



**Billing Code 4910-13**

**DEPARTMENT OF TRANSPORTATION**

**Federal Aviation Administration**

**14 CFR Part 25**

**[Docket No. FAA-2020-0286; Special Conditions No. 25-772-SC]**

**Special Conditions: Avidyne Corporation, Textron Aviation Inc. Model 550, 560, and 560XL Airplanes; Electronic-System Security Protection from Unauthorized Internal Access.**

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Final special conditions; request for comments.

**SUMMARY:** These special conditions are issued for Textron Aviation Inc. (Textron) Model 550, 560, and 560XL airplanes. These airplanes, as modified by Avidyne Corporation, will have a novel or unusual design feature when compared to the state of technology envisioned in the airworthiness standards for transport category airplanes. This design feature is Avidyne Corporation avionics that allow internal connection to previously isolated data networks, which are connected to systems that perform functions required for the safe operation of the airplane. This feature creates a potential for unauthorized persons to access the aircraft-control domain and airline information-services domain, and presents security vulnerabilities related to the introduction of computer viruses and worms, user errors, and intentional sabotage of airplane electronic assets (networks, systems, and databases). 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:** This action is effective on Avidyne Corporation on [INSERT DATE OF PUBLICATION IN THE FEDERAL REGISTER]. Send comments on or before [INSERT DATE 45 DAYS AFTER PUBLICATION IN THE FEDERAL REGISTER].

**ADDRESSES:** Send comments identified by Docket No. FAA-2020-0286 using any of the following methods:

- *Federal eRegulations Portal:* Go to <http://www.regulations.gov/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, DC, 20590-0001.
- *Hand Delivery or Courier:* Take comments to Docket Operations in Room W12-140 of the West Building Ground Floor at 1200 New Jersey Avenue, SE., Washington, DC, 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://www.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).

*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 Docket Operations in Room W12-140 of the West Building Ground Floor at 1200 New Jersey Avenue, SE., Washington, DC, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

**FOR FURTHER INFORMATION CONTACT:** Varun Khanna, Airplane and Flightcrew Interface Section, AIR-671, Transport Standards Branch, Policy and Innovation Division, Aircraft Certification Service, Federal Aviation Administration, 2200 South 216th Street, Des Moines, Washington 98198; telephone and fax 206-231-3159; e-mail [varun.khanna@faa.gov](mailto:varun.khanna@faa.gov).

**SUPPLEMENTARY INFORMATION:**

The substance of these special conditions has been published in the *Federal Register* for public comment in several prior instances with no substantive comments received. Therefore, the FAA has determined that prior public notice and comment are unnecessary, and finds that, for the same reason, good cause exists for adopting these special conditions upon publication in the *Federal Register*.

**Comments Invited**

The FAA invites 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.

The FAA will consider all comments received by the closing date for comments. The FAA may change these special conditions based on the comments received.

### **Background**

On February 1, 2019, Avidyne Corporation applied for a supplemental type certificate for Avidyne Corporation avionics connected to the aircraft-control domain and airline information-services domain in Textron Model 550, 560, and 560XL airplanes.

The Model 550 is a twin-engine, transport-category airplane with a maximum takeoff weight of 14,800 pounds, and seating for up to 11 passengers, depending upon configuration.

The Model 560 is a twin-engine, transport-category airplane with a maximum takeoff weight of 16,630 pounds, and seating for up to 11 passengers, depending upon configuration.

The Model 560XL is a twin-engine, transport-category airplane with a maximum takeoff weight of 20,200 pounds, and seating for up to 12 passengers, depending upon configuration.

### **Type Certification Basis**

Under the provisions of title 14, Code of Federal Regulations (14 CFR) 21.101, Avidyne Corporation must show that the Textron Model 550, 560, and 560XL airplanes, as changed, continue to meet the applicable provisions of the regulations listed in Type

Certificate No. A22CE or the applicable regulations in effect on the date of application for the change, except for earlier amendments as agreed upon by the FAA.

If the Administrator finds that the applicable airworthiness regulations (i.e., 14 CFR part 25) do not contain adequate or appropriate safety standards for Textron Model 550, 560, and 560XL airplanes 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 applicant apply for a supplemental type certificate to modify any other model included on the same type certificate to incorporate the same novel or unusual design feature, these special conditions would also apply to the other model under § 21.101.

In addition to the applicable airworthiness regulations and special conditions, Textron Model 550, 560, and 560XL airplanes 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.

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**

The Textron Model 550, 560, and 560XL airplanes, as modified by Avidyne Corporation, will incorporate the following novel or unusual design features:

Avidyne Corporation avionics that allow internal connection to previously isolated data networks, which are connected to systems that perform functions required for the safe operation of the airplane.

## **Discussion**

The Textron Model 550, 560, and 560XL airplanes' architecture is novel or unusual for commercial transport airplanes because it allows connection to previously isolated data networks connected to systems that perform functions required for the safe operation of the airplane. This data network and design integration creates a potential for unauthorized persons to access the aircraft-control domain and airline information-services domain, and presents security vulnerabilities related to the introduction of computer viruses and worms, user errors, and intentional sabotage of airplane electronic assets (networks, systems, and databases) critical to the safety and maintenance of the airplane.

The existing regulations and guidance material did not anticipate this type of system architecture or electronic access to airplane systems. Furthermore, 14 CFR regulations and the current system-safety assessment policy and techniques do not address potential security vulnerabilities, which could be exploited by unauthorized access to airplane networks and servers. Therefore, these special conditions ensure that the security of airplane systems and networks is not compromised by unauthorized wired or wireless internal access.

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.

## **Applicability**

As discussed above, these special conditions are applicable to Textron Model 550, 560, and 560XL airplanes. Should Avidyne Corporation apply at a later date for a supplemental type certificate to modify any other model included on Type Certificate No. A22CE to incorporate the same novel or unusual design feature, these special conditions would apply to that model as well.

## **Conclusion**

This action affects only certain novel or unusual design features on one model of airplane. It is not a rule of general applicability and affects only the applicant who applied to the FAA for approval of the features on the airplane.

## **List of Subjects in 14 CFR Part 25**

Aircraft, Aviation safety, Reporting and recordkeeping requirements.

## **Authority Citation**

The authority citation for these special conditions is as follows:

Authority: 49 U.S.C. 106(f), 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 Textron Model 550, 560, and 560XL airplanes, as modified by Avidyne Corporation, for airplane electronic-system security protection from unauthorized internal access.

1. The applicant must ensure that the design provides isolation from, or airplane electronic-system security protection against, access by unauthorized sources internal

- to the airplane. The design must prevent inadvertent and malicious changes to, and all adverse impacts upon, airplane equipment, systems, networks, or other assets required for safe flight and operations.
2. The applicant must establish appropriate procedures to allow the operator to ensure that continued airworthiness of the airplane is maintained, including all post-type-certification modifications that may have an impact on the approved electronic-system security safeguards.

Issued in Des Moines, Washington, on July 7, 2020.

James E. Wilborn  
Acting Manager, Transport Standards Branch  
Policy and Innovation Division  
Aircraft Certification Service  
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