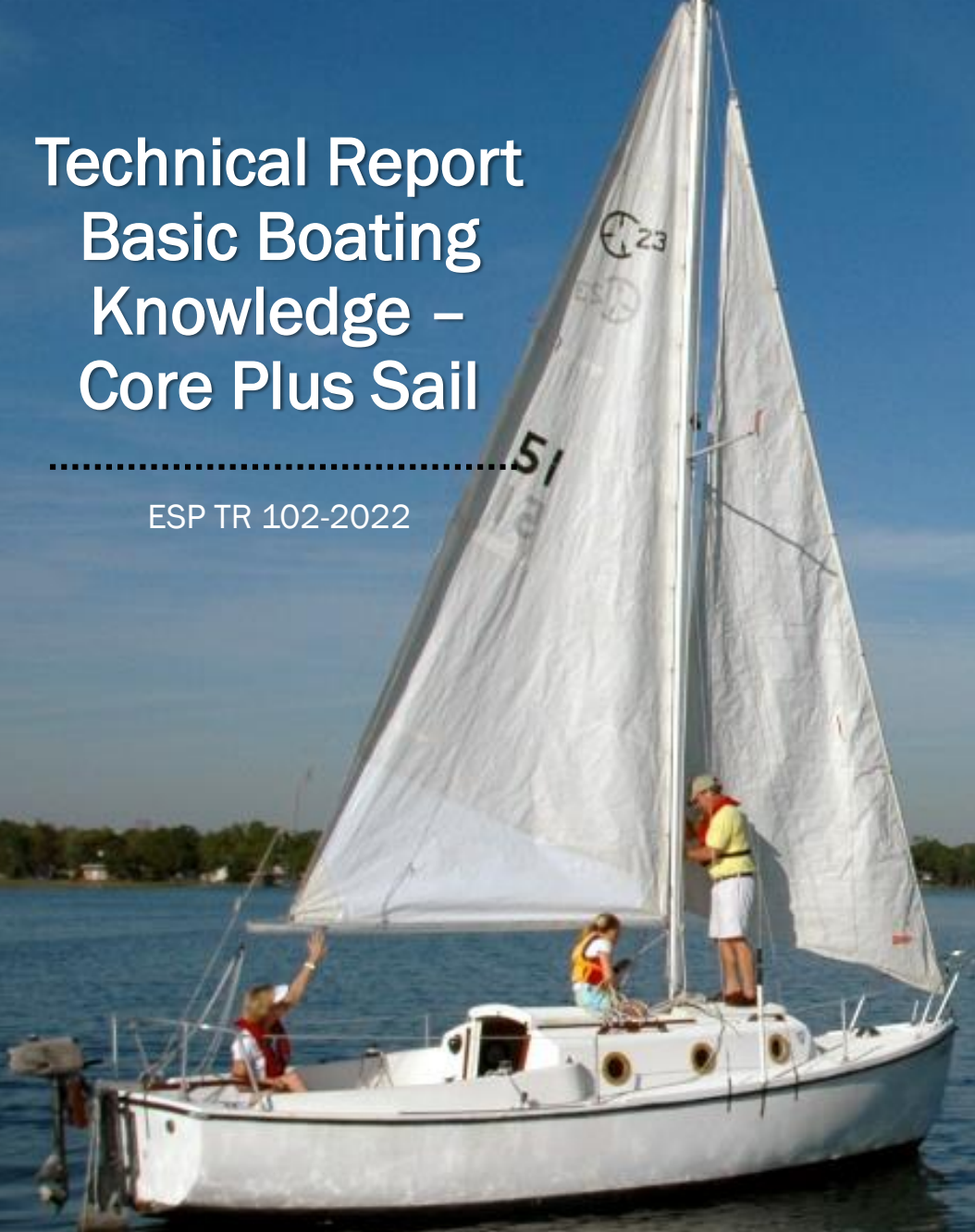


Technical Report Basic Boating Knowledge – Core Plus Sail

ESP TR 102-2022



Use with American National Standards:

- ANSI/NASBLA 100-2022: Basic Boating Knowledge – Core
- ANSI/NASBLA 102-2022: Basic Boating Knowledge – Plus Sail

National Association of State
Boating Law Administrators

A Technical Report prepared by the National Boating Education Standards Panel and registered with the American National Standards Institute (ANSI)

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Comments on the content of this document should be sent to NASBLA's National Boating Education Standards Panel, 1020 Monarch Street, Suite 200, Lexington, KY 40513, or esp@nasbla.org.

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Adapted from: American Camping Association. (1998). UAccreditation Standards for Camp Programs and Services. American Camping Association: Martinsville, IN.

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Basic Boating Knowledge - Core Plus Sailing

ANSI/NASBLA 100-2022: Basic Boating Knowledge – Core

**ANSI/NASBLA 102-2022: Basic Boating Knowledge
– Plus Sailing**

Chapter 1 - Introduction

This Technical Report supports American National Standards (ANS) entitled *ANSI/NASBLA 100-2022: Basic Boating Knowledge – Core* and *ANSI/NASBLA 102-2022: Basic Boating Knowledge – Plus Sailing* (hereafter called the “Standards”), which was formulated through voluntary consensus of representatives of federal and state government, industry, non-profit organizations, and public sectors.

The purpose of this Technical Report is to provide information that helps design and implement successful recreational sailing education programs.

History of Recreational Boating Education Standards

In 1978, minimum boating education guidelines existed for state, non-profit and commercial providers to follow in developing boating education materials. These guidelines, were developed under the oversight of the National Association of State Boating Law Administrators (NASBLA) Education Committee to “emphasize generic safety and emergency procedures” for the recreational boater. In 1989, state members of NASBLA agreed to recognize NASBLA Certified Boating Safety Courses as a means to “reduce boater confusion as to various state or provincial education requirements.” To facilitate this recognition, in 1990, NASBLA implemented a process for review and approval of courses to ensure they met the published guidelines.

In July 1998, with financial assistance provided by a national non-profit grant administered by the United States Coast Guard (USCG), NASBLA, in partnership with the National Safe Boating Council (NSBC), contracted with a research team anchored at The Pennsylvania State University to evaluate existing guidelines and develop a new minimum “standard of care” for boating education. This new set of standards was intended to prescribe the minimum body of knowledge necessary to effect safe, legal, and enjoyable boating. In addition, the proposed standard of care was predicated on reducing risks to recreational boaters based on empirical accident and boating violation statistics.

Many documents, a number of which are included as references in this Technical Report, were reviewed and interviews conducted with nationally prominent and recognized boating educators for development of the new National Boating Education Standards. A result was a working draft of the standards which were submitted to the NASBLA Standards Advisory Committee¹ for review and comment. Several more drafts of the standards were completed, each going through a revision process. In December 1998, the research team met with the Standards Advisory Committee for two days of review and comment. The result of that meeting was a draft set of standards, which was validated and pilot-tested in the second phase of the study between January and August 1999. The results of this second phase showed a strong consensus among boating educators that the draft standards represented the minimum information that should be taught in an eight-hour boating safety course. The final version of the standards was approved by NASBLA membership on September 22, 1999.

In 2009, NASBLA membership requested that the standards be analyzed in order to determine whether they had contributed to the reduction of risks to recreational boaters in the 10 years in which they were in use. NASBLA was fortunate to be able to work with the original researchers from the 1998 project now anchored at Colorado State University. The 2009 Standards Advisory Committee was made up of a combination of state agency staff as well as stakeholders in the recreational boating education field. The researchers analyzed 10 years of USCG accident and fatality statistics and noted how this data compared to the existing boating education standards. The advisory

¹ The Standards Advisory Committee was comprised of education specialists representing the NSBC, U.S. Coast Guard Auxiliary, United States Power Squadrons, various states, NASBLA, and NASBLA associates.

committee and the researchers were able to link the available statistics to almost all of the standards, thus justifying their existence and continued inclusion in the document. In addition, several standards were modified, combined, or reworded to emphasize key points related to the statistics. Along with revisions made in the education standards, separate test standards were revised resulting in a distinct number of test questions per standard required for course approval to reflect overall importance of the subject for boater safety. The revised standards were approved by the 2009 Standards Advisory Board, the Education & Awareness Committee and were approved by the overall membership of NASBLA on September 28, 2009.

American National Standards

NASBLA-approved National Boating Education Standards are referenced in numerous state laws and regulations as the minimum criteria for state-mandated boater education; however, several state legislatures enacted process rules in conflict with the NASBLA Standards. In 2011, the NASBLA Executive Board directed that the standard-setting process follow nationally recognized procedures for development of recognized American National Standards (ANSs) and formed the National Boating Education Standards Panel (the “Panel”) to implement this process. The Panel adopted the Essential Requirements of the American National Standards Institute (ANSI) for development of ANSs. ANSI is recognized both nationally and internationally for oversight in creation, promulgation and use of thousands of standards, norms, and guidelines that directly impact businesses in nearly every sector. NASBLA received recognition from ANSI as an Accredited Standards Developer in 2014.

Development of the ANS as referenced in this Technical Report was developed with adherence to these ten ANSI Essential Requirements:

- **Openness** to all directly and materially affected
- **Lack of dominance** by any single interest category, individual, or organization
- **Balance** of interests represented on the Panel
- **Coordination and harmonization** between existing and candidate standards
- **Notification** of standards development
- **Consideration of views and objections**
- **Consensus vote**
- **Appeals** process
- **Written procedures**
- **Compliance** with normative American National Standards Policies and administrative procedures

In accordance with the Panel’s recommendation and the NASBLA Executive Board’s subsequent approval on March 30, 2012, the standard document once covering both the educational content and the conformity assessment (review) process was formatted to present a single National Boating Education Standard for a basic boating safety course and to separate out administrative policy for the purpose of course approval not to be included as part of the Panel’s review. A previous standard for Basic Boating Knowledge – Sail was released in 2017.

The Technical Report

With the separation of NASBLA course approval procedure from previous Basic Boating Knowledge standards, rationales in support of the content of the Standard, originally developed by NASBLA’s Education Committee, were removed from the Standard and published in a separate document. This Core Plus Sailing Technical Report builds

upon the original rationales, instructional strategies, and assessment considerations, with additional detail to facilitate understanding and implementation of the American National Standards for *Basic Boating Knowledge – Core*, and *Basic Boating Knowledge – Plus Sailing*.

Why the Core-Plus approach?

In 2020, the National Boating Education Standards Panel proposed a “Core-Plus” approach to standards. Previous standards (published 2015-2017), contained inconsistent language resulting from acceptance of public review comments and updates to individual standards for Power, Sail, and Human-Propelled, each completed under individual time frames. The Panel recognized these inconsistencies as a ‘risk factor’ which must be addressed, as delay in updating of a single standard (or the creation of inconsistent language among Basic Boating Knowledge standards) could lead to unnecessary safety or legal concerns for the nation’s boating community.

By design, the Core-Plus approach will maintain consistency and improve efficacy by revising the mechanism for updating each Basic Boating Knowledge standard. As Core information is updated through its individual public-review process, the resulting Core information is automatically and consistently revised in all disciplines: *Core Plus Human-Propelled*; *Core Plus Sailing*; *Core Plus Power*; and, *Core Plus Power Plus Water-Jet Propelled*.

Chapter 2 - Recreational Boating Instructional Design and Performance Assessment

The American National Standards (ANS) for Basic Boating Knowledge are divided into two categories, “Core” and “Plus” Standards. The “Core” boating knowledge consists of information that a boater needs to comprehend to ensure a safe voyage regardless of the type of vessel they are using. The “Plus” knowledge is specific to the type of vessel propulsion. The division of the required knowledge and the creation of separate standards ensures continuity across all the boating education courses for human, power, sail, and water-jet propelled vessel domains.

When the ANSI/NASBLA 100-2022: Basic Boating Knowledge – Core and ANSI/NASBLA 101-2022: Basic Boating Knowledge - Plus Sailing” are combined, it establishes the minimum national content for basic **Sailing** courses. These Standards address primary risk factors to mitigate their effects on recreational boating. The elements of the Standards can (and should) be implemented into a broad range of educational approaches (e.g., online, classroom, instructor-led distance learning, hands-on simulation, on-water skill development, etc.). For ease in presentation, face-to-face instructor-led training in a classroom-setting is the primary approach addressed in this Technical Report.

NOTE: When combined, the ANSI/NASBLA 100-2022: Basic Boating Knowledge – Core, and ANSI/NASBLA 102-2022: Basic Boating Knowledge - Plus Sailing, replaces the previous standard: ANSI/NASBLA 102-2017: Basic Boating Knowledge – Sailing (effective date: February 24, 2017).

Successful Instructional Strategies for Face-to-Face Basic Boating Safety Education Courses

This Technical Report reflects information on successful instruction strategies gained as a result of many years of teaching experience from a broad diversity of subject matter experts, including boating safety education course designers, instructor-trainers, and instructors. The successful strategies identified are not intended to be a complete list of all teaching practices nor will the use of these strategies guarantee an excellent course experience. Teaching is an ever-changing series of choices made by an educator to provide the student the best possible opportunity to learn a given subject. Considerations for designing a successful learning opportunity include the student’s readiness for learning, well-written student performance objectives, well-defined course goals and content, a prepared and motivated instructor, a safe location conducive to learning, suitable and practical instructional materials, organizational context, and other factors.

General Instructional Strategies

Effective programs clearly define the “Educational Purpose,” which includes the program’s mission, goals, and objectives, and assures that all are aligned with each other. Important considerations include:

- Planning effective programs;
- Relying on experienced, well informed, prepared, and ethical staff;
- Having a clear understanding of agency goals and objectives;
- Being inclusive of all audiences;
- Aligning curricula with national and state educational standards when appropriate;
- Presenting accurate and balanced information, incorporating many different perspectives;
- Clearly addressing safety and other regulations, and reducing real risks to everyone involved;
- Empowering learners - teaching them “how” to think not “what” to think;

- Using multiple teaching methods to accommodate diverse learning styles; and
- Using instructors as facilitators, not “transmitters.”

Course Instructors:

- Are selected through a process that ascertains their knowledge of boating safety content and teaching ability related to boating safety education courses;
- Are regularly evaluated by students, peers and supervisors in order to improve their instructional skills;
- Participate in professional development opportunities such as training sessions, workshops, or conferences to improve their boating safety knowledge and teaching skills;
- Use a variety of instructional strategies in the course such as:
 - demonstrations with boating equipment,
 - student interaction including involvement in demonstrating skills,
 - simulations of practical boating situations,
 - students solving hypothetical boating situations,
 - short videos of boating topics,
 - role playing boat operator decision-making,
 - reading texts and attending lectures of boating safety content,
 - computer simulations and content, and
 - incorporating situational awareness scenarios when possible;
- Provide opportunities for students to demonstrate their understanding of course objectives through hands-on activities that encourages application of their boating safety knowledge and skill; and
- Monitor student attainment of the learning objectives during the course through a variety of assessment strategies such as: verbal conversations, written tasks, and formal assessments.

Human Learning Styles

Boating safety course instructors should have an excellent working knowledge of how people learn and seek to continually extend their understanding of human learning. A teacher’s effectiveness is in part due to knowledge of the content area but also rests on their ability to ascertain their student’s learning processes and match instructional strategies to the learning needs of their students. While each student and class is unique, there are some general human learning characteristics that can assist boating safety instructors in making their teaching decisions. The amount of research and written material on human learning is vast and beyond the scope of this document.

Current explanations for how people learn are varied and complex. While learning can encompass memorization of discrete facts (retention rates are typically low), most current explanations focus on the ability to learn for understanding. This is thought of as learning that contains rich, deep content knowledge organized around conceptual themes, which can be applied to new situations and contexts. In other words, providing opportunities for students to apply and use recently acquired information is paramount to improving and prolonging retention rates.

Every student brings with them previously established conceptions and beliefs about the wide variety of boating safety education topics. One common approach in elevating human learning is to provide the student with opportunities to actively derive meaning from their past experiences by providing opportunities to apply the new knowledge against previously held beliefs or experiences. An implication for the boating safety instructor is that they must actively and explicitly pre-assess the student’s prior understandings to identify any misconceptions. Instructional choices can then be better targeted to challenge existing misconceptions and present the student with overwhelming motivation and experiences to transform misconceptions into the more sophisticated

understanding held by expert boaters. Teaching for understanding focuses on developing an educated boater that knows how and when to apply knowledge rather than a boater who simply knows boating facts.

There are some general suggestions for boating safety instructors. Human learning can be organized into categories such as knowledge, skills and attitudes. The boating safety instructor should design learning experiences that address each of these categories and consciously select instructional strategies matched to the learning category. Another consideration is that students utilize preferred learning styles, which can be categorized as visual learners, auditory learners and kinetic learners. The main message for boating safety instructors is to NOT imagine their students as identical in their learning style but INSTEAD view their students as using different learning styles. The boating safety instructor should deliver a course that intentionally includes a variety of learning activities that target different learning styles. The boating safety instructor must also consider that differences in culture, language, family, community and socio-economic status affect how a student learns. In order to be most effective, the ideal instructor explicitly identifies the learning needs of his/her students and provides a variety of instructional experiences to meet those needs. Finally, instructors should focus on designing a significant percentage of learning experiences that incorporate higher order thinking skills such as analysis, synthesis, evaluation and application. Long term retention rates for remembering specific facts or vocabulary are low. Learning is retained when students are given an opportunity to apply the information received. A boating safety instructor should focus on the most crucial content using instructional strategies that result in a highly-educated boater.

More information about human learning and teaching successful boating safety courses can be obtained through state/province/territory boating agencies, the U.S. Coast Guard, The National Safe Boating Council and organizations such as NASBLA, U.S. Coast Guard Auxiliary, U.S. Power Squadrons, U.S. Sailing, American Sailing Association, and many others.

Program Planning

Instructors, text authors, boating professionals, and organizations are encouraged to go beyond the Standards when, in their judgment and experience, it encourages the boat operator to boat more safely. In addition, the Standards are intended to show just the minimum content of the course materials, not the sequence or organization of the material. Although the Standard is organized in a logical fashion, course/text developers are encouraged to organize their information to be most effective in their environment.

Boat Operator Knowledge Assessments

The following information is presented as a guide for the development of multiple-choice questions. These principles guided the style and development of sample questions use in this technical report.

ASSESSMENT BEST PRACTICES – Part 1

Each item in the assessment will be a four-option multiple-choice question composed of a premise (or stem); a key (or correct alternative); and three distractors (or incorrect alternatives).

- A. A premise that states an opinion of an author or source, rather than reflecting a fact or principle, should use the statement, “According to...”.
- B. The alternatives must be in a logical order if one exists. Alternatives beginning with the same words should follow each other.
- C. A test item must be a grammatical and logical completion of the premise or a concise reply to the question asked.
- D. Avoid overlapping alternatives.
- E. Alternatives must not combine options such as ‘all of the above’, ‘none of the above’, ‘a and b’, or ‘(1) or (2).’
- F. When possible, avoid developing questions using negative words, i.e.: no, not, never. Also, NEVER use double negatives.
- G. Avoid repeating information in all the alternatives that can be included in the premise.
- H. Alternatives should not be distinguishable from the correct answer based on length.
- I. Each test item must be linked to an element in the Standard.
- J. The test should include clearly written directions to the candidates on how to respond to the questions.
- K. The correct answer for the test items should be equally distributed (or as nearly so as possible) among each of the options, i.e. 25% of the answers should be option ‘a’, 25% should be option ‘b’, 25% should be option ‘c’, and 25% should be option ‘d’.
- L. There should be no more than three items in a row with the same option as the correct answer.

ASSESSMENT BEST PRACTICES – Part 2

Each test item must be documented in at least one reference from the nationally recognized reference and documented by the course provider.

EXAMPLE - Recognized Reference List for Test Items *(add additional data such as year and publisher as appropriate):*

1. USCG Handbook of Navigation Rules & Regulations (most current edition)
2. 33 Code of Federal Regulations (CFR), 46 CFR, 50 CFR
3. U.S. Coast Guard Boating Accident Statistics/Reports
4. Information contained on U.S. Coast Guard websites (e.g., “Influence of Drugs & Alcohol on Boat Operation”)
5. State statutes and administrative rules.
6. Relevant NASBLA Technical Report(s)

Chapter 3 – Standard Details and Background

The chapter contains details of:

- ANSI/NASBLA 100-2022: Basic Boating Knowledge – Core;
- ANSI/NASBLA 102-2022 – Plus Sailing

The contents are presented as follows:

Scope

- Core
- Plus Sailing

Section 1 Terminology

- Core
- Plus Sailing

Section 2 Boat Types

- Core
- Plus Sailing

Sections 3 through 9 follow this same format.

Layout Key:

Items presented in BLUE text boxes are elements from the Core or Plus Sailing Standard.

Information below each blue box is technical guidance provided as a guide to understand and implement each element. This technical guidance is NOT required to be presented by a course provider, rather it may be used as reference information in development of a course curricula.

The headers for *Sample Activities* and *Sample Questions* are indicated in green boxes. These are numbered in reference to each individual standard element. **Correct responses to Sample Questions are bolded.**

Basic Boating Knowledge – Core

Scope

This standard establishes the essential knowledge needed to reduce recreational boating risk factors and mitigate their effects. This "Core" standard is designed to be combined with discipline-specific power, sail, and/or human-propelled "Plus" standards for development of basic boating education courses and student assessment. This standard applies to basic boating knowledge for all disciplines (power, sail, or human-propelled) of recreational boating in the U.S. states, territories, and the District of Columbia.

102 Plus Sailing

SCOPE

This discipline-specific "Plus" standard, when combined with the "Basic Boating Knowledge – Core" standard, establishes minimum essential knowledge to reduce recreational sailing risk factors. The combined standards are to be used for development of basic boating education courses and student assessment for sailing vessels. This standard applies to basic knowledge for recreational sail boating in the U.S. states, territories, and the District of Columbia.

1.0 Terminology - Core

1.1 Define and demonstrate knowledge of common nautical terms across all types of boating including vessel, port, starboard, bow, stern, stand-on, and give-way.

A boat operator must know common terminology of vessels as used in the Navigation Rules *which apply across all types of boating*. Terms specific to vessel types are included in the Plus Standards and the Technical Report Glossary.

Vessel (n) –Any watercraft, including non-displacement craft and seaplanes, used or capable of being used as a means of transportation on water.

Port (n) - the left side of a vessel looking forward.

Starboard (n) - the right side of a vessel looking forward

Bow (n) - the forward part of a vessel

Stern (n) – the rear end of a vessel

[33CFR Part 83](#)

USCG Navigation Rules (adapted from Nav Rule #16 and #17)

Stand-on (adj.)– a vessel directed by the Navigation Rules to maintain course and speed; however, appropriate action may be taken to avoid collision.

Give-way (adj.)– a vessel directed by the Navigation Rules to keep out of the way of another shall, so far as possible, take early and substantial action to keep well clear.

1.1 Sample Activities

1. Show students where to find the Navigation Rules and definitions for vessel terms.
2. Show photos of boats and review terms with students.
3. Have terms on cards and match the terms with the image of a boat.
4. Using a layout of a vessel drawn or taped on the floor have students assume the position for operator and various lookout positions and explain the meaning of the phrase “maintain a proper lookout” as given in the NAVRULs

Note: Activities in section 6 (Navigation Rules) can be used to further explain the terms in this section. Example: Give each student a red and green item have each identify stand-on and give-way.

1.1 Sample Questions

1.1-1. *What is the definition of "starboard"?*

- A) The left side of a vessel looking forward.
- B) The right side of a vessel looking forward.**
- C) The forward part of a vessel.
- D) The rear end of a vessel.

1.1-2. *What is meant by "stand-on"?*

- A) A vessel is directed by the Navigation Rules to maintain course and speed; however, appropriate action may be taken to avoid collision.**
- B) A vessel directed by the Navigation Rules to keep out of the way of another shall, so far as possible, take early and substantial action to keep well clear.
- C) A vessel is directed by the Navigation Rules to stop and allow approaching vessels to pass, taking early and substantial action to slow all progress.
- D) A vessel is directed to maintain course and speed up to quickly pass approaching vessels while keeping well clear.

1.0 Terminology - Plus Sailing

1.1 - See “Basic Sailing Knowledge - Core” (latest version)

1.2 Discipline Specific

Notes:

An operator should be able to identify basic parts on a small sailboat so that effective crew communication can occur.

Since wind is the primary means of power, wind awareness is fundamental to the operation of a sailboat.

Operators need to understand the functions of items that are used to control vessel power (sail controls) and direction (steering). Operators need to know directional terms in the vessel and relating to the wind so that crew may be positioned correctly for optimal heel, to prevent capsize, etc.

Using visual and non-visual wind indicators is important for safe and effective control of vessel speed, direction, amount of heel, etc.

1 Terminology - Plus Sailing - *continued*

1.2.1 Identify and describe the functions of the parts of a typical small sailboat.

Basic sailboat parts (use these as applicable to your vessel and students). Additional terms may be applicable to your situation. For definitions and descriptions, see appropriate publication references from US Sailing, American Sailing Association, America's Boating Club/ U.S. Power Squadrons, or Chapman Book of Seamanship and vessel Handling (latest editions):

Hull

Centerboard, Cleat, Cockpit, Daggerboard, Keel, Rudder, Tiller

Rigging

Block, Boom, Boom Vang, Downhaul, Gooseneck, Halyard, Jib Sheet, Mainsheet, Mast, Outhaul, Shackle, Shroud, Stay, Traveler

Sail

Batten, Clew, Foot, Head (top of sail), Jib, Leech, Luff, Mainsail, Tack, Telltale

1.2.1 Sample Activity

1. Provide a diagram of a sailboat and a list of terms. Ask students to label each part on the diagram.

1.2.1 Sample Questions

1.2.1-1. *What is a centerboard?*

- A) A large daggerboard.
- B) A board above the keel.
- C) A board separating port from starboard.
- D) A board which is raised or lowered by a pendant.**

1.2.1-2. *Which of the following are parts of the standing rigging?*

- A) Sheets, shrouds, halyards
- B) Halyards, sheets, dock lines
- C) Shrouds, backstay, jibstay**
- D) Anchor rode, shroud, sheets

1.2.1-3. *How are sheets used?*

- A) Sheets hoist the sails
- B) Sheets control the sails**
- C) Sheets attach the whisker pole to the mast
- D) Sheets attach the tack of the sail to the boat

1.2.1-4. *How is the outhaul used?*

- A) To raise the centerboard
- B) To tension the foot of the mainsail**
- C) To assist in tightening the jib sheet
- D) To assist in lifting the boat out of the water

1.2.1-5. *What are the three sides of a triangular sail called?*

- A) Clew, luff, and foot
- B) Tack, head, and luff
- C) Luff, foot, and leech**
- D) Tack, foot, and leech

1.2.1-6. *Where is the halyard attached to the sail?*

- A) The head**
- B) The tack
- C) The clew
- D) The foot

2.0 Boat Types and Characteristics - Core

2.1 Describe the types of boats and limitations of each (power-driven including jet-propelled, sailing, and human-propelled).

Describe the common types of recreational boats, common hull designs, and their performance in various types of boating situations. Boat operators should understand the handling characteristics of various boat types to match the boat to the water and planned activity. Boat performance characteristics as determined by design features should be known to a boat operator and factored into their boating decisions.

2.1 Sample Activities

- 1) Have pictures of the different types of boats so that the students can see them as they are being discussed.
- 2) Provide images of common hull designs. Have students match the hull shape with the description of its performance including stability.

2.1 Sample Questions

2.1-1. *Which factors impact the stability of a boat?*

- A) Load placement**
- B) Waterline
- C) Capacity Plate
- D) Horsepower

2.1-2. *A boat floats due to the force of gravity in combination with which other force?*

- A) Velocity
- B) Mass
- C) Buoyancy**
- D) Momentum

2.1-3. *What hull shape is best for small, calm, shallow water bodies?*

- A) Flat bottom hull**
- B) Round bottom hull
- C) V-shaped hull
- D) Modified V-shaped hull

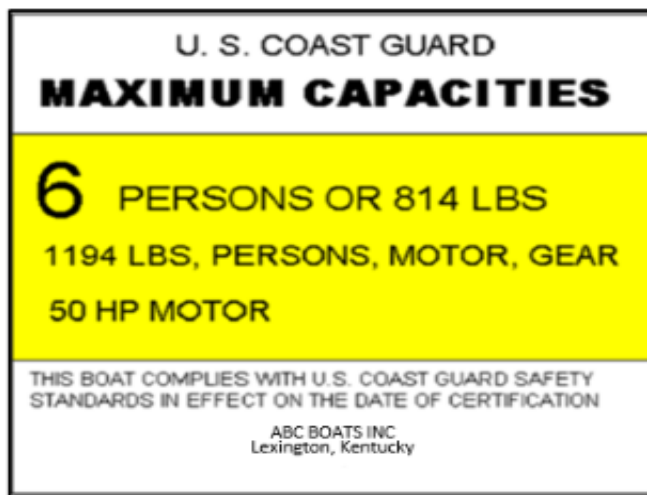
2.1-4. *What hull shape is most suitable for heavy wave conditions?*

- A) Flat bottom
- B) Pontoon
- C) V-shaped**
- D) Planing

2 - Boat Types and Characteristics - *continued*

2.2 Determine a boat's capacity by locating and determining gross load capacity (total weight and number of persons) from the boat capacity plate.

A boat operator must be able to avoid capsizing situations by adhering to boat capacity limits for safe operation. U.S. Coast Guard accident statistics indicate that capsizing is a leading cause of fatal accidents. Many capsizing incidents have resulted from overloaded boats. For boats without capacity plates, a boater should reference the owner's manual and state laws.



