



[4910-13]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 31

[Docket No. FAA-2016-5424; Special Conditions No. 31-001-SC]

Special Conditions: Ultramagic, S.A., Mark-32 Burner Series

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final special conditions.

SUMMARY: This action proposes special conditions for the Ultramagic, S.A., balloon models F-18, H-56, H-65, H-77, M-56, M-56C, M-65, M-65C, M-77, M-77C, M-90, M-105, M-120, M-130, M-145, M-160, N-180, N-210, N-250, N-300, N-355, N-425, S-70, S-90, S-105, S-130, S-160, T-150, T-180, T-210, V-56, V-65, V-77, V-90, V-105, and Z-90. These models will have a novel or unusual design feature associated with having the new Mark-32 Burner series. The applicable airworthiness regulations do not contain adequate or appropriate safety standards for this design feature. These final 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: These special conditions are effective **[INSERT DATE OF PUBLICATION IN FEDERAL REGISTER]** and is applicable beginning May 25, 2016.

FOR FURTHER INFORMATION CONTACT: John VanHoudt, Federal Aviation Administration, Small Airplane Directorate, Aircraft Certification Service, Programs and Procedures Branch, ACE-114, 901 Locust, Kansas City, MO 64106; telephone (816) 329-4142; facsimile (816) 329-4090.

SUPPLEMENTARY INFORMATION:

Background

On September 21, 2014, Ultramagic, S.A. (Ultramagic) applied for a change to Type Certificate No. B02CE to incorporate the new Mark-32 (MK-32) Burner series in balloon models F-18, H-56, H-65, H-77, M-56, M-56C, M-65, M-65C, M-77, M-77C, M-90, M-105, M-120, M-130, M-145, M-160, N-180, N-210, N-250, N-300, N-355, N-425, S-70, S-90, S-105, S-130, S-160, T-150, T-180, T-210, V-56, V-65, V-77, V-90, V-105, and Z-90. The MK-32 Burner series is a derivative of the MK-10 Burner series, which are currently approved under TCDS B02CE. The MK-32 burner does introduce a particular novel aspect in terms of operation and performance—the primary modification being an oxygen augmented igniter system.

Type Certification Basis

Under the provisions of § 21.101, Ultramagic must show that the balloon models F-18, H-56, H-65, H-77, M-56, M-56C, M-65, M-65C, M-77, M-77C, M-90, M-105, M-120, M-130, M-145, M-160, N-180, N-210, N-250, N-300, N-355, N-425, S-70, S-90, S-105, S-130, S-160, T-150, T-180, T-210, V-56, V-65, V-77, V-90, V-105, and Z-90, as changed, continues to meet the applicable provisions incorporated by reference in Type Certificate No. B02CE 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 Direccion General de Aviacion Civil originally type certificated this aircraft under its type certificate Numbers 3, 4, 18, 61, 147, and 247. The FAA validated these products under U.S. Type Certificate Number B02CE. On September 28, 2003, EASA began oversight of this product on behalf of Spain. The regulations incorporated by reference in B02CE are as follows:

a. 14 CFR 21.29.

b. 14 CFR part 31, effective on January 1990, as amended by 31-1 through 31-5 inclusive.

Application for Type Certificate dated June 5, 1997.

c. Equivalent Level of Safety (ELOS) Findings per provision of 14 CFR 21.21(b)(1):

(1) ACE-08-15¹, August 1, 2008, Burners, 14 CFR 31.47(d).

(2) ACE-08-15A², November 05, 2013, Burners, 14 CFR 31.47(d), for Model S-70.

If the Administrator finds that the applicable airworthiness regulations (i.e., 14 CFR part 31) do not contain adequate or appropriate safety standards for balloon models F-18, H-56, H-65, H-77, M-56, M-56C, M-65, M-65C, M-77, M-77C, M-90, M-105, M-120, M-130, M-145, M-160, N-180, N-210, N-250, N-300, N-355, N-425, S-70, S-90, S-105, S-130, S-160, T-150, T-180, T-210, V-56, V-65, V-77, V-90, V-105, and Z-90 because of a novel or unusual design feature, special conditions are prescribed under the provisions of § 21.16.

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 or similar novel or unusual design feature, or should any other model already included on the same type certificate be modified to incorporate the same or similar novel or unusual design feature, the special conditions would also apply to the other model under § 21.101.

