

Inspected Towing Vessel Inspector

Towing Vessel Industry Familiarization Workbook

Developed by CG-CVC-1

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Goals:

1. Create an effective towing vessel industry orientation and indoctrination program for all new Coast Guard personnel assigned to inspect towing vessels, and
2. Create an outreach program designed to effectively communicate the new regulatory requirements of Subchapter M to all members of the towing industry and Coast Guard.

Revision 7/16

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Industry Background

A. Overview of Industry

i. Geography of Industry

- The tugboat, towboat and barge industry operates throughout the United States, including the Atlantic and Pacific Oceans, the Great Lakes, the Gulf of Mexico and the interior river system. Some companies make international voyages.

ii. Variation in Industry

- Vessels operating along the coasts are constructed for blue water and must be prepared for variable weather conditions, including hurricanes.
- Vessels operating along the inland waterways have to contend with variable weather conditions, strong currents and variation in depth of water.
- Vessels operating in the Great Lakes must be prepared for seagoing conditions, variable weather conditions, strong currents and variation in water levels.
- Depending on the region of the country, harbor vessels operate either 24 hours a day, or only as “day boats,” also known as “lunch bucket boats” on the Western Rivers and the Gulf Intracoastal Waterway (GIWW).

iii. Importance of Industry to Nation

The industry is vital to the U.S. economy in a variety of ways:

- In the nation, nearly 5,900 tugboats and towboats and more than 27,000 barges move over 800 million tons of raw materials and finished goods every year.
- More than 33,000 mariners are employed aboard tugs and towboats.
- 30,000 people are employed by shipyards.
- Almost 500,000 individuals work in industries that rely on raw materials delivered by barge.
- The industry contributes over \$5 billion a year to the nation’s economy.
- The industry pays a combined yearly total of more than \$750 million in payroll and corporate income taxes.
- In 2005, 176 million tons of coal, 100 million tons of crude materials and 75 million tons of petroleum were carried aboard vessels.
- While water carriage requires just 3% of the freight costs in the U.S. economy, it accounts for 13% of the ton-miles produced.

iv. Background of the Inspection Regulation

- The Maritime Transportation Act of 2004 (P.L. 108-293) added towing vessels to the list of vessels subject to Coast Guard inspection, and authorized the Secretary of Homeland Security to consider a safety management system as a key element of the new inspection regime.
- In September 2004, the Coast Guard tasked the Towing Safety Advisory Committee (TSAC) with assisting the agency in developing an inspection system for towing vessels. In October 2005, TSAC approved a comprehensive report that made recommendations to the Coast Guard on the content of a new inspection regime for towing vessels. TSAC issued updated recommendations

to the Coast Guard in September 2006, May 2007 and April 2008.

- June 2009, the Towing Vessel Briding Program began to begin examining the nations fleet of towing vessels to become better aquatined with the industry.
- In November of 2011, the Coast Guard published the Notice of Proposed Rule Making (NPRM).
- June 20, 2016, the final rules for inspected towing vessel was published in 46 CFR Subchapter M.

v. Types of Vessels (See **Appendix A for Photographs of Vessels**)

- The Coast Guard defines a towing vessel as a “commercial vessel engaged in or intending to engage in the service of pulling, pushing, or hauling along side, or any combination of pulling, pushing, or hauling along side.”
- A barge is a manned or unmanned vessel that can be loaded with various cargos. The size and cargo carrying capacity of barges vary greatly. Among the main types of inland and seagoing barges are the following:
 - Inland Dry Cargo Hopper Barges have a capacity of 1,400 to 2,000+ tons, are 195 to 200 feet long, 35 feet wide and 10 to 14 feet deep.
 - Seagoing Dry Cargo Barges range from 5,000 to 30,000+ tons and are 250 to 500+ feet long, up to 100+ feet wide and with drafts of up to 30+ feet.
 - Liquid Tank Barges have a capacity of 1,500 to 4,000 tons (with larger capacity vessels in construction), are 150 to 300 feet long, 35 to 54 feet wide and 10 to 13 feet deep. Tank Barges are subject to periodic inspection and certification. **(Figures B-1 & B-2)**
 - Seagoing Tank Barges have capacities up to 30,000+ tons, and are up to 500+ feet long with a draft of up to 30+ feet.
 - Deck Barges can be used as work platforms for individuals and equipment, and they serve as an extension of land. They often carry oil rigs, stacked containers, rail cars, oversized construction and military equipment, and spacecraft. There are approximately 4,000 deck barges that operate in the United States.
 - Sectional Barges are smaller barges that “pin” or lock together to make larger barges.
- A towboat is an Inland manned vessel that transports/pushes barges. There are several main groups of towboats, including: Linehaul Towboats, Locking River Towboats, Canal Towboats and Fleeting Towboats.
 - Linehaul Towboats operate throughout the river system, including locking rivers, and have a variable towing capacity. **(Figure B-3)**
 - Locking River Towboats operate in the Upper Ohio, Upper Mississippi, Tennessee and Illinois Rivers, and may have a towing capacity of 9 to 16 loaded barges. **(Figures B-4 & B-5)**
 - Canal Towboats operate in the GIWW and its tributaries, and may have a towing capacity of 2 to 5+ loaded barges. **(Figures B-6 & B-7)**
 - Fleeting Towboats facilitate the movement of barges within a defined fleeting location or limited geographic area.
- A tugboat generally has a model bow with propellers deep in the water. It is designed to operate safely in traditional blue water conditions, as it contains doors with high thresholds and openings that can be made water-tight.

- Seagoing Tugs are vessels that tow their barges astern and are connected to them by either a tow hawser or a cable. **(Figures B-8 & B-9)**
 - Towing astern is the traditional method of ocean and coastwise towing.
 - Seagoing tugs are usually between 60 to 140 feet long.
 - The engines in hawser tugs have between 500 and 9,000 horsepower.
- Harbor Assist Tugs are vessels used primarily within a harbor environment to assist ships into and out of berths or anchorages and to shift various types of barges. These tugs do not typically have a tow wire, and primarily work with synthetic lines. They often work under the direction of a docking pilot in conjunction with other tugs. Propulsion systems may be conventional twin screw, Arneson Surface Drive (ASD) or Voith. **(Figure B-10)**
- Linehaul Vessels are distinct from the Linehaul Towboats referred to above. They are large tugs that usually have conventional twin screw propulsion and a towing winch equipped with a tow wire for long haul ocean and coastwise towing of various cargo barges, ships and oil rigs. They have a horsepower range of 1,800 to 14,000. Some of them are outfitted with Kort Nozzles.
- Petroleum Barge Assist Tugs move oil bunker barges within a harbor from fuel facilities to vessels or between facilities. These tugs may at times be dedicated to this service or also used as general harbor service tugs.
- Tanker Escort Tugs are tugs that primarily escort oil tankers into and out of specific navigation areas as dictated by regulatory requirements. They typically have higher horsepower capabilities and have either ASD or Voith propulsion. The purpose of these tugs is to provide stopping and steering capabilities to tankers in the event of engine or steering casualties during transits. These tugs may also be used as harbor assist tugs for ship docking and undocking. **(Figure B-11)**
- Salvage Tugs are large and high horsepower vessels designed to conduct emergency towing of large vessels, oil platforms, and to perform emergency rescue towing and response work. They may have firefighting, oil spill, and medical treatment capabilities in addition to typical towing capabilities.
- Tugboats that work primarily within harbors and perform ship-handling operations include: Z-Tech Tugs **(Figure B-12)**, Tractor Tugs **(Figure B-13)**, Twin Screw Tugs, and Single Screw Tugs.
- Integrated Tug-Barge Units (ITB), as defined by the Coast Guard, are any tug barge combinations which use special design features or a specially designed connection system to increase seakeeping capabilities compared to a tug and barge in the conventional pushing mode. ITBs have increased speed and cargo capacity.
 - Dual-Mode ITBs contain a tug that can either push or tow, and a barge that can adapt to either pushing or towing.
 - An Articulated Tug and Barge (ATB) Unit is an example of a Dual-Mode ITB. The ATB combines the cargo-handling capabilities of a ship with the typical crewing, maneuverability and efficiency of a tug barge

unit. Within the ATB, the tug utilizes mechanical means to lock into the stern notch of a barge. This allows the tug to push the barge at sea in all but the worst conditions. The tug articulates in the notch of the barge, pitching independently, but rolling with the barge as a unit. Most of the tugs that are built as part of an ATB unit do not have towing winches. They are not intended to tow on a towline except in an emergency situation. There are tugs that are retrofitted as ATBs, and these may retain their conventional towing winches. **(Figures B-14 & B-15)**

- Push-Mode ITBs consist of the propelling unit being tightly connected to the barge for the entire voyage.

B. Regulations

i. Regulations/Oversight of the Industry

- Vessels in this industry are subject to portions of Titles 29, 33, 46, 47 and 49 of the Code of Federal Regulations and IMO standards as applicable.
- Numerous vessels are subject to the Responsible Carrier Program (RCP), and some choose to comply with the International Organization for Standardization (ISO).
- Various seagoing vessels are required to follow the International Safety Management (ISM) Code and the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW).
- The industry is also subject to oversight from the Coast Guard, the U.S. Army Corps of Engineers, and the Environmental Protection Agency.

