

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 are applicable to Dassault Model Mystere-Falcon 20-C5, 20-D5, 20-E5, and 20-F5 series and Dassault Model Fan Jet Falcon series C, D, E, F, and G airplanes. Should Genesis3 Engineering apply at a later date for a supplemental type certificate to modify any other model included on Type Certificate No. A7EU, to incorporate the same or similar novel or unusual design features, these special conditions would apply to that model as well as under the provisions of 14 CFR 21.101(a)(1).

### Conclusion

This action affects only certain novel or unusual design features on Dassault Model Mystere-Falcon 20-C5, 20-D5, 20-E5, and 20-F5 series and Dassault Model Fan Jet Falcon series C, D, E, F, and G airplanes. 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.

The substance of these special conditions has been subjected to the notice and comment procedure in several prior instances and has been derived without substantive change from those previously issued. Because a delay would significantly affect the certification of the airplane, which is imminent, the FAA has determined that prior public notice and comment are unnecessary and impracticable, and good cause exists for adopting these special conditions upon issuance. The FAA is requesting comments to allow interested persons to submit views that may not have been submitted in response to the prior opportunities for comment described above.

### List of Subjects in 14 CFR Part 25

Aircraft, Aviation safety, Reporting and record keeping 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

Accordingly, pursuant to the authority delegated to me by the Administrator, the following special conditions are issued as part of the supplemental type certification basis for

the Dassault Model Mystere-Falcon 20-C5, 20-D5, 20-E5, and 20-F5 series and Dassault Model Fan Jet Falcon series C, D, E, F, and G modified by Genesis3 Engineering:

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 September 13, 2004.

**Ali Bahrami,**

*Manager, Transport Airplane Directorate, Aircraft Certification Service.*

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**BILLING CODE 4910-13-P**

## DEPARTMENT OF TRANSPORTATION

### Federal Aviation Administration

#### 14 CFR Part 25

[Docket No. NM288; Special Conditions No. 25-271-SC]

#### Special Conditions: Lockheed Martin Corporation Model 1329-23A, -23D, -23E, and 1329-25 Airplanes; High-Intensity Radiated Fields (HIRF)

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Final special conditions; request for comments.

**SUMMARY:** These special conditions are issued for Lockheed Martin Corporation Model 1329-23A, -23D, -23E and 1329-25 airplanes modified by Garrett Aviation Services. These modified airplanes will have novel or unusual design features when compared to the state of technology envisioned in the airworthiness standards for transport category airplanes. The modification incorporates the installation of four Honeywell N1 Digital Electronic Engine Controls (DEEC) that perform critical functions. 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 (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 September 13, 2004. Comments must be received on or before October 22, 2004.

**ADDRESSES:** Comments on these special conditions may be mailed in duplicate to: Federal Aviation Administration, Transport Airplane Directorate, Attn: Rules Docket (ANM-113), Docket No. NM288, 1601 Lind Avenue, SW., Renton, Washington 98055-4056; or delivered in duplicate to the Transport Airplane Directorate at the above address. All comments must be marked *Docket No. NM288*.

**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 98055-4056; telephone (425) 227-2799; facsimile (425) 227-1320.

### SUPPLEMENTARY INFORMATION:

#### Comments Invited

The FAA has determined that notice and opportunity for prior public comment is impracticable because these procedures would significantly delay certification of the airplane and thus 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. The FAA therefore finds that good cause exists for making these special conditions effective upon issuance; however, the FAA invites interested persons to participate in this rulemaking by submitting written comments, data, or views. 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 concerning these special conditions. The docket is available for public inspection 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 December 4, 2003, Garrett Aviation Services, 1200 North Airport Drive, Capital Airport Springfield, IL 62707, applied for a supplemental type certificate (STC) to modify Lockheed Martin Corporation Model 1329-23A, -23D, -23E and 1329-25 airplanes. These models are currently approved under Type Certificate No. 2A15. They are transport category airplanes. The Lockheed Martin Corporation Model 1329-23A, -23D, -23E and 1329-25 airplanes are powered by four AiResearch TFE731-3-1F turbofan engines and have a maximum takeoff weight of 44,500 pounds. This airplane operates with a 2-pilot crew and can hold up to 10 passengers. The modification incorporates the installation of Honeywell N1 Digital Electronic Engine Controls (DEEC). The N1 Digital Electronic Engine Controls (DEEC) are a replacement for the existing analog electronic engine control (EEC) and also provide additional functional capability to the system. The digital avionics/electronics and electrical systems installed under this project in these airplanes have the potential to be vulnerable to high-intensity radiated fields (HIRF) external to the airplane.

**Type Certification Basis**

Under the provisions of 14 CFR 21.101, Garrett Aviation Services must show that the Lockheed Martin Corporation Model 1329-23A, -23D, -23E and 1329-25 airplanes, as changed, continue to meet the applicable provisions of the regulations incorporated by reference in Type Certificate No. 2A15, 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 Lockheed Martin Corporation Model 1329-23A, -23D, -23E and 1329-25 airplanes includes 14 CFR Part 25, dated February 1, 1964, as amended by Amendments 25-1 through 25-20, except for special conditions and

exceptions noted in Type Certificate Data Sheet (TDGS) 2A15.

If the Administrator finds that the applicable airworthiness regulations (that is, 14 CFR part 25, as amended) do not contain adequate or appropriate safety standards for the Lockheed Martin Corporation Model 1329-23A, -23D, -23E and 1329-25 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 Lockheed Martin Corporation Model 1329-23A, -23D, -23E and 1329-25 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.

