



[4910-13]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 23

[Docket No. FAA-2017-0703; Special Conditions No. 23-283-SC]

Special Conditions: Pilatus Aircraft Ltd., PC-24, Autothrust System

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final special conditions; request for comments.

SUMMARY: These special conditions are issued for the Pilatus Aircraft Ltd. PC-24 airplane.

This airplane will have a novel or unusual design feature associated with installation of an autothrust system. The applicable airworthiness regulations do not contain adequate or appropriate safety standards for this design feature. 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: These special conditions are effective [INSERT DATE OF PUBLICATION IN THE FEDERAL REGISTER], and are applicable July 6, 2017.

ADDRESSES: Send comments identified by docket number FAA-2017-0703 using any of the following methods:

- Federal eRegulations Portal: Go to <http://www.regulations.gov> and follow the online instructions for sending your comments electronically.
- Mail: Send comments to Docket Operations, M-30, U.S. Department of Transportation (DOT), 1200 New Jersey Avenue, SE., Room W12-140, West Building Ground Floor, Washington, D.C., 20590-0001.

- Hand Delivery of Courier: Take comments to Docket Operations in Room W12-140 of the West Building Ground Floor at 1200 New Jersey Avenue, S.E., Washington, D.C., between 9 a.m., and 5 p.m., Monday through Friday, except Federal holidays.
- Fax: Fax comments to Docket Operations at 202-493-2251.

Privacy: The FAA will post all comments it receives, without change, to <http://regulations.gov>, including any personal information the commenter provides. Using the search function of the docket web site, anyone can find and read the electronic form of all comments received into any FAA docket, including the name of the individual sending the comment (or signing the comment for an association, business, labor union, etc.). DOT's complete Privacy Act Statement can be found in the Federal Register published on April 11, 2000 (65 FR 19477-19478), as well as at <http://DocketsInfo.dot.gov>.

Docket: Background documents or comments received may be read at <http://www.regulations.gov> at any time. Follow the online instructions for accessing the docket or go to the Docket Operations in Room W12-140 of the West Building Ground Floor at 1200 New Jersey Avenue, SE., Washington, D.C., between 9 a.m., and 5 p.m., Monday through Friday, except Federal holidays.

FOR FURTHER INFORMATION CONTACT: Jeff Pretz, ACE-111, Federal Aviation Administration, Small Airplane Directorate, Aircraft Certification Service, 901 Locust Street, Kansas City, MO 64106; telephone (816) 329-3239; facsimile (816) 329-4090.

SUPPLEMENTARY INFORMATION:

The FAA has determined, in accordance with 5 U.S.C. 553(b)(3)(B) and 553(d)(3), that notice and opportunity for prior public comment hereon are unnecessary because 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.

| Special Condition Number ² | Company/Airplane Model |
|---------------------------------------|---|
| 23-264-SC | Honda Aircraft Company/Model HA-420 |
| 23-272-SC | Cirrus Design Corporation/Model SF50 |
| 23-281-SC | Innovative Solutions and Support Inc./Pilatus Aircraft Ltd., PC-12 Models |

Comments Invited

We invite interested people to take part in this rulemaking by sending 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 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.

Background

On July 9, 2012, Pilatus Aircraft Ltd. applied for a type certificate for their new PC-24 airplane. The PC-24 is an aluminum pressurized low-wing business jet with a T-tail configuration and retractable undercarriage designed to meet the commuter category requirements of part 23. Two Williams International FJ44-4A turbofan engines rated at 3,400 pounds (lbs.) of take-off thrust, situated in nacelles on each side of the rear fuselage power the PC-24. The PC-24 will have a Maximum Take-off Weight (MTOW) of 17,200 pounds (7,802

² See <http://rgl.faa.gov/> to review the listed special conditions.

kilograms). It has a maximum seating capacity of up to ten passengers and one or two pilots. The airplane will be certificated for day and night Visual Flight Rules, Instrument Flight Rules and flight into known icing.

The PC-24 is equipped with an autothrust system—also referred to as an autothrottle system. The autothrust system is useable in all phases of flight from takeoff to decision height on approach. The system includes speed and thrust modes along with monitors to prevent the system from exceeding engine or airspeed limits. A servo provides throttle movement, which is part of each throttle quadrant assembly. The servo(s) can be overridden by pilot force or disconnected using the autothrottle quick disconnect switch on either thrust control lever, the autopilot quick disconnect switch on the yoke, or the autothrottle control switch on the flight guidance panel.

Type Certification Basis

Under the provisions of 14 CFR 21.17, Pilatus Aircraft Ltd. must show the PC-24 meets the applicable provisions of part 23, as amended by amendments 23-1 through 23-62 thereto.

If the Administrator finds the applicable airworthiness regulations (i.e., 14 CFR part 23) do not contain adequate or appropriate safety standards for the PC-24 because of a novel or unusual design feature, special conditions are prescribed under the provisions of § 21.16.

In addition to the applicable airworthiness regulations and special conditions, the PC-24 must comply with the fuel vent and exhaust emission requirements of 14 CFR part 34, the noise certification requirements of 14 CFR part 36, and the FAA must issue a finding of regulatory adequacy pursuant to section 611 of Public Law 92-574, the "Noise Control Act of 1972."