The FAA issues special conditions, as defined in 14 CFR 11.19, in accordance with § 11.38, and they become part of the type-certification basis under § 21.101.

Novel or Unusual Design Features

¹

http://rgl.faa.gov/Regulatory_and_Guidance_Library/rgELOS.nsf/0/BE4DB369A87F7A7A86257C210072E48A?OpenDocument&Highlight=ace-08-15

²

http://rgl.faa.gov/Regulatory_and_Guidance_Library/rgELOS.nsf/0/BE4DB369A87F7A7A86257C210072E48A?OpenDocument&Highlight=ace-08-15

The Model Numbers F-18, H-56, H-65, H-77, M-56, M-56C, M-65, M-65C, M-77, M-77C, M-90, M-105, M-120, M-130, M-145, M-160, N-180, N-210, N-250, N-300, N-355, N-425, S-70, S-90, S-105, S-130, S-160, T-150, T-180, T-210, V-56, V-65, V-77, V-90, V-105, and Z-90 balloons will incorporate the following novel and unusual design feature:

The oxygen augmentation and hydraulic control.

Discussion

Based on the provisions of §§ 21.17 and 21.29 and the U.S.-EASA Technical Implementation Procedures for Airworthiness and Environmental Certification Between the Federal Aviation Administration of the United States of America and the European Aviation Safety Agency of the European Union, the following airworthiness requirements are applicable to this project and will remain active for three years from the date of application and form the Certification Basis:

a. Part 31, amendment 7 (The certification basis complied with according to the Ultramagic part 31 compliance checklist.).

b. ELOS Findings: The FAA notes that it has issued equivalent level of safety findings per provision of 14 CFR 21.21(b)(1), specifically ACE-08-15³ on August 1, 2008, Burners, § 31.47(d) and then extended the ELOS as ACE-08-15A⁴ on November 05, 2013, Burners, § 31.47(d), for the Model S-70. This ELOS has not been applied to the MK-32 and therefore not applicable.

³

http://rgl.faa.gov/Regulatory_and_Guidance_Library/rgELOS.nsf/0/BE4DB369A87F7A7A86257C210072E48A?OpenDocument&Highlight=ace-08-15

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http://rgl.faa.gov/Regulatory_and_Guidance_Library/rgELOS.nsf/0/BE4DB369A87F7A7A86257C210072E48A?OpenDocument&Highlight=ace-08-15

3. Special conditions: The FAA notes that Ultramagic elected to comply with certain provisions of CS-23, amendment 3, that apply to oxygen systems. These provisions are applicable because there is an oxygen augmented igniter system available for the MK-32 burner. The following 14 CFR regulations, except § 23.1445, are harmonized with their CS-23, amendment 3, counterpart regulations and form the basis of this special condition.

| Section | Title | Paragraph | Amendment |
|-----------|---|-------------------|-----------|
| § 23.1445 | Oxygen distribution system | (a) and (b) | 23-62 |
| § 23.1451 | Fire protection for oxygen equipment | (a), (b), and (c) | 23-49 |
| § 23.1453 | Protection of oxygen equipment from rupture | (a) and (b) | 23-49 |

Section 23.1445 mentions the only significant regulatory difference, regarding common sources oxygen with passengers. The oxygen system is not utilized for breathing; hence, this Significant Standard Difference (SSD) does not apply.

In addition, the FAA notes that Ultramagic offers an optional hydraulic kit. This kit is a hydraulic system that actuates the burners' fuel valve. Since part 31 does not have provisions for hydraulic systems, § 23.1435, Hydraulic systems, will provide the basis for the hydraulic system special conditions contained herein. No SSD is associated with this regulation.

Discussion of Comments

Notice of proposed special conditions No. 31-16-01-SC for the Ultramagic, S.A., MK-32 Burner Series was published in the Federal Register on April 5, 2016 (81 FR 19502). No comments were received, and the special conditions are adopted as proposed.