C. Background Documents for References *(The following are intended to serve as references; there is no expectation that they be read in their entirety)*

i. Recommended Readings Beyond the Regulatory Requirements

- The Responsible Carrier Program (RCP), produced by The American Waterways Operators (AWO), is a code of practice for association member companies, with membership dependent upon completion of regular audits. More about RCP can be found on AWO's website at: <http://www.americanwaterways.com>
- The Deckhand's Manual: An Orientation and Training Manual, P.O. Box 343, Titusville, NJ 08560. This is an introductory manual for deckhands new to the maritime industry. It contains a number of illustrations of equipment and necessary tasks.
- Primer of Towing, 3rd Edition, by George H. Reid. Cornell Maritime Press, Inc. Centreville, MD. 2004.
- Tugboat Enthusiasts Society of the Americas web site. This is a web site that shares information about, and photographs of, tugboats. The address is <http://www.tugboatenthusiastsociety.org/index.htm>

ii. Additional Reference Materials

- Language of the Western Rivers, DOT U.S. Coast Guard Second District, St. Louis, MO. 1974
- Modern Towing, 1st Edition, by John S. Blank. Cornell Maritime Press, Inc.

- Centreville, MD. 1989.
- Regulatory Training Guidebook for the Workboat Industry by QSE Solutions. QSE Publishing. Woodinville, WA. 2008.
 - The Tug Book, 2nd Edition, by M. Gaston. Haynes Publishing. Somerset, UK. 2004.
 - Tug Use In Port: A Practical Guide, 2nd Edition by Captain Henk Hensen. The Nautical Institute. London, UK. 2003.
 - Tug Use Offshore in Bays and Rivers: The Towmaster's Manual, by Captain George Livingstone and Grant Livingstone. The Nautical Institute. London, UK. 2006.

As is applicable for the Area of Responsibility, some or all of the references should be maintained as part of the local Coast Guard unit's library.

D. Vessel Familiarization (*There is a wide variety in vessel features from sector to sector*)

i. Physical Characteristics of Vessel (**See Appendix B for Additional Marine Terms**)

- Hull: The main body of a vessel which provides flotation.
- Engine Room: This is where the main engine(s) and other propulsion equipment are located. All of the boat's electricity is generated by a primary and secondary power plant, as most vessels have two power plants. The engine room contains a fire detection system and firefighting equipment.
- Wheelhouse: This is the area where the control over a vessel's movements is normally exercised. Primary navigation equipment and charts are located here. Some towing vessels have an Upper Wheelhouse which is a smaller control station above the regular wheelhouse, used when transporting a tow with unusually high fixed points creating limited visibility.
- Hatch: A removable cover that provides access to an interior space or tank such as storage areas, steering gear, voids, ballast tanks and fuel tanks.
- Confined Spaces: The void, ballast and fuel tanks below deck on towing vessels are confined spaces.
- **See Appendix C for Diagrams of Deck Fittings and their Uses.**
- **See Appendix D for Additional Diagrams and Descriptions of Vessel Features.**

ii. Vessel Handling/Steering

- Lines of Responsibility: The Manager of Vessel Operations, the Port Captain or equivalent position is responsible for implementing navigation policy and ensuring that wheelhouse personnel are aware of its requirements. The vessel Master and Pilot/Mate are responsible for ensuring that all reasonable efforts are made so that the policy is followed. The Master and Pilot/Mate must be credentialed by the Coast Guard.
- Procedures: The vessel Master or person on watch must navigate the vessel in a safe and prudent manner. His/her other responsibilities include: ensuring that the vessel and tow are suitable for the waterway; maintaining an appropriate radio watch; maintaining in proper working order the vessel's installed navigation

- equipment; and, communicating with other vessels.
- Steering: Rudders on tugs are oversized in order to promote maneuverability. On most tugs, the leading edge of the rudder extends forward of the rudder post in order to ensure efficient flow from the propellers. Different types of rudders used include spade rudders, flanking rudders, steering rudders and single-screw double rudders. There are vessels in existence that have full rotational power units and, therefore, have no rudders.
 - Mooring: During times when vessels are not normally crewed and operating in a manner of navigation, all operations should be performed in the same manner and under the same expectations as when a vessel is crewed and in navigations. Therefore, the expectations are that all work is planned with risk assessment, associates are looking after each other, and there is consistent accountability and appropriate leadership.
 - Navigation: The navigational gear on vessels may consist mainly of compasses (gyro and/or magnetic), autopilot and radar. Vessels are often fitted with depth finders, Electronic Charting Systems, an Automatic Identification System (AIS) and a Global Positioning System. Some vessels may have a fax and weather fax as well.

iii. Vessel Maintenance and Repair

- Cleaning of Decks and Walkways: All decks and walkways should be cleaned in order to provide a safe walkway and working area.
- Engine Room Upkeep: The engine room walls, ceiling, walkways, stairs, piping, equipment and deck plates should be kept clean and painted. All bilge spaces should be free of rags, boxes, filters, or any other foreign matter.
- Upkeep of Fuel System and Related Devices: Larger linehaul-type vessels normally have a live-aboard Engineer that maintains the mechanical systems through daily routine preventive maintenance checks. Some smaller horsepower vessels often have a designated individual base shoreside who oversees similar maintenance functions and delegates many of these tasks to onboard individuals who perform the routine checks as necessary.
- Fuel Transfer Procedures: Vessels should have written procedures that outline the specifics of fuel transfers including lubes and the removal of oily slops. Records of the transfers can be recorded in the engineering or vessel log as appropriate, and may be logged in a Coast Guard-approved Oil Record Book if required by tonnage. Prior to commencing a transfer, the person in charge of the operation will complete a Declaration of Inspection (DOI) to ensure all safety and pollution prevention items have been considered.
- Hot Work: Only qualified individuals are authorized to perform or oversee hot work.
- Flammable Storage: A deck-mounted gasoline tank or a designated and placarded storage area for "Type II Containers" is generally used for the primary storage of gasoline aboard towboats. Vessel supplies with contents that are flammable, hazardous, or packaged under pressure should be stored in low-risk areas.

iv. Credentials/Maritime Personnel

- Credentials: Mariners are required to be properly credentialed when operating a

vessel.

- Licenses by Routes: Mariners receive towing vessel licenses subject to distinctions corresponding to what routes they will operate on. Among the distinctions-by-route for licenses are: ocean; near coastal; inland; Western Rivers; and, Great Lakes. Many mariners operating coastwise vessels carry upper level licenses that must be endorsed for towing.
- Tonnage Restrictions: Some, but not all, mariners receive towing vessel licenses subject to limits corresponding to the tonnage of the vessels they will be operating. The unit used is gross registered tons (GRT). Among the tonnage restrictions put on licenses are: 100 GRT; 200 GRT; 500 GRT; and, 1600 GRT.
- Titles Aboard Vessel: Within the community of towing vessel licenses, there are a variety of titles that mariners hold. Among the titles are: Master; Mate (pilot); Chief Engineer; and, apprentice mate (steersman) of towing vessels.
- Individuals Onboard: Individuals onboard towing vessels typically include the following: Master; Pilot; Mate; Leadman; Chief Engineer; Junior Engineer; Deckhand; and, Cook. On Seagoing tugs, the crew may consist of a Captain, Mate (s), Engineer, Asst. Engineer/Utility, Cook, Deckhands and/or possibly Tankermen. These individuals perform a variety of tasks aboard vessels, including cleaning, effecting repairs, etc.
- Time Spent Operating and Living on Vessel:
 - Hitches/Tours for mariners often last between 7 to 28 days with either an equal time off or a 2-for-1 time off rotation.
 - In a two-watch system, common to most towing vessels, crews that live aboard the vessel typically work on a 6 hours-on and 6 hours-off schedule, or a different schedule such that they work about 12 hours per day.
 - On certain towing vessels engaged in seagoing voyages in excess of 600 nautical miles or those working upon the Great Lakes, the crew stands 8-hour watches, usually working 4 hours-on followed by 8 hours-off.
 - Some crews in the harbor sector do not live aboard the vessels and may work 12-hour shifts as “day boats.” Almost all harbor vessels on the Gulf Coast, however, are manned and operated 24 hours per day using crews that work a 12 hour-on/off schedule.
 - On towing vessels subject to STCW, 10 hours rest are required in any 24-hour period, with 2 rest periods permitted, one of which should be at least 6 hours.
 - No licensed towing vessel operator may work more than 12 hours in any continuous 24-hour period.
 - Certain types of work are excluded from the time requirements. Such excluded work includes: shifting berth, mooring, unmooring; performing work necessary for the safety of the vessel or the vessel's passengers, crew or cargo; saving of life on board another vessel in jeopardy; or, performing fire, lifeboat or other drills in port or at sea.
- Crew Endurance Guidelines:
 - Mariners are recommended to: make an effort to get at least 5 hours of sleep during the primary sleep watch; maintain a regular sleep/wake schedule; manage caffeine intake and food consumption; and, manage and minimize stress.
 - No crewmember may work more than 15 hours in any 24-hour period nor may

he/she work more than 42 hours in a 72-hour period.