Special conditions, as defined in 14 CFR 11.19, are issued in accordance with § 11.38 and become part of the type certification basis in accordance with § 21.101.

Special conditions are initially applicable to the model for which they are issued. Should Garrett Aviation Services apply at a later date for a supplemental type certificate to modify any other model included on Type Certificate No. 2A15 to incorporate the same or similar novel or unusual design features, these special conditions would also apply to the other model under the provisions of 14 CFR 21.101.

**Novel or Unusual Design Features**

The Lockheed Martin Corporation Model 1329-23A, -23D, -23E and 1329-25 airplanes modified by Garrett Aviation Services will incorporate Honeywell N1 Digital Electronic Engine Controls (DEEC) that will perform critical functions. These systems have the potential to be vulnerable to high-intensity radiated fields (HIRF) external to the airplane. The current airworthiness standards of part 25 do not contain adequate or appropriate safety standards for the protection of this equipment from the adverse effects of HIRF. Accordingly, these systems are considered to be novel or unusual design features.

**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 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 Lockheed Martin Corporation Model 1329-23A, -23D, -23E and 1329-25 airplanes modified by Garrett Aviation Services. 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 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 and the advent of space and satellite communications, coupled with electronic command and control of the airplane, the immunity of critical avionics/electronics and electrical 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 (root-mean-square) 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 field strengths identified in the table below for the frequency ranges indicated. Both peak and average field strength components from the table are to 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

Frequency	Field strength (volts per meter)	
	Peak	Average
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 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 are applicable to Lockheed Martin Corporation Model 1329–23A, –23D, –23E and 1329–25 airplanes modified by Garret Aviation Services. Should Garrett Aviation Services apply at a later date for a supplemental type certificate to modify any other model included on Type Certificate No. 2A15 to incorporate the same or similar novel or unusual design features, these 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 the Lockheed Martin Corporation Model 1329–23A, –23D, –23E and 1329–25 airplanes modified by Garrett Aviation Services. 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.

The substance of these special conditions has been subjected to the notice and comment period in several prior instances and has been derived without substantive change from those previously issued. Because a delay would significantly affect the certification of the airplane, which is imminent, the FAA has determined that prior public notice and comment are unnecessary and impracticable, and good cause exists for adopting these special conditions upon issuance. The FAA is requesting comments to allow interested persons to submit views that may not have been submitted in

response to the prior opportunities for comment described above.

**List of Subjects in 14 CFR Part 25**

Aircraft, Aviation safety, Reporting and record keeping 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**

Accordingly, pursuant to the authority delegated to me by the Administrator, the following special conditions are issued as part of the supplemental type certification basis for the Lockheed Martin Corporation Model 1329–23A, –23D, –23E and 1329–25 airplanes modified by Garrett Aviation Services.

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 September 13, 2004.

**Ali Bahrami,**

*Manager, Transport Airplane Directorate, Aircraft Certification Service.*

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**DEPARTMENT OF TRANSPORTATION**

**Federal Aviation Administration**

**14 CFR Part 39**

**[Docket No. 2001–NM–292–AD; Amendment 39–13797; AD 2004–19–03]**

**RIN 2120–AA64**

**Airworthiness Directives; Empresa Brasileira de Aeronautica S.A. (EMBRAER) Model EMB–135 and EMB–145 Series Airplanes**

**AGENCY:** Federal Aviation Administration, DOT.

**ACTION:** Final rule.

**SUMMARY:** This amendment supersedes an existing airworthiness directive (AD),

applicable to certain EMBRAER Model EMB–135 and EMB–145 series airplanes, that currently requires revising the airplane flight manual and eventual disconnection of the precooler differential pressure switches. This amendment expands the applicability of the existing AD. This amendment also requires a one-time inspection of those additional airplanes to ensure the disconnection and insulation of the electrical connectors of certain precooler differential pressure switches located in the left and right pylons; and disconnection and insulation of the connectors, if necessary. The actions specified by this AD are intended to prevent incorrect operation of the precooler differential pressure switches, which could result in inappropriate automatic shutoff of the engine bleed valve, and consequent inability to restart a failed engine using cross-bleed from the other engine or possible failure of the anti-ice system. This action is also necessary to ensure that the flightcrew is advised of the procedures necessary to restart an engine in flight using the auxiliary power unit. This action is intended to address the identified unsafe condition.

**DATES:** Effective October 27, 2004.

The incorporation by reference of a certain publication, as listed in the regulations, is approved by the Director of the Federal Register as of October 27, 2004.

The incorporation by reference of a certain other publication, as listed in the regulations, was approved previously by the Director of the Federal Register as of July 3, 2000 (65 FR 39541, June 27, 2000).

**ADDRESSES:** The service information referenced in this AD may be obtained from Empresa Brasileira de Aeronautica S.A. (EMBRAER), P.O. Box 343—CEP 12.225, Sao Jose dos Campos—SP, Brazil. This information may be examined at the Federal Aviation Administration (FAA), Transport Airplane Directorate, Rules Docket, 1601 Lind Avenue, SW., Renton, Washington; or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call (202) 741–6030, or go to: [http://www.archives.gov/federal\\_register/code\\_of\\_federal\\_regulations/ibr\\_locations.html](http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html).

**FOR FURTHER INFORMATION CONTACT:** Todd Thompson, Aerospace Engineer, International Branch, ANM–116, FAA, Transport Airplane Directorate, 1601 Lind Avenue, SW., Renton, Washington 98055–4056; telephone (425) 227–1175; fax (425) 227–1149.