

SAIL TRAINING MANUAL

for

Programs aboard the *Abbey Road*



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PREFACE

This manual is designed to serve as an instructional reference guide during your sail training voyage with Lake Superior Tall Ships. Please study this manual carefully before joining the vessel and refer to it when aboard.

LSTS Sail Training Programs on board the *Abbey Road* are carefully organized around our mission:

- To Teach Seamanship, Personal Responsibility, Teamwork and Self Esteem, While Building Skills in Leadership and Citizenship.
- To Inspire All Generations to Be Responsible Stewards of Lake Superior.
- To Promote Awareness, Appreciation and Preservation of Lake Superior's Marine Communities and Maritime Heritage

Our trips are “Un-plugged” experiential learning voyages. Teamwork is required which fosters acceptance of others, cultivates personal responsibility and helps develop leadership skills.

Longer trips may be physically and emotionally challenging for some participants (although not dangerous). However, as controlled risks are overcome by participants they discover hidden strengths, acquire new skills and increase self-confidence.

Although it will be plainly obvious once on board, participants should recognize in advance that each person's duties consist of real responsibilities affecting the safety and welfare of the vessel and all those on board. Indifference or negligence on the part of anyone places additional burdens on shipmates.

The sea is no place for someone who is not prepared to take his/her role seriously and participate fully in the common effort. Everyone pitches in when necessary. By working together and helping out when needed, the voyage can be an unforgettable and rewarding adventure.

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OUR ORGANIZATION

The mission on board Lake Superior Tall Ships vessels is educational. All trainees will be involved in the operation of the vessel with the goal of learning about Lake Superior, how human activity impacts the lake, and how the lake has had an impact on human populations. Activities during the LSTS Sail Training Program are centered around three major topics: seamanship, stewardship, maritime heritage.

A. Seamanship

Doing hard work with limited resources in a hostile environment has led to traditions of skill, pride, craftsmanship, and conservation, all of which we lump under the term "seamanship." A mariner, whether he or she is a trainee, deckhand, mate, or captain, regards it as high praise to be called a good seaman by his or her peers. Much of the instruction you receive during your time on the *Abbey Road* is geared to developing in you the qualities of seamanship.

B. Stewardship

Environmental stewardship refers to responsible use and protection of the natural environment through conservation and sustainable practices. Lake Superior is the largest fresh water lake in the world by surface area, and contains ten percent of the Earth's fresh water. It's easy to think that pollutants dumped into the lake would be quickly diluted by 3 quadrillion gallons of water, however with a 191-year retention (the time it takes for the lake to refresh itself), it is important that we are careful not put anything into the lake that will build up and affect the eco-system and future generations.

C. Maritime Heritage

Indigenous people populated this region almost as soon as these lands were uncovered by the last glacier about 8,000 B.C. Early maritime travel on Lake Superior depended on canoes of varying sizes, even after the fur trade discovered the bounty of the North Woods. The first vessel on the lake "with sails larger than an Indian blanket" was built by a Frenchman from Madeline Island about 1731. Today thousand-foot bulk freighters carry taconite pellets from the mines in Minnesota down the lakes to the steel mills in Ohio, as well as other bulk cargos. The stories of Native Americans, Fur Traders, Sailors, Soldiers, Lighthouse Keepers, Miners, Farmers, Fisherman and many others tell us the history of the lake and the communities that line her shores.

LIFE ON A BOAT

Ashore, at the end of the day and on weekends, you can get away from your teacher, boss, classmates or co-workers, and relax at home and enjoy yourself. But on a boat the size of the *Abbey Road*, you cannot get away, except by maybe climbing into your bunk.

Twenty-four hours a day, work and recreation will happen in the same confined space with the same group of people. This calls for courtesy, cooperation and personal discipline. You must give up, for the length of the cruise, some things that you take for granted ashore. Experience has shown that a few points need to be stressed.

A. Drugs

LSTS has a “zero-tolerance” policy for illegal drugs. Use or possession of illegal drugs, including marijuana and medical marijuana, will result in immediate dismissal from any LSTS program. Absolutely no illegal drugs are permitted at any time on shore or on board.

The *Abbey Road* may be searched by the Coast Guard for illegal drugs at any time. If drugs are found aboard, the captain can lose his/her license and LSTS can lose the vessel and programs. Anyone found in possession of illegal drugs on board will be put off the boat as soon as practical. This policy is not negotiable. Due to the possible legal consequences, the captain is entitled to search a trainee’s personal belongings in any case of suspected violation.

B. Alcohol

LSTS has a “zero-tolerance” policy for underage trainees with regard to possession, consumption, or being under the influence of alcohol, including beer, any time on board or ashore. Use of alcohol will result in immediate dismissal from any LSTS training program.

C. Smoking

Smoking, vaping, chewing or tobacco use of any kind is not permitted by trainees enrolled in the sail training programs.

D. Courtesy

Courtesy is essential no matter what mental or physical state you may be in. Quietness is a virtue on board ship. Due to the watch system, some of the vessel's company may be asleep at any given time. Respect their need for quiet. Electronic equipment (i.e. ipods, radio and cd players with or without headphones, cell phones) is not allowed on board. However, musical instruments are always welcome. Helping others is always appreciated.

E. Your Space

Your bunk is your space while on board. It is important to remember that all other areas of the vessel are shared by all. Therefore, everyone must strive to contain his/her personal belongings in his/her space.

F. Cleaning

With six trainees aboard the vessel, a regimen of cleanliness must be maintained in order to keep all shared spaces livable, workable and pleasant. To this end a cleaning schedule will be devised which ensures daily attention to the vessel.

1. Galley Clean-up

The galley is cleaned after each meal, with a deep cleaning done after breakfast. Persons assigned galley duty will wash the pot, pans and dishes, empty the garbage, clean the stove, wipe down all the counters, and sweep the soles (floors).

2. Morning Chores

The deck, cockpit and below-decks area are cleaned by all crew each morning after muster. The morning clean-up consists of thoroughly cleaning each head (bathroom), sweeping and mopping the soles from bow to stern, emptying waste cans, washing the deck, wiping down the cockpit, and stowing any loose gear.

3. Field Day

At the end of each voyage, everyone on the ship pitches in on Field Day. Field Day is the thorough scrubbing of all areas of the vessel. Each watch is assigned areas to clean. Field Day generally takes two hours and can be fun as it provides a break from the normal routine, shows immediate results and is often rewarded with snacks!

Cleanliness of the vessel directly influences the health and general mood of the entire ship's company. The job may not always be the most enjoyable, but it is the most important for morale.

G. Medical Problems

The captain is the ship's medical provider and treats minor complaints. All injuries, however slight, must be reported to the captain. All prescription medicine must be given to him/her when reporting aboard. Medications may be given back, or may be kept and dispensed as needed. Professional medical advice is always available by cell phone or radio communication while out on the lake. Any serious illness or injury is referred to a shore side facility. Participants are responsible for medical costs incurred in this connection.

H. Seasickness

Trainees may experience seasickness if the weather is rough. But lots of people are not affected at all. If you do feel sick, do not worry. It may be unpleasant, but it will not cause you any long-term harm. We anchor most nights and seasickness doesn't usually last long. The important thing is to keep drinking and eating, even if it is only water and soda crackers, and to keep doing your job. We can coach you through treatments for sea sickness, including looking at the horizon, nibbling ginger, pressure point bracelets, essential oils, and motion sickness tablets and other [ways to tackle sea-sickness](#).

I. Safety

If people are careless, a vessel can be dangerous. No amount of rules and protective equipment can replace caution and common sense. LSTS staff are chosen for their experience, and their concern is to prevent injuries. Check with them, listen to their advice, and read and obey the Standing Orders.

Some aspects of safety have been mentioned elsewhere. They are summarized here for your convenience. Please study this section carefully.

1. Falls/Falling Overboard

Sailing is an activity where we are subject to continuous three-axis motion of pitch, roll and yaw. This motion is generated by the sea state, winds and passing boats. To some degree, we account for odd changes in motion automatically with our internal gyro, but it is the unexpected motions that cause problems.

Try to think about sea conditions in a proactive way. Be attuned to the size and direction of the ground swell, the superimposed wind waves on top of the swell, and the waves that are larger than normal. Get used to thinking about the way the boat is moving, the way it is heeling. Be aware at all times of the potential for motion that could cause you to lose your balance, fall and get injured, or worse, fall overboard. If you fall overboard at night and no one notices, the chances of recovery are slim. That is why we insist that you:

- Hold on to ladder rails, and face the rungs when going up or down.
- Maintain "three points of contact" when moving around on the boat.
- Use handrails on deck and below deck.
- Move on the high side of the boat when the boat is heeling.
- Sit down before you fall down.
- Do not sit on the rails or lifelines.
- Get permission before leaving the cockpit at night.
- Use safety harnesses when required.

2. Burns

An extensive third degree burn requires hospitalization - not just medical knowledge. The galley is the major danger area, the engine room second. Follow all safety instructions when working in these areas.

3. Hypothermia

A deadly hazard to persons on the water is hypothermia. Hypothermia occurs when the body loses heat faster than it can produce heat because of exposure to cold temperatures. When this occurs, the heart, the nervous system, and the body's normal functions slow and cease.

Prevention : Wear appropriate clothing when it is cold. Cotton is a poor choice because it retains water if it gets wet. Synthetic and wool fibers are better insulation and dry more quickly. Carry an extra change of clothing when boating. You may need it if the weather gets rough, or you may want to put on another layer if the cold becomes more extreme. The U.S. Coast Guard promotes using life jackets as a method of protection against hypothermia through the 50/50/50 rule: If someone is in 50 degrees Fahrenheit water for 50 minutes, he or she has a 50 percent better chance of survival wearing a lifejacket.

