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Emergency Locator Transmitters; Rule and Notice

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Parts 25, 29, 91, 121, 125, and 135

[Docket No. 26180; Amendments No. 25–82, 29–33, 91–242, 121–239, 125–20, and 135–49]

RIN 2120–AD19

Emergency Locator Transmitters

AGENCY: Federal Aviation Administration, DOT.

ACTION: Final rule.

SUMMARY: This rule requires that newly installed emergency locator transmitters (ELT's) on U.S.-registered aircraft be of an improved design that meets the requirements of a revised Technical Standard Order (TSO) or later TSO's issued for ELT's. This rule is prompted by unsatisfactory performance experienced with automatic ELT's manufactured under the original TSO. Further, it addresses certain safety recommendations made by the National Transportation Safety Board (NTSB) and the search and rescue (SAR) community. The FAA is also adopting improved standards for survival ELT's. The rule is expected to have a dramatic effect on reducing activation failures and would increase the likelihood of locating airplanes after accidents. In addition, publication of this document coincides with notice of the FAA's withdrawal of manufacturing authority for ELT's produced under TSO–C91.

EFFECTIVE DATE: This document is effective June 21, 1994.

FOR FURTHER INFORMATION CONTACT: Phil Akers, Aircraft Engineering Division (AIR–120), Aircraft Certification Service, Federal Aviation Administration, 800 Independence Avenue, SW., Washington, DC 20591; telephone (202) 267–9571.

SUPPLEMENTARY INFORMATION:

Background

In 1971, responding to a congressional mandate for rulemaking (Public Law 91–596), the FAA adopted amendments to parts 25, 29, 91, 121, and 135 of the Federal Aviation Regulations (FAR) to require the installation and use of ELT's that meet the requirements of TSO–C91. The amendments require that certain U.S.-registered civil airplanes be equipped with automatic ELT's. An automatic ELT is a crash-activated electronic signaling device used to facilitate search and rescue efforts in locating downed aircraft. The ELT's crash sensor is commonly called a G-switch (an actuation device that operates on acceleration forces measured in G's; one G denotes the acceleration of the earth's gravity). In most installations, the ELT is attached to the aircraft structure as far aft as practicable in the fuselage in such a manner that damage to the device will be minimized in the event of impact.

Certain aircraft, such as turbojet-powered aircraft and aircraft engaged in scheduled air carrier operations, are excepted from this requirement because they are more readily located after an accident because they operate within the air traffic control system and their operators have filed instrument flight plans. For example, scheduled air carriers and turbojet-powered aircraft use the air traffic control system (ATC) and air carriers use instrument flight plans. This rule is applicable to those airplanes that are most difficult to locate after an accident. An ELT is particularly helpful in locating an airplane that is operated by a pilot who does not file a flight plan or operate within the air traffic control system.

Survival ELT's are manually operated or automatically actuated upon contact with water. Survival ELT's are required ditching equipment for transport category airplanes and rotorcraft, as provided by the operating rules. They are also required emergency equipment for extended overwater operations on aircraft used in air carrier, air taxi, and commercial operations.

Since the adoption of those amendments requiring installation of ELT's, there has been unsatisfactory field experience with the automatic ELT's. Accordingly, the FAA requested RTCA, Inc. (formerly the Radio Technical Commission for Aeronautics) to develop a revised technical standard that would address false alarms and improve the failure-to-activate rate for automatic ELT's. The RTCA project produced a minimum operational performance standard that is referenced in TSO–C91a, issued in April 1985. Installation of ELT's that meet this improved standard, however, is voluntary until compliance is required as specified in this amendment.

NTSB safety recommendations A–78–5 through A–78–12, issued in 1978, also addressed ELT problems; they are now classified by the NTSB as "Closed-Acceptable Action," primarily because TSO–91a was issued. Following the issuance of the new TSO, in 1987 the NTSB issued safety recommendation A–87–104, that recommends existing ELT's be replaced with ELT's that comply with TSO–C921a by 1989. That safety recommendation also urged that ELT's be subject to specific maintenance requirements.

In October 1990, the National Aeronautics and Space Administration (NASA) and the FAA completed a report entitled, "Current Emergency Locator Transmitter (ELT) Deficiencies and Potential Improvements Utilizing TSO–C91a ELT's", hereafter referred to as the FAA/NASA report. This report consolidates and analyzes most of the known data on ELT problems and quantifies the safety problem. General aviation accident and fatality data from the NTSB form the cornerstone of the report. The most significant conclusions derived from the report show: 23 to 58 lives are lost per year due to ELT failures; 15 percent of ELT failures are attributed to poor or no ELT maintenance; and after excluding lives lost attributed to maintenance-related ELT failures, 64 percent or 13 to 31 of the lives lost each year could be saved with a complete transition to TSO–C91a ELT's.

Based on the known unsatisfactory performance of the TSO–C91 ELT's during the 1970's and 1980's, the FAA issued Notice No. 90–11 (55 FR 12316, April 2, 1990). This notice proposed that ELT's approved under TSO–C91a (or later issued TSO's for ELT's) be required for all future installations. The NPRM further proposed that the manufacture of the TSO–C91 ELT's be simultaneously terminated with issuance of a final rule. The term "future installations" applies to newly manufactured airplanes, and to the replacement of existing ELT's as they become unusable or unserviceable. Additionally, the FAA solicited comments on the need for a fleet-wide ELT replacement program and specific maintenance requirements. These issues are addressed below.

Sources of Information Referenced Below

NTSB Recommendations

1. NTSB safety recommendations A–78–5 through A–78–12, issued 1978;

2. NTSB safety recommendations A–87–104, issued 1987.

Reference Material

(1) The National Aeronautics and Space Administration (NASA) and the FAA, a report entitled, "Current Emergency Locator Transmitter (ELT) Deficiencies and Potential Improvements Utilizing TSO–C91a ELT's", (FAA/NASA report), October 1990.

(2) FAA Action Notice A 8150.3 (July 23, 1990).

Related Activity

(1) Publication of this document coincides with notice of the FAA's withdrawal of manufacturing authority for ELT's produced under TSO–C91.

(2) The Aviation Rulemaking Advisory Committee (ARAC) has been tasked to make recommendations concerning an ELT retrofit policy.

