Proposed Rules

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This section of the FEDERAL REGISTER contains notices to the public of the proposed issuance of rules and regulations. The purpose of these notices is to give interested persons an opportunity to participate in the rule making prior to the adoption of the final rules.

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 23

[Docket No. CE175]; Notice No. 23–02–02–SC

Special Conditions: Installation of Full Authority Digital Engine Control (FADEC) System on The Lancair Company, Model LC40–550FG–E Airplane

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of proposed special conditions.

SUMMARY: This notice proposes special conditions for The Lancair Company, Model LC40–550FG–E Airplane, which will use a FADEC System. This airplane will have a novel or unusual design feature associated with the installation of an engine that uses an electronic engine control system in place of the engine's mechanical system. The applicable airworthiness regulations do not contain adequate or appropriate safety standards for this design feature. These proposed special conditions contain the additional safety standards that the Administrator considers necessary to establish a level of safety equivalent to that established by the existing airworthiness standards.

DATES: Comments must be received on or before April 29, 2002.

ADDRESSES: Comments on this proposal may be mailed in duplicate to: Federal Aviation Administration, Regional Counsel, ACE–7, Attention: Rules Docket, Docket No. CE175, DOT Building, 901 Locust, Kansas City, Missouri 64106, or delivered in duplicate to the Regional Counsel at the above address. Comments must be marked: Docket No. CE175. Comments may be inspected in the Rules Docket weekdays, except Federal holidays, between 7:30 a.m. and 4:00 p.m.

FOR FURTHER INFORMATION CONTACT: Ervin Dvorak, Aerospace Engineer, Standards Office (ACE–110), Small Airplane Directorate, Aircraft Certification Service, Federal Aviation Administration, 901 Locust, Room 301, Kansas City, Missouri 64106; telephone (816) 329–4123.

SUPPLEMENTARY INFORMATION:

Comments Invited

Interested persons are invited to participate in the making of these proposed special conditions by submitting such written data, views, or arguments as they may desire. Communications should identify the regulatory docket or notice number and be submitted in duplicate to the address specified above. All communications received on or before the closing date for comments will be considered by the Administrator. The proposals described in this notice may be changed in light of the comments received. All comments received will be available in the Rules Docket for examination by interested persons, both before and after the closing date for comments. A report summarizing each substantive public contact with FAA personnel concerning this rulemaking will be filed in the docket. Persons wishing the FAA to acknowledge receipt of their comments submitted in response to this notice must include with those comments a self-addressed, stamped postcard on which the following statement is made: ''Comments to Docket No. CE175.'' The postcard will be date stamped and returned to the commenter.

Background

On November 8, 2001, The Lancair Company applied to amend Type Certificate A0003SE for the addition of the Model LC40–550FG–E airplane. The Model LC40–550FG–E is a small, utility category airplane. The airplane is powered by one reciprocating engine equipped with an electronic engine control system with full authority capability in place of the hydromechanical control system.

Type Certification Basis

Under the provisions of 14 CFR 21.101(c), The Lancair Company must show that the Model LC40–550FG–E meets the applicable provisions of the certification basis specified in Amendment 6 to TCDS A00003SE except as follows:

- FAR 23.1305 as of Amendment 52.
- FAR 23.1359 as of Amendment 49.
- Special conditions will be applied to the FADEC installation for protection against high intensity radiated fields (HIRF) and for installed system reliability (FAR 23.1309 applicability).

If the Administrator finds that the applicable airworthiness regulations (i.e., 14 CFR part 23) do not contain adequate or appropriate safety standards for the Model LC40–550FG–E because of a novel or unusual design feature, special conditions are prescribed under the provisions of § 21.16.

In addition to the applicable airworthiness regulations and special conditions, the Model LC40–550FG must comply with the fuel vent and exhaust emission requirements of 14 CFR part 34 and the noise certification requirements of 14 CFR part 36, and the FAA must issue a finding of regulatory adequacy pursuant to section 611 of Public Law 92–574, the ''Noise Control Act of 1972.''