Applicability

As discussed above, these special conditions are applicable to the Model Numbers F-18, H-56, H-65, H-77, M-56, M-56C, M-65, M-65C, M-77, M-77C, M-90, M-105, M-120, M-130, M-145, M-160, N-180, N-210, N-250, N-300, N-355, N-425, S-70, S-90, S-105, S-130, S-160, T-

150, T-180, T-210, V-56, V-65, V-77, V-90, V-105, and Z-90 balloons. Should Ultramagic, S.A. 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 standard practice, the effective date of final special conditions would be 30 days after the date of publication in the Federal Register; however, as the certification date for the Ultramagic, S.A., Model Numbers F-18, H-56, H-65, H-77, M-56, M-56C, M-65, M-65C, M-77, M-77C, M-90, M-105, M-120, M-130, M-145, M-160, N-180, N-210, N-250, N-300, N-355, N-425, S-70, S-90, S-105, S-130, S-160, T-150, T-180, T-210, V-56, V-65, V-77, V-90, V-105, and Z-90 balloons is imminent, the FAA finds that good cause exists to make these special conditions effective upon issuance.

Conclusion

This action affects only certain novel or unusual design features on one model series of burners. 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 balloons.

List of Subjects in 14 CFR Part 31

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 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 Ultramagic, S.A., balloon models F-18, H-56, H-65, H-77, M-56, M-56C, M-65, M-65C, M-77, M-77C, M-90, M-105, M-120, M-130, M-145, M-160, N-180, N-210, N-250, N-300, N-355, N-425, S-70, S-90, S-105, S-130, S-160, T-150, T-180, T-210, V-56, V-65, V-77, V-90, V-105, and Z-90 modified by Ultramagic, S.A.

1. Certification of the MK-32 Burner Series under 14 CFR part 31.

(a) In addition to the provisions of part 31, amendment 7, the applicant must design the MK-32 Burner to comply with the requirements, as described below, with respect to the igniter oxygen augmentation system and hydraulic burner valve actuation system:

Oxygen distribution system

(1) Except for flexible lines from oxygen outlets to the dispensing units, or where shown to be otherwise suitable to the installation, nonmetallic tubing must not be used for any oxygen line that is normally pressurized during flight.

(2) Nonmetallic oxygen distribution lines must not be routed where they may be subjected to elevated temperatures, electrical arcing, and released flammable fluids that might result from any probable failure.

Fire protection for oxygen equipment

Oxygen equipment and lines must:

(1) Not be installed in any designated fire zones.

(2) Be protected from heat that may be generated in, or escape from, any designated fire zone.

(3) Be installed so that escaping oxygen cannot come in contact with and cause ignition of grease, fluid, or vapor accumulations that are present in normal operation or that may result from the failure or malfunction of any other system.

Protection of oxygen equipment from rupture

(1) Each element of the oxygen system must have sufficient strength to withstand the maximum pressure and temperature, in combination with any externally applied loads arising from consideration of limit structural loads that may be acting on that part of the system.

(2) Oxygen pressure sources and the lines between the source and the shutoff means must be:

- (i) Protected from unsafe temperatures; and
- (ii) Located where the probability and hazard of rupture in a crash landing are minimized.

Hydraulic systems

(1) Design. Each hydraulic system must be designed as follows:

(i) Each hydraulic system and its elements must withstand, without yielding, the structural loads expected in addition to hydraulic loads.

(ii) A means to indicate the pressure in each hydraulic system which supplies two or more primary functions must be provided to the flight crew.

(iii) There must be means to ensure that the pressure, including transient (surge) pressure, in any part of the system will not exceed the safe limit above design operating pressure

and to prevent excessive pressure resulting from fluid volumetric changes in all lines which are likely to remain closed long enough for such changes to occur.

(iv) The minimum design burst pressure must be 2.5 times the operating pressure.

(2) Tests. Each system must be substantiated by proof pressure tests. When proof tested, no part of any system may fail, malfunction, or experience a permanent set. The proof load of each system must be at least 1.5 times the maximum operating pressure of that system.

(3) Accumulators. A hydraulic accumulator or reservoir may be installed on the engine side of any firewall, if—

(i) It is an integral part of an engine or propeller system; or

(ii) The reservoir is nonpressurized and the total capacity of all such nonpressurized reservoirs is one quart or less.

(b) Ultramagic, through EASA, will provide the FAA with all Airworthiness Directives issued against the changed type design, if any, and a plan for resolving the unsafe conditions for the FAA type design.

Issued in Kansas City, Missouri on May 25, 2016.

Pat Mullen,
Acting Manager, Small Airplane Directorate,
Aircraft Certification Service.

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