2.2 Sample Activities

1. Show an example of a capacity plate or a photo of one.
2. Place a couple of chairs in front of the room to represent a boat. Ask for two volunteers to sit in the "boat" and add gear (real or imaginary) to the "boat". List the weight of everything added to the boat (plus people) and see if it is too heavy for the boat using the capacity equation. (This also ties in with Standard 2: Boating Equipment)
3. Show pictures of possible boat capacity violations and ask students to evaluate them.
4. Show slides of a variety of boats (including seats) and ask students to guess the boat's capacity. Evaluate information from the capacity plate and explain any differences.

2.2 Sample Questions

2.2-1. *What information is shown on a boat's capacity plate?*

- A) The total weight and number of persons the boat is designed to carry.**
- B) The location where every person is to sit during boat operation.
- C) Information on how to start the boat's motor, including horsepower rating.
- D) The total number of passengers and seating locations.

2.2-2. *What is checked by calculating the number of persons and amount of gear on a boat?*

- A) Anchor size
- B) Engine power
- C) Trim adjustment
- D) Weight capacity**

2 - Boat Types and Characteristics - *continued*

2.3 Determine a boat's capacity if a capacity plate is not present.

Boat Operators need to be able to determine the boat's capacity if a capacity plate is not present by using the following formula for vessels less than 20 feet in length:

$$\text{Number of people} = (\text{boat length (ft.)} \times \text{boat width (ft.)}) \div 15.$$

This calculation represents the number of persons (weighing 150* pounds each, on average) the boat can carry safely in good weather conditions.

Although it is not a federal violation to exceed the loading capacities, many states have regulations regarding maximum capacity and overloading (even if a capacity plate is not present). Additionally, exceeding a boat's capacity limits may be considered in the event of a boating incident investigation and could result in further legal actions.

**Note: The USCG uses an average weight of 185 pounds per person for commercial passenger-carrying vessels. While the 185 pounds per person only applies to commercial passenger carrying vessels at this time, this is an important consideration when loading any vessel. Over the years there have been several commercial boating accidents where the weight of the passengers onboard played a role in the reduction of the vessel's stability. As a result, the NTSB recommended the formula and regulations governing the maximum weight and number of passengers be modified.*

The USCG made these adjustments for commercial vessels (reference link: <https://www.dco.uscg.mil/Portals/9/DCO%20Documents/5p/CG-5PC/CG-CVC/CVC1/policy/pwivsr/pwivsr.pdf>).

2.3 Sample Activity

1. Provide information on boat hulls under 20 feet and ask the students to calculate capacity using the formula.

2.3 Sample Questions

2.3-1. *What formula would you use to approximate the safe number of people onboard a 19-foot boat without a capacity plate?*

- A) Number of people = (boat length (ft.) × boat width (ft.)) ÷ 15**
- B) Number of people = (boat length (ft.) × boat width (ft.)) × 15
- C) Number of people = (boat length (ft.) × boat width (ft.)) × 1.5
- D) Number of people = (boat length (ft.) × boat width (ft.)) ÷ 1.5

2.3-2. *What is the capacity for a 19-foot powerboat that is 4 feet wide? Use this formula for the recreational boat: Number of people = (boat length (ft.) × boat width (ft.)) ÷ 15.*

- A) 2 people
- B) 3 people
- C) 4 people
- D) 5 people**

2 - Boat Types and Characteristics - *continued*

2.4 Describe how to determine acceptable loading including the benefits and methods of stowing and securing gear and equipment properly aboard a boat.

Many capsizing incidents have resulted from overloaded boats and shifting loads. U.S. Coast Guard accident statistics indicate that capsizing is a leading cause of fatal accidents.

A boat operator should recognize capsizing situations by adhering to boat capacity limits and ensure the loads are balanced (port to starboard and bow to stern). To enhance the stability of a boat all gear stored onboard should be placed as low and centered as possible and secured so it does not shift while underway.

2.4 Sample Activities

1. Place two chairs in front of the room to represent a boat. Ask for two volunteers to sit in the “boat” and add gear (real or imaginary) to the “boat.” List the weight of everything added to the boat (plus people) and see if it is too heavy for the boat using the capacity equation.
2. Show pictures of possible boat capacity violations and ask students to evaluate them.
3. Show slides of a variety of boats (including seats) and ask students to guess the boat’s capacity. Evaluate information from the capacity plate and explain any differences.
4. Discuss moving weight (ballast) to enhance or maintain boat performance (for example when transitioning from displacement to planning mode in powerboats).

2.4 Sample Questions

2.4-1. *What is checked by calculating the number of persons and amount of gear on a boat?*

- A) Anchor size
- B) Engine power
- C) Trim adjustment
- D) Weight capacity**

2.4-2. *Where is the best location on a boat to secure and stow gear?*

- A) On the aft deck
- B) On the forward deck
- C) Low and centered as possible**
- D) Above the gunwale

2.4-3. *What is a major consideration when balancing a load?*

- A) Weight distribution port to starboard**
- B) Distance to destination
- C) Boating experience of the operator
- D) Estimated time for the planned trip

2.0 Boat Types and Characteristics - Plus Sailing

2.1 through 2.4 - See “Basic Boating Knowledge - Core” (latest version)

2.5 Discipline Specific

Note: Because of the complexities of sailing, it is impractical to describe and illustrate each of the components of this section in great detail. Organizations such as American Sailing Association and US Sailing have gone to great lengths to develop learn-to-sail manuals which describe the content in detail. The content of these manuals are proven and widely recognized within the sailing community. An additional reference includes Chapman Book of Seamanship and vessel Handling.

2.5.1 Describe proper methods for boarding while keeping the sailboat reasonably stable.

Stay low, drop the centerboard if you have one. If on a small vessel, avoid stepping forward of the mast when boarding. Avoid carrying items aboard as you board. Maintain three points of contact with the vessel at all times. Communicate to others when boarding/disembarking to alert others that the vessel may lurch from the changing load. Also, advise others onboard if they need to change locations to keep the vessel level.

Methods of boarding can include from a dock, from shallow water near a beach, etc. There will almost certainly be some vessel movement, especially on smaller vessels; “reasonably stable” is included as a way to account for this expected movement.

2.5.1 Sample Activity

1. Demonstrate the meaning of three points of contact (two feet, one hand/ two hands, one foot.)

2.5.1 Sample Questions

- 2.5.1-1. How many points of contact should be made when boarding a vessel?
- A) None
 - B) One
 - C) Two
 - D) Three**

2.5.1-2. *What should you do before stepping onto a vessel?*

- A) Untie the dock lines
- B) Announce you are stepping aboard**
- C) Move everyone to the bow
- D) Move everyone to the stern

2 Boat Types and Characteristics - Plus Sailing - *continued*

2.5.2 Describe the purpose and functions of rudder, as well as the relationship between vessel speed and rudder control. Describe the purpose and functions of the tiller, tiller extension, and steering wheel(s). Discuss their advantages and disadvantages.

The rudder and tiller/wheel are an integral system that the operator uses to control the direction of the sailboat. Water must be flowing past the rudder in order to maintain steerage. The operator must understand how these systems work in order to steer the vessel to reach a destination, avoid hazards, and collisions with other vessels.

The faster the vessel is traveling, the smaller the tiller/wheel movement required. Large movements create excessive rudder and hull turbulence which slows the vessel.

The tiller extension allows the operator to steer the vessel from various positions. The direction of a tiller indicates the rudder's position, which is an advantage over a steering wheel.

The steering wheel is more intuitive for the operator and takes up less space in the cockpit. The rudder position is less apparent when using a steering wheel.

2.5.2 Sample Activity

1. Use a video or a model to demonstrate how a tiller and a rudder react.

2.5.2 Sample Questions

2.5.2-1. *What does a tiller extension permit the skipper to do?*

- A) Use an oversized rudder
- B) Scull the boat efficiently
- C) Install a self-steering device
- D) Sit further out on the windward side of the boat**

2.5.2-2. *How does a boat's rudder work?*

- A) Effective only when water is flowing past it**
- B) Move to starboard to turn the stern to port when backing
- C) Move to starboard to turn the bow to port when going forward
- D) An effective method of propulsion when used during sculling

2 Boat Types and Characteristics - Plus Sailing - *continued*

2.5.3 Describe the functions of, and differences between, a ballasted keel and a centerboard or dagger board.

A fixed ballasted keel, centerboard, or daggerboard help the vessel point upwind and minimizes hull rotation (heeling).

A fixed ballasted keel adds stability to help keep the vessel upright.

The centerboard pivots around a forward point, a daggerboard slides vertically to reduce the draft on a sailboat.

2.5.3 Sample Activity

1. Use a model or photos to illustrate the differences between these parts.

2.5.3 Sample Questions

2.5.3-1. *What is the primary purpose of a keel and centerboard?*

- A) Reduce leeway.**
- B) Provide a deeper bilge.
- C) Slow down the boat when sailing off the wind.
- D) Increase the maximum draft of a smaller boat.

2.5.3-2. *When included in the boat design, what does a keel do?*

- A) A keel does little to prevent leeway
- B) A keel is retractable for sailing downwind
- C) A keel is weighted to lower the boat's center of gravity**
- D) A keel is buoyant so that the boat will not sink if filled with water

2 Boat Types and Characteristics - Plus Sailing - *continued*

2.5.4 Define the basic force generated as air flows over a sail when sailing upwind and describe how this force propels the sailboat forward. Describe how the sail works differently when sailing straight downwind.

Bernoulli describes a fundamental principle and application of the force known as "lift." Bernoulli's law describes the pressure differential between the two sides of the sail caused by the different speeds at which air flows over the windward and the leeward sides of the sail. The wind speed difference creates low pressure on the leeward side of the sail generating horizontal lift that pulls the vessel through the water when sailing upwind.

For optimum performance the sails should be trimmed to the apparent wind. Apparent wind is a combination of the forward speed of the vessel and the actual (true) direction and wind speed. ("Apparent wind" is the wind the sails "see.")

Bernoulli's law does not apply when sailing downwind. While sailing downwind, the vessel is being pushed and is typically the slowest point of sail.

2.5.4 Sample Activity

1. Using an 8.5 x 11 sheet of paper, hold the narrow edge to your mouth and blow easily toward the sheet of paper to form a smooth curve when viewed from the long edge of the paper. Then blow hard on narrow edge to show how the paper flutters. Then repeat the easy blow, again forming a smooth curve, describe lift and Bernoulli's law.

2.5.4 Sample Questions

2.5.4-1. *Which side of the sail has lower pressure?*

- A) **Leeward**
- B) Windward
- C) Forward
- D) Aft

2.5.4-2. *Which of the following is a prime concern when adjusting sails?*

- A) True wind
- B) Boat wind
- C) Sea Breeze
- D) **Apparent wind**

2 Boat Types and Characteristics - Plus Sailing - *continued*

2.5.5 Describe what adjustments to the sails and rudder must be made to accommodate changes in wind direction and wind speed.

Operators need to know how changes in the apparent wind speed or direction impact the performance and safety of the vessel. Increasing and gusty wind conditions can increase the risk of excessive heeling or capsize.

When sailing in high or gusty winds, there are a number of options to reduce the power of the wind such as easing the mainsheet, reducing the sail area, reefing the mainsail, or changing course.

2.5.5 Sample Activity

1. Wind and rudder reaction may be demonstrated using a sailboat model or by video or animation.

2.5.5 Sample Question

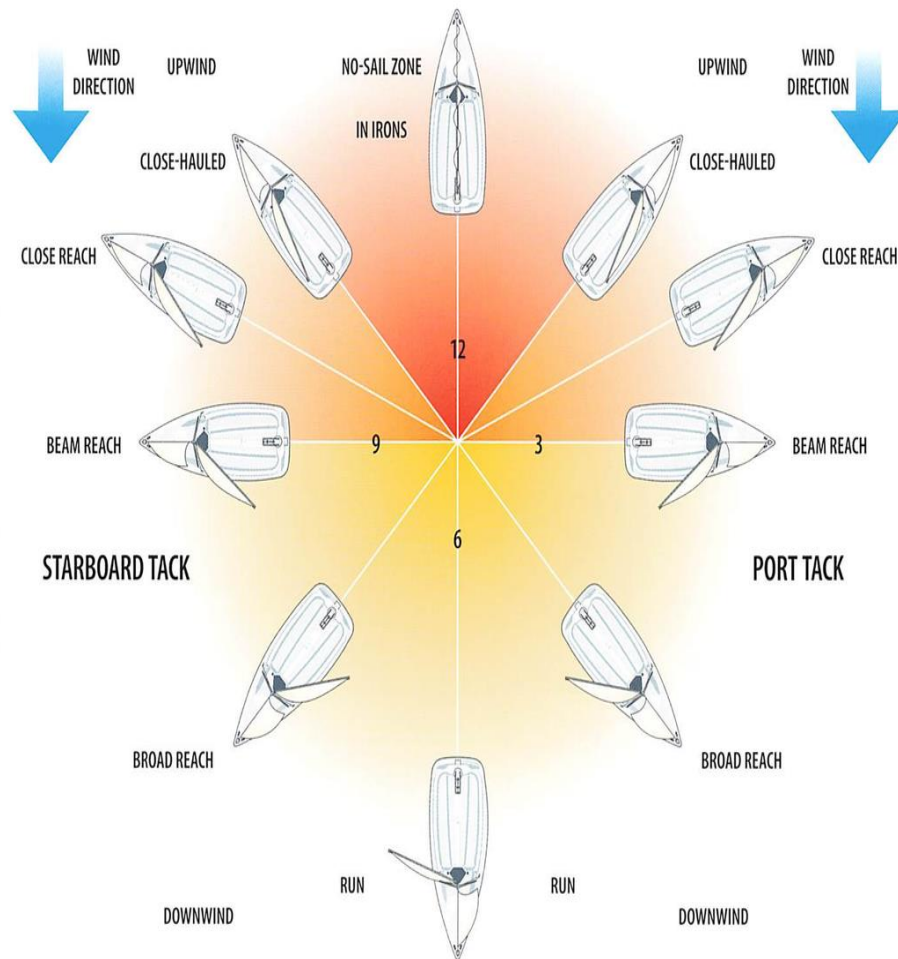
2.5.5-1. *When a boat is sailing too close to the apparent wind, what is it said to be?*

- A) In irons
- B) Beating
- C) **Pinching**
- D) Sailing too low

2 Boat Types and Characteristics - Plus Sailing - *continued*

2.5.6 Describe and identify the following points of sail and sailboat positions relative to the wind: close hauled, close reach, beam reach, broad reach, run/directly downwind, by the lee, no sail zone/in irons.

Points of Sail include: Head to Wind (In-Irons), Close-hauled, Close Reach, Beam Reach, Broad Reach, Run, Run



American Sailing Association reference diagram (used with permission)

2.5.6 Sample Activity

1. Draw outline of a boat from top down view on sheet of paper. Place on a table with students standing around forming circle around the table. Ask each student if they were direction of wind what would be the point of sail. Then have them lay a pen or pencil on draw to represent correct position of sail.

2.5.6 Sample Question

2.5.6 -1. *With winds from the northwest, what is the point of sail if traveling east?*

- A. Beam reach on starboard tack.
- B. Close-Hauled on port tack.
- C. Close reach on starboard tack.
- D. Broad reach on port tack.**

2 Boat Types and Characteristics - Plus Sailing - *continued*

2.5.7 Describe the purpose and identify the following course and tack changing maneuvers and their results: heading up, bearing away, tacking, gybing (jibing).

The points of sail define the direction that the vessel is going relative to the wind. Knowing the definitions of the points of sail and the orientation of the vessel on each is important so that the operator can stay in control and adjust the sails properly. See appropriate publication references from US Sailing, American Sailing Association, and others. The operator should know how to sail a steady course as well as turn the vessel relative to the wind, including toward the wind (heading up), away from the wind (bearing away), and changing the side of the vessel that the wind is on (tacking or gybing).

- Heading up - turning the bow towards the wind
- Bearing away - turning the bow away from the wind
- Tacking - changing direction of the vessel with the bow passing through the direction of the wind
- Gybing (jibing) - changing the direction of the vessel with the stern passing through the direction of the wind

2.5.7 Sample Activity

1. Using a model sailboat or take a plastic water bottle and poke a pen/pencil in the side as mast with a triangle cut piece of paper attached. Have students using model to travel across a table changing wind directions to create different scenarios.

2.5.7 Sample Questions

2.5.7 -1. *Your heading northeast with winds from the west, what maneuver would you do to change to broad reach starboard tack?*

- A) Heading up.
- B) Bearing away.
- C) Tacking.
- D) Gybing (jibing)**

2.5.7-2. *What maneuver on the same tack is used going from board reach to close-hauled?*

- A) Heading up.**
- B) Bearing away.
- C) Tacking.
- D) Gybing (jibing)

2 Boat Types and Characteristics - Plus Sailing - *continued*

2.5.8 Describe the causes and risks associated with an accidental gybe and ways in which it can be prevented.

Inattentive sailing is a leading cause of accidental jibes. An accidental gybe occurs when the wind catches the forward surface of the sail, which causes the boom to swing uncontrollably across the vessel to the opposite side. When an accidental gybe happens, people can be severely injured, the vessel can capsize and/or be damaged. Pay attention to the vessel's direction as well as changing wind conditions when going downwind.

Sailing-by-the-lee (wind on the same side as the mainsail) can result in an accidental gybe. Re-position the bow of the vessel to keep the jib full to reduce the risk of an accidental jibe.

If the course needs to be downwind, when possible a preventer line could be connected from the end of the boom to a point forward on the vessel. By doing this, even if the wind gets on the wrong side of the mainsail, the preventer line will reduce the chances of the boom from coming across the vessel.

2.5.8 Sample Activity

1. Show a video of the dangers of an accidental gybe (jibe).

2.5.8 Sample Question

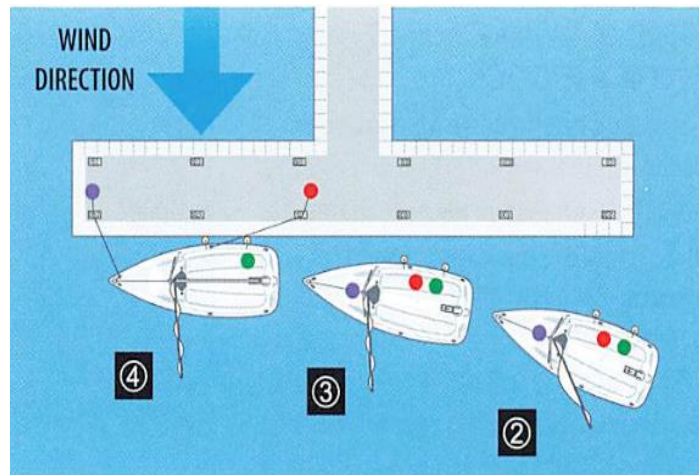
2.5.8 -1. *Why does a preventer reduce the risk of an accidental jibe?*

- A) The preventer line will reduce the chances of the boom coming across the vessel.**
- B) If the wind gets on the wrong side of the mainsail, the preventer line will keep the mast standing.
- C) If the wind is on the front side of the mainsail, the preventer line holds the tiller in place.
- D) If the wind is behind the boat, the preventer holds the daggerboard all the way down.

2 Boat Types and Characteristics - Plus Sailing - *continued*

2.5.9 Describe methods of accelerating, decelerating, and stopping a sailboat.

ASA (used with permission)



Placing the vessel in the safety position (single-sail sailboat on a close reach with mainsail luffing) or heaving-to (jib backed, main eased, helm to leeward) are important maneuvers to know. When a vessel is placed in one of these positions, control of the vessel can be maintained while vessel adjustments are made, the sails are reefed, the crew takes a break, or when responding to an onboard emergency, etc.)

Slow or stop the vessel by easing the sail (fig above), or turning the vessel toward the wind to cause the sails to luff (i.e., “In Irons” re Point of sail diagram). If the sails are luffing and the vessel has slowed, adjusting the sails or turning the vessel to where the sails are properly trimmed will cause the vessel to accelerate.

Large rudder movements create excessive rudder and hull turbulence and drag which slows the vessel.

2.5.9 Sample Activity

1. Use photos, videos, and models to illustrate techniques for accelerating, slowing and stopping the boat.

2.5.9 Sample Question

2.5.9 -1. If properly trimmed on a beam reach while approaching a dock, what happens when the sail is pulled in too tight ?

- A) You lose steerage.
- B) You gain speed.
- C) You lose speed.**
- D) The boat will tack.

2 Boat Types and Characteristics - Plus Sailing - *continued*

2.5.10 Describe methods for getting the sailboat out of irons and under control onto a desired tack.

An operator needs to know about the no-sail zone (a.k.a. no-go zone) and how to get out of 'irons', which is when the vessel is pointing directly into the wind with sails luffing. By back-winding the sails and turning the rudder, the vessel may be backed downwind to force the bow away from the wind so that sailing may resume.

2.5.10 Sample Activity

1. Use photos, videos, and models to illustrate techniques for getting the sailboat out of irons and under control onto a desired tack.

2.5.10 Sample Question

2.5.10-1. *What should you do to get out of irons?*

- A) Keep the bow pointed upwind
- B) Back-wind the sails and turning the rudder**
- C) Point the vessel directly into the wind with sails luffing
- D) Execute a controlled jibe

2 Boat Types and Characteristics - Plus Sailing - *continued*

2.5.11 Describe how to place the sailboat in the safety position or how to heave to, and the circumstances under which these maneuvers could be used.

Heaving-to allows the sailboat to be “parked” in open water. It can provide a chance to rest, take a meal, or check over the sailboat in relative tranquility.

How to Heave-to:

Hove-to trim has the jib trimmed “aback” (i.e., to the wrong side), the main sail eased, and the helm affixed to windward.

The easiest way to do this is to trim the jib sheet hard and tack, leaving the jib sheet in place. Trimmed this way, the wind pushes the bow downwind. Once the main sheet is eased, the sailboat will slowly rock back and forth and usually move downwind at 1-2 knots.

2.5.10 Sample Activity

1. Use photos, videos, and models to illustrate techniques for placing a sailboat into a safety position (heave-to).

2.5.10 Sample Question

2.5.10-1. Which of the following occurs when a sailboat is hove-to ?

- A) It does not change position or heading.
- B) It will change both position and heading.**
- C) It may change position but not heading.
- D) It may change heading but not position.

2 Boat Types and Characteristics - Plus Sailing - *continued*

2.5.12 Describe commands and responses for maneuvers such as heading up, bearing away, tacking, gybing, departure from and return to a dock, mooring, or shoreline, etc.

Good communication between operator and crew is important to maintain fun, increase safety and sailing efficiency. The crew should discuss appropriate commands to be used and responses, both verbally as well as actions to be taken.

Ensure all aboard understand the commands to be used during maneuvers.

Commands should be described and understood by the crew prior to sailing the vessel. Four actions of the vessel are heading up, falling off, coming about and jibing. Each action has a preparatory command that should be shared with the crew to alert them that an action is pending. Traditional commands include "prepare to come about", "coming about", "prepare to jibe", "jibe-ho", and "hard a-lee."

2.5.12 Sample Activities

1. Smaller movements with the tiller helps prevent oversteering. In a classroom, a shortened broomstick can be used to simulate tiller usage.
2. Diagrams can help illustrate how different positions of the centerboard, daggerboard, or swing keel, can affect the vessel's leeway and performance.

2.5.12 Sample Questions

2.5.12-1. *What is the command for telling the crew to prepare to tack?*

- A) Prepare to jibe
- B) Ready about**
- C) Hard alee
- D) Ease the sheets

2.5.12-2. *What is the command for changing tacks when sailing downwind?*

- A) Ready About (Hard alee)**
- B) Tiller towards boom (Tack Now)
- C) Prepare to jibe (Jibe Ho)
- D) Head up (Harden Up)

3.0 Required Equipment - Core

3.1 Describe how to select, use, and wear U.S. Coast Guard approved life jackets/personal flotation devices (wearables and throwables) including:

- ***1) legal requirements for carriage and wear including “readily accessible” versus “immediately available”;***
- ***2) label information indicating U.S. Coast Guard approval, size, performance, and limitations of use;***
- ***3) appropriateness for activity and in accordance with the law;***
- ***4) sizing and fit for intended wearer;***
- ***5) importance of wearing the life jacket due to rapidly changing conditions including weather and water conditions, boat traffic, etc.;***
- ***6) difficulty of putting on a life jacket in the water while under distress;***
- ***7) maintenance of inherent and inflatable life jackets per manufacturer recommendations;***
- ***8) serviceability of inherent and inflatable life jackets; and***
- ***9) when to replace life jackets due to excessive wear or damage.***

(Note: Bullet points are numbered for the flow of information within this Technical Report. The content above is repeated within boxes with supporting information below each box.)

Boating incident statistics consistently show (when known), that the leading cause of death is drowning. An overwhelming majority of these drowning victims were not wearing life jackets. Increasing the consistent and proper use of life jackets may significantly reduce the number of boating fatalities each year. Capsizing and falls overboard are leading causes for boaters unexpectedly entering the water.

Drowning death occurs to both swimmers and non-swimmers. Boaters need to understand that some life jackets are also referred to as Personal Flotation Devices (PFDs) and various designs are intended for different uses or activities, such as inflatable life jackets and throwable devices. Boaters should read and understand the information on the life jacket/PFD label and apply that to its intended use. The best life jacket/PFD is the one people will wear. Wearable life jackets are designed to keep your head above water and certain life jackets help you remain in a position that permits proper breathing. Some styles of life jackets are not intended for weak or non-swimmers.

3.1 Describe how to select, use, and wear U.S. Coast Guard approved life jackets/personal flotation devices (wearables and throwables) including: (see numbered points for detailed information)

While state and federal law use the reference PFD, the U.S. Coast Guard and others in the boating community encourage the use of the term “life jacket” when educating the boating public about wearable life jackets. The term “life jacket” has broader recognition and acceptance by the boating public than the term “PFD.”

Throwable devices are commonly configured as USCG-approved seat cushions or throw rings.

33 CFR § 175.13 Definitions.

A Personal flotation device or PFD means a device that is approved by the Commandant under 46 CFR part 160.

Personal Flotation Devices (PFDs) include wearable and throwable devices. In 2014, the U.S. Code of Federal Regulations (33 CFR Part 175, Subpart B) revised language regarding PFDs and defined wearable and throwable PFDs as follows:

- Throwable PFD means a PFD that is intended to be thrown to a person in the water. A PFD marked as Type IV or Type V with Type IV performance is considered a throwable PFD. Unless specifically marked otherwise, a wearable PFD is not a throwable PFD.
- Wearable PFD means a PFD that is intended to be worn or otherwise attached to the body. A PFD marked as Type I, Type II, Type III, or Type V with Type (I, II, or III) performance is considered a wearable PFD.

While state and federal law use the reference PFD, the U.S. Coast Guard and others in the boating community encourage the use of the term “life jacket” when educating the boating public about wearable life jackets. The term “life jacket” has broader recognition and acceptance by the boating public than the term “PFD.”

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- | |
|--|
| <ul style="list-style-type: none"> • <i>1) requirements for carriage and wear including “readily accessible” versus “immediately available”;</i> |
|--|

It is the boat operator’s legal responsibility to ensure that a USCG approved life jacket is available or worn in accordance with state and federal law. Each life jacket on board must be in serviceable condition, properly fitting, and approved for the boating activities taking place. If a law enforcement officer determines these conditions have not been met, the boat operator can expect to receive a citation or fine.

[§ 175.11 Applicability.](#)

This subpart applies to all recreational vessels that are propelled or controlled by machinery, sails, oars, paddles, poles, or another vessel.

[§ 175.15 Personal flotation devices required.](#)

Except as provided in § 175.17 and 175.25:

(a) No person may use a recreational vessel unless -

- (1) At least one wearable PFD is on board for each person;
- (2) Each PFD is used in accordance with any requirements on the approval label;

and

(3) Each PFD is used in accordance with any requirements in its owner's manual, if the approval label makes reference to such a manual.

(b) No person may use a recreational vessel 16 feet or more in length unless one throwable PFD is onboard in addition to the total number of wearable PFDs required in paragraph (a) of this section.

(c) No person may operate a recreational vessel under way with any child under 13 years old aboard unless each such child is either -

- (1) Wearing an appropriate PFD approved by the Coast Guard; or
- (2) Below decks or in an enclosed cabin.

[§ 175.17 Exemptions.](#)

(a) Canoes and kayaks 16 feet or more in length are exempted from the requirements for carriage of the additional throwable PFD required under § 175.15(b).

(b) Racing shells, rowing sculls, racing canoes, and racing kayaks are exempted from the requirements for carriage of any PFD required under § 175.15.

(c) Sailboards are exempted from the requirements for carriage of any PFD required under § 175.15.

(d) Vessels of the United States used by foreign competitors while practicing for or racing in competition are exempted from the carriage of any PFD required under § 175.15, provided the vessel carries one of the sponsoring foreign country's acceptable flotation devices for each foreign competitor onboard.

Life jacket wear regulations for children may also vary by state. If a state has an established statute requiring children of a certain age to wear an appropriate PFD while aboard a recreational vessel, then that requirement supersedes the requirement provided in 33 CFR 175.15(c).

§175.25 Enforcement of State requirements for children to wear personal flotation devices.

(a) This section applies to operators of recreational vessels on waters subject to the jurisdiction of any State that has established by statute a requirement for children of a certain age to wear an appropriate PFD approved by the Coast Guard, while aboard a recreational vessel.

