

# Rules and Regulations

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## DEPARTMENT OF TRANSPORTATION

### Federal Aviation Administration

#### 14 CFR Part 25

[Docket No. NM227; Special Conditions No. 25-208-SC]

#### Special Conditions: Dassault Aviation Mystere Falcon 50; 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 Dassault Aviation Mystere Falcon 50 airplanes modified by Haycock & Associates LLC. These modified airplanes will have a novel or unusual design feature when compared to the state of technology envisioned in the airworthiness standards for transport category airplanes. The modification incorporates the installation of Universal Avionics Systems Corporation EFI-640 Electronic Flight Instruments 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 July 29, 2002. Comments must be received on or before September 16, 2002.

**ADDRESSES:** Comments on these special conditions may be mailed in duplicate to: Federal Aviation Administration, Transport Airplane Directorate, Attention: Rules Docket (ANM-113), Docket No. NM227, 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. NM227. 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:

Meghan Gordon, FAA, Standardization Branch, ANM-113, Transport Airplane Directorate, Aircraft Certification Service, 1601 Lind Avenue SW., Renton, Washington 98055-4056; telephone (425) 227-2138; facsimile (425) 227-1149.

#### SUPPLEMENTARY INFORMATION:

##### Comments Invited

The FAA has determined that notice and opportunity for prior public comment hereon are 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 in light of 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 June 5, 2002, Haycock & Associates LLC, 2558 Rittenour Court, Blacklick, Ohio, applied for a Supplemental Type Certificate (STC) to modify Dassault Aviation Mystere Falcon 50 (Falcon 50) aircraft. The Falcon 50 is a small transport category airplane. The Falcon 50 airplanes are powered by three Honeywell (Garrett) TFE-731-3-1C turbofans, and have a maximum takeoff weight of 38,800 pounds (40,780 pounds with Service Bulletin F50-191). This airplane operates with a 2-pilot crew and can hold up to 19 passengers. The modification incorporates the installation of Universal Avionics Systems Corporation EFI-640 Electronic Flight Instruments. The EFI-640 displays are replacements for the mechanical heading (HSI) and attitude (ADI) instruments. The avionics/electronics and electrical systems installed in this airplane 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, Amendment 21-69, effective September 16, 1991, Haycock & Associates LLC must show that the Falcon 50 as changed, continues to meet the applicable provisions of the regulations incorporated by reference in Type Certificate No. A46EU, or the applicable regulations in effect on the date of application for the change. Subsequent changes have been made to § 21.101 as part of Amendment 21-77, but those changes do not become effective until June 10, 2003. The regulations incorporated by reference in the type certificate are commonly referred to as the "original type certification basis." The regulations included in the certification basis for the Falcon 50 airplanes include 14 CFR 21.29; 14 CFR part 25 effective February 1, 1965, as amended by amendments 25-1 through 25-34; § 25.255, as amended by amendment 25-42;

§§ 25.979(d) and (e), as amended by amendment 25–38; § 25.1013(b)(1), as amended by amendment 25–36; § 25.1351(d), as amended by amendment 25–41; and § 25.1353, as amended by amendment 25–42. In addition, the certification basis includes Special Conditions 25–86-EU–24, and additional requirements listed in the type certificate data sheet that are not relevant to these special conditions.

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 Dassault Aviation Mystere Falcon 50 airplanes modified by Haycock & Associates LLC 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, these Falcon 50 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(b)(2), Amendment 21–69, effective September 16, 1991.

Special conditions are initially applicable to the model for which they are issued. Should Haycock & Associates LLC 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 also apply to the other model under the

provisions of § 21.101(a)(1), Amendment 21–69, effective September 16, 1991.

#### Novel or Unusual Design Features

As noted earlier, the Dassault Aviation Mystere Falcon 50 airplanes modified by Haycock & Associates LLC will incorporate dual Electronic Primary Flight Displays that will perform critical functions. This system may be vulnerable to high-intensity radiated fields 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, this system is considered to be a novel or unusual design feature.

