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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 25

[Docket No. NM–142; Special Conditions No. 25–ANM–126]

Special Conditions: McDonnell-Douglas Model DC–9–31/–32, High-Intensity Radiated Fields

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final special conditions; request for comments.

SUMMARY: These special conditions are issued for McDonnell-Douglas Model DC–9–31/–32 airplanes as modified by Innovative Solutions & Support, Inc. The Innovative Solutions & Support, Inc. altimeter P/N 9D–80110–2 will utilize an electronic system which performs a critical function. The applicable 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 May 13, 1997. Comments must be received on or before July 7, 1997.

ADDRESSES: Comments on these special conditions may be mailed in duplicate to: Federal Aviation Administration, Office of the Assistant Chief Counsel, Attn: Rules Docket (ANM–7), Docket No. NM–142, 1601 Lind Avenue SW., Renton, Washington, 98055–4056; or delivered in duplicate to the Office of the Assistant Chief Counsel at the above address. Comments must be marked: Docket No. NM–142. 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: Joe Jacobsen, Standardization Branch, ANM–113, Transport Airplane Directorate, Aircraft Certification Service, 1601 Lind Avenue SW., Renton, Washington 98055–4056; telephone (206) 227–2011.

SUPPLEMENTARY INFORMATION:

Comment Invited

The FAA has determined that good cause exists for making these special conditions effective upon issuance; however interested persons are invited to submit such written data, views, or arguments as they may desire. Communications should identify the regulatory docket and special condition 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 persons, 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 submit with those comments a self-addressed, stamped postcard on which the following statement is made: ''Comments to Docket No. NM–142.'' The postcard will be date stamped and returned to the commenter.

Background

On January 17, 1997, Innovative Solutions & Support, Inc. applied for a supplemental type certificate to modify the altimeter system of McDonnell-Douglas Model DC–9–31/–32 airplanes to an electronic system. The Model DC–9–31/–32 is currently approved under Type Certificate No. A6WE.

Type Certification Basis

Under the provisions of 14 CFR 21.101, Innovative Solutions & Support, Inc. must show that the Model DC–9–31/–32 airplanes meet the applicable provisions of the regulations incorporated by reference in Type Certificate No. A6WE or the applicable regulations in effect on the date of application for the changes to the Model DC–9–31/–32. In addition, the certification basis includes certain special conditions and later amended sections of 14 CFR part 25 that are not relevant to these special conditions.

If the Administrator finds that the applicable airworthiness regulations (i.e., 14 CFR part 25, as amended) do not contain adequate or appropriate safety standards for the DC–9–31/–32 because of a novel or unusual design feature, special conditions are prescribed under the provisions of 14 CFR 21.16 to establish a level of safety equivalent to that established in the regulations.

In addition to the applicable airworthiness regulations and special conditions, the McDonnell Douglas DC–9–31/–32 must comply with the fuel and exhaust emission requirements of 14 CFR part 34 and the noise certification requirements of 14 CFR part 36.

Special conditions, as appropriate, are issued in accordance with 14 CFR 11.49 after public notice, as required by 14 CFR 11.28 and 11.29, and become part of the type certification basis in accordance with 14 CFR 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 14 CFR 21.101(a)(1).

Novel or Unusual Design Features

The Model DC–9–31/–32, as modified, incorporates a new electronic altimeter system. This system 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 issued for the DC–9–31/–32, as modified by Innovative Solutions & Support, Inc., which require that new technology electronic systems, such as altimeter system, 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

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 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 paragraphs 1 or 2 below:

1. A minimum threat of 100 volts per meter peak 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	Peak (V/M)	Average (V/M)
10 KHz–100 KHz	50	50
100 KHz–500 KHz	60	60
500 KHz–2000 KHz	70	70
2 MHz–30 MHz	200	200
30 MHz–100 MHz	30	30
100 MHz–200 MHz	150	33
200 MHz–400 MHz	70	70
400 MHz–700 MHz	4,020	935
700 MHz–1000 MHz	1,700	170
1 GHz–2 GHz	5,000	990
2 GHz–4 GHz	6,680	840
4 GHz–6 GHz	6,850	310
6 GHz–8 GHz	3,600	670
8 GHz–12 GHz	3,500	1,270
12 GHz–18 GHz	3,500	360
18 GHz–40 GHz	2,100	750

As discussed above, these special conditions would be applicable initially to the modified Model DC–9–31/–32. Should Innovative Solutions & Support, Inc. 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 14 CFR 21.101(a)(1).

Conclusion

This action affects only certain design features on McDonnell-Douglas DC–9–31/–32 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 for this airplane has been subjected to the notice and comment procedure in several prior instances and has been derived without substantive change from those previously issued. It is unlikely that prior public comment would result in a significant change from the substance contained herein. For this reason, and 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 immediately. Therefore, these special conditions are being made effective 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 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 McDonnell-Douglas DC–9–31/–32 airplane, as modified by Innovative Solutions & Support, 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 May 13, 1997.

Darrell M. Pederson,

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

[FR Doc. 97–13264 Filed 5–20–97; 8:45 am]

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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 71

[Docket No. 97–ACE–8]

Amendment to Class E Airspace, Storm Lake, IA

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Direct final rule; request for comments.

SUMMARY: This action amends the Class E airspace area at Storm Lake Municipal Airport, Storm Lake, IA. The Federal Aviation Administration has developed a Standard Instrument Approach Procedure (SIAP) based on the Global Positioning System (GPS) which has made this change necessary. The effect of this rule is to provide additional controlled airspace for aircraft arriving and departing the Storm Lake Municipal Airport.

DATES: *Effective date:* 0901 UTC, September 11, 1997.

Comment date: Comments must be received on or before June 28, 1997.

ADDRESSES: Send comments regarding the rule in triplicate to: Manager, Operations Branch, Air Traffic Division, ACE–530, Federal Aviation Administration, Docket Number 97–ACE–8, 601 East 12th St., Kansas City, MO 64106.

The official docket may be examined in the Office of the Assistant Chief Counsel for the Central Region at the same address between 9:00 a.m. and 3:00 p.m., Monday through Friday, except Federal holidays.

An informal docket may also be examined during normal business hours