(b) If the applicable State statute establishes any requirement for children of a certain age to wear an appropriate PFD approved by the Coast Guard, then that requirement applies on the waters subject to the State's jurisdiction instead of the requirement provided in § 175.15(c) of this part.

All boat occupants must know where the PFDs/life jackets and throwable devices are located, how to readily access them, and how to put them on for proper performance.

Wearable PFDs must be readily accessible (can be reached within a reasonable time).

Throwable PFDs must be immediately available (instant access).

[§ 175.19 Stowage.](#)

(a) No person may use a recreational boat unless each wearable PFD required by § 175.15 is readily accessible.

(b) No person may use a recreational boat unless each throwable PFD required by § 175.15 is immediately available.

- ***2) label information indicating U.S. Coast Guard approval, size, performance, and limitations of use;***

Boaters should read and understand the information on the life jacket/PFD label and apply that to its intended use. (See bullet point 3- appropriateness for activity and in accordance with the law.)

Some life jackets must be worn to meet carriage requirements. The label will indicate life jacket is "Approved only when worn".

In 2014, the U.S. Coast Guard removed the “Type” codes from the Code of Federal Regulations; in the future, these devices will be referred to as either “throwable” or “wearable” and have a performance category of Newton Levels (50, 70, 100, 150) indicated by an icon. New life jackets that are brought to the market may feature these new labels. However, it will take many years for the older style labels to be completely phased out and you are likely to see both styles in stores, on boats, and in use for many years to come. Any life jacket with a legacy label that is serviceable, as long as it’s Coast Guard approved, will meet regulatory requirements.

Boaters should check the label for limitations of use.

Lower Level numbers generally offer greater mobility, comfort, and style with good flotation for most people.

Higher Level numbers generally offer greater flotation, turning, and stability in the water.

The new label design relies on pictograms.

[New Life Jacket Labels and Icons – What do they Mean?\[1\]](#)

New life jacket labels feature information in five main categories, usually in separate boxes. The placement and location of the information may vary; however, they must be on the life jacket.

[What the Labels Tell You\[2\]](#)



EXAMPLE

[1] From BoatUS Foundation website <https://www.boatus.org/life-jackets/>

[2] Graphic Icons available for educational use at <https://uscgboating.org/multimedia/PFDlabelsgraphics.php>. Use Statement: Commandant United States Coast Guard (CG-BSX) has entered into a copyright permission agreement with Underwriters Laboratory Inc. ("UL") to provide a publicly available source of the graphics required for labels and Point of Sale ("POS") materials on USCG Approved PFDs complying with UL standards. To be used for educational and training purposes. The USCG intends to reproduce, publish, and otherwise use the works for Federal Purposes, and authorize others to do so. Note: This agreement does not grant Publisher any rights, authority or license to use or authorize the use of UL's trademarks, service marks, certification marks, logos, company name, corporate identity, or any abbreviation thereof.

1. Sizing



At the top of the label, usually toward the neck, is sizing information. The sizing usually specifies a user's weight range and chest size range. Proper fit is one of the most important considerations when selecting a life jacket. Additional considerations are found elsewhere on the life jacket label.

Example





2. Performance, Buoyancy, and Turning Information



[3]

Graphic	Definition of graphic
	Meets all requirements for Level 50
	Meets all requirements for Level 70

[4]

Graphic	Description
	Meets the requirements of this standard for Type III devices
	Meets the requirements of this standard for Type II or Type I devices

The first thing you'll notice is a bold-faced number. It could be 50, 70, 100, 150, or 275. This a measurement of gravitational force, which in the case of a life jacket is essentially buoyancy. The measurement is in Newtons (70N is roughly 15 lbs. of flotation). Newtons are used so that it's consistent with European and Canadian standards. Simply put, the higher the number, the greater the flotation. For the time being, most of the life jackets on the market today in the United States with the new labeling are Level 70 life jackets.

Graphic	Definition of Graphic
	Device does not turn wearer from face down position.
	Device turns some wearers from a face down position.

The curved arrow indicates the turning ability of the life jacket. Turning ability is whether or not a life jacket is capable or designed to turn an unconscious person face-up, unassisted. A Level 70 life jacket will not turn a person face up, that's what the curved arrow with a slash through it indicates. If there is no slash, it will turn most wearers face up. The higher the level number the more turning ability.


[3] UL1123: Standard for Marine Buoyant Devices and UL12402-5: ANSI/CAN/UL Standard for Personal Flotation Devices – Part 5: Buoyancy Aids (Level 50) – Safety Requirements

[4] UL1180: Standard for Fully Inflatable Recreational Personal Flotation Devices


3. Warnings, Intended Activity and Limitations of Use

Icons with activities and a slash through them indicate warnings and limitations of use. These symbols indicate a life jacket is not designed for towed sports such as skiing and tubing, personal watercraft operation, or whitewater paddle sports.

Graphic			Definition of graphic
			Not designed for water skiing, towed sports or for use on personal watercraft (PWC).

Graphic	Definition of graphic
	Warning symbol

[5]

Graphic	Definition of graphic
	Not designed for use in whitewater.

[5] Note: Within the confines of the ANSI/CAN/UL Standard for Personal Flotation Devices – Whitewater is meant to mean; any activity with a vessel on Class II and above rapids as determined by the six-class “International Scale of River Difficulty”. This definition applies only to those sections of the river with such rapids, and not the entire river.

4. Manufacturer, Certification and Approval Information

The Coast Guard testing approval numbers and manufacturer information are in this section of the label.

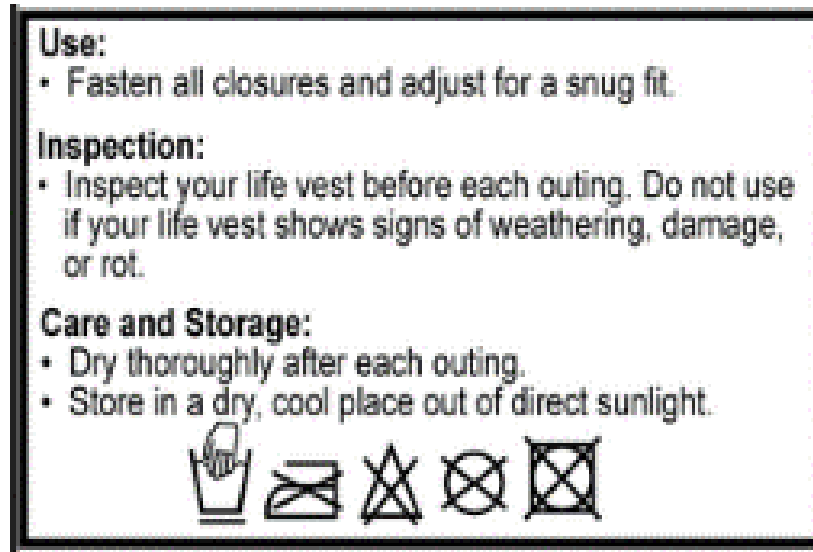
Example

Company Name Company Address Company website if available Made in XXXXX USCG Approved 160.064/XXXX/X TC Approved XXXXXXX-X ANSI/CAN/UL 12402-5 Model: XXXX Style: XXXX Lot No. XXXX Approval conditions state that this device must be worn to be counted as equipment required by vessels meeting Transport Canada or USCG regulations.	<div style="border: 1px solid black; padding: 5px; text-align: center;"> Lab Certification Mark </div> Certifying Lab Identification
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5. Care and Maintenance Instructions

This graphic indicates care and maintenance instructions. Follow additional information found in the instruction manual. *See bullet point 7) Maintenance of Inherent and Inflatable Life Jackets per Manufacturer Recommendations.*

Example



Icon Key [6]

	Hand wash. Hand wash at a water temperature between 30° C and a maximum of 40° C, depending on the particular article. First dissolve a fine detergent in plenty of water. Allow the textiles to float in the solution and agitate carefully. Do not rub, pull and wring out. Then rinse the textiles well, press the superfluous water out carefully and pull into shape. Treat coloured and sensitive pieces rapidly and do not leave lying in the wet state.
	Do not bleach. The triangle with a diagonal cross (St. Andrews Cross) indicates that bleaching is not allowed. Use only bleach-free detergent.
	Do not dry-clean. No professional dry-cleaning allowed. Do not use stain removers which contain solvents.
	Do not iron. Irreversible changes must be expected if an iron is used.
	Do not tumble dry Articles unsuitable for tumble drying.

The following link describes the condition, fit, and approval markings as defined in the CFR:

[§ 175.21 Condition; size and fit; approval marking.](#)

No person may use a recreational boat unless each PFD required by § 175.15 is -

(a) In serviceable condition as provided in § 175.23; (Note: See "serviceability of inherent and inflatable life jackets" in separate bullet point.)

(b) Of an appropriate size and fit for the intended wearer, as marked on the approval label (Note: See "*sizing and fit for intended wearer* " in separate bullet point.); and

(c) Legibly marked with its approval number, as specified in 46 CFR part 160.

Wearable PFDs are categorized by performance type or performance level.

- Type I, II, III, and V
- Level 50, 70, 100, and 150 (as measured in Newtons). 70 Newtons equals 15.74 pounds of buoyancy.
- Most adults only need 7 to 12 pounds of buoyancy (31 to 53 Newton) to keep their heads above water.
- Lower level number offers more mobility, comfort, and style with good flotation, and is intended for near shore (calm water) activities.
- Higher level number offers greater flotation, turning, and stability in the water, and for offshore activities (greater time to rescue).
- There are areas where you may be boating near shore when rescue is hours away, and a higher level is needed.

Performance Type Devices[7]:

- Type I - has the greatest required inherent buoyancy and turns most unconscious persons in the water from a face down position to a vertical and slightly backward position, therefore, greatly increasing one's chance of survival.
- Type II - intended to turn some unconscious persons from a face down position in the water to a position where the wearer's respiration is not impeded.
- Type III - intended to support a conscious person in the water in an upright position. This type of device is not required to turn an unconscious person in the water from a face-down position to a position where the wearer's respiration is not impeded.
- Type V - is approved for restricted uses or activities such as boardsailing, or commercial whitewater rafting. These devices may not be suitable for other boating activities. The label indicates whether a particular design of Type V can be used in a specific application, what restrictions or limitations apply, and its performance type.

Level 50 - intended for use by those who are competent swimmers and who are near to bank or shore, or who have help and a means of rescue close at hand. *Proposed for US market.*

Level 70 - intended for use by those who have help or a means of rescue close at hand, or who are near bank or shore. These devices have minimal bulk, but cannot be expected to keep the user safe for a long period of time in disturbed water. *Now available in U.S. markets.*

Level 100 - intended for those who may have to wait for rescuers, but are likely to do so in sheltered water. The device should not be used in rough water. *Proposed for US market.*

Level 150 - intended for general application or use with foul weather clothing. It will turn an unconscious person into a safe position and requires no subsequent action by the user to maintain this position. *Proposed for US market.*

Level 275 - intended primarily for offshore use under extreme conditions. *Proposed for US market.*

What does "*impact rating*" mean? It means the device has been strength tested at a specific mile per hour (mph) and not tested for personal protection from impact.

Underwriter's Laboratory tests the structural integrity of the life jacket by placing it in a frame and dropping it into the water from a boat at six different angles. Often a buckle will explode or a zipper seam will peel like a banana. This disclaimer appears because many people mistake the structural integrity test for an endorsement of high speed use. "Impact rating" means that the device has been strength tested at a specific mph and not tested for personal protection from impact. IMPORTANT NOTE: When engaging in towed sports such as skiing and tubing, personal watercraft operation, or whitewater paddle sports, use a life jacket that is specifically marked for the intended use. Older life jackets (manufactured before 2014) may say "impact tested" instead of "strength tested" but this is not an indication of personal protection from impact. Unless a person is trained, hitting the water at 50mph can provide an experience similar to hitting the pavement after falling out of a car at the same speed.

^[7] source – USCG website: <https://uscgboating.org/recreational-boaters/life-jacket-wear-wearing-your-life-jacket.php>

<ul style="list-style-type: none">• 3) appropriateness for activity and in accordance with the law;
--

The life jacket must be worn in accordance with the label. *See bullet 2 above.*

All U.S. recreational vessels are REQUIRED to carry one life jacket that is appropriate for the activity and used in accordance with the label for each POB onboard the vessel. Vessels 16 ft. in length, or greater MUST carry a throwable PFD unless exempted. *(See bullet point 1 for “legal requirements for carriage and wear...”).*

Life jacket wear requirements may vary from state to state. Check with your state boating agency for specific requirements. The student needs to understand and comply with requirements in the state in which they are boating. *(See Bullet Point 1- legal requirements for carriage and wear including “readily accessible” versus “immediately available and 2 for information on icons/appropriateness for activity.)*

- **4) sizing and fit for intended wearer [8];**

Participants need to understand how to select the correct size for themselves and other passengers and how to properly adjust for fit. When worn correctly, an inherently buoyant life jacket will fit snugly and will not allow the life jacket to rise above the wearer’s ears. It is important that the intended wearer correctly fit the life jacket using all adjustment points. It is also recommended that the user test performance and fit before getting on board the vessel.

Adult-sized life jackets may be inappropriate for children. Child size life jackets are available[9]. Fitting a child with the correct life jacket is critical. Do not purchase a life jacket that is too large, expecting the child to “grow into it.” However, some children may require a larger life jacket to achieve a proper fit because of the size of the child. All life jackets must fit snugly.

Check the life jacket label for the appropriate weight or chest size. The life jacket label will indicate the size and weight of the intended user. Make sure the wearer is within these ranges. Verify the life jacket label states it is “Coast Guard approved.” Inspect the life jacket for wear and tear including rips and missing buckles. If undamaged, put the life jacket on. Buckle all straps and tighten or zip up all zippers. If the straps or zippers don’t close, the jacket is too small. If the life jacket is equipped with a crotch strap, adjust and use it properly. Have the wearer lift their arms overhead and gently lift them by the top of the life jacket arm openings. If the jacket rides up above their ears, it’s too big.

Federal references:

[§ 175.21 Condition; size and fit; approval marking.](#)

No person may use a recreational boat unless each PFD required by § 175.15 is -

(a) In serviceable condition as provided in § 175.23;

- (b) Of an appropriate size and fit for the intended wearer, as marked on the approval label; and
- (c) Legibly marked with its approval number, as specified in 46 CFR part 160.

[8] Content from BoatUS infographic at <http://www.boatus.org/life-jackets/infographic/>

[9] See Important information about Children's PFDs at <https://uscgboating.org/library/graphics/UL12402-5/su2113a.png>.

- ***5) importance of wearing the life jacket due to rapidly changing conditions including weather and water conditions, boat traffic, etc.;***

The best life jacket/PFD is the one people will wear and that fits. Modern life jacket designs allow more maneuverability and comfort for every boating activity, including paddling and towed water sports.

Environmental conditions and situations can change rapidly and often can catch an unaware boater off guard. Boater safety education must repeatedly emphasize the importance of always wearing a properly fitting life jacket appropriate for the activity. Research has shown most drownings associated with recreational boating might not have occurred if the person had been wearing a life jacket. Wearing a life jacket at all times is the single most important behavior that a boater can do to be safe and prevent drowning.

- ***6) difficulty of putting on a life jacket in the water while under distress;***

Capsizing and falls overboard account for a large percentage of all boating fatalities.

Once a person enters the water, it can be very difficult to reach and put on a life jacket, especially under distress. Become familiar with your gear and know how to adjust straps. Layers of clothing may inhibit the ability to adjust the fit of the jacket when in the water. Consider factors such as water temperature, sea state, swimming ability or water competency, etc. which may affect the user's ability to properly don and adjust the life jacket to maximize the life jacket's performance.

- ***7) maintenance of inherent and inflatable life jackets per manufacturer recommendations; and***

Regular maintenance checks are essential to ensure the proper functioning of all PFDs/life jackets and especially inflatable life jackets which have additional manufacturer maintenance requirements.

Life Jacket Maintenance^[10]

DO:

- Check your life jackets at the beginning of each boating season.
- Check that all hardware and straps are in good shape, are firmly attached, and are in working order.
- Check for leaks, mildew, lumpy or hardened buoyancy material, & oil saturation in the fabric.
- Make sure that there are no rips or tears in the fabric.
- Make sure that the label stating USCG approval is attached, and that it is readable.
- Discard and replace life jackets that show signs of deterioration - tears, mildew stains, punctures, etc.

DON'T:

- Don't use a life vest or throwable flotation cushion as a kneeling pad or boat fender.
- Don't use harsh detergents or gasoline to clean it.
- Don't remove any labels, straps or buckles.

STORAGE:

- Store in an area with good ventilation and away from direct sunlight.
- If wet, allow it to dry thoroughly in open air before storing.
- Drying it in a dryer, in front of a radiator, or other source of direct heat will destroy its buoyancy.

^[10] Life Jacket Care - Source: www.boatus.org

<ul style="list-style-type: none">• <i>8) serviceability of inherent and inflatable life jackets;</i>
--

Life jackets are often subjected to rough handling, damaging ultraviolet sunlight, and improper storage. These conditions reduce the ability of the PFD/life jacket to perform its intended function. The operator should be able to distinguish serviceable PFDs/life jackets and identify the key conditions that necessitate replacing the PFD/life jacket.

The following two sections are from the Code of Federal Regulations (CFR) Title 33:

§ 175.21 Condition; size and fit; approval marking.

No person may use a recreational boat unless each PFD required by § 175.15 is -

(a) In serviceable condition as provided in § 175.23;

§ 175.23 Serviceable condition.

A PFD is considered to be in serviceable condition if the following conditions are met:

(a) No PFD may exhibit deterioration that could diminish the performance of the PFD, including -

(1) Metal or plastic hardware used to secure the PFD on the wearer that is broken, deformed, or weakened by corrosion;

(2) Webbing or straps used to secure the PFD on the wearer that are ripped, torn, or which have become separated from an attachment point on the PFD; or

(3) Any other rotted or deteriorated structural component that fails when tugged.

(b) In addition to meeting the requirements of paragraph (a) of this section, no inherently buoyant PFD, including the inherently buoyant components of a hybrid inflatable PFD, may exhibit -

(1) Rips, tears, or open seams in fabric or coatings, that are large enough to allow the loss of buoyant material;

(2) Buoyant material that has become hardened, non-resilient, permanently compressed, waterlogged, oil-soaked, or which shows evidence of fungus or mildew; or

(3) Loss of buoyant material or buoyant material that is not securely held in position.

(c) In addition to meeting the requirements of paragraph (a) of this section, an inflatable PFD, including the inflatable components of a hybrid inflatable PFD, must be equipped with -

(1) Except as provided in paragraph (d) of this section, a properly armed inflation mechanism, complete with a full inflation medium cartridge and all status indicators showing that the inflation mechanism is properly armed;

(2) Inflatable chambers that are all capable of holding air;

(3) Oral inflation tubes that are not blocked, detached, or broken;

(4) A manual inflation lanyard or lever that is not inaccessible, broken, or missing; and

(5) Inflator status indicators that are not broken or otherwise non-functional.

(d) The inflation system of an inflatable PFD need not be armed when the PFD is worn inflated and otherwise meets the requirements of paragraphs (a) and (c) of this section.

<ul style="list-style-type: none">• 9) when to replace life jackets due to excessive wear or damage.

Foam filled life jackets should be tested for wear and buoyancy at least once a year. Waterlogged, faded, or otherwise damaged life jackets should be discarded. (*See bullet point 8- Serviceability of inherent and inflatable life jackets.*) Replace any life jacket which is not in serviceable condition.

3.1 Sample Activities

1. Provide a variety of life jackets of various sizes and types. Have students locate the following information on the labels and choose the best life jacket for the boat and activity: USCG Approval number; wearer size; activities approved for use; other special instructions or restrictions.
2. Discuss the importance of wearing a life jacket for both swimmers and non-swimmers.
3. Demonstrate how to select the correct size and adjust for proper fit. Place life jackets on a variety of students and give them a tug at the shoulders with the student's arms extended over their heads to check for fit.
4. Regarding availability: Place several students in front of the room with a variety of sizes and types of life jackets buckled, tied, etc. and placed under their chairs. Simulate a boat crash and give the students 30 seconds to select, don and secure a life jacket. Review the success at the end of 30 seconds. Next, put the life jackets on, adjust properly, and repeat the activity. (With jackets already on, the person is protected).
5. Have a life jacket fashion show using examples of many different styles.
6. Have a relay race to show how long it can take to fully put on a life jacket as appropriate for the age group (i.e., young children versus adults).
7. Use assorted pictures of activities/people/boats and ask students to match recommended types of life jackets to pictures.
8. Show an example of an inflatable life jacket inflating it fully, deflating, re-packaging, and re-arming.
9. Have students read and share stories from the National Safe Boating Council's "Saved by the Jacket" book.
10. In a pool setting with a lifeguard on duty, have students put their lifejackets on while onshore; time them and establish how quickly they complete this. Then ask the students to enter the water until they can no longer touch the bottom (CAUTION: follow appropriate swimming and rescue policies). Throw life jackets into the water and time the students as they try to put on lifejackets in the water; compare the time required between donning life jackets onshore versus in the water. Emphasize that all people should wear life jackets at all times regardless of how strong a swimmer they may be.
11. Have several life jackets in various levels of serviceability (missing buckles, straps, small tears, broken seams). Have the students determine which devices would be deemed as "serviceable" based on the USCG serviceability policies.
12. Have a student demonstrate how to inflate an inflatable life jacket using the oral inflation tube. Deflate and re-pack the device.
13. Have a student demonstrate how a properly armed inflatable life jacket works by pulling the inflation cord. Deflate and re-pack the device. (Be sure an appropriate re-arming kit is available.)
14. Have students determine if a device is properly armed.
15. Pass around an expended CO2 cylinder showing students how to determine it is expended.

3.1 Sample Questions

3.1-1. *Why should a person be encouraged to wear a life jacket?*

- A) A high percentage of drowning deaths while boating occurs to non-swimmers.
- B) It is a federal law for boaters to wear a life jacket during the cold weather months.
- C) Life jacket labels describe who is required to wear the devices.
- D) An overwhelming majority of boating deaths occur from drowning.**

3.1-2. *When should adults wear USCG-approved life jackets?*

- A) When in bad weather
- B) During the nighttime
- C) At all times when aboard**
- D) Only when boating alone

3.1-3. *According to the U.S. Coast Guard, what is the leading cause of boaters unexpectedly entering the water?*

- A) Swamping and sinking
- B) Collisions with other boats
- C) Ejection from a boat
- D) Capsizing and falling overboard**

3.1-4. *A life jacket on your vessel should be sized for which person on board?*

- A) The largest person
- B) The smallest person
- C) Average sized person
- D) Its intended wearer**

3.1-5. *For a 15-foot boat, which object is required to be on board?*

- A) A working VHF radio or cell phone
- B) A copy of the Navigation Rules book
- C) At least ten feet of line
- D) One USCG-approved PFD for each person**

3 Required Equipment - *continued*

3.2 Describe required lights and sound signals for recreational boats as set forth in the most recent version of the NAVIGATION RULES AND REGULATIONS HANDBOOK as published/maintained by the United States Coast Guard's online Navigation Center including:

- ***common lighting configurations; and***
- ***types of sound-producing devices required and use of such devices on recreational boats.***

Recreational boats are required to display navigation lights between sunset and sunrise and during periods of restricted visibility. U. S. Coast Guard boating statistics indicate a significant number of boat collisions occur during these times. Boat operators who know, understand and follow navigation and anchorage light requirements can help reduce collisions. Part C of the NAVIGATION RULES AND REGULATIONS HANDBOOK as published/maintained by the United States Coast Guard's online Navigation Center (most recent series edition) provides a summary of the most relevant lighting requirements for recreational boaters.

Technical advances in marine lighting, such as Light Emitting Diodes (LEDs), rope lighting, underwater lighting, and other various types of decorative lighting, may violate navigation light provisions of the Nautical Rules of the Road. The Rules concerning lights shall be complied with from sunset to sunrise, and during such times no other lights shall be exhibited.

If other lights are used, they cannot be mistaken for the lights specified in the Rules, cannot interfere with visibility or distinctive character of navigation lights, or interfere with the ability to keep a proper look-out. For more details, see Rule 20 PART C—LIGHTS AND SHAPES.

The means of producing an effective audible sound is required on all recreational boats. Boat operators must be able to alert other boats to their presence, operational intentions, signal distress, and recognize those of others. The use of sound producing devices can aid in reducing collisions. Boaters should know how sound producing equipment can be used to prevent collisions by signaling navigational intentions to other vessels. Part D of the NAVIGATION RULES AND REGULATIONS HANDBOOK as published/maintained by the United States Coast Guard's online Navigation Center (most recent series edition) provides a summary of the most relevant sound requirements for recreational boaters.

3.2 Sample Activities

1. Show examples of navigation lights indicating proper placement.
2. Show pictures, videos, or online clips of lights at night and ask students to identify and explain what they are observing.
3. Have students “position” themselves in proximity to a series of navigation lights in a dark classroom. Observe the displayed light pattern dead ahead; crossing left-to-right; crossing right-to-left; and overtaking. Students indicate what the light patterns mean and how to identify the type of boat displaying them.
4. Set up a boating channel scheme with buoys (using objects readily available such as chairs) and have the students practice moving through the course using appropriate sound signals to demonstrate their understanding of both international and inland rules.
5. Students may use red (port) and green (starboard) cards to demonstrate their understanding of navigation rules such as crossing, stand-on, give-way and overtaking situations including audibly simulating appropriate sound signals.

3.2 Sample Questions

3.2-1. Which type and size vessel need only show navigation lights at night consisting of an electric torch or lighted lantern showing a white light in time to prevent collision?

- A) Rowboats with an electric motor
- B) Sailing vessel over 40 ft.
- C) Sailing vessel less than 65.6 ft.
- D) Sailing vessel or vessel under oars less than 23 ft.**

3.2-2. What does a red, green, and white light indicate when seen together at night?

- A) It is the bow of a power vessel heading straight toward you.**
- B) It is the port side of another vessel crossing your bow.
- C) It is the starboard side of another vessel crossing your bow.
- D) It is the stern side of another vessel that you are overtaking.

3.2-3. Which of the following is typically recognized as a sound signaling device?

- A) Your voice
- B) Revving your engine
- C) A handheld air horn**
- D) Clapping your hands

3 Required Equipment - *continued*

3.3 Describe visual distress signals for recreational boaters as set forth in 33 CFR 175.110, including types and required visual distress signals on recreational boats.

33 CFR 175.110 states: Visual distress signals required.

(a) No person may use a boat 16 feet or more in length, or any boat operating as an uninspected passenger vessel subject to the requirements of 46 CFR chapter I, subchapter C, unless visual distress signals selected from the list in § 175.130 or the alternatives in § 175.135, in the number required, are onboard. Devices suitable for day use and devices suitable for night use, or devices suitable for both day and night use, must be carried.

(b) Between sunset and sunrise, no person may use a boat less than 16 feet in length unless visual distress signals suitable for night use, selected from the list in § 175.130 or § 175.135, in the number required, are on board.

Per 33 CFR 175.115 Exceptions, the following persons need not comply with § 175.110; however, each must carry onboard visual distress signals suitable for night use, selected from the list in § 175.130 or § 175.135, in the number required, between sunset and sunrise:

- (a) A person competing in any organized marine parade, regatta, race, or similar event;
- (b) A person using a manually propelled boat; or
- (c) A person using a sailboat of completely open construction, not equipped with propulsion machinery, under 26' in length.

Visual distress signals (VDS) provide an effective means for boaters to alert others they are in distress and/or mark a location for assistance. Using VDS in combination with electronic or wireless communications can expedite an emergency response when used correctly. When electronic communication methods are ineffective, a boater may have no other means to summon help from others in an emergency. Numerous boaters in distress have successfully signaled for assistance using traditional pyrotechnic devices such as flares, or daytime devices such as smoke signals and distress flags. Boaters should familiarize themselves with the new electronic VDS, their advantages and display characteristics.

Boaters should understand the different types of VDS that may be carried onboard boats, know how to use them, and recognize them when deployed in an emergency. Part D Rule 37 of the NAVIGATION RULES AND REGULATIONS HANDBOOK as published/maintained by the United States Coast Guard's online Navigation Center (most recent series edition) provides a summary of VDS appropriate for recreational boaters. No person in a boat shall display a visual distress signal under any circumstance except a situation where assistance is needed.

NOTE: States and geographical locations may dictate additional VDS carriage requirements. The U.S. Coast Guard requires that VDS as described in 33 CFR 175.110 be carried on recreational boats operating on coastal waters. Coastal waters means: (1) The U.S. waters of the Great Lakes (Lake Erie, Huron, Michigan, Ontario, and Superior); (2) The territorial seas of the United States; and (3) Those waters directly connected to the Great Lakes and territorial seas (i.e., bays, sounds, harbors, rivers, inlets, etc.) where any entrance exceeds 2 nautical miles between opposite shorelines to the first point where the largest distance between shorelines narrows to 2 miles, as shown on the current edition of the appropriate National Ocean Service chart used for navigation. Shorelines of islands or points of land present within a waterway are considered when determining the distance between opposite shorelines.

[§ 175.130 Visual distress signals accepted.](#)

(a) Any of the following signals, when carried in the number required, can be used to meet the requirements of § 175.110:

(1) An electric distress light meeting the standards of 46 CFR 161.013. One is required to meet the night only requirement.

(2) An orange flag meeting the standards of 46 CFR 160.072. One is required to meet the day only requirement.