Discussion of Comments

The FAA received 51 written comments in response to Notice No. 90–11 from individuals, manufacturers, equipment users, associations, and government agencies. Twenty-two support the proposed rule or its intent while 20 express concern or nonsupport. Most of the nonsupport commenters, however, address the fleet-wide replacement of automatic ELT's rather than the proposal for new installations. Nine of the comments do not take a position for or against the proposals; however, they offer suggestions and advice.

Nineteen of the commenters supporting the rule represent major segments of the aviation search and rescue community such as government agencies and associations. These commenters also agree on the unsatisfactory performance of current TSO–C91 ELT's.

Failure to Activate—Automatic ELT's

Eleven of the commenters contributed information supporting the implementation of TSO–C91a, and stated that it would have a dramatic effect on reducing activation failures and would increase the likelihood of locating airplanes after accidents. Most commenters agreed with the conclusions identified in the FAA/NASA report explaining that failure-to-activate was caused by:

—Insufficient impact deceleration to cause the crash sensor (G-switch) to activate the ELT;
—Improper installation;
—Battery problems;
—Fire damage;
—Impact damage;
—Antenna broken/disconnected;
—Water submersion;
—Unit not armed;
—Internal failure;
—Packing device still installed;
—Remote switch in off position; and
—ELT shielded by wreckage or terrain (although not an initial failure, this was listed as another reason for the ELT not functioning).

An ELT manufacturer states that the term "failure to activate" encompasses two groups of cases that should not be treated in the same manner. Group 1 situations are those in which the ELT does not operate after a crash because it has a mechanical defect or failure. Group 2 situations are those in which the ELT does not operate because the crash forces are insufficient to activate it. This commenter states that the Group 2 cases should not be classified as ELT failures because the ELT's did what they were supposed to do when they did not activate. The commenter asserts that any "failure" associated with the Group 2 cases is a shortcoming of the current TSO–C91 standard that established the crash sensor sensitivity specifications.

FAA Response: The FAA agrees with the manufacturer's comment about two causes of failure-to-activate and notes that the FAA/NASA report addresses these two situations. The FAA/NASA report documents well the failures of ELT's approved under TSO–C91. As discussed previously, the most significant conclusions from the report are that: (1) 23 to 58 lives are lost each year due to ELT failures; (2) many of these failures are caused by poor ELT maintenance; and (3) a 64 percent failure rate reduction can be expected with a complete transition to TSO–C91a ELT's. Attachment 1 of the FAA/NASA report entitled, "Validation of NASA ELT Reasons for Failure Analysis Report," verifies the NTSB data that provides the cornerstone of the FAA/NASA report. In addition, the new ELT TSO–C91a contains revised G-switch specifications designed to provide proper activation limits and to minimize mechanical defects. This new design is expected to reduce the number of false alarms and improve the failure-to-activate rate.

False Alarms—Automatic ELT's

Twenty commenters identified ELT false alarms as contributing to poor performance. Several commenters cite the FAA/NASA report, which documents the following causes of false alarms:

—G-switch (crash sensor);
—Corrosion;
—Incorrect installation of the ELT;
—Human failures or mishandling;
—Heat, water, or radiated interference;
—Accidental operation of the controls;
—Internal failure.

In addition to identifying the causes of false alarms, members of the Search and Rescue community (SAR) note the significant, additional cost of responding to false alarms, the ability to respond to real emergencies, the cost to taxpayers, and the additional, unnecessary, physical risk to SAR personnel caused by responding to false alarms. In its comments, the NTSB stated that "in a recent SAR mission the cost incurred, excluding a significant contribution by volunteers, was $13 million."

FAA Response: The FAA agrees with the comments regarding false alarms. The primary beneficiary of reducing the number of false alarms would be the SAR community. A reduction in false alarms would make more SAR resources available to aid aircraft in distress. The resources expended by SAR on false alarms would be significantly reduced. The FAA expects that the current number of false alarms will be reduced by 75 percent with implementation of TSO–91a and a mandatory inspection and maintenance program. However, as stated in the FAA/NASA report, the FAA cannot quantify the benefits in lives to be saved. A reduction in the number of false alarms would result in the Air Force Rescue Coordination Center (AFRCC) spending less time analyzing the validity of thousands of signals that occur annually on the 121.5 Mhz frequency. Thus, it is reasonable to presume that if the pre-rescue preparation time were reduced, additional lives could be saved.

Replacement Time and Costs

Although the FAA did not propose the replacement of existing ELT's with models of newer design, in Notice No. 90–11, the agency solicited opinion from affected users regarding a proposed time frame for a near-term retrofit program. Twenty-one commenters address the time that should be permitted for mandatory replacement of existing ELT's with those approved under TSO–C91a. Seven commenters call for a "voluntary" replacement. In general, the SAR community proposes four years. Most commenters acknowledge that a manatory timetable for replacement is necessary to realize the benefits of this second-generation ELT.

Twenty-six commenters express concern over the direct replacement cost of existing TSO–C91 ELT's with TSO–C91a ELT's.

FAA Response: The FAA does not agree with the recommendations concerning voluntary replacement. The FAA evisions this final rule addressing new installations to be the first step in the much-needed transition to the improved ELT's. Even though the FAA conducted an extensive education program in the 1980's through the FAA Back-to-Basics Program, seminars, advisory material, and pamphlets, the FAA estimates that fewer than five percent of potential users voluntarily installed the improved ELT's. Although a voluntary replacement program may

be less costly, resolution of the failure to activate and false alarm problems would not be timely.

The Aviation Rulemaking Advisory Committee (ARAC) has been tasked to make recommendations concerning the retrofit of ELT's in the entire fleet. For a detailed description of this task, see the ARAC notice published at 58 FR 16574, March 29, 1993.

Automatic ELT Replacement

Integration of 406 Mhz ELT's

Nineteen commenters recommend using the 406 Mhz ELT because it has significant technical improvements over the 121.5/243 Mhz ELT equipment system. Commenters also noted that 406 Mhz ELT's are compatible with the Search and Rescue Satellite-Aided Tracking System (COSPAS-SARSAT). Several commenters submitted data indicating that the COSPAS/SARSAT system has proven to be an effective tool in detecting and locating both maritime and aeronautical distress incidents. The data further show that this satellite system had been credited with saving more than 1,700 lives since it was commissioned in 1982. In many of these distress cases, the satellite system was the only means of detecting the distress signal. The commenters assert that improvements in ELT equipment, both on the 121.5 Mhz and 406 Mhz frequencies, will increase the accuracy of location, reduce the time required to provide information to the Rescue Coordination Centers, reduce the effects of interference, reduce the number of false alerts on 121.5 Mhz, and improve satellite coverage of all areas in the United States.