- No licensed vessel operator may work more than 12 hours in any 24-hour period.
- According to the United States Code, mariners operating in the Great Lakes sector and in the deck or engine department may “not be required to work more than 8 hours in one day, or permitted to work more than 15 hours in any 24-hour period, or more than 36 hours in any 72-hour period, except in an emergency when life or property are endangered.”

v. Safety Management System (SMS)

- A Safety Management System (SMS) describes procedures and practices for safe vessel operations, and promotes a safe work environment onboard towing vessels; it also is designed to provide guidance for emergencies and for environmental protection with regard to company-specific and vessel-specific operations.
- One example of an SMS is The American Waterways Operators’ Responsible Carrier Program (RCP). An industry-wide risk assessment was performed in the process of developing the RCP. Another example of a system is the International Safety Management (ISM) Code.
- An important element of any SMS is regular audits by third-party auditors. To maintain a company’s RCP certification, the successful completion of periodic audits is required by certified and approved auditors.
- A company’s SMS should include methods for confirming that the company is actually following (or complying with) its own policies and procedures.

vi. Security Plan

- Vessel Security Plans: The 2002 Maritime Transportation Security Act (MTSA) required the Coast Guard to promulgate rules on vessel security plans. Many companies have since implemented the AWO Alternative Security Program (ASP), an option that has been recognized by the Coast Guard as satisfying this requirement. ASPs are valid for five years upon enactment.
- Vessel Security Officer: The Coast Guard’s Navigation and Vessel Inspection Circular 10-02 established the position of Vessel Security Officer (VSO). The VSO is a member of the crew who conducts regular security inspections of the vessel, and implements, maintains and supervises the company’s vessel security plan.
- Company Security Officer: The Company Security Officer is the designated person responsible for overseeing the company (vessel) security plan.
- Security Drills: Vessels are required to conduct security drills every quarter, or when the Maritime Security (MARSEC) level of alert changes.
- TWIC: MTSA 2002 mandated a Transportation Worker Identification Credential (TWIC). As of April 15, 2009, all licensed/documentated mariners and any workers requiring unescorted access to the secure area onboard a MTSA regulated vessel must possess a valid TWIC readily available for inspection. Verification of these credentials shall be incorporated into annual vessel inspections or during any response to a marine incident. Non-licensed mariners onboard vessels not subject to the MTSA regulations are not required to possess a TWIC.
- TWIC New Hire Provision: Newly hired employees may be granted

“accompanied” access to the secure area of a regulated vessel for thirty days while waiting to receive their TWIC. This access is contingent upon enrollment into the TWIC program and submission of the employees’ name into <http://homeport.uscg.mil>. This access may be extended an additional thirty days by the cognizant COTP. This provision is only available for direct hire employees, and does not extend to contracted employees.

vii. Injury Prevention

- To prevent injuries, companies are highly recommended to have, in accordance with their SMS, plans for:
 - slips, trips and falls;
 - ladder safety;
 - fall overboard prevention;
 - eye and face protection;
 - hearing protection; and,
 - back safety
- Personal Protective Equipment: Personal Protective Equipment (PPE), including Type V work vests, safety glasses or other eye protection, hard hats, safety shoes, hearing protection, etc. should be worn and used as appropriate. Work vests are not intended to replace Personal Floatation Devices (PFD), which should be on board towing vessels and should have water lights and/or whistles, depending upon the particular towing vessel’s service and waters on which it is working.

viii. Emergency Response/Prevention

- Equipment Accidents: After addressing the equipment accident in question, the Coast Guard requires the company to notify the nearest Coast Guard Sector Office whenever a vessel is involved in a marine casualty due to equipment failure. A written report (CG-2692 Report of Marine Accident, Injury or Death) should be submitted to the Coast Guard within five days of the incident. Any required drug testing should take place within the appropriate time parameters.
- First Responder Requirements: Crewmembers should perform the following duties:
 - report any spill of a liquid material from the vessel to the wheelhouse;
 - identify any hazardous materials in barges in tow and review the properties;
 - inspect the spill kit each trip; and,
 - during each trip, review what possible actions could be taken to lessen the effects of a spill.
- Spill Kit: All towing vessels are highly recommended to be equipped with a spill kit. Spill kits should have suitable cleanup materials such as bags, tools, personal protective equipment and absorbent pads.
- First Aid: Vessels should have supplies for the treatment of medical conditions and emergencies. The kits may include bandages, antiseptic, compresses, splints, general medications and a first aid handbook. Some vessels may have additional trauma kits, including prescription drugs, backboards, bifibulators and other items for the treatment of more serious medical emergencies.
- Personal Injuries: In the event of a serious personal injury or illness, the Master

should: sound the general alarm; determine the injured person's need for emergency care; see that a properly trained crewmember administers the necessary first aid; and, fill out a personal injury packet.

- General Alarm: The Coast Guard requires weekly testing of the general alarm.
- Emergency Drills: Emergency drills should include fire, person overboard, abandon ship, etc. The required drills should be described in each boat's emergency station bill, and the frequency of drills is described in each company's safety management system. Quarterly OPA-90 and security drills apply to many operators.
- Collisions, Allisions, Groundings: There are specific procedures to be followed in the event of these emergencies, which may include sounding the general alarm, sounding the "danger signal" on the vessel's whistle, and alerting authorities by radio or other means.
- Fire Response: When a fire onboard is discovered, the alarm should be immediately sounded. Each vessel contains a Station Bill and an Emergency Response Procedure for responding to fires.

ix. Pollution Prevention

- Handling Waste: Companies have individual procedures and processes in place in order to dispose of waste.
- Used Paint Products, Solvent, and Gasoline: All solvents, paints, thinners, gasoline or other cleaning waste products should be properly stored onboard in a designated area that is properly marked and labeled, and different wastes should not be mixed.
- Ballast Water Management: In 2004, the Coast Guard published regulations establishing a national mandatory ballast water management program for all vessels equipped with ballast water tanks that enter or operate within U.S. waters. Vessels are required to keep a ballast water management plan that is specific for that vessel, and assigns responsibility to the Master or appropriate official to understand and execute the ballast water management strategy for that vessel.
- Disposal of Contaminated Engine Parts: All fuel filters, sufficiently drained oil filters and oil rags should be disposed of by placing them in bags. The bags are then offloaded at approved facilities.

Time on Vessels: Familiarization with Industry Operations

A. Introduction

In order for new inspector to fully understand and appreciate the towing industry, they must have hands-on, real-world experience about the vessels they will be inspecting. This familiarization program includes a requirement for inspectors to spend a period of time on a tugboat or towboat with a company representative(s) who will explain the various aspects of the vessel. During these visits, both the inspector and company personnel have several responsibilities to ensure the visit is a productive one and gives the inspector a solid background in towing vessel operations.

This is a familiarization activity and not an inspection, however if an inspector notices a major non-conformity or deficiency that puts the crew or vessel at risk, the inspector should point it out to the company representative immediately.

Inspector Responsibilities

It is the responsibility of the inspector to:

- **Act as the company's guest on the vessel**
The company has volunteered to help the Coast Guard educate new inspectors in order to smooth the transition of the towing industry to inspected status. Please be courteous and respectful.
- **Make gaining knowledge your top priority**
Ask questions and explore in detail the issues outlined in the checklist.
- **Ensure that all tasks have been completed**
Ask company personnel to help complete the tasks.

Company Responsibilities

The company should provide adequate personnel, both in number and experience, to educate the inspector while on the vessel. It is very important that the inspector walks away fully educated about the areas outlined in the checklist below, and that all of his or her questions are addressed.

It is the responsibility of the company personnel accompanying the inspector to:

- **Foster a dialogue**
This is an unparalleled opportunity to demonstrate to future regulators the commitment to safety and professionalism of the industry and the men and women who work in it.
- **Treat the examiner as a guest**
Understand the inspector may have very little knowledge of vessel operations.
- **Be familiar with the checklist and the inspector responsibilities**
- **Highlight SMS**
Take special attention to highlight the role and implementation of Safety Management Systems (SMS) on vessels at every opportunity.
- **Demonstrate equipment on the vessel whenever possible**
- **Initial the "Verified" box once a task has been completed**
Note that some tasks may not apply to the vessel.