(3) Pyrotechnics meeting the standards noted in Table 175.130.

(b) Any combination of signal devices selected from the types noted in paragraphs (a) (1), (2) and (3) of this section, when carried in the number required, may be used to meet both day and night requirements. Examples - the combination of two handheld red flares (160.021), and one parachute red flare (160.024 or 160.036) meets both day and night requirements. Three handheld orange smoke (160.037) with one electric distress light (161.013) meets both day and night requirements.

Table 175.130 - Pyrotechnic Signal Devices

Approval number under 46 CFR	Device description	Meets requirement for	Number required
160.021	Hand Held Red Flare Distress Signals ³	Day and Night	3
160.022	Floating Orange Smoke Distress Signals	Day Only	3
160.024	Parachute Red Flare Distress Signals	Day and Night ¹	3
160.036	Hand-Held Rocket-Propelled Parachute Red Flare Distress Signals	Day and Night	3
160.037	Hand-Held Orange Smoke Distress Signals	Day Only	3
160.057	Floating Orange Smoke Distress Signals	Day Only	3
160.066	Distress Signal for Boats, Red Aerial Pyrotechnic Flare	Day and Night ²	3

1 These signals require use in combination with a suitable launching device approved under [46 CFR 160.028](#).

2 These devices may be either meteor or parachute assisted type. Some of these signals may require use in combination with a suitable launching device approved under [46 CFR 160.028](#).

3 Must have manufacture date of 1 Oct. 1980 or later.

[CGD 81-038-A, [47 FR 24548](#), June 7, 1982]

3.3 Sample Activities

1. Show examples of VDS (ensure they are inert) and how they are best used/stored.
2. Determine if pyrotechnic or other devices are approved for marine use.
3. Determine if a device has an expired service date.
4. Determine if a device is approved for daytime or nighttime use, or both.
5. Show videos of VDS being used properly.
6. With permission of the appropriate authorities and implementation of safety protocols, demonstrate the use of devices in the field.

3.3 Sample Questions

3.3-1. *How should a red hand-held flare be used as a distress signal?*

- A) Wave it in a slow arc over your head
- B) Hold it still facing upwind at the stern
- C) Move it up and down in front of your chest
- D) Hold it downwind over the side of the boat**

3.3-2. *Which of the following situations indicates an emergency aboard?*

- A) Flying a yellow flag from the bow
- B) A boat blowing its horn one time
- C) Orange smoke billowing from a boat**
- D) A flashing red light displayed on the stern

3.3-1. *What is the VDS carriage requirement for a 20-foot powerboat on coastal waters?*

- A) Day and night signals are required.**
- B) Day signals only are required.
- C) Night signals only are required.
- D) No signals are required.

3.0 Required Equipment - Plus Sailing

3.1 through 3.3 - See ““Basic Boating Knowledge - Core” (latest version)

3.4 Discipline Specific

3.4.1 Describe required lights and sound signals for sail vessels as set forth in the most recent version of the NAVIGATION RULES AND REGULATIONS HANDBOOK as published/maintained on the United States Coast Guard’s online Navigation Center including:

- **common lighting configurations; and**
- **types of sound-producing devices required and use of such devices on sail vessels.**

Sailboat lighting may differ from other types of vessels. For non-motorized, a flare-up electric torch such as a flashlight is required to be shown. Larger sailboats display Red over Green on the mast and a white stern light. A sailor must understand and display the proper lighting configurations for a vessel under sail.

Sailboats are required to carry the same sound-producing devices as other vessels as determined by the vessel's length.

3.4.1 Sample Activity

1. Use flash lights, whistles, and air horns to demonstrate various signals used on sailboats.
2. Use diagrams to illustrate lighting configurations for sailboats.

3.4.1 Sample Question

3.4.1-1. Which of the following is a lighting display for a sailboat under sail?

- A) White over green lights on the mast
- B) Red over green lights on the mast**
- C) Green over white lights on the mast
- D) All-round green light on the mast

4.0 Trip Planning and Preparation - Core

Note: Analysis reveals that the most common cause of incidents is a lack of deliberate and systematic risk management during planning, preparation, and throughout the entire boating trip. Trip planning and preparation effectively identifies hazards early, which gives ample time to evaluate and implement mitigations and controls to reduce risk exposure. Risk has many definitions. For Trip Planning and Preparation risk is defined as the possibility of loss or injury due to exposure to a hazard. Trip Planning and Preparation is a process to identify, assess, control, mitigate and manage hazards associated with an activity.

4.1 Describe how to obtain and adhere to information regarding local, state, and federal laws and regulations including regulations for titling, registering or documentation of a boat.

The USCG requires states to have an approved numbering system for any power-driven vessel. In addition, boaters should be informed that some states require registration of non-motorized craft including sailboats and human-powered vessels. Boaters need to know how to obtain and adhere to information regarding local, state, and federal laws and regulations including regulations for titling, registering or documentation of a boat.

Paddlecraft, sail, and rowboats that have installed propulsion machinery of any type (fuel or electric) are defined as an “open motorboat,” and are therefore required to be registered and titled (if required by the state) as an “open motorboat.” They also must carry all safety equipment for an “open motorboat” of its size.

Refer to the VIRT State Titling and Registration Dashboards at <https://idash.nasbla.net/idashboards/viewer/?guestuser=guest&dashID=178&c=0>. This provides most of the basic requirements state by state of what is required when it comes to titling and registering recreational vessels.

Note to course developers: A boat owner is required to provide the boat's hull identification number (HIN) when titling or registering a vessel. "ABC 123XY H1 21" is used by the U.S. Coast Guard as an example of the format of a HIN. Wherein, "ABC" is the Manufacturer Identification Code (MIC); "123XY" is the production or serial number; "H1" is the Month/Year of Certification/Manufacture; "21" is the Model Year.

Vessel Titling: Vessel ownership is proven with a vessel title. In states that require a vessel to be titled, a title must be issued before a certificate of number (registration). Once issued, it doesn't have to be renewed.

Vessel Registration: Each vessel registered in a state of principle operation is given a permanent registration number (boat number, i.e. OH 0001 ZZ) that proves the vessel has been legally registered. In states that require titles, a title must be issued before the registration is issued.

Certificate of Number: Once a recreational vessel is registered, the owner will receive a “Certificate of Number,” which is commonly referred to as a “registration card.” The original copy of this document (or an official duplicate) must be carried onboard. (See exceptions in 33 CFR 173.21.)

Recreational Vessel Documentation: A process of registering a vessel with the U.S. Coast Guard National Vessel Documentation Center (NVCD). Unlike state titling, USCG vessel documentation occurs at the federal level and provides lenders with a “Preferred Ship Mortgage.” A U.S. Coast Guard Certificate of Documentation establishes the ownership nationality of a vessel. To be documented, vessels must measure at least five net tons. Net tonnage is a measure of vessel volume. The rule of thumb is a vessel would have to be 25 feet or longer to be documented.

Some states require a recreational documented vessel to be registered. If it is required to be registered in a state, it will not receive a boat number, only a user decal. Since USCG documentation establishes ownership on a federal level, a documented boat will not be issued a state title, even if they are required to be registered in a state.

[CFR, Title 33, Parts 173 & 174](#)

PART 173—VESSEL NUMBERING AND CASUALTY AND ACCIDENT REPORTING

[§173.3 Definitions.](#)

[Subpart B—Numbering](#)

[§173.11 Applicability.](#)

[§173.13 Exemptions.](#)

[§173.15 Vessel number required.](#)

[§173.17 Reciprocity.](#)

[§173.19 Other numbers prohibited.](#)

[§173.21 Certificate of number required.](#)

[§173.23 Inspection of certificate.](#)

[§173.25 Location of certificate of number.](#)

[§173.27 Numbers: Display; size; color.](#)

[§173.71 Application for and issuance of certificate of number.](#)

[§173.77 Validity of certificate of number.](#)

PART 174—STATE NUMBERING AND CASUALTY REPORTING SYSTEMS

[§174.3 Definitions.](#)

[§174.17 Contents of application for certificate of number.](#)

[§174.19 Contents of a certificate of number.](#)

[§174.23 Form of number.](#)

[§174.25 Size of certificate of number.](#)

[§174.27 Duration of certificate of number.](#)

[§174.31 Terms imposed by States for numbering of vessels.](#)

4.1 Sample Activity

1. Provide a sample showing placement of boat registration numbers on the bow of the vessel with block letters.

4.1 Sample Question

4.1-1. *Where are boat registration numbers placed?*

A) On the bow

B) On the stern

C) On the helm

D) Inside the engine compartment

4 Trip Planning and Preparation - *continued*

4.2 Identify information sources for local weather and water conditions. Obtain and interpret the information for the length of the intended trip according to:

Obtaining, understanding and using weather reports is important. Boat operators should recognize the signs of changing weather conditions to make an informed judgment as they relate to their boating skill, experience, and vessel capability. It is the responsibility of the operator to decide to launch, continue, or make adjustments to the trip. Many boating incidents occur because the operator did not take into account the current or changing environmental factors. Many incidents occur on calm, clear days. Challenging, changing weather/water conditions combined with operator skill level and unexpected emergencies can accelerate the danger to operators and passengers. (Also see 4.8 regarding “go-no-go” decision-making.)

- **boater skill level;**

Skill level, including the ability and on-water experience of the operator and passengers, should be considered by the operator when evaluating overall risk.

- **boat capability pertinent to those conditions; and**

The operator should evaluate the boat's capability and equipment when considering risk. Boat capability includes maneuverability, propulsion type, hull shape, draft, freeboard, structures above the waterline, and understanding the operational parameters and design limitations of the vessel per the owner's manual or manufacturer's specifications.

- **environmental conditions including low/high tide, submerged objects, sand bars, currents, etc.**

Boat Operators must have a continuous, systematic process of identifying and managing risk. This process includes detecting hazards associated with weather and environmental conditions, assessing risks, and implementing controls. The wind, sea state, tides, and currents affect steering; low and high tides can reveal (low tide) or hide (high tide) sandbars and other submerged objects; reduced visibility limits visual navigation, and the state of the atmosphere (such as lightning) can affect electronic navigation and communications.

4.2 Sample Activity

1. Bring a handheld radio into class and tune to the Weather Station.

4.2 Sample Question

4.2-1. *Where would you find the local tides for your area?*

A) Tides and Tables book

B) The newspaper

C) The Coastal Pilot

D) Local chart

4 Trip Planning and Preparation - *continued*

4.3 Identify critical topics for a pre-departure briefing including safety equipment, first-aid kit, emergency and routine communications and procedures, falls overboard, line handling, etc. that should be described for crew and passengers and how it could be delivered.

Pre-departure checklists aid the operator and passengers in determining if all legally required and recommended equipment is onboard, operating systems (e.g., engines, electronics, navigation lights, etc.) are working correctly, and that all safety equipment is available and functional (e.g., life jackets, dewatering equipment, visual distress signals, etc.). *(Also see section 5.1)*

The following is an example for a powerboat captured from [A Boater's Guide to the Federal Regulations for Recreational Boats](#), published by the U.S. Coast Guard (pages 70-72). Not all items apply to all vessel types or waters. Add additional items, such as Emergency Cut-off Switch (if required) based on your type of vessel. Look for additional details in the Plus Human-Propelled, Plus Sail, and Plus Power sections of this Technical Guide. Also see U.S. Coast Guard's app with Pre-departure checklist at <https://www.uscgboating.org/images/420.PDF>.

BOATER'S PRE-DEPARTURE CHECKLIST

Know your vessel. Before departure, always be sure your vessel is in good working order and properly equipped for emergencies. Avoid inconvenience and potential danger by taking a few minutes to check the following:

Minimum Federal Required Equipment	Page	Yes	No
State Registration (Certificate of Number)	5		
State Numbering Display	5		
Certificate of Documentation	6		
Life Jackets: one for each person on board	9		
Throwable Type IV Device	14		
Visual Distress Signals	17		
Fire Extinguisher (Fully Charged)	21		
Proper Ventilation	23		
Backfire Flame Control	25		
Sound Producing Device	25		
Navigation Lights	27		
Oil Pollution Placard	32		
Garbage Placard	34		
Marine Sanitation Device	35		
Copy of Navigation Rules (Inland Waters)	36		
Any Additional State Requirements			

Besides meeting the federal requirements, prudent boaters carry additional safety equipment and supplies. The following additional items are suggested depending on the size, location, and use of your boat:

Recommended Equipment and Supplies	Yes	No	N/A
VHF-FM Marine Radio			
EPIRB/PLB			
Anchor and Line			
Chart(s) of the Area and Navigation Tools			
Magnetic Compass			
Fenders and Boat Hook			
Mooring Lines and Heaving Line			
Manual Bilge Pump or Bailing Device			
Tool Kit			
Spare Parts (Fuses, Spark Plugs, Belts, etc.)			
Spare Battery (Fully Charged)			
Spare Propeller/Shear or Cotter Pins			
Extra Fuel and Oil			
Alternate Propulsion (Paddles/Oar)			
Flashlight and Batteries			
Search Light			
First Aid Kit			
Sunscreen (SPF 30+)			
Mirror			
Food and Water			
Extra Clothing/Foul Weather Gear			
AM-FM Radio			
Cellular Phone			
Binoculars			

Safety Checks and Tests	Yes	No	N/A
Test VHF Marine Radio (Voice Call)			
Test Navigation and Anchor Lights			
Test Steering (Free Movement)			
Test Tilt/Trim			
Test Bilge Pump			
Check for Excessive Water in Bilges			
Check Fuel System for Leaks			
Check Engine Fluids			
Ensure Boat Plug is Properly Installed			
Check Electrical System			
Check Galley/Heating Systems			
Check Gauges (i.e., Battery)			
Check Fuel Amount			
Ensure Anchor is Ready for Use			
Check Load of Vessel and Secure Gear			
Ensure Passengers Know Emergency Procedures and Equipment Location			
Check that all Life Jackets Fit Properly			
Check the Weather Forecast			
File a Float Plan with Relative or Friend			

You can also download a Pre-Departure Checklist from the U.S. Coast Guard website at www.uscgboating.org.

A pre-departure briefing can aid the operator in delivering important safety information to passengers before getting underway. Safety information may include; the location and importance of wearing life jackets, location of fire extinguishers and emergency signaling equipment, what to do in the event of a person falling overboard, emergency boat operation, emergency and routine communications and procedures, safe line handling, etc. It is important for passengers to know where they are traveling so they may communicate to emergency responders, if needed.

- Safety equipment - All passengers should be made aware of the location and proper use of the safety equipment on board, including life jackets, throwable flotation devices, fire extinguishers, emergency signaling devices, communication devices, etc.
- First-aid kit - All passengers should be made aware of the location and contents of all first-aid kits and materials aboard the vessel.
- Emergency and routine communications and procedures - Operators need to make passengers aware of the limitations and benefits of different communication devices in their area as well as the appropriate use of each before selecting the best options for their vessel. Passengers must be made aware of the proper use of communications devices on board including but not limited to VHF radio (and areas where they may not be monitored as readily), cell phones (and the limitations of calls made from a phone as well as the need for local emergency numbers to be readily available), Emergency Position Indicating Radio Beacons (EPIRBs) and Personal Locator Beacons (PLBs), satellite phones, and other communication devices. Additional considerations for choosing onboard communications devices include: the type and size of the vessel, boating location, body of water, and the population of nearby boaters who could render assistance. Everybody on board should be able to describe the nature of the distress, determine the actual location of the vessel, give the vessel's description and the number of individuals on board to relay the information in an emergency call. *Also see Section 7: Emergency Preparedness and Response.*
- Falls overboard - Passengers should be made aware of the immediate first steps to be taken in the event of a fall overboard as well as responsibilities and procedures for retrieving a person in the water. When someone goes overboard or when it is noticed that someone is missing, it is important to shout "Man Overboard" immediately (or another understood phrase) and include from what location of the vessel (if known). One person should be assigned as the spotter and keep pointing to the person or the last known location so as to not lose sight as the operator attempts to retrieve them. *Also see section 7.2 - Falls Overboard, etc.; section 5.4.*
- Line handling - proper use of lines during launching and docking procedures is important for the safety of all. A review of relevant knots may also be helpful for crewmembers, especially those who may help in tying a vessel up at the dock or securing gear onboard in inclement weather.

See SAMPLE Safety Briefing from the National Safe Boating Council (Section 5.1).

4.3 Sample Activities

1. Create a sample pre-departure checklist for a specific type of vessel.
2. Complete a pre-departure checklist on a vessel.

4.3 Sample Question

4.3-1. *When would you prepare a pre-departure checklist?*

- A) **Before the trip**
- B) At the dock
- C) When your underway
- D) Never

4 Trip Planning and Preparation - *continued*

4.4 List important considerations for personal preparation and readiness before departure, including health/medications, fitness, gear, supplies, hydration, clothing, etc.

Readiness before departure includes operator and passenger responsibilities. Everyone on board should be present and attentive during the safety briefing before departure.

Persons should consider their physical fitness for any boating activity. People should be aware that they can enter the water and be prepared to swim. People should have the proper gear available to them or bring it themselves (food, water, supplies, adequate clothing - including foul weather gear). Persons should carry medications essential for the trip duration and any potential delays and be aware of side effects that may impact their trip. People should also dress appropriately for the environmental conditions for the intended voyage.

Readiness before departure also includes filing a float plan (see element 4.7), obtaining local knowledge (see element 4.6), and personal readiness such as availability of food, water, supplies, adequate clothing (including foul weather gear), phone numbers for requesting assistance, sunscreen, etc.

Personal fitness, disabilities, medications, and other physical limitations should be considered before beginning any boating activity. I.e. ensure non-swimmers wear a life jacket, essential medication is available throughout the planned trip duration, etc.

Adequate food, water, clothing, medications and other essential personal items are available throughout the planned trip duration and any potential delays.

For example: Diabetics that require insulin should provide a basic awareness of their condition, have with them the ability to check blood glucose levels, have an adequate amount of insulin and fast-acting glucose products needed for the entire trip plus extra for unplanned events such as mechanical problems or foul weather that may extend a trip longer than expected.

Boaters should be able to recognize that the knowledge standards for basic boating education represent the beginning of education opportunities and additional courses are encouraged on more advanced topics such as weather, navigation, electronics and hands-on boat training.

Also consider the contents of a kit (a.k.a. "ditch bag") that can be grabbed in case of an emergency. Consider items needed for short-term and, if appropriate, longer-term survival when preparing the content of the kit.

4.4 Sample Activity

1. Go through a “ditch bag” and explain each item's importance.

4.4 Sample Question

4.4-1. *When should you check the expiration dates of medicine on board?*

- A) **Before every trip**
- B) Once a year
- C) Monthly
- D) Never

4 Trip Planning and Preparation - *continued*

4.5 Describe how to identify dangerous weather including strong winds, storms, lightning, hurricanes, fog and water conditions including high water, sand bars, currents, large waves and their importance in trip planning.

Boaters should be able to understand basic weather patterns common to their boating area, where to find reliable weather and forecast information for their location and length of the planned voyage. In addition, they must recognize, understand the effects and continually monitor for the key signs of changing/deteriorating weather conditions. Changing wind and water conditions affect vessels differently. Planning for inclement weather is an important part of trip planning and includes identifying places to seek shelter quickly and being continually aware of those options throughout the boat trip.

Groundings account for fatalities, injuries, and millions of dollars of property damage every year. Preventing running aground is an important boat operator competency. Following proper procedures in the event of a grounding can reduce or eliminate fatalities, injuries, boat damage, damage to submerged objects, and responses by public and private entities for rescue and salvage operations.

Boaters should also be aware of the impact of the tides on their activity. In some locations, tides can rise or fall 30 feet or more, creating currents in narrow areas, and slower water in open bays. The lunar phases and topography of an area will dramatically impact the strength and direction of tidal currents.

4.5 Sample Activity

1. Have students go outside and describe in detail the weather indicators they see. Examples: clouds, wind flags, water movement.

4.5 Sample Question

4.5-1. *What is a strong indication of an impending storm?*

- A) **A fall in temperature**
- B) Calm winds
- C) Clearing skies
- D) A rising barometer

4 Trip Planning and Preparation - *continued*

4.6 Describe how to obtain information about local hazards and local knowledge that may affect the safe operation of a recreational boat including use of charts or maps.

It is important for the boat operator to know how to find information on local hazard conditions and not become complacent with his/her knowledge of local hazards. Hazards are ever-changing in every type of water system (i.e. lakes, ponds, rivers, oceans, etc.). Types of hazards to investigate should include both man-made (i.e. low-head dams, overhead cables, bridges, heavy boating traffic) and natural hazards (i.e. rapids, sudden winds, tides, sand bars, currents, white water, waves, etc.).

Examples of reliable sources for this information include printed and electronic charts, maps of local waterways, smartphone apps, knowledge from local sources such as marina staff, professional mariners, etc. Always check for the latest updates to published information and supplement with local knowledge.

4.6 Sample Activity

1. Use a local chart (or nautical map) to plot a course, identifying examples of local hazard marks that would be in the way.

4.6 Sample Question

4.6-1. *What information is given on a chart next to a bridge?*

- A) Clearance
- B) Water depth
- C) Number of lanes of traffic
- D) Preferred channel

4 Trip Planning and Preparation - *continued*

4.7 Describe the purpose and content of a float plan, to whom it should be submitted and when it should be cancelled.

Float plans act as a rescue tool for authorities in the event of an incident or overdue situation. Rescue authorities can respond faster and more efficiently if a float plan has detailed information about the time of departure, expected destination, expected activity, boat description, how many people are aboard, course, and time of expected return. Float plans are filed with a reliable source through written plans, telephone conversations, electronic emails, text messages, or other forms of communication. A boater should remember to cancel the plan upon their safe return to shore.

4.7 Sample Activity

1. Describe an outing. Have students create a float plan based on the description.

4.7 Sample Question

4.7-1. *Who should you provide your float plan before departure?*

- A) A trusted family or friend on land**
- B) Another person on the vessel
- C) The U.S. Coast Guard
- D) Local law enforcement

4 Trip Planning and Preparation - *continued*

4.8 Describe the importance of preventative maintenance including regular inspection and maintenance of boat and key components.

Keeping a boat in good working order is as much a part of the boating experience as boating itself. Negligence in maintaining a boat may lead to an unsafe or disastrous experience. Preventative maintenance is vessel type-specific, i.e., hull integrity, engines, hoses, gauges, thru-hulls, lines, rigging, lighting, sound producing devices, other safety equipment, and gear.

Note: If using a trailer, check hitch connections, tires, wheel bearings/axles, lighting, etc.

4.8 Sample Activity

1. Create a checklist of items to regularly check for a specific vessel.

4.8 Sample Question

4.8-1. Why would it be important to check for excess water accumulating within the vessel?

- A) Structural damage could result in catastrophic failure.**
- B) It is not important to check until the voyage is underway.
- C) Boats should always have water in the bilge to maintain hull integrity.
- D) The water will eventually run out on its own if the through-hull fittings are secure.

4 Trip Planning and Preparation - *continued*

4.9 Identify examples of factors that would lead to a “go-no-go” decision, state the reasons why and how these factors influence decisions, and provide some safe, alternative options.

Boat operators must make a safe and smart decision to proceed with their voyage ("go"), change plans, or cancel the trip ("no-go") based on a list of considerations, such as compliance with federal and state requirements, weather experience/skill, boat capabilities, environmental conditions, completion of the pre-departure checklist, personal readiness, knowledge of local hazards and security zones, boat maintenance, and completion of a float plan.

4.9 Sample Activity

1. Identify an upcoming trip. After placing students into teams, provide each team a scenario for which they must make a "go-no-go" decision. Each team shares their scenario and decision making process with the class for discussion.

4.9 Sample Question

4.8-1. *What would be an example of a time to cancel your trip?*

- A) An impending storm**
- B) A friend can't go
- C) Someone gets sick at the dock
- D) The water level is low

4 Trip Planning and Preparation - *continued*

4.10 Describe why boats should be prepped away from a launching area in order to leave the ramp clear to facilitate efficient launching and retrieval of vessel.

The majority of recreational boats in the U.S. are trailered to and from the water. Practice ramp courtesy by preparing the boat for launch and after retrieval away from the ramp area. Keep the ramp area clear while parking or retrieving your vehicle. Good trailering skills can help boaters avoid incidents on the road and reduce conflicts at boat ramps. Boaters should practice trailering and backing skills away from busy dock areas. (*Also see 9.1 regarding Aquatic Invasive Species*).

4.10 Sample Activity

1. Provide a boat on a trailer. Have the students indicate how to prep a boat for launch, including consideration of ramp courtesy.

4.10 Sample Question

4.10-1. *Why is it important to prep away from the launching area?*

- A) **Practice ramp courtesy to share the facilities.**
- B) It is not important.
- C) Boats should be cleaned away from the water.
- D) Because boats are launched by length order.

4.0 Trip Planning and Preparation - Plus Sailing

4.1 through 4.10 - See “Basic Boating Knowledge - Core” (latest version)

4.11 Discipline Specific

Note: Section 4.0 is a list of elements that ensure an acceptable level of readiness prior to departure. By investing time in preparation, the risk of mishaps is reduced. This includes not only federally required items on board, but also procedures for rigging the vessel, maintenance of critical items, and proper gear stowage.

Knowing the predicted weather is important for an outing on any vessel, but it is especially important when sailing. Obtain a weather forecast to be sure that conditions will be acceptable for the duration of the time on the water. Pay particular attention to wind and wave conditions.

4.11.1 Describe examples of actions to be taken when a temporary increase in wind speed occurs. Describe the steps to be taken if sustained increased winds appear imminent.

An increase in wind speed can cause the vessel to be overpowered. Sailing overpowered is slow, uncomfortable, hard on the crew and gear, and can lead to loss of control. If the increased wind is a strong gust or temporary, then easing the main sheet, lowering the traveler or heading up slightly will quickly depower the vessel. Strong sustained winds call for the changes in sail trim and a reduction in sail area by reefing the jib and main.

4.11.1 Sample Activity

1. Discuss various scenarios and how to respond to them. Use illustrations when possible.
2. Use a model to demonstrate how excessive heel pulls the rudder out of the water.

4.11.1 Sample Question

4.11.1 - 1. What should you do if you experience a strong gust of wind?

- A) Ease the main sheet or lower the traveler
- B) Do nothing and let the wind die down
- C) Head downwind and jibe
- D) Let go of the tiller and main sheet

4 Trip Planning and Preparation - Plus Sailing - *continued*

4.11.2 Describe critical preventive maintenance that should be performed periodically on a typical small sailboat.

Items to check include rigging and sail integrity, missing, malfunctioning or broken hardware, and chafed lines.

4.11.2 Sample Activity

1. Show examples of sailboat parts which are in need of replacement or repair.

4.11.2 Sample Question

4.11.2 - 1. Why is it important to perform preventive maintenance on a regular basis?

- A) Many sailboat parts are made of non-corrosive stainless steel which never fails.
- B) Sailboat parts are meant to be replaced on an annual basis.
- C) Missing, malfunctioning or broken hardware could endanger the vessel and people aboard.**
- D) You may void your warranty if you repair the vessel yourself.

4 Trip Planning and Preparation - Plus Sailing - *continued*

4.11.3 List maintenance issues that, if found during a pre-trip inspection, would require cancellation of the trip if not corrected before departure.

Items to check include torn sails, frayed lines, indications of instability in standing rigging, hull damage, and steering malfunctions. Any of these issues may necessitate a delay until repairs are made.

4.11.2 Sample Activity

1. Show examples of broken parts which would endanger the vessel and passengers aboard.

4.11.2 Sample Question

4.11.2-1. Which of the following maintenance issues would result in a cancellation of a trip?

- A) Small rips in the jib sail
- B) A loose shroud which can be tightened
- C) Missing daggerboard**
- D) Small crack in the lower rudder

4 Trip Planning and Preparation - Plus Sailing - *continued*

4.11.4 Describe importance of recognition of overhead hazards.

The height of the mast must be considered at all times to help prevent damage and danger. Risks include electrocution from power lines and damage to standing rigging caused by trees, low bridges, or other overhanging items. Raising and lowering masts at a vessel launch can be dangerous for the vessel owner and others in the area.

4.11.4 Sample Activity

1. Using a navigation chart, make a route down a river with several bridges that are fixed, lift or swing and have a student determine which need to be raised.

4.11.4 Sample Question

4.11.4-1. Why is knowing the mast height important when traveling places such as the Intracoastal Waterway?

- A) You may run aground
- B) The current may take you out to sea
- C) You may endanger wildlife
- D) You may be dismasted by a bridge**

4.11.4-2. Why is knowing the mast height important when going under powerlines?

- A) Powerlines can cause minor electrical issues.
- B) Powerlines may cause radio interference.
- C) Contact with powerlines can kill you.**
- D) Powerlines are never lower than the boats which sail on the local waters.

5.0 Safe Boat Operation - Core

5.1 Describe the purpose and content of a pre-departure checklist and operator responsibilities for passenger communication.

Completing the pre-departure checklist and briefing provides tools to reduce risk. It creates opportunities to ensure the operator and passengers have moved through a sequential progression of elements critical to safe boating. All passengers should attend and participate in the pre-departure briefing. *(Also see section 4.3)*

Passengers should be instructed in how to assist in the quick recovery of persons in the water in various water conditions, water temperatures and watercraft. Procedures could include deploying a throwable personal flotation device or any other immediately available floating aid. The briefing should stress prevention of falls overboard, maintaining stability and three points of contact, wearing of life jackets at all times, and the proper response/action in a capsizing/fall overboard emergency. Before departure, the operator and passengers should discuss appropriate terms and hand signals which will be used during the voyage to ensure effective communication. Examples include:

- Coming up – speeding up
- Coming down – slowing down
- Turning to Port, Starboard
- Standby for wake, heavy rolls

See SAMPLE passenger briefing from the National Safe Boating Council (*next page*):



National Safe Boating Council Safety Briefing

Instructions: This Safety Brief should be used in coordination with the Pre-departure Checklist. Safety is paramount and must be observed onboard at all times. Have a safety talk with all passengers on the following items.