Symptoms: Watch for "umbles" – stumbles, mumbles, fumbles, and grumbles. There are three stages of hypothermia, and treating it in the earlier stages is far easier and safer than waiting until the situation is dire.

- Stage 1: Mild to strong shivering, goose bumps, breathing is quick and shallow, victim is unable to perform complex tasks with hands.
- Stage 2: Violent shivering; apparent lack of muscle coordination; movement is slow and labored; mild confusion; victim is pale with blue lips, ears, fingers, and toes.
- Stage 3: Shivering stops, difficulty speaking and thinking, stumbling, inability to use hands, pulse and respiration rates decrease, major organs fail, clinical death occurs.

4. Lines

Mooring lines, halyards and sheets under tension will stretch, particularly those made from synthetic material. If the line breaks, stored energy will be released as it reverts to its original length. The two ends of the line will recoil or "snap-back" towards and past the points to which they are secured. Anyone standing within the snap-back zone at either end of the line risks serious injury. Be mindful of what you and those around you are doing any time you are working with lines.

- Do not cast off a line until you understand the strain it is under.

- Be careful not to pinch fingers/hands between a line and a winch, or a cleat.
- Do not cross in front of the windlass or winches when in use.
- Do not step on a loose line. It will roll, or worse, a moving bight may pull you off your feet and into a block or over the side.

5. Miscellaneous

There are many ways that you could be injured on a boat, but staying safe is simple if you use common sense and follow the basic guidelines listed here.

- Shoes must be worn at all times while standing watch in any capacity.
- Sunburn can incapacitate a person. Always wear sunblock on exposed skin. Hats are highly recommended.
- Rings, long fingernails, loose hair, and loose shirtsleeves and shirttails can be responsible for serious injuries at sea.
- Know the location of every fire extinguisher and all safety gear on the vessel.

J. Conservation

Conservation means not wasting. In this sense, sailors have always been conservationists regarding with wonder, and sometimes contempt, the wastefulness of people ashore compared with their frugal lives as mariners. Any vessel is a miniature of the "spaceship earth." Once it leaves port, it is a closed system of non-renewable resources where one makes do with what one has or improvises.

Our irreplaceable resources at sea are PEOPLE, WATER, FUEL, FOOD, EQUIPMENT and SUPPLIES. At the outset of a cruise, there is enough to go around, plus a margin of safety, but there is none to waste. Therefore, it is vitally necessary to conserve and not waste.

We average 2-3 gallons of water per person, per day at sea. During a typical day on land, you may use up to 70 gallons! If you consciously try to be frugal with the vessel's resources, you will take a big step toward earning the right to be called a seaman.

Learning that you can rely on yourself and can do without the wastefulness of a "throwaway" society will teach you something you can use all your life, at sea and ashore. It is a lesson that is valuable in today's world.

K. Having Fun

Most manuals that describe sailing courses stress learning the subject matter and the amount of work involved. But few mention that there is also a lot of fun involved. Our programs can be difficult and demanding, but are also designed to provide opportunities for adventure, discovery, and stewardship along with the training.

SCHEDULES

A. First Day

When you first arrive to the *Abbey Road*, report to the mate in charge on deck. You will be shown where to stow your gear. When this is done, report back on deck and lend a hand wherever needed.

Normally, we will stay at the dock for the first night. The captain will give an orientation and safety briefing. After the briefing, participants will be divided into watches and begin planning the voyage.

B. Daily Routine

Once away from the dock, the boat will fall into a daily routine, which may vary slightly depending on whether we sail through the night, or anchor in a protected cove. A typical day on the *Abbey Road* may look like this:

0700	Reveille, Breakfast
0745	Muster On Deck
0800	Colors
0815	Chores – Shared by All Trainees
0900	Watch group instruction, demonstrations, and hands-on sailing lessons
1200	Lunch Underway, or Maybe While Anchored Near an Island
1300	Watch group instruction, demonstrations, and hands-on sailing lessons
1700	Anchor for the Night / Swimming / Shore Excursion
1800	Dinner
Sunset	Muster On Deck / Colors
2000	Sea stories from the captain
2100	Personal Time
2230	Lights Out

B. Rotation of Duties

On most vessels, crewmembers have jobs that do not change. Since the *Abbey Road* is a teaching vessel, and you are aboard to learn all the jobs on the vessel, your duty assignment will change nearly every time you go on watch. You will serve as helmsman, navigator, lookout, deckhand, engineer, cook, dishwasher, and swabbie many times during your cruise.

To ensure that this happens as fairly and uniformly as possible, a rotation of duties will be built into a watch schedule.

C. Watch Schedule

Sometimes, the operations of the vessel must be carried out around the clock. To accomplish this, trainees are divided into watches. The on duty watch runs the vessel, while the off duty watch might be training, assigned galley duty, or resting.

The Royal Navy ran on a traditional watch system for hundreds of years. Under that system a sailor would work 4 hours on duty and then have 4 hours off duty. To ensure a rotation around the clock the schedule includes two 2-hour “dog watches”.

Note 24-hour time is used on board ships, where midnight is 0000 (or 2400) and Noon is 1200.

	<u>Hrs</u>	<u>Time</u>	<u>Day 1</u>	<u>Day 2</u>	<u>Day 3</u>	<u>Repeats.</u>
First Watch	4	2000-0000	A	B	A	B
Middle Watch	4	0000-0400	B	A	B	A
Morning Watch	4	0400-0800	A	B	A	B
Forenoon Watch	4	0800-1200	B	A	B	A
Afternoon Watch	4	1200-1600	A	B	A	B
First Dog Watch	2	1600-1800	B	A	B	A
Last Dog Watch	2	1800-2000	A	B	A	B

In another version of a watch schedule, the daylight watches are six hours long, and night watches are four hours long.

	<u>Hrs</u>	<u>Time</u>	<u>Day 1</u>	<u>Day 2</u>	<u>Day 3</u>	<u>Repeats</u>
First Watch	4	1900-2300	A	B	A	B
Middle Watch	4	2300-0300	B	A	B	A
Morning Watch	4	0300-0700	A	B	A	B
Forenoon Watch	6	0700-1300	B	A	B	A
Afternoon Watch	6	1300-1900	A	B	A	B

Watch systems can be organized in many different ways, with the goal of making sure all the work that needs to get done is completed, and the crew get enough rest so they do not become fatigued.

We will organize the watch schedule for your trip during the orientation after you arrive, taking into account the total number of trainees, the trip itinerary, and the experience of each watch member.

DECK WATCH DUTIES

The safety of the vessel rests in the hands of the on duty deck watch during normal operations. The captain and mate are always on call, but it is the deck watch that sail the boat. They must anticipate problems and deal immediately with any situation.

It is difficult for a novice to realize how vigilant a seaman must be. The dangers that threaten a vessel are nearly always hidden and only the experienced expect them. It is thus a great temptation to become careless in routine watch responsibilities, this must be guarded against at all times.

Normally members of the on duty watch will rotate between the positions of Navigator, Helmsman, and Lookout every hour during the watch. Here are brief descriptions of the duties of each position.

A. Watch Leader

The watch leader's primary responsibility while on duty is the safety of the crew and the ship. They are to be guided in carrying out this responsibility by the standing orders, and the orders of the captain given orally. The watch leader ensures all watch standers carry out the responsibilities of their station. They are responsible for the safe navigation and conduct of the ship for the duration of his/her watch unless specifically relieved by a verbal statement from the captain or mate.

B. Navigator

The navigator will lay out the ship's course on the chart before getting underway and review it with the watch leader. They will maintain the navigation log, and maintain a proper navigation plot, constantly adhering to the Six Rules of Dead Reckoning. The navigator will promptly inform the watch leader of any hazards to safe navigation along the course, and advise of any upcoming waypoints, or course changes needed to reach the destination.

C. Lookout

The vigilance of the lookout is the vessel's first line of defense. Everything the lookout sees or hears is reported to the watch leader. The lookout will report the bearing and range of any vessel within sight that could possibly be a hazard, any object in the water, all aids to navigation, and any underwater obstructions or shallow water. Lookouts may not perform other duties or engage in conversation. During times in darkness or in restricted visibility, a lookout may be stationed at the bow. In bad weather, a second lookout may be stationed on the aft deck.

D. Helmsman

The helmsman will steer the course as given to them and continuously monitor sail trim. They will inform the watch leader and navigator if the given course cannot be maintained. They will maintain a listening watch on the VHF radio using the remote speaker and alert the watch leader if *Abbey Road* is hailed, or if a distress call is heard. Helmsmanship is the mark of a good seaman, and inattention to the helm can cause serious trouble--even disaster in the case of an unintentional jibe. The Helmsmen must therefore pay strict attention to their job at all times.

F. Boat Checks

An hourly check of the vessel is made when underway, and after meals when at anchor, or in port. The purpose of these checks is to detect - and stop - trouble before it starts. This is one of the most important safety measures on board any vessel, and boat checks should be carried out carefully, thoroughly, and documented in the ship's log, report any problems to the captain or mate.

1. On Deck:

- Check for loose gear, chafe of lines or sails, and uncoiled lines.
- In bad weather, check for open vents, portholes and hatches.
- Check the running lights if sailing at night.
- At anchor, check anchor bearings, and the depth sounder.
- Alongside the dock, check lines and fenders.

