



**National Transportation Safety Board**

Washington, D.C. 20594

**Safety Recommendation**

**Date:** NOV 24 1995

**In Reply Refer To:** M-95-37 through -42

Admiral Robert E. Kramek  
Commandant  
U.S. Coast Guard  
Washington, D.C. 20593-0001

About 8:35 p.m. on December 3, 1994, an engineroom fire occurred aboard the U.S. small passenger vessel ARGO COMMODORE while on a dinner cruise in San Francisco Bay. All passengers were safely evacuated by a U.S. Coast Guard vessel and a passing yacht; there were no deaths or injuries among the 41 passengers and 4 crew members.<sup>1</sup>

In its investigation of this accident, the Safety Board identified several major issues related to small passenger vessel safety, including fixed firefighting systems on small passenger vessels, fire pump operation on small passenger vessels, crew training in emergency procedures, and safety placards and briefings/orientations for passengers.

The ARGO COMMODORE was equipped, in excess of Coast Guard regulatory requirements, with a fixed CO<sub>2</sub> firefighting system that included a heat sensor to automatically activate the system in the event of an engineroom fire; however, the system did not activate in this accident. It is Coast Guard policy that plans for fixed firefighting systems that are in excess of regulatory requirements be reviewed and approved by the Coast Guard before those systems are installed shipboard. Coast Guard representatives told the Safety Board that they could find no approved plans or records for the CO<sub>2</sub> system installed on the ARGO COMMODORE, nor were details relating to the design and performance characteristics of the system available from the

<sup>1</sup> For more detailed information, read Marine Accident Report—*Fire Aboard U. S. Small Passenger Vessel ARGO COMMODORE in San Francisco Bay, California. December 3, 1994* (NTSB/MAR-95/03)

vessel's owner. Commodore Dining Cruises, Inc. Lacking plan review records, Safety Board investigators had to evaluate the capability of the CO<sub>2</sub> system to work in the automatic mode based on general facts found in their investigation of the accident. The Safety Board concluded that the fixed CO<sub>2</sub> firefighting system aboard the ARGO COMMODORE was inadequately designed to function effectively in the automatic mode.

In the absence of plans and approval records, there can be no assurance that any particular CO<sub>2</sub> system was ever approved or that, if it was approved, that it has been maintained during the vessel's life to comply with its original design and installation specifications. The Safety Board therefore believes that where no records exist regarding the approval of fixed firefighting systems already installed on small passenger vessels, the Coast Guard should require those vessels' owners to submit plans for those systems to the Coast Guard for approval. The regulatory proposal for fixed gas firefighting systems contained in Supplemental Notice of Proposed Rulemaking (SNPRM) CGD 85-080 would make the development and approval of fixed firefighting system plans a routine procedure in the future and thus would not place an undue burden on vessel owners in light of the potentially significant safety benefits.

The Safety Board notes that the SNPRM proposes that all existing small passenger vessels with hulls constructed of wood or FRP be retrofitted with fixed firefighting systems within 3 years of the effective date of final regulation. It is of concern to the Safety Board, however, that this proposal would not apply to those vessels whose decks or superstructures are made of wood or FRP while their hulls are constructed either of aluminum, like the ARGO COMMODORE, or of steel. These vessels are equally vulnerable to fires, as the experience of the ARGO COMMODORE attests. As demonstrated by this accident, considerable smoke and toxic gases can be generated by the burning of insulation and combustible materials, such as FRP and wood, that may be used to construct parts of a vessel other than its hull. The Safety Board therefore believes that the Coast Guard should amend its regulatory proposal so that its retrofit provision applies to vessels with hulls, decks, or superstructures constructed of wood or FRP.

The fire pump on the ARGO COMMODORE could only be operated from inside the engineroom. In this respect, it was in compliance with existing regulations that require the fire pump to be operable locally. But in this accident, smoke not only would have prevented the master from entering the engineroom to operate the fire pump, it also cut off access to the vessel's only fire hydrant and attached hose, which were also located in the engineroom.

The Safety Board supports implementation of the SNPRM proposal that fire pumps on small passenger vessels be operable from a location outside, as well as inside, the engineroom. In addition, the Safety Board believes that at least one fire hydrant should be located outside the engineroom in case the hydrant inside the engineroom becomes inaccessible. This is particularly important when one considers that the engineroom is where most marine fires originate, regardless of hull construction material. The Safety Board therefore believes that the Coast Guard should expand the SNPRM proposal relating to the remote operation of the fire pump to also require that at least one fire hydrant with attached hose be located outside the engineroom on all new small passenger vessels.

The Safety Board concluded that the crew's inadequate knowledge of safety systems aboard the vessel prevented them from assuming a leadership role during the emergency. Although the senior deckhand had worked on the ARGO COMMODORE 5 to 8 times before, he stated that he did not know that there was a fire pump and hose in the engineroom. He said that he was not trained in firefighting, and his responses to questions from Safety Board investigators revealed that he did not know which types of fire extinguishers to use with different classes of fires. His statements also showed that he possessed minimal knowledge of the engineroom and its machinery; this in spite of the fact that the company's senior deckhand's checklist stated that it was his duty to monitor the engineroom for smoke or fluid leaks.

The deckhand had been classified a senior deckhand on other company vessels, yet she had less than 4 months of marine experience. She was not familiar with the lifesaving and firefighting equipment on board the ARGO COMMODORE, and in this accident she went to the bow of the vessel to look for life preservers, which, in fact, were stowed inside the bench seats on which the passengers were seated.

