

Delaware Bay: A Private Vessel Traffic & Information Service

by

Glen Paine

ABSTRACT

Well-run vessel traffic services greatly improve the safety and efficiency of the waterways. This paper describes how the Pilots' Association for the Bay and River Delaware developed a system for the Delaware Estuary. The system is one of the few privately operated systems in the world. The paper lists the key elements necessary for a successful VTIS service.

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The Pilots' Association for the Bay and River Delaware operates one of the few private vessel traffic and information services (VTIS) in the world. This paper discusses the reasons for this private service, and the factors that made it a success.

Background

The approach to the Delaware Bay consists of three traffic separation schemes (TSS), and an unofficial offshore anchorage. The bottom's natural contours allow vessels with drafts up to fifty-five feet to enter the Bay. The dredged channel leading to the ports of Wilmington and Philadelphia can handle ships with drafts up to forty feet. Overall, the navigable channels continue upriver for over hundred miles.

The port ranks seventh in the nation in terms of ship arrivals, and is the number one tanker port on the East Coast. Oil refineries, heavy industry, recreational interests, and wildlife sanctuaries share the coastline.

Wildlife preserves and tourist resorts dominate the economic activity of the lower bay. The beach resorts of Cape May, New Jersey, and Lewes, Delaware, are connected by ferry service. During the peak season, the ferries cross the main shipping channel every twenty minutes.

Vessel Traffic Service At Cape Henlopen

For years, the pilot boat Philadelphia provided informal vessel traffic service along with her pilot dispatch duties. After the sale of the pilot boat in the 1970's, these duties moved shore-side. The Association negotiated with the Maritime Exchange¹ for partial use of its reporting station located on Cape Henlopen. The commanding view of the pilot boarding area, ferry traffic and the lower bay made it an ideal location.

Public interest in formal vessel traffic services came in the 1990's as the result of the Exxon Valdez disaster and the subsequent passage of the Oil Pollution Act of 1990. As a result of this legislation, the United States Coast Guard developed the "VTS 2000" program. However, for a variety of reasons, Congress failed to fund "VTS 2000".

The State of Delaware continued to support the idea of a vessel traffic service on the Delaware River. The State hoped that such a service would reduce the probability of a Valdez type of oil spill in Delaware. With the support in Congress for VTS diminishing, the State turned to the Pilots' Association for assistance.

¹ The Maritime Exchange for the Bay and River Delaware is a non-profit organization dedicated to promoting the ports of the Delaware Valley and provide critical vessel movement information to the port community.

Why the Pilots' Association

The Association took the State's request to the "Mariners' Advisory Committee for the Bay and River Delaware". This Advisory Committee was organized in 1960's as a means for the port community to work together on beneficial projects. The members include United States Coast Guard, Army Corps for Engineers, National Oceanic and Atmospheric Agency (NOAA), state and federal pilots, shipping interest, state authorities, and other maritime groups.

The Committee decided that the Pilots' Association was in the best position to implement a vessel traffic service. First, the use of the Association's existing infrastructure would dramatically reduce the cost of implementation. Second, the Association had experience in providing this type of service. Third, as the local knowledge experts, the Association had a large pool of the highly qualified VTIS watchstanders.

Implementation

Several issues still had to be resolved before VTIS became a reality. These issues included surveillance area, funding mechanism, watchstander liability, and compliance.

It made economical sense to provide radar / visual surveillance at the Capes, since the infrastructure was already in place. The Tower's location provided full coverage of the pilot boarding, the ferry routes, and the tanker lightering anchorages. Advanced electronic chart display and information system (ECDIS) could easily be added to the existing equipment.

A funding source for new equipment was the second issue. The Committee resolved this issue by funding the VTIS service through an increase in the pilotage rate. Initially, there was some discussion of whether VTIS should be restricted to those vessels that paid pilotage fees. However, for safety purposes, the Committee decided that the service must be provide to all.

Liability for watchstanders was another important issue. The probability of a watchstander being held liable is low, but the magnitude of the risk is great. The cost for liability insurance would be prohibitive (if it could be obtained at all). The passage of limited liability legislation by the State of Delaware reduced this risk to an acceptable level.