- Life jackets and the importance to be properly wearing it all times
- Location(s) of Type IV PFD and how to use it if someone falls overboard
- Location(s) and usage of Fire Extinguishers
- Location and usage of visual distress signals to signal for help
- How to use the VHF radio to place a MAYDAY call for help
- Location and usage of first-aid kit
- Use of safety lanyards and shut-off switches
- Identify mooring/towing/anchoring points and discuss each procedure
- How to store or dispose of trash (Waste Management Plan)
- Importance of staying hydrated and using sunscreen
- No smoking or drinking alcohol onboard
- Sit only on designated seating areas inside the boat – no gunnel, stern or bow riding
- When moving around – make sure you have 3 points of contact
- When changing speed or direction – alert everyone and be sure they're in a safe position
- Everyone can assist with keeping a proper lookout and report
- Alert others if you see any dangers, hazards or safety concerns
- Give overview of boating trip – purpose, expected weather and sea conditions
- Assign duties – such as line handling, etc.
- Any questions?

Additional Items for NSBC Boat Control Course

Describe the use of the following terms:

- Time Out
- Do what I say
- Stand aside
- Help
- Maintaining Proper Lookout
- Starting Position
- Counting between shifts
- Others

Always announce the following:

All Ready
Coming Up
Coming Down
Turning Port/Starboard
Stopping
Hold On
Boat on Port/Starboard/Astern/Ahead
Danger – log or any object & location

5.1 Sample Activities

1. Students can break into small groups to develop a pre-departure checklist based on vessel type and area.
2. Students take turns being the operator and perform a passenger briefing based on the area using the above passenger briefing.

5.1 Sample Questions

5.1-1. *What is the tool used to ensure your vessel is in good working order and properly equipped before getting underway?*

- A) Float Plan
- B) Vessel Registration
- C) Pre-departure Checklist**
- D) Boating Incident Report

5.1-2. *Why is a passenger briefing beneficial before getting underway?*

- A) Eliminates the operator's responsibility for safe passage
- B) The operator can rest after turning the boat over to a passenger.
- C) Passengers should be able to take over control of the vessel at any time.
- D) Passengers are given information on emergency procedures**

5 Safe Boat Operation - *continued*

5.2 Describe the responsibilities for:

The ultimate responsibility for the safe operation and conduct of a vessel lay squarely upon the operator. Failure to comply with the bullet points exposes the operator to liability that may result in injury or death of persons onboard the operator's vessel or other vessels.

- **operator proficiency;**

Boat operators are ultimately responsible for the safe operation and conduct of their boat. Boat operators must be familiar with the capability and/or limitations of their boat and be proficient in its operation. Boat operators must recognize the need for the development of boat handling skills and additional knowledge beyond this standard. Such knowledge may include basic knots, docking and securing the vessel, etc.

- **situational awareness;**

Situational awareness means knowing what is going on in and around the vessel at all times. Boat operators should be aware of constantly changing circumstances such as weather, tides, sea conditions, traffic, passenger activity, etc.

- **safety for everyone aboard and activity on, in or around the boat;**

The boat operator is ultimately responsible for the safety and actions of everyone aboard. Completing a pre-departure checklist and safety briefing will help address this responsibility.

- **regulations regarding controlled areas, areas of danger, exclusion areas;**

The boat operator is ultimately responsible for knowing, understanding and complying with regulations related to controlled areas, areas of danger, exclusion areas and other restricted zones.

- **ensuring safe speed;**

Safe speed means *"every vessel shall at all times proceed at a safe speed so that she can take proper and effective action to avoid collisions and allisions and be stopped within a distance appropriate to the prevailing circumstances and conditions."* Reference Navigation Rule 6.

- **careless, reckless, or negligent operations on the water;**

The legal definition of careless, reckless, or negligent operations varies from state to state. They are behaviors that encompass a wide range of activities that can endanger passengers or others on or around the water. Failure to operate a vessel in a reasonable and prudent manner or failing to have regard for other waterborne traffic, posted speed and wake restrictions, and losing situational awareness may be considered careless or reckless operation.

- **courteous operation and sharing the waterways;**

Boater courtesy and considerations should be followed at all times. For example, vessels should be aware of and consider the impact of their wake on others, including the shoreline and facilities.

- **risk of collision and action to avoid collision; and**

The action to avoid collision should be taken well in advance of any potential meeting. Any course or speed change should be great enough to be obvious to any approaching vessel. Due regard shall be had to all dangers of navigation and collision which may make a departure from the navigation rules necessary to avoid immediate danger.

- **safe use of lines and proper storage.**

Boaters should be knowledgeable of the appropriate types and sizes of lines, proper storage and applicable knots for various situations. Safe use of lines includes the operator instructing passengers in proper line handling and storage.

5.2 Sample Activities

1. Set up several staggered rows of chairs. Have students maneuver through them utilizing the “one hand for yourself / one hand on the boat” method. Have students respond and react to vessel movement communications.
2. Have students role-play navigating an open water course with various types and directions of oncoming vessel traffic.

5.2 Sample Questions

5.2-1. *What is an example of the operator's responsibility while underway?*

- A) There is sufficient anchor and chain
- B) Operate at a safe speed**
- C) There are at least 2 fenders on each side
- D) Passengers have food and snacks

5.2-2. *When is it OK to depart from the navigation rules?*

- A) When you are running low on fuel.
- B) When turning to pick up a fallen skier.
- C) When turning away from the wind and waves.
- D) When necessary to avoid immediate danger.**

5 Safe Boat Operation - *continued*

5.3 Describe when and how boating accidents/incidents must be reported.

Boat incident reporting requirements include how, when, and where to file the report. Incident reports are legally required when the incident involves: 1) disappearance or loss of life; or 2) personal injury requiring medical treatment beyond first aid; or 3) property damage in excess of current state or federal thresholds; or 4) complete loss of the boat.

5.3 Sample Activities

1. Discuss the state-specific requirements for submitting a boating accident/incident report (BAR).
2. Review the Boating Accident Report form.

5.3 Sample Questions

5.3-1. *Which of the following circumstances require a boating accident/incident report to be filed?*

- A) Passenger falls and breaks an arm**
- B) Marine mammal strike without vessel damage
- C) Passenger falls overboard and re-boards uninjured
- D) Sunglasses lost overboard

5.3-2. *Who do you contact to report a boating accident/incident?*

- A) Marina Dockmaster
- B) State or local law enforcement**
- C) Coast Guard Auxiliary
- D) Your local DMV

5 Safe Boat Operation - *continued*

5.4 Describe basic safe boating operation and good seamanship for recreational boaters to avoid capsizing, falls overboard, ejection, or injuries including:

- communication from the boat operator to passengers of intended actions;
- the importance of wearing a life jacket to reduce the risk of drowning;
- staying centered and low when moving around the boat;
- avoiding sudden moves;
- maintaining three points of contact;
- loading the boat properly, including safe seating locations for passengers and crew;
- changing water conditions;
- additional safety considerations inherent to all small watercraft to include stabilizing the boat for entering, boarding safely, movement in the boat including keeping the weight centered from side-to-side and bow-to-stern; and
- being prepared for unintended water entry.

Boaters should habitually follow these safe practices to avoid circumstances that may lead to capsizing, falls overboard or ejection.

5.4 Sample Activities

1. Set up several staggered rows of chairs have students then have students maneuver through them utilizing the “one hand for yourself / one hand on the boat” method. Have students respond and react to vessel movement communications.
2. Provide several vessels in a parking lot or other location. Discuss and demonstrate (when appropriate) different boarding and seating considerations for each.

5.4 Sample Question

5.4-1. How should vessels be loaded with gear and passengers?

- A) **Distribute the weight along the centerline and as low as possible.**
- B) All in one area so the rest of the vessel is open
- C) As far forward as possible.
- D) As far aft as possible.

5 Safe Boat Operation - *continued*

5.5 Describe why boating under the influence of drugs or alcohol is unsafe.

Alcohol use plays a major part in the number of boating incidents and fatalities. It is illegal to operate a boat while under the influence of alcohol or drugs. The effects of alcohol are compounded by other stressors related to being on the water (e.g. sun, glare, dehydration, heat, wind, fatigue, etc. *See Section 7.3.*). Passengers who are drinking should be especially encouraged to wear life jackets. Alcohol use by operators and passengers can cause impaired judgement and awareness, slow reaction times, reduced perception, and increased risk-taking.

5.5 Sample Activities

1. Show the most recent USCG Boating Accident Statistics and discuss the number of accidents and fatalities attributed to boating under the influence.
2. Discuss the ways alcohol results in impaired judgment, even at very low levels of use.
3. Discuss state and local laws regarding “Operating Under the Influence” including the use of prescription and recreational drugs.
4. Invite a marine patrol officer to discuss the impact of Alcohol and Drugs on Boat Operation.

5.5 Sample Questions

5.5-1. *What effect does the use of alcohol or drugs have on an operator while boating?*

- A) Heightened awareness
- B) Impaired judgment**
- C) Faster reaction time
- D) Reduced risk-taking

5.5-2. *According to the U.S. Coast Guard, which factor is among the leading causes of boating fatalities?*

- A) Improper anchoring
- B) Dangerous maneuvers
- C) Alcohol**
- D) Restricted vision

5.0 Safe Vessel Operation - Plus Sailing

5.1 through 5.5 - See “Basic Boating Knowledge - Core” (latest version)

5.6 Discipline Specific

5.6.1 List items that must be checked periodically to avoid dangerous failures while sailing.

Worn or damaged gear is an invitation to failure, and with it, distractions and further troubles.

- Running rigging - Sails. Periodically raise or unfurl the sails at the dock and carefully inspect sails and lines for chafe, tears or damaged areas.
- Standing Rigging - Inspect stays and shrouds for security, corrosion and wear. Ensure that there are no snags or impediments to raising, lowering, tacking, or jibing the sails.
- Fuel and water systems - Examine for leaks and capacity accuracy. Running out of fuel or water can compromise your safety.
- Have a checklist and inspect the vessel for the proper USCG-required safety equipment, regulation conformity, and specific additional equipment.

5.6.1 Sample Activities

1. Using a real sail, review the names of the six parts of the sail plus material and plus battens. Discuss how to check each of the eight parts for most likely damage.
2. Show how misguided/jammed sheaves and blocks, corroded and frozen blocks, and misuse of rope clutches can lead to chafe and damage to halyards and sheets.
3. Display torn stained glove along with pictures of cable snag and open cotter pin. Show how they are made safe.
4. Review topping off tanks and verifying gauges.
5. Provide the USCG-required equipment checklist and have the students verify each item on the sailboat.

5.6.1 Sample Questions

5.6.1-1. When checking for worn, damaged or weakened running rigging, what special attention should be given?

- A) Rudder mounting and possible delamination
- B) Engine and transmission controls
- C) Keel attachment bolts
- D) Sails and sail control lines.**

5.6.1-2. *When checking for security, damaged or corroded standing rigging, what special attention should be given?*

- A) Stanchions and lifelines
- B) Dock lines and cleats
- C) Tiller or Wheel alignment
- D) Mast, shrouds, stays and hull/deck attachments**

5.6.1-3. *Some safety items are important because of their quantity in addition to their condition. Which of these items is most important to check?*

- A) Spare dock lines
- B) Extra sailing Gloves
- C) Extra life lines
- D) Fuel and water**

5 Safe Vessel Operation - Plus Sailing - *continued*

5.6.2 List important safe navigation responsibilities of a sailboat operator.

Thoroughly understand sailboat collision regulations when under sail without auxiliary power (*see section 6.5*).

Reference the most recent marine chart information for markers and buoys, depth units, obstructions, restricted areas and local notes.

Running aground is a heightened risk when sailing. Know the depth of water in the designated sailing area. Understand the settings of the depth meter (if applicable) and what it indicates.

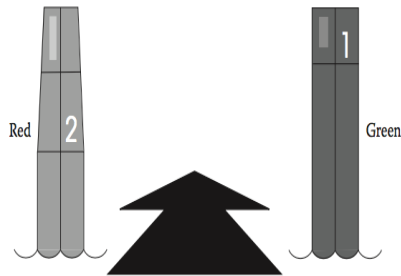
Plan routes with wind in mind. Wind can change direction and speed resulting in extra sailing time which can mean arriving in the dark at a strange port. Be prepared for a continuation/alternate route decision while in route. For example, because you cannot sail directly into the wind, if your destination is directly upwind of your starting location it will take much longer to arrive.

5.6.2 Sample Activities

1. Using two marine charts, determine 1) depth in feet, and 2) depth in fathoms. Show how to find the Depth Units, Buoys and Marks, and the depth at various locations. Local chart preferred.
2. Explain how a Fathometer (depth meter) works and, unless calibrated and labeled, what it means.
3. Discuss how sailboats are especially concerned with running aground. 1) extra depth from the keel. 2) keel attachment damage can sink the boat.

5.6.2 Sample Questions

5.6.2-1. *What does it mean if you are passing between these buoys?*



- A) Travelling along a channel from open water.
- B) Entering a port.
- C) Travelling through restricted area.
- D) Traveling along a channel toward open water.**

5.6.2-2. *The bottom of your hull is 2 feet below the waterline and your keel extends down an additional 4 feet. If the tide is now at chart depth in fathoms and reads “1”, how much room do you have below your keel to the bottom?*

- A) One foot
- B) Four feet
- C) Minus 5 feet (aground)
- D) Zero feet**

5.6.2-3. *Your sailboat has no auxiliary power and sails at best 5 knots. Your destination is 5 nautical miles due North and a good wind is from true North. What is an optimistic estimate of your travel time to the destination?*

- A) One-half hour
- B) Three-fourth hour (forty-five minutes)
- C) One hour
- D) Two hours**

5 Safe Vessel Operation - Plus Sailing - *continued*

5.6.3 Describe the purpose and usage of each of the following knots: figure 8, square/reef, clove hitch, round turn & two half-hitches, cleat hitch, bowline, and sheet bend.

Bowline

One of the most useful sailing knots is the *bowline*, (pronounced "BO'lin"). The bowline forms a temporary eye, or loop, in the end of a line and is commonly used to attach a jib sheet to the clew of the jib.



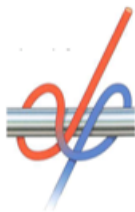
Figure-Eight Knot

This knot is bulky and serves well as a stopper knot. It is commonly tied to the bitter end of halyards and sheets to prevent them from being inadvertently pulled out of the blocks, fairleads, or jammers through which the line has been led.



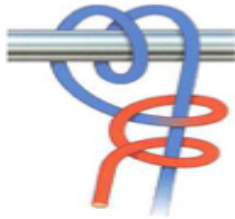
Clove Hitch

This hitch is used to quickly and temporarily tie a line to a pole (such as a piling on a dock), a ring, or another line. It is secure as long as it is under a constant load, but may work loose if subject to on-and-off loads. It may be difficult to untie under strong loads. The chief feature is that it is easily adjustable.



Round Turn and Two Half-Hitches

This knot is capable of being tied under load and is applicable as a good all around reliable knot. It can be tied around a ring or pole and resists being shaken undone.



Square (or Reef) Knot

This knot is common when tying two lines of the same diameter, or when tying the two ends of a line together.



Sheet Bend

This knot is commonly used when tying two lines of different diameters together. A square knot in this situation may be undone when subject to load.



Cleat Hitch

Many working lines on a sailboat are secured on a horn or cleat with this hitch. It is most commonly used as the primary attachment for dock or mooring lines.



Marlinspike

The marlinspike is a usually a polished thin metal cone tapered to a point. The marlinspike may be a separate tool or one item on a pocket knife. It is a multi-functional tool for general marine rope work, and is very useful for untying knots.

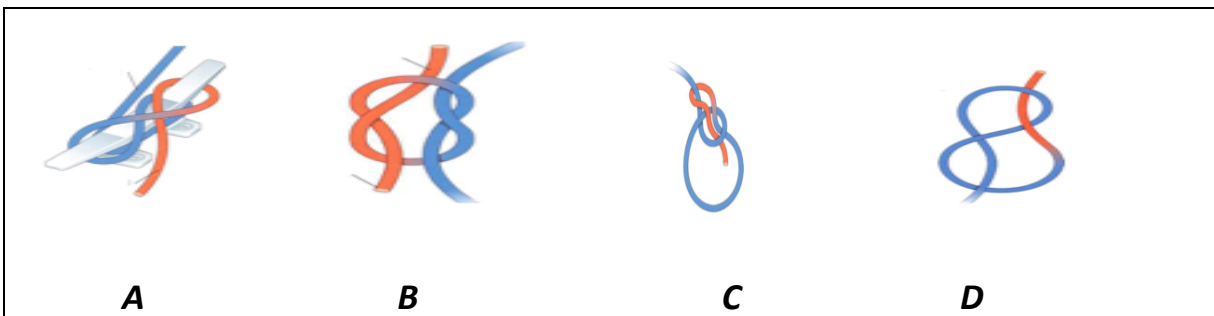


5.6.3 Sample Activities

1. Provide each student a piece of line about 3-4 feet in length. Practice tying each knot.
2. Visit a boat on a trailer or at a dock. Point out or demonstrate various knots which can be used to secure the boat to the trailer or dock.

5.6.3 Sample Questions

5.6.3-1. Match the knot with its description:



Square knot - **B**

Bowline - **C**

Cleat hitch - **A**

Figure Eight knot - **D**

5.6.3-2. *Which of the following is a stopper knot?*

- A) Sheet bend
- B) Sheepshank
- C) Square knot
- D) Figure-eight knot**

5.6.3-3. *What type of hitch is used to fasten to pilings, railings, and to hang fenders?*

- A) Bowline
- B) Clove hitch**
- C) Square knot
- D) Rolling hitch

5.6.3-4. *What is a proper knot used to fastening a jib sheet to the clew?*

- A) Bowline**
- B) Square knot
- C) Anchor bend
- D) Rolling hitch

5 Safe Vessel Operation - Plus Sailing - *continued*

5.6.4 Describe various types of anchors, associated equipment, and their use. Describe the proper scope, anchoring and retrieval procedures, and safety considerations.

Knowledge of anchoring is important to keep the vessel in a fixed location. Select an anchor for the bottom conditions. Different anchor types are designed to hold better in various bottom conditions. For example, a Danforth-style anchor holds differently than a mushroom or plow. Scope is determined by taking the ratio of anchor rode to total depth, including present depth, tidal changes, and freeboard. The required scope should be determined based on the anchor type, combination of the chain and rode, the weather and bottom conditions, and how long you expect to be at anchor. For example, when anchoring overnight, a Danforth anchor with a scope of 7:1 is usually best for a combination chain and nylon rode in sandy bottom conditions.

While there are many techniques for anchoring, a single anchor should be deployed from the bow. Anchoring from the stern should be avoided. When in an anchorage area, use the same anchoring techniques as other vessels, so the vessel will swing the same as others in the area.

When choosing a sailboat anchorage, consider these characteristics of the site: protection from wind/waves, room to swing, depth, tides, and bottom type. If the wind/current is switching, the vessel will swing around its anchor. When anchored, a vessel may swing 360 degrees around the anchor. The water depth must be adequate for the keel to clear the bottom in the entire area it may travel.

Prior to retrieving the anchor, ensure the vessel is prepped for departure. Hand signals may be needed to communicate between the helm and the person hauling the anchor. Establish these signals when the anchor is being set. To retrieve, move the vessel slowly forward while retrieving the rode. When the vessel is over the anchor, pull the anchor vertically. When anchoring overnight or in low-visibility in a non-designated anchorage, display an anchor light.

5.6.4 Sample Activities

1. Have a Helm Student stand a few feet behind a Bow Student. The Bow Student gives hand signals and the Helm Student narrates what detailed control actions are taken at the helm in response to the hand signals. Simulate both the anchor setting and retrieving procedures. The Instructor inspires the action by standing ahead of the Bow Student and moves around to simulate the boat movement and relative location and distance to the anchor.
2. When on the sailboat, find the Anchor Light switch and point out that it is not the Masthead switch.

5.6.4 Sample Questions

5.6.4-1. *Which Type of anchor is best suited for a soft sand bottom?*

- A) Plow
- B) Fisherman
- C) Grappling
- D) Danforth**

5.6.4-2. *When anchoring, total depth does NOT include:*

- A) Present Depth
- B) Tidal change
- C) Freeboard
- D) Crown**

5.6.4-3. *Given the depth of water, what would be the preferred length of rode?*

- A) Total Depth 10 ft. and Rode 30 ft.
- B) Total Depth 15 ft. and Rode 60 ft.
- C) Total Depth 20 ft. and Rode 80 ft.
- D) Total Depth 10 ft. and Rode 70 ft.**

6.0 Navigation - Core

6.1 Describe typical navigation rule situations* and the operator's legal obligations regarding:

- Rules 2(a) and 2(b) - Responsibility;
- Rule 5 - Look-out;
- Rule 6(a) - Safe Speed;
- Rules 7(a), 7(d) - Risk of Collision;
- Rule 8 - Action to Avoid Collision;
- Rule 9 – Narrow Channels;
- Rule 13 - Overtaking;
- Rule 14(a), 14(b), 14(c) - Head-on Situation;
- Rule 15(a) - Crossing Situation;
- Rule 16 - Action by Give-way Vessel;
- Rule 17 - Action by Stand-on Vessel;
- Rule 18 (a-d) - Responsibilities Between Vessels; and
- Rule 19 (a-e) - Conduct of Vessels in Restricted Visibility.

**Disclaimer: The navigation rules contained in this standard summarize basic navigation rules for which a boat operator is responsible on inland waterways. Additional and more in-depth rules apply regarding various types of waterways, such as International Waters and Western Rivers, and operation in relation to commercial vessels and other watercraft. For a complete listing of the navigation rules, refer to the most recent version of the NAVIGATION RULES AND REGULATIONS HANDBOOK as published/maintained on the United States Coast Guard's online Navigation Center. For state-specific navigation requirements, refer to the state laws where you intend to boat. In those areas that Inland Rules do not apply, the equivalent International, Western Rivers or Great Lakes rule(s) may be substituted. It is the responsibility of a boat operator to know and follow all applicable rules.*

Whether fishing on a small lake, paddling on a river or sailing on the ocean as a vessel operator, you have a responsibility to understand and apply the navigation rules responsibly.

According to U.S. Coast Guard statistics, the majority of boating accidents involving operator controllable factors are caused by violations of one or more of the navigation rules.

6.1 Sample Activity

1. Show an object that represents a vessel overtaking another and have the student mimic what the give-way vessel should do.

6.1 Sample Question

6.1-1. *What is the responsibility of a give-way vessel?*

- A) The give-way vessel is required to take early and substantial action or keep out of the way of another vessel.**
- B) The give-way vessel is legally responsible for changing course no matter the situation.
- C) The give-way vessel is required to hold course unless signaled by the other vessel.
- D) The give-way vessel is required to signal with one prolonged horn blast.

6 Navigation - *continued*

6.2 Describe homeland security measures, including:

- keeping a safe prescribed distance from military and commercial ships;
- restricted operation in the vicinity of commercial activities and port operations;
- observing all security zones; and
- observing and reporting suspicious activities to proper authorities.

Boat operators should be aware of established security zones surrounding land-based restricted facilities and vessels such as passenger ferries, military vessels and cargo ships.

Boat operators are an important part of the homeland security effort. Boaters play an active role in national security by reporting any suspicious activity to the proper authorities.

6.2 Sample Activity

1. Provide examples of suspicious activity, such as someone lingering too long at a bridge.

6.2 Sample Question

6.2-1. According to the Department of Homeland Security, what action should boat operators take to ensure the safety of everyone on the nation's waterways?

- A) Report suspicious activities to the proper authorities.**
- B) Take it upon yourself to follow a vessel.
- C) Announce a securite over the VHF radio.
- D) Collect registration and insurance for a suspicious vessel.

6 Navigation - *continued*

6.3 Identify the U.S. Aids to Navigation System (USATONS) and state its purpose.

Aids to Navigation (ATONS) are the road signs of the water. ATONS includes all visible, audible and electronic symbols that are established by government and private authorities for piloting purposes including buoys, day beacons, lights, lightships, radio beacons, fog signals, and marks. The US Aids to Navigation System (USATONS) prescribes regulatory markers and aids to navigation that mark navigable waters of the United States to be used by boaters to determine position or follow a safe course. Using ATONS and nautical charts creates an effective method to transit waterways safely. Together they provide information on hazards, channels, water depth, and other important features. To ensure safe and effective boat operations, boat operators must have an understanding of Aids to Navigation.

ATONS should be used with caution as they may be moved by weather, currents, USCG or vandals. It is important to use a fixed point of reference whenever possible for a navigation fix.

Reference: https://www.navcen.uscg.gov/pdf/navRules/US_ATON_Guide.pdf

6.3 Sample Activity

1. Use a 7-Up can as an example of a green can with an odd number.

6.3 Sample Question

6.3-1. Which one of the following is true about can buoys?

- A) They are cylindrical
- B) They are red
- C) They have an even number
- D) They are on your right when you enter a harbor

6 Navigation - *continued*

6.4 Identify regulatory and informational markers and state their purposes including controlled, information, danger, and exclusion areas.

Regulatory marks are an extension to the US Aids to Navigation System (USATONS) that alert vessel operators to various warnings and regulations. Regulatory Markers - consisting of white 'can' buoys with orange geometric shapes - are used to inform boaters of special restrictions or dangers.

Historical note: The Uniform State Waterways Marking System (USWMS) was originally intended for use on waterways not covered by nautical charts. In 1998, the U.S. Coast Guard announced the phase-out of the USWMS to avoid potential confusion of boaters. The phase-out period ended in 2003.

6.4 Sample Activity

1. Post the symbols found on various regulatory and informational markers. Have students identify each symbol.

6.4 Sample Question

6.4-1. *Regulatory and informational markers are easily identified through which features?*

- A) **White with orange markings**
- B) White with blue markings
- C) Flashing red lights
- D) They are only on law enforcement vessels

6.0 Navigation - Plus Sailing

6.1 through 6.4 - See “Basic Boating Knowledge - Core” (latest version)

Notes: Per the Navigation Rules, sailboats do not have special privileges if participating in a sailboat race or regatta.

If sailing in narrow channels, be aware of traffic and avoid creating a risk of collision. Sailboats should be aware of bridge clearance, and how to communicate with movable bridge operators.

6.5 Discipline Specific

6.5.1 Describe typical navigation rule situations and the operator’s legal obligations regarding: _ Rule 12(a) - Sailing Vessels

- (i) - Starboard tack vs Port tack
- (ii) - Windward vessel vs Leeward vessel
- (iii) - Unclear situation

A sailing vessel being propelled by machinery (even if the sails are up), must follow all navigation rules that apply to power-driven vessels.

Subpart II—Conduct of Vessels in Sight of One Another

Rules 12 (a) states:

(a) When two sailing vessels are approaching one another, so as to involve risk of collision, one of them shall keep out of the way of the other as follows:

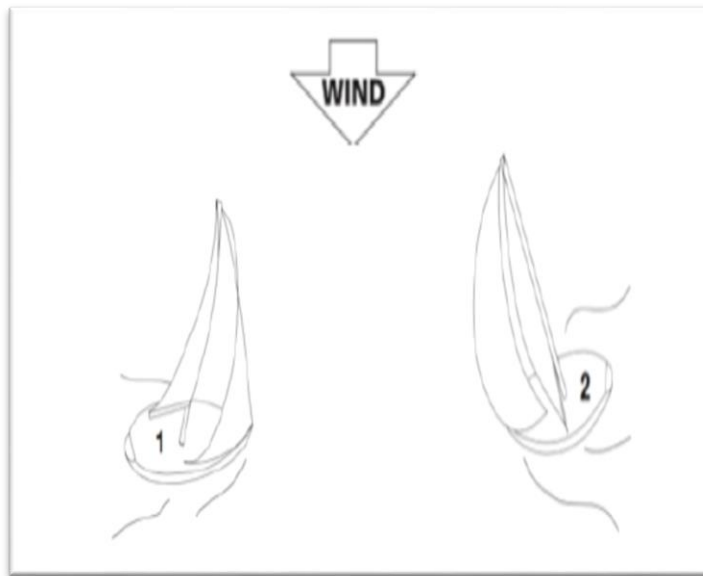
- (i) when each has the wind on a different side, the vessel which has the wind on the port side shall keep out of the way of the other;
- (ii) when both have the wind on the same side, the vessel which is to windward shall keep out of the way of the vessel which is to leeward;
- (iii) if a vessel with the wind on the port side sees a vessel to windward and cannot determine with certainty whether the other vessel has the wind on the port or on the starboard side, she shall keep out of the way of the other.

(b) For the purposes of this Rule the windward side shall be deemed to be the side opposite to that on which the mainsail is carried or, in the case of a square-rigged vessel, the side opposite to that on which the largest fore-and aft sail is carried.