The FAA issues special conditions, as defined in § 11.19, under § 11.38 and they become part of the type certification basis under § 21.17(a)(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, the FAA would apply these special conditions to the other models under § 21.101.

Novel or Unusual Design Features

The PC-24 will incorporate the following novel or unusual design features:

Autothrust System

Discussion

As discussed in the “Background” section, the PC-24 will incorporate an autothrust system, which is considered a novel design for this type of airplane. The applicable airworthiness regulations do not contain adequate or appropriate safety standards for this design feature. Mandating additional requirements—developed in part by adapting the relevant portions 14 CFR 25.1329 (automatic pilot systems) applicable to the autothrust system—along with FAA experience with similar autothrust systems. This additional requirement mitigates the concerns associated with installation of the autothrust system.

Applicability

As discussed above, these special conditions are applicable to the PC-24. Should Pilatus Aircraft Ltd. apply at a later date for a change to the type certificate to include another model on the same type certificate incorporating the same novel or unusual design feature, the FAA would apply these special conditions to that model as well.

Conclusion

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

The substance of these special conditions has been subjected to the notice and comments period in several prior instances—identified above—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. Therefore, notice and opportunity for prior public comments hereon are unnecessary and the FAA finds good cause, in accordance with 5 U.S.C. 553(b)(3)(B) and 553(d)(3), making these special conditions 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 23

Aircraft, Aviation safety, Signs and symbols.

Citation

The authority citation for these special conditions is as follows:

Authority: 49 U.S.C. 106(f), 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 Pilatus Aircraft Ltd. PC-24 airplanes.

1. Autothrust System.

For autothrust systems, in addition to the requirements of §§ 23.143, 23.1309, and 23.1329 the following apply:

(a) Quick disengagement controls for the autothrust function must be provided for each pilot. The autothrust quick disengagement controls must be located on the thrust control levers. Quick disengagement controls must be readily accessible to each pilot while operating the thrust control levers.

(b) The effects of a failure of the system to disengage the autothrust function when manually commanded by the pilot must be assessed in accordance with the requirements of § 23.1309.

(c) Engagement or switching of the flight guidance system, a mode or a sensor may not cause the auto thrust system to affect a transient response that alters the airplane's flight path any greater than a minor transient, as defined in paragraph (1)(1) of this special condition.

(d) Under normal conditions, the disengagement of any automatic control function of a flight guidance system may not cause a transient response of the airplane's flight path any greater than a minor transient.

(e) Under rare normal and non-normal conditions, disengagement of any automatic control function of a flight guidance system may not result in a transient any greater than a significant transient, as defined in paragraph (1)(2) of this special condition.

(f) The function and direction of motion of each command reference control, such as heading select or vertical speed, must be plainly indicated on—or adjacent to—each control if necessary to prevent inappropriate use or confusion.

(g) Under any condition of flight appropriate to its use, the flight guidance system may not produce hazardous loads on the airplane, nor create hazardous deviations in the flight path. This applies to both fault-free operation and in the event of a malfunction and assumes that the pilot begins corrective action within a reasonable period of time.

(h) When the flight guidance system is in use, a means must be provided to avoid excursions beyond an acceptable margin from the speed range of the normal flight envelope. If the airplane experiences an excursion outside this range, a means must be provided to prevent the flight guidance system from providing guidance or control to an unsafe speed.

(i) The flight guidance system functions, controls, indications, and alerts must be designed to minimize flightcrew errors and confusion concerning the behavior and operation of the flight guidance system. Means must be provided to indicate the current mode of operation, including any armed modes, transitions, and reversions. Selector switch position is not an acceptable means of indication. The controls and indications must be grouped and presented in a logical and consistent manner. The indications must be visible to each pilot under all expected lighting conditions.

(j) Following disengagement of the autothrust function, a caution—visual and auditory—must be provided to each pilot.

(k) During autothrust operation, it must be possible for the flightcrew to move the thrust levers without requiring excessive force. The autothrust may not create a potential hazard when the flightcrew applies an override force to the thrust levers.

(l) For purposes of this section, a transient is a disturbance in the control or flight path of the airplane that is not consistent with response to flightcrew inputs or environmental conditions.

(1) A minor transient would not significantly reduce safety margins and would involve flightcrew actions that are well within their capabilities. A minor transient may involve a slight increase in flightcrew workload or some physical discomfort to passengers or cabin crew.

(2) A significant transient may lead to a significant reduction in safety margins, an increase in flightcrew workload, discomfort to the flightcrew, or physical distress to the passengers or cabin crew, possibly including non-fatal injuries. Significant transients do not require—in order to remain within or recover to the normal flight envelope—any of the following:

- (i) Exceptional piloting skill, alertness, or strength.
- (ii) Forces applied by the pilot which are greater than those specified in § 23.143(c).
- (iii) Accelerations or attitudes in the airplane that might result in further hazard to secured or non-secured occupants.

Issued in Kansas City, Missouri on July 6, 2017.

Kelly Broadway, Acting Manager
Small Airplane Directorate
Aircraft Certification Service
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