Special conditions, as appropriate, as defined in § 11.19, are issued in accordance with § 11.38 after public notice and become part of the type certification basis in accordance with § 21.17(a)(2).

Special conditions are initially applicable to the model for which they are issued. Should the type certificate for that model be amended later to include any other model that incorporates the same novel or unusual design feature, the special conditions would also apply to the other model under the provisions of § 21.101(a)(1).

Novel or Unusual Design Features

The Lancair Company, Model LC40–550FG–E Airplane will incorporate the following novel or unusual design features:

The Lancair Company, Model LC40–550FG–E Airplane will use an engine that includes an electronic control system with full engine authority capability.

Many advanced electronic systems are prone to either upsets or damage, or both, at energy levels lower than analog systems. The increasing use of high power radio frequency emitters mandates requirements for improved high intensity radiated fields (HIRF) protection for electrical and electronic equipment. Since the electronic engine control system used on the Lancair Company, Model LC40–550FG–E will perform critical functions, provisions for protection from the effects of HIRF

fields should be considered and, if necessary, incorporated into the airplane design data. The FAA policy contained in Notice 8110.71, dated April 2, 1998, establishes the HIRF energy levels that airplanes will be exposed to in service. The guidelines set forth in this Notice are the result of an Aircraft Certification Service review of existing policy on HIRF, in light of the ongoing work of the ARAC Electromagnetic Effects Harmonization Working Group (EEHWG). The EEHWG adopted a set of HIRF environment levels in November 1997 that were agreed upon by the FAA, JAA, and industry participants. As a result, the HIRF environments in this notice reflect the environment levels recommended by this working group. This notice states that a full authority digital engine control is an example of a system that should address the HIRF environments.

Even though the control system will be certificated as part of the engine, the installation of an engine with an electronic control system requires evaluation due to the possible effects on or by other airplane systems (*e.g.,* radio interference with other airplane electronic systems, shared engine and airplane power sources). The regulatory requirements in 14 CFR part 23 for evaluating the installation of complex systems, including electronic systems, are contained in § 23.1309. However, when § 23.1309 was developed, the use of electronic control systems for engines was not envisioned; therefore, the § 23.1309 requirements were not applicable to systems certificated as part of the engine (reference § 23.1309(f)(1)). Also, electronic control systems often require inputs from airplane data and power sources and outputs to other airplane systems (*e.g.,* automated cockpit powerplant controls such as mixture setting). Although the parts of the system that are not certificated with the engine could be evaluated using the criteria of § 23.1309, the integral nature of systems such as these makes it unfeasible to evaluate the airplane portion of the system without including the engine portion of the system. However, § 23.1309(f)(1) again prevents complete evaluation of the installed airplane system since evaluation of the engine system's effects is not required.

Therefore, special conditions are proposed for The Lancair Company, Model LC40–550FG–E to provide HIRF protection and to evaluate the installation of the electronic engine control system for compliance with the requirements of § 23.1309(a) through (e) at Amendment 23–46.

Applicability

As discussed above, these special conditions are applicable to the The Lancair Company, Model LC40–550FG–E Airplane. Should The Lancair Company apply at a later date for a change to the type certificate to include another model incorporating the same novel or unusual design feature, the special conditions would apply to that model as well under the provisions of § 21.101.

Conclusion

This action affects only certain novel or unusual design features on one model, The Lancair Company, Model LC40–550FG–E Airplane. It is not a rule of general applicability, and it affects only the applicant who applied to the FAA for approval of these features on the airplane.

List of Subjects in 14 CFR Part 23

Aircraft, Aviation safety, Signs and symbols.

Citation

The authority citation for these special conditions is as follows:

Authority: 49 U.S.C. 106(g), 40113 and 44701; 14 CFR 21.16 and 21.17; and 14 CFR 11.38 and 11.19.