Most commenters support use of an improved 121.5/2430 Mhz ELT or the improved ELT that includes 406 Mhz capability. The NTSB further advocates a fleet-wide mandatory conversion to the 406 Mhz standard.

FAA Response: In October, 1992, the United States responded to an International Civil Aviation Organization (ICAO) letter requesting comments on ELT carriage requirements. The United States recommended the use of 406 Mhz ELT's.

To accelerate the introduction of the 406 Mhz capability, and to provide an acceptable standard of certification for ELT's, the FAA issued TSO–C126 on December 23, 1992. The intended configuration of the 406 Mhz ELT can be accomplished by either of two approaches: (1) Installation of a stand-alone 406 Mhz ELT to augment an existing 121.5/243.0 Mhz ELT installation; or (2) Installation of an integrated 121.5/406 Mhz ELT, or an integrated 121.5/243.0/406 Mhz ELT of which the 121.5 or the 121.5/243.0 portion meets the requirements of TSO–C91a. TSO–C126 provides a standard for significant performance and information improvements for ELT's and these improvements are expected to permit more effective and timely SAR response after aircraft accidents.

A 406 Mhz ELT would operate at much higher power levels than a 121.5/243.0 Mhz ELT. Lithium chemistry batteries appear to be the only likely power source. The FAA is concerned about the safety characteristics of these batteries and has placed some initial guidance material in TSO–C126 to aid approving lithium batteries. Currently, RTCA Special Committee 168 is developing a standard for the various kinds of lithium batteries that could be used in aircraft. The FAA plans to use the RTCA standard as a basis for a future TSO.

The 121.5/243 Mhz ELT's approved under TSO–C91a are expected to be effective when used in conjunction with the U.S. National Airspace and SAR systems. Therefore, the FAA recommends, but does not require, carriage of 406 Mhz ELT's. Voluntary use of the 406 Mhz ELT's would provide a definite enhancement over the minimum requirements of the Federal Aviation Regulations. There may be even more life-saving benefits derived from the 406 Mhz ELT for those operations conducted over water and in remote areas; therefore, the FAA encourages installation of the 406 Mhz ELT although the 121.5/243 Mhz will continue to be used.

Costs of Automatic and Survival ELT's

Five commenters express concern over the additional cost of automatic TSO–C91a ELT's required for new installations. The General Aviation Manufacturers Association indicates that the estimated $75 installation cost in Notice No. 90–11 is inappropriate. It claims that a realistic estimate for parts and labor is $750.

With regard to survival ELT's, Dayton-Granger, Inc. and the DME Corporation currently estimate the cost of survival ELT's at approximately $900. Both companies plan to manufacture ELT's approved to the TSO–C91a standard. The Air Transport Association of America (ATA) states that its member airlines estimate the cost of the TSO–C91a survival ELT's to be $4,193 to $4,662 per aircraft. Additionally, it states that the new TSO standards are unnecessary because there are no problems with the current survival ELT's.

FAA Response: The FAA based its cost estimates on estimates provided by manufacturers of authorized equipment. ARNAV Systems, Inc., whose automatic ELT is now marketed by Artex Aircraft Supplies, Inc., obtained TSO–C91a approval for the model ELS–10 in October 1986 and for a lower cost model, the ELT–100, in March 1988. These automatic ELT's sell for approximately $900 and $350 respectively, and have beneficial design enhancements, such as built-in test equipment. Narco Avionics, Inc., obtained approval for its automatic model ELT–910 in June 1989, and is marketing it for approximately $400. Since the issuance of Notice No. 90–11, ACK Technologies, Inc., received approval for its automatic Model E–01 ELT in May 1990; the list price for this ELT is $279. According to this manufacturer, a selling price of less than $200 may be possible, once full production is underway. Several other ELT manufacturers have expressed an interest in producing low-cost TSO–C91a ELT's.

This rulemaking applies only to "new installations;" therefore, the FAA has attempted to minimize direct costs to operators while enhancing operators' safety. In Notice 90–11 the FAA estimated that automatic ELT's would cost an additional $150 to $400 per unit, and that survival ELT's would cost an additional $875 to $1,225 per unit. However, as a result of analyzing more recent data received from ELT manufacturers, the FAA has reduced its estimates of incremental costs. Automatic ELT's are estimated to cost an additional $50 to $200 per unit, and survival ELT's are estimated to cost an additional $250 to $750 per unit. Conversely, the FAA has increased its estimate of incremental installation costs for automatic ELT's from $75 to $150 per unit.

G-Switch

Eight commenters express concern about the design specifications of the TSO–C91a crash sensor, known as a G-switch. These eight commenters agree that the current TSO–C91 G-switch needs improvement because it is the primary cause of an ELT's failure to activate. Several commenters note that the FAA/NASA report estimates a 95 percent rate of effectiveness increase expected from using the TSO–C91a G-switch.

FAA Response: On the basis of the current performance of TSO–C91a ELT installations and the conclusions reported in the FAA/NASA report, the FAA determined that TSO–C91a provides an adequate G-switch

specification for sensing an airplane crash and would minimize the number of activation failures and false activations. In the event of false activation, the ELT monitor would alert the pilot or ground personnel. Additionally, the RTCA has determined that the TSO–C91a standard is an appropriate specification to be included in the RTCA/DO–204 standard for 406 Mhz ELT's.

Batteries

Seven commenters specifically raise the issue of batteries as a factor in ELT's poor performance. Several commenters indicate that an alternative to lithium chemistry batteries is needed and additional battery research should be conducted. Suggestions for new battery types ranged from use of solar batteries to use of size "D" batteries.

FAA Response: The FAA has found that most battery problems can be eliminated if aircraft owners ensure that the ELT and its battery receive a proper inspection as discussed in the next section, ELT Maintenance. The status of FAA requirements for lithium batteries was discussed previously.

ELT Maintenance

Consistent with the FAA/NASA report, 19 commenters note lack of proper maintenance as a contributing cause of the current unsatisfactory performance of TSO–C91 ELT's. Most of the commenters agree that scheduled inspection of ELT's is necessary to reduce the number of false alarms and to ensure their proper working order. The NTSB, National Oceanic and Atmospheric Administration (NOAA), ACK Technology, Inc., and The National Association for Search and Rescue (NASAR) call for mandatory inspections.

