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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 23

[Docket No. 131CE, Special Condition 23-ACE-86]

Special Conditions; Cessna Model 425 Airplanes

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final special conditions; request for comments.

SUMMARY: These special conditions are issued for the Cessna Model 425 airplanes modified by Modern Avionics, Inc., Eden Prairie, Minnesota. These airplanes will have novel and unusual design features when compared to the state of technology envisaged in the applicable airworthiness standards. These novel and unusual design features include the installation of electronic displays for which the applicable regulations do not contain adequate or appropriate airworthiness 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 the airworthiness standards applicable to these airplanes.

EFFECTIVE DATE: The effective date of these special conditions is on publication in the Federal Register. Comments must be received on or before May 30, 1996.

ADDRESSES: Comments may be mailed in duplicate to: Federal Aviation Administration, Office of the Assistant Chief Counsel, ACE-7, Attention: Rules Docket Clerk, Docket No. 131CE, Room 1558, 601 East 12th Street, Kansas City, Missouri 64106. All comments must be marked: Docket No. 131CE. Comments

may be inspected in the Rules Docket weekdays, except Federal holidays, between 7:30 a.m. and 4:00 p.m.

FOR FURTHER INFORMATION CONTACT: Ervin Dvorak, Aerospace Engineer, Standards Office (ACE-110), Small Airplane Directorate, Aircraft Certification Service, Federal Aviation Administration, 601 East 12th Street, Kansas City, Missouri 64106; telephone (816) 426-6941.

SUPPLEMENTARY INFORMATION:

Comments Invited

Although this action is in the form of a final rule that involves requirements affecting flight safety, and, thus, was not preceded by notice and an opportunity for public comment, comments are invited on these special conditions.

Interested persons are invited to submit such written data, views, or arguments as they may desire. Communications should identify the regulatory docket and special conditions number and be submitted in duplicate to the address specified above. All communications received on or before the closing date for comments will be considered by the Administrator. These special conditions may be changed in light of the comments received. All comments submitted will be available in the rules docket for examination by interested parties, both before and after the closing date for comments. A report summarizing each substantive public contact with FAA personnel concerning this rulemaking will be filed in the docket. Persons wishing the FAA to acknowledge receipt of their comments, submitted in response to this request, must include a self-addressed and stamped postcard on which the following statement is made: "Comments to Docket No. 131CE." The postcard will be date stamped and returned to the commenter.

Background

On March 8, 1996, Modern Avionics, Inc., 10000 Flying Cloud Drive, Eden Prairie, Minnesota 55347, made an application to the FAA for a supplemental type certificate (STC) for the Cessna Model 425 airplanes. The proposed modification incorporates a novel or unusual design feature, such as digital avionics consisting of an electronic flight instrument system (EFIS), that is vulnerable to HIRF external to the airplane.

Type Certification Basis

The type certification basis for the Cessna Model 425 Airplanes is given in Type Certification Data Sheet No. A7CE plus the following:

§ 23.1301 of Amendment 23-20; §§ 23.1309, 23.1311, and 23.1321 of Amendment 23-41; and § 23.1322 of Amendment 23-43; exemptions, if any; and the special conditions adopted by this rulemaking action.

Discussion

The FAA may issue and amend special conditions, as necessary, as part of the type certification basis if the Administrator finds that the airworthiness standards, designed according to § 21.101(b), do not contain adequate or appropriate safety standards because of novel or unusual design features of an airplane. Special conditions are prescribed under the provisions of § 21.16 to establish a level of safety equivalent to that established in the regulations. Special conditions are normally issued according to § 11.49, effective October 25, 1989, after public notice, as required by §§ 11.28 and 11.29(b), and become a part of the type certification basis in accordance with § 21.101(b)(2).

Modern Avionics, Inc., plans to incorporate certain novel and unusual design features into an airplane for which the airworthiness standards do not contain adequate or appropriate safety standards for protection from the effects of HIRF. These features include electronic systems, which are susceptible to the HIRF environment, that were not envisaged by the existing regulations for this type of airplane.

Protection of Systems from High Intensity Radiated Fields (HIRF): Recent advances in technology have given rise to the application in aircraft designs of advanced electrical and electronic systems that perform functions required for continued safe flight and landing. Due to the use of sensitive solid state advanced components in analog and digital electronics circuits, these advanced systems are readily responsive to the transient effects of induced electrical current and voltage caused by the HIRF. The HIRF can degrade electronic systems performance by damaging components or upsetting system functions.

Furthermore, the HIRF environment has undergone a transformation that was

not foreseen when the current requirements were developed. Higher energy levels are radiated from transmitters that are used for radar, radio, and television. Also, the number of transmitters has increased significantly. There is also uncertainty concerning the effectiveness of airframe shielding for HIRF. Furthermore, coupling to cockpit-installed equipment through the cockpit window apertures is undefined.