6.5.1 Sample Activities

1. Duplicate the positions of the two sailboats in Rule 12a(i) on a whiteboard.
 - A. Using 2 drink bottles or similar items on a table, duplicate the location, motions and actions of the sailboats in this situation.
 - B. Have two students each carry a stick or paddle in position representing their boom. On a clear space, duplicate the location, motions and actions of the sailboats in this situation.
2. Duplicate the positions of the two sailboats in Rule 12a(ii) and Rule 12a(iii) on a whiteboard. Repeat steps A and B above for each.
3. Indicate wind position. Spin a bottle. When the bottle stops, have the students determine which point of sail is represented.

6.5.1 Sample Questions

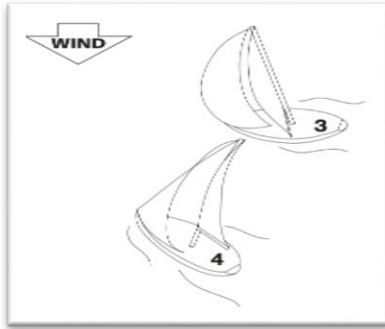


6.5.1-1. You are vessel "1." What are you considered to be?

- A) Stand-on vessel
- B) Give-way vessel**
- C) Stand-way vessel
- D) Overtaking vessel

6.5.1-2. Which rule applies here?

- A) A vessel to leeward shall give-way to a windward vessel when on the same tack.
- B) A vessel on a port tack shall give-way to a vessel on a starboard tack.**
- C) A vessel that is overtaking another vessel must give-way.
- D) A vessel on a port tack shall give-way to a vessel to windward.



6.5.1-3. You are vessel "3." What are you considered to be?

- A) Stand-on vessel
- B) Give-way vessel**
- C) Overtaking vessel
- D) Right-of-way vessel

6.5.1-4. Which rule applies here?

- A) A vessel to windward shall give-way to a leeward vessel when on the same tack.**
- B) A vessel on a port tack shall give-way to a vessel on a starboard tack.
- C) A vessel that is overtaking another vessel must give-way.
- D) A vessel on a port tack shall give-way to a vessel to windward.

6.5.1-4. You are on a port tack approaching a vessel and are unable to determine its tack. What are you considered to be?

- A) Stand-on vessel
- B) Give-way vessel**
- C) Right-of-way vessel
- D) Windward vessel

6.5.1-5. You are on a port tack approaching a vessel and are unable to determine its tack. Which rule applies here?

- A) A vessel to leeward shall give-way to a windward vessel when on the same tack.
- B) A vessel on a port tack shall give-way to a windward vessel with an undetermined tack.**
- C) A vessel on a port tack shall give-way to a vessel on a starboard tack.
- D) A vessel on a port tack shall give-way to a vessel to windward.

7.0 Emergency Preparedness and Response - Core

According to the U.S. Coast Guard, most incidents leading to injuries and fatalities are sudden onset emergencies, there may not be time to react. Being properly prepared is critical to the success of any boating trip which includes emergency response planning.

7.1 Determine the obligation and ability to render assistance to an individual or boat in distress per 46 U.S. Code § 2304.

Good Samaritans are responsible for hundreds of rescues every year. In the event of an emergency, individuals in charge of a vessel are required to assist so far as they can do so without serious danger to their own vessel or the individuals onboard their vessel. Assistance from other boaters can reduce the loss of life, injury or property damage resulting from boating incidents.

46 U.S. Code Section 2304 requires a master or individual in charge of a vessel to render assistance to those in danger at sea if able to do so without seriously endangering the vessel or crew. *Operator*

7.1 Sample Activity

1. Discuss various ways to render assistance without needing to tow a boat.

7.1 Sample Questions

7.1-1. *What are the Good Samaritan's obligations to a known individual or vessel in distress?*

- A) Rendering assistance is not required for recreational boaters.
- B) Render assistance so far as they can do so without serious danger.**
- C) Collect information regarding a boating incident.
- D) Notify a commercial salvage company.

7.1-2. *What is the primary responsibility of a vessel operator assisting a boat in distress?*

- A) Keeping his/her vessel and him/herself out of danger.**
- B) Finding fault with the operator of the distressed boat.
- C) Operating the radio on the distressed boat.
- D) Notifying the Coast Guard of the situation

7.1-3. *According to the Navigation Rules, how are boat operators required to respond to a boat in distress?*

A) Render assistance so long as it's safe to do so.

B) No assistance is required.

C) Make a note of the location and report it as soon as you return from your outing.

D) File a boating accident report to the local authorities.

7 Emergency Preparedness and Response - *continued*

7.2 Describe capsizing/falls overboard post-incident response procedures including:

Capsizing, ejections, and falls overboard are considered a sudden onset emergency, therefore there is little time to react. Emergency scenarios vary, the following responses are not in order of priority or may not be applicable:

- **putting on a life jacket if not already being worn;**
- **calling for assistance, use of communication devices, reporting location, number of people, description of the boat, nature of distress;**
- **taking a head count;**
- **staying with the vessel when appropriate;**
- **signaling for assistance;**
- **using improvised floating aids;**
- **recognition of a person in the water in distress; and**
- **initiation of procedures to recover people in the water.**

7.2 Sample Activity

1. Set up chairs in front of the classroom as the “boat” with boating safety equipment (for example a fire extinguisher, throwable device, life jackets, signaling devices, etc.) inside the “boat.” Instruct the students to get into the boat, tell them they can use any of the equipment they need for their trip. Tell the boaters they just capsized, who is wearing their life jackets? Did the boaters expect that their boat would capsize? Why should boaters always have their life jackets on when they first get into the boat? Discuss all other post incident responses.

7.2 Sample Question

7.2-1. *What can a boater do to minimize injury or death if they capsize, fall overboard, or ejected?*

- A) Always wear a life jacket**
- B) Initiate a man overboard drill
- C) Pull the pin on a fire extinguisher
- D) Tie a bowline knot

7 Emergency Preparedness and Response - *continued*

7.3 Describe environmental stressors that impact recreational boating including:

All boaters are at the mercy of the environment. Many incidents occur on the water due to tunnel vision, lack of situational awareness, improper lookout, and distracted boaters.

Knowing and adapting to the environmental stressors can help mitigate risk for a safe day on the water (Reference 4.2). Environmental stressors that impact recreational boating include:

- **sun, wind, glare;**

Prevention includes sunglasses, UV clothing, sunscreen, windbreaker, and shade.

- **dehydration;**

Dehydration can lead to headaches, dizziness or lightheadedness, fatigue, and poor judgement. It may also lead to severe health complications such as seizures, swelling of the brain, kidney failure, shock, coma, and even death. Ensure there is enough drinking water and non-alcoholic fluids to hydrate each individual on board for the duration of the trip or unforeseen circumstances. Alcohol consumption should always be avoided as it enhances and accelerates dehydration.

- **fatigue;**

Fatigue can be caused by continuous exposure to environmental stressors, constant movement and vibration of the boat, and noise. Fatigue can impair judgment, reduced operating skills, and delayed reaction time which affect the safe operation of the boat. These conditions can be potentially life-threatening to the operator, passengers, and other boaters.

- **heat factors including the effects of hyperthermia and how to prepare for, prevent, and respond to heat related events;**

4. Heat Factors: Overheating can lead to heat exhaustion and heatstroke. Signs could include nausea, vomiting, confusion, fatigue, dizziness, extreme sweating. Move to a cooler area if possible, seek medical attention if necessary. *Reference Centers Disease Control and Prevention*

- **cold factors (exposure) including the effect of hypothermia and how to prepare for, prevent, and respond to cold related events; and**

Both air and water temperatures are factors that influence survival in an emergency situation. Cold Water is defined as water temperature less than 70 degrees (F) Depending on the time of year and location, most areas should consider the risk of cold water immersion preparation, prevention and response.

Cold Factors: There are four stages of cold water immersion, the first being cold shock, followed by swim failure, immersion hypothermia and then post immersion collapse. *(See descriptions of each in the following section.)*

- **effects of cold water immersion and how to prepare for, prevent, and respond to a cold water immersion event, including the physiological effects of cold water immersion.**

Overconfidence in swimming ability is a major component in drowning and cold water adversely affects everyone's ability to swim. Factors such as wearing a life jacket, controlled entry into the water, the ability to maintain an open airway, and in-water experience including swimming ability and survival training, can improve the odds of surviving a cold water immersion event. Age, body size, medical condition (known or unknown), clothing, water temperature and surface conditions, type of flotation and drug and alcohol use influences outcomes.

Avoid full-body immersion whenever possible by following safe boating practices described in other sections of this document (e.g., section 5.4). If immersed, use the boat or any floating items to keep as much of your body out of the water as possible.

Survival of cold water immersion depends on recognizing the stages of cold water immersion and what actions to take. For example, floating until breathing under control rather than swimming or thrashing about upon initial immersion.

The stages of cold water immersion: [1]

1. Initial reaction - Cold Shock Response: The initial reaction when entering cold water is panic, gasping, hyperventilation, vertigo, and increased heart rate. These reactions can result in inhalation of water and drowning. To minimize these effects, within the first few minutes reduce movement. Float on the back using the Float First technique (add a reference to this technique), and focus on regaining breath control. Wearing a properly fitted life jacket greatly aids floating first on the back, reduces the need to vigorously swim, and minimizes movement until regaining breath control.

2. Short term immersion- Cold incapacitation: Within the first 30 minutes, localized cooling restricts blood flow to muscles and nerves which reduces muscle function, and thereby impairs fine and gross motor skills required to swim and deploy survival equipment. Determine the best method to self-rescue. Perform necessary actions before dexterity loss, put on a life jacket if not wearing one as soon as possible, deploy communication and signaling devices, catching a rescue rope, climbing a ladder, etc. Wearing a life jacket is paramount, as time passes, even good swimmers will be unable to swim efficiently without one. Cold water will reduce core body temperature much faster than air, get as much of your body out of the water as soon as possible (even if it feels colder) to extend survival times. Determine if swimming to shore is the best option. Swim/don't swim is situation dependent. If you decide to swim, use your arms as little as possible. Swim on your back using legs with arms wrapped around your life jacket. Deploy devices to alert Search and Rescue or Good Samaritans and pinpoint location for an efficient and effective rescue.

3. Long term immersion- Immersion Hypothermia: After about thirty minutes, cooling of body core temperature, focus on reducing body heat loss such as Heat Escape Lessening Position (HELP) or Huddle Position. Move/swim as little as possible unless it gets you quickly to a much better situation. Focus on retaining body heat, even small amounts of trapped air in clothing can provide thermal protection.

4. Post-Rescue collapse- The emotional release of rescue can cause a decrease in blood pressure, which may result in a post-rescue (circum rescue) collapse. This can occur shortly before, during, or after rescue—sometimes hours after—victims of cold water immersion may pass out, experience ventricular fibrillation, or go into full cardiac arrest. Handle cold water victims gently to avoid further injury, and seek professional medical attention. There are several distinct mechanisms associated with collapse around the time of rescue:

- a. Relief at being rescued. This can occur when the SAR team arrives and before they touch the casualty. Theory: it may be due to "relaxation" and collapse associated with the relief (perhaps parasympathetic nervous system in origin). It can be made worse by rescuers saying things like "relax, we have you, you are safe." Better to say "we are here to help, but keep fighting for your survival."

b. Loss of hydrostatic support to circulation on removal from water and reintroduction of full effects of gravity (especially if lifted over long distances vertically) - short vertical lifts into ribs are probably not a problem.

c. Ongoing drowning that still evolves post-immersion.

[1] Reference Gordon Giesbrecht, Ph.D. and Michael Ducharme

7.3 Sample Activities

1. In-Class activity: Set up a skit with someone in a chair with someone moving a chair with a light shining on them, in front of the person with a spray bottle squirting a mist, and have them perform a simple task. Next to this person is another person in a chair without these simulated environmental factors performing the same simple skill such as reading a chart, searching a website on their phone, or texting a long message. What were the simulated environmental factors that contributed to the impairment of boater #1? (Answers: the glare and heat of the sun, vibration and constant of the boat, water spray.) All of these environmental factors have an adverse effect on the body. Mitigating the environmental stressors can allow for a safer boating experience.

2. In-room or in-water activity: Pile several life jackets in varying sizes and styles including non-serviceable life jackets, in front of many students, perhaps fewer life jackets than there are students. Tell the students that when told to go, students must scramble to grab a life jacket and put it on correctly for optimal fit and performance in under a minute.

Ask the students:

A. Did every student find a serviceable life jacket of proper size and fit? In a sudden onset emergency resulting in a capsized, swamping, or falling overboard, there is no guarantee each person will find a life jacket.

B. How is always wearing a life jacket aid in each of the first three stages of cold water immersion?

1) Cold Shock Response: a life jacket provides an airway during hyperventilation and panic. A life jacket provides flotation and the ability to lay in a horizontal position with minimal movement to “float first.”

2) Swim Failure: A life jacket provides flotation necessary to perform the most important functions, rather than expending energy trying to maintain an airway by treading water or swimming. Regardless of swimming ability always wear a life jacket.

3) Hypothermia: A life jacket provides the flotation necessary to maintain the H.E.L.P. or Huddle positions.

7.3 Sample Questions

7.3-1. *What is a possible life-threatening effect of environmental stressors on the body while boating?*

- A) **Fatigue**
- B) Sunburn
- C) Nausea
- D) Muscle cramps

7.3-2. *What should a boater do in the first few minutes to minimize the effects of a sudden cold water immersion?*

- A) **Float first**
- B) Swim vigorously
- C) Hold your breath
- D) Tread in water

7 Emergency Preparedness and Response - *continued*

7.4 Describe storm and rough weather procedures and response.

Weather cannot be controlled, however by constantly monitoring the weather and water conditions boaters can mitigate their risk. *(See section 4.2.)*

- Avoid getting caught in storms and heavy waves by evaluating current and forecasted conditions such as oncoming dark clouds and change in wind speed. Continue to monitor the weather on the radio, heading for safety before threatening conditions develop.
- Close all hatches, windows, and doors.
- Remove water collecting and sloshing in the vessel, which can cause stability problems.
- Secure all loose gear, both above and below deck. Lash down larger items and put smaller ones away. Stow lines that are not in use.
- Have everyone put on appropriate foul weather gear and USCG approved life jackets.
- Direct passengers to stay low or sit on the floor, close to the boat's centerline. *(See section 5.4.)*
- If there is lightning, stay clear of metal objects, and seek the closest safe harbor.
- Slow the vessel's speed, but maintain enough power for steering and headway.

7.4 Sample Questions

7.4-1. How can a boater avoid the possibility of getting caught in a storm and rough wave conditions during a boat trip?

- A) Make a SECURITE call on VHF radio
- B) Ensure adequate horsepower
- C) File a float plan
- D) Evaluate current and forecasted conditions**

7.4-2. What is the significance of keeping the bilge free of water while operating in rough sea conditions?

- A) Easier to get on a plane
- B) Greater stability of the boat**
- C) Possibility of flooding the engine
- D) Prohibits effective steering

7 Emergency Preparedness and Response - *continued*

7.5 Describe recommendations for carrying emergency communication and distress signaling devices on the vessel and on your person.

In order to be “rescue ready,” boaters carry a combination of devices on their person and on the boat. Emergency communication devices are not required equipment, however, distress signaling devices are part of state and federal carriage requirements (Reference Core 3.3). Both types of devices should be carried on your person to alert search and rescue professionals and to locate your position quickly. Examples of communication devices include radios (VHF, 2-way), phones (satellite, cellular), Emergency Locator Beacon (Emergency Position Indicating Radio Beacon, Personal Locator Beacon), etc. Distress signaling devices include whistle, flare, mirror, LED white light, Satellite tracking device such as an Automatic Identification System (AIS), Man Overboard device (MOB), etc.

Many boating incidents occur quickly and with little or no time to react. In sudden onset emergencies, a boater is often dependent on what they are carrying on their person at that moment. In other emergencies, having a readily available “ditch bag” is suggested. It is recommended to carry a communication device effective in your specific location. VHF radios will work in coastal areas, while cell or satellite phones may be more appropriate communication devices in others. Certain distress signaling devices are part of state and federal carriage requirements (e.g., whistle, flare) (See Core 3.3). Carry a communication device on your person and on the vessel to alert rescuers and assist in locating your position.

7.5 Sample Activity

Title: “Device Advice”

Time: 30 minutes

Search and Rescue professionals report, an efficient and effective search and rescue mission increases the chance of survival. To help Search and Rescue professionals, carry both types of devices on your boat and on your person.

Not all devices operate the same way. Examples of emergency communication devices include, VHF radio (handheld and dashboard mounted), Emergency Locator Beacon. Cellular phones are unreliable.

NOTE: Reference section 3 – Required Equipment

Summary:

Choosing which emergency communication and distress signaling devices are right for various boating scenarios including location, body of water, population of nearby boaters who could render assistance, type of boat.

Implementation:

- A. Divide the class into small groups.
- B. Distribute cards with different types of boats, bodies of water in the local area and display each type of emergency communication and distress signaling device at the front of the class.
- C. Ask students to consider their cards and discuss within their groups which emergency communication and distress signaling devices would be the best choices to carry both in their boat and on their person based on the cards they received.
- D. Give the students 10 minutes to discuss and create a list of pros and cons for each device and prioritize their list based on the top items as being the best match, and add any considerations they want to add for each item.
- E. Note: none of the answers are necessarily “wrong” the exercise is a chance to discuss features and benefits to consider.

For example: Kayak, near shore-ocean, Prince William Sound Valdez, Alaska

1. VHF handheld radio and pencil flares because there is heavy boat traffic and a Good Samaritan could rescue faster than waiting for a U.S. Coast Guard unit. A VHF handheld radio with DSC and GPS can alert nearby boaters to initiate a rescue. This type of radio provides changing latitude and longitude location of the victim if they move due to wind and current. Pencil flares can be easily deployed, are small enough to fit in a pocket, and are easily seen by nearby boaters.

2. AIS and MOB in combination with an LED white light attached to the victim are considered distress signaling devices that are good options if there is significant commercial boat traffic in the area.

3. A cell phone in a waterproof container and “buzz saw technique” can be an effective communication and signaling combination. The buzz saw technique includes a glow stick on a string that the victim spins in a circle above their head appearing as a large glowing ring. A cell phone will only work where there is cellular service. Cold water will drain the battery quickly, so ensure batteries are fully charged. By calling only one person, potentially off-shore, the victim may be bypassing Good Samaritan’s nearby, delaying rescue time. Don’t forget, a cellphone also can be a distress signaling device, the flashlight function of a cell phone can be seen by search and rescue professionals even in daylight scanning shadows.

7.5 Sample Questions

7.5-1. *Which device emits a 406 MHZ signal?*

- A) VHF Radio
- B) Satellite Tracking Device
- C) Emergency Locator Beacon**
- D) Cellular Phone

7.5-2. *Which device emits a victim's location and can be seen by commercial traffic?*

- A) VHF Radio
- B) Satellite Tracking Device
- C) Emergency Locator Beacon
- D) Automatic Identification System**

7.5-3. *Why is it important to carry both emergency communication and distress signaling devices on your person?*

- A) So Search and Rescue professionals know the name and boat information of a victim.
- B) So authorities can contact the family to confirm a victim's identity.
- C) To allow rescuers to alert and locate the victim quickly and efficiently.**
- D) To identify a victim's boating experience and education record.

7.5-4. *When boating in a densely populated area which device can hail help from any Good Samaritans nearby?*

- A) Emergency Locator Beacon
- B) VHF radio**
- C) Cellular phone
- D) Two way-radio

7.5-5. *Which device is not designed to be carried on one's person?*

- A) VHF Radio
- B) Cellular Phone
- C) EPIRB**
- D) Satellite tracking device

7 Emergency Preparedness and Response - *continued*

7.6 Describe proper methods of communication with other vessels and emergency hailing, including:

- VHF radio;
- Digital Selective Calling (DSC) and Mobile Maritime Service Identity (MMSI) number; and

Understanding communication procedures is an essential element of responding to emergencies. The course should describe the protocol and use of VHF marine radios and other equipment for contacting the U.S. Coast Guard or other rescue personnel in the event of a boating emergency. (*Also see section 4.3.*)

- VHF Radio and MMSI:
 - A. Obtain and program MMSI number into the unit, if applicable
 - B. Ensure properly installed antennas
 - C. Wire to GPS, if applicable: See Interconnection to a GPS Receiver on the USCG Navigation Center (<https://www.navcen.uscg.gov/>)
 - D. Perform a radio check
- Digital Selective Calling: Digital Selective Calling - to see how it works, visit <https://www.dco.uscg.mil/Portals/9/CG-5R/SARfactsInfo/DSCpamphlet.pdf> .

Types of Calls: Channel 16 is the International distress channel for safety and calling. U.S. Coast Guard coastal stations maintain a listening watch on this channel. For more information visit the USCG Navigation Center (<https://www.navcen.uscg.gov/>).

Types of communication calls include: 1. Mayday, emergencies (for example taking on water); 2. Pan-Pan, informational (for example, large group of paddlers crossing a channel with heavy traffic) 3. Securite, Safety signal (for example commercial vessel coming through a narrow channel).

Recognize, respond and make Mayday, Pan-Pan, Securite call (<https://www.boatus.org/study-guide/equipment/communication/>)

• cell phone limitations.

Cell phone limitations: Cell phones should not be relied upon as a primary means of communication due to signal strength, availability, battery life, and water resistance.

7.6 Sample Activity

1. Students will recognize each of the types of communication calls. In addition, they will learn how to make a MAYDAY, PAN PAN, and a SECURITE call. Each student will pair with a buddy and practice making the calls.

7.6 Sample Questions

7.6-1. *Which VHF radio channel is used for hailing and distress?*

- A) 10
- B) 13
- C) 16**
- D) 88

7.6-2. *In an immediate emergency which call would be appropriate?*

- A) Mayday**
- B) Pan Pan
- C) Radio Check
- D) Securite

7.6-3. *When making a mayday call what do you identify first after saying MAYDAY, MAYDAY, MAYDAY?*

- A) Identify your vessel name**
- B) Describe your boat type
- C) Give your Location
- D) State the nature of the emergency

7.0 Emergency Preparedness and Response - Plus Sailing

7.1 through 7.6 - See “Basic Boating Knowledge - Core” (latest version)

7.7 Discipline Specific

7.7.1 Describe dynamic crew locations to help prevent capsizing a centerboard or dagger board sailboat and the effect of moving weight on board all sailboats.

There are a number of variables which play a role in determining safe crew placement and movement, including size and type of the vessel, wind and weather conditions, point of sail, intended maneuvers, etc. Knowledge of crew placement as related to amount of vessel heel for the given conditions will help keep the vessel from being uncomfortable or capsizing. Sailors should understand that moving crew members is an important and constant component of sailing to improve performance and maintain safety.

7.7.1 Sample Activity

1. Use a model, videos, or photos to illustrate crew locations and the effects of moving weight on board.

7.7.1 Sample Questions

7.7.1-1. *What happens when you put the crew on the windward rail?*

- A) Raises the center of buoyancy
- B) Increases the righting moment
- C) Lowers the center of gravity and increases stability
- D) Moves the center of gravity toward the center of buoyancy**

7.7.1-2. *What is defined as the boat's center of gravity?*

- A) Is the boat's balance point**
- B) Is the center of the displaced water
- C) Moves when the boat heels or pitches
- D) Is located in the central plane at deck level

7.0 Emergency Preparedness and Response - Plus Sailing - *continued*

7.7.2 Describe capsizing and how to prevent and recover from capsize including important safety considerations with regard to sail vessels including rigging entanglements, enclosed spaces, etc.

Capsizing is defined as when the vessel is overturned. Small sailing dinghies can be expected to capsize on occasion, but this can usually be avoided by proper positioning of crew and carrying appropriate sail area for the conditions. Capsize recovery typically involves checking to be sure no one is injured, then turning the bow of the vessel while on its side into the wind, releasing sheets, extending the centerboard/daggerboard (if necessary), using body weight to stand on centerboard while pulling up on gunwale, and using a bailer to remove water from the righted vessel, if needed.

In addition to capsize maneuvers, operators should know and be able to perform an appropriate Person in Water (PIW) maneuver for the vessel they are using. There are a number of maneuvers that can be used based on wind and water conditions and vessel type.

7.7.2 Sample Activity

1. Use videos to demonstrate various techniques for capsize and recovery.

7.7.2 Sample Questions

7.7.2-1. *In the event of a capsize, which do you do first?*

- A) Take a head count**
- B) Right the boat
- C) Secure loose gear
- D) Pass out the life jackets

7.7.2-2. *If a person overboard is unconscious, what is one recovery technique?*

- A) Wait for help; a boat crew can't handle an unconscious person.
- B) Have a strong swimmer enter the water and pull the victim to the side of the boat.
- C) Maneuver to the unconscious person in a controlled manner and pick them up on the windward side if possible.**
- D) Throw a cushion or horseshoe flotation device overboard.

7.0 Emergency Preparedness and Response - Plus Sailing - *continued*

7.7.3 Describe how to avoid running aground and recovery procedures from a grounding.

Everyone aboard should keep a proper lookout, and operators should know how to read navigation charts or maps to acquire local knowledge about shoal areas, recognize wave patterns and other visual indicators of shallow water to avoid running aground. Operators should ease sheets if aground while under sail. Operators should be familiar with various methods for un-grounding. These may include heeling, backing sails, getting out to push, kedging off with an anchor (an advanced maneuver), or getting a tow.

7.7.3 Sample Activity

1. Use videos to demonstrate various techniques for recovery from running aground.

7.7.3 Sample Questions

7.7.3-1. *What is one technique used to unground yourself?*

- A) Move everyone to the front of the boat
- B) Get crew to move to one side of the boat to list and allowing the boat to sail off**
- C) Move everyone to the back of the boat
- D) Lower the sails

8.0 Other Water Activities - Core

8.1 Describe how to recognize a diver down flag, the International Code Flag A, and legal requirements for operating a boat in the vicinity of snorkeling and scuba diving activities.

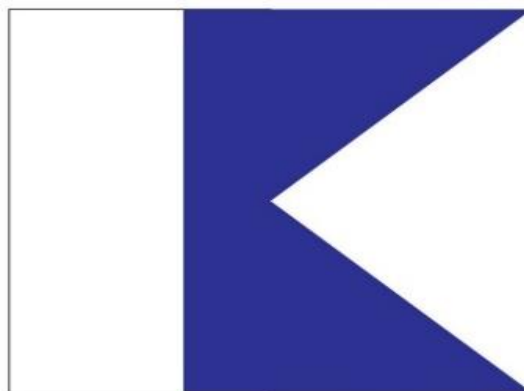
Recreational vessels present a significant hazard to people engaged in snorkeling and diving. State and local regulations require that a diver down flag be prominently displayed when diving activities are occurring in the immediate area. Federal navigation rules further require dive vessels restricted in their ability to maneuver to display either the appropriate day shapes or the “Alpha” flag. Vessel operators should always keep a sharp lookout and maintain a safe distance from divers and dive flags. Consult state rules for specific flag and minimum operating distance requirements.

Navigation Rule 27(e)

Diver Down Flag



Alpha Flag



8.1 Sample Activity

1. Show examples of each flag and describe how to properly display each. Identify the differences between how each flag is used and what each signifies.

8.1 Sample Question

8.1-1. Who is responsible for displaying the diver down flag while diving?

- A) United States Coast Guard
- B) State Boating Law Administrators
- C) SCUBA divers and snorkelers**
- D) Professional Association Diving Instructors (PADI)

8 Other Water Activities - *continued*

8.2 Describe risks unique to hunters and anglers while boating.

Anglers and hunters may not think of themselves as boaters, or take the time to learn the boating safety rules. However, every year, a portion of all boating injuries and fatalities occur on trips involving fishing. Likewise, many hunters suffer injuries; die from drowning, the effects of cold-water shock, and hypothermia. Water-based hunting and fishing incidents occur from actions as simple as standing up to cast a line, reaching out for a decoy, or shooting. Other incidents are caused when a boat capsizes due to an unbalanced load. Many of these injuries or deaths could have been prevented if the sports enthusiast had been wearing a life jacket.

8.2 Sample Activities

1. Show students actual Diver Down and Alpha flags that would be displayed on a boat and a Diver Down flag displayed by a diver.
2. Set up a “boat” with chairs or turn a table upside down in the front of the classroom and simulate a hunting trip. Discuss proper boarding (i.e., a single individual boards the boat; they are handed the gear; the load is balanced and secured while the individual maintains three points of contact, etc.). Also discuss overloading (weight), over capacity (number of people on board), etc. (Reference 2.2). Water-based hunting and fishing incidents occur from actions as simple as standing up to cast a line, reaching out for a decoy, or shooting. Other incidents are caused when a boat capsizes due to an unbalanced load. What additional behaviors might cause injury or death of an angler or hunter?

8.2 Sample Question

8.2-1. *What safety equipment should hunters and anglers wear while boating?*

- A) Raingear
- B) Life jacket**
- C) Camouflage
- D) Boots

8.0 Other Water Activities - Plus Sailing

8.1 through 8.2 - See “Basic Boating Knowledge - Core” (latest version)

9.0 Environmental Concerns - Core

9.1 Describe the impact, risk, and mitigation of aquatic invasive species.

Boat operators are responsible for understanding the impact and risk of aquatic invasive species (AIS). AIS are organisms (e.g., plants, animals, fish, mollusks, or microbes) that are not native to a particular ecosystem. Once introduced, they quickly reproduce, spread, and displace native species. This causes harm to the environment, economy, human health, clogs waterways and creates hazardous conditions for navigation and recreation.