FAA Response: The FAA agrees with these comments concerning ELT maintenance and with NTSB recommendation, A–87–104, that recommended replacing TSO–C91 ELT's with TSO–C91a ELT's. The FAA/NASA report also concludes that an inspection and maintenance program for ELT's is necessary. As discussed in the background section of this preamble, an estimated 15 percent of ELT failures have been maintenance related.

The FAA already provides for mandatory ELT inspections in the regulations and in TSO's. Meeting the inspection requirements is a responsibility shared among the manufacturer, the inspector, and the aircraft owner or operator. Maintenance of ELT's is a major issue; accordingly, this section will digress from discussion of the comments to emphasize these requirements. This is necessary so that users understand the FAA's requirements concerning ELT maintenance.

ELT Maintenance Requirements—An Explanation

Subpart E of Part 91 provides inspection and maintenance requirements for the continued airworthiness of the aircraft and all of its components. Also, § 91.207, of subpart C, requires that each ELT be in an operable condition and provides specific requirements for battery replacement. Technical Standard Order C91a requires that instructions for periodic maintenance, which are necessary for the ELT's continued airworthiness, be provided with each unit manufactured under the TSO. These instructions must contain specific information to ensure that appropriately rated persons will be able to inspect and maintain ELT's in an airworthy condition to meet the needs of the flying public and the SAR community. Manufacturers of the earlier (TSO–C91) ELT's, however, were not required to submit periodic maintenance instructions to the FAA with their TSO approval applications. Therefore, the content and usefulness of instructions provided with TSO–C91 ELT's may vary, depending on the approach used by each manufacturer.

Section 43.13(a) requires persons performing inspections and other maintenance to use the manufacturers' instructions or other instructions acceptable to the FAA Administrator. The aircraft owner or operator is responsible for ensuring that the ELT is included in these inspections and is maintained accordingly. To provide guidance on improving ELT maintenance, Action Notice A 8310.1, recommending a specific supplemental inspection procedure for ELT's, was issued to all FAA field personnel in September 1988. This information was also included in the February 1989 issue of Advisory Circular 43–16, General Aviation Airworthiness Alerts, and reissued in Action Notice A 8150.3 on July 23, 1990. This Action Notice applies to ELT's authorized under both TSO–C91 and TSO–C91a.

To summarize the notice, the inspection procedure can be accomplished by making a close examination of the ELT, its battery pack, and antenna. The signal emissions and G-switch must also be checked.

If the ELT's antenna is radiating a signal, it can be heard on any frequency through a low-cost AM radio held about six inches from the ELT's antenna. The aircraft's VHF receiver or a check with an airport control tower may also be used to verify the ELT signal on the 121.5 Mhz frequency. An airplane's VHF receiver is located very close to the ELT, and it is sensitive; therefore, it does not check the integrity of the ELT together with its antenna. Consequently, using the airplane's VHF receiver does not provide the same level of confidence in verifying the ELT signal as using the AM radio or tower check. The ELT transmits on the emergency frequency, therefore, the signal check must be conducted within the first five minutes after any hour and it must be limited to three sweeps of the transmitter's audio signal, in order not to send false alarm signals.

To check the G-switch of most TSO–C91 ELT's, the unit is removed from its mounting and given a quick rap with the hand in the direction of activation indicated on the ELT case. For TSO–C91a ELT's, however, a throwing motion is used, coupled with a rapid reversal.

Finally, although the antenna and G-switch checks are not measured checks and do not quantify the adequacy of the G-switch or the power output of the antenna, they do provide an acceptable level of confidence that the ELT is functioning properly.

In response to NTSB recommendation A–87–104, the findings of the FAA/NASA report, and the comments to this rulemaking, the FAA is clarifying what must be done for an ELT to be considered in "operable condition" as found in § 91.207(a)(1) by adding a new paragraph (d). Although paragraph (d) is new, it is written in accordance with current regulations and guidance, as discussed earlier under, "ELT Maintenance Requirements—An Explanation". Specifically, the new regulation § 91.207(a)(1)(d), describes how to inspect an ELT under Part 43, Appendix D, paragraph (i), and requires that it be accomplished within 12 calendar months after the last inspection. The Appendix D requirements are non-specific in nature because they apply to all components of the radio group, which includes the ELT's. The 12-month requirement accommodates those airplanes maintained under either an annual or a progressive inspection program and could be accomplished under the provisions of any other program approved by the Administrator under § 91.409. The FAA has determined that this clarification is not an additional requirement that would entail additional rulemaking and an economic evaluation. The FAA has determined that this additional information should be included in part 91 to reinforce to

airplane owners and inspectors what the FAA expects when an ELT is inspected.

"Approved" as Opposed to "TSO-Approved"

Three commenters express concern over the meaning of the word "approved" in the proposed language of the ELT rules. One commenter indicates that this rulemaking procedure may "establish a precedent for future mass terminations of TSO authorizations, without going through the rulemaking process." Another commenter requests that the FAA refer to a particular TSO number instead of using the generic language, "approved TSO."

FAA Response: The FAA intends to clarify the certification process with regard to the regulations and TSO's. Since the effective date of Amendment 21–50 to part 21 (September 9, 1980), The FAA's TSO revision program has been eliminating TSO's from the rulemaking process and eliminating references to specific TSO's from the regulations. The TSO revision makes it possible for the public to use the most up-to-date TSO or other standards that are found acceptable during the certification of a particular piece of equipment. When specific TSO standards are designated in a regulation, other TSO's or standards are automatically excluded. As stated in Notice No. 90–11, "This rule replaces specific references to TSO–C91 in the FAR with 'an approved ELT that is in operable condition'," and withdraws all TSO–C91 authorizations issued to ELT manufacturers. In effect, this would allow TSO–C91a, or any subsequent TSO's issued for ELT's, to be used as a basis for compliance with the FAR. Using the language "approved" is consistent with the FAA's responsibility to eliminate dated references to regulations.

Whenever a material, part, process, or appliance is required to be "approved," it must be approved under the Federal Aviation Regulations. The approval can be obtained in one of the following ways: (1) under a Parts Manufacturer Approval; (2) in conjunction with type certification procedures for a product, including approvals granted by a supplemental type certificate; (3) under a Technical Standard Order authorization; or (4) in any other manner approved by the Administrator.