The combined effect of the technological advances in airplane design and the changing environment has resulted in an increased level of vulnerability of electrical and electronic systems required for the continued safe flight and landing of the airplane. Effective measures against the effects of exposure to HIRF must be provided by the design and installation of these systems. The accepted maximum energy levels in which civilian airplane system installations must be capable of operating safely are based on surveys and analysis of existing radio frequency emitters. These special conditions require that the airplane be evaluated under these energy levels for the protection of the electronic system and its associated wiring harness. These external threat levels, which are lower than previous required values, are believed to represent the worst case to which an airplane would be exposed in the operating environment.

These special conditions require qualification of systems that perform critical functions, as installed in aircraft, to the defined HIRF environment in paragraph 1 or, as an option to a fixed value using laboratory tests, in paragraph 2, as follows:

(1) The applicant may demonstrate that the operation and operational capability of the installed electrical and electronic systems that perform critical functions are not adversely affected when the aircraft is exposed to the HIRF environment defined below:

FIELD STRENGTH VOLTS/METER

Frequency	Peak	Average
10–100 KHz	50	50
100–500	60	60
500–2000	70	70
2–30 MHz	200	200
30–70	30	30
70–100	30	30
100–200	150	33
200–400	70	70
400–700	4020	935
700–1000	1700	170
1–2 GHz	5000	990
2–4	6680	840
4–6	6850	310

FIELD STRENGTH VOLTS/METER— Continued

Frequency	Peak	Average
6–8	3600	670
8–12	3500	1270
12–18	3500	360
18–40	2100	750

or,

(2) The applicant may demonstrate by a system test and analysis that the electrical electronic systems that perform critical functions can withstand a minimum threat of 100 volts per meter, peak electrical field strength, from 10 KHz to 18 GHz. When using this test to show compliance with the HIRF requirements, no credit is given for signal attenuation due to installation.

A preliminary hazard analysis must be performed by the applicant, for approval by the FAA, to identify electrical and/or electronic systems that perform critical functions. The term “critical” means those functions whose failure would contribute to, or cause, a failure condition that would prevent the continued safe flight and landing of the airplane. The systems identified by the hazard analysis that perform critical functions are candidates for the application of HIRF requirements. A system may perform both critical and non-critical functions. Primary electronic flight display systems, and their associated components, perform critical functions such as attitude, altitude, and airspeed indication. The HIRF requirements apply only to critical functions.

Compliance with HIRF requirements may be demonstrated by tests, analysis, models, similarity with existing systems, or any combination of these. Service experience alone is not acceptable since normal flight operations may not include an exposure to the HIRF environment. Reliance on a system with similar design features for redundancy as a means of protection against the effects of external HIRF is generally insufficient since all elements of a redundant system are likely to be exposed to the fields concurrently.

Conclusion

In view of the design features discussed for the Cessna Model 425 Airplanes, the following special conditions are issued. This action is not a rule of general applicability and affects only those applicants who apply to the FAA for approval of these features on these airplanes.

The substance of these special conditions has been subject to the notice

and public comment procedure in several prior rulemaking actions. For example, the Dornier 228–200 (53 FR 14782, April 26, 1988), the Cessna Model 525 (56 FR 49396, September 30, 1991), and the Beech Models 200, A200, and B200 airplanes (57 FR 1220, January 13, 1992). It is unlikely that additional public comment would result in any significant change from those special conditions already issued and commented on. For these reasons, and because a delay would significantly affect the applicant's installation of the system and 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 without notice. Therefore, these special conditions are being made effective upon publication in the Federal Register. However, as previously indicated, interested persons are invited to comment on these special conditions if they so desire.

List of Subjects in 14 CFR Part 23

Aircraft, Aviation safety, Signs and symbols.

Citation

The authority citation for these special conditions is as follows:

Authority: 49 U.S.C. 106(g); 40113, 44701, 44702, and 44704; 14 CFR 21.16 and 21.101; and 14 CFR 11.28 and 11.49.

Adoption of 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 modified Cessna Model 425 Airplanes:

1. *Protection of Electrical and Electronic Systems from High Intensity Radiated Fields (HIRF)*. Each system that performs critical functions must be designed and installed to ensure that the operations, and operational capabilities of these systems to perform critical functions, are not adversely affected when the airplane is exposed to high intensity radiated electromagnetic fields external to the airplane.

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 Kansas City, Missouri on April 15, 1996.

Henry A. Armstrong,
*Acting Manager, Small Airplane Directorate,
Aircraft Certification Service.*

[FR Doc. 96-10673 Filed 4-29-96; 8:45 am]

BILLING CODE 4910-13-M

14 CFR Part 97

[Docket No. 28549; Amdt. No. 1725]

Standard Instrument Approach Procedures; Miscellaneous Amendments

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: This amendment establishes, amends, suspends, or revokes Standard Instrument Approach Procedures (SIAPs) for operations at certain airports. These regulatory actions are needed because of changes occurring in the National Airspace System, such as the commissioning of new navigational facilities, addition of new obstacles, or changes in air traffic requirements. These changes are designed to provide safe and efficient use of the navigable airspace and to promote safe flight operations under instrument flight rules at the affected airports.