2. Below:

- Check bilges and engine room.
- Turn off unnecessary lights and fans.
- Check for smoke or smell of fire.
- Check for leaking water taps or heads.
- Check for loose gear or items improperly stowed.

G. Relief of Watches

The on-coming watch must be on deck, ready to relieve the off-going watch, 10 minutes ahead of time. This means that the on-coming watch must be called at least 30 minutes in advance of the watch change.

Each watch stander must be dressed for the weather, have a knife, a harness, and at night, a flashlight or headlamp with a red filter. Relieved watch standers may not go below until all deck personnel of both watches are present and a detailed "handover" has been carried out.

Each oncoming watch member will obtain a face-to-face verbal handover of information pertinent to the watch position being relieved.

The watch leader assumes full responsibility for the vessel when the watch is relieved. The watch leader will not relieve the off-going watch until all members of the on-coming deck watch understand:

- The night orders
- The vessel's position, course, plans, and any hazards that may be in the area
- Point of sail and sail combination in use
- Anticipated sighting of land, aids to navigation, or hazards
- Predicted weather
- Any problems encountered during the previous watch
- Conditions on deck and below: what lights are displayed, any loose gear, malfunctioning equipment or problems

Formally relieve the watch by stating "I relieve you", and receiving the acknowledgment "I stand relieved."

Once you relieve a watch, you assume full responsibility for anything that is wrong (or right). Do not relieve the off-going watch until you are satisfied. Call the captain if in doubt.

The watch leader shall be relieved LAST. Watch relief may occur only if topsides are shipshape-- clean and orderly.

H. Standing Orders

The captain cannot always supervise the vessel personally, so some of his/her responsibilities are delegated to the watch leader via Standing Orders that state his/her policies. These standing orders are kept in the front of the navigation log book. A sample of standing orders are included in the appendix.

I. Captain's Night Orders

At night the standing orders are supplemented by the Captain's Night Orders. Watch leaders are responsible for reading and carrying out the night orders for their watch. Each on-coming watch leader will read and sign the night orders before taking over the watch.

During the day, the captain's instructions are passed to the watch leader in person.

GALLEY DUTY

The health and morale of the vessel's company depend on the people working in the galley. All trainees will lend a hand on Galley Duty to prepare and serve meals, wash dishes and general cleaning. The watch schedule will indicate when participants are assigned to galley duty.

A. Cooking

As part of their galley duty, trainees will learn quickly that cooking on a boat is much different than cooking at home. What you have onboard is what you've got. Which means you can't just run to the supermarket to pick up something for dinner. You will also notice that the galley on the *Abbey Road* is much smaller than your kitchen at home, space is limited, and boat is always moving. Sometimes the boat moves a little, and sometimes a lot, so the motion of the boat may affect what you can prepare for the upcoming meal.

Cooks on a boat need to plan ahead, be flexible to match meals with activities, and be innovative.

Menus for the trip are prepared in advance and all the food for the voyage will come on board when you arrive. In the summer, the daily caloric needs per person range from 2,800 to 4,000 calories. Teenagers will generally require more calories than adults. Menus are to be planned so that extra food is available in case of unforeseen circumstances. When the *Abbey Road* is sailing during the day, we'll want meals that are fast and easy to prepare, but the evening meals are usually a little more elaborate.

You can expect meals on board to be a lot tastier than the traditional sailor's diet of hard tack and salt pork. As a cook onboard the *Abbey Road*, you will prepare meals that include a good mix of protein, carbohydrates, fruits, vegetables, dairy products, fats, and water.

The captain and the mate will be available to give you direction and pointers.

B. Provisioning/Stowage

It's amazing how quickly things get 'misplaced' or lost on a boat. You know you saw a can of spam come onboard with the other provisions, but where did it get stowed? (Ok, you might not spend a lot of time searching for that) One trainee will be designated to be the Quartermaster. Their job will be to stow the provisions and keep a list of what is put where. Using the menu for the trip, the Quartermaster will do their best to stow items that will be needed first near the top or front of the fridge or lockers.

C. Meal Service

Part of galley duty is to set the table. Meals are served family style in the saloon, or in the cockpit. It is absolutely essential that meals be served on time. The entire schedule of watches, work and classes depends on this. If, for some reason, a meal must be late, the captain should be notified in advance.

Everyone must wear a shirt at the table (no bathing suits), and food handlers must wear shirts and shoes in the galley.

D. Dishwashing

The galley duty does the dishes, pot and pans used in cooking, and cleans the galley after meals, but all trainees should assist in removing serving dishes and pitchers from the table, and are responsible for scraping food scraps from their own dishes into the trash and stacking them for the dishwasher.

Dishes must be washed in a sink of hot water with a squirt of detergent, rinsed with fresh water, and then sanitized in a sink of water to which a half cap of bleach has been added. Care should be taken not to run water continuously in the sink when doing the dishes to conserve water. Dishes, pots, pans and utensils should then be stacked carefully in drying racks.

E Galley Safety

The Galley can be one of the most dangerous places on the vessel. Serious burns cannot be treated effectively aboard, and pots of boiling liquids, or hot, heavy baking dishes pose great hazards on a moving vessel. The stove itself, if improperly handled, is a fire hazard. Observe the following precautions:

- No one may operate the stove, oven or grill without being checked out first.
- Learn the location of all extinguishers, and the propane fuel cutoff.
- There should never be anything near the stove that is readily flammable like towels, curtains, loose clothing.
- As in any kitchen, a grease fire is always a risk. If a fire of any kind starts in a pan, turn off the burner to stop the flow of fuel, and then extinguish the fire by putting a cover on the pan, smothering the fire with baking soda, or with a fire blanket.
- **Do not pour water on a grease fire!**
- Remember, the best prevention for a galley fire is vigilance on the part of the cook.
- Do not leave knives and choppers where they can slide or fall, and do not reach into knife drawers without looking first. You could lose a finger.

- Always secure cooking pots on the stove with fiddles and be very cautious moving them.
- In rough weather, guard against hot spills by using partially filled pots.
- Keep cabin sole and working areas clean; the cabin sole can get slippery easily!
- Shoes and shirts are required at all times!
- Tie up long hair in a scarf or a band.

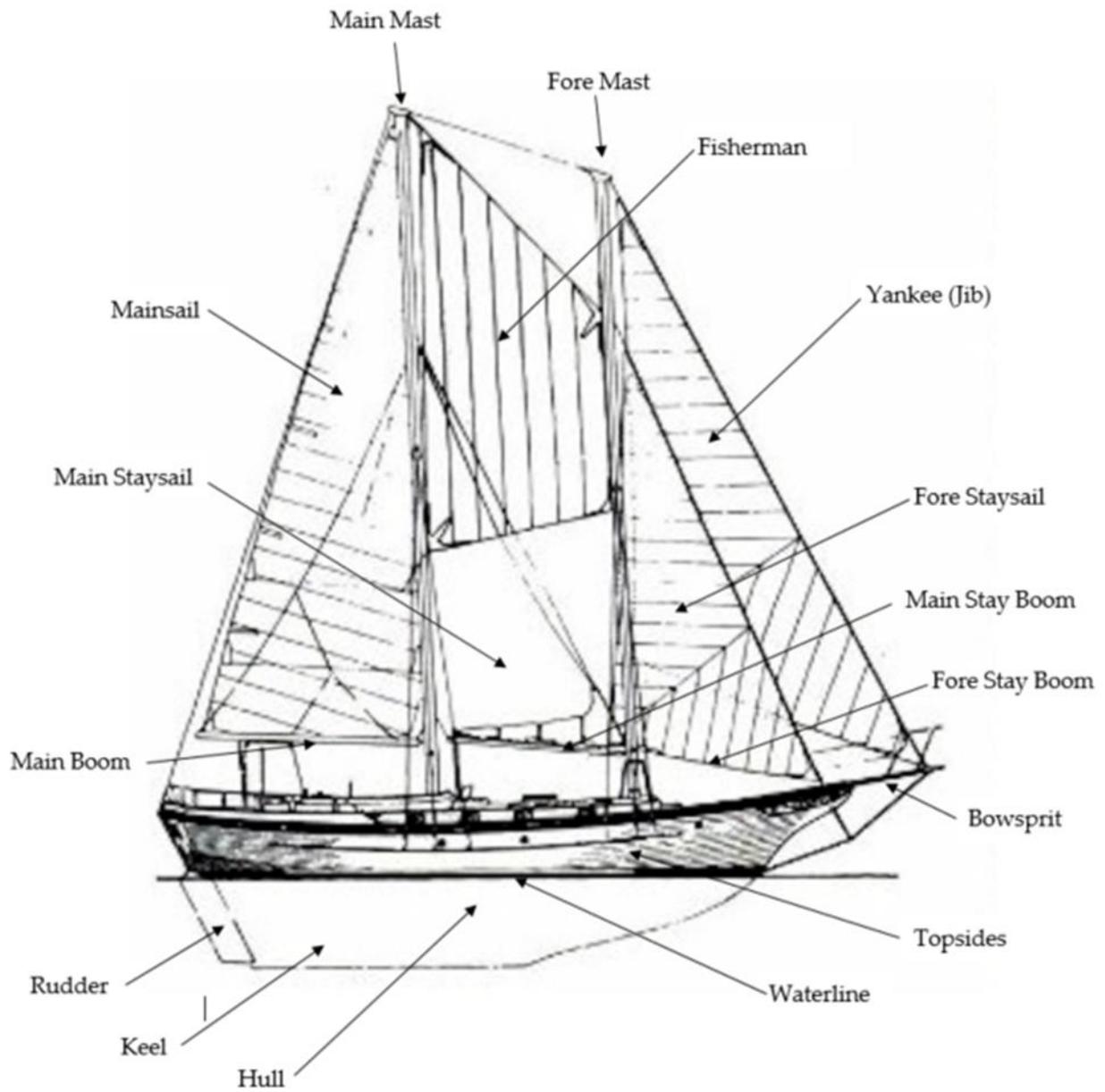
F. Food Safety

Thousands of bacteria are naturally present in our environment—some beneficial, some deadly. Bacteria in foods can cause nausea, vomiting, diarrhea, fever, and worse, but foodborne illness can be prevented. Proper storage, processing, and cooking of food reduces and destroys bacteria.

