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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 23

[Docket No. CE201; Special Conditions No. 23-141-SC]

Special Conditions; Maule Aerospace Technology, Inc. M-7-230, M-7-230C, and M-9-230 Airplane Models; Installation of Full Authority Digital Engine Control (FADEC) System and the Protection of the System From the Effects of High Intensity Radiated Fields (HIRF)

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final special conditions; request for comments.

SUMMARY: These special conditions are issued to Maule Aerospace Technology, Inc., for the Maule Aerospace Technology, Inc. M-7-230, M-7-230C, and M-9-230 airplane models. These airplanes will have a novel or unusual design feature(s) associated with the installation of an engine that uses an electronic engine control system in place of the engine's mechanical system. The applicable airworthiness regulations do not contain adequate or appropriate safety standards for this design feature. These special conditions contain additional safety standards that the Administrator considers necessary to establish a level of safety equivalent to that established by the existing airworthiness standards applicable to these airplanes. These special conditions were issued and effective in December 2003; however, they were inadvertently not published. This document is being published with the same effective date to correct that oversight.

DATES: The effective date of these special conditions is December 17,

2003. Comments must be received on or before September 2, 2005.

ADDRESSES: Comments may be mailed in duplicate to: Federal Aviation Administration, Regional Counsel, ACE-7, Attention: Rules Docket Clerk, Docket No. CE201, Room 506, 901 Locust, Kansas City, Missouri 64106. All comments must be marked: Docket No. CE201. 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: Wes Ryan, Federal Aviation Administration, Aircraft Certification Service, Small Airplane Directorate, ACE-111, 901 Locust, Room 301, Kansas City, Missouri 64106; telephone 816-329-4127, fax 816-329-4090.

SUPPLEMENTARY INFORMATION: The FAA has determined that notice and opportunity for prior public comment hereon are impracticable because these procedures would significantly delay issuance of the approval design 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.

Comments Invited

Interested persons are invited to submit such written data, views, or arguments as they may desire. Communications should identify the regulatory docket or 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. The special conditions may be changed in light of the comments received. All comments received 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. Commenters wishing the FAA to acknowledge receipt of their comments submitted in response to this notice must include a self-addressed, stamped postcard on which the following statement is made: "Comments to

Docket No. CE201." The postcard will be date stamped and returned to the commenter.

Background

On October 26, 2000, Maule Aerospace Technology, Inc. applied for a type certificate for the M-7-230, M-7-230C, and M-9-230 models. The M-7-230, M-7-230C, and M-9-230 models are powered by one reciprocating engine equipped with an electronic engine control system with full authority capability in place of the hydromechanical control system.

Type Certification Basis

Under the provisions of 14 CFR part 21, § 21.17, Maule Aerospace Technology, Inc. must show that Models M-7-230, M-7-230C, and M-9-230 meet the applicable provisions of Part 3, Civil Air Regulations, effective May 15, 1956 as amended by 3-1 through 3-5; the following 14 CFR part 23 regulations at Amendment 23-55 that do not have equivalent rules in CAR 3: §§ 23.853(e)(f), 23.943, 23.1091, 23.1125, 23.1305, 23.1337, 23.863, 23.955, 23.1093, 23.1143, 23.1309, 23.1351, 23.865, 23.961, 23.1103, 23.1163, 23.1311, 23.1353(h), 23.903(f), 23.997, 23.1107, 23.1181, 23.1321, 23.1361, 23.909, 23.1043, 23.1121, 23.1182, 23.1322, 23.1365, 23.939(b), 23.1047, 23.1123, 23.1183, 23.1331; 14 CFR part 36, Amendment 36-24; exemptions, if any; and the special conditions adopted by this and other rulemaking actions.

If the Administrator finds that the applicable airworthiness regulations (*i.e.*, 14 CFR part 23) do not contain adequate or appropriate safety standards for the Models M-7-230, M-7-230C, and M-9-230 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 Models M-7-230, M-7-230C, and M-9-230 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, and the FAA must issue a finding of regulatory adequacy pursuant to § 611 of Public Law 92-574, the "Noise Control Act of 1972."

Special conditions, as appropriate, as defined in § 11.19, are issued in accordance with § 11.38, and become

part of the type certification basis in accordance with § 21.17(a)(2).

Special conditions are initially applicable to the models for which they are issued. Should the type certificate be amended later to include any other models that incorporate the same novel or unusual design feature, the special conditions would also apply to the other models under the provisions of § 21.101.

Novel or Unusual Design Features

The Models M-7-230, M-7-230C, and M-9-230 will incorporate the following novel or unusual design features:

Maule Aerospace Technology, Inc. Models M-7-230, M-7-230C, and M-9-230 airplanes will use an engine that includes an electronic control system with full engine authority capability.

