PERSONNEL DEVELOPMENT FOR INLAND WATERWAYS

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The purpose of this paper is to show the necessity of solving the problem of the personnel needs of the inland waterway industry. The only way in which the challenge can be effectively met is optimizing training results through the application of modern techniques, effective administration, unique training aids, and institutional and on-board training.

•HISTORICALLY, turnover has been high for deckhands on riverboats. This has not been the case for those working in the pilothouse. However, to be retained, they have had to learn innumerable techniques. The importance of this training has grown at a rate equaling that of the growth of waterways and the marine transportation industries. A real need exists for a specialized training program geared to provide future qualified personnel for the inland waterway industry.

Safety is a matter of continuing and vital concern to the barge and towing industry. Intensive in-company training and safety programs give crews an opportunity to improve their skills in accident prevention and safety. Traditionally, the inland waterway transportation industry has depended on on-the-job training to fulfill qualified personnel requirements. Skill, experience, and a feel of the river are required to pilot a tow of barges, most of which are longer than the greatest ocean liners, through the inland waters.

The crews of the vessels are the most important part of the advancement of the marine transportation field. Trained and efficient personnel who take professional pride in their jobs and in the industry for which they work are the backbone of the waterway industry. These people have contributed immeasurably to the prosperity of marine business. Continued development of the inland waterway industry largely depends on the competence of its personnel. As navigable waters become congested with a large array of vessels, as cargoes become more hazardous, and as quantities shipped by water increase, the technology of the industry and the skill of the personnel must advance.

Many changes have taken place during the past 160 years of river traffic. Most of them occurred during the modern age of towboating (1925 to the present).

In the beginning of the industry, large crews (40 to 50 people) were needed to run the tows because almost everything was done by hand. Crew size dropped after the Civil War, but the drop was not appreciable because many people still were needed to keep the barges in tow and to load and unload the bulky cargoes. Modern technology, with its bigger and better power units, steel barges, searchlights, steel cables, rudder indicators, and diesel power, started to advance in 1925. At this time crew size began to shrink. The veterans of today were the youths that manned the new and complicated equipment, but they are now retiring and they are leaving the industry with large gaps in personnel.

On-the-job training, despite its disadvantages, has been a most effective training device from the earliest days of marine transportation, and it will continue to play a vital role in the education of waterway personnel. For example, on a steamboat, the pilot, not the captain or mate, navigated the boat. The pilot's knowledge was gained through actual practice and close observation of the river. The pilot's knowledge of the innumerable details of water depth, locations and names of beacons, bars, islands, chutes (narrow channels), projections, landmarks, the shape of every bend, the precise point for making crossings, and many other facts took years to accumulate. Pilots first were trained as steersmen, then they advanced to apprentice, and finally they became pilots.

Apprentice engineers, or strikers, began their training by cleaning and oiling the machinery and tending the boiler. Later they progressed to adjusting and operating the machinery under supervision. Then they became reasonably qualified engineers.

The first licensing system came into effect with the Steamboat Inspection Act of 1852, and qualified pilots and engineers were, after appropriate examination and experience, granted licenses attesting to their proficiency. Pilots applying for a federal pilot's license had to draw from memory every stretch of river for which they desired licensing. Faced with newly imposed standards aimed at increasing engine room safety, the engineers were examined on procedures and methods of operation.

These lengthy apprentice programs and the licensing system provided a satisfactory number of qualified personnel for many years, but the dramatic growth of the waterway industry requires a new and more efficient approach to crew training. Crew members must be more skilled so that they can use the increasingly sophisticated equipment on towboats and safely operate the constantly growing tows. Even if apprentice programs could provide prospective crew members with the necessary knowledge, they could not do it at a rate sufficient to keep up with growing demands.

The Towboat Operator's Licensing Act of 1973 initiated compulsory licensing of operators of uninspected towing vessels. This act provides for an operator's license for 1 or more geographical areas. To be eligible for this license, a crew member must have 1 of the following: (a) at least 3 years of service, including at least 2 years on deck of any vessel 26 ft (7.8 m) or longer, (b) 3 years of service on towing vessels, including at least 1 year of service on deck, or (c) 18 months service on deck on a towing vessel for a license that is endorsed for a limited local area designated by an officer in charge of a U.S. Coast Guard Marine Inspection Office. That is, a deckhand on the inland waterways who serves 30 days on and 30 days off with no break in service will need 4 years to qualify. The U.S. Coast Guard credits 1.5 days for every 1 day on board, because all crew members work 12 h/day. After accumulating the required time on the river, the prospective operator must then pass a physical examination and a very stringent written examination on the many facets of towboat operation. All too often, experienced people encounter severe difficulties in taking the written exam because their training has not included the fine points of information that are necessary to pass.

