

As a general rule, local truckdrivers receive an hourly wage and extra pay for working overtime, usually after 40 hours. Employers pay long-distance drivers primarily by the mile. Their rate per mile can vary greatly from employer to employer and may even depend on the type of cargo. Typically, earnings increase with mileage driven, seniority, and the size and type of truck driven. Most driver-sales workers receive a commission based on their sales in addition to an hourly wage.

Most self-employed truckdrivers are primarily engaged in long-distance hauling. After deducting their living expenses and the costs associated with operating their trucks, earnings of \$20,000 to \$25,000 a year are common.

Many truckdrivers are members of the International Brotherhood of Teamsters. Some truckdrivers employed by companies outside the trucking industry are members of unions representing the plant workers of the companies for which they work.

### Related Occupations

Other driving occupations include ambulance driver, busdriver, chauffeur, and taxi driver.

### Sources of Additional Information

Information on truckdriver employment opportunities is available from local trucking companies and local offices of the State employment service.

Information on career opportunities in truckdriving may be obtained from:

☛ American Trucking Associations, Inc., 2200 Mill Rd., Alexandria, VA 22314. Internet: <http://www.truckline.com>

☛ American Trucking Association Foundation, 660 Roosevelt Ave., Pawtucket, RI 02860

The Professional Truck Driver Institute of America, a nonprofit organization established by the trucking industry, manufacturers, and others, certifies truckdriver training programs meeting industry standards. A free list of certified tractor-trailer driver training programs may be obtained from:

☛ Professional Truck Driver Institute, 2200 Mill Rd., Alexandria, VA 22314, or by calling (703) 838-8842. Internet: <http://www.ptdia.org>

## Water Transportation Occupations

(O\*NET 97502A, 97505, 97508, 97514, 97517, and 97521)

### Significant Points

- Many jobs in water transportation occupations require a merchant mariner's document or a license from the U.S. Coast Guard.
- Merchant mariners on ocean going ships are hired for periods ranging from a single voyage to several continuous voyages and may be away from home continuously for months.
- Jobs aboard ocean going vessels have high pay but competition for them remains keen and merchant mariners might have to wait months between work opportunities.

### Nature of the Work

Movement of huge amounts of cargo, as well as passengers, between nations and within our nation depends on workers in water transportation occupations. They operate and maintain deep sea merchant ships, tugboats, towboats, ferries, dredges, excursion vessels, and other waterborne craft on the oceans, the Great Lakes, in harbors, on rivers and canals, and on other waterways. (Workers

who operate water craft used in commercial fishing are described in the section on fishers and fishing vessel operators elsewhere in the *Handbook*.)

*Captains* or *masters* are in overall command of the operation of a vessel and they supervise the work of any other officers and crew. They determine the course and speed, maneuver to avoid hazards, and continuously monitor the vessel's position using charts and navigational aides. They either direct or oversee crew members who steer the vessel, determine its location, operate engines, communicate to other vessels, perform maintenance, handle lines, or operate vessel equipment. Captains and their department heads insure that proper procedures and safety practices are followed; check that machinery and equipment are in good working order; and oversee the loading and discharging of cargo or passengers. They also maintain logs and other records tracking the ships' movements, efforts at controlling pollution, and cargo/passenger carrying history.

*Deck officers* or *mates* perform the work for captains on vessels when they are on duty. Mates also supervise and coordinate activities for the crew aboard the ship. They inspect the cargo holds during loading to ensure the load is stowed according to specifications. Mates supervise crew members engaged in maintenance and the primary up-keep of the vessel. All mates stand watch for specified periods, usually 4 hours on and 8 hours off. However, on smaller vessels, there may be only one mate (called a pilot on some inland vessels) who alternates watches with the captain. The mate would assume command of the ship if the captain became incapacitated. When more than one mate is necessary aboard a ship, they are typically designated Chief Mate or First Mate, Second Mate, and Third Mate.