The Committee did not feel that participation had to be mandatory. This was due to the large support for the idea of pilot operated VTIS by the port users. The voluntary nature of the service, and the lack of user-fees eliminated the need for regulatory action.

Fundamental Principles of Pilot-Operated VTIS

IMO defines Vessel traffic services (VTS) "as a service implemented by a competent authority designed to improve the safety and efficiency of vessel traffic and to protect the environment. The service should have the capability to interact with the traffic and to respond to traffic situations developing in the VTS area"¹.

The fundamental way a system meets this definition is by providing information to master/pilot that will reduce the uncertainty of the situation. The less uncertainty, the higher the likelihood

¹ Part 1.1 of NAV 41/23

that the proper assessment and action will be taken. The Association fulfills this goal by operating the VTIS under the following principles:

1. Ship masters and pilots are the most important recipient of VTIS information. These are the decision-makers that have the legal responsibility for the safe navigation of the vessel.
2. The information provided must be timely, accurate, necessary, and non-intrusive as possible.
3. VTIS should enhance the existing navigation support systems. VTIS watchstander is there to support not replace the vessels' bridge teams.

Indirect Navigation & Information Support

Given its length, radar surveillance for the entire Delaware River would be extremely expensive. Also, the practical benefits of such surveillance would be minimal given the narrow width of the channels, the low volume of cross traffic, and lack of blind bends.

For these areas, portable positioning receivers made more sense than radar surveillance. The Association had been experimenting with differential LORAN receivers for many years. The knowledge gained from that experience allowed the Association to quickly take advantage differential global positioning system (DGPS).

The system uses standard laptop computer connected to the Starlink® GPS/DGPS receivers, and a portable antenna. The position information is displayed on the screen along with electronic routes. The Starlink® provides pilots with constant position reports with accuracy of fifteen feet or less.

Over the years, the Association and the Maritime Exchange have also developed a sophisticated communication infrastructure. These trans/receivers are connected through private phone lines to pilot station, pilot office, and Maritime Exchange. The system allows the pilots to be in constant communication with their office, and the ship agents.

The cornerstone of the information management is the Pilot Dispatch System®. This database program keeps transit data flowing between the Tower, Maritime Exchange, and the Pilot Office. Data collected includes sailing & arrival times, destinations, and anchorage information. This network computer system keeps the maritime community instantly apprised of vessel activities.

Future Plans

As transponder technology becomes a reality, the system will be upgraded to include this information. Transponder data will aid in identifying vessels during periods of poor radar reception, and in areas outside of radar coverage.

The U.S. Coast Guard is planning to install a new DGPS beacon near the entrance to the C&D Canal. This new beacon will extend DGPS coverage for the upriver areas of Delaware and Maryland, and serve as a backup for the Cape Henlopen DGPS beacon.

Additional real-time tide gauges are also being considered for the port. When available, this information will be made available via computer, VHF, or cellular phone.

Summary

Private vessel traffic service is a success in Delaware because it has the support of the port community. The Advisory Committee plays a key role in maintaining this support.

The Association has demonstrated a firm, long-term commitment to VTIS. The service supplements, not detracts from, the existing navigation support system. Tower is staffed by professional mariners. Ship masters and pilots voluntarily use the system because it works.

Economic reality is also an essential component. By taking advantage of the existing infrastructure, the service is cost-effective. In addition, the use of DGPS and other technology extend the range of VTIS. Finally, the system is financially self-sustaining.

Biography

Glen Paine is currently the Director of Operations for the Pilots' Association for the Bay and River Delaware. His duties include the direct oversight of the Vessel Traffic and Information Service (VTIS), the apprentice pilot training program, and the station facilities. Previously, he worked as division director for the Maritime Institute of Technology and Graduate Studies. At the Institute, Glen developed and managed continuing education courses for professional mariners.

Glen holds a master's degree in general administration from the University of Maryland, and an undergraduate degree from the United States Merchant Marine Academy. He also holds a valid U.S. Coast Guard Chief Mate's unlimited oceans license.