B. Information Form (Fill out one for every vessel boarded)

Company Name:	Location:
Inspector Name:	Date:
Vessel Name:	Official #:
Year Built:	Call sign:

Dimensions		Main Engines	
Length overall		Horsepower	
Breadth (molded)		Service speed	
Maximum draft		Type of steering gear	
Minimum freeboard		Bow thruster (BHP)	
Gross tonnage		Stern thrusters (BHP)	

Inspector Name

Inspector Signature

Date

Company Representative Name

Company Representative Signature

Date

C. Vessel Familiarization Checklist

SAFETY MANAGEMENT SYSTEM			
<input checked="" type="checkbox"/>	Task	Vessel	Verified
	Ask company personnel to explain and demonstrate how the company's Safety Management System is implemented on the vessel, including policies and procedures, documentation, audits, and corrective actions.		
PHYSICAL CHARACTERISTICS OF VESSELS			
<input checked="" type="checkbox"/>	Task	Vessel	Verified
	Learn about the physical characteristics of the vessel, including the length, breadth, draft, hull, and highest fixed point of vessel. Ask company personnel to explain how the vessel design helps it accomplish its purpose.		
	Take a tour of the vessel, including the pilothouse, engine room, deck, and galley, and learn about the equipment used by the crew to operate the vessel. Ask company personnel to demonstrate the use of the equipment, if possible.		
	Examine equipment the crew uses to make the vessel safe and watertight, including safety chains and doors/hatches.		
	Examine the barge handling equipment on the deck, including lines, wires, winches, shackles, anchoring gear, terminal gear, and facewires, if applicable. Learn how it is used, maintained, and stowed.		
	Locate operational manuals and other documents, such as vessel log and certificate of documentation (COD), if applicable.		
VESSEL HANDLING/STEERING			
<input checked="" type="checkbox"/>	Task	Vessel	Verified
	Examine the main engine or propulsion system, taking note of the make, manufacturer, horsepower, control system, wheels, and rudders.		
	Examine the steering system, including type, controls, and back-up systems.		
	Learn how the vessel is moored and anchored, if applicable.		
	Examine the technology used to navigate the vessel, including VTS, AIS, radar, radio, compass, charts/maps, and GPS, and ask crew personnel to demonstrate its use, if possible. Learn about the technology used by the crew to communicate.		
	Stand at least one watch in the wheelhouse, learning about the navigation of the vessel.		
	Ask company personnel to explain the key evolutions of the vessel, such as mooring, making tow, maneuvering around obstacles, etc., and observe those evolutions.		

NOTES: _____

MAINTENANCE AND REPAIR			
<input checked="" type="checkbox"/>	Task	Vessel	Verified
	Ask company personnel to explain and demonstrate how the equipment, engine, and hull are maintained, including hot work and welding, if applicable.		
	Stand at least one engineering watch with the crewmember responsible for engineering duties.		
LICENSING AND CREW LIFE			
<input checked="" type="checkbox"/>	Task	Vessel	Verified
	Learn about the different job titles of the crew, their main duties and responsibilities, licenses and documents they may hold (including TOARs, endorsements, routes, and tonnage restrictions), experience they have, and the chain of command.		
	Learn about work and rest hour requirements, as well as the vessel's watch schedule and tour of duty. Ask company personnel why they use that kind of watch schedule, and if there are any procedures in place to enhance crew alertness, such as the Crew Endurance Management System (CEMS).		
	Stand at least one watch on the deck with deck personnel.		
	Locate amenities on the vessel, such as exercise equipment and TVs, and ask company personnel about life on a towing vessel.		
	Learn about company's drug and alcohol policy and testing procedures.		
VESSEL SECURITY			
<input checked="" type="checkbox"/>	Task	Vessel	Verified
	If the vessel has a security plan, locate it and ask company personnel to explain how it is implemented on the vessel, including the security responsibilities of each crewmember.		
	Discuss with company personnel how Transportation Worker Identification Credential (TWIC) regulations and other recent security enhancements have changed procedures on the vessel.		
INJURY PREVENTION			
<input checked="" type="checkbox"/>	Task	Vessel	Verified
	Learn about safety procedures and equipment to prevent slips, trips, ladder falls, and falls overboard.		
	Ask company personnel to explain and demonstrate the use of personal protective gear such as life jackets, helmets, goggles, gloves and ear plugs.		
	Ask company about confined space entry procedures.		

NOTES: _____

EMERGENCY RESPONSE			
<input checked="" type="checkbox"/>	Task	Vessel	Verified
	Ask company personnel to describe how and why potential incidents may occur and procedures in place to respond to them, such as equipment failures, oil spills, crew injuries, person overboard, abandon ship, collisions, allisions and groundings.		
	Learn about training and drills that the vessel and crew conduct to prepare for incidents.		
	Learn about reporting requirements in the event of an incident.		
	Locate applicable life-saving equipment and learn how and when they are used. Ask company personnel to see the first-aid kit.		
	Locate fire detection and response equipment and ask company personnel to explain how they are used.		
	Ask company personnel how they store flammable materials.		
POLLUTION PREVENTION			
<input checked="" type="checkbox"/>	Task	Vessel	Verified
	Locate and learn about oil discharge containment and response equipment, such as spill kits.		
	Locate the written copy of the vessel's fuel-transfer procedures and discuss the responsibilities of the crew when transferring fuel.		
	Discuss with crew personnel the procedures for the disposal of garbage, sewage, oily bilges, oily waste, and paint. Ask to see the Marine Sanitation Device (MSD) and oily-water separator, if applicable.		
	If applicable, discuss with crew personnel how fuel transfer hoses and other equipment are tested and examine and ask to see the records of the tests and inspections, as well as the oil placard.		

NOTES: _____

Time Shoreside: Familiarization with Office Practices

A. Introduction

All tugboat and towboat operations begin with their shoreside management. New inspectors can familiarize themselves with the day-to-day operations of their sector's towing industry by spending several days shoreside, touring a tugboat or towboat company office and meeting with a knowledgeable company representative(s) who can explain the various aspects of the towing industry's business, operations, safety management systems, traffic management and personnel decisions. During these visits, both the inspector and company personnel have several responsibilities to ensure the visit is a productive one and gives the examiner a solid background in towing industry operations.

Inspector Responsibilities

It is the responsibility of the inspector to:

- **Act as the company's guest in their office of operations**
The company has volunteered to help the Coast Guard educate new inspectors in order to smooth the transition of the towing industry to inspected status. Please be courteous and respectful.
- **Make gaining knowledge your top priority**
Ask questions and explore in detail the issues outlined in the checklist.
- **Ensure that all tasks have been completed and verified by company personnel**
Ask company personnel to help complete the tasks and initial the "Verified" box once the task has been completed.

Company Responsibilities

The company should provide adequate personnel, both in number and experience, to educate the inspector while touring a company's shoreside offices and operations. Nothing is more important than ensuring that the inspector walks away fully educated about the areas outlined in the checklist below, and that all of his or her questions are addressed.

It is the responsibility of the company personnel accompanying the inspector to:

- **Foster a dialogue**
This is an unparalleled opportunity to demonstrate to future regulators the commitment to safety and professionalism of the industry and the men and women who work in it.
- **Treat the inspector as a guest**
Understand the examiner may have very little knowledge of industry operations.
- **Be familiar with the checklist and the inspectors responsibilities**
- **Highlight SMS**
Take special attention to highlight the role and implementation of Safety Management Systems (SMS) in company operations at every opportunity.
- **Initial the "Verified" box once a task has been completed**
Note that some tasks may not apply to all company operations.

B. Shoreside Checklist

SAFETY MANAGEMENT SYSTEM (SMS)		
<input checked="" type="checkbox"/>	Task	Verified
	Ask company personnel to review the types of certified SMS currently in use (i.e. TSMS, AWO-Responsible Carrier Program, ISM, ISO 9001, ISO 14001, etc.).	
	Ask company personnel to review position of designated person ashore.	
	Ask company personnel to provide a summary of internal audit program.	
	Ask company personnel to provide a summary of external 3 rd party audit program.	
	Ask company personnel to provide a summary of reporting procedures for non-conformities and corrective actions.	
	Ask company personnel to provide a summary of strategy for continual improvement of programs.	
SHORESIDE/OFFICE OPERATIONS MANAGER		
<input checked="" type="checkbox"/>	Task	Verified
	Ask Operations Manager or company equivalent to examine the company's organization chart.	
	Ask Operations Manager or company equivalent to provide a summary of the company's holdings, divisions and corporate mission.	
	Ask Operations Manager or company equivalent to provide a summary of the types of operations carried out (including but not limited to ocean towing, vessel assist, tanker escort, barge moves, construction support, etc.).	
	Ask Operations Manager or company equivalent to review type/s of cargo/s transported.	
	Accompany Operations Manager or company equivalent on a facility tour.	
	Complete a visitor orientation sheet and release of liability form if required.	
PORT CAPTAIN		
<input checked="" type="checkbox"/>	Task	Verified
	Ask Port Captain or company equivalent to review the types and number of vessels currently owned or operated.	
	Ask Port Captain or company equivalent to provide a summary of territorial/ operational domain.	
	Ask Port Captain or company equivalent to provide a list of current rigging and mooring makeups.	
	Ask Port Captain or company equivalent to provide a summary of typical crewing make up, watch schedules, tour/hitch makeup.	
	Ask Port Captain or company equivalent to provide a summary of vessel specific orientations.	