The Safety Board notes that while Coast Guard Navigation and Inspection Circular (NVIC) 1-91 provides recommended guidelines for qualifying deckhands, there are no Coast Guard regulations that require crewmembers to possess specific qualifications before serving aboard vessels. Guidelines alone are not sufficient to ensure that crewmembers are fully qualified to serve aboard vessels. Because guidelines, unlike regulations, are unenforceable, it is difficult for Coast Guard inspectors to require that crewmembers be qualified in accordance with NVIC 1-91. Further, the general guidelines in NVIC 1-91 are open to different interpretations by the individual officers-in-charge of marine inspections (OCMIs) charged with assessing deckhand qualifications and competence. The Safety Board believes that mandatory qualification standards for crewmembers would be particularly beneficial for improving the safety of small passenger vessels, especially among those companies with high crew turnover rates where inspectors may not have the opportunity to assess the competence of crewmembers whose entire periods of employment may have occurred between Coast Guard inspections.

Although the Coast Guard may verify crew competence in some cases through witnessing emergency drills, the crewmembers aboard the ARGO COMMODORE testified that they had not undergone emergency drills. By leaving the method and frequency of verification of crew competence to the discretion of individual OCMIs, NVIC 1-91 allows for non-uniformity between inspectors and OCMIs.

A safety orientation given aboard the ARGO COMMODORE at the beginning of this cruise would have made the passengers aware of the location and proper donning procedures for the life preservers and would have familiarized them with the emergency procedures and safety equipment they might have had to use during the evacuation. Further, it would have made the passengers aware of the roles of individual crewmembers and would have prepared them to react more effectively in the emergency.

After its investigation of the 1985 collision involving the passenger vessel MISSISSIPPI QUEEN, the Safety Board issued Safety Recommendation M-86-72 asking that the Coast Guard

require that all passengers receive a comprehensive safety briefing by a crewmember soon after boarding a passenger vessel. This is an important safety issue that is currently on the list of the Safety Board's "Most Wanted Transportation Safety Improvements." The Safety Board has long been concerned about the Coast Guard's delay in acting on this recommendation and has previously classified it "Open--Unacceptable Response." As a result of this investigation, the Safety Board has reviewed this recommendation and has noted that it does not indicate the type of safety information that should be included in a safety briefing, in consideration whereof the Safety Board has reclassified Safety Recommendation M-86-72 "Closed--Unacceptable Response/Superseded." The Safety Board is concerned that if the content of required safety briefings is not specified, there can be no assurance that appropriate information will be provided to the passengers whose safety may depend on that information.

Therefore, the National Transportation Safety Board recommends that the U.S. Coast Guard:

Determine the adequacy of the design and installation of fixed firefighting systems fitted aboard existing small passenger vessels regardless of hull materials, and require that plan approval records for fixed firefighting systems be maintained for the life of the vessels. (Class II, Priority Action) (M-95-37)

Amend the regulatory proposal for retrofitting small passenger vessels with fixed firefighting systems to also include vessels whose decks and superstructures are constructed of wood or fiberglass-reinforced plastic. (Class II, Priority Action) (M-95-38)

Require that at least one fire hydrant with attached hose be located outside the engineroom on all new small passenger vessels. (Class II, Priority Action) (M-95-39)

Establish mandatory standards for qualifications and training of crewmembers aboard small passenger vessels. (Class II, Priority Action) (M-95-40)

Require that the operators of small passenger vessels conduct a passenger safety briefing prior to departure to include: the location of lifesaving equipment; the use of such equipment; and proper procedures to be followed during the course of an emergency evacuation or other on-board emergency. (Class II, Priority Action) (M-95-41)

Verify crew competence and company preplanning for emergencies either by routinely witnessing emergency drills at every annual inspection or by some other effective means of regulatory oversight. (Class II, Priority Action) (M-95-42)

In addition, the Safety Board reiterates Safety Recommendation M-89-113 made to the Coast Guard on October 11, 1989, in its Safety Study *Passenger Vessels Operating from U.S. Ports*:

Require owners and/or operators of all domestic small passenger vessels to keep records that include information on training provided to crewmembers and emergency drills in use of safety equipment, firefighting and man-overboard rescue, and other safety-related information.

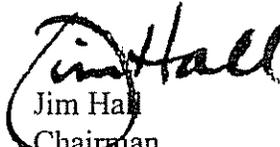
Since 1977, the Safety Board has issued to the Coast Guard 55 Safety Board recommendations that were classified "Open--Acceptable Action" because the Coast Guard responded that it would take these recommendations into consideration when the regulations were revised. Based on a lack of timely action, the Safety Board has reclassified these recommendations "Open--Unacceptable Response."

The reclassified recommendations are as follows:

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|-----------------|---------------------|-----------------------|
| M-77-25         | M-86-60 and -61     | M-88-44               |
| M-83-80 and -81 | M-86-64             | M-89-111 through -113 |
| M-84-13 and -14 | M-86-66             | M-89-118 through -121 |
| M-84-25         | M-86-68             | M-90-11               |
| M-84-27 and -28 | M-86-73             | M-90-13 through -17   |
| M-85-45         | M-86-75 through -77 | M-90-20 and -21       |
| M-85-84 and -85 | M-86-113            | M-91-11               |
| M-85-89         | M-87-115 and -116   | M-94-15 through -17   |
| M-86-55         | M-88-9 through -12  | M-94-21 through -26   |

Also, the Safety Board issued Safety Recommendations M-95-36 to the U.S. Department of Transportation; M-95-43 and -44 to the Passenger Vessel Association; and M-95-45 through -53 to Commodore Dining Cruises, Inc. If you need additional information, you may call (202) 382-6860.

Chairman HALL, Vice Chairman FRANCIS, Member HAMMERSCHMIDT, and Member GOGLIA concurred in these recommendations.

By:   
Jim Hall  
Chairman