

and which are necessary to the development of operational guidelines.

- 3. Inability to broadcast a distress message, because of a circuit arrangement in which the radio was subject to a loss of power when the main electrical system malfunctioned.
- 4. Lack of adequate provisions for surviving exposure in the waters normally transited by the MARYLAND.
- 5. Lack of provisions to allow the crewmembers of the tug to board the barge from the water, as a last safe refuge.

Log M-30 NOT 1297

RECOMMENDATIONS thru M-74-6-13

The National Transportation Safety Board recommends that:

- 1. The Norfolk, Baltimore and Carolina Line, Inc., and other operators of uninspected towing vessels, analyze their operations to develop operating instructions, manuals, or checkoff lists which will clearly convey guidelines for safe operating methods. Safety information obtainable from the Coast Guard should be incorporated in these guidelines, and the guidelines should be updated periodically to reflect current experience. (Recommendation No. M-74-6)
- 2. The U.S. Coast Guard:
 - a. Develop, in its study of towing vessel stability, stability criteria which would enable an unpowered vessel to withstand the combined effect of direct wind and of lateral forces of the towline. The application of these criteria would require establishing towline pull characteristics of barges under specified wind conditions, e.g., ocean and coastwise service and partially protected and protected waters. This would enable the capabilities of towing vessels to be matched with certified towline-pull characteristics of barges. (Recommendation No. M-74-7)
 - b. Determine, in its study of towing vessel stability, the effect of towline length on towing safety. (Recommendation No. M-74-8)
 - c. Structure the results of its towing vessel stability study into operating information which could be used as a guide by the operators of towing vessels. (Recommendation No. M-74-9)
 - d. Increase the frequency and scope of its examination program in regard to ensuring that required lifesaving equipment on towing vessels is in good and serviceable condition. (Recommendation No. M-74-10)

MAR-74-3

seek authority to require adequate thermal, as well as buoyant, protection to provide for survival of seaman on all commercial vessels. (Recommendation No. M-74-11)

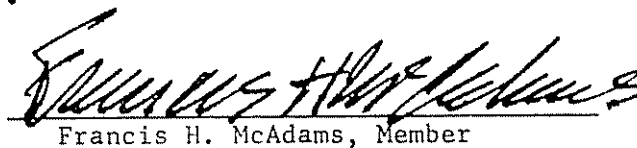
3. The United States Salvage Association:

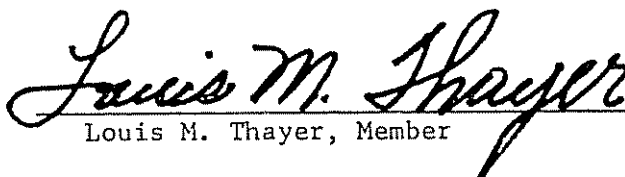
- a. Develop and undertake a more comprehensive survey program for uninspected towing vessels to include a determination of a vessel's adequacy for towing based on towline stability. (Recommendation No. M-74-12)
- b. Consider the usefulness of systems analysis techniques, such as fault-tree analysis, as a predictor of towing vessel characteristics which are important to safety. (Recommendation No. M-74-13)

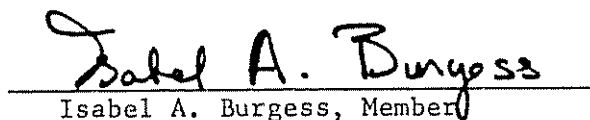
BY THE NATIONAL TRANSPORTATION SAFETY BOARD:

Adopted this 22nd day of May 1974:


John H. Reed, Chairman


Francis H. McAdams, Member


Louis M. Thayer, Member


Isabel A. Burgess, Member


William R. Haley, Member