Of these approval methods, TSO's contain minimum performance and quality control standards for specified articles (material, part, process, or appliance). The standards for each TSO are those the Administrator finds necessary to ensure that the article concerned will operate satisfactorily. Compliance with a TSO is only one method of obtaining an approval and its use is not mandatory; therefore, the standards contained in the TSO are not mandatory but are a way of obtaining approval for a particular article.

Miscellaneous Comments

An ELT manufacturer requests that the word "transmitter" be added to § 91.207(c)(2) for consistency with the rest of the section.

FAA Response: The FAA agrees; this word has already been incorporated into § 91.207(c)(2).

One commenter encourages integration with the European Organization for Civil Aviation Electronics.

In addition, the National Business Aircraft Association, Inc., expresses concern over the prematurity of the FAA's rulemaking and states that the ramifications of other equipment such as the international Automatic Dependent Surveillance (ADS) system used to indicate the location of other aircraft must be fully understood. The NTSB calls for integration with ICAO efforts in establishing ELT carriage requirements.

FAA Response: The FAA disagrees with the National Business Aircraft Association's comment that this rule is premature. The FAA will no longer delay this final rule because there will always be new technology on the horizon. The rule is in agreement with the ICAO requirements, including recent changes pertaining to ELT's. The FAA is a strong supporter of the search and rescue satellite system (COSPAS/SARSAT). In addition, the ELT program, as outlined in this rulemaking, takes into account national and international issues and these considerations were integrated into the justification for this rule.

Three commenters request field testing of TSO–C91a ELT's to confirm their potential costs and benefits before their use is mandated. Four commenters call for additional research on ELT's. For example, the General Aviation Manufacturers Association (GAMA) requests further research on TSO–C91a G-switches and battery technology.

FAA Response: The FAA agrees with the intent of these comments on the need for appropriate research and field testing. Transport Canada, the Canadian counterpart of the United States Department of Transportation, is currently field testing 130 ARNAV ELT's. Usable results may not be available until late 1993. The FAA is working with Transport Canada on its ELT improvement program and with other government as well as non-government organizations on maximizing ELT knowledge. However, in view of the Canadian study and numerous studies documented in the FAA/NASA report, including an FAA ELT maintenance survey on repair stations, the FAA has determined that there is no need for research on new issues before regulatory action is taken. Additional research would only delay the installation of improved ELT's without any clear expectation of improvement over the TSO–C91a specification.

One commenter encourages the FAA to expand its ELT educational effort to install more reliable ELT's. NASA suggests that all pilots be required to monitor the 121.5 Mhz frequency as part of the shutdown procedure in aircraft that do not have a cockpit monitor.

FAA Response: The FAA agrees with the intent of both of these comments. Working with organizations such as the Aircraft Owners and Pilots Association, the FAA has been actively promoting the public's awareness of potential problems with ELT's. A pamphlet entitled, "Attention to ELT's: Insurance To Life" has been distributed to all active U.S. pilots. This pamphlet addresses the ELT false alarm problem and recommends that a pilot-in-command monitor the 121.5 Mhz frequency prior to engine shutdown. This information contained in the pamphlet and ELT inspection procedures are discussed at pilot safety seminars and have been incorporated in the FAA Back-To-Basics program.

The NASA report suggested that the pilot be required to check the 121.5 Mhz frequency before leaving the airplane.

One commenter requests that tow planes be excepted from the requirements because they often are operated under harsh conditions that could trigger false alarms.

FAA Response: The FAA agrees and the final rule does not change the ELT requirements for tow planes. Those airplanes that are currently excepted may continue operations without an ELT.

The ATA concludes, given the operating procedures of transport category aircraft, that benefits to the travelling public from automatic ELT's would be very limited. A complete replacement of its members' fleets by 1995 would cost $14 million.

FAA Response: Survival ELT's, rather than automatic ELT's, are required in transport category aircraft. Currently, automatic ELT's are not required on transport category aircraft.

One commenter suggests that a fine be used as a penalty for an ELT false alarm

resulting from the pilot's failure to maintain the ELT.

FAA Response: The suggestion is beyond the scope of this rulemaking.

Another commenter suggests that insurance considerations should be the driving force to motivate aircraft owners to install ELT's, rather than the FAA mandating ELT's.

FAA Response: The FAA disagrees and is not convinced that insurance considerations alone would assure a 100-percent installation rate. Moreover, in 1971, Congress passed a law that requires the installation and use of ELT's on most aircraft.

Finally, one commenter interprets the language "unusable or unserviceable" in Notice No. 90–11 to mean that replacement would be required for a TSO–C91 ELT when it needed a battery change or was removed for routine scheduled maintenance.

FAA Response: The FAA intends that the term "unusable or unserviceable" be given its everyday meaning so as to require replacement only when the ELT cannot be repaired. Thus, the TSO–C91 ELT would not need replacement when it can be serviced with routine maintenance.

Impact of the Rule

Summary of the Amendments

In summary, effective six months after publication of this Final Rule, the FAA is withdrawing TSO–C91 authorizations for automatic ELT's; therefore, the TSO–C91 model ELT's may not be manufactured after that date. Current production of unsold TSO–C91 ELT's for general aviation airplanes is sufficiently small so that accumulation of inventories is unlikely. This inventory is expected to be depleted by the time this rule becomes effective. The preamble to Notice No. 90–11 specifically stated that the FAA proposed to require installation of an improved ELT that meets the requirements of a revised TSO, and to terminate approval to use ELT's authorized under the original TSO–C91. Although the notice stated that the new equipment would be required for future installations, language to that effect did not appear in the proposed amendment. To carry out this intent, § 91.207(a)(1) and (a)(2) are revised to state that ELT's meeting the applicable requirements of TSO–C91 may no longer be installed.

Another change is being made to paragraph (a)(2) of § 91.207 to correct an error that inadvertently occurred when former § 91.52 was revised and renumbered as § 91.207 during the recodification of part 91 in 1990. Former paragraph (b)(4) of § 91.52 (the predecessor to paragraph (a)(2) of § 91.207) contained a reference to three preceding paragraphs. That is, paragraph (a)(1)(i) was included in the subject reference. The reference also should have included paragraphs (a)(1)(ii) and (a)(1)(iii). This correction is effected by replacing the reference to "(a)(1)(i)" with "(a)(1)", which subsumes all of the provisions of paragraph (a)(1) into the reference.

With regard to survival ELT's, the TSO authorization withdrawal will become effective two years after publication of this final rule. The FAA is allowing additional time for the manufacturers of survival ELT's to begin producing, and for operators to begin installing, TSO–C91a ELT's. For new installations, the new requirements include satellite compatibility, crash survivability, and certain environmental specifications (temperature, water resistance, etc.) that will provide definite improvement at reasonable costs.