NOTES: _____

SAFETY/SECURITY/ENVIRONMENTAL		
<input checked="" type="checkbox"/>	Task	Verified
	Ask company personnel to review the safety, security and environmental policies.	
	Ask company personnel for a summary of contingency plans, operation manuals and Federal / State regulations.	
	Ask company personnel to review spill prevention programs.	
	Ask company personnel for a summary of contracts with spill response providers.	
	Ask company personnel to review injury prevention policies (i.e. training, etc.).	
	Ask company personnel to review the PPE policy.	
	Ask company personnel to provide a summary of safety statistics.	
	Ask company personnel to review procedures for incident reporting, accident investigations, near miss reporting, and root cause analysis.	
	Ask company personnel to provide a summary of job safety analysis and pre-task planning.	
ENGINEERING		
<input checked="" type="checkbox"/>	Task	Verified
	Ask company personnel to review vessel preventative maintenance, maintenance and inspection program.	
	Ask company personnel to provide a summary of the types of vessel classes currently in use (i.e. USCG inspected vessels/ classed vessels / SOLAS).	
	Ask company personnel to review types of propulsion systems in use (including but not limited to conventional, z-drive, Voith), propulsion types, and how it differs from other steering types.	
	Ask company personnel to review drydocking and shipyard schedules and their key components.	
	Ask company personnel for a summary of fuel transfer procedures, DOIs, and PIC qualifications.	
	Ask company personnel to review procedures for waste management and environmental programs.	

NOTES:

TRAFFIC MANAGEMENT		
<input checked="" type="checkbox"/>	Task	Verified
	Ask company personnel to review dispatch procedures and vessel scheduling.	
	Ask company personnel to provide a summary of contractual agreements.	
	Ask company personnel to review current fleet communication capabilities (i.e. GPS, AIS vessel tracking, etc.).	
PERSONNEL ISSUES		
<input checked="" type="checkbox"/>	Task	Verified
	Ask company personnel to provide a summary of all Coast Guard credentials (e.g., licenses, MMDs) held and how they are tracked and managed. This includes: <ul style="list-style-type: none"> • Standards of Training, Certification and Watchkeeping • Towing Officer Assessment Record • Transportation Worker Identification Credential 	
	Ask company personnel to review hiring process, candidate background tests/screening, qualifications and abilities.	
	Ask company personnel to explain the company's drug and alcohol policies and testing procedures.	
	Ask company personnel to provide a summary of entry level training & continuation training programs and how training records are tracked and managed.	
	As company personnel to review employee career progression.	
	Ask company personnel to review company CEMS program; training of CEMS coaches, crew, and management; and, steps taken to implement CEMS.	

NOTES: _____

APPENDIX A

Photographs of Vessels (Figures B1-B15)

Liquid Tank Barge



Figure B-1

Courtesy of Ingram Barge Company

Liquid Tank Barge



Figure B-2

Courtesy of Buffalo Marine Service, Inc.

Linehaul Towboat



Figure B-3

Courtesy of Ingram Barge Company

Locking River Towboat



Figure B-4

Courtesy of Ingram Barge Company

Locking River Towboat



Figure B-5

Courtesy of Ingram Barge Company

Canal Towboat



Figure B-6

Courtesy of Ingram Barge Company

Canal Towboat



Figure B-7

Courtesy of Ingram Barge Company

Seagoing Tug



Figure B-8

Courtesy of Allied Transportation Company

Seagoing Tug



Figure B-9

Courtesy of Foss Maritime Company

Harbor Assist Tug



Figure B-10

Courtesy of Foss Maritime Company

Tanker Escort Tug



Figure B-11

Courtesy of Foss Maritime Company

Z-Tech Tug



Figure B-12

Courtesy of Bay-Houston Towing Company

Tractor Tug



Figure B-13

Courtesy of Foss Maritime Company

Articulated Tug and Barge



Figure B-14

Courtesy of Allied Transportation Company

Articulated Tug and Barge



Figure B-15

Courtesy of Allied Transportation Company

APPENDIX B

Glossary of Marine Terms
(Produced by McDonough Marine Service)

Marine Terms & Definitions

A

ABS -

American Bureau of Shipping; a vessel classification agency which also assigns international badlines.

admeasure -

to measure, calculate, and certify; for the purpose of registration, certain dimensions of a vessel as well as its gross and net tons.

affreightment -

a contract for the movement of cargo in which the cargo owner/shipper is neither charterer nor operator of the vessel.

AHP -

Above Head of Passes; used with mileage designations on the Mississippi River, the Head of Passes being mile zero.

AIWW -

Antic Intracoastal Waterway.

anchor -

a heavy object of steel or iron attached to a vessel by a cable and/or chain and cast overboard to keep the vessel in place either by its weight or by its flukes gripping the bottom.

anchor billboard -

a structure on the deck of a vessel upon which the anchor is mounted when not in use.



anchor billboard

B

ballast -

any substance, other than cargo, which is usually placed in the inner compartment of a vessel to produce a desired draft or trim.

bareboat charter - (demise charter) -

a form of vessel rental in which the charterer assumes total responsibility for the vessel and its operations as if it were his own.

beam -

the breadth of a vessel.

bell suction -

the flared open end of a cargo pipeline which is situated at close tolerances to the bottom of a liquid cargo tank.

bilge -

the lower inner space of a vessel's hull.

bin -

a walled enclosure built on the deck of a barge for the purpose of retaining cargo; also called a pen or cargo box.

anodes -

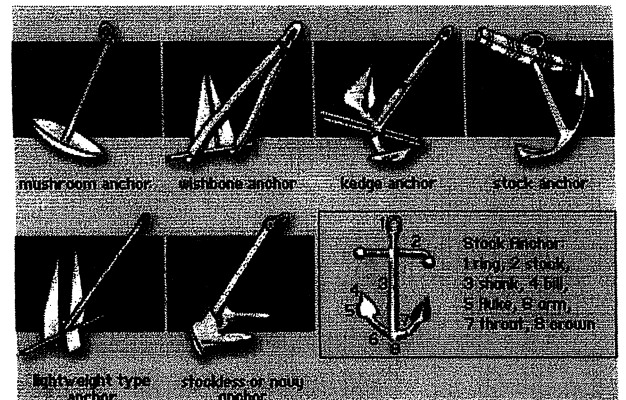
metallic plates which, when attached to the hull of a vessel, decompose because of electrolysis, thereby reducing deterioration of hull plate.

athwartship -

transverse or across a vessel from side to side.

Automated Identification System (AIS) -

an electronic instrument placed on regulated powered vessels to automatically provide their identity, location and other navigational data to a central receiving base to facilitate navigational control and safety.



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bounding angle -

a steel angle used for reinforcement at the junction of two steel plates.

bow -

the forward or front end of a vessel.

boxed end -

the end of a barge which is squared for the full depth and width of the hull.

bridle -

a V-shaped chain, wire, or rope attached to a vessel being towed to which the towline is connected.

buckframe -

a transverse truss.

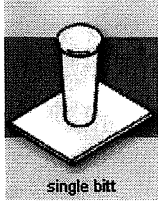
bulkhead -

an upright partition separating compartments.

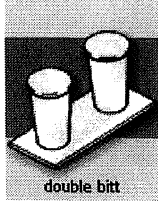


bridle

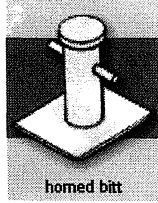
bitt (bollard or timberhead) -
a single or double post on a vessel or wharf to which lines are tied.



single bitt



double bitt



homed bitt

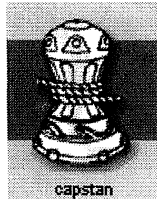
bollard pull -
the static pulling force of a tugboat measured in pounds.

C

camber -
the upward slope of a vessel's deck, occurring when the centerline is higher than the gunwale.

camel -
a pontoon used to fender between a vessel and a wharf.

capstan -
a hand or machine powered, vertical, spindle-mounted drum which rotates and pulls lines by winding.



capstan

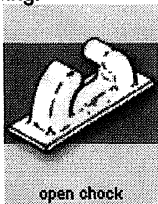
CERCLA -
Comprehensive Environmental Response, Compensation and Liability Act. The U.S. federal statute that establishes the legal and financial responsibilities of those persons or companies which discharge or dispose of hazardous substances on or into land, air, and navigable waters of the U.S. Primarily administered by the U.S. Environmental Protection Agency.

certification -
the act of attesting that a vessel has met specific legal requirements by the issuance of various certificates or validation of documents by certain governmental or private agencies.

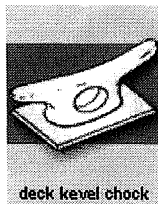
channel -
that portion of a waterway which is naturally or artificially deepened to permit safe navigation within certain limits.

charter party -
a contractual agreement between two entities for the purpose of renting, hiring, or leasing the exclusive use of a vessel.

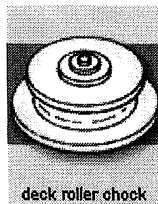
chock -
a heavy metal casting through which lines may pass for mooring or towing.



open chock



deck level chock



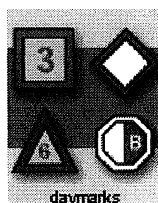
deck roller chock

CIF -
Cost, Insurance, and Freight; cost of transportation and insurance to be paid by the seller of goods to the named point of destination.

D

daymark -
a marker used as an aid to navigation and which is visible in daylight.

deadman -
an object, such as an anchor, piling, or concrete block, buried on shore.



daymarks

bulwark -
the side of a vessel which extends above the upper deck.

buoy -
a stationary floating object used as an aid for navigation.

butterworth -
a washing process used to gas free or clean a cargo tank, employing hot water or chemicals, sprayed through a patented rotating nozzle.

butterworth opening -
a deck access opening with bolted cover, designed for butterworth operations.