DATES: An effective date for each SIAP is specified in the amendatory provisions.

Incorporation by reference—approved by the Director of the Federal Register on December 31, 1980, and reapproved as of January 1, 1982.

ADDRESSES: Availability of matter incorporated by reference in the amendment is as follows:

For Examination—1. FAA Rules Docket, FAA Headquarters Building, 800 Independence Avenue, SW., Washington, DC 20591;

2. The FAA Regional Office of the region in which affected airport is located; or

3. The Flight Inspection Area Office which originated the SIAP.

For Purchase—Individual SIAP copies may be obtained from:

1. FAA Public Inquiry Center (APA-200), FAA Headquarters Building, 800 Independence Avenue, SW., Washington, DC 20591; or

2. The FAA Regional Office of the region in which the affected airport is located.

By Subscription—Copies of all SIAPs, mailed once every 2 weeks, are for sale by the Superintendent of Documents, US Government Printing Office, Washington, DC 20402.

FOR FURTHER INFORMATION CONTACT:

Paul J. Best, Flight Procedures Standards Branch (AFS-420), Technical Programs Division, Flight Standards Service, Federal Aviation Administration, 800 Independence Avenue, SW., Washington, DC 20591; telephone (202) 267-8277.

SUPPLEMENTARY INFORMATION: This amendment to part 97 of the Federal Aviation Regulations (14 CFR part 97) establishes, amends, suspends, or revokes Standard Instrument Approach Procedures (SIAPs). The complete regulatory description on each SIAP is contained in the appropriate FAA Form 8260 and the National Flight Data Center (FDC)/Permanent (P) Notices to Airmen (NOTAM) which are incorporated by reference in the amendment under 5 U.S.C. 552(a), 1 CFR part 51, and § 97.20 of the Federal Aviation Regulations (FAR). Materials incorporated by reference are available for examination or purchase as stated above.

The large number of SIAPs, their complex nature, and the need for a special format make their verbatim publication in the Federal Register expensive and impractical. Further, airmen do not use the regulatory text of the SIAPs, but refer to their graphic depiction of charts printed by publishers of aeronautical materials. Thus, the advantages of incorporation by reference are realized and publication of the complete description of each SIAP contained in FAA form documents is unnecessary. The provisions of this amendment state the affected CFR (and FAR) sections, with the types and effective dates of the SIAPs. This amendment also identifies the airport, its location, the procedure identification and the amendment number.

The Rule

This amendment to part 97 of the Federal Aviation Regulations (14 CFR part 97) establishes, amends, suspends, or revokes SIAPs. For safety and timeliness of change considerations, this amendment incorporates only specific changes contained in the content of the following FDC/P NOTAM for each SIAP. The SIAP information in some previously designated FDC/Temporary (FDC/T) NOTAMs is of such duration as to be permanent. With conversion to FDC/P NOTAMs, the respective FDC/T NOTAMs have been cancelled.

The FDC/P NOTAMs for the SIAPs contained in this amendment are based on the criteria contained in the U.S. Standard for Terminal Instrument Approach Procedures (TERPS). In developing these chart changes to SIAPs

by FDC/P NOTAMs, the TERPS criteria were applied to only these specific conditions existing at the affecting airports. All SIAP amendments in this rule have been previously issued by the FAA in a National Flight Data Center (FDC) Notice to Airmen (NOTAM) as an emergency action of immediate flight safety relating directly to published aeronautical charts. The circumstances which created the need for all these SIAP amendments requires making them effective in less than 30 days.

Further, the SIAPs contained in this amendment are based on the criteria contained in the TERPS. Because of the close and immediate relationship between these SIAPs and safety in air commerce, I find that notice and public procedure before adopting these SIAPs are impracticable and contrary to the public interest and, where applicable, that good cause exists for making these SIAPs effective in less than 30 days.

Conclusion

The FAA has determined that this regulation only involves an established body of technical regulations for which frequent and routine amendments are necessary to keep them operationally current. It, therefore—(1) is not a “significant regulatory action” under Executive Order 12866; (2) is not a “significant rule” under DOT Regulatory Policies and Procedures (44 FR 11034; February 26, 1979); and (3) does not warrant preparation of a regulatory evaluation as the anticipated impact is so minimal. For the same reason, the FAA certifies that this amendment will not have a significant economic impact on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

List of Subjects in 14 CFR Part 97

Air Traffic Control, Airports, Navigation (Air).

Issued in Washington, DC on April 19, 1996.

Thomas C. Accardi,
Director, Flight Standards Service.

Adoption of the Amendment

Accordingly, pursuant to the authority delegated to me, part 97 of the Federal Aviation Regulations (14 CFR part 97) is amended by establishing, amending, suspending, or revoking Standard Instrument Approach Procedures, effective at 0901 UTC on the dates specified, as follows:

PART 97—STANDARD INSTRUMENT APPROACH PROCEDURES

1. The authority citation for part 97 is revised to read as follows: