

10/7/87 JCO



National Transportation Safety Board

Washington, D.C. 20594
Safety Recommendation

Date: August 24, 1987

In reply refer to: A-87-104

Honorable T. Allan McArtor
Administrator
Federal Aviation Administration
Washington, D.C. 20591

About 1030 on October 28, 1986, explosions and fires occurred in the engineroom and starboard fuel oil tanks of the 811-foot-long U.S. tankship OMI YUKON which was en route from Hawaii to South Korea for scheduled vessel repairs and biennial inspection by the U.S. Coast Guard. At the time of the explosions, the tankship was located in the Pacific Ocean about 1,000 miles west of Honolulu, Hawaii, and was not carrying any cargo. There were 24 crewmembers, 2 U.S. welders, and 11 Japanese workers employed in cleaning the cargo tanks aboard the vessel. Four persons were killed; the other 33 persons safely abandoned the vessel and were later rescued by a Japanese fishing vessel. The estimated damage to the OMI YUKON was \$40 million. The vessel was towed to Japan and sold for scrap. ^{1/}

Vessel emergency position indicating radiobeacons (EPRIB) and airplane emergency locating transmitters (ELT) both transmit distress signals on the same frequencies, 121.5 MHz and 243 MHz, and are monitored by commercial airplanes, military airplanes, and the search and rescue satellite-aided tracking (SARSAT) system. On April 30, 1985, the U.S. Interagency Committee on Search and Rescue (ICSAR) stated:

Recent statistics confirm that an ELT will activate only 30 percent of the time in an actual crash, and that 97 percent of ELT signals detected are non-distress activations (false alarms). Until recently, lack of a systematic monitoring system has seriously limited effective use of ELT's. An over-flying aircraft monitoring the distress frequency was needed for signal detection. Such overflights are almost non-existent in many regions. In spite of these problems and limitations, SAR personnel have supported the use of ELT's since they are, by far, the best tool to locate downed aircraft. Many lives have been saved because the ELT led rescue forces to the victims rapidly. However, many SAR resources are wasted tracking down ELT false alarms. Clearly, development of an ELT that activates in a crash, but is silent at all other times, is a worthwhile objective.

^{1/} For more detailed information, read Marine Accident Report—"Explosions and Fires Aboard U.S. Tankship OMI YUKON in the Pacific Ocean about 1,000 Miles West of Honolulu, Hawaii, on October 28, 1986" (NTSB/MAR-87/06).

The chairman of ICSAR is the Chief of the U.S. Coast Guard Office of Operations. The membership includes representatives from the Federal Aviation Administration (FAA), the Federal Communications Commission (FCC), the U.S. Air Force, the Radio Technical Commission for Aeronautics, the National Aeronautics and Space Administration, and the National Oceanic and Atmospheric Administration.

ICSAR has further stated, "Existing ELTs malfunction more often than they operate properly due primarily to inadequate standards and poor design." On January 9, 1987, in a letter to the FAA, ICSAR stated its concern regarding the 97 percent false alarm rate resulting primarily from airplane ELTs which are "inundating Rescue Coordination Centers with far more alerts than can be tracked down, and diverting rescue resources from responding to real distress situations." The letter also requested that the FAA ". . . give a high priority to rulemaking that would require replacement of existing ELTs with devices complying with your more recent TSO [Technical Standard Order]." The primary purposes of the FAA's most recent Technical Standard Order, TSO-C91a, are to reduce the high false alarm rate of ELTs and to increase the reliability of ELTs in crashes. TSO-C91a requires new models of ELTs to meet more stringent design standards, but there is no requirement for the installation of these improved ELTs in aircraft.

