Log M-235

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

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Forwarded to:

Admiral James S. Gracey
Commandant
U.S. Coast Guard
Washington, D. C. 20593

SAFETY RECOMMENDATION(S)

M-84-5 through -8

About 0415 on February 12, 1983, the 605-foot U.S. bulk carrier MARINE ELECTRIC capsized and sank during a storm in the Atlantic Ocean about 30 nautical miles east of Chincoteague, Virginia. Thirty-four persons were aboard. Three persons survived the accident, and the bodies of 24 persons were recovered. The other seven persons are missing and presumed dead. The MARINE ELECTRIC currently is resting in three pieces on the bottom of the ocean in about 120 feet of water; its estimated value including the cargo was $12 million. 1/

Approximately 28 percent of the U.S. operating seagoing fleet is over 30 years old. The MARINE ELECTRIC, which was built in 1944 and converted in 1961, is the second U.S. registered ship built during World War II which has been lost during the last 3 years. In October 1980, the U.S. freighter POET 2/ disappeared in the North Atlantic Ocean about 500 nmi east of Delaware Bay during a severe storm. Although the Safety Board in the last 3 years also has investigated the total loss of three major U.S. vessels 3/ less than 10 years old, these losses did not raise any questions regarding structural integrity. The loss of the POET and the MARINE ELECTRIC on the other hand may have reversed this factor and raise the possibility that owners, operators, the American Bureau of Shipping (ABS), and the U.S. Coast Guard (USCG) should subject older vessels to more comprehensive inspections. USCG inspection regulations do not include any special accommodation or have any special requirements based upon vessel age, and the USCG has not issued any standard policy or written guidance for its inspectors to follow when conducting inspections of older vessels. The Safety Board believes that the USCG should publish guidelines for its inspectors who conduct such inspections.

1/ For more detailed information, read Marine Accident Report—"United States Bulk Carrier MARINE ELECTRIC Capsizing and Sinking about 30 Nautical Miles East of Chincoteague, Virginia, February 12, 1983" (NTSB/MAR-84/01).
2/ For more detailed information, read Marine Accident Report--"Disappearance of U.S. Freighter SS POET in North Atlantic Ocean about October 25, 1980" (NTSB-MAR-81-6).
3/ For more detailed information, read Marine Accident Reports--"Sinking of the M/V OXY PRODUCER in the Atlantic Ocean Near the Azores Islands, September 20, 1981" (NTSB-MAR-82-6); "Capsizing and Sinking of the U.S. Mobile Offshore Drilling Unit OCEAN RANGER off the East Coast of Canada 166 Nautical Miles East of St. John's Newfoundland, February 15, 1982" (NTSB/MAR-83/2); and "Explosion and Fire Onboard the U.S. Tankship GOLDEN DOLPHIN in the Atlantic Ocean March 6, 1982" (NTSB/MAR-83/7).

The records and testimony of the ABS surveyor and the USCG inspector who attended the 1981 drydocking of the MARINE ELECTRIC in Jacksonville, Florida, showed that a comprehensive ABS special survey No. 8 and a USCG drydocking inspection were conducted and that extensive structural renewals were required as a result. The cargo hatch covers, however, were not hose tested or otherwise tested for weathertightness as required by ABS special survey No. 8. The records and testimony of Marine Transport Lines (MTL) representatives indicated that the required "regular" repairs had been performed on the MARINE ELECTRIC's cargo hatch covers and cargo holds (to correct damage caused by unloading equipment) and the main deck between hatch coamings. The 1980 and 1981 gaugings indicated that extensive plate and stiffener renewals were required for the hull structure to meet required standards. The structural calculations performed after the accident, which indicated that stresses were within design standards, used averaged wastage values in determining the longitudinal hull strength of the MARINE ELECTRIC. However, some local areas of wastage may have developed during the 2-year period since the last gaugings were taken which, in the sea conditions on February 11 and 12, 1983, could have led to a local structural failure. The Safety Board believes that the MARINE ELECTRIC's continuous need for structural repairs of the hatch covers, main deck, and cargo holds (which it does not view as "regular" repairs) also indicates that a parallel deterioration of structural strength of the vessel must have been in progress over the preceding 2 years due to wasting of underwater hull plating. The next extensive gaugings would not have been required until 1985. Therefore, the Safety Board believes that the ABS and the USCG should require extensive gauging of all older vessels every 2 years during the biennial drydocking, rather than every 4 to 5 years at special surveys. If such gaugings are performed during regular drydock periods, the added cost to the owner should be minimal.

