AD, or at the next major inspection interval (MII), whichever occurs first. Perform inspections of the critical aspects of these components in accordance with the applicable service bulletins (SBs) listed in paragraph (c) of this AD. Thereafter, inspect at intervals not to exceed 10,500 hours TIS since last inspection. Prior to further flight, remove and replace with serviceable parts those components that do not meet the return to service criteria defined in the applicable SBs.

(c) Perform the inspections for wear required by this AD in accordance with, and use the return to service criteria defined in, the following applicable Hamilton Standard SBs, Revision 1, all dated April 23, 1996, or Original, dated November 27, 1995: 14RF-9-61-64, 14RF-19-61-32, 14RF- 21-61-51, 14SF-61-70, and 6/5500/F-61-25.

(d) For the purpose of this AD, time in service (TIS) is defined as operating time since issuance of this AD or operating time since last inspection in accordance with this AD.

(e) An alternative method of compliance or adjustment of the compliance time that provides an acceptable level of safety may be used if approved by the Manager, Boston Aircraft Certification Office. The request should be forwarded through an appropriate FAA Maintenance Inspector, who may add comments and then send it to the Manager, Boston Aircraft Certification Office.

Note 2: Information concerning the existence of approved alternative methods of compliance with this airworthiness directive, if any, may be obtained from the Boston Aircraft Certification Office.

(f) 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 aircraft to a location where the requirements of this AD can be accomplished.

(g) The actions required by this AD shall be done in accordance with the following Hamilton Standard SBs:

Document No	Pages	Revision	Date
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14RF-9-61-64	1,2	1	April 23, 1996
	3	Original	November 27, 1995
	4	1	April 23, 1996
	5-11	Original	November 27, 1995
	12,13	1	April 23, 1996
	14-28	Original	November 27, 1995
	29	1	April 23, 1996
	30,31	Original	November 27, 1995
	32	1	April 23, 1996
	33	Original	November 27, 1995
	34	1	April 23, 1996
Total Pages: 34.			
14RF-9-61-64	1-33	Original	November 27, 1995
Total Pages: 33.			
14RF-19-61-32	1,2	1	April 23, 1996
	3	Original	November 27, 1995
	4	1	April 23, 1996
	5-11	Original	November 27, 1995
	12,13	1	April 23, 1996
	14-28	Original	November 27, 1995
	29	1	April 23, 1996
	30,31	Original	November 27, 1995
	32	1	April 23, 1996
	33	Original	November 27, 1995
	34	1	April 23, 1996
Total Pages: 34.			
14RF-19-61-32	1-33	Original	November 27, 1995
Total pages: 33.			
14RF-21-61-51	1,2	1	April 23, 1996
	3	Original	November 27, 1995
	4	1	April 23, 1996
	5-11	Original	November 27, 1995
	12,13	1	April 23, 1996
	14-27	Original	November 27, 1995
	28	1	April 23, 1996

	29-31	Original	November 27, 1995
	32	1	April 23, 1996
	33	Original	November 27, 1995
	34	1	April 23, 1996
Total Pages: 34.			
14RF-21-61-51	1-33	Original	November 27, 1995
Total Pages: 33.			
14SF-61-70	1,2	1	April 23, 1996
	3	Original	November 27, 1995
	4	1	April 23, 1996
	5,6	Original	November 27, 1995
	7	1	April 23, 1996
	8-11	Original	November 27, 1995
	12-14	1	April 23, 1996
	15-29	Original	November 27, 1995
	30	1	April 23, 1996
	31,32	Original	November 27, 1995
	33	1	April 23, 1996
	34	Original	November 27, 1995
	35	1	April 23, 1996
Total Pages: 35.			
14SF-61-70	1-34	Original	November 27, 1995
Total Pages: 34.			
6/5500/F-61-25	1,2	1	April 23, 1996
	3	Original	November 27, 1995
	4	1	April 23, 1996
	5,6	Original	November 27, 1995
	7	1	April 23, 1996
	8-10	Original	November 27, 1995
	11-13	1	April 23, 1996
	14-28	Original	November 27, 1995
	29	1	April 23, 1996
	30,31	Original	November 27, 1995
	32	1	April 23, 1996
	33	Original	November 27, 1995

	34	1	April 23, 1996
Total Pages: 34.			
6/5500/F-61-25	1-33	Original	November 27, 1995
Total Pages: 33.			

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 Publication Distribution, Hamilton Standard, One Hamilton Road, Windsor Locks, CT 06096-1010; fax (860) 654-6906. Copies may be inspected at the FAA, New England Region, Office of the Assistant Chief Counsel, 12 New England Executive Park, Burlington, MA; or at the Office of the Federal Register, 800 North Capitol Street NW., suite 700, Washington, DC.

(h) This amendment becomes effective on February 7, 1997.

**Footer Information**

**Comments**

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