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 25

[Docket No. NM165, Notice No. 25–99–09–SC]

Special Conditions: McDonnell Douglas DC–9–30 Series Airplanes; High Intensity Radiated Fields (HIRF)

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of proposed special conditions.

SUMMARY: This notice proposes special conditions for the McDonnell Douglas DC–9–30 series airplanes modified by Lockheed Martin Aircraft Center. These airplanes will have novel and unusual design features when compared to the state of technology envisioned in the airworthiness standards for transport category airplanes. The applicable type certification regulations do not contain adequate or appropriate safety standards for the protection of this system from the effects of high-intensity radiated fields (HIRF). These proposed special conditions contain the additional safety standards that the Administrator considers necessary to establish a level of safety equivalent to that provided by the existing airworthiness standards.

DATES: Comments must be received on or before January 18, 2000.

ADDRESSES: Comments on this proposal may be mailed in duplicate to: Federal Aviation Administration, Transport Airplane Directorate, Attn: Rules Docket (ANM–114), Docket No. NM165, 1601 Lind Avenue SW., Renton, Washington, 98055–4056; or delivered in duplicate to the Transport Airplane Directorate at the above address. Comments must be marked: Docket No. NM165. Comments may be inspected in the Rules Docket weekdays, except Federal holidays, between 7:30 a.m. and 4 p.m.

FOR FURTHER INFORMATION CONTACT: Connie Beane, FAA, Standardization Branch, ANM–113, Transport Airplane Directorate, Aircraft Certification Service, 1601 Lind Avenue SW., Renton, Washington, 98055–4056; telephone (425) 227–2796; facsimile (425) 227–1149.

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 before further rulemaking action on this proposal is taken. The proposals contained in this notice may be changed in light of the comments received. All comments received will be available by 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. Commenters wishing the FAA to acknowledge receipt of their comments submitted in response to this notice must include a self-addressed, stamped postcard on which the following statement is made: ''Comments to Docket No. NM165.'' The postcard will be date stamped and returned to the commenter.

Background

On April 20, 1998, Lockheed Martin Aircraft Center, Inc. (LMAC), 244 Terminal Road, Greenville, NC 29605, applied for a supplemental type certificate (STC) to modify McDonnell Douglas DC–9–30 series airplanes listed on Type Certificate A6WE. The modification incorporates the installation of a Rockwell-Collins FDS–255 Electronic Flight Instrument System, consisting of an electronic attitude display, an electronic horizontal situation indicator, and a display controller for each pilot. This advanced system uses electronics to a far greater extent than the original mechanical attitude displays and may be more susceptible to electrical and magnetic interference. This disruption of signals could result in loss of attitude display or present misleading attitude information to the pilot.

In addition, on August 18, 1998, LMAC applied for an additional STC to modify McDonnell Douglas DC–9–30 series airplanes listed on Type Certificate A6WE. The modification incorporates the installation of an Innovative Solution & Support electronic air data instrument system, which consists of an electronic airspeed display, an electronic altimeter, and a digital air data computer for each pilot. This advanced system uses electronics to a far greater extent than the original pneumatic pitot-static instruments and may be more susceptible to electrical and magnetic interference. This disruption of signals could result in loss of air data display or present misleading air data information to the pilot.

Type Certification Basis

Under the provisions of 14 CFR 21.101, LMAC must show that the McDonnell Douglas DC–9–30 series airplanes, as changed, continue to meet the applicable provisions of the regulations incorporated by reference in Type Certificate No. A6WE, or the applicable regulations in effect on the date of application for the change. The regulations incorporated by reference in the type certificate are commonly referred to as the ''original type certification basis.'' The certification basis for the modified the McDonnell Douglas DC–9–30 series airplanes include CAR 4b, dated December 31, 1953, with Amendments 4b–1 through 4b–16, as amended by Type Certificate Data Sheet (TCDS) A6WE.

If the Administrator finds that the applicable airworthiness regulations (i.e., CAR 4b, as amended) do not contain adequate or appropriate safety standards for the McDonnell Douglas DC–9–30 series airplanes because of novel or unusual design features, special conditions are prescribed under the provisions of § 21.16.

In addition to the applicable airworthiness regulations and special conditions, the Model DC–9–30 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.

Special conditions, as appropriate, are issued in accordance with 14 CFR 11.49, as required by §§ 11.28 and 11.29, and become part of the type certification basis in accordance with § 21.101(b)(2).