- Anyone using the head must wash their hands thoroughly before returning to the galley!
- Wash your hands and clean all surfaces often. Clean and sanitize everything used in food preparation prior to its use.
- Counters and tables must be scrubbed after each meal.
- When purchasing and storing food, separate raw meats, poultry, and seafood from other foods. The same goes for food preparation. Do not process vegetables on the same cutting board you used for meat unless it has been thoroughly washed.
- Bacteria multiply rapidly from 40°F–140°F, so make sure foods are stored quickly and at the correct temperatures.
- Cook foods, especially meats, to the proper temperatures.
- Wash all fruits and vegetables that are to be eaten raw.
- Pure drinking water is essential. It should be available in clean, tightly covered containers. You must also be sure that it is dispensed in a sanitary manner and that each person is drinking from his or her own cup or water bottle.

SEAMANSHIP

Abbey Road - Sail Plan



A. Definitions of Sailing Terms

Aft: In, rear, or toward the stern or rear end of the boat.'

Abeam: The direction at right angles to the keel of the boat.

Astern: Behind a boat, or in a backward direction.

Bow: The forward or front end of a vessel.

Falling Off (bearing off or heading down): Altering the course of the vessel away from the direction of the wind.

Forward: Toward the bow.

Lee: Pertaining to the part or side toward which the wind blows, or which the wind blows, or which is sheltered from the wind.

Leeward: "loo-ard"; toward the lee side; away from the wind. Downwind

Luff: The forward or entering edge of a sail.

Luffing: The quivering of the luff when sailing almost directly into the wind.

Heading Up: Altering the course of the vessel toward the direction of the wind.

Port: The left side of a vessel looking toward the bow.

Quarter: That part of a vessel lying within 45 degrees from the stern, starboard or port quarter, depending whether after right or left corner is referred to.

Running Rigging: All the working Dacron rigging including:

Halyards: Halyards are the lines used to raise the sails. Halyards are prefixed with the name of the sail it is controlling (e.g. main halyard)

Sheets: The word sheet refers to any line used to control the trim (in or out) of a sail. The word sheet is prefixed with the name of the sail it is controlling (e.g. mainsheet).

Standing Rigging: All the stationary wire rigging, i.e., stays and shrouds.

Starboard: The right side of a vessel, looking forward.

Stern: The after part or back end of a vessel.

Windward: the direction from which the wind is blowing; also called Weather side.

B. Linehandling

1. Useful Knots

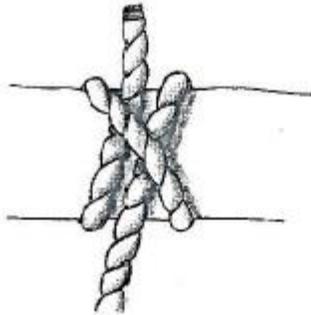
It is important on a vessel when knots are needed that all trainees be able to tie them quickly and correctly.

The following knots and hitches are commonly used on board: Bowline, Clove Hitch, Figure Eight, Reef (Square) Knot, Sheet Bend, Rolling Hitch, Round Turn and Two Half Hitches, and Cleat Hitch.



Bowline

A most useful knot, the bowline will not slip or jam and become difficult to untie. Bowlines are used wherever a secure loop is needed in the end of the line, such as tying a boat to a ring in a wharf, securing a line to an anchor quickly, or securing two hawsers together.



Clove Hitch

Quick and easy to tie, the clove hitch is used for securing to any cylindrical object such as a post, bollard or spar and is commonly used in dock lines as a temporary mooring, or hitching vendors to a rail. It must not be considered a permanent fastening as it will loosen and slip if subject to intermittent pulls in different direction.

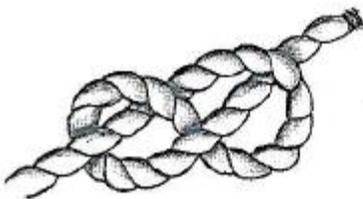
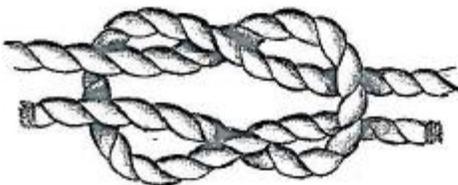


Figure Eight Knot

As its name implies, a figure eight shaped knot is formed in the bitter end of a line. This becomes a stopper knot, which prevents lines, such as sheets and halyards from running out accidentally through a block.



Reef Knot

One of the commonest knots, a reef knot is tied in lines of the same diameter. "Right over left and under; left over right and under" will prevent your tying the treacherous "granny knot" which looks like a reef but will jam more easily. Used in tying light lines, such as awning straps, reef nettles, cord on packages it is also known as the square knot.



Sheet Bend

Used for tying two lines together, the sheet bend can be used for lines of different diameters. When connecting hawsers for towing, the free ends of the lines should be stopped down with twine for security. The sheet bend will not jam after being subjected to heavy strain and is tied just like the bowline, except it employs two different lines instead of one.



A Rolling Hitch

This knot is used to bend a line to a spar or rope. Make the turns as illustrated then push them together tightly and take the strain on the end with the arrow.

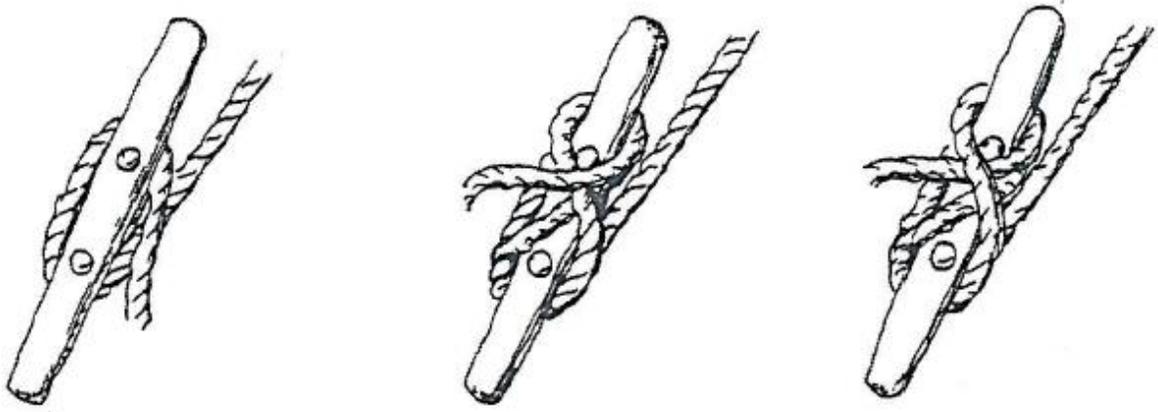


A Round Turn and Two Half Hitches

Used for making a line fast to a ring, stanchion, bollard etc. The knot is simply a round turn around the object and a clove hitch around the line itself.

Cleat Hitch

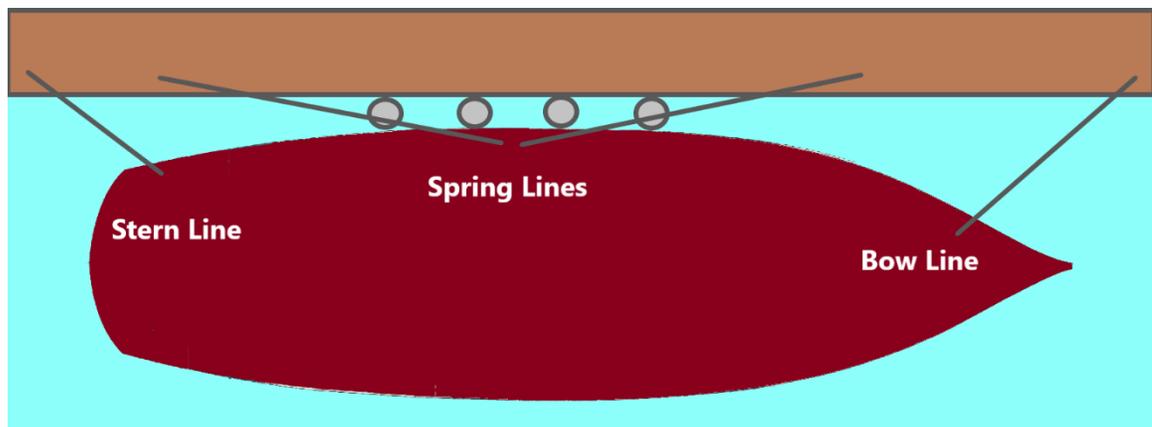
The Cleat Hitch is the best way to secure a dock line, halyard, sheet or keep other running rigging from running. It is a quick and easy to tie, and also easy to untie.



This cleat hitch starts with a turn around the base of the cleat, then a figure eight under and across the “ears” (aka “horns”), and then lock it in place with a half hitch.