*Marine* or *ship engineers* operate, maintain, and repair propulsion engines, boilers, generators, pumps, and other machinery. Merchant marine vessels usually have four engineering officers: A chief engineer, and a first, second, and third assistant engineer. Assistant engineers stand periodic watches, overseeing the safe operation of engines and machinery.

*Seamen*, also called *deckhands* (particularly on inland waters), operate the vessel and its deck equipment under the direction of the ship's officers, and keep the non-engineering areas in good condition. They stand watch, looking out for other vessels and obstructions in the ship's path and navigational aids such as buoys and lighthouses. They also steer the ship, measure water depth in shallow water, and maintain and operate deck equipment such as lifeboats, anchors, and cargo-handling gear. When docking or departing, they handle lines. They also perform routine maintenance chores such as repairing lines, chipping rust, and painting and cleaning decks or other areas. Seamen may also load and unload cargo, if necessary. On vessels handling liquid cargo, they hook up hoses, operate pumps, and clean tanks. Deckhands on tugboats or tow vessels tie barges together into tow units, inspect them periodically, and disconnect them when the destination is reached. Larger vessels usually have a *boatswain* or head seaman.

Qualified members of the engine department, or QMED's, work in the engine spaces below decks under the direction of the ship's engineering officers. They lubricate gears, shafts, bearings, and other moving parts of engines and motors, read pressure and temperature gauges and record data, and may assist with repairs and adjust machinery.

A typical deep sea merchant ship has a captain, three deck officers or mates, a chief engineer and three assistant engineers, plus six or more non-officers, such as deck seamen, QMED's, and cooks or foodhandlers. The size and service of the ship determine the number of crew for a particular voyage. Small vessels operating in harbors, rivers, or along the coast may have a crew comprised only of a captain and one deckhand. The cooking responsibilities usually fall under the deckhands' duties. On larger coastal ships, the crew may include a captain, a mate or pilot, an engineer, and seven or eight seamen. Non-licensed positions on a large ship may include a full-time cook, an electrician, machinery mechanics, and a radio officer.



*Water transportation workers move barges through locks on the Mississippi River.*

Pilots guide ships in and out of harbors, through straits, and on rivers and other confined waterways where a familiarity with local water depths, winds, tides, currents, and hazards such as reefs and shoals are of prime importance. Pilots on river and canal vessels are usually regular crew members, like mates. Harbor pilots are generally independent contractors, who accompany vessels while they enter or leave port. They may pilot many ships in a single day.

### **Working Conditions**

Merchant mariners spend extended periods at sea, and earn leave. Most are hired for one or more voyages that last for several months, although there is no job security after that voyage. Merchant marine officers and seamen, both veterans and beginners, are hired for voyages through union hiring halls or directly by shipping companies. Hiring halls prioritize the candidates by the length of time the person has been out of work, and fill open slots accordingly. Hiring halls are typically found in major seaports.

At sea, these workers usually stand watch for 4 hours and are off for 8 hours, 7 days a week. Those employed on Great Lakes ships work 60 days and have 30 days off, but do not work in the winter when the lakes are frozen. Workers on rivers, canals, and in harbors are more likely to have year-round work. Some work 8- or 12-hour shifts and go home every day. Others work steadily for a week or month and then have an extended period off. When working, they are usually on duty for 6 or 12 hours and are off for 6 or 12 hours.

People in water transportation occupations work in all weather conditions. Although merchant mariners try to avoid severe storms while at sea, working in damp and cold conditions is often inevitable. While it is uncommon nowadays for vessels to suffer sea disasters such as fire, explosion, or a sinking, workers face the possibility that they may have to abandon their craft on short notice if it collides with other vessels or runs aground. They also risk injury or death from falling overboard, and hazards associated with working with machinery, heavy loads, and dangerous cargo.

Most newer vessels are air-conditioned, soundproofed from noisy machinery, and equipped with comfortable living quarters. Nevertheless, some mariners dislike the long periods away from home and the confinement aboard ship, and consequently leave the industry.