Many advanced electronic systems are prone to either upsets or damage, or both, at energy levels lower than analog systems. The increasing use of high power radio frequency emitters mandates requirements for improved high intensity radiated fields (HIRF) protection for electrical and electronic equipment. Since the electronic engine control system used on the Maule Aerospace Technology, Inc. Models M-7-230, M-7-230C, and M-9-230 will perform critical functions, provisions for protection from the effects of HIRF fields should be considered and, if necessary, incorporated into the airplane design data. The FAA policy contained in Notice 8110.71, dated April 2, 1998, establishes the HIRF energy levels that airplanes will be exposed to in service. The guidelines set forth in this Notice are the result of an Aircraft Certification Service review of existing policy on HIRF, in light of the ongoing work of the ARAC Electromagnetic Effects Harmonization Working Group (EEHWG). The EEHWG adopted a set of HIRF environment levels in November 1997 that were agreed upon by the FAA, JAA, and industry participants. As a result, the HIRF environments in this notice reflect the environment levels recommended by this working group. This notice states that a full authority digital engine control is an example of a system that should address the HIRF environments.

Even though the control system will be certificated as part of the engine, the installation of an engine with an electronic control system requires evaluation due to the possible effects on or by other airplane systems (e.g., radio interference with other airplane electronic systems, shared engine and airplane power sources). The regulatory requirements in 14 CFR part 23 for evaluating the installation of complex

systems, including electronic systems, are contained in § 23.1309. However, when § 23.1309 was developed, the use of electronic control systems for engines was not envisioned; therefore, the § 23.1309 requirements were not applicable to systems certificated as part of the engine (reference § 23.1309(f)(1)). Also, electronic control systems often require inputs from airplane data and power sources and outputs to other airplane systems (e.g., automated cockpit powerplant controls such as mixture setting). Although the parts of the system that are not certificated with the engine could be evaluated using the criteria of § 23.1309, the integral nature of systems such as these makes it unfeasible to evaluate the airplane portion of the system without including the engine portion of the system. However, § 23.1309(f)(1) again prevents complete evaluation of the installed airplane system since evaluation of the engine system's effects is not required.

Therefore, special conditions are proposed for the Maule Aerospace Technology, Inc. Models M-7-230, M-7-230C, and M-9-230 to provide HIRF protection and to evaluate the installation of the electronic engine control system for compliance with the requirements of § 23.1309(a) through (e) at Amendment 23-46.

Applicability

As discussed above, these special conditions are applicable to the Models M-7-230, M-7-230C, and M-9-230. Should Maule Aerospace Technology, 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, the 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 M-7-230, M-7-230C, and M-9-230 airplanes. It is not a rule of general applicability, and it affects only the applicant who applied to the FAA for approval of these features on the airplane.

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:

PART 23—[AMENDED]

Authority: 49 U.S.C. 106(g), 40113 and 44701; 14 CFR 21.16 and 21.17; and 14 CFR 11.38 and 11.19.

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 Maule Aerospace Technology, Inc. M-7-230, M-7-230C, and M-9-230 models of airplanes.

1. *High Intensity Radiated Fields (HIRF) Protection.* In showing compliance with 14 CFR part 21 and the airworthiness requirements of 14 CFR part 23, protection against hazards caused by exposure to HIRF fields for the full authority digital engine control system, which performs critical functions, must be considered. To prevent this occurrence, the electronic engine control system must be designed and installed to ensure that the operation and operational capabilities of this critical system are not adversely affected when the airplane is exposed to high energy radio fields.

At this time, the FAA and other airworthiness authorities are unable to precisely define or control the HIRF energy level to which the airplane will be exposed in service; therefore, the FAA hereby defines two acceptable interim methods for complying with the requirement for protection of systems that perform critical functions.

(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 external HIRF threat environment defined in the following table:

Frequency Field strength (volts per meter)	Peak	Average
10 kHz–100 kHz	50	50
100–500 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 root-mean-square (rms) values.

or,

(2) The applicant may demonstrate by a system test and analysis that the electrical and electronic systems that perform critical functions can withstand a minimum threat of 100 volts per meter peak electrical strength, without the benefit of airplane structural shielding, in the frequency range of 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. Data used for engine certification may be used, when appropriate, for airplane certification.

2. *Electronic Engine Control System.* The installation of the electronic engine control system must comply with the requirements of § 23.1309(a) through (e) at Amendment 23–46. The intent of this requirement is not to re-evaluate the inherent hardware reliability of the control itself, but rather determine the effects, including environmental effects addressed in § 23.1309(e), on the airplane systems and engine control system when installing the control on the airplane. When appropriate, engine certification data may be used when showing compliance with this requirement.