2. Docklines

The diagram below shows positions for mooring lines at a dock. The bow and stern lines keep the boat next to the dock, the forward and aft spring lines keep it from surging forward or aft. Use fenders to protect the topsides from chafe. NEVER put hands or feet between the dock or pilings and the boat, use a fender instead.



3. Terms

The terms used in handling docklines are as follows:

Put Out: Use heaving line to get dock line from vessel to dock.

Take In: Bring line back aboard.

Slack: Ease out a line to release any tension.

Surge: Ease out a line but maintain some tension.

Check: Hold a line, but not to the breaking point; let the line slip as necessary.

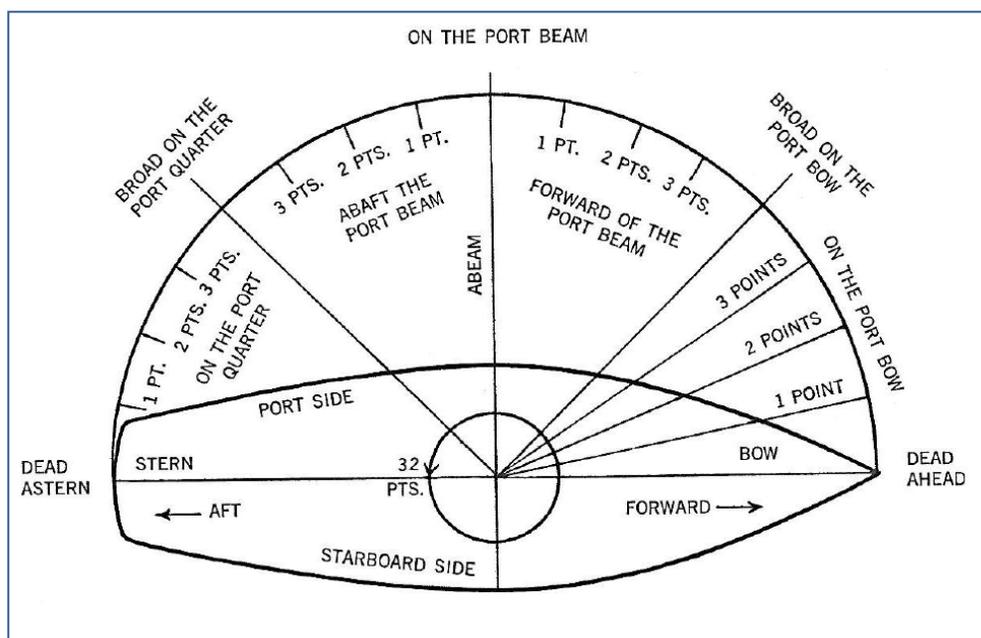
Hold: Take enough turns so that the line will not give.

Cast Off: Throw off the line from over the bollards or cleats on the dock.

C. Directional Terms

Using the proper directional terms is essential for a lookout to report accurately any object – another ship, a rock, a swimmer etc. – as it relates to your ship. You will also need to give your best estimate for distance off to the captain or whomever is the watch leader. For example, you report that “there is a small sailing dinghy broad on the starboard bow about half a mile off”. This is helpful because it identifies the object, the direction and the distance which the captain needs to know to make the right decision.

The “point” system, as illustrated, is an old one and sometimes confusing. It may help to note that each point is eleven and a quarter degrees (11.25°); hence four points is 45° and thirty-two points make a circle.



D. Wind Direction

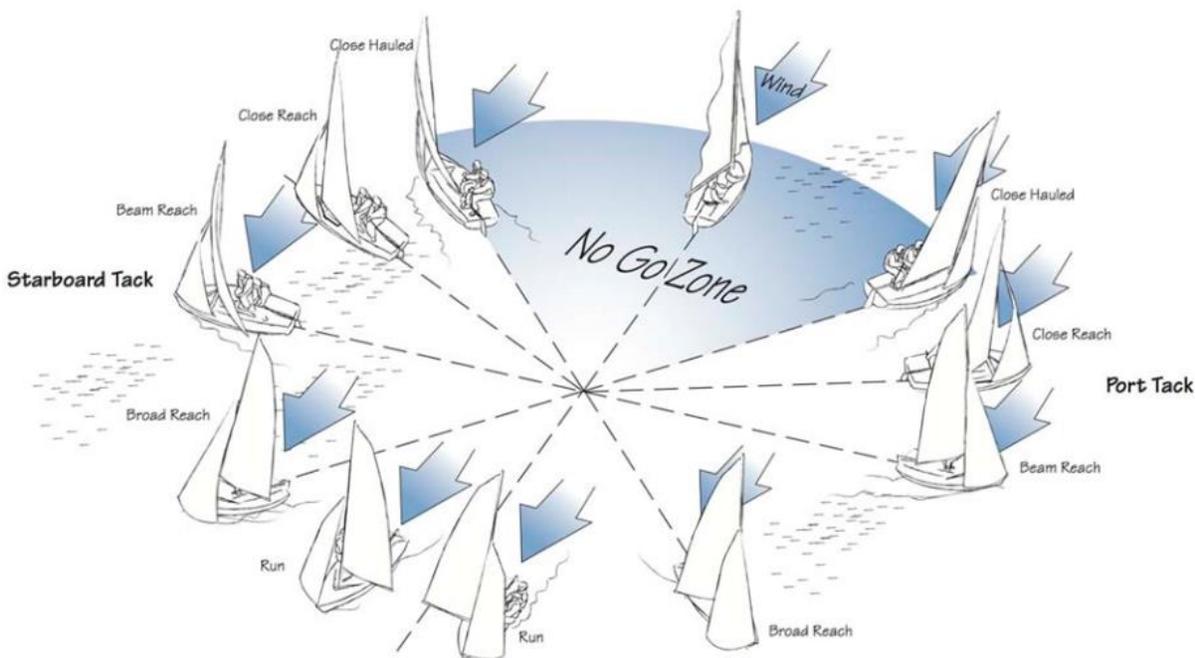
Wind on the sails can push – and even pull – the ship through the water. The wind direction determines how to position the sails to keep the boat moving forward. Trainees need to know where the wind is coming from and the wind angle relative to their boat for sail-trim purposes.

The *Abbey Road* has electronic sailing instruments that indicate the wind speed and direction, but trainees also need to learn how to feel the wind on their face, and read the wind on the water.

Once you know the wind direction, you can trim the sails for the course you want to travel. In the simplest form of sailing, a boat and its sails can be pushed "downwind," with the wind coming over the stern. But keep in mind that if you sail downwind, you will need to work your way back upwind to return to your starting place.

E. Points of Sail and Sail Trim

Sailors divide the wind circle into six sections. The No-Go zone, Close-Hauled, Close Reach, Beam Reach, Broad Reach and Running.



- The **No-Go Zone** is roughly a 90° area that is too close to the wind to sail in effectively, but it is possible to sail on either side of the zone and zigzag your way to windward.
- **Upwind sailing** is sailing toward the direction from which the wind is blowing. It includes two points of sail: **Close-Hauled** and **Close Reaching**.
- Sailing across the wind is called **Beam Reaching**.
- **Downwind sailing** refers to sailing in the direction to which the wind is blowing. It includes both **Broad Reaching** and **Running**.

The best trim for a sail is generally just slightly in from the angle at which it first begins to luff. Where more than one sail is involved, it is important that all sails are trimmed so that the sails work well together. Usually this is done by trimming the forward sails first then working aft.

F. Setting Sails

Large sails must be kept under control as much as possible to prevent damage from chafe and luffing. This means that proper trimming and careful steering are essential. During the setting and striking of a sail it inevitably will flog about. This can be minimized a) by making careful preparations before commencing to hoist or lower the sail to ensure that it is accomplished as quickly as possible, and b) by "blanketing" the sail (i.e., hoisting or lowering it behind [to leeward] of another sail).

G. Tacking/Coming About

This maneuver is done by altering course so that the bow crosses through the wind and the sails fill on the other side. The *Abbey Road* is not particularly close winded vessels (she tacks through 110 degrees). As a large and heavy vessel, it is sometimes necessary to back the headsail to help get the bow through the wind. Once the tack is complete, the backed sail is brought over.

H. Jibing

Jibing is altering course so that the stern passes through the wind and the sails fill from the other side. The jibe actually takes place with the vessel dead before the wind when the sails cross over. It is important to maintain control of all sails, especially the main. This is done by sheeting the main in tight as it jibes, then letting it out quickly. (sometimes spelled "gybe")

I. Heaving To

Heaving to means to stop the vessel and maintain its position by setting the sails and helm in opposition. In general, the head sails are backed, reducing the forward motion and the helm is lashed to keep the boat heading up. On board *Abbey Road*, the fisherman is lowered. The main is sheeted tight, the jib and

staysails are backed, and the helm is lashed hard over. As the pressure on her backed sails heads her down, the drive of the main and the helm heads her up again. As wind strengths vary, sail combinations are adjusted to achieve the correct balance.

J. Sail Combinations

Decisions on how much sail and which particular sails to set depend upon wind conditions and speed desired. The size and location of each sail must be taken into account. In addition to having an appropriate amount of sail set, the sail plan should be balanced.

For example, on a beam reach in a 20 knot breeze, with all fore and aft sail set, the Abbey Road's speed may approach eight or nine knots. Thereafter, sail is reduced to avoid undue strain on the vessel, or potentially dangerous knockdowns. Which sails are struck, and in what order, depends upon the specific circumstances. There are many ways to alter the vessels' sail plans while still keeping them balanced, and different captains have their own preferences.