Finally, a change is made to §§ 121.339, 121.353, 125.209, and 135.167 to correct inadvertent errors that were made when the applicable parts were codified in 1971 and 1980. These sections refer to survival ELT's and specifically describe the timely replacement of transmitter batteries. Currently, these sections state that the transmitter batteries must be replaced when the transmitter has been in use for more than one hour *and* when 50 percent of its useful life has expired (according to the specific expiration date). The FAA has always intended and enforced these regulations concerning survival ELT's to prescribe a change of transmitter batteries when either the battery has been in use for more than one hour *or*, when 50 percent of its useful life has expired. This correction is consistent with § 91.207 regarding automatic ELT's.

Technical Standard Order

Published simultaneously with this rule, the FAA, pursuant to § 21.621 of the Federal Aviation Regulations, is withdrawing each TSO authorization to the extent that it authorizes the holder to identify or mark ELT's with TSO–C91, effective six months after the publication of this rule for automatic ELT's, and effective two years after publication of this rule for survival ELT's.

Regulatory Evaluation Summary

Proposed changes to Federal regulations must undergo several economic analyses. First, Executive Order 12866 directs that each Federal agency shall propose or adopt a regulation only upon a reasoned determination that the benefits of the intended regulation justify its costs. Second, the Regulatory Flexibility Act of 1980 requires agencies to analyze the economic effect of regulatory changes on small entities. Third, the Office of Management and Budget directs agencies to assess the effects of regulatory changes on international trade. In conducting these analyses, the FAA has determined that this rule: (1) Will generate benefits that justify its costs and is not a significant regulatory action as defined in the Executive Order; (2) is significant as defined in DOT's Policies and Procedures; (3) will not have a significant impact on a substantial number of small entities; and (4) will not constitute a barrier to international trade. These analyses, available in the docket, are summarized below.

Costs—Automatic ELT's

Based on the comments received in response to the NPRM, the FAA has revised its estimates of the rule's costs. The FAA now estimates that the incremental selling price of new ELT's will be $125 per unit above those of old ELT's and that the incremental installation costs will be $150 per unit. The FAA has also re-estimated automatic ELT acquisitions to 3,500 units annually, including units installed on new airplanes and replacements on existing airplanes. Applying these revised estimates to the first 20 years of the rule (1995–2014), the costs of automatic ELT's will total $19.3 million (or $10.2 million in 1993 dollars at 1994 discounted present value).

Costs—Survival ELT's

Recent efficiencies in production techniques have reduced the costs from those estimated in the NPRM. As a result, the incremental acquisition cost of survival ELT's is estimated to total $500 per unit. The FAA estimates that, during the 1996–2015 evaluation period, 3,081 new survival ELT's will be installed, costing $1.5 million (or $0.8 million, discounted).

Benefits—Automatic ELT's

Based on the findings of the FAA/NASA report (cited earlier), significant improvements in ELT effectiveness will reduce the time required to locate downed airplanes and, concomitantly, improve the chances of saving seriously injured crash survivors. Additional benefits will be realized from reducing false alarms.

The report's most significant conclusions are that: 23 to 58 lives are lost per year due to ELT's failure-to-

operate; 12 to 18 percent of these are attributed to poor or no maintenance; and, with 100 percent TSO–C91a installations, a 64 percent failure rate reduction can be expected. In addition, a 75 percent reduction in false alarms is likely with all new units in place (although not directly specified in the report, this evaluation estimates that 25 percent of false alarms, in contrast to the 12 to 18 percent of ELT failures-to-operate, are attributable to poor or no maintenance).

Consequently, using the midpoints of the range of lives lost (41) and the range attributed to maintenance failures (15 percent), 22 or more lives could be saved annually if all TSO–C91 ELT's were replaced with TSO–C91a ELT's (41 x (1 − .15) x .64), decreasing to approximately 18 annually as general aviation activity decreases during the 20-year evaluation period. Since ELT replacements will take place gradually over time, avoided fatalities will not reach their full potential for several years after the period. Nevertheless, 81 fatalities are expected to be avoided during the 20-year period following promulgation of the rule, valued at $209 million ($86.4 million discounted).

The additional benefits expected from reduced false alarms are calculated as follows. False alarms are estimated to cost approximately $4.3 million annually (based on a $3.5 million estimate for 1987 by the Air Force Rescue Coordination Center, adjusted to 1993 dollars). Excluding the 25 percent of false alarms attributable to maintenance-related problems, the expected reduction in false alarm costs totals $2.4 million annually ($4.3 million x .75 x (1 − .25)). Taking into account the gradual, increasing percentage of the fleet equipped with new ELT's over the 1995–2014 evaluation period, these benefits are projected to total $8.9 million ($3.7 million discounted).

Benefits—Survival ELT's

There is no direct evidence of lives lost as a result of delays in reaching survivors because of defective survival ELT's; however, such occurrences are possible. Historical data indicate that an average of 61 preventable drownings occur per 10-year period in parts 121 and 135 operations. Over the course of the 1996–2015 evaluation period, only one life needs to be saved in order for the benefits of new survival ELT's to exceed the $0.8 million in discounted costs.

Comparison of Cost and Benefits

Costs and benefits summarized below are for the evaluation period 1995–2015 in terms of 1993 dollars at 1994 discounted present value. Automatic ELT's are estimated to have incremental costs totalling $10.2 million and benefits of $90.1 million, yielding a benefit-to-cost ratio of 8.8 to 1. Incremental costs of survival ELT's are estimated to total $0.8 million, requiring the avoidance of only one fatality in order to be cost-beneficial.

Regulatory Flexibility Determination

The Regulatory Flexibility Act of 1980 (RFA) was enacted by Congress to ensure that small entities are not unnecessarily and disproportionately burdened by government regulations. The FRA requires agencies to review rules that may have "a significant economic impact on a substantial number of small entities." FAA Order 2100.14A, Regulatory Flexibility Criteria and Guidance, establishes small entity size and cost level thresholds for complying with RFA review requirements in FAA rulemaking actions.

The small entities potentially affected by the rule are Part 121, Part 125, and Part 135 operators that own nine or fewer aircraft, which is the size threshold for aircraft operators considered small entities by the FAA. The annual cost thresholds are $119,500 for operators of scheduled services with entire fleets having a seating capacity of over 60; $66,800 for other scheduled operators; and $4,700 for unscheduled operators. A substantial number of small entities is a number which is not less than eleven and which is more than one-third of the small entities subject to the rule.