Special conditions are initially applicable to the model for which they are issued. Should LMAC apply at a later date for design change approval to modify any other model already included on the same type certificate to incorporate the same novel or unusual design feature, this special conditions would also apply to the other model under the provisions of § 21.101(a)(1).

Novel or Unusual Design Features

The modified McDonnell Douglas DC–9–30 series airplanes will incorporate an electronic attitude display system and an electronic air data system, which were not available at the time of certification of these airplanes, both of which perform critical functions. These systems may be vulnerable to HIRF external to the airplane.

Discussion

There is no specific regulation that addresses protection requirements for electrical and electronic systems from HIRF. Increased power levels from ground-based radio transmitters and the growing use of sensitive electrical and electronic systems to command and control airplanes have made it necessary to provide adequate protection.

To ensure that a level of safety is achieved equivalent to that intended by the regulations incorporated by reference, special conditions are needed for the McDonnell Douglas DC–9–30 series airplanes. These special conditions require that new electrical and electronic systems, such as the electronic attitude and air data display systems that perform critical functions, be designed and installed to preclude component damage and interruption of function due to both the direct and indirect effects of HIRF.

High-Intensity Radiated Fields (HIRF)

With the trend toward increased power levels from ground-based transmitters, plus the advent of space and satellite communications, coupled with electronic command and control of the airplane, the immunity of critical digital avionics systems to HIRF must be established.

It is not possible to precisely define the HIRF to which the airplane will be exposed in service. There is also uncertainty concerning the effectiveness of airframe shielding for HIRF. Furthermore, coupling of electromagnetic energy to cockpit-installed equipment through the cockpit window apertures is undefined. Based on surveys and analysis of existing HIRF emitters, an adequate level of protection exists when compliance with the HIRF protection special condition is shown with either paragraph 1, or 2 below:

1. A minimum threat of 100 volts rms per meter electric field strength from 10 KHz to 18 GHz.

a. The threat must be applied to the system elements and their associated wiring harnesses without the benefit of airframe shielding.

b. Demonstration of this level of protection is established through system tests and analysis.

2. A threat external to the airframe of the following field strengths for the frequency ranges indicated.

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.

The threat levels identified above are the result of an FAA review of existing studies on the subject of HIRF in light of the ongoing work of the Electromagnetic Effects Harmonization Working Group of the Aviation Rulemaking Advisory Committee.

Applicability

As discussed above, these special conditions would be applicable initially to the McDonnell Douglas DC–9–30 series airplanes modified by LMAC. Should LMAC apply at a later date for a supplemental type certificate to modify any other model included on the same type certificate to incorporate the same novel or unusual design feature, these special conditions would apply to that model as well under the provisions of § 21.101(a)(1).

Conclusion

This action affects only certain novel or unusual design features on the McDonnell Douglas DC–9–30 series airplanes modified by LMAC. It is not a rule of general applicability and affects only the applicant who applied to the FAA for approval of these features on the airplane.

List of Subjects in 14 CFR Part 25

Aircraft, Aviation safety, Reporting and recordkeeping requirements.

The authority citation for these special conditions is as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701, 44702, 44704.

The Proposed Special Conditions

Accordingly, the Federal Aviation Administration proposes the following special conditions as part of the type certification basis for McDonnell Douglas DC–9–30 series airplanes modified by Lockheed Martin Aircraft Center.

1. *Protection from Unwanted Effects of High-Intensity Radiated Fields (HIRF).* Each electrical and electronic system that performs critical functions must be designed and installed to ensure that the operation and operational capability of these systems to perform critical functions are not adversely affected when the airplane is exposed to high intensity radiated fields.

2. For the purpose of these special conditions, the following definition applies:

Critical Functions. Functions whose failure would contribute to or cause a failure condition that would prevent the continued safe flight and landing of the airplane.

Issued in Renton, Washington, on November 17, 1999.

Donald L. Riggin,

Acting Manager, Transport Airplane Directorate, Aircraft Certification Service, ANM–100.

[FR Doc. 99–31397 Filed 12–2–99; 8:45 am]

BILLING CODE 4910–13–P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. 98–ANE–33–AD]

RIN 2120–AA64

Airworthiness Directives; Rolls-Royce, plc RB211 Trent 875, 877, 884, 892, 892B Series Turbofan Engines

AGENCY: Federal Aviation Administration, DOT.

ACTION: Notice of proposed rulemaking (NPRM).