Generally, we reduce sail in the following order:

- Fisherman struck
- Main reefed
- Jib struck
- Second reef in Main
- Main staysail struck

While it is easy to imagine why it might be dangerous to have too much sail set, sometimes too little sail set can also cause problems. In rough seas, without enough sail set, the vessel may roll excessively which also can cause undue strain on both the vessel and the crew.

It should be remembered that the sails are set and struck according to the particular conditions. The captain must constantly evaluate and assess the strength and direction of the wind, and what forces he or she would like to apply to the vessel through the sails.

Although many vessels have very similar sailing characteristics, they are not identical, and similar weather conditions may call for different actions aboard each vessel. It is therefore not possible to memorize an order in which sails are set and struck, but rather the trainee must consider the effect desired, the size and location of the sails, and the forces involved.

K. Helmsmanship

Steering is not difficult once you get the hang of it. Most beginners over steer, i.e., turn the wheel too far in either direction. A helmsman is considered competent when he/she is able to steer the vessel within 5 degrees of the desired course for an extended period without letting go a spoke.

Helm orders used in maneuvering have specific, universally understood meanings. Whenever steering according to helm orders, you must keep in mind the rudder's position at all times.

All orders given by the watch leaders are repeated twice--once when received, and again when complied with. This avoids the chance of misunderstanding or of errors being passed on. Note compass courses are phrased in digits, e.g. "three, two, zero".

Example: Watch Leader: "Come right to 320."
Helmsman: "Right to 320."
Helmsman: Steady on 320", (when vessel is steady on 320).
Watch Leader: "Very well."

A similar procedure is followed on relieving the helm.

Example: On-coming helmsman: "I am ready to relieve the helm."
Off-going helmsman: "The course is 320."
On-coming helmsman: "Course is 320."
Off-going helmsman: (to watch leader, after being relieved):
"I have been relieved. The course is 320."

Common Helm Orders:

"Come Up": Head closer to the wind.

"Fall Off": Head further away from the wind.

"Full and by": Steer as near the wind as possible while keeping the sails full and making way. This requires much skill and judgement from the helmsman.

"Steady as she goes": Note the heading you are on right now, and steady the vessel on it.

"Hard right (or left)": Turn the wheel all the way in the desired direction.

"Left (or right) easy": Turn the wheel enough to cause the vessel to swing slowly in the desired direction.

"What's your head?": What is the compass reading right now?

"What's your course?": What course are you supposed to be steering?

EMERGENCY PROCEDURES

The three principal emergency situations we are most concerned about are: Man Overboard, Fire, and Abandon Ship. The Ships Navigation Log includes Emergency Check Off Lists to be used as guidelines for action to be taken in an emergency, they are also included in the appendix of this manual. It is expected that each watch leader will carry out a plan of immediate action, taking into account prevailing circumstances, and will instruct his/her watch what to do.

A. General Comments

- Emergency procedures should be started immediately by the watch on deck.
- In general, all hands should go to their emergency stations. If someone is there already, help him/her until the watch leader or the captain reassigns you.
- DO NOT PANIC AND KEEP QUIET. Remember, the lives of all depend on you and your ability to hear and follow orders promptly and efficiently.

B. Emergency Station Bill

The Emergency Station Bill organizes everyone on board for various emergency activities. You should memorize your assignments the first night on board.

Drills are held periodically, and walk-through drills are held the first day. Drills are always unannounced and may be at night. You are always to assume that it is a real emergency. The watch leader in charge remains in charge until officially relieved by the captain.

An example of a Station Bill is in the appendix.

C. Emergency Equipment

The *Abbey Road* is fitted with all the emergency and safety equipment required by the US Coast Guard, and then some. Trainees will get a safety orientation on the first day that includes basic instruction on the location and operation of safety gear. A list of all equipment is included in the appendix.

APPENDIX I - ABBEY ROAD SPECIFICATIONS



Year Built: 1989

Designer: William Garden

Builder: Bluewater Yacht Builders Ltd., Taipei, Taiwan, R.O.C.

Model: Vagabond 52 Staysail Schooner

LOA: 57' 00" **LOD:** 52'00" **LWL:** 41'00" **Beam:** 13'11" **Draft:** 6' 6"

Displacement: 50,000 lbs **Ballast:** 19600 lbs **Tonnage:** 38 Gross, 34 Net

Sail Area: up to 2,400 sq ft

Working Jib, Fore Staysail, Fisherman, Main Staysail, and Furl in Boom Mainsail

Engine: Cummins Mercruiser, 2-liter displacement, 150 hp (New 2011)

Generator: Cummins Onan

Tanks: Diesel 4 @ 50 gallons, Water 3 @ 75 gallons, Waste 2 @ 50 gallons

Accommodations: 3 Double Staterooms with 6 Berths, 2 Heads and a Bathtub.

Can sleep 6 to 11 crew (depending on how friendly they are).

APPENDIX II – STANDING ORDERS

For Safety

The watch leader is responsible for:

- Knowing the emergency procedures and signals for Man Overboard, Fire, Collision and Abandoning Ship; and for training the crew on his/her watch in their duties according to the Watch List and Station Bill.
- Keeping track of all persons on deck during darkness and heavy weather. Rig lifelines, require harnesses as necessary.
- Ensuring all watch members are wearing PFD/harnesses when underway, and that they clip in to the jackline when working on deck in restricted visibility and heavy weather.
- Ensuring that a thorough Boat Check is done every hour (on the half-hour) and logged.
- Posting a second lookout and maintaining a radar watch whenever visibility is less than three (3) miles.
- Showing proper navigation lights and/or day shapes, as well as sounding appropriate signals.
- Depending on the size of the crew, the watch leader may also be the helmsman.

For Navigation

The navigator is responsible for:

- Making entries in the navigation log every half hour with:
 - Position and method
 - Course steered
 - Speed
 - ETA to next ATON, waypoint or course change
 - Sails set and tack, motoring, or motor sailing
 - Weather - barometric pressure, wind direction and speed, cloud comments, sea direction and height
- Plotting the ship's position on the chart at least every half hour by the best means available.
- Promptly informing the watch leader of any hazard to safe navigation
- The navigator will not change or alter the DR course based on new data, but will establish a TRACK as a separate record of the ship's progress based on fixes.

STANDING ORDERS

Lookout

The lookout is responsible for:

- Reporting to the watch leader:
 - Any vessel within sight that could possibly be a hazard.
 - Any object in the water.
 - All aids to navigation within sight.
 - Underwater obstructions and shallow water.
- Giving the range and relative bearing of the objects being reported using degrees relative and yards or nautical miles.
- Reporting all persons or objects falling overboard and maintain eye contact and pointing at said objects or persons and give continuous reports of their positions to the watch leader.
- Wearing a life jacket at all times and will wear a harness in bad weather or during darkness.
- Having no other duties and will not engage in conversation not related to ship's operation.

At all times in darkness or in restricted visibility, at least one lookout is stationed in the bow. In bad weather, a second lookout may be stationed on the aft deck.

When Underway

The watch leader will notify the master if:

- In doubt as to the safe way to proceed.
- In doubt about the course, work ordered, or proper course of action.
- A reduction of sail is deemed prudent or desirable. The watch leader is to take in sail on their own initiative should the situation be urgent.
- An equipment failure occurs.
- Visibility falls below three (3) miles.
- True wind shifts by two points or more (22½ degrees).
- Wind speed changes +/- 5kts or 1 Beaufort Force.
- A course change of more than 10 degrees is necessary.
- There is evidence of adverse weather (i.e. approaching squall, etc.).
- Any vessel will approach within three (3) miles (Do not wait until it has reached three miles).
- The main engine is to be started/stopped.
- Radio contact is made on VHF or SSB.
- **WHENEVER YOU ARE IN DOUBT.**

If you are questioning, a doubt assumes to exist. Wake the captain.
You will never be reprimanded for doing so.

APPENDIX III - STATION BILL

Abbey Road Station Bill

AS OF:

FIRE & EMERGENCY ALARM A continuous blast of the vessel's whistle for a period of not less than 10 seconds, and/or the continuous ringing of the ship's bell for not less than 10 seconds.

MAN OVERBOARD ALARM Sound the letter O (---) at least 3 times on the whistle or ship's bell

ABANDON SHIP ALARM Seven short blasts, followed by one long blast, of the vessel's whistle, and/or a comparable signal on the ship's bell.

