Statement

of

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for the

Technology and Competitiveness Subcommittee

of the

Committee on Science, Space and Technology

U.S. House of the Representatives

January 24, 1992

Good morning, Mr. Chairman. My name is Warren Leback and I am the Administrator of the Maritime Administration, U.S. Department of Transportation. I am pleased to be here to present the Maritime Administration's views with regard to vessel traffic control technology.

There are many new technologies in use, and others under development, to enhance vessel traffic control. I will address a few of the most significant areas of technological development and, also, other activities being conducted to maximize the benefit of technology development.

1. Worldwide Vessel Location and Tracking - Knowing the position of your own vessel or the position of many vessels is essential for safe and efficient ship operations. With technology that currently is available, it is possible for a land-based facility to obtain a vessel's position without any human intervention, using commercially available Global Positioning System (GPS) and International Maritime Satellite (INMARSAT) services and PC-based display and communications software. Aboard ship, the latitude/longitude position can be provided on an electronic chart display through the GPS. The ability to display ownship position on an electronic chart is an essential

element of advanced vessel navigation systems. Although the technology exists for real time determination of vessel position, there are issues of cost, value, confidentiality of data, and economies of scale that need to be addressed.

2. Electronic Charts - The electronic chart is an essential part of any integrated navigation system, and it is a critical component of advanced vessel traffic control systems. We not only need to know where our vessel and other vessels are in a visual display, but we also need the underlying digital chart data base in order to provide the full system capabilities. We recommend that all ship operators become active participants in the activities of RTCM (Radio Technical Commission Marine) and Woods Hole Oceanographic Institute in the development and testing of the standards for ECDIS (Electronic Chart Display Information System) under the ECDIS Test Bed program. Another activity that we are closely monitoring in regard to ECDIS is the Coast Guard's simulator experiments at CAORF, which are being conducted by Marine Safety International, to evaluate the human factor aspects of the various ECDIS capabilities and functions.

3. Expert Computer Systems - The industry is actively involved in the application of artificial intelligence technology to various ship operations functions, including navigation.

There is a joint project with Exxon Shipping, Rensselaer Polytechnic Institute, Sperry Marine, the Coast Guard, and NOAA to develop a Shipboard Piloting Expert System (SPES) as part of the Exxon integrated bridge system (EXXBRIDGE). The SPES incorporates information from the shipboard local area network (e.g., position, course, speed, radar targets), knowledge of a descriptive nature (chart information, transit-specific knowledge) and the knowledge of experienced pilots in making its recommendations. SPES will be installed and evaluated aboard the tanker EXXON BENECIA in the summer of this year.

4. Crew Qualifications and Training - With the increased level of automation of shipboard navigation systems, the whole subject of duties, qualifications, and training for the crew is being re-examined and redefined. Extensive use of various types of simulator and scale-model training is currently being employed at various facilities in the U.S. and abroad. In addition, experiments are planned for the evaluation of human factors aspects of advanced technology systems. The Computer-Aided Operations Research Facility (CAORF), located at the United States Merchant Marine Academy at Kings Point, NY, will continue to be a key element of such activities.

5. Environmental Impact - The successful implementation of advanced vessel traffic systems has the potential to reduce the number of oil and hazardous spills and the resulting damage to our environment. We are committed to a program of spill prevention, and advances in navigation and piloting technology can play a major role. This is responsive to the resolution recently taken by the International Maritime Organization (IMO) that the prevention of maritime casualties is the primary method for avoiding pollution of the marine environment.

6. International Cooperation - Throughout the maritime world, advanced navigation systems are under development, standards for electronic charts are evolving, and vessel traffic systems are being installed or upgraded in order to take advantage of the rapidly expanding technologies of geographic information systems, high resolution displays and graphic user interfaces. There appears to be a need for increased cooperation and communications between the United States and other leaders in these application areas, including Canada, Japan, France, Norway, and the Netherlands. We are currently participating in a cooperative research information exchange with Transport Canada and are in the process of initiating a similar cooperative research information exchange with the Ship Research Institute of Japan. In addition we are an active

member of RTCM which presents U.S. positions at various international maritime meetings.

Concerning the research necessary to develop the next generation vessel traffic control technology, we think that the commercial maritime market for such products and services provides substantial incentives to the private sector to play a leadership role in such research. To the degree that the government can facilitate this effort, we at MARAD are prepared to do all that we can.

We appreciate the Committee's interest in advanced ship technology research and development in order to increase safety and enhance productivity. We are supportive of the development of vessel traffic systems to improve navigation safety, and we plan to continue our efforts for the benefit of the U.S. maritime community as a whole.

This concludes my statement. I would be happy to answer any questions the Subcommittee may have.