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classification -
the certification process as administered by certain international agencies whereby a vessel is designed, constructed, and maintained to an agency's requirements.

cleat -
a metal fitting with two projecting horns around which a rope may be made fast. (See keel.)

clip -
a small steel bracket used for securing or reinforcing.

coaming -
a watertight, raised framework around an opening in the deck of a vessel.

cofferdam -
the space in a vessel between two closely located parallel bulkheads.

COFR -
Certificate of Financial Responsibility; a document issued by U.S.C.G. to a company for a vessel or a fleet of vessels, giving evidence that the vessel owner/ operator has met the financial requirements for oil spill clean up costs as contained in the Oil Pollution Act of 1990.

coils -
a system of small diameter pipes installed inside a liquid cargo tank for the purpose of heating the cargo by means of hot oil or steam.

comehome -
a convex curvature of the rake sides of a barge that produces a narrower beam at the headlog than the beam of the hull.

common carrier -
a federally licensed company which offers to the general public, under published tariffs, to engage in the interstate or foreign transportation of commodities of various types.

compartment -
an interior space of a vessel's hull which is formed by bulkheads.

contract carrier -
a federally licensed company which offers, under individual contracts, to engage in interstate or foreign transportation of commodities of various types.

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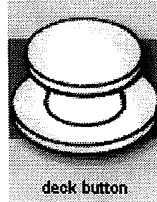
docking tug -
a tugboat which assists a large seagoing vessel to and from its berth.

documentation -
the process of licensing a vessel in either enrollment or registry, resulting in the issuance of a vessel's official document.

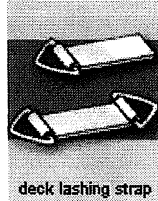
deadrise - the upward slope of a vessel's bottom occurring when the centerline is deeper than the bilge knuckle; provided to facilitate removal of liquid cargo.

deadweight tonnage - the cargo capacity of a vessel.

deck button - a round, steel fitting affixed to a vessel's deck, designed to secure or guide cables for making up barge tows.



deck lashing strap - a steel deck fitting normally used as an attachment for cargo tie down lines.



"dedicated" tow - movement of barge(s) between two points by the use of a boat exclusively assigned to that movement (contrast with "tramp" tow).

A "dedicated" boat offers greater control of barge movements than a "tramp" tow, but generally at a higher cost.

demurrage - a charge assessed for detaining a vessel beyond the free time stipulated for loading or unloading.

detention - the period of time that an owner or charterer is deprived of the use of his vessel as a result of actions of another party.

E

EHL - East of Harvey Lock; used with mileage designations on the Gulf Intracoastal Waterway, Harvey Lock being mile zero.

ETA - Estimated Time of Arrival.

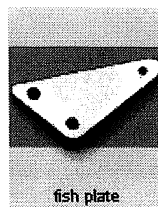
F

fairing - re-forming distorted steel to its original form or shape.

fairlead - a device consisting of pulleys or rollers arranged to permit the reeling in of a cable from any direction; often used in conjunction with winches and similar apparatus.

fender - any device used to absorb and distribute shock and to prevent chafing between a vessel and another object.

fish plate - a triangular-shaped steel plate used to strengthen the connection between the towing bridle and the towing hawser.

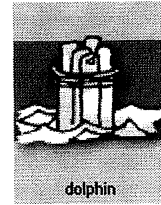


flame screen - a corrosion-resistant fine wire mesh screen used to cover certain openings on tank vessels to prevent the passage of flame into the tank.

flange - that portion of a steel shape which projects at a right angle to provide strength or a means of attachment to another part.

fleet boat -

dolphin - a cluster of piles driven into the bottom of a waterway and bound firmly together for the mooring of vessels.

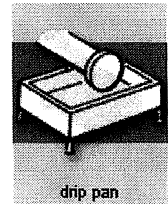


doubler - a steel plate installed on an existing structural plate and used as a strengthening base for deck fittings or as a repair of a damaged area.

draft - the depth of a vessel's keel below the waterline; often expressed as light draft, or conversely, loaded draft.

draft marks - the numerical markings on the sides of a vessel at the bow and stem, which indicate, at the lower edge of the number, the amount of water the vessel draws.

drip pan - an open container, located on deck under the ends of a pipeline header to retain cargo drippage. Required on all U.S.C.G. certified tank barges.



drydocking - the removal of a vessel from the water to accomplish repairs or inspections.

dumb vessel - a vessel without means of self-propulsion.

dunnage - any materials used to block or brace cargo to prevent its motion, chafing, or damage and to facilitate its handling.

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ETD - Estimated Time of Departure.

expansion trunk - a raised enclosure around an opening in the top of a liquid cargo tank which allows for heat expansion of the cargo.

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fleeting area (fleet) - a designated portion of a waterway where vessels are regularly moored and tended.

F.O.B. - Free on Board; cargo delivered to and placed on board a carrier at a specific point without charge.

freeboard - the distance from the waterline to the main deck of a boat or barge.

freeing port - a large opening in the bulwark on an exposed deck of a seagoing vessel which provides for the rapid draining of water from that deck.

fully found - a vessel completely equipped and manned for service.

FWPCA - Federal Water Pollution Control Act; the U.S. federal statute that establishes the legal and financial responsibilities of those persons or companies which discharge or dispose of oil or hazardous substances into or upon the navigable waters of the U.S. Primarily administered by the U.S. Coast Guard.

a boat which primarily tends, tows within, or otherwise services a fleeting area.

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G

gas free - the process of removing all hazardous gases and residues from the compartments of a vessel.

gasket - an elastic packing material used for making joints watertight.

gauge - a waterway marker which measures the level of the water in foot increments; also refers to the specific measure on the gauge.

GIWV11 - Gulf Intracoastal Waterway.

H

harbor boat - any powered vessel which is used primarily in harbor operations.

hatch - a removable cover over the cargo hold of a vessel.

hawser - a large circumference rope used for towing or mooring a vessel or for securing it at a dock.

headlog - the reinforced, vertical plate which connects the bow rake bottom to the rake deck of a barge or square-stemmed boat.

head of navigation - the uppermost limit of navigation from the mouth of a waterway.

I

ICC - Interstate Commerce Commission; a U.S. governmental agency which regulates the domestic transportation of certain commodities.

inland waters - considered to be the canals, lakes, rivers and their tributaries, and bays and sounds of the land mass of a country.

K

keel - the lowest structural member of a ship or boat which runs the length of the vessel at the centerline and to which the frames are attached.

keel line - an imaginary line describing the lowest portion of a vessel's hull.

L

landing - an improved waterfront property which facilitates loading, unloading, and servicing of vessels.

lightening hole - a hole cut in a plate or frame to reduce its weight without reducing its strength.

lighter - a vessel, usually a barge, that is used in loading or unloading a ship or in transporting cargo in and around a harbor.

gross tons - the volume measurement of the internal voids of a vessel wherein 100 cu. ft. equals one ton.

gunwale (gunnel) - that part of a barge or boat where the main deck and the side meet.

gusset - a steel plate used for reinforcing or bracing the junction of other steel members.

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hip towing (hipping) - a method of towing whereby the vessel being towed is secured along-side the towboat.

home port - the port city which is the home base of a vessel or the city from which it is documented.

horsepower - a standard unit of power which is often classified in connection with engines as brake, continuous input, intermittent, output, or shaft horsepower.

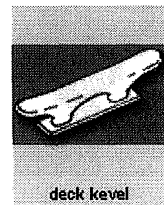
hull - the main body of a vessel which provides flotation.

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integrated tow - a tow of box-ended barges which, as a complete unit, is raked at the bow, boxed at the intermediate connections, and boxed or raked at the stem.

keel (caval) - a heavy, metal deck fitting having two horn-shaped arms projecting outward around which lines may be made fast for towing or mooring of a vessel.

knot - one nautical mile per hour; used as a unit of measurement in expressing the rate of speed of seagoing vessels and the relative speed of water currents.



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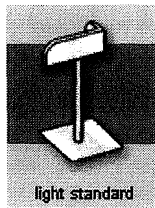
limber hole - a drain hole near the bottom of a frame or bulkhead.

lines - the ropes or cables used on a vessel for towing, mooring, or lashing.

loadline marks - a set of permanent markings on the side of an oceangoing or Great Lakes vessel which denotes its maximum legal operating draft under certain specified conditions and which is determined by one of the internationally-recognized assigning agencies.

light screen -
a structure surrounding a vessel's navigation light so as to shield the light from view at certain points of the compass as required by navigational regulations.

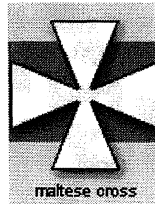
light standard -
a structure on a vessel used to hold a navigation light.



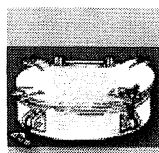
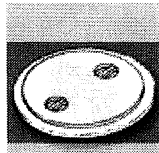
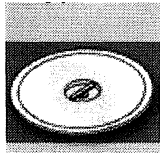
M

make-up -
the act of final positioning and securing of the vessels that form a tow.

