

restricted ports and waterways, should be encouraged.

3. The feasibility of offshore marine terminals should be given serious consideration.

VI. SUMMARY

Although the problem has been stated and possible solutions have been discussed, the choice of a solution for a particular harbor or waterway should be accomplished by systematically analyzing the constraints, requirements, and nautical circumstances of that specific area. Some of the elements of a harbor and waterway operation which should be considered are the current and predicted future traffic conditions such as traffic density and traffic patterns, types of vessels encountered, natures of cargo carried, percentage of days when inclement weather is a factor, existing navigational restrictions, and potential station location for a shore-based system. Such a systematic approach is indicated in order to determine how a particular system will effectively solve the problem and to select the most economical system of those which are capable of solving the problem. It is recognized that justification of a system on a cost benefit basis only may be difficult or impossible. Currently, this type of data is not routinely collected and tabulated. Assembly of a data base should be one of the initial steps not only to determine the basic criteria for a system but also for use in future evaluation of the effectiveness of the selected system.

VII. RECOMMENDATIONS

The National Transportation Safety Board recommends that:

1. Congress enact appropriate legislation such as the "Ports and Waterways Safety Act of 1971" (H.R. 8140) to provide the Coast Guard with statutory authority to establish traffic control systems as needed, including mandatory control systems when appropriate, in the congested waters of the United States
2. Congress authorize and appropriate sufficient funds and manpower for the Coast Guard to develop mandatory traffic control systems where appropriate under the authority of the previously mentioned legislation.
3. The Coast Guard:
 - a. Evaluate the conditions of marine traffic in each major port and waterway to determine what types of traffic control, if any, are needed.
 - b. Establish a priority list for establishment of traffic control systems in the congested ports and waterways of the United States.
 - c. Compile casualty data on a more localized basis than is currently done.
 - d. In addition to tabulating casualty data, obtain data pertaining to traffic density, traffic patterns, types of cargo moved and other pertinent data which will be useful in determining the need for traffic control in a particular port or waterway and for use in future evaluation of the effectiveness of installed systems.
4. The vessel operators, pilots associations, port authorities, and other interested and knowledgeable parties cooperate and assist the Coast Guard in determining the needs of each port or waterway.
5. The Coast Guard, Maritime Administration, organized labor, and maritime industry augment the collision avoidance training programs currently available, and utilize typical shipboard and shore-based systems in these programs
6. The Radio Technical Commission for Marine Services Special Committee 65

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continue its work on developing general standards or specifications for shipboard collision avoidance systems so that the standards may be used by the marine industry for evaluating the effectiveness of the various systems available or currently under development.

7. The Department of Commerce, Department of Transportation, and the

electronics industry collaborate to develop:

- a. A transponder-type identification system for use in the marine field.
- b. An accurate and reasonable method for determining own ship's speed.

BY THE NATIONAL TRANSPORTATION SAFETY BOARD:

/s/ JOHN H. REED
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February 2, 1972