

further increases the potential for inconsistent and unsatisfactory installations;

(2) Hook and loop fasteners closed with proper tension may stretch or loosen over time due to wear, fluids, vibration, and repeated use, leading to insufficient tension to retain the ELT;

(3) Hook and loop fasteners closed with proper tension do not provide stated retention capability due to debris which can contaminate the hooks and loops of the fastener; and

(4) Hook and loop fasteners closed with proper tension degrade due to environmental factors such as repeated heating and cooling cycles, temperature extremes, and contamination resulting from location in equipment areas.

FAA Actions

After publishing our initial intent to withdraw the TSO Authorizations (TSOA) for TSO-C91a, and TSO-C126/126a (See 135 FR 41,473 (2012)), the FAA considered five courses of action to mitigate safety concerns with the use of hook and loop fasteners to retain ELTs. These actions addressed design, production, and airworthiness approvals for both the TSO and retrofit for existing installations. Below is a summary of the actions and their outcomes:

(1) *Recommendation to revise Installation and Maintenance manuals.* The FAA published a Safety Awareness Information Bulletin (SAIB) HQ-12-32, *Hook and Loop Style Fasteners as a Mounting Mechanism for Emergency Locator Transmitters*, on May 23, 2012. The SAIB outlined actions ELT manufacturers could take to improve their installation and maintenance instructions to mitigate the concerns with hook and loop retention.

(2) *Revised TSO-C126a for 406 MHz ELTs.* The FAA published TSO-C126b, *406 MHz Emergency Locator Transmitters*, on November 26, 2012. The TSO precluded the use of hook and loop fasteners as a primary means of securing an ELT in its mounting tray for future ELT designs. TSO-C91a was previously cancelled, and a revision was not needed.

(3) *Determined need for an Airworthiness Directive to correct ELTs with hook and loop fasteners.* The FAA accomplished a Corrective Action Review Board (CARB) to determine if existing airworthiness approvals and existing Technical Standard Order (TSO) authorizations required 14 CFR part 39 Airworthiness Directive (AD) action. The CARB determined an AD was not warranted.

(4) *Cease airworthiness approval of ELTs with hook and loop fasteners.* Not

necessary. Manufacturers with ELT designs incorporating hook and loop fasteners which failed to perform their intended function in accidents either have revised or are in the process of revising their designs, minimizing the need for policy in this area.

(5) *Withdrawal of ELT TSO Authorizations.* Not pursued.

Manufacturers with ELT designs incorporating hook and loop fasteners that failed to perform their intended function have either revised or are revising their designs, minimizing the need for this action.

Conclusion

The FAA issued an SAIB providing ELT installation and maintenance guidance and revised TSO-C126a to eliminate hook and loop fasteners from future TSO designs. The FAA is not issuing an airworthiness directive or a policy disallowing installation approval of ELTs that use hook and loop fasteners. Lastly, the FAA decided not to take the action of withdrawing the TSO authorizations of ELTs utilizing hook and loop fasteners as a mounting mechanism, but ask those aircraft owners/operators with ELTs secured with hook and loop fasteners in their aircraft to voluntarily switch to a metal strap type restraint method. Therefore, the proposed June 30, 2014 date for TSOA withdrawals is no longer applicable.

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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

Underwater Locating Devices (Acoustic) (Self-Powered)

AGENCY: Federal Aviation Administration, FAA, DOT.

ACTION: Notice to extend the revocation date of Technical Standard Order (TSO) C-121 and C-121a, Underwater Locating Devices (ULD) (Acoustic) (Self-Powered).

SUMMARY: This Notice extends the planned revocation date of Technical Standard Order (TSO) authorization for the production of Underwater Locating Devices (ULD) (Acoustic) (Self-Powered) manufactured to TSO-C121 and TSO C-121a specifications. This action is

necessary to facilitate an efficient transition to UDLs with a 90-day minimum battery operating life manufactured to the TSO-C121b specifications.

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SUPPLEMENTARY INFORMATION:

Background

The FAA published a Notice in the Federal Register, 76 FR 52734, August 23, 2011, announcing the planned revocation of TSO-C121 and TSO-C121a. Notice of that conformation was published in the **Federal Register**, 77 FR 13174, March 5, 2012. Thus far, only two manufacturers currently hold TSO authorizations (TSOAs) under TSO-C121 or TSO-C121a; both are domestic. Both manufacturers are now authorized to produce longer duration TSO-C121b units as envisioned by the March 5, 2012 **Federal Register** notice. One manufacturer received its TSO-C121b authorization in December 2014, the other in February 2015. Although both manufacturers received approval to manufacture devices meeting the current standard, the TSOA by itself does not authorize installation in an aircraft. Recent events have driven additional testing requirements for installation of lithium batteries, which these devices contain. Prior to the FAA's issuing the TSOAs to the two applicants, testing of the lithium batteries produced satisfactory results, such that the newly approved TSO-C121b devices will contain the effects of catastrophic battery failures. The ULD manufacturer's data may be used to support installations of the device on an aircraft, but each installer must analyze their design for safety impacts on their aircraft. A major aircraft manufacturer requested additional time to complete testing and analysis of the TSO-C121b device's installation. They also requested additional time to update their part numbers and drawings in their various Type Certificated (TC) aircraft once the analysis is complete. Granting this additional time will prevent a disruption in aircraft production as the necessary documentation changes are updated to reflect the current production of TSO-C121b devices.

Conclusion

Based on the recent award of TSO-C121b authorizations, additional testing and analysis of lithium battery

installations and the lead time required to update required documentation, the FAA has delayed the revocation of

TSO-C121 and TSO-C121a authorizations to December 1, 2015.

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