The only type of entity with the potential to sustain a significant economic impact as a result of this rule is an unscheduled operator. Such an operator would have to purchase at least ten ELT's in a year in order to exceed the $4,700 threshold. The rule will not have a significant economic impact on a substantial number of small unscheduled operators because most such operators own five or fewer airplanes each, and it is unlikely that at least 11 of them representing more than one-third of the total will purchase ten new ELT's in any given year.

International Trade Impact Statement

The rule will have little or no impact on trade for either U.S. firms doing business in foreign countries or foreign firms doing business in the United States. Foreign air carriers are prohibited from operating between points within the United States. Therefore, they will not gain any competitive advantage over U.S. carriers. In international operations, foreign air carriers are not expected to realize any cost advantage over U.S. carriers because the differential in costs between the existing and new ELT rule will not be significant enough to have an adverse impact on the international operations of U.S. carriers. Further, general aviation operations conducted in the United States are not in any direct competition with foreign enterprises. For these reasons, the FAA does not expect that the rule will result in any international trade impact.

Federalism Implications

The regulations herein will not have substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government. Therefore, in accordance with Executive Order 12612, it is determined that this final rule does not have sufficient federalism implications to warrant the preparation of a Federalism Assessment.

Conclusion

The FAA has determined that the potential benefits of the regulation outweigh its potential costs and that it is not a significant regulatory action under Executive Order 12866. In addition, this rule will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act. This rule is considered significant under DOT Regulatory Policies and Procedures (44 FR 11034; February 26, 1979) because it concerns a matter of substantial public interest. A regulatory evaluation of the rule, including a Regulatory Flexibility Determination and an International Trade Impact Analysis, has been placed in the docket. A copy may be obtained by contacting the person identified under **FOR FURTHER INFORMATION CONTACT.**

List of Subjects

14 CFR Part 25

Aircraft, Aviation safety, Air transportation, Safety

14 CFR Part 29

Aircraft, Aviation safety, Air transportation, Safety

14 CFR Part 91

Air carriers, Aircraft, Airworthiness directives and standards, Aviation safety, Safety, Aircraft

14 CFR Part 121

Air carriers, Aircraft, Aircraft pilots, Airmen, Airplanes, Aviation safety, Air transportation, Common carriers, Safety, Transportation

14 CFR Part 125

Aircraft, Airmen, Airplanes, Airports, Air transportation, Airworthiness, Pilots

14 CFR Part 135

Air carriers, Aircraft, Airplanes, Airmen, Airspace, Aviation safety, Air taxi, Air transportation, Airworthiness, Pilots, Safety, Transportation.

The Amendments

In consideration of the foregoing, the Federal Aviation Administration amends 14 CFR Parts 25, 29, 91, 121, 125, and 135 as follows:

PART 25—AIRWORTHINESS STANDARDS: TRANSPORT CATEGORY AIRPLANES

1. The authority citation for Part 25 is revised to read as follows:

Authority: 49 U.S.C. App. 1344, 1354(a), 1355, 1421, 1423, 1424, 1425, 1428, 1429, 1430; 49 U.S.C. 106(g).

2. Section 25.1415(d) is revised to read as follows:

§ 25.1415 Ditching equipment.

* * * * *

(d) There must be an approved survival type emergency locator transmitter for use in one life raft.

* * * * *

PART 29—AIRWORTHINESS STANDARDS: TRANSPORT CATEGORY ROTORCRAFT

3. The authority citation for Part 29 is revised to read as follows:

Authority: 49 U.S.C. App. 1344, 1354(a), 1355, 1421, 1423, 1424, 1425, 1428, 1429, 1430; 49 U.S.C. 106(g).

4. Section 29.1415(d) is revised to read as follows:

§ 29.1415 Ditching equipment.

* * * * *

(d) There must be an approved survival type emergency locator transmitter for use in one life raft.

PART 91—GENERAL OPERATING AND FLIGHT RULES

5. The authority citation for Part 91 is revised to read as follows:

Authority: 42 U.S.C. 4321 *et seq.*; 49 U.S.C. app. 1301(7), 1303, 1344, 1348, 1352–1355, 1401, 1421–1431, 1471, 1472, 1502, 1510, 1522, 2121–2125, 2157, 2158; 49 U.S.C. 106(g); articles 12, 29, 31, and 32(a) of the Convention on International Civil Aviation (61 stat. 1180); E.O. 11514, 35 FR 4247, 3 CFR, 1966–1970 Comp., p.920.

6. Section 91.207 is amended by revising paragraph (a) introductory text, paragraph (a)(1) introductory text, paragraph (a)(2), and paragraph (c) (2) to read as follows:

§ 91.207 Emergency locator transmitters.

(a) Except as provided in paragraphs (e) and (f) of this section, no person may operate a U.S.-registered civil airplane unless—

(1) There is attached to the airplane an approved automatic type emergency locator transmitter that is in operable condition for the following operations:

* * * * *

(2) For operations other than those specified in paragraph (a)(1) of this section, there must be attached to the airplane an approved personal type or an approved automatic type emergency locator transmitter that is in operable condition.

* * * * *

(c) * * *

(2) When 50 percent of their useful life (or, for rechargeable batteries, 50 percent of their useful life of charge) has expired, as established by the transmitter manufacturer under its approval.

* * * * *

7. Section 91.207 is amended by redesignating paragraph (e) as paragraph (f), by redesignating paragraph (d) as paragraph (e); the reference "(d)" in the concluding text of the redesignated paragraph (e)(2) is removed and "(e)" is added in its place; and a new paragraph (d) is added to read as follows:

§ 91.207 Emergency locator transmitters.

* * * * *

(d) Each emergency locator transmitter required by paragraph (a) of this section must be inspected within 12 calendar months after the last inspection for—

(1) Proper installation;

(2) Battery corrosion;

(3) Operation of the controls and crash sensor; and

(4) The presence of a sufficient signal radiated from its antenna.

* * * * *

PART 121—CERTIFICATION AND OPERATIONS: DOMESTIC, FLAG, AND SUPPLEMENTAL AIR CARRIERS AND COMMERCIAL OPERATORS OF LARGE AIRCRAFT

8. The authority citation for Part 121 continues to read as follows:

Authority: 49 U.S.C. app. 1354(a), 1355, 1356, 1357, 1401, 1421–1430, 1472, 1485, and 1502; 49 U.S.C. 106(g).