The Proposed Special Conditions

Accordingly, the Federal Aviation Administration (FAA) proposes the following special conditions as part of the type certification basis for The Lancair Company, Model LC40–550FG–E Airplane.

1. *High Intensity Radiated Fields (HIRF) Protection.* In showing compliance with 14 CFR part 21 and the airworthiness requirements of 14 CFR part 23, protection against hazards caused by exposure to HIRF fields for the full authority digital engine control system, which performs critical functions, must be considered. To prevent this occurrence, the electronic engine control system must be designed and installed to ensure that the operation and operational capabilities of this critical system are not adversely affected when the airplane is exposed to high energy radio fields.

At this time, the FAA and other airworthiness authorities are unable to precisely define or control the HIRF energy level to which the airplane will be exposed in service; therefore, the FAA hereby defines two acceptable interim methods for complying with the requirement for protection of systems that perform critical functions.

(1) The applicant may demonstrate that the operation and operational capability of the installed electrical and electronic systems that perform critical functions are not adversely affected when the aircraft is exposed to the external HIRF threat environment defined in the following table:

Frequency	Field strength (volts per meter)	
	Peak	Average
10 kHz–100 kHz	50	50
100 kHz–500 kHz	50	50
500 kHz–2 MHz	50	50
2 MHz–30 MHz	100	100
30 MHz–70 MHz	50	50
70 MHz–100 MHz	50	50
100 MHz–200 MHz	100	100
200 MHz–400 MHz	100	100
400 MHz–700 MHz	700	50
700 MHz–1 GHz	700	100
1 GHz–2 GHz	2000	200
2 GHz–4 GHz	3000	200
4 GHz–6 GHz	3000	200
6 GHz–8 GHz	1000	200
8 GHz–12 GHz	3000	300
12 GHz–18 GHz	2000	200
18 GHz–40 GHz	600	200

The field strengths are expressed in terms of peak root-mean-square (rms) values.

or,

(2) The applicant may demonstrate by a system test and analysis that the electrical and electronic systems that perform critical functions can withstand a minimum threat of 100 volts per meter peak electrical strength, without the benefit of airplane structural shielding, in the frequency range of 10 KHz to 18 GHz. When using this test to show compliance with the HIRF requirements, no credit is given for signal attenuation due to installation. Data used for engine certification may be used, when appropriate, for airplane certification.

2. *Electronic Engine Control System.* The installation of the electronic engine control system must comply with the requirements of § 23.1309(a) through (e) at Amendment 23–46. The intent of this requirement is not to re-evaluate the inherent hardware reliability of the control itself, but rather determine the effects, including environmental effects addressed in § 23.1309(e), on the airplane systems and engine control system when installing the control on the airplane. When appropriate, engine certification data may be used when showing compliance with this requirement.

Issued in Kansas City, Missouri on February 5, 2002.

Michael Gallagher,

Manager, Small Airplane Directorate, Aircraft Certification Service.

[FR Doc. 02–7503 Filed 3–27–02; 8:45 am]

BILLING CODE 4910–13–P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. 98–CE–124–AD]

RIN 2120–AA64

Airworthiness Directives; de Havilland Inc. Models DHC–2 Mk. I, DHC–2 Mk. II, and DHC–2 Mk. III Airplanes

AGENCY: Federal Aviation Administration, DOT.

ACTION: Notice of proposed rulemaking (NPRM).

SUMMARY: This document proposes to adopt a new airworthiness directive (AD) that would apply to certain de Havilland Inc. (de Havilland) Models DHC–2 Mk. I, DHC–2 Mk. II, and DHC–2 Mk. III airplanes. This proposed AD would establish a life limit for the front fuselage struts and would require you to repetitively replace the front fuselage struts every 15 years or repetitively inspect the struts for corrosion or fatigue damage and replace when the damage exceeds a certain level. This proposed AD is the result of mandatory continuing airworthiness information (MCAI) issued by the airworthiness authority for Canada. The actions specified by the proposed AD are intended to prevent structural failure of the front fuselage caused by corrosion or fatigue damage to the struts that develops over time, which could result in reduced or loss of control of the airplane.