OR BY THE CRY "FIRE!"; "MAN OVERBOARD!"; "COLLISION"; "ABANDON SHIP"

CREW	FIRE	M.O.B	COLLISION/FLOOD	ABANDON SHIP
(1) Master	In Command Account For All Persons	In Command Account For All Persons	In Command Account For All Persons	In Command Account For All Persons
(2) Mate	Evacuate Below Decks Fire Team Leader	Sail Handling Team Leader	Damage Control Leader	Evacuate Below Decks
(3) Navigator	Communications Get Abandon Ship Items Ready	Communications	Communications Get Abandon Ship Items Ready	Communications Get Abandon Ship Items
(4) Helmsman	Maneuver For Fire Shut Down Engine If Ordered	Maneuver As Ordered	Maneuver As Ordered	Maneuver As Ordered
(5) Lookout	Secure Propane, Secure ER Vents Get Deck Wash Hose Out	Lead Spotter	Secure Galley, Get Medical Supplies Damage Control Team	Secure Galley, Get Food/Supplies
(6) Deckhand	Get Fire Extinguishers Close Hatches, Ports, Doors Secure Galley	Launch Life Sling Sail Handling Assist Spotter	Get PFDs Sail Handling Damage Control Team	Get PFDs, Launch Small Boat
(7) Deckhand	Get Fire Extinguishers Close Hatches, Ports, Doors Secure Fuel And Electric	Sail Handling Assist Spotter Rig Ladder	Get PFDs Sail Handling Damage Control Team	Get PFDs, Launch Small Boat
(8) Deckhand	Get Fire Extinguishers Close Hatches, Ports, Doors Medical As Needed	Sail Handling Assist Spotter Get Medical Kit And Blankets	Get PFDs Sail Handling Medical As Needed	Get PFDs Get Medical Kits

Abandon Ship Items: EPIRB, Portable VHF Radio, Flares and Emergency Signaling Devices, Portable Lights, First Aid Kit, Portable GPS, Charts, Handheld Compass, Knife, Three Dock Lines, Emergency Provisions, Fresh Water

APPENDIX IV - EMERGENCY CHECKOFF LISTS

FIRE AT SEA

- When you first board the vessel, the captain and crew will help you:
 - Identify all the escape routes from the interior; companionway, large hatch in mid-cabin, hatches in each cabin, and forward head hatch.
 - Identify the location of all fire extinguishers, and other firefighting equipment, and describe their use.
- Anyone discovering the presence of smoke or fire is to shout "FIRE!" and confirm that other crew have received the alarm.
- If the fire is small, and you feel confident in extinguishing it
 - Immediately turn off the battery switches, propane or fuel lines, depending on the type of fire. Securing the source of a fire may be the best way to control it.
 - Select the appropriate extinguisher and apply it before the fire gets out of control.
 - For fire on the galley stove, put a cover on the pan, and/or extinguish with baking soda or a fire blanket.
 - For flammable liquids, grease or electrical fires use dry chemical portable fire extinguishers at the base of the flames.
 - For wood, paper, cushions, etc. use water by bucket or deck wash hose.
 - For an engine room fire, shut off fuel at emergency fuel shut off. Close the engine room door and plug ventilators. Using the Fire Port, deploy contents of fire extinguisher into the engine compartment.
- Beware of toxic fumes that may be emitted from some burning materials, stay low to avoid smoke inside the boat.
- If the fire cannot be quickly extinguished, ensure that all crew are evacuated from the interior, close all cabin doors and openings into the vessel to starve the fire of air.
- The helmsman will maneuver vessel to minimize the effect of wind on the fire.
- The navigator will contact the USCG giving the ship's position, description of vessel, number of persons aboard and nature of the emergency.
- Once a fire is extinguished, a fire watch will be posted to respond in the event of reignition.
- If unable to control fire, the navigator will notify USCG and other vessels in vicinity by VHF radio. Make preparations to abandon ship.

MAN OVERBOARD

- When any member of the crew or passenger determines that someone has fallen overboard, that person shall sound the alarm by shouting “MAN OVERBOARD STARBOARD OR PORT.”, throw a life ring, and begin pointing at MOB. Do not take your eyes off the MOB, and continue pointing until relieved by designated crew pointer.
- If you hear the MOB alarm given by someone else, you should repeat the alarm until you are sure that the crew on watch is aware of the situation
- The pointer shall maintain continuous eye contact with the person in the water and shall give continuous reports as to the location by verbal and hand signals.
- The navigator shall press “Enter” on the GPS MOB button to record the exact position of the person falling into the water and will fix the position on the chart. The navigator shall keep the master advised as to the relative position of the person in the water to the ship.
- The master or watch leader shall order all hands on deck by stating, “THIS IS NOT A DRILL. ALL HANDS ON DECK”. Preparations for recovery will then be made.
 - The inflatable boat is ready and manned.
 - The lookout is doubled.
 - First aid equipment is at the ready.
 - All hands are wearing life jackets.
 - Lifeline and harness are at the ready for use on an emergency swimmer.
 - Emergency lighting is manned and ready if needed.
- The master will account for all persons aboard, control passengers.
- The master or watch leader shall order a Williamson turn if under power. If under sail, only the master shall order a Quick Stop or Figure 8 turn, start the engine and make the turn in a direction so as not to jibe if possible. The bow should be turned toward the person that fell over the side.
- No swimmer will be ordered into the water unless there is no other effective method of rescue. The master or watch leader will not order a swimmer into the water until the swimmer is secured by a line and is wearing a life jacket.
- If MOB is not recovered, notify Coast Guard and vessels in vicinity by VHF radio, and continue search until released by Coast Guard.

NOTE: The variables of wind and sea conditions, daylight and darkness, sail combinations, and the condition of the victim may preclude any fixed procedures for recovering a man overboard. Quick, orderly response, discipline, and good seamanship must be combined to deal with the special circumstances of the situation.

ABANDON SHIP

- Only the Master can give the order to ABANDON SHIP, and if he/she does, the watch leader shall assure that:
 - The alarm is sounded and all hands are directed to abandon ship.
 - The inflatable boat is launched.
 - All hands are wearing warm clothing and a Type I life jacket.
 - The navigator will activate the DSC alarm and contact the USCG by radio. Then provide the ship's position, ship name, and description, number of persons aboard and nature of the situation. In the event that the USCG cannot be contacted, the navigator will attempt to contact other stations.
 - If the navigator cannot contact other stations, the navigator will give a continuous broadcast of the ship's position, ship name repeating the words MAYDAY three times with each transmission until the navigator is ordered to leave his station.
- An abandon ship bag will be placed in the inflatable boat and shall contain:
 - Portable VHF radio
 - Flares and emergency signaling devices
 - Portable lights
 - First aid kit
 - Knife
 - Portable GPS, charts and handheld compass
- The following items may be placed in the inflatable boat:
 - Three lengths of 3/4 inch line 50 feet in length (dock lines)
 - Portable water containers filled with fresh water
 - Emergency provisions
- The master and the watch leader will assure that all hands are accounted for prior to leaving the ship.
- The EPIRB will be activated before leaving the ship, and brought along in the inflatable boat.

ROUGH WATER AT SEA

- Close all hatches and ventilation to prevent taking water aboard.
- Keep bilges dry to prevent loss of stability due to water in bilges.
- Keep passengers seated and evenly distributed.
- Have passengers don life jackets if conditions become severe, or prior to crossing hazardous bars.
- Do not abandon vessel unless forced to do so.
- If assistance is needed, the navigator will contact USCG or vessels in vicinity by VHF radio (Channel 16—Emergency Channel).

COLLISION

- Upon the sounding of the collision alarm, all hands shall respond by moving on deck wearing their life jackets.
- At night all hands shall have a small flashlight in their possession.
- Damage control measure will be considered.
- Preparation will be made to abandon ship.

DAMAGE CONTROL

- The master will brief all hands as to the location of all seacocks, and proper use of seacocks prior to getting underway.
- The master will train all hands in the location and use of all bilge pumps. The electric bilge pumps shall be kept in the automatic position. At the beginning of his watch, the lookout shall check to determine that all bilge pumps are in good working order.
- If the bilge alarm sounds, the watch leader will immediately determine the reason and location of high water and take immediate action to terminate the flow of water into the ship.
- Prior to getting underway, damage control materials should be located and inspected by the master.
- Once it is determined that water is coming into the ship, the master shall prepare to abandon ship while in the process of terminating the flow of water.

APPENDIX V – EMERGENCY EQUIPMENT & LOCATION

Mounted on the Rail on the Aft Deck:

Type IV PFD aka Horseshoe Buoy
Life Sling: MOB Recovery System
EPIRB

Stowed Under Seats of the Aft Deck Bench:

8 Type I Adult PFDs with Light & Whistle
2 Type I Child PFDs with Light & Whistle
Radar Reflector
Cone Day Shape
Ball Day Shape
Portable Bilge Pump

At the Navigation Table

Charts and Navigation Tools
Fixed VHF Radio
Portable VHF Radio
Flashlights and Batteries
6 Safety Harnesses and Tethers
First Aid Kits
Bell

In the Bathtub of the Aft Head

6 Type II adult PFD in storage bag
12 Type III Adult PDF on hangers
PFD = Personal Floatation Device

Each trainee will be fitted for a Type III PFD and will be responsible for it during the voyage.

Port Aft Deck Locker

Propane Tank Shut Off Valves

At the Cockpit Pedestal

6 Type IV PFD aka Throw Cushions
Remote VHF Microphone
Air Horn

Stowed Under Seats of the Aft Deck Bench

Emergency Signals in Waterproof Container
Electronic Flare
Signal Mirror
Many Outdated Hand Flares
3 Emergency Flags
Manual Horn
Leather Gloves
Dye Marker
2 Outdated Aerial Flares
Eye Protection

Mounted on Bulkheads Below Decks

6 “1-A, 10-BC” Fire Extinguishers
2 Smoke Detectors
3 Smoke and CO detector

In the Aft Cabin Hanging Locker

2 Type III Child PFDs
6 Type III Youth PFD
5 Type III Adult PFD

Starboard Forward Deck Locker

Deck Wash Hose

APPENDIX VI - TRAINEE PACKING LIST

Every trainee should bring the following LABELED items in a SOFT duffel bag (avoid hard or large suitcases). All items must be stowed on your bunk - there is limited storage space - so bring only what you need!

The weather can change suddenly on the water so bring layers that can be added or removed as needed. Clothes that dry quickly will make you happy. It is a boat, after all. As a rule, synthetic fibers like polar fleece and various polyesters and nylons are better than heavy cotton. Avoid denim, thick towels and heavy cotton sweatshirts; once wet, they will NEVER dry.

Cruises varies in length. Use this list as a starting point, and pack to accommodate your specific needs for the length of the cruise.