9. Section 121.339(a)(4) is revised to read as follows:

§ 121.339 Emergency equipment for extended overwater operations.

(a) * * *

(4) An approved survival type emergency locator transmitter. Batteries used in this transmitter must be replaced (or recharged, if the battery is rechargeable) when the transmitter has been in use for more than 1 cumulative hour, or when 50 percent of their useful life (or for rechargeable batteries, 50 percent of their useful life of charge) has expired, as established by the transmitter manufacturer under its approval. The new expiration date for replacing (or recharging) the battery must be legibly marked on the outside of the transmitter. The battery useful life (or useful life of charge) requirements of this paragraph do not apply to batteries (such as water-activated batteries) that are essentially unaffected during probable storage intervals.

* * * * *

10. Section 121.353(b) is revised to read as follows:

§ 121.353 Emergency equipment for operations over uninhabited terrain areas: flag and supplemental air carriers and commercial operators.

* * * * *

(b) An approved survival type emergency locator transmitter. Batteries used in this transmitter must be replaced (or recharged, if the battery is rechargeable) when the transmitter has been in use for more than 1 cumulative hour, or when 50 percent of their useful life (or for rechargeable batteries, 50 percent of their useful life of charge) has expired, as established by the transmitter manufacturer under its approval. The new expiration date for replacing (or recharging) the battery must be legibly marked on the outside of the transmitter. The battery useful life (or useful life of charge) requirements of this paragraph do not apply to batteries (such as water-activated batteries) that are essentially unaffected during probable storage intervals.

* * * * *

PART 125—CERTIFICATION AND OPERATIONS: AIRPLANES HAVING A SEATING CAPACITY OF 20 OR MORE PASSENGERS OR A MAXIMUM PAYLOAD CAPACITY OF 6,000 POUNDS OR MORE

11. The authority citation for Part 125 is revised to read as follows:

Authority: 49 U.S.C. app. 1354, 1421–1430, and 1502; 49 U.S.C. 106(g).

12. Section 125.209(b) is revised to read as follows:

§ 125.209 Emergency equipment: Extended overwater operations.

* * * * *

(b) No person may operate an airplane in extended overwater operations unless there is attached to one of the life rafts required by paragraph (a) of this section, an approved survival type emergency locator transmitter. Batteries used in this transmitter must be replaced (or recharged, if the batteries are rechargeable) when the transmitter has been in use for more than one cumulative hour, or, when 50 percent of their useful life (or for rechargeable batteries, 50 percent of their useful life of charge) has expired, as established by the transmitter manufacturer under its approval. The new expiration date for replacing (or recharging) the battery must be legibly marked on the outside of the transmitter. The battery useful life (or useful life of charge) requirements of this paragraph do not apply to batteries (such as water-activated batteries) that are essentially unaffected during probable storage intervals.

PART 135—AIR TAXI OPERATIONS AND COMMERCIAL OPERATORS

13. The authority citation for Part 135 is revised to read as follows:

Authority: 49 U.S.C. app. 1354(a), 1355(a), 1421 through 1431, and 1502; 49 U.S.C. 106(g).

14. Section 135.167(c) is revised to read as follows:

§ 135.167 Emergency equipment: Extended overwater operations.

* * * * *

(c) No person may operate an airplane in extended overwater operations unless there is attached to one of the life rafts required by paragraph (a) of this section, an approved survival type emergency locator transmitter. Batteries used in this transmitter must be replaced (or recharged, if the batteries are rechargeable) when the transmitter has been in use for more than 1 cumulative hour, or, when 50 percent of their useful life (or for rechargeable batteries, 50 percent of their useful life of charge) has expired, as established by the transmitter manufacturer under its approval. The new expiration date for replacing (or recharging) the battery must be legibly marked on the outside of the transmitter. The battery useful life (or useful life of charge) requirements of this paragraph do not apply to batteries (such as water-activated batteries) that are essentially unaffected during probable storage intervals.

Issued in Washington, DC, on June 10, 1994.

David R. Hinson,

Administrator.

[FR Doc. 94–14677 Filed 6–20–94; 8:45 am]

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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

Emergency Locator Transmitters; Notice

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of technical standard order authorization withdrawal.

SUMMARY: This notice withdraws each Technical Standard Order (TSO) C91 authorization to the extent that it allows the authorization holder to identify or mark emergency locator transmitters (ELT's) with "TSO–C91)," and sets a date for the termination of ELT's manufactured under TSO–C91. This withdrawal will ensure that future ELT's are produced under TSO–C91a, issued previously which requires a higher minimum operational performance standard for ELT's.

EFFECTIVE DATES: For automatic ELT's December 19, 1994. For survival ELT's: June 21, 1996.

FOR FURTHER INFORMATION CONTACT: Mr. Phil Akers, Technical Analysis Branch, AIR–120, Aircraft Engineering Division, Aircraft Certification Service, Federal Aviation Administration, 800 Independence Avenue SW., Washington, DC. 20591, Telephone (202) 267–9571.

SUPPLEMENTARY INFORMATION:

Background

In April 1990, the FAA proposed that all future installations of Emergency Locator Transmitters (ELT's) use equipment approved under Technical Standard Order (TSO) C91a (55 FR 12316, April 2, 1990). The FAA also proposed the termination of the manufacture of TSO–C91 ELT's by withdrawing the TSO–C91 manufacturing authorizations. These actions were based on the known unsatisfactory performance of ELT's approved under TSO–C91.

In April 1985, the FAA issued TSO–C91a, which provides an improved minimum operational performance standard (MOPS) for 121.5/243.0 MHz ELT's. In December 1992, the FAA issued TSO–C126, which provides a MOPS for 406 MHz ELT's. ELT's approved under either of these TSO's may be used to comply with the Federal Aviation Regulations for ELT's.

Accordingly, this notice withdraws TSO–C91 to the extent that it authorizes the holder to mark ELT's with the designation "TSO–C91." For automatic ELT's manufactured under TSO–C91, this cancellation is effective December 19, 1994. For survival ELT's manufactured under TSO–C91, this withdrawal is effective June 21, 1996.

Issued in Washington, DC on June 10, 1994.

Richard A. Kirsch,

Acting Manager, Aircraft Engineering Division, Aircraft Certification Service.

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