Maltese Cross A-1 -
the designation used by ABS which signifies that a vessel has met the classification requirements of that agency.



manhole -
a framed opening in the deck of a vessel which provides access for a man.



manhole cover -
a cover which seals a manhole and is usually designed to lock in place by twisting or using a centerbolt, studbolts, or dogs.

MARAD -
the U.S. Maritime Administration.

marine chemist -
one who is certified to perform inspections in accordance with the Standard for the Control of Gas Hazards on Vessels to be Repaired as adopted by the National Fire Protection Association.

N

nautical mile -
a unit of length used in sea navigation equal to 1852 meters or approximately 6076 feet.

navigable waters -
those waterways upon which commercial or private vessels are able to operate in their customary mode of navigation.

O

OCMI -
Officer in Charge of Marine Inspections at a U.S. Coast Guard Marine Inspection office. Such offices are located in a number of U.S. ports.

official number -
the registration number assigned by the U.S. Maritime Administration to a U.S. documented vessel which is permanently marked on the main beam of that vessel.

P

padeye -
a steel fitting formed by a flat doubler plate and vertical steel

lock -
an enclosure on a river or canal, with movable, watertight gates, through which vessels pass, and proceed from one water level to another by raising or lowering the water within the lock chamber.

logbook (Qogs) -
the official records of the daily operations of a manned vessel, kept in detail by the master.

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marine chemist's certificate -
the documentation of a vessel's inspection by a marine chemist and his assignment of standard safety designations to the inspected compartments or spaces.

master -
the captain of a vessel; the person who has complete charge and authority aboard an operating vessel.

mats -
slabs, usually constructed of timbers, which are placed on the deck of a vessel for the purpose of supporting and distributing the weight of heavy loads.

milemarker (mileboard) -
a marker set up to indicate distances in miles along a waterway.

model hull -
a type of hull design in which the form is molded, curved, and shaped into a pointed stem and rounded stern.

molded depth -
the distance from the top of the keel to the top of the upper deck beams amidships at the gunwale.

MRGO -
Mississippi River Gulf Outlet; the deep draft waterway connecting the New Orleans Inner Harbor Navigation Canal to the Gulf of Mexico.

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net tons -
the gross tons of a vessel less deductions for certain specified non-cargo spaces resulting in a net volume capacity of 100 cu. ft. per ton. (See gross tons.)

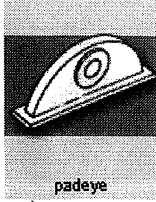
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offshore waters -
a common term for those waters which are beyond inland water limits and have the technical classification of oceans.

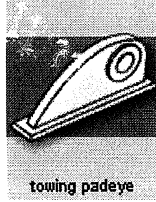
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port -
the left-hand side of a vessel when facing forward; a city having a

member containing a circular opening.



padeye

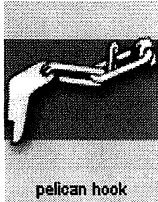


towing padeye

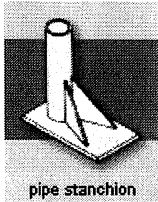
pelican hook - a hinged hook held closed by a ring and used to provide the quick release of an object which it holds.

pipe stanchion - a steel deck fitting consisting of a vertical post with angled bracket (s) on one side, welded to a doubler plate, which is welded on the deck of a vessel to restrain the movement of cargo, such as pipe.

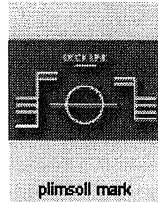
Plimsoll mark - the primary loadline mark which is a circle intersected by a horizontal line accompanied by letters indicating the authority under which the loadline is assigned.



pelican hook



pipe stanchion



plimsoll mark

R

raised rake - the rake of a barge which has sheer.

reachrod - a steel rod which connects an above deck valve handle to a below deck valve.

registered - pertaining to certain vessel data calculated under specific rules and officially documented, such as registered length.

rubrail - a protective railing on the hull of a vessel which is used for tendering.

Responsible Carrier Program - (RCP)
A vessel safety management program developed by the maritime industry through the American Waterways Operators and designed as a framework for continuously improving the industry's safety performance. AWO members use the RCP as a guide in developing company-specific safety and environmental programs that are tailored to the unique operational environments found in the barge and towing industry. The program complements and builds upon existing government regulations, requiring company safety standards that exceed those required by federal law or regulation.

S

sailing line - the preferred course for safe and efficient navigation in the channel of a waterway.

scow - another term for a deck cargo barge having a hull design of a flat bottom, square ended rakes, and usually with a deck cargo bin.

scupper - a drainage opening cut flush with the deck of a vessel through the bilge or bin wall.

seaworthy -

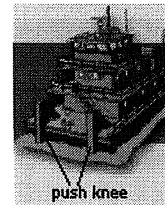
harbor for vessels; a port hole.

pv valve - pressure vacuum relief valve; a valve which automatically regulates the pressure or vacuum in a tank.

propeller - a mechanical device having radiating blades which is mounted on a revolving, power-driven shaft for the purpose of propelling a boat; also called a screw or wheel.

pushboat - a highly maneuverable, inland waters, shallow draft towboat usually designed with a square bow and towing knees which facilitate its primary method of towing which is pushing.

push knee (tow knee) - a vertical, reinforced steel structure installed on a vessel to facilitate push towing. The height of the knee allows for variance in freeboard between vessels.



push knee

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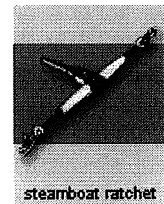
Rules of the Road - a code governing vessels as to the lights to be carried, the signals to be made, and their safe and proper navigation in order to avoid collisions. Statutes of the United States provide varying regulations for two areas of navigation. These regulations are known as Inland Navigation Rules and International Navigation Rules.

running lights - those lights required to be shown at night aboard a vessel or a tow while underway.

steamboat ratchet - a sleeve, internally threaded at the ends and with attached eye-rods, equipped with a ratchet used to turn the sleeve, thereby pulling the rods toward each other.

stem - the main vertical structural member which forms the foremost part of a boat's model bow.

stem - the after or rear end of a vessel.



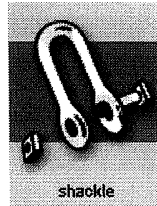
steamboat ratchet

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the reasonably staunch, sound, and fit condition describing a vessel's capability to safely carry its cargo and complete its intended voyage or use.

semi-integrated barge -
a barge which is raked at one end and boxed at the other end.

shackle -
a U-shaped metal fitting used as a connection for line, cable, or chain and which has a pin secured through its end by a nut, cotterpin, or screw threads.



sheer -
the upward curvature or angle of a vessel's deck at the bow or stem.

shifting -
the short movement or transfer of a vessel within a harbor or mooring area.

skeg (skag) -
a framed steel plate structure which acts as a fixed rudder under the stem rake of a barge; also, the after part extension of a boat's keel upon which the rudder rests.

slopesheet -
the sloped vertical steel plate forming the end of the hopper barge cargo compartment and which is part of the rake bulkhead.

SOPEP -
Shipboard Oil Pollution Emergency Plan; a U.S.C.G. approved set of guidelines for responding to a spill or potential spill of oil from all U.S. flag oil tankers of 150 gross tons and above, as mandated in Regulation 21 of Annex I of the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 (MARPOL 73/78).

spoonson -
an addition to the side of a vessel that is outside its normal hull and which provides added deck space and/or greater flotation stability.

spud -
a steel or wooden post or pile that is placed vertically through a well in the hull of a vessel and which, when lowered to the bottom of the waterway, anchors the vessel.

spudwell -
a casing which is attached to or passes through the hull of a vessel through which a spud is raised or lowered.

starboard -
the right-hand side of a vessel when facing forward.

T

tank -
an enclosed space used for holding liquids.

time charter -
a contract for the services of a vessel for a specified period of time during which the primary control and management of the vessel remain with the owner.

tow -
to push or pull vessels on a waterway; also refers to the unit comprised of the towing vessel and the vessels being towed or only the vessels being towed.

towboat -
any powered vessel which is used for towing.

"tramp" tow -
movement of barge(s) between two points by including it/them in a tow of a boat and other barges going in the same direction (contrast

stemlog -
the reinforced, vertical shell plating which connects the stem rake bottom to the rake deck of a barge.

strake -
a longitudinal or transverse row of steel hull plates.

strapping table -
a chart used to convert readings of liquid levels in the tanks of a barge to volume measurements of that liquid.

strongback -
the bar in a centerbolt manhole cover assembly which is drawn up against the manhole ring to pull the cover down tight.

superstructure -
the structural part of a boat above the main deck.

survey -
a critical examination or inspection of a vessel, cargo, or marine structure for the purpose of ascertaining desired facts and conclusions when necessary.

survey, condition -
a survey that determines in some detail the specific condition of a vessel or of cargo; usually performed at the commencement or termination of charters or voyages for the agreed mutual benefit of various parties.

survey, damage -
a survey that determines the exact extent of damages incurred and specifies repair requirements.

survey report -
the written evidence of the survey.

survey, suitability -
a survey that determines whether a vessel and its equipment are capable of adequately and safely performing an intended task.

survey, trip and tow -
a survey in which the surveyor has full responsibility for inspecting and approving the suitability of the towing vessel, its gear and its tow, the bading and lashing of the cargo, and the navigational procedures, all in relation to the trip intended.

survey, valuation -
a survey that determines the current market value and may also express replacement value.

surveyor -
a qualified marine inspector who performs surveys.

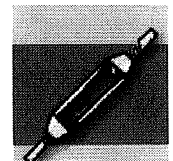
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transom -
the hull plate and its framing that form the vertical end of a box-shaped barge; also, the frame plate forming the stem of a square-ended boat.

truss -
a rigid framework of horizontal, vertical, and diagonal structural members designed to support loads and reinforce a vessel's hull.

tugboat -
a model hull towboat of relatively deep draft used primarily for pull towing and designed for navigation in open or unprotected waters.

tumbuckle -
a connecting device usually used with cable or chain and which takes up slack by rotating on its screw threads.



with "dedicated" tow). It is sometimes necessary to transfer barges being "tramped" from one boat to another to achieve the desired destination. Cost is generally less than the use of a "dedicated" boat, but control of the timing of barge movements is also less.

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U

ullage opening - a small, covered opening in the top of a cargo tank through which measurements are made to determine the level of the liquid in the tank.

U.S.C.G. - the United States Coast Guard.

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V

VCG - vertical center of gravity; an important computation used in the determination of the stability of a vessel with its cargo.

VTC - Vessel Traffic Control; a central control system used in some ports to safely direct navigation.

VRP - Vessel Response Plan; a U.S.C.G. approved set of guidelines for responding to a spill or potential spill of oil from tank vessels, including training and testing procedures, as mandated in the Oil Pollution Act of 1990.

Vessel Security Plan - (VSP) A U.S.C.G. approved set of guidelines providing for the secure operation of regulated vessels under various levels of national security warning levels, including specific protections, defenses and procedures as mandated by the Maritime Transportation Security Act of 2002.

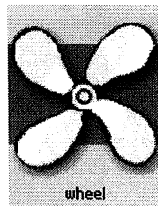
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W

watertight - of such construction or fit as to prevent the passage of water, except when structural discontinuity, physical rupture, or purposeful opening may occur.

WHL - West of Harvey Lock; used with mileage designations on the Gulf Intracoastal Waterway, Harvey Lock being mile zero.

wheel - another term for a propeller; also, a boat's steering wheel. WHL - West of Harvey Lock; used with mileage designations on the Gulf Intracoastal Waterway, Harvey Lock being mile zero.



WQIS - Water Quality Insurance Syndicate; an underwriting agency formed by various insurance companies for the purpose of insuring against losses resulting from water pollution.

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NOTE: The preceding terminology is defined as it is used in the shallow draft boat and barge industry in the United States. For complete information regarding requirements or regulations of governmental or private agencies, we recommend direct contact with those agencies.

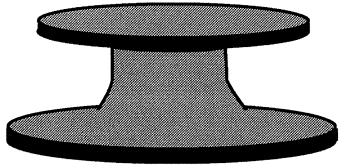


APPENDIX C

Diagrams of Deck Fittings and their Uses
(Produced by Ingram Barge Company)

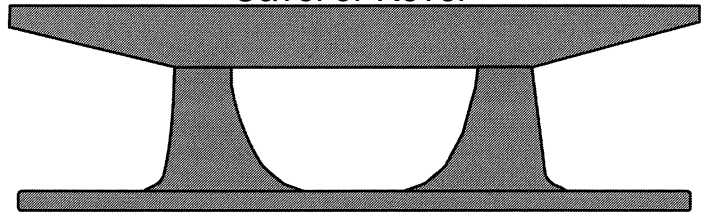
DECK FITTINGS AND THEIR USES

Spool



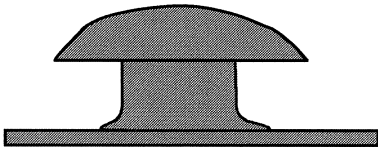
The spool is designed primarily for wire and is usually found on the head of a towing vessel.

Cavel or Kevel



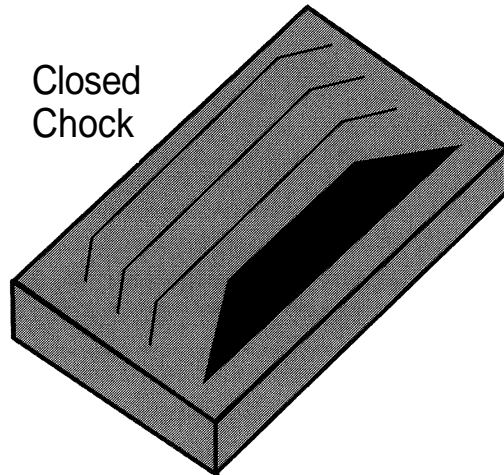
The Kevel is designed for wire or line and is found on barges, boats and docks. Use a figure "8" criss-cross fashion when using with a line.

Button



The button is designed primarily for wire and is found on the head of a towing vessels and barges.

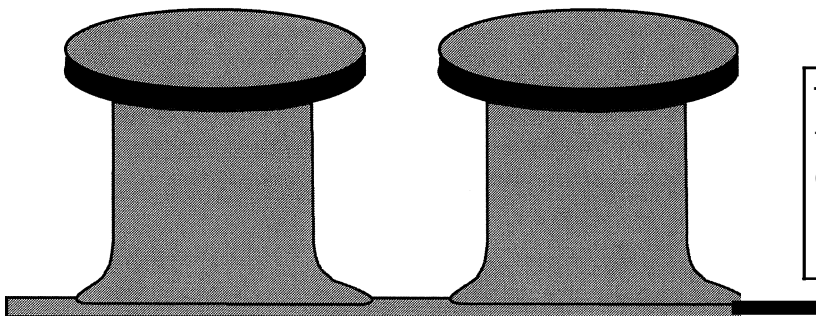
Closed Chock



The closed chock is designed for wire or line and is found on some boats and barges. Used mostly as a fair lead to hold down wires or lines.

Timberheads

p



Timberheads are designed for wire or line and are found on barges, boats and docks. Use clockwise wraps when using with a line.

APPENDIX D

Additional Diagrams and Descriptions of Vessel Features
(Produced by Eric Johansson-State University of New York)

Bulwark

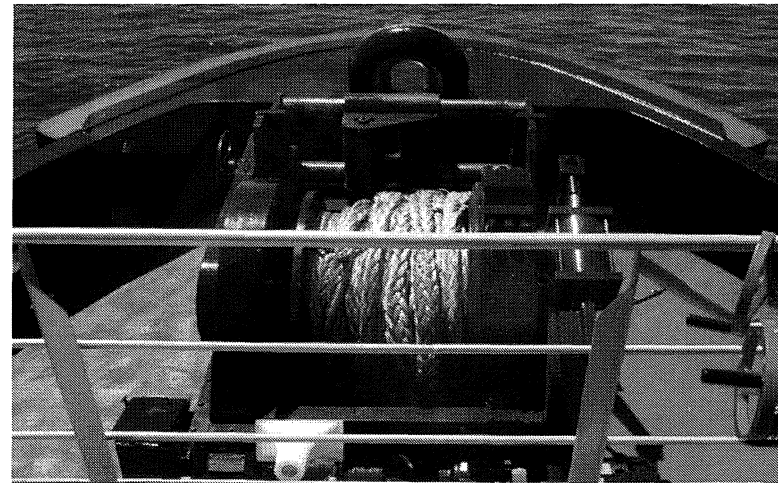
- Bulwark - A safety wall around the main deck of some boats that keeps you from slipping overboard.



- Freeing Ports - Opening to allow the egress of water off the main deck

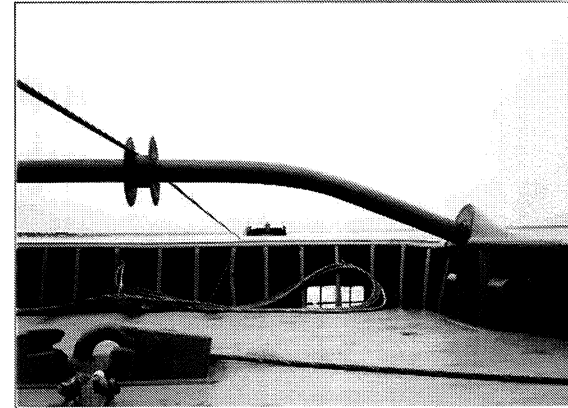
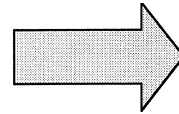
Bow Winch

- Bow Winch -
Located on the bow
and is common
among tractor tugs
and other vessel
assist tugs.

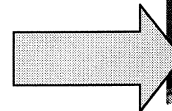


Tow Spans

- Texas Tow Bar - reduces friction for tow wires. *Texas bar has rollers*



- *Dutch bars - Similar to Texas bars sans rollers used for both wire and line with chafing gear.*



Bitts Names