ESSENTIALS

- Face mask (COVID-19 requirement)
- 1 sleeping bag (pillow optional)
- 2 pairs of pants
- 2 pairs of shorts
- 4 or 5 T-shirts or tops
- 2 warm sweaters or sweat shirts
- 1 pair of socks & underwear for each day
- sleepwear
- 1 swimsuit
- 1 wide brim hat or cap
- gloves (for cool nights/hauling lines)
- 1 warm jacket
- rain gear** (jacket and pants)
- 1 pair shoes suitable for on deck and shore excursions
- 1 pair shoes that can get wet (water shoes, waterproof sport sandals, old runners)
- 1 pair of rubber boots deck boots
- water bottle
- towel
- biodegradable soap & shampoo
- toothbrush, toothpaste
- sunscreen (preferably zinc-based lotion)
- polarized sunglasses
- waterproof wristwatch
- flashlight or headlamp with red filter (and spare batteries)
- plastic bag for wet gear (important)
- 1 pen, 1 pencil and eraser, & notebook
- top & bottom base layer (long johns)

OPTIONAL ITEMS

- reading material
- camera
- a little cash for shore excursions

CELL PHONES may only be used prior to boarding and after disembarking. While on board they must be in "Airplane" mode. Only the **camera** function may be used if you don't have a dedicated camera.

DO NOT BRING other electronic devices (music players, headphones/ear buds, computers, tablets, hand held games – if brought for traveling to/from the ship they must remain stowed in your baggage for the duration); valuable jewelry; large amounts of cash; chewing gum; smoking/vaping implements (including tobacco, cannabis, e-cigarettes); mind altering substances, illicit drugs, alcohol.



UNITED STATES - GREAT LAKES LAKE SUPERIOR

Mercaator Projection
Scale 1:600,000 at Lat 47°30' N
North American Datum of 1983
(World Geodetic System 1984)

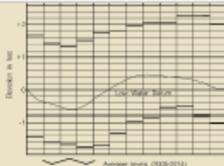
SOUNDINGS IN FEET IN BLUE TINT AREAS AND IN FATHOMS ELSEWHERE
Add local information can be obtained at nautical chart publishing

NOTES
PLANE OF REFERENCE OF THIS CHART (Low Water Datum) is 102.1 ft. Refer to mean water level at Detroit, Quebec, International Great Lakes Datum (IGLD) ADE TO NAVIGATION. Consult U.S. Coast Guard Light List for supplemental information concerning aids to navigation.
SYMBOLS AND ABBREVIATIONS. For complete list of symbols and abbreviations see Chart No. 1 BRIDGE AND OVERHEAD CABLE CLEARANCES. Vertical clearance is shown Low Water Datum, bridge and overhead clearances are reduced correspondingly. For clearances see U.S. Coast Pilot.
AUTHORITIES: Hydrography and topography by the National Ocean Service, Coast Survey with additional data from the Corps of Engineers, Geological Survey, U.S. Coast Guard, and Canadian authorities.

HORIZONTAL DATUM
The horizontal reference datum of this chart is North American Datum of 1983 (NAD 83), which for charting purposes is considered equivalent to the World Geodetic System of 1984 (WGS 84). Geographical positions referred to the North American Datum of 1983 do not require conversion to WGS 84 for plotting on this chart.

Sailing vessels are recommended by the Lake Caribou Association and the Canadian of Marine Commission an advisory agency for course to other with navigational safety and Collision Regulations always being primary.

WARNING
The prudent mariner will not rely solely on any single aid to navigation, particularly on floating aids. See U.S. Coast Guard Light List and U.S. Coast Pilot for details.



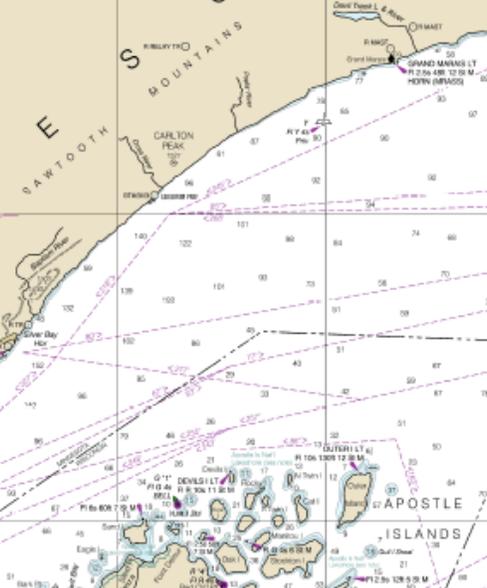
Low Water Datum which is the plane of reference for the basic soundings on the chart, is the mean of the low water level at the time of the chart survey. It is the low water level of the Low Water Datum, the mean of the low water level of the chart survey.

CAUTION
Limitations on the use of radio signals as aids to marine navigation can be found in the U.S. Coast Guard Light List and National Geospatial-Intelligence Agency Publication 117. Radio direction finder bearings for commercial broadcasting stations are subject to error and should be used with caution. Station positions are shown as follows:
○ (Broadcast location) △ (Broadcast location)

SUPPLEMENTAL INFORMATION
Consult U.S. Coast Pilot 8 for important supplemental information.

CAUTION
Temporary changes or deficits in aids to navigation are not indicated on this chart. See Local Notice to Mariners. Query some other months or when indicated by sea, obtain aids to navigation as reported by other publications. For details see U.S. Coast Guard Light List.

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W I S C O N S I N

CABLE AND PIPELINE AREAS
The cable and pipeline areas falling within the areas of the larger scale charts are shown thereon and are not repeated on this chart.

NOTE A
Navigation warnings are published in Chapter 2, U.S. Coast Pilot 8. Additions or revisions to Chapter 2 are published in the Notice to Mariners. Information concerning the regulations may be obtained at the Office of the Commander, 9th Coast Guard District in Cleveland, Ohio or at the Office of the District Engineer, Corps of Engineers in Detroit, Michigan. Refer to charted regulation section numbers.

RADAR REFLECTORS
Radar reflectors have been placed on many floating aids to navigation. Individual radar reflector identification on these aids has been printed from this chart.

POLLUTION REPORTS
Report all spills of oil and hazardous substances to the National Hazardous Disposal Unit (NHU) at 1-800-424-6862 (oil spill), or to the nearest U.S. Coast Guard facility if telephone communication is impossible (24 HR 195).

LAKE SUPERIOR NATIONAL LAKESHORE
The Apostle Islands National Lakeshore extends from the shore line to 1/2 mile offshore.

CAUTION
Due to peculiar high water conditions in the Great Lakes, some features charted as visible at Low Water Datum may not be visible, particularly in the near shore areas. Mariners should proceed with caution.

NOAA WEATHER RADIO BROADCASTS
The NOAA Weather Radio stations listed below provide continuous weather broadcasts. The reception range is typically 20 to 40 nautical miles from the antenna site, but can be as much as 100 nautical miles for stations at high elevations.
Duluth, MN 93.64 162.550 MHz (Class WX-1)
Marquette, MI 93.66 162.445 MHz (Class WX-1)
Sault Ste. Marie, MI 93.74 162.555 MHz (Class WX-1)
Houghton, MI 93.75 162.430 MHz (Class WX-2)

NO Michigan and WI Coast Guard aids to navigation are shown on this chart. Under the authority of the International Convention on the High Seas, the U.S. Coast Guard is required to provide aids to navigation in the EEZ. Additional information regarding requirements for the EEZ is available in the International Convention on the High Seas.

This chart has been corrected from the Notice to Mariners (NM) published weekly by the National Geospatial Intelligence Agency and the Local Notice to Mariners (LNM) issued periodically by each U.S. Coast Guard district to the data shown in the cover and back cover. Chart updates extracted from Notice to Mariners published after the date shown in the lower left hand corner are available at nauticalcharts.noaa.gov.

Use NOAA electronic navigational charts for the most up-to-date information.

APPENDIX VIII - SUGGESTED READING & VIDEOS

Seven Essential Knots for Sailors

<https://www.sailmagazine.com/.amp/diy/seven-essential-knots-for-sailors>

Handbook of Wisconsin Boating Laws and Responsibilities

<https://dnr.wi.gov/files/pdf/pubs/1e/1e0301.pdf>

U.S. Aids to Navigation System -

What You Need to Know About the Markers on the Water.

<https://www.uscgboating.org/images/486.PDF>

Navigation Rules FAQ

<https://www.youtube.com/watch?v=Jjx9ELuSxyM>

Rules of the Road for Sailboats

https://wow.uscgaux.info/Uploads_wowII/095-45-01/Rules_of_the_Road_for_Sailboats.pdf

Give Way - United States Power Squadrons Boating Tutorial

<https://www.youtube.com/watch?v=EEEx7DE0eOSY&list=PL569BDF94F367EE24&index=8&t=0s>

BoatOnCourse: Nav Rules - Navigation Lights

https://www.youtube.com/watch?v=C_06ujzcvtk

Marine Navigation Lights

https://www.youtube.com/watch?v=VAz7tMldo48&list=PLXNEJpAaCDczZxN-vE_sGJ0bs5MJXyR1y>

A Short Course on Nautical Charts and Basic Plotting For the Recreational Boater

https://www.garykessler.net/scuba/library/Charts_Navigation.pdf

Plotting Labeling Standards

<https://www.usps.org/localusps/bare/Plotting%20Labeling%20Standards.pdf>

Lake Superior Facts

<http://law2.umkc.edu/faculty/projects/ftrials/superior/superiorfacts.html>

Shipwrecks Lake Superior

<https://www.wisconsinshipwrecks.org/Map/LakeSuperior>