#### 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 that is equivalent to that intended by the regulations incorporated by reference, special conditions are needed for the Dassault Aviation Mystere Falcon 50 airplanes modified by Haycock & Associates LLC. 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, plus 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 in accordance 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 indicated 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
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 Dassault Aviation Mystere Falcon 50 modified by Haycock & Associates LLC. Should Haycock & Associates LLC apply at a later date for a supplemental type certificate to modify any other model included on Type Certificate A46EU 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), Amendment 21-69, effective September 16, 1991.

### Conclusion

This action affects only certain features on Dassault Aviation Mystere Falcon 50 airplanes modified by Haycock & Associates LLC. 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 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

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 Aviation Mystere Falcon 50 airplanes modified by Haycock & Associates LLC.

**1. Protection from Unwanted Effects of High-Intensity Radiated Fields (HIRF).** Each electrical and of electronic system that performs critical functions must be designed and installed to ensure that the 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 July 29, 2002.

**Ali Bahrami,**

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

[FR Doc. 02-20883 Filed 8-15-02; 8:45 am]

**BILLING CODE 4910-13-P**

Comments for inclusion in the Rules Docket must be received on or before October 15, 2002.

**ADDRESSES:** Submit comments in triplicate to the Federal Aviation Administration (FAA), Transport Airplane Directorate, ANM-114, Attention: Rules Docket No. 2002-NM-147-AD, 1601 Lind Avenue, SW., Renton, Washington 98055-4056. Comments may be inspected at this location between 9 a.m. and 3 p.m., Monday through Friday, except Federal holidays. Comments may be submitted via fax to (425) 227-1232. Comments may also be sent via the Internet using the following address: 9-anm-iarcomment@faa.gov. Comments sent via fax or the Internet must contain "Docket No. 2002-NM-147-AD" in the subject line and need not be submitted in triplicate. Comments sent via the Internet as attached electronic files must be formatted in Microsoft Word 97 for Windows or ASCII text.

The service information referenced in this AD may be obtained from Boeing Commercial Aircraft Group, Long Beach Division, 3855 Lakewood Boulevard, Long Beach, California 90846, Attention: Data and Service Management, Dept. C1-L5A (D800-0024). This information may be examined at the FAA, Transport Airplane Directorate, 1601 Lind Avenue, SW., Renton, Washington; or at the FAA, Los Angeles Aircraft Certification Office, 3960 Paramount Boulevard, Lakewood, California; or at the Office of the Federal Register, 800 North Capitol Street, NW., suite 700, Washington, DC.

**FOR FURTHER INFORMATION CONTACT:** *Technical Information:* Thomas Phan, Aerospace Engineer, Systems and Equipment Branch, ANM-130L, FAA, Los Angeles Aircraft Certification Office, 3960 Paramount Boulevard, Lakewood, California 90712-4137; telephone (562) 627-5342; fax (562) 627-5210.

*Other Information:* Sandi Carli, Airworthiness Directive Technical Editor/Writer; telephone (425) 687-4243, fax (425) 227-1232. Questions or comments may also be sent via the Internet using the following address: sandi.carli@faa.gov. Questions or comments sent via the Internet as attached electronic files must be formatted in Microsoft Word 97 for Windows or ASCII text.

**SUPPLEMENTARY INFORMATION:** The FAA has recently been advised of failed tests of spoiler actuator assemblies due to failure of the solenoid-operated shut-off valve (SOV) on McDonnell Douglas Model 717-200 airplanes in service and

**SUMMARY:** This amendment adopts a new airworthiness directive (AD) that is applicable to all McDonnell Douglas Model 717-200 airplanes. This action requires repetitive tests to detect failure of the solenoid operated shut-off valve (SOV) of the inboard and outboard spoiler actuator assemblies, and corrective action if necessary. This action is necessary to detect and correct conditions associated with high electrical resistance in the solenoid, which, in combination with the failure of a spoiler actuator, could result in reduced controllability of the airplane. This action is intended to address the identified unsafe condition.

**DATES:** Effective September 3, 2002.

The incorporation by reference of certain publications listed in the regulations is approved by the Director of the Federal Register as of September 3, 2002.