Rules and Regulations

Federal Register
Vol. 64, No. 230
Wednesday, December 1, 1999

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 25

[Docket No. NM158; Special Conditions No. 25–152–SC]

Special Conditions: Boeing Model 767–400ER; High-Intensity Radiated Fields

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final special conditions.

SUMMARY: These special conditions are issued for the Boeing Model 767–400ER airplane. This airplane will utilize new avionics/electronic systems that provide critical data to the flightcrew. The applicable airworthiness regulations do not contain adequate or appropriate safety standards for the protection of these systems from the effects of high-intensity radiated fields. These special conditions provide the additional safety standards that the Administrator considers necessary to establish a level of safety equivalent to that established by the existing airworthiness standards.

EFFECTIVE DATE: January 3, 2000.

FOR FURTHER INFORMATION CONTACT: Massoud Sadeghi, FAA, Transport Airplane Directorate, Aircraft Certification Service, Airplane and Flight Crew Interface Branch, ANM–111, 1601 Lind Avenue SW., Renton, Washington, 98055–4056, telephone (425) 227–2117 or facsimile (425) 227–1320.

SUPPLEMENTARY INFORMATION:

Background

On January 14, 1997, the Boeing Commercial Airplane Group applied for an amendment to Type Certificate No. A1NM to include the new Model 767–400ER, a derivative of the Model 767–200/300 series airplanes. The Model 767–400ER is a swept-wing, conventional-tail, twin-engine, turbofan-powered transport airplane. The airframe has been strengthened to accommodate the increased design loads and weights. The airplane has a seating capacity of up to 375, and a maximum takeoff weight of 450,000 pounds (204,120 kg). Each engine will be capable of delivering 62,000 pounds of thrust. The flight controls are unchanged beyond those changes deemed necessary to accommodate the stretched configuration.

Type Certification Basis

Under the provisions of 14 CFR 21.101, Boeing must show that the Model 767–400ER airplane meets the applicable provisions of the regulations incorporated by reference in Type Certificate No. A1NM, 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 regulations incorporated by reference in Type Certificate No. A1NM include 14 CFR part 25, as amended by Amendments 25–1 through 25–45 with a few exceptions, and certain other later amended sections of part 25 that are not relevant to these special conditions. Except for certain earlier amended sections of part 25 that are not relevant to these special conditions, Boeing has chosen to comply with part 25 as amended by Amendments 25–1 through 25–89, the applicable regulations in effect on the date of application.

In addition to the applicable airworthiness regulations and special conditions, the Model 767–400ER must comply with the fuel vent and exhaust emission requirements of part 34, effective September 10, 1990, plus any amendments in effect at the time of certification; and the noise certification requirements of part 36, effective December 1, 1969, as amended by Amendment 36–1 through the amendment in effect at the time of certification.

If the Administrator finds that the applicable airworthiness regulations (*i.e.,* part 25, as amended) do not contain adequate or appropriate safety standards for the Model 767–400ER because of a novel or unusual design feature, special conditions are prescribed under the provisions of § 21.16.

Special conditions, as appropriate, are issued in accordance with § 11.49, as required by §§ 11.28 and 11.29(b), 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 the type certificate for that model be amended later to include any other model that incorporates the same novel or unusual design feature, or should any other model already included on the same type certificate be modified to incorporate 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 Model 767–400ER airplane will utilize electrical and electronic systems that perform critical functions, including the following: primary electronic flight displays and full authority digital engine controls (FADEC). These systems may be vulnerable to high-intensity radiated fields (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 Model 767–400ER. The Model 767–400 requires that new technology electrical and electronic systems 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 and the use of composite material in the airplane structure, 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 Model 767–400ER airplane. Should Boeing apply at a later date for a change to the type certificate to include another model incorporating 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).

Discussion of Comments

Notice of proposed special conditions No. 25–99–06–SC was published in the **Federal Register** on July 21, 1999 (64 FR 39095). One comment in support of the special condition was received.

Conclusion

This action affects certain design features only on the Model 767–400ER. It is not a rule of general applicability and affects only the manufacturer 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 proposed special conditions is as follows:

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

The Special Conditions

Accordingly, pursuant to the authority delegated to me by the Administrator, the following special conditions are issued as part of the type certification basis for the Boeing 767–400ER series airplanes.

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 this special condition, 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. 99–31185 Filed 11–30–99; 8:45 am]

BILLING CODE 4910–13–U

DEPARTMENT OF COMMERCE

International Trade Administration

DEPARTMENT OF THE INTERIOR

Office of Insular Affairs

15 CFR Part 303

[Docket No. 990813222–9309–02]

RIN 0625–AA55

Extend Production Incentive Benefits to Jewelry Manufacturers in the U.S. Insular Possessions

AGENCIES: Import Administration, International Trade Administration, Department of Commerce; Office of Insular Affairs, Department of the Interior.

ACTION: Final rule.

SUMMARY: This action amends the Departments' regulations governing duty-exemption allocations and duty-refund benefits for watch producers in the United States insular possessions (the U.S. Virgin Islands, Guam, American Samoa and the Commonwealth of the Northern Mariana Islands) due to the enactment of Pub. L. 106–36. This law amends additional U.S. notes to chapter 71 of the Harmonized Tariff Schedule of the United States (''HTSUS'') to provide a duty-refund benefit for any article of jewelry within heading 7113 which is the product of the Virgin Islands, Guam, American Samoa or the Northern Mariana Islands in accordance with the new provisions of the note in chapter 71 and additional U.S. note 5 to chapter 91. The rule amends the regulations by changing Title 15 CFR part 303 to include jewelry, creating a Subpart A for the current insular watch and watch movement regulations and a Subpart B for the new regulations pertaining to jewelry duty-refund benefits authorized by Pub. L. 106–36.

EFFECTIVE DATE: December 1, 1999.

FOR FURTHER INFORMATION CONTACT: Faye Robinson, (202) 482–3526.

SUPPLEMENTARY INFORMATION: We published proposed regulatory revisions on August 27, 1999 (64 FR 46872) and invited comments. Referring to the requirement in the proposed section 303.16(a)(5) that a new jewelry firm be ''completely separate from and not associated with, by way of ownership or control'' with other jewelry program participants in a territory, one commenter suggested that we replace ''ownership or control'' with ''ownership and control''. The commenter hoped to be free to have, as