The investigation showed that the USCG inspections of the MARINE ELECTRIC hatch covers were cursory at best. During the USCG drydocking inspection in February 1981, the inspector did not inspect the hatch covers because the hatch covers were away from the ship undergoing repairs. During June 1981, the USCG inspected the hatch covers during the vessel's biennial inspection after some repairs recommended by the manufacturer's representative had been accomplished. However, because the hatch covers were in the open position, the USCG inspector could not inspect the hatch covers completely, and he did not conduct any weathertightness tests. He did not require that the hatch covers be closed for these purposes. During June 1982, the USCG inspector reinspected the MARINE ELECTRIC; however, he did not inspect the hatch covers because he believed the ABS would take care of the inspection of hatch covers at the next annual load line survey. Although the USCG has delegated the responsibility of assuring the weathertightness of hatch covers to the assigning authority (the ABS for the MARINE ELECTRIC) of the Load Line Certificate, the USCG still has the overall safety responsibility for assuring compliance with safety requirements. The USCG needs to provide better guidance to its inspectors regarding their responsibility for insuring compliance with the load line regulations, such as the weathertightness of hatch covers. Moreover, the USCG should consider more comprehensive inspections of older vessels, such as the MARINE ELECTRIC, in respect to fixtures, such as the hatchcovers.

The bilge wells in the cargo holds on the MARINE ELECTRIC were covered with steel plates to prevent clogging of the suction piping by the pulverized coal cargo. Regardless of whether the bilge wells were covered with steel plates or by any other method, because of the nature of the cargo, it probably would not have been possible to pump out the cargo holds if they had flooded. The wing ballast tanks could be dewatered through a separate system. The Safety Board believes that covering the cargo hold bilge

wells on the MARINE ELECTRIC with steel plates did not contribute to the accident. However, USCG regulations require a bilge pumping system capable of operation under all practicable conditions. The MARINE ELECTRIC had a bilge pumping system, but it normally was not capable of operation while the vessel was in the coal trade. The USCG should examine the bilge pumping systems of other vessels in the coal trade to evaluate the adequacy of the bilge pumping systems and require that they be modified if they cannot be operated while the vessel is carrying coal.

Shortly after it arrived onscene, the U.S. Navy helicopter placed a rescue swimmer into the water in an attempt to rescue crewmembers from the MARINE ELECTRIC. Unfortunately, none of the persons that the swimmer put into the rescue basket survived. Presently, the USCG does not have the capability of putting a swimmer into the water to aid persons in the water to enter a rescue basket. In an October 6, 1983, letter 4/ to the Commandant, U.S. Coast Guard, the House Subcommittee on Coast Guard and Navigation recommended that USCG personnel be trained in rescue swimming. In a November 10, 1983 letter, the Acting Commandant responded favorably to the Subcommittee's recommendation, pointing out that in spite of the cost, such a program "has merit" and would produce a "substantial return." The inability of survivors to participate in their own rescue due to the debilitating effects of hypothermia was illustrated in two other accidents 5/ investigated by the Safety Board. Because the Safety Board's findings in those accidents as well as the February 12, 1983, accident were similar, we urge the USCG to consider the use of rescue swimmers in search and rescue cases, especially those involving cold water where hypothermia can limit a person's ability to aid in his own rescue, and to implement the Subcommittee's recommendation as soon as possible.

Therefore, as a result of its investigation, the National Transportation Safety Board recommends that the U.S. Coast Guard:

> Provide written guidance to U.S. Coast Guard inspectors regarding the inspection of vessels over 20 years of age, including specific structural gauging, equipment renewal, and testing requirements. (Class II, Priority Action) (M-84-5)
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> Require that structural gaugings of vessels be conducted at 2-year intervals after a vessel reaches 20 years of age. (Class II, Priority Action) (M-84-6)
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> Provide written guidance to U.S. Coast Guard inspectors specifying their responsibility for the inspection of items, such as the weathertightness of hatch covers, that have been delegated to the American Bureau of Shipping under the Load Line Regulations. (Class II, Priority Action) (M-84-7)

4/ Congressional Record - House, November 15, 1983, Pages H9889, H9890.
5/ Marine Accident Report--"Capsizing and Sinking of the U.S. Mobile Offshore Drilling Unit OCEAN RANGER off the East Coast of Canada 166 Nautical Miles East of St. John's, Newfoundland, February 15, 1982" (NTSB/MAR-83/2); and Aircraft Accident Report--"Air Florida, Inc., Boeing 737-222, N62AF, Collision with 14th Street Bridge, near Washington National Airport, Washington, D.C. January 13, 1982" (NTSB-AAR-82-2).

Evaluate the design of the bilge pumping systems in the cargo holds of U.S. flag bulk carriers in the coal trade similar to the MARINE ELECTRIC to determine if the systems are compatible with the cargo and require modifications if necessary to those vessels which do not comply with U.S. Coast Guard regulations (46 CFR 56.50-50) that they may be operable under "all practicable conditions." (Class II, Priority Action) (M-84-8)

BURNETT, Chairman, GOLDMAN, Vice Chairman, and BURSLEY, ENGEN, and GROSE, Members, concurred in these recommendations.

By: Jim Burnett
Chairman