AIS may be accidentally transported by recreational boaters when caught in propellers or intakes; attached to hulls, gear, and clothing; and introduced via bait transfer when fishing. AIS can damage your boat, foul propellers, jam impellers, and cause bilge pump failure.

To help mitigate the spread of AIS, drain live wells, bilge water, and transom wells before leaving the waterway where you have used your vessel. Clean, drain, and dry your vessel, especially when moving between different bodies of water.

9.1 Sample Activities

1. Show a cutaway diagram of various types of vessels (and trailers) and ask a student to identify the areas requiring precautions/cleaning to prevent the spread of invasive species.
2. Show images of typical boater gear/clothing. Ask students to identify what needs cleaning and why.
3. Show a series of maps of the USA through time that shows the spread of invasive species (and exponential growth). Ask for student conjecture on why this is happening. Ask what role they can play.
4. Show graphs of invasive species growth (pick a species or two) and ask students to make inferences (e.g., If left unchecked, what will be the growth in 5 years? 10 years?).

9.1 Sample Questions

9.1-1. What can a boater do to help prevent the spread of aquatic invasive species?

- A) **Clean, drain and dry your boat before using another waterbody.**
- B) Tie down trash when underway to minimize trash going overboard.
- C) Drain live wells, bilge water, and transom before launching.
- D) Drain live wells, bilge water, and transom wells at home.

9.1-2. *What are the impacts of aquatic invasive species?*

- A) **Harms the environment and clogs waterways**
- B) Reduces parking spots at a launch
- C) Benefits native species
- D) Improves recreational opportunities

9 Environmental Concerns - *continued*

9.2 Describe how to adhere to state and federal laws and regulations regarding environmental protection including wildlife, littering, marine sanitation, oil pollution, and garbage.

The boat operator must be aware of and comply with existing state and federal laws and regulations regarding the environment, including those species protected under the Endangered Species Act (<https://www.epa.gov/laws-regulations/summary-endangered-species-act>) and Marine Mammal Protection Act (<https://www.fisheries.noaa.gov/node/1211>). Additional considerations are required if operating within a marine sanctuary or other protected body of water.

Boaters must understand the fragile nature of our national and state waterways. Every boater plays a role in protecting and safeguarding our waters and the wildlife and fishery within it. The U.S. Department of Commerce, through NOAA Fisheries, is charged with protecting whales, dolphins, porpoises, seals, and sea lions. Walrus, manatees, sea otters, and polar bears are protected by the U.S. Department of the Interior through the U.S. Fish and Wildlife Service. Each state and or region of the country may have species of unique concern, which may be addressed by local or state laws and regulations.

See Marine Life Viewing Guidelines, published by NOAA Fisheries at <https://www.fisheries.noaa.gov/topic/marine-life-viewing-guidelines>.

See A Boater's Guide to the Federal Requirements for Recreational Boats and Safety Tips (<https://www.uscgboating.org/images/420.PDF>) published by the U.S. Coast Guard, pages 32 through 35 (captured on the following pages).

Pollution Regulations (33 CFR 151/155)

Annex V of MARPOL 73/78 prohibits throwing, discharging, or depositing any refuse matter of any kind (including trash, garbage, oil, and other liquid pollutants) into the waters of the United States.

The Federal Water Pollution Control Act prohibits the discharge of oil or hazardous substances that may be harmful into U.S. navigable waters. Vessels 26 feet and greater in length, with machinery spaces, must display a placard at least 5 by 8 inches, made of durable material, fixed in a conspicuous place in the machinery spaces, or at the bilge pump control station, stating the following:

Discharge of Oil Prohibited

The Federal Water Pollution Control Act prohibits the discharge of oil or oily waste upon or into any navigable waters of the United States. This prohibition includes any discharge that causes a film or discoloration of the surface of the water, or causes a sludge or emulsion beneath the surface of the water. Violators are subject to substantial civil and/or criminal sanctions, including fines and imprisonment.

Regulations issued under the Federal Water Pollution Control Act require all vessels with propulsion machinery to have a capacity to retain oily mixtures on board and be equipped with a fixed or portable means to discharge these oily mixtures to a reception facility. On recreational vessels, a bucket, oil absorbent pads, and heavy-duty plastic bag, bailer, or portable pump are some of the suitable means that meet the requirement for retention on board until transferring the oily mixture to a reception facility. No person may intentionally drain oil or oily waste from any source into the bilge of any vessel. You must immediately notify the U.S. Coast Guard if your vessel discharges oil or hazardous substances in the water. Call the Coast Guard National Response Center toll-free (800) 424-8802, or (202) 267-2675.

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Report the following information:

- Location of the incident.
- Size/quantity (estimated amount of material released).
- Description, color, consistency, odor.
- Date and time observed.
- Source and cause of the release, if known.
- Substance, if known.
- Weather and any other information that may help emergency personnel respond to the incident.

Discharge of Garbage

The Act to Prevent Pollution from Ships (MARPOL ANNEX V) places limitations on the discharge of garbage from vessels. It is illegal to dump plastic trash anywhere in the ocean or navigable waters of the United States. It is also illegal to discharge garbage in the navigable waters of the United States, including the inland waters and anywhere in the Great Lakes. The discharge of other types of garbage is permitted outside of specific distances offshore as determined by the nature of that garbage. (See chart next page.)



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Note: state and local laws may place further restrictions on the disposal of garbage.

Garbage Type	Discharge
Plastics – includes synthetic ropes, fishing nets, and plastic bags	Prohibited in all areas
Comminuted or ground food waste, paper, rags, glass, etc.	Prohibited less than 3 miles from nearest land
Food waste, paper, rags, glass, metal, bottles, crockery, and similar refuse	Prohibited less than 12 miles from nearest land
Floating dunnage, lining, and packing materials	Prohibited less than 25 miles from nearest land

United States vessels of 26 feet or longer must display in a prominent location, a durable placard at least 4 by 9 inches notifying the crew and passengers of the discharge restrictions.



United States ocean-going vessels of 40 feet or longer that are engaged in commerce or equipped with a galley and berthing must have a written waste management plan describing the procedures for collecting, processing, storing, and discharging garbage, and must designate the person in charge of carrying out the plan.

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Marine Sanitation Devices (33 CFR 159)

All recreational boats with installed toilet facilities must have an operable marine sanitation device (MSD) on board. Vessels 65 feet and under may use a Type I, II, or III MSD. Type I and Type II are "flow-through" devices, while a holding tank is a Type III device. Vessels over 65 feet must install a Type II or III MSD. All installed MSDs must be U.S. Coast Guard-certified. U.S. Coast Guard-certified devices are so labeled, except for some holding tanks, which are certified by definition under the regulations.

The discharge of treated sewage is allowed within 3 nautical miles of shore except in designated "No Discharge Zone" areas. (Untreated sewage may be discharged beyond 3 nautical miles.)

A "No Discharge Zone" is a body of water where the discharge of treated or untreated sewage is prohibited. When operating a vessel in a No Discharge Zone, the operator must secure the device in a manner that prevents any discharge. Some acceptable methods are: padlocking overboard discharge valves in the closed position, using a non-releasable wire tie to hold overboard discharge valves in the closed position, closing overboard discharge valves and removing the handle, and locking the door to the space enclosing the toilets. Note: these methods for preventing the overboard discharge are only required when operating in a No Discharge Zone. State and local laws may place further restrictions on overboard discharges.



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Boaters should check state laws when transporting watercraft to a different state or province, especially if concerned with the spread of aquatic invasive/ nuisance species (see *section 9.1*).

9.2 Sample Activities

1. Ask students to list states/regions with different/special environments (e.g., swamp, bayou, wetland, coastal, barrier island). Discuss how these differences account for different marine environmental concerns.
2. Show actual regulations from various states that have special requirements (e.g., Texas Coastal Seagrass). Ask students to compare and contrast the differences. Discuss where to find local and state regulations.
3. Discuss safe distances for viewing marine life from land and the water as published on the NOAA Fisheries website (<https://www.fisheries.noaa.gov/topic/marine-life-viewing-guidelines>).

9.2 Sample Question

9.2-1. Where do you find the environmental laws governing waterbodies in your state?

- A) State boater's guide**
- B) Federal waterway management guide
- C) Federal Code of Regulations
- D) U.S. Department of Environmental Protection

9.0 Environmental Concerns - Plus Sailing

9.1 through 9.3 - See “Basic Boating Knowledge - Core” (latest version)

Note: Be sure to check centerboard trunks and rudder areas for Aquatic Invasive Species.

Chapter 4 - Taking it Further

State-Specific Boating Information

In addition to addressing the American National Standard, it is recommended that a course contain (as part of the text or a separate handout) state-specific information in regard to boating laws/regulations and local boating conditions. The following state-specific topics may be required for NASBLA and state approval*:

- A. Boat registration and titling requirements such as the number of years a registration decal is valid, expiration date of registration, and decal placement.
- B. Laws for required wearing of PFDs/life jackets for children, certain types of boats, and for special boating activities such as personal watercraft, skiers and others being towed.
- C. Additional equipment requirements such as anchor, engine cutoff lanyard, bailing devices, visual distress signals, etc.
- D. Mufflers and noise levels.
- E. Requirements for waste disposal, no discharge zones, and litter laws.
- F. Special requirements for mandatory education, licensing, rental operation, and proficiency test certifications.
- G. Age/horsepower restrictions and adult supervision requirements for children.
- H. Laws further defining careless, reckless, unsafe, and negligent operations such as becoming airborne and operating less than specified distances behind a water skier.
- I. Boat speed limits and operation in zoned and restricted areas.
- J. Laws on operating under the influence of drugs and alcohol such as implied consent and Blood Alcohol Content (BAC) levels.
- K. Law enforcement officer authority and boater responsibility to comply.
- L. Boat accident reporting requirements including how, when, and where to file the report. Accident reports are legally required when the accident involves: 1) disappearance or loss of life; or 2) personal injury requiring medical treatment beyond first aid; or 3) property damage in excess of current state or federal thresholds; or 4) complete loss of the boat.
- M. A state approved boating accident report form or U.S. Coast Guard form.
- N. Other laws or regulations as required by the state approving authority.

*NOTE: All courses submitted to NASBLA for approval need to include state-specific information, supplemental materials and instruction to meet the intent of this requirement. State-specific content will be reviewed and accepted, endorsed, or recognized by each state in which the course will be taught. NASBLA approval is not complete without gaining the acceptance, endorsement, or recognition of at least one state through the state's review of State-specific materials.

On-Water Instruction and Education

There are many different ingredients associated with helping individuals learn how to engage in safe and enjoyable recreational boat operation. In recent years, experiential learning has become increasingly recognized as a highly effective approach to teaching recreational boating operation.

Accordingly, acquiring boat operator skills through “learning by doing” augmented with knowledge acquisition on-land, is the long-term goal to be achieved through the development of a set of national standards for on-water, skills-based instruction in recreational boat operation.

Skills-Based Standards for Recreational Boat Operators

The National On-Water Standards (NOWS) initiative, under funding from the Sport Fish Restoration and Boating Trust Fund administered by the U.S. Coast Guard, produced American National Standards defining entry-level skills for recreational boat operation for power, sail, and human-propelled domains. These standards identify the outcome skills recreational boat operators should be able to demonstrate at the completion of an on-water, hands-on skill-based course onboard a recreational boat.

A copy of the EDU-3 Skills-Based Sailboat Standard (American National Standard) is available for free download at the American Boat & Yacht Council (ABYC) at <https://abycinc.org/store/ListProducts.aspx?catid=&ftr=edu%201>. The separate Technical Support Document supporting this standard is posted at https://www.usnows.org/files/ugd/abe9a2_4f8d72e8cd034754903897a9d8587309.pdf.

Chapter 5 – Additional Resources

The National Association of State Boating Law Administrators

Since its inception, the National Association of State Boating Law Administrators (NASBLA) has functioned effectively as the voice of the states and territories regarding state boating law enforcement and boating safety. Today, NASBLA coordinates approval of state and private boating education programs, promotes uniform boating regulations through the adoption of model acts and policies, develops methods to improve the nation's boating accident database, fosters cooperation between the U.S. Coast Guard and the states, and strives for the general advancement of boating safety.

NASBLA is a 501(c)(3) non-profit organization. Membership in the association consists of state officials responsible for administering and/or enforcing state boating laws. "State" means a state of the United States, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, American Samoa, Northern Mariana Islands and the District of Columbia.

Executive Officers of NASBLA consist of a Chair, Vice Chair, Secretary-Treasurer, and an executive board composed of three additional members-at-large and the immediate Past Chair. The Board is augmented with an Executive Director. Officers are elected annually and take office on the first day following the conference at which they were elected, and hold office until the last day of the conference at which their successors are chosen.

NASBLA has a wide-range of Associate members consisting of national non-profit organizations, Federal partners, industry, and course providers.

NASBLA is recognized for its stewardship of recreational boating safety and has worked closely with the U.S. Coast Guard (USCG), the States and others to ensure that the intent of the congress to promote uniformity, reciprocity and comity among the various states was given priority. The many resolutions and model acts that have been generated by the association are testament to this intent. In doing this, NASBLA brings highly-qualified personnel in the fields of boating law enforcement, education, boating safety and on-the-water search and rescue.

Conformity Assessment (a.k.a. Course Approval)

NASBLA reviews boating courses to determine if a course meets an indicated American National Standard. Course providers seeking NASBLA review and course approval, sanction, or verification must first complete and submit the application. Complete information is posted at <https://www.nasbla.org/education/nasbla-course-approval>.

Research

A number of research projects address the topic of the efficacy of boater education. Research was conducted by NASBLA with financial support from the Sport Fish Restoration and Boating Trust Fund administered by the U.S. Coast Guard. Grant the projects are listed at <https://www.nasbla.org/education/education-research>.

Data

A wide range of boating accident data, state law enforcement and education data, and Recreational Boating Safety Fiscal data are available via interactive Dashboards at this link <https://www.nasbla.org/nasblamain/nasbla-resources/rbsdashboards>. The Recreational Boating Safety Dashboards were made possible through a Sport Fish Restoration and Boating Trust Fund grant administered by the U. S. Coast Guard.

Chapter 6 – Glossary and Definitions

The following terms and definitions are presented to help clarify the information presented in this Technical Report. The original source or the authoritative reference for each term is identified as follows:

- ANSI = American National Standards Institute
- ESP = National Boating Education Standards Panel
- Federal = A term commonly used by the U.S. Government
- NASBLA = National Association of State Boating Law Administrators
- Nav Rules = USCG Handbook of Navigation Rules and Regulations
- NBSAC = National Boating Safety Advisory Council
- NOWS = National On-Water Skills Standards

TERM	Source	Definition
<i>Advanced Education</i>	<i>NBSAC</i> <i>NASBLA</i>	Any course of instruction that goes beyond a basic boating safety course that is NASBLA approved.
<i>ANSI</i>	<i>ANSI</i>	American Nation Standards Institute
<i>ANSI Essential Requirements</i>	<i>ANSI</i> <i>ESP</i>	The minimum acceptable due process requirements applying to activities associated with developing consensus for the purposes of approving, revising, reaffirming, and withdrawing standards sanctioned as American National Standards. In abbreviated form, the requirements are: Openness; Lack of Dominance; Balance; Coordination and harmonization; Notification of standards development; Consideration of views and objections; Consensus vote; Appeals (procedural); Written procedures; and Compliance.
<i>Approved Scope of Activity</i>	<i>ANSI</i> <i>NASBLA</i>	“NASBLA’s standards development scope of activity covers knowledge and competencies for the recreational boater and boating professionals working within or on behalf of the recreational boating community in North America.”
<i>conformity assessment</i>	<i>ANSI</i>	Methods of evaluating whether products, processes, systems, services and personnel comply with a standard.
<i>consensus</i>	<i>ANSI</i>	General agreement, but not necessarily unanimity, and includes a process for attempting to resolve objections by interested parties, as long as all comments have been fairly considered, each objector is advised of the disposition of his or her objection(s) and the reasons why, and the consensus body members are given an opportunity to change their votes after reviewing the comments.

TERM	Source	Definition
<i>consensus</i>	<i>ESP</i>	Means that substantial agreement has been reached by directly and materially affected interests. Consensus requires that all views and objections be considered, and that an effort be made toward their resolution.
<i>consensus body</i>	<i>ANSI ESP</i>	The group that approves the content of a Standard and whose vote demonstrates evidence of consensus.
<i>course</i>	<i>NASBLA</i>	1) Refers to all components of “a boating education course, including instruction, texts, supplemental materials, and tests. A boating course may be presented in various formats, including classroom instruction, home study, video, distance learning, CD-ROM, or any combination of these formats.” 2) A NASBLA -approved boating safety education course, including all documents and materials submitted as part of an application for NASBLA approval of said Course.
<i>course</i>	<i>NOWS</i>	A series of specific learning experiences such as lectures or training sessions focused on a specific topic. It is designed to accomplish the acquisition of a defined level of knowledge and skills association with the specific topic; a framework of specific goals and objectives for learning experiences individual will engage in to transfer knowledge and skills.
<i>Course Provider</i>	<i>NASBLA</i>	A party, including a state, seeking application to NASBLA for approval of a boating safety Course and, after approval, providing that Course in compliance with the education standards.
<i>curriculum</i>	<i>NOWS</i>	A high level plan or overarching framework for all the experiences individuals will engage in as part of their education; identifies what is to be learned and takes into account the needs of the individual learner, the domain of knowledge and skill and the needs of the society overall. The core ingredients of a curriculum include: the overall needs to be addressed through education; the specific goals and objectives to be pursued; and a method of evaluating its impact.
<i>ESP</i>	<i>NASBLA</i>	Means the National Boating Education Standards Panel. See “Consensus body.”
<i>Executive Board</i>	<i>ESP</i>	The Executive Board of the National Association of State Boating Law Administrators.
<i>experiential learning</i>	<i>NOWS</i>	An instructional method based on the belief that people learn best by doing; learning new knowledge and skills takes place through active, hands-on experiences. The best approaches to experiential learning involve both focus on knowledge and understanding and activity with a focus on skills and behavior.
<i>government unique standards</i>	<i>Federal</i>	Government developed standards for its own uses when, for security or uniqueness of application, no other standard is acceptable (Ex. Military, Fed Specifications, individual agency standards).

TERM	Source	Definition
<i>in good standing</i>	ESP	For a duly appointed Standards Panel member, means remaining in compliance with the Panel's attendance, balloting, conduct, and performance requirements. See Part V.2. of the Panel Rules.
<i>Incorporation by Reference</i>	Federal	1) A process which allows Federal agencies to comply with the requirement to publish rules in the Federal Register and the Code of Federal Regulations (CFR) by referring to materials already published elsewhere; 2) The legal effect of incorporation by reference is that the material is treated as if it were published in the Federal Register and CFR. This material, like any other properly issued rule, has the force and effect of law.
<i>instructional design</i>	NOWS	A specific plan on how learning will be transferred. It identifies the specific approaches, sequence of activities or events, the required resources and time frames that will be used to enable the learning of new knowledge, skills and behaviors. It includes identification of instructional delivery strategies to be employed such as lecture, cooperative learning, experiential learning, as well as the structure in which instruction will take place such as individually, one-to-one, in small or large groups.
<i>in-writing</i>	ANSI	Communication sent by either mail or electronic mail (email).
<i>knowledge</i>	ESP	Cognitive outcome of the learning process. Usually tested by verbal or written questions.
<i>lesson</i>	NOWS	A specific occasion when students meet with their teacher to learn a particular topic. Students engage in multiple lessons when the topic of a course is too large to be learned in one meeting.
<i>meeting</i>	ESP	Means any gathering of members in person or electronically (through webinar or teleconference or other electronic communication methods open and accessible to all members) to conduct official business.
NASBLA	ESP	Means the National Association of State Boating Law Administrators.
<i>National Technology Transfer and Advancement Act (NTTAA)</i>	ANSI Federal	1) Directs Federal Agencies to use consensus standards developed by consensus standards bodies; 2) Encourages participation in voluntary consensus standards bodies when compatible with missions, authorities, etc.; 3) Directs NIST to coordinate Federal standards and conformity assessment activities with those of the private sector
NIST	Federal	An abbreviation for the National Institute of Standards and Technology
<i>non-consensus standard</i>	Federal	"Industry standards," "company standards," or "de-facto standards" are standards developed in the private sector but not in the full consensus process.
NTTAA	Federal	An abbreviation for the National Technology Transfer and Advancement Act of 1995

TERM	Source	Definition
<i>on-water education</i>	NBSAC NASBLA	Any course of instruction that is boat based for skills development, regardless of the level of the course content
<i>Panel</i>	ESP	Means the National Boating Education Standards Panel. See “Consensus body.”
<i>performance standard</i>	ANSI	states requirements in terms of required results with criteria for verifying compliance but without stating the methods for achieving required results
<i>prescriptive standard</i>	ANSI	may specify design requirements, such as materials to be used, how a requirement is to be achieved, or how an item is to be fabricated or constructed
<i>power-driven vessel</i>	Nav Rules	Any vessel propelled by machinery.
<i>resolved</i>	ANSI	A negative vote cast by a member of the consensus body or a comment submitted as a result of public review where the negative voter agrees to change his/her vote or the negative commenter accepts the proposed resolution of his/her comment.
<i>restricted visibility</i>	Nav Rules	Any condition in which visibility is restricted by fog, mist, falling snow, heavy rainstorms, sandstorms, or any other similar causes.
<i>sailing vessel</i>	Nav Rules	Any vessel under sail provided that propelling machinery, if fitted, is not used.
<i>skills</i>	ESP	An outcome of the learning process, most often a psychomotor ability. Usually tested by demonstration. Skill testing may often be accomplished either within or outside the classroom.
<i>small boat</i>	ESP	In reference to the standards, a 'small boat' includes all boats less than 26 feet in length.
<i>Standard</i>	ANSI	1) a recognized unit of comparison by which the correctness of others can be determined; 2) a set of characteristics or qualities that describes features of a product, process, or service.
<i>standard</i>	NOWS	A definition of the qualities or characteristics used to judge desired level of acceptability.
<i>Standard</i>	ESP	(Upper case) means the NASBLA National Boating Education Standards or the Paddlesports Education Standards or any other national boating education standards that the Executive Board authorizes the Standards Panel to address.
<i>standards development</i>	ESP	The overall process and procedures associated with reviewing, revising, reaffirming, withdrawing, and approving standards.

TERM	Source	Definition
<i>Standards Panel</i>	<i>ESP</i>	Means the National Boating Education Standards Panel. See “Consensus body.”
<i>standardization</i>	<i>ANSI</i>	A broad range of activities and ideas – from the actual development of a standard to its promulgation, acceptance and implementation.
<i>state</i>	<i>NASBLA</i>	For the purposes of NASBLA course approval, means a state, commonwealth, federal district, or territory of the United States or, if outside the United States, another regulating jurisdiction.
<i>substantive change</i>	<i>ANSI</i>	Substantive Change: A substantive change in a proposed American National Standard is one that directly and materially affects the use of the standard. Examples of substantive changes are: "shall" to "should" or "should" to "shall"; addition, deletion or revision of requirements, regardless of the number of changes; addition of mandatory compliance with referenced standards.
<i>syllabus</i>	<i>NOWS</i>	Identifies the specific topics that will be examined, or the experiences that will be provided, during a particular course.
<i>teaching</i>	<i>NOWS</i>	To show or explain how to do something where the focus is to develop or transfer knowledge and understanding.
<i>Technical Report</i>	<i>ANSI</i> <i>ESP</i>	A document registered with ANSI which informs a user on technical considerations for use of a Standard.
<i>template</i>	<i>NOWS</i>	The specific form, structure, or framework used to prescribe how something is configured, organized or designed.
<i>training</i>	<i>NOWS</i>	Learning experiences where the priority focus is to develop or transfer skills and behaviors through instruction and practice.
<i>TSD</i>	<i>NOWS</i>	Technical Support Document
<i>unresolved</i>	<i>ANSI</i>	Either (a) a negative vote submitted by a consensus body member or (b) written comments, submitted by a person during public review expressing disagreement with some or all of the proposed standard, that have not been satisfied and/or withdrawn after having been addressed according to the developer's approved procedures.
<i>underway</i>	<i>Nav Rules</i>	A vessel is not at anchor, or made fast to the shore, or aground.
<i>vessel</i>	<i>Nav Rules</i>	Includes every description of water craft, including non-displacement craft and seaplanes, used or capable of being used as a means of transportation on water.

TERM	Source	Definition
<i>voluntary consensus body</i>	ANSI	A body of balanced interest group representatives which plan, develop, establish, or coordinate voluntary consensus standards using agreed-upon procedures as defined by ANSI Essential Requirements.
<i>voluntary consensus standards</i>	ANSI	standards developed or adopted by voluntary consensus standards bodies

Authorized Vessel Types and Optional Vessel Sub-Types

This section presents the vessel types/sub-types work product voted on and approved by the NASBLA membership in a process authorized under NASBLA's Bylaw III, Section 8. The **12 Authorized Vessel Types** have been set in regulation as per the U.S. Coast Guard's Final Rule on Changes to Standard Numbering System, Vessel Identification System, and Boating Accident Report Database, 33 C.F.R. Parts 173, 174, 181, 187, issued March 28, 2012, with implementation by the states no later than January 2017. The **Vessel Sub-Types** are for **optional use**. Following the vessel types is a list of terms and definitions for all entries. The **History**, **Voting Process**, and **Overview of Process** presented below provides additional background information.

History: Vessel sub-types entries were vetted through a multi-stage review process involving the project team (subgroup of NASBLA Engineering, Reporting & Analysis Committee (ERAC), including additional U.S. Coast Guard subject matter experts); the full ERAC; the NASBLA Executive Board; and the broader NASBLA community via two open comment solicitations – the first, Feb. 22-March 24, 2013, and the second, July 11-26, 2013 (following the release of a revised version of the list on July 11). Comments also were received from NASBLA membership during a Feb. 28, 2013 session conducted as part of the NASBLA Spring BLA Workshop and a July 15, 2013 national teleconference/webinar.

Voting process: Voting was authorized under NASBLA Bylaw III, Section 8 (Conducting Interim Business). A Request for Vote was initiated in an Aug. 2, 2013 email to all Boating Law Administrators. By the Sept. 3 deadline, 44 NASBLA member States had cast ballots, with 43 in the affirmative.

Overview of Process: The review process for this Accident Reporting Terms and Definitions Project was accepted by the NASBLA Executive Board and the USCG Office of Auxiliary and Boating Safety in mid-June 2011.

On September 11, 2012, NASBLA membership approved Resolution 2012-3 (In support of the Accident Reporting Terms and Definitions Project, the adoption of standardized terms and definitions by the U.S. Coast Guard, and actions to facilitate their application), and under its provisions, the first two work products in the series – Accident Types/Events and Accident Contributing Factors/Causes.

On September 3, 2013, NASBLA membership approved the final three work products in the series – Operation, Activity, and Vessel Sub-Types (for optional use with authorized Vessel Types).

AUTHORIZED VESSEL TYPES AND OPTIONAL VESSEL SUB-TYPES

VESSEL TYPES terms authorized in 33 CFR 173.57 (eff. 1/17)	VESSEL SUB-TYPES for optional use with the authorized Vessel Types, to expand the selections
Open Motorboat	Bass Boat
	Center Console
	Runabout
	Runabout-Bow Rider
	Runabout-Low Profile
	Ski Boat
	Wakeboard Boat
	Deck Boat
	Jon/Utility Boat
	Offshore Performance Boat (Open Style)
	Rigid Hull Inflatable Boat
	Open Motorboat (unspecified)
Cabin Motorboat	Cabin Cruiser
	Cuddy Cabin Cruiser
	Offshore Performance Boat (Cuddy Cabin Style)
	Cabin Motorboat (unspecified)
Paddlecraft	Canoe – Unspecified
	Canoe – Whitewater version
	Canoe – Decked version
Paddlecraft	Kayak – Unspecified
	Kayak – Whitewater version
	Kayak – Recreational version
	Kayak – Touring version
	Kayak – Sit-on-top version
	Paddleboard
	Paddlecraft (unspecified)
Personal Watercraft	
Pontoon Boat	
Sail Only	Sailboat
	Kiteboard
	Sailboard
	Sail Only (unspecified)
Auxiliary Sail	
Airboat	
Houseboat	
Inflatable Boat	Whitewater Raft
	Inflatable Boat (unspecified)
Rowboat	Drift Boat
	Rowing Shell
	Rowboat (unspecified)
Other	Other (Describe)
	Possible sub-types to code as Other
	Amphibious Vehicle
	Hovercraft
	Pedal Boat

VESSEL SUB-TYPES associated with AUTHORIZED VESSEL TYPES

In this list, the main Vessel Types entries authorized and defined in regulation as a result of the issuance of the Final Rule on Changes to Standard Numbering System, Vessel Identification System, and Boating Accident Report Database **are identified by yellow highlighted term labels.**

The term labels and definitions for the authorized Types—Open Motorboat, Cabin Motorboat, Paddlecraft, Personal Watercraft, Pontoon Boat, Sail Only, Auxiliary Sail, Airboat, Houseboat, Inflatable Boat, and Rowboat—are as defined in regulation. However, clarifying information—not intended to be part of the official definitions—has been appended to Personal Watercraft, Pontoon Boat and Inflatable Boat. Also, a definition is presented for “Other,” a Vessel Type term label that was authorized, but not defined in Code of Federal Regulations.