Issued in Kansas City, Missouri on July 25, 2005.

James E. Jackson,

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

[FR Doc. 05–15310 Filed 8–2–05; 8:45 am]

BILLING CODE 4910–13–P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 71

[Docket No. FAA–2005–21337; Airspace
Docket No. 05–ACE–16]

Establishment of Class E2 Airspace; and Modification of Class E5 Airspace; Storm Lake, IA

AGENCY: Federal Aviation
Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: This rule establishes a Class E surface area at Storm Lake, IA. It also modifies the Class E airspace area extending upward from 700 feet above the surface at Storm Lake, IA.

The effect of this rule is to provide appropriate controlled Class E airspace for aircraft departing from and executing instrument approach procedures to Storm Lake Municipal Airport and to segregate aircraft using instrument approach procedures in instrument

conditions from aircraft operating in visual conditions.

EFFECTIVE DATE: 0901 UTC, September 1, 2005.

FOR FURTHER INFORMATION CONTACT:
Brenda Mumper, Air Traffic Division,
Airspace Branch, ACE–520A, DOT
Regional Headquarters Building, Federal
Aviation Administration, 901 Locust,
Kansas City, MO 64106; telephone:
(816) 329–2524.

SUPPLEMENTARY INFORMATION:

History

On Wednesday June 22, 2005, the FAA proposed to amend 14 CFR part 71 to establish a Class E surface area and to modify other Class E airspace at Storm Lake, IA (70 FR 19027). The proposal was to establish a Class E surface area at Storm Lake, IA. It was also to modify the Class E5 airspace area to bring it into compliance with FAA directives. Interested parties were invited to participate in this rulemaking proceeding by submitting written comments on the proposal to the FAA. No comments objecting to the proposal were received.

The Rule

This amendment to Part 71 of the Federal Aviation Regulations (14 CFR Part 71) establishes Class E airspace designated as a surface area for an airport at Storm Lake, IA. Controlled airspace extending upward from the surface of the earth is needed to contain aircraft executing instrument approach procedures to Storm Lake Municipal Airport. Weather observations will be provided by an Automatic Weather Observing/Reporting System (AWOS) and communications will be direct with Fort Dodge Automated Flight Service Station.

This rule also revises the Class E airspace area extending upward from 700 feet above the surface at Storm Lake, IA. An examination of this Class E airspace area for Storm Lake, IA revealed noncompliance with FAA directives. This corrects identified discrepancies by decreasing the width of the southeast extension from 2.6 miles to 2.5 miles each side of the 167° bearing from Storm Lake NDB and creating an extension within 2.5 miles each side of the 357° bearing from the Storm Lake NDB extending from the 6.6-mile radius of the airport to 7 miles north of the airport, defining airspace of appropriate dimensions to protect aircraft departing and executing instrument approach procedures to Storm Lake Municipal Airport and bringing the airspace area into compliance with FAA directives. Both

areas will be depicted on appropriate aeronautical charts.

Class E airspace areas designated as surface areas are published in Paragraph 6002 of FAA Order 7400.9M, Airspace Designations and Reporting Points, dated August 30, 2004, and effective September 15, 2004, which is incorporated by reference in 14 CFR 71.1. Class E airspace areas extending upward from 700 feet or more above the surface of the earth are published in Paragraph 6005 of the same Order. The Class E airspace designations listed in this document will be published subsequently in the Order.

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. Therefore, this regulation—(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. Since this is a routine matter that will only affect air traffic procedures and air navigation, it is certified that this rule, when promulgated, will not have a significant economic impact on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

This rulemaking is promulgated under the authority described in Subtitle VII, Part A, Subpart I, Section 40103. Under that section, the FAA is charged with prescribing regulations to assign the use of the airspace necessary to ensure the safety of aircraft and the efficient use of airspace. This regulation is within the scope of that authority since it contains aircraft executing instrument approach procedures to Storm Lake Municipal Airport.

List of Subjects in 14 CFR Part 71

Airspace, Incorporation by reference,
Navigation (Air).

Adoption of the Amendment

■ In consideration of the foregoing, the Federal Aviation Administration amends 14 CFR part 71 as follows:

PART 71—DESIGNATION OF CLASS A, CLASS B, CLASS C, CLASS D, AND CLASS E AIRSPACE AREAS; AIRWAYS; ROUTES; AND REPORTING POINTS

■ 1. The authority citation for part 71 continues to read as follows: