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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 25

[Docket No. NM268, Special Conditions No. 25-252-SC]

Special Conditions: Cessna Aircraft Company Cessna Model 500 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 Cessna Aircraft Company Cessna Model 500 airplanes modified by Honeywell International, Inc. These modified 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 modification incorporates the installation of dual Honeywell RVSM (reduced vertical separation minimum)-capable AM-250 electronic barometric altimeters. 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 provided by the existing airworthiness standards.

DATES: The effective date of these special conditions is October 14, 2003. Comments must be received on or before November 21, 2003.

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. NM268, 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. NM268.

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: The FAA has determined that notice and opportunity for prior public comment 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 based on the comments we receive.

If you want the FAA to acknowledge receipt of your comments on this proposal, 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 12, 2003, Honeywell International, Inc., 23500 W. 105th St., Olathe, KS 66061, applied for a supplemental type certificate (STC) to modify Cessna (Citation) Model 500 airplanes. This model is currently approved under Type Certificate No. A22CE. The Cessna Model 500 airplanes are executive type transports that have two aft mounted turbine engines, a minimum passenger load of 9 passengers, and a maximum operating speed of 260 to 287 knots, depending on altitude. The modification, under one supplemental type certificate (STC) project, incorporates the installation of dual Honeywell RVSM-capable AM-250 electronic barometric altimeters.

The dual Honeywell AM-250 barometric altimeters provide the aircraft baro-corrected altitude information, also corrected for static source error (SSE), which enables the aircraft to be capable of RVSM operations. The dual AM-250 barometric altimeters replace the existing pilot and copilot pneumatic altimeters. Since the AM-250 altimeters use electronics to transmit altimeter data to the pilots, as well as to other equipment, they may be susceptible to electrical and magnetic interference caused by high-intensity radiated fields (HIRF). This disruption of signals could result in misleading altimeter information to the pilots or loss of altimeter information.

Type of Certification Basis

Under the provisions of 14 CFR 21.101, Honeywell International, Inc. must show that the Cessna Model 500 airplanes, as changed, continue to meet the applicable provisions of the regulations incorporated by reference in Type Certificate No. A22CE 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 Cessna Model 500 airplanes includes Part 25 of the Federal Aviation Regulations effective February 1, 1965, as amended by Amendments 25-1 through 25-17. Other applicable amendments, Federal aviation regulations, and special conditions are

also noted in Type Certificate Data Sheet (TCDS) A22CE.

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 Cessna Model 500 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 Cessna Model 500 airplanes must comply with the fuel vent and exhaust emission requirement of 14 CFR part 34 and the noise certification requirement of 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 Honeywell International, Inc. apply at a later date for a supplemental type certificate to modify any other model already included on the same type certificate to incorporate the same 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 Cessna Model 500 airplanes will incorporate, under one supplemental type certificate (STC) project, the installation of dual Honeywell AM-250 barometric altimeters. Because these altimeters use electronics to a far greater extent than the original pneumatic or servo altimeters, they may be more susceptible to electrical and magnetic interference caused by high-intensity radiated fields (HIRF) external to the airplane. The current airworthiness standards (14 CFR part 25) do not contain adequate or appropriate safety standards that address protecting this equipment from the adverse effects of HIRF. Accordingly, these instruments are 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 equivalent to that intended by

the regulations incorporated by reference, special conditions are needed for the Cessna Model 500 airplanes modified to include the new altimeters. These special conditions will require that the new Honeywell AM-250 barometric altimeters, which 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/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 below are to be demonstrated.

Frequency	Field strength (volts per meter)	
	Peak	Average
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 Cessna Model 500 airplanes modified by Honeywell International, Inc. to include dual Honeywell AM-250 barometric altimeters. Should Honeywell International, Inc. apply at a later date for a supplemental type certificate to modify any other model already included on Type Certificate A22CE to incorporate the same novel or unusual design features, these special conditions would apply to that model as well under the provisions of 14 CFR 21.101.

Conclusion

This action affects only certain design features on Cessna Model 500 airplanes modified by Honeywell International, Inc. 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 the special conditions for this airplane has been subjected to 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.

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

- 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 Cessna model 500 airplanes modified by Honeywell International, Inc.

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 October 14, 2003.

Neil D. Schalekamp,

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

[FR Doc. 03-26559 Filed 10-21-03; 8:45 am]

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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. 2001-NM-52-AD; Amendment 39-13345; AD 2003-21-10]

RIN 2120-AA64

Airworthiness Directives; McDonnell Douglas Model MD-11 and -11F Airplanes

AGENCY: Federal Aviation Administration, DOT.

ACTION: Final rule.

SUMMARY: This amendment adopts a new airworthiness directive (AD), applicable to certain McDonnell Douglas Model MD-11 and -11F airplanes, that requires an inspection to detect arcing damage of the terminal strips, surrounding structure, and electrical cables in the forward cargo compartment; and repair or replacement of any damaged part

of any damaged part with a new part. This amendment also requires modification of the applicable terminal strip installation in the cargo compartment, and replacement of the applicable terminal strips in the cargo compartment with new strips. This action is necessary to prevent arcing and consequent damage to the terminal strips and adjacent structure and smoke/fire in the forward cargo compartment. This action is intended to address the identified unsafe condition.

DATES: Effective November 26, 2003.

The incorporation by reference of certain publications listed in the regulations is approved by the Director of the Federal Register as of November 26, 2003.

ADDRESSES: 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: Brett Portwood, Aerospace Engineer, Systems and Equipment Branch, ANM-130L, FAA, Los Angeles Aircraft Certification Office, 3960 Paramount Boulevard, Lakewood, California 90712-4137; telephone (562) 627-5350; fax (562) 627-5210.

SUPPLEMENTARY INFORMATION: A proposal to amend part 39 of the Federal Aviation Regulations (14 CFR part 39) to include an airworthiness directive (AD) that is applicable to certain McDonnell Douglas Model MD-11 and -11F airplanes was published as a supplemental notice of proposed rulemaking (NPRM) in the **Federal Register** on July 24, 2003 (68 FR 43683).

That action proposed to require an inspection to detect arcing damage of the terminal strips, surrounding structure, and electrical cables in the forward cargo compartment; and repair or replacement of any damaged part with a new part. That action also proposed to require modification of the applicable terminal strip installation in the cargo compartment, and replacement of the applicable terminal strips in the cargo compartment with new strips.

Comments

Interested persons have been afforded an opportunity to participate in the making of this amendment. No comments were submitted in response to the supplemental NPRM or the FAA's determination of the cost to the public.

Conclusion

The FAA has determined that air safety and the public interest require the adoption of the rule as proposed.

Cost Impact

There are approximately 154 Model MD-11 and -11F airplanes of the affected design in the worldwide fleet. The FAA estimates that 59 airplanes of U.S. registry will be affected by this AD, that it will take approximately between 1 and 6 work hours per airplane depending on the airplane configuration to accomplish the required actions, and that the average labor rate is \$65 per work hour. Required parts will cost between \$133 and \$474 depending on the airplane configuration. Based on these figures, the cost impact of the AD on U.S. operators is estimated to be between \$198 and \$864 per airplane depending on the airplane configuration.

The cost impact figures discussed above are based on assumptions that no operator has yet accomplished any of the requirements of this AD action, and that no operator would accomplish those actions in the future if this AD were not adopted. The cost impact figures discussed in AD rulemaking actions represent only the time necessary to perform the specific actions actually required by the AD. These figures typically do not include incidental costs, such as the time required to gain access and close up, planning time, or time necessitated by other administrative actions. The manufacturer may cover the cost of replacement parts associated with this AD, subject to warranty conditions.

Regulatory Impact

The regulations adopted herein will not have a substantial direct effect on the States, on the relationship between the national Government and the States, or on the distribution of power and responsibilities among the various levels of government. Therefore, it is determined that this final rule does not have federalism implications under Executive Order 13132.

For the reasons discussed above, I certify that this action (1) is not a "significant regulatory action" under Executive Order 12866; (2) is not a "significant rule" under DOT Regulatory Policies and Procedures (44