On February 18, 1987, the FAA responded, "We are now actively pursuing a rulemaking project with the primary objective of replacing the existing ELTs with those complying to TSO-C91a, while also addressing the need for specific ELT maintenance requirements." The FAA also stated that they are "looking at voluntary methods to reduce the existing false alarm problem," and that "Before allowing an equivalent approval for 406 MHz ELTs now being developed, . . . it must also be shown that they are functioning properly and practically in the search and rescue system." The FAA intends to issue a notice of proposed rulemaking (NPRM) in early 1988 to propose that all newly installed ELTs meet TSO-C91a. The FAA also intends to issue a NPRM in early 1988 to propose requirements for the inspection and maintenance of ELTs. Although the FAA intends to issue a NPRM sometime in the future to propose the replacement of existing ELTs with ELTs meeting TSO-C91a, they have not specified a date.

The Commander of the U.S. Air Force Aerospace Rescue and Recovery Service at Scott Air Force Base, Illinois, has stated that false alarms cost well over \$2 million yearly. The FAA has estimated that the total false alarm cost for 1984 as \$3.5 million. Most existing ELTs cost under \$300 and there are about 200,000 ELT installations in the U.S.

Because of the large number of reports of ELT and EPIRB signals received by the Coast Guard and the high false alarm rate primarily from malfunctioning ELTs, the Coast Guard apparently considers an ELT/EPIRB signal only as an indication that an ELT/EPIRB is transmitting and not necessarily as a distress signal. The Coast Guard normally seeks further confirmation of an ELT/EPIRB signal before committing its limited search and rescue resources. In this case, the reported location of the ELT/EPIRB signal was about 1,000 miles from the nearest Coast Guard search and rescue unit. Thus, the Coast Guard watchstander did not immediately commit an aircraft for an extended search for an uncertain distress because the aircraft would then be unavailable if a known distress occurred. The Coast Guard watchstander waited approximately 2 hours before calling Oakland air traffic controller (ATC) to allow sufficient time for reports of the ELT/EPIRB signal to indicate whether the ELT/EPIRB signal was transmitted from a transiting aircraft, from a fixed position, or from an accidental activation. The National Transportation Safety Board believes that the Coast Guard watchstander's decision to

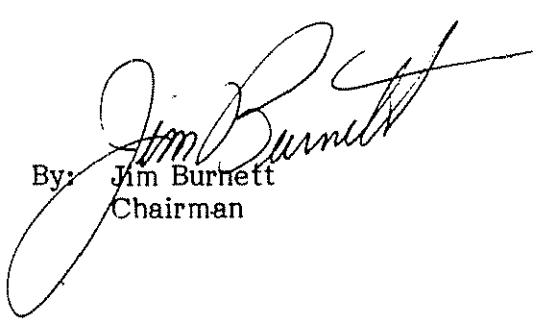
wait 2 hours before calling Oakland ATC was reasonable given the high false alarm rate of ELTs. If the ELT/EPIRB distress alerting system was more reliable, Coast Guard watchstanders could consider ELT/EPIRB signals as true distress signals and could immediately commit available search and rescue resources. The high false alarm rate from existing ELTs will probably continue until the FAA takes action to require the replacement of existing ELTs with more reliable ELTs meeting TSO-C91a or an equivalent standard. The existing high false alarm rate not only costs millions of dollars per year but diverts search and rescue resources from responding to real distress situations. The Safety Board believes that the FAA should act to require by 1989 the replacement of existing ELTs with those complying with TSO-C91a and to require specific ELT maintenance standards.

Therefore, as a result of its investigation, the National Transportation Safety Board recommended that the Federal Aviation Administration:

Require that existing emergency locator transmitters (ELTs) be replaced by 1989 with ELTs complying with technical standard order TSO-C91a and that ELTs be subject to specific maintenance requirements. (Class II, Priority Action) (A-87-104)

Also, as a result of its investigation, the Safety Board issued Safety Recommendations M-87-28 through -37 to the U.S. Coast Guard, M-87-38 to the American Bureau of Shipping, M-87-39 through -46 to the OMI Corporation, M-87-47 and -48 to the Hawaiian Independent Refinery, Inc., M-87-49 to the Caleb Brett, U.S.A., Inc., and M-87-50 to the American Petroleum Institute.

BURNETT, Chairman, GOLDMAN, Vice Chairman, and LAUBER, NALL, and KOLSTAD, Members, concurred in this recommendation.

By:  Jim Burnett
Chairman