DATES: The Federal Aviation Administration (FAA) must receive any comments on this proposed rule on or before May 10, 2002.

ADDRESSES: Submit comments to FAA, Central Region, Office of the Regional Counsel, Attention: Rules Docket No. 98–CE–124–AD, 901 Locust, Room 506, Kansas City, Missouri 64106. You may view any comments at this location between 8 a.m. and 4 p.m., Monday through Friday, except Federal holidays. You may also send comments electronically to the following address: *9–ACE–7–Docket@faa.gov.* Comments sent electronically must contain ''Docket No. 98–CE–124–AD'' in the subject line. If you send comments electronically as attached electronic files, the files must be formatted in Microsoft Word 97 for Windows or ASCII text.

You may get service information that applies to this proposed AD from Bombardier Inc., Bombardier Regional Aircraft Division, 123 Garratt Boulevard, Downsview, Ontario, Canada M3K 1Y5; telephone: (416) 633–7310. You may also view this information at the Rules Docket at the address above.

FOR FURTHER INFORMATION CONTACT: Mr. Jon Hjelm, Aerospace Engineer, New York Aircraft Certification Office, 10 Fifth Street, 3rd Floor, Valley Stream, New York 11581–1200; telephone: (516) 256–7523; facsimile: (516) 568–2716.

SUPPLEMENTARY INFORMATION:

Comments Invited

How do I Comment on This Proposed AD?

The FAA invites comments on this proposed rule. You may submit whatever written data, views, or arguments you choose. You need to include the rule's docket number and submit your comments to the address specified under the caption **ADDRESSES**. We will consider all comments received on or before the closing date. We may amend this proposed rule in light of comments received. Factual information that supports your ideas and suggestions is extremely helpful in evaluating the effectiveness of this proposed AD action and determining whether we need to take additional rulemaking action.

Are There any Specific Portions of This Proposed AD I Should Pay Attention to?

The FAA specifically invites comments on the overall regulatory, economic, environmental, and energy aspects of this proposed rule that might suggest a need to modify the rule. You may view all comments we receive before and after the closing date of the rule in the Rules Docket. We will file a report in the Rules Docket that summarizes each contact we have with the public that concerns the substantive parts of this proposed AD.

How can I be Sure FAA Receives my Comment?

If you want FAA to acknowledge the receipt of your mailed comments, you must include a self-addressed, stamped postcard. On the postcard, write ''Comments to Docket No. 98–CE–124–AD.'' We will date stamp and mail the postcard back to you.

Discussion

What Events Have Caused This Proposed AD?

Transport Canada, which is the airworthiness authority for Canada, notified FAA that an unsafe condition may exist on certain de Havilland Models DHC–2 Mk. I, DHC–2 Mk. II, and DHC–2 Mk. III airplanes. Transport Canada reports numerous incidents of corrosion of the front fuselage struts. Further analysis of the front fuselage struts reveals that these parts are not life limited and incur corrosion and fatigue damage over time.

What are the Consequences if the Condition is not Corrected?

Corrosion damage, if not detected and corrected, could result in failure of the front fuselage and possible reduced or loss of control of the airplane.

Is There Service Information That Applies to This Subject?

De Havilland Inc. has issued Parts Service Manual (PSM) No. 1–2–2, Part 5, Temporary Revision 2–22; and PSM No. 1–2T–2, Part 5, Temporary Revision 2T–6, both dated August 3, 1998. These service documents establish a life limit of 15 years for the front fuselage struts. The procedures for replacement of the front fuselage struts are included in the applicable maintenance manual.