SUMMARY: This document proposes the supersedure of an existing airworthiness directive (AD), applicable to certain Rolls-Royce, plc RB211 Trent 800 series turbofan engines, that currently requires initial and repetitive ultrasonic inspections of fan blade roots for cracks, and replacement, if necessary, with serviceable parts. This proposed action would reduce initial cyclic compliance threshold and repetitive inspection intervals. This proposal would also allow inspections to be accomplished within 100 cycles-in-service if the initial or repetitive thresholds are exceeded on the effective date of the AD. This proposal is prompted by an improved understanding of the crack propagation mechanism and the latest service operational data. The actions specified by the proposed AD are intended to prevent fan blade failure, which could result in multiple fan blade releases, uncontained engine failure, and possible damage to the airplane.

DATES: Comments must be received by February 1, 2000.

ADDRESSES: Submit comments to the Federal Aviation Administration (FAA), New England Region, Office of the Regional Counsel, Attention: Rules Docket No. 98–ANE–33–AD, 12 New England Executive Park, Burlington, MA 01803–5299. Comments may also be sent via the Internet using the following address: ''9-ane-adcomment@faa.gov''. Comments sent via the Internet must contain the docket number in the subject line. Comments may be inspected at this location between 8:00 a.m. and 4:30 p.m., Monday through Friday, except Federal holidays.

The service information referenced in the proposed rule may be obtained from Rolls-Royce North America, Inc., 2001 South Tibbs Ave., Indianapolis, IN 46241; telephone (317) 230–3995, fax (317) 230–4743. This information may be examined at the FAA, New England Region, Office of the Regional Counsel, 12 New England Executive Park, Burlington, MA.

FOR FURTHER INFORMATION CONTACT: Jason Yang, Aerospace Engineer, Engine Certification Office, FAA, Engine and Propeller Directorate, 12 New England Executive Park, Burlington, MA 01803–5299; telephone (781) 238–7747, fax (781) 238–7199.

SUPPLEMENTARY INFORMATION:

Comments Invited

Interested persons are invited to participate in the making of the proposed rule by submitting such written data, views, or arguments as they may desire. Communications should identify the Rules Docket number and be submitted to the address specified above. All communications received on or before the closing date for comments, specified above, will be considered before taking action on the proposed rule. The proposals contained in this notice may be changed in light of the comments received.

Comments are specifically invited on the overall regulatory, economic, environmental, and energy aspects of the proposed rule. All comments submitted will be available, both before and after the closing date for comments, in the Rules Docket for examination by interested persons. A report summarizing each FAA-public contact concerned with the substance of this proposal will be filed in the Rules Docket.

Commenters wishing the FAA to acknowledge receipt of their comments submitted in response to this notice must submit a self-addressed, stamped postcard on which the following statement is made: ''Comments to Docket Number 98–ANE–33–AD.'' The postcard will be date stamped and returned to the commenter.

Availability of NPRMs

Any person may obtain a copy of this NPRM by submitting a request to the FAA, New England Region, Office of the Regional Counsel, Attention: Rules Docket No. 98–ANE–33–AD, 12 New England Executive Park, Burlington, MA 01803–5299.

Discussion

On September 11, 1998, the Federal Aviation Administration (FAA) issued airworthiness directive 98–19-21, Amendment 39–10762 (63 FR 50484, September 22, 1998, corrected by 63 FR 52961, October 2, 1998), applicable to Rolls-Royce, plc (R–R) RB211 Trent 800 series turbofan engines, to require initial and repetitive ultrasonic inspections of fan blade roots for cracks, and replacement, if necessary, with serviceable parts. That action was prompted by reports of multiple fan blade root cracks in several factory test engines. That condition, if not corrected, could result in fan blade failure, which could result in multiple fan blade releases, uncontained engine failure, and possible damage to the airplane.

Information since Publication of AD 98–19–21

Since the issuance of that AD, the Civil Aviation Authority (CAA) of the United Kingdom and the FAA have received revised analysis from the manufacturer and recent service data from operators. R–R's analysis provides an improved understanding of the crack propagation mechanism and the service operational data since institution of the inspection program required by the current AD indicates that the initial compliance threshold and repetitive inspection intervals must be decreased in order to maintain an acceptable level of safety.

Service Bulletin (SB)

R–R has issued SB RB211–72–C445, Revision 6, dated September 3, 1999, that describes the initial inspection threshold and repetitive inspection intervals for Trent 800 series turbofan engines. The SB also describes the procedures for ultrasonic inspections of fan blade roots for cracks, and provides part rejection data.