### **Employment**

Water transportation workers held about 56,000 jobs in 1998. The total number who worked at some point in the year was somewhat

higher because many merchant marine officers and seamen worked only part of the year. The following tabulation shows employment in the occupations that make up this group:

|   |        |
|---|--------|
| Able seamen, ordinary seamen, and deckhands ..... | 23,000 |
| Ship captains and pilots .....                    | 19,000 |
| Ship, boat, and barge mates .....                 | 8,000  |
| Ship engineers .....                              | 6,000  |

Over 2,900 of the captains and pilots were self-employed, operating their own vessel, or were pilots who were independent contractors.

About 30 percent of all water transportation workers were employed on board merchant marine ships or U.S. Navy Military Sealift ships operating on the oceans or Great Lakes. Another 47 percent were employed in water transportation services, working on tugs, towboats, ferries, dredges, and other watercraft in harbors, on rivers and canals, and other waterways. Others worked in water transportation services such as piloting vessels in and out of harbors, operating lighters and chartered boats, and in marine construction, salvaging, and surveying. The remaining water transportation workers were employed on vessels that carry passengers, such as cruise ships, casino boats, sightseeing and excursion boats, and ferries.

### **Training and Other Qualifications**

Entry, training, and educational requirements for most water transportation occupations are established and regulated by the U.S. Coast Guard, an agency of the U.S. Department of Transportation. All officers and operators of watercraft must be licensed by the U.S. Coast Guard, which offers various kinds of licenses, depending on the position and type of craft.

To qualify for a deck or engineering officer's license, applicants usually must have graduated from the U.S. Merchant Marine Academy, or one of the six State academies, and pass a written examination. Federal regulations also require that an applicant pass a physical examination and a drug screening before being considered. Persons without formal training can be licensed if they pass the written exam and possess at least 3 years of appropriate sea experience. However, it is difficult to pass the examination without substantial formal schooling or independent study. Also, because seamen may work 6 months a year or less, it can take 5 to 8 years to accumulate the necessary experience. The academies offer a 4-year academic program leading to a bachelor of science degree, a license as a third mate (deck officer) or third assistant engineer (engineering officer) issued by the U.S. Coast Guard, and a commission as ensign in the U.S. Naval Reserve, Merchant Marine Reserve, or the Coast Guard Reserve. With experience and additional training, third officers may qualify for higher rank. Because of keen competition, however, officers may have to take jobs below the grade for which they are licensed.

For employment in the merchant marine as an unlicensed seaman, a merchant mariner's document issued by the U.S. Coast Guard is needed. Most of the jobs must be filled by U.S. citizens. However, a small percentage of applicants for merchant mariner documents do not need to be U.S. citizens, but must at least be aliens legally admitted into the U.S. and holding a green card. A medical certificate of excellent health and a certificate attesting to vision, color perception, and general physical condition may be required for higher-level deckhands. While no experience or formal schooling is required, training at a union-operated school is the best source. Beginners are classified as ordinary seamen and may be assigned to any of the three unlicensed departments: deck, engine, or steward. With experience at sea, and perhaps union-sponsored training, an ordinary seaman can pass the able seaman exam and move up with 3 years of service.

No special training or experience is needed to become a seaman or deckhand on vessels operating in harbors or on rivers or other

waterways. Newly hired workers are generally given a short introductory course and then learn skills on the job. After sufficient experience, they are eligible to take a Coast Guard exam to qualify as a mate, pilot, or captain. Substantial knowledge gained through experience, courses taught at approved schools, and independent study are needed to pass the exam.

Harbor pilot training is usually an extended apprenticeship with a towing company or a pilot association. Entrants may be able seamen or licensed officers.

### Job Outlook

Keen competition is expected to continue for jobs in water transportation occupations. Overall, employment in water transportation occupations is projected to grow more slowly than the average for all occupations through the year 2008. Opportunities will vary by sector.

