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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 25

[Docket No. NM376; Special Conditions No. 25-352-SC]

Special Conditions: McDonnell Douglas Models DC-10-10, 10-15, 10-30, 10-30F, 10-40, and 10-40F Airplanes; High-Intensity Radiated Fields (HIRF)

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final special conditions; request for comments.

SUMMARY: The FAA issues these special conditions for McDonnell Douglas Models DC-10-10, 10-15, 10-30, 10-30F, 10-40, and 10-40F airplanes modified by Canard Aerospace Corporation. These modified airplanes will have novel or unusual design features when compared with the state of technology envisioned in the airworthiness standards for transport category airplanes. The modification consists of installing electronic flight and engine instrument systems. The applicable airworthiness regulations do not contain adequate or appropriate safety standards for protecting these systems from effects of high-intensity radiated fields (HIRF). These 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: The effective date of these special conditions is April 16, 2007. We must receive your comments on or before May 23, 2007.

ADDRESSES: You may mail or deliver comments on these special conditions in duplicate to: Federal Aviation Administration, Transport Airplane Directorate, Attention: Rules Docket

(ANM-113), Docket No. NM376, 1601 Lind Avenue SW., Renton, Washington 98057-3356. You must mark your comments Docket No. NM376.

FOR FURTHER INFORMATION CONTACT: Greg Dunn, FAA, Airplane and Flight Crew Interface Branch, ANM-111, Transport Airplane Directorate, Aircraft Certification Service, 1601 Lind Avenue SW, Renton, Washington 98057-3356; telephone (425) 227-2799; facsimile (425) 227-1320.

SUPPLEMENTARY INFORMATION:

Comments Invited

The FAA has determined that notice and opportunity for prior public comment for these special conditions is impracticable because these procedures would significantly delay certification and delivery of the affected aircraft. In addition, the substance of these special conditions has been subject to the public comment process in several prior instances with no substantive comments received. We therefore find that good cause exists for making these special conditions effective upon issuance. However, we invite interested persons to take part in this rulemaking by submitting written comments. The most helpful comments reference a specific portion of the special conditions, explain the reason for any recommended change, and include supporting data. We ask that you send us two copies of written comments.

We will file in the docket all comments we receive, as well as a report summarizing each substantive public contact with FAA personnel about these special conditions. You may inspect the docket before and after the comment closing date. If you wish to review the docket in person, go to the address in the **ADDRESSES** section of this preamble between 7:30 a.m. and 4 p.m., Monday through Friday, except Federal holidays.

We will consider all comments we receive on or before the closing date for comments. We will consider comments filed late if it is possible to do so without incurring expense or delay. We may change these special conditions based on the comments we receive.

If you want the FAA to acknowledge receipt of your comments on these special conditions, include with your comments a pre-addressed, stamped postcard on which the docket number

appears. We will stamp the date on the postcard and mail it back to you.

Background

On October 24, 2006, Canard Aerospace Corporation, 250 South Fuller Street, Shakopee, Minnesota, 55379, applied for a supplemental type certificate (STC) to modify McDonnell Douglas Models DC-10-10, 10-15, 10-30, 10-30F, 10-40, and 10-40F airplanes. The McDonnell Douglas Model DC-10 airplanes are powered by three turbofan engines, with maximum takeoff weights of up to 590,000 pounds. These airplanes operate with a 2-pilot crew and can seat up to 380 passengers. The modification consists of installing electronic flight and engine instrument systems. These systems have a potential to be vulnerable to high-intensity radiated fields (HIRF) external to the airplane.

Type Certification Basis

Under provisions of 14 CFR 21.101, Canard Aerospace Corporation must show that the McDonnell Douglas Models DC-10-10, 10-15, 10-30, 10-30F, 10-40, and 10-40F airplanes, as changed, continue to meet the applicable provisions of the regulations incorporated by reference in Type Certificate No. A22WE 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 specific regulations are 14 CFR part 25, as amended by Amendments 25-1 through 25-22. In addition, the certification basis includes certain special conditions and exemptions that are not relevant to these special conditions.

If the Administrator finds that the applicable airworthiness regulations (part 25, as amended) do not contain adequate or appropriate safety standards for the McDonnell Douglas Model DC-10 airplanes 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 McDonnell Douglas Model DC-10 airplanes 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.

The FAA issues special conditions, as defined in § 11.19, under § 11.38, and they become part of the type certification basis under the provisions of § 21.101.

Novel or Unusual Design Features

As noted earlier, the McDonnell Douglas Model DC-10 airplanes modified by Canard Aerospace will incorporate the Astronautics Electronic Flight Information System (EFIS) that will perform critical functions. This system may be vulnerable to high-intensity radiated fields external to the airplane. Current airworthiness standards of part 25 do not contain adequate or appropriate safety standards for protecting this equipment from adverse effects of HIRF. So this system is considered to be a novel or unusual design feature.

Discussion

As previously stated, there is no specific regulation that addresses protection for electrical and electronic systems from HIRF. Increased power levels from radio frequency transmitters and the growing use of sensitive avionics/electronics and electrical 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 Model DC-10 airplanes modified by Canard Aerospace Corporation. These special conditions require that new avionics/electronics and electrical systems that perform critical functions be designed and installed to preclude component damage and interruption of function because of HIRF.

High-Intensity Radiated Fields (HIRF)

High-power radio frequency transmitters for radio, radar, television, and satellite communications can adversely affect operation of airplane electric and electronic systems. Therefore, the immunity of critical avionics/electronics and electrical systems to HIRF must be established.

Based on surveys and an analysis of existing HIRF emitters, an adequate level of protection exists when airplane system immunity is demonstrated when exposed to the HIRF environments in either paragraph 1 OR 2 below:

1. A minimum environment of 100 volts rms (root-mean-square) per meter electric field strength from 10 KHz to 18 GHz.

a. System elements and their associated wiring harnesses must be

exposed to the environment without benefit of airframe shielding.

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

2. An environment external to the airframe of the field strengths shown in the table below for the frequency ranges indicated. Immunity to both peak and average field strength components from the table must be demonstrated.

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 of the root-mean-square (rms) over the complete modulation period.

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

Applicability

These special conditions are applicable to McDonnell Douglas Model DC-10 airplanes modified by Canard Aerospace Corporation. Should Canard Aerospace apply at a later date for a supplemental type certificate to modify any other model included on Type Certificate No. A22WE to incorporate the same or similar novel or unusual design feature, these special conditions would apply to that model as well under provisions of § 21.101.

Conclusion

This action affects only certain novel or unusual design features on McDonnell Douglas Model DC-10 airplanes modified by Canard Aerospace Corporation. 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 Special Conditions

■ Therefore, under the authority delegated to me by the Administrator, the following special conditions are issued as part of the supplemental type certification basis for the McDonnell Douglas Models DC-10-10, 10-15, 10-30, 10-30F, 10-40, and 10-40F airplanes modified by Canard Aerospace Corporation.

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 continued safe flight and landing of the airplane.

Issued in Renton, Washington, on April 16, 2007.

Ali Bahrami,

Manager, Transport Airplane Directorate, Aircraft Certification Service.

[FR Doc. E7-7699 Filed 4-20-07; 8:45 am]

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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2007-27866; Directorate Identifier 2007-NM-055-AD; Amendment 39-15027; AD 2007-08-09]

RIN 2120-AA64

Airworthiness Directives; Short Brothers Model SD3-60 SHERPA, SD3-SHERPA, SD3-30, and SD3-60 Airplanes

AGENCY: Federal Aviation Administration (FAA), Department of Transportation (DOT).

ACTION: Final rule; request for comments.