There are more than 4,200 towboats, 1,800 dry-cargo barges, and 3,420 tank barges in the waterway system. The towboat industry will require more than 600 new operators per year because of retirements, job changes, sickness, deaths, injuries, and promotions. The greatest source of replacements is the vast number of deckhands who generally make up half of the crew. The assumption that a critical pilothouse personnel shortage exists is based on the following:

1. Many deckhands serve on the river intermittently;
2. Numerous deckhands seek shore positions after serving 1 to 2 years on the river; and
3. Deckhands qualified to be pilots must possess the essential aptitude and pass an eye examination and a U.S. Coast Guard written examination.

The attrition rate of deckhands is greater than the number of licensed pilots required for the inland waterway system. The towing companies cannot afford to wait for people to learn by experience alone. The water transportation industry needs people who have learned on the job and have experienced the new and updated methods of operations in classroom settings. How does the industry plan to solve the problem? In 1969, Bill Alexander, U.S. Representative from Arkansas, discussed with prominent industry leaders the need for establishing a training institution that could eventually alleviate this personnel shortage. This discussion led to the founding of the National River Academy of the United States of America (NRA), which trains people for all positions in the inland waterway industry. The NRA is supported by the waterway industry. It serves through 3 types of membership. Owners or operators of waterborne vessels may elect to become regular members; firms, corporations, or persons connected with the industry frequently become associated members; and individuals or nonprofit organizations interested in the industry may join as affiliate members.

The objectives of NRA are

1. To promote the study of the U.S. inland waterway system, its uses, and resources,
2. To attract young people to careers in inland waterway transportation,
3. To provide education and training for all categories of personnel in the industry,
4. To maintain a library and research center, and
5. To assist persons who have completed training at NRA in finding employment.

At present, NRA coordinates programs with industry executives on the safety of personnel and transfer of liquid cargoes and liquefied flammable gases, chemicals, and dangerous cargoes. NRA, in addition to providing a much needed professional education program, can become the focal point of technological advancement for the inland waterway industry. The development of a total environmental simulator is a substantial advancement in providing a labor force that will be prepared to cope with the advancing automation and industrial demand within the rapidly expanding transportation network.

Noble Gordon, Chairman of NRA's Simulator Advisory Committee, has worked diligently toward the development and acquisition of a river pilot simulator, a device that is similar to those now used by the airlines. A simulation of circumstances and events that a pilot actually will experience will be part of the program. The trainee will stand in a typical pilothouse and will see areas similar to test areas projected on screens outside the windows of the pilothouse. The scene will change in response to pilot-controlled changes and external computer-generated changes. The simulator will realistically simulate weather conditions, emergencies, and radio and radar communications. The test areas to be used for training purposes include hazardous locales such as the Berwick Bay bridges, St. Louis harbor, New Orleans harbor, Vicksburg Bridge, Beardstown Bridge, the new bridge at Booth's Point, and Gallipolis Lock.

The most important benefit of a simulator is its ability to take a trainee through a hazardous area over and over again until the person masters it or demonstrates the inability to do so. The ability of the simulator to take a trainee from St. Louis to New Orleans in a matter of hours rather than days also is valuable.

Half of the cadet-pilot program is institutional training and half is on-board experience. Cadets experience training and practical application at the deckhand, wiper-oiler, mate-tankerman, and apprentice-pilot levels. After graduation, the licensed cadet is qualified to serve as a steersman. The cadet will be knowledgeable on the use and procedures of radio telephones; use, limitation, interpretation, care, and adjustment of radar; western and inland rules of the road; the duties and responsibilities expected of deckhands and mates; and the engine room's main and auxiliary units and their cycles, operation procedures, repairs, and emergency procedures. The graduate also will be certified for all necessary grades of liquids and chemicals.

In conclusion, the cadet program supplemented with upgrading courses and use of the simulator makes the occupational outlook for cadet-pilots unlimited.