Employment in deep sea shipping for American mariners is expected to stabilize after several years of decline. New international regulations have raised shipping standards with respect to safety, training, and working conditions. Consequently, competition from ships that sail under foreign flags of convenience (FOCs) should lessen as insurance rates rise for ships that don't meet the new standards. Insuring ships under industrialized countries' flags, including that of the United States, should become less expensive, increasing the amount of international cargo carried by U.S. ships. A fleet of deep sea U.S. flagged ships is considered to be vital to the Nation's defense, so some receive Federal support through a maritime security subsidy and other provisions in laws limit certain Federal cargoes to ships that fly the U.S. flag.

Newer ships are designed to be operated safely by much smaller crews. Innovations include automated controls and computerized monitoring systems in navigation, engine control, watchkeeping, ship management, and cargo handling. Possible future developments include "fast ships," ocean-going cargo vessels that use jet propulsion, which would decrease ocean-crossing times significantly. If such plans are successful, the industry will benefit in terms of increased business and employment. As older vessels are replaced, crew responsibilities will change. Seamen will need to learn new skills to be able to handle these varied duties.

Vessels on rivers and canals and on the Great Lakes carry mostly bulk products such as coal, iron ore, petroleum, sand and gravel, grain, and chemicals. Though shipments of these products are expected to grow through the year 2008, current imports of steel are dampening employment on the Lakes. Employment in water transportation services is likely to rise, however.

Growth is also expected in the cruise line industry within U.S. waters. Vessels that operate between U.S. ports are required by law to be U.S. flagged vessels. The building and staffing of several new cruise ships over the next 3 to 4 years will create new opportunities

for employment at sea in the cruise line industry, which is composed mostly of foreign flagged ships.

Nevertheless, openings within the traditional industrial sectors for mariners, though expanding slightly, will remain tight. Many experienced merchant mariners may continue to go for periods of time without work. As a result, unions have been traditionally slow to accept new members. However, this situation appears to be changing, as the demand for non-licensed personnel has been on the rise. Also, many maritime academy graduates have not found licensed shipboard jobs in the U.S. merchant marine, although most do find jobs in related industries. Because they are commissioned as ensigns in the U.S. Naval or Coast Guard Reserve, some are selected for active duty in the Navy or Coast Guard. Some find jobs as seamen on U.S. flagged or foreign flagged vessels, tugboats, other watercraft, or enter civilian jobs with the U.S. Navy. Some take land-based jobs with shipping companies, marine insurance companies, manufacturers of boilers or related machinery, or other related jobs.

### Earnings

Earnings vary widely depending on the particular water transportation position and experience, ranging from the minimum wage in some beginning seamen or mate positions to more than \$35.00 an hour for some experienced captains and ship engineers. The following tabulation presents 1998 median hourly earnings for water transportation occupations:

|   |         |
|---|---------|
| Captains and pilots .....                         | \$19.81 |
| Ship engineers .....                              | 19.31   |
| Ship, boat, and barge mates .....                 | 14.09   |
| Able seamen, ordinary seamen, and deckhands ..... | 11.40   |

### Related Occupations

Workers in occupations having duties and responsibilities similar to these occupations include fishing vessel captains, ferryboat operators, and longshoremen.

### Sources of Additional Information

Information on merchant marine careers, training, and licensing requirements is available from:

- ☛ Maritime Administration, U.S. Department of Transportation, 400 7th St. SW., Room 7302, Washington, DC 20590.
- ☛ Seafarers' International Union, 5201 Auth Way, Camp Springs, MD 20746.
- ☛ Paul Hall Center for Maritime Training and Education, P.O. Box 75, Piney Point, MD 20674-0075.
- ☛ U.S. Coast Guard National Maritime Center, Licensing and Evaluation Branch, 4200 Wilson Boulevard, Suite 510, Arlington, VA 22203.

Individuals interested in attending a merchant marine academy should contact:

- ☛ Admissions Office, U.S. Merchant Marine Academy, Steamboat Rd., Kings Point, NY 11024.