OPEN MOTORBOAT

OPEN MOTORBOAT: *A vessel equipped with propulsion machinery and having an open load carrying area that does not have a continuous deck to protect it from the entry of water.*

Bass Boat: *Generally, an outboard powered vessel designed for inland bass fishing or inshore fishing; usually distinguished by a small, two or three occupant cockpit with decking covering most of the rest of the vessel; the decking typically has built-in sockets for the insertion of pedestal fishing seats for use only when the vessel is still or moving slowly; usually propelled additionally by a bow-mounted electric trolling motor.*

Center Console: *A single-decked open hull vessel where the console is in the center of the vessel. The deck surrounds the console so that a person can walk all around the vessel from stern to bow with ease.*

Runabout: *A vessel with a deck covering the bow, with an offset helm, conventional seating and windshield, and typically between 17 and 30 feet in length.*

Runabout-Bow Rider: *A vessel with an open bow area and seats in front of an offset helm station, with conventional seating and windshield, and typically between 17 and 30 feet in length.*

Runabout-Low Profile: *A closed bow vessel, with low freeboard/transom, shallow V configuration, powered by a large engine, and typically between 17 and 30 feet in length.*

Ski Boat: *A vessel with a shallow draft V bottom hull; typically inboard powered; designed primarily for towed watersports.*

Wakeboard Boat: *A vessel with a shallow draft V bottom hull; typically inboard powered; designed primarily for wakeboarding; typically has a wakeboard tower and some type of adjustable variable onboard ballast system or adjustable transom tab in order to create larger wakes.*

Deck Boat: *A vessel with large open spaces in the interior and plenty of seating, typically with a deep-V or tri-hull construction. If closed cylinder buoyancy, see **PONTOON BOAT**.*

Jon/Utility Boat: *An open, lightweight vessel, usually constructed of aluminum and usually with bench seats.*

Offshore Performance Powerboat (Open Style): *A high performance vessel of open fiberglass construction with a deep V or catamaran offshore racing hull; usually 30 to 50 feet long; relatively narrow in beam and generally equipped with two or more powerful engines.*

Rigid Hull Inflatable Boat (RIB/RHIB): *A relatively light-weight vessel constructed with a solid, shaped hull and flexible or foam-filled tubes around much of the vessel's perimeter.*

Open Motorboat (unspecified): *Vessel does not fit any of the Open Motorboat Sub-Type descriptions.*

CABIN MOTORBOAT

CABIN MOTORBOAT: *A vessel propelled by propulsion machinery and providing enclosed spaces inside its structure.*

Cabin Cruiser: *A vessel with a cabin that can be completely closed by means of doors or hatches.*

Cuddy Cabin Cruiser: *A vessel with a small cabin, galley, head, and berth; typically, the cuddy is not tall enough to stand in.*

Offshore Performance Powerboat (Cuddy Cabin Style): *A high performance cabin vessel of fiberglass construction with a deep V or catamaran offshore racing hull; usually 30 to 50 feet long; relatively narrow in beam and generally equipped with two or more powerful engines.*

Cabin Motorboat (unspecified): *Vessel does not fit any of the Cabin Motorboat Sub-Type descriptions.*

PADDLECRAFT

PADDLECRAFT: *A vessel powered only by its occupants, using a single- or double-bladed paddle as a lever without the aid of a fulcrum provided by oarlocks, thole pins, crutches, or similar arrangements.*

Canoe-Unspecified: *A vessel typically pointed upwards at both ends and open on top; propelled by single-bladed paddles.*

Canoe-Whitewater version: *A vessel designed for whitewater; propelled by single-bladed paddles; generally, has more bow and stern curvature (rocker) and supplemental flotation, in the form of bow, stern or center air bags, than its flatwater counterpart; may be outfitted for tandem, solo or both.*

Canoe-Decked version: *A vessel propelled by single-bladed paddles; has a spray-skirt to enclose the open portion of the canoe; the paddler kneels in it and uses a canoe paddle.*

Kayak-Unspecified: *A vessel propelled by double-bladed paddles, by one or more seated individuals facing the direction of travel.*

Kayak-Whitewater version: *A vessel designed for whitewater; propelled by double-bladed paddles;*

generally, has more bow and stern curvature (rocker), which aids in maneuverability; generally uses a spray-skirt; generally, a shorter kayak, but may be as long as 12 feet.

Kayak-Recreational version: *A vessel propelled by double-bladed paddles; typically has a large cockpit with or without a provision for sealing the opening to the body of the occupant (i.e., spray-skirt); typically, less than 12 feet in length, with wider beam and larger cockpit than a touring version kayak.*

Kayak-Touring version: *A vessel propelled by double-bladed paddles; typically has built-in storage capacity for gear and provision for sealing the cockpit opening to the body of the occupant with a water-tight spray-skirt; normally longer and more slender in construction than a recreational version kayak. (Includes sea kayaks)*

Kayak-Sit-on-top version: *A vessel that one sits on top of, not inside of; propelled by double-bladed paddles; has a sealed, watertight deck surface into which seats and features might be molded; does not have an opening that can be sealed around the occupant, but may have thigh straps.*

Paddleboard: *A vessel, similar in appearance to a surfboard, but may vary significantly in length; intended to be propelled with a single- or double-bladed paddle.*

Paddlecraft (unspecified): *Vessel does not fit any of the Paddlecraft Sub-Type descriptions.*

PERSONAL WATERCRAFT

PERSONAL WATERCRAFT: *A vessel propelled by a water-jet pump or other machinery as its primary source of motive power and designed to be operated by a person sitting, standing, or kneeling on the vessel, rather than sitting or standing within the vessel's hull. [Includes tethered water thrust equipment.]*[§]

PONTOON BOAT

PONTOON BOAT: *A vessel with a broad, flat deck that is affixed on top of closed cylinders which are used for buoyancy, the basic design of which is usually implemented with two rows of floats as a catamaran or with three rows of floats as a trimaran. [If typical deep-V or tri-hull construction, see **OPEN MOTORBOAT - Deck Boat.**]*^{**}

[§] Bracketed information is intended only for clarification of application and is not part of official definition.

^{**} Bracketed information is intended only for clarification of application and is not part of official definition. Definition for **Deck Boat** (proposed **OPEN MOTORBOAT** sub-type) directs users to **PONTOON BOAT** in the event of closed cylinder buoyancy. The distinction and appropriate application is also to be addressed in training.

SAIL ONLY

SAIL ONLY: *A vessel propelled only by sails.*

Sailboat: *A vessel with sail as its only method of propulsion.*

Kiteboard: *A vessel, similar in appearance to a surfboard, with or without foot-straps or bindings, combined with a large controllable kite to propel the rider and board across the water.*

Sailboard: *A vessel, similar in appearance to a surfboard, equipped with a swivel mounted mast and sail not secured to a hull by guys or stays.*

Sail Only (unspecified): *Vessel does not fit any of the Sail Only Sub-Type descriptions.*

AUXILIARY SAIL

AUXILIARY SAIL: *A vessel with sail as its primary method of propulsion and mechanical propulsion as its secondary method.*

AIRBOAT

AIRBOAT: *A vessel that is typically flat-bottomed and propelled by an aircraft-type propeller powered by an engine.*

HOUSEBOAT

HOUSEBOAT: *A motorized vessel that is usually non-planing and designed primarily for multi-purpose accommodation spaces with low freeboard and little or no foredeck or cockpit.*

INFLATABLE BOAT

INFLATABLE BOAT: *A vessel that uses air-filled flexible fabric for buoyancy. [If equipped with mechanical propulsion, see **OPEN MOTORBOAT.**]*^{††}

Whitewater Raft: *A vessel designed for use on whitewater, consisting of very durable, multi-layered rubberized (hypalon) or vinyl fabrics (PVC) with independent air chambers; may be steered with paddles at the stern or with central helm oars.*

Inflatable Boat (unspecified): *Vessel does not fit the Whitewater Raft Sub-Type description.*

ROWBOAT

ROWBOAT: *An open vessel manually propelled by oars.*

Drift Boat: *A vessel with a wide, flat bottom for low draft; flared sides; a narrow, flat bow, often*

mistaken for the transom; and a pointed stern; specialized to run rapids on rivers.

Rowing Shell: *A light, long, narrow racing vessel for rowing by one or more persons.*

Rowboat (unspecified): *Vessel does not fit any of the Rowboat Sub-Type descriptions.*

OTHER

OTHER (Describe): *If the vessel does not fit any of the descriptions above, enter another term for the vessel that best describes it.*^{††}

Proposed SUB-TYPES that would appropriately fit under “OTHER”

Amphibious Vehicle: *A motorized, wheeled vehicle that can be operated as a vessel.*

Hovercraft: *A vessel capable of moving over water or land on a cushion of air created by downward directed fans powered by engine(s).*

Pedal Boat: *A vessel mechanically propelled by paddles, worked by one or more operators’ feet and legs.*

^{††} Bracketed information is intended only for clarification of application and is not part of official definition. **INFLATABLE BOAT**, unlike the other main, authorized Vessel Types, focuses on hull type instead of propulsion. Given how vessels are currently coded in BARD, users are directed to look to the propulsion type as a primary consideration before resorting to use of this entry.

^{‡‡} **OTHER** is an authorized Vessel Type, but was not defined in the Final Rule. This is the recommended definition.

Sailing Glossary

Provided courtesy of the American Sail Association, and U.S. Power Squadrons/America's Boating Club.

Aback. To have the wind on the forward side of the sails. Of a sail, when the wind is on the "wrong" side.

Abaft. Behind, aft of.

Abeam. Off the boat at right angles to centerline.

Aboard. Upon or in the boat.

About. See Come About, Ready About.

Accommodations The living quarters inside a boat

Adrift. Unattached to shore or bottom, floating out of control.

Aft. At, near, or toward the stern.

After. Toward the stern.

Aground. Touching or stuck on the bottom.

Ahead. In front of the boat, forward; opposite of astern.

Ahoi. Term used in hailing a boat.

Ahull. See Lie Ahull.

Airfoil. A device designed to deflect an air stream thereby deriving energy from it. Examples: an aircraft wing, elevator or rudder, a kite, or a sail.

Airfoil Draft. The maximum distance measured perpendicularly from the chord line to the sail. (Depth of sail.)

Alee. To leeward, away from the wind.

Aloft. Above deck, usually in the rigging.

Amidships. In or near the middle of the boat.

Analog Display. Method of presenting physical variables such as speed or direction, indicated by a pointer on a scale, usually a graduated dial.

Angle of Attack. The angle between the apparent wind and the sail or the water flow and the rudder.

Apparent Wind. The vector sum of the true wind and the wind created by the movement of the boat. Wind direction and speed as they appear to an observer on a moving boat.

Aspect Ratio. In general usage, the aspect ratio of a sail is taken to be the length of the luff to the length of the foot.

Astern. In back of or behind the boat; backward, opposite of ahead.

Athwartship. Direction at right angles to centerline of a boat.

Attached Flow. The movement of particles along a surface, such as the flow of air particles along the leeward side of a sail.

Autopilot A device that steers a boat automatically.

Auxiliary. The engine of a sailboat; a sailboat with an auxiliary engine.

Awash. Mostly under water, but not completely submerged.

Aweigh. Position of anchor when raised off the bottom of a body of water.

Back. Change in direction of the wind in a counter clockwise direction in the northern hemisphere, and a clockwise direction in the southern hemisphere; see Veer. Also, to cause to move backwards.

Backing The act of setting a sail aback.

Backstay. Part of standing rigging, usually cable, that supports a mast from aft.

Backwinded. A sail is backwinded when another sail to leeward of it is trimmed so closely as to cause increased pressure on the lee side of the windward sail thus causing the windward sail to bulge to windward.

Baggywrinkle. Anti-chafe material made from old rope yarns woven between strands of marlin.

Bail. To remove water by scooping it out with a bucket. Also, a curved fitting for securing a line or a block to a spar.

Balance. Where all forces are equal and the boat sails with a neutral helm.

Ballast. Weight carried low in boat to improve trim or stability.

Barber Hauler. A trimming line for positioning the athwartship lead of the jib.

Bare Poles. Under way with no sail set; usually a heavy weather precaution.

Batten Car. Fittings attached at the inboard end of full length battens to reduce friction between the mast

and the battens when the mainsail is being raised.

Batten. Stiffening strip placed in leech of sail. Also a wooden strip fastened over seam to stop leakage.

Batten Down. To secure all hatches and ports in preparation for heavy weather.

Batten Pocket. An envelope-like enclosure stitched into the trailing edge of a sail to hold a batten.

Beam. Maximum width of a boat. Also, a horizontal athwartship support for the deck.

Beam Ends. A boat heeled completely on her side.

Beam Reach. Sailing with the wind at a right angle to the boat.

Bear Away. To change course so that the boat alters course away from the wind.

Bearing. Horizontal direction of an object from an observer expressed as an angle from a reference direction e.g., compass bearing, true bearing, relative bearing.

Beat. A close-hauled course.

Becket. An eye in the end of a block used for securing an end of a line; an eye in the end of a line.

Before the Wind. Sailing the same direction the wind blows, sailing downwind.

Belay. Secure a line without a knot or hitch; to make fast by winding a line around a cleat or belaying pin. Also, an order to cease action.

Below. Beneath the deck.

Bend. To make fast a sail to a spar or stay. Also, a knot to secure a line to another line or object.

Bight. Open or closed loop in a line.

Bilge. Lowest part of a boat's interior.

Bilge Keel. Twin keels, similar to bilgeboards.

Bilgeboard. A pair of centerboards on either side of centerline.

Binnacle. Pedestal in which a compass is mounted.

Bitt. A perpendicular post through the deck used for securing lines and cables.

Bitter End. The inboard end of a line, chain, or cable. The end made fast to the vessel, as opposed to the "working end" which may be attached to an anchor, cleat, or other vessel.

Blanket. To come between the wind and a sail so the sail is not full.

Block. A sheave that rotates on a pin; a nautical pulley.

Blooper. A full sail set opposite a spinnaker.

Board Boat. Small (car top) centerboard sailing dinghy with very low topsides and virtually no cockpit.

Boat Wind. The so-called wind produced by the movement of the boat through the water.

Boatswain's Chair. Seat made fast to a halyard for a person to sit on while working aloft (pronounced bo'sun's chair.)

Bobstay. A stay from the stem to the outer end of the bowsprit.

Bollard. Stout post on a deck, wharf, or pier for securing mooring lines.

Boltrope. A rope sewn along the edge of a sail for reinforcement, to limit stretch, or to slide into a cove in the boom or mast to eliminate slides.

Boom. Spar used to extend and control the foot of a fore- and-aft sail.

Boom Crutch. A temporary support for the boom when the sail is not hoisted.

Boom Vang. A tackle, usually running between the boom and deck, which removes twist from the sail by a downward pull on the boom.

Boomkin. A spar projecting aft of the stern with a boomkin stay to support a backstay.

Bow. Forward end of a boat.

Bow line A dockline tied between the bow of a boat and a dock.

Bowsprit. A spar that extends forward from the bow. Sails and rigging are attached to the bowsprit.

Bridgedeck The deck connecting the hulls of a catamaran.

Bridgedeck clearance The distance from the underside of the bridgedeck to the water's surface.

Bridle. A length of line or wire rope with both ends secure (or a secured loop) to the middle of which another line is attached.

Brightwork. Polished metal fittings or varnished wood- work.

Broach. Turn a boat broadside to wind or waves, subject- ing it to possible capsizing.

Broad Reach. A point of sail with the wind more or less over either quarter.

Brummel Hooks. Patented type of rigging devices that attach to each other easily and quickly and remain secure even when under load.

Bulkhead. Vertical partition separating compartments in a boat.

Bulwark. Portion of hull extending above the deck.

Buoyancy. The upward force that keeps a boat floating.

Burgee. A tapered flag with a device denoting a yachting organization.

By the Lee. Sailing on a run with the wind on the same side as the main boom, making a sudden jibe possible.

Cabin. The enclosed or decked-over living space of a boat.

Cable. A number of conductors individually insulated and bound as a group. Also, a heavy stranded conductor such as is used for battery connections. Also, a strong, heavy rope or chain used for mooring. Also, 1/10th of a nautical mile of 1852 meters or 185.2 meters. Commonly rounded to 200 yards.

Cam Cleat. A fitting that grips a rope in the teeth of two rotating cams.

Camber. Draft or fullness in a sail. Also, athwartship arching of deck or cabin top.

Capsize. To turn over, upset.

Carry Away. To break free and become lost, said of gear that is stressed beyond its strength or its fastenings.

Carry Her Way, To. The movement of a boat through the water as a result of momentum.

Carvel. Smooth-planked hull construction.

Cast Off. To let go a line; to set loose, unfasten; to undo all mooring lines in preparation for departure.

Catamaran. Boat with twin, narrow hulls connected by a deck or crossbeams, resulting in a wide beam and good stability.

Catboat. Sailboat with a mast stepped near the bow, and no jib.

Cat's Paw. A small, isolated puff of wind that ripples the water surface only in a small area.

Caulk. Fill seam with a material to prevent leakage.

Center of Buoyancy. The center of gravity of the water displaced by a floating boat.

Center of Effort. Static: the geometric center of a single sail or the combined geometric centers of several sails. Dynamic: the point where all the lateral forces of the sails of a boat under sail could be concentrated without changing their effect.

Center of Gravity. The point from which a body could be freely suspended without rotating in any direction.

Center of Lateral Resistance. Static: the exact middle of the lateral plane. Dynamic: the point where all lateral forces acting on a hull moving through the water could be concentrated without changing their effect.

Centerboard. A pivoted board that can be lowered through a slot in the keel to reduce leeway.

Centerline. Fore-and-aft line that runs along the exact center of a boat.

Chafe. Wear on a sail, spar, or line. Prevented by chafing gear—sacrificial coverings, such as leather, cloth, or rubber.

Chain Plate. Metal strap on a sailboat, usually secured to hull structure or bulkhead, to which a shroud or stay is attached.

Cheater. A low-cut sail set below a high flying spinnaker.

Cheek Block. A block with one flat side so that it can be mounted on a spar or structure.

Chine. Line formed by the intersection of sides and bottom of a flat or V-bottomed boat.

Chock. Fitting to guide a line or cable. Also, a wedge or block to keep an object from moving.

Chute. Slang for spinnaker (it resembles a parachute).

Clam Cleat. A simple ridged 'V' groove that holds nylon and Dacron lines firmly yet has no moving parts to break or seize. It allows the immediate release of the line by a short upward pull, on the free end.

Claw Off. To beat off of a lee shore under difficult conditions.

Clear Astern and Clear Ahead; Overlap. Sailing terms describing the relative positions of two boats close enough to each other to possibly restrict their maneuverability. A boat is *clear astern* of another when her hull and equipment in normal position are behind an imaginary line abeam from the aftermost point of the other's hull and equipment in normal position. The other boat is *clear ahead*. They *overlap* when neither is clear astern of the other or when a boat between them overlaps both.

Cleat. Fitting, usually with two projecting horns, to which lines are made fast.

Clevis pin A pin with a formed head used to connect rigging

Clew. After lower corner of a triangular sail. On a spinnaker, the lower corner attached to the sheet.

Clinker-built. Type of hull construction where the lower edge of each plank overlaps and is fastened to the upper edge of the plank below it. Also see lapstrake.

Close-hauled. Sailing as close to the wind, or as directly into the wind, as possible. Also, on- or by-the-wind, beating.

Close Reach. The point of sail between close-hauled and beam reaching.

Close Reefed. When all possible reefs have been taken in.

Closest tack When beating, the tack that brings the boat on the closest approach to the destination

Clove Hitch. A knot used to secure a line temporarily to bitt, spar, or rope.

Club-footed Jib. A jib with a boom.

Coachroof. The roof of the trunk cabin

Coaming. Vertical structure around a hatch or cockpit or skylight to repel water.

Cockpit. Well or sunken space in the deck.

Cockpit sole The surface that's walked on in a boat's cockpit.

Coil. To arrange a line in loops.

Coil (2) A line that has been coiled.

Come About. Change tacks by turning the bow through the eye of the wind.

Companionway. Stairway or ladder leading below from deck.

Cordage. A general term for all types of rope.

Cotter Pin. A split pin, the ends of which are bent after insertion through a hole.

Counter. Above water stern extending back from the after end of the waterline.

Course. The direction in which a boat is steered.

Cove. A groove or slot built into the boom or after edge of a mast.

Cradle. A fitted frame by which the boat is supported during storage or shipping.

Craze. To develop small cracks emanating outward from a central point.

Cringle. A ring sewn into a sail through which a line can be passed. Also, see Grommet.

Crossbeam A beam that connects the hulls of a catamaran.

Crown. The point on an anchor where the shank joins the arms. Also, deck camber.

Cuddy. A shelter cabin in a small boat.

Cunningham (Rig). An arrangement of gear used to adjust the luff tension in a sail without using a halyard or moving the boom.

Current. The horizontal movement of water.

Cutter. A single-masted boat with mainsail and usually more than one headsail, with the mast stepped close to amidships (from 40 to 50% aft of the bow versus

Daggerboard. A sliding board that can be lowered through the keel to reduce leeway.

Danforth[®] Anchor. An anchor with long, pointed, hinged flukes with great holding power.

Davit. Crane-like device for hoisting a small boat, anchor, or cargo.

Daybeacon. Unlighted fixed aid to navigation.

Deadlight. A fixed window.

Dead Reckoning (DR). Calculating a boat's position using the boat's course, speed, and time run from a previous position.

Deadrise. The deadrise angle is that made by a line horizontal to the top of the keel and a line from the top of the keel to the chine or turn of the bilge. A flat-bottomed boat has no rise of floor, but a deep vee hull has a large deadrise angle.

Dead Run. The point of sail on which a boat has the wind blowing straight over the stern.

Deck. Nautical equivalent of a floor.

Deck Drain. Openings in the deck or cockpit to drain water overboard.

Deckhouse. A structure built on top of a deck to house accommodations.

Depth. The curvature of a sail from luff to leech.

Digital Display. A number flashed on the display unit presenting a physical variable.

Dinghy. Small open boat used as lifeboat or tender.

Displacement. The weight of water displaced by a floating vessel; hence, the weight of the vessel itself.

Ditty Bag. A small bag for stowage, e.g., sewing kit, or small tools.

Dock. Area of water in which a boat rests between two landing piers or wharves.

Dodger. A folding spray hood usually made of canvas with clear plastic windows.

Dog Watch. A watch of half usual duration; used to stagger the watch periods from day-to-day.

Dolphin Striker. A short spar fitted below a bowsprit, over which the bobstay is fitted.

Dorade Vent. A ventilator that does not permit water or spray to pass below with the fresh air.

Double Sheet Bend. A sheet bend with a second round turn on the standing bight.

Douse. To lower quickly.

Downhaul. A line or tackle used to exert a downward pull on a sail or spar.

Downwind. In the direction toward which the wind is blowing.

Draft.(1) Depth of water needed to float a boat. Also, the fullness or “belly” of a sail.

Draft (2) The curvature of a sail.

Draft position. The fore-and-aft position where a sail's depth is greatest.

Drift. Movement of a boat due to current.

Drogue. Sea anchor or drag used to create resistance to movement.

Earing. A line that secures a cringle to the boom.

Ease. To let out a line gradually.

Electrolytic Action. A plating and eroding action that occurs when dissimilar metals are immersed in an electrolyte such as salt water.

Embark. To go aboard.

Estimated Position, (EP). Most probable position of a boat based on a single line of position (LOP) or based on incomplete or questionable data.

Even Keel. A boat is on an even keel when it is floating level.

Eye-of-the-Wind. Directly upwind.

Eye Splice. A permanent loop in the end of a rope.

Eyelet. A small grommet through which lacing is passed.

Fairlead. Fitting to route controls, lines or cables.

Fairway. Navigable channel in a body of water.

Fake. To lay out a line in parallel lengths so it can run freely.

Fake Down. To store a line so that it will run free. Also, the mainsail may be faked or flaked down onto the boom.

Fall. The line in a tackle.

Fall Off. To Bear Away. To change course so as to bring the relative wind direction farther aft.

Fast. Secure: to make something fast is to secure it.

Fastenings. Screws or nails that are used to hold parts of a boat together.

Fathom. Nautical water depth measurement equal to six feet.

Fender. Protective device between a boat and another object.

Fetch. The distance over which a wind has blown uninterrupted.

Fid. Tapered tool used in splicing.

Fiddle rail. A raised edge around a horizontal surface or shelf.

Figure-eight Knot. A stopper knot; used to keep the bitter end of a line from running through a block.

Fin Rudder. A rudder fastened directly to the after edge of a keel.

Fisherman's Bend. A knot used to connect a rode to an anchor.

Fix. Relatively accurate position determined without reference to any former position. Usually determined by nearness to a known charted object or by crossed (intersecting) lines of position.

Flake. See Fake Down.

Flare. Outward curve of the hull towards the deck.

Fly. A masthead wind pennant.

Foot. The lower edge of a sail.

Foot off Bear away from close-hauled to gain speed

Fore. Denoting at, near, or towards the bow.

Fore and Aft. Parallel to the centerline or keel.

Foredeck. The forward part of the deck, usually forward of the forward-most mast.

Foreguy. A line led from the foredeck to a spinnaker pole to limit its upward swing.

Forepeak. A stowage compartment in the very forward part of the boat.

Forereach. To carry way as a boat luffs into the wind.

Foresail. The sail set from a schooner's foremast.

Forestay. A stay below and aft of the headstay on a yacht carrying two headsails. Also used as the term for headstay.

Forestaysail. A sail, similar to a jib, set on the forestay.

Foretriangle. The area formed by the headstay, mast, and deck.

Forward. Toward the bow.

Foul. Jammed, entangled; not clear; being hindered or impeded.

Foul Ground. Bottom that is unsuitable as an anchorage because holding qualities of an anchor are poor or obstructions exist.

Founder. To swamp and sink to the bottom.

Fractional Rig. A sailboat with the jibstay attached to the mast at a point other than the masthead.

Frame. Athwartship structural member (rib) that gives shape and stiffening to the hull and to which planking is attached.

Freeboard. Vertical distance from the water surface to the lowest point where unwanted water could come aboard.

Full and By. Close-hauled with all sails full and drawing.

Furl. Gather and lash sails to a spar.

Gaff. Spar that supports the upper side of a fore-and-aft four-sided sail.

Gaff Rig. Any sailboat with a four-sided mainsail.

Galley. Area where food is stored and cooked; nautical kitchen.

Gallows. A frame to hold the boom when the mainsail is down or is being reefed.

Gasket. A strip of cloth or line used to secure a furled sail to a boom, (also, stop).

Gear. General name for all non-permanent nautical equipment, including crew's clothing and personal effects.

Gelcoat. The outside color coat used in fiberglass construction.

Genoa Jib. A large overlapping headsail.

Ghosting. Sailing in very light winds.

Gimbals. Mounting supports permitting an object, such as the compass, to remain level when the boat heels.

Go About. To tack or come about.

Going astern. To be moving backward.

Gooseneck. A mechanism used to attach a boom to a mast. To be effective it must permit the unattached end of the boom to swing in any direction without restraint.

Goosewing Jibe. A jibe in which either the top or bottom of the sail has failed to jibe with the rest of the sail.

Gravity Switch. A switch, usually electrical, that is closed when the contact is pulled down by gravity.

Grommet. A metal ring fitted into a hole in a sail or in canvas. See Cringle.

Ground Tackle. Anchor with rode and related gear.

Gudgeon and Pintle. A metal eye and matching pin used to mount a rudder on the sternpost or the transom of a boat.

Gunwale. Upper edge or rail of a boat. (Pronounced "gunn'el").

Gust A sudden brief increase in wind speed

Guy. The control line connected to the tack (windward clew) of a spinnaker.

Halyard. Line for hoisting sails or flags.

Hand. A member of the crew. Also, to lower a sail.

Hank. A fitting, usually made of stainless steel, bronze or nylon, fastened to the luff of a staysail, used to attach the staysail to a forestay.

Hard Alee. The command given when the helmsman pushes the tiller to leeward to tack.

Hard Over. To put the helm over as far as possible.

Harden. To haul the sheets in.

Hatch. Closable opening in the deck.

Haul. The wind hauls when it draws more ahead.

Head. Marine toilet and its compartment. Also, upper corner of a triangular sail or upper edge of a four-sided sail. Also, upper end of mast, masthead. Also, foremost part of boat, bow.

Head Off. Head away from the wind, bear off.

Head to wind A boat's position when its bow is pointing directly into the wind

Headboard A reinforcement at the head of a sail

Head down To steer away from the wind, bear away, fall off

Head Up. To sail closer to the wind.

Header. A wind that shifts more ahead of a boat sailing close-hauled, forcing it to change course to avoid pinching or luffing. Usually a good time to tack.

Headfoil. A metal or plastic cover that fits over a forestay to accept the luff tape of a jib when it's hoisted.

Heading. Direction in which a boat is pointing at a given moment.

Headsail. Any sail flown forward of the mast.

Headstay. Alternative term for forestay, a jibstay.

Headway. Boat's forward motion.

Heave. Rise and fall of a boat due to wave action. Also, to pull on a line to tighten it. Also, to throw an

object.

Heave To. To bring a boat into a position where there is little or no headway, usually with the bow into the wind or current.

Heaving Line. A light line used for throwing.

Heel. Incline to one side due to force of wind or waves. **Helm.** The tiller or wheel and related steering gear.

Helmsman. The one who steers the boat with the tiller or wheel.

High Aspect. Having much greater height than width.

Hiking Out. Moving a crew's weight outside the boat to the windward side. The technique is used on small boats to decrease the heeling angle.

Hitch. A knot used to secure a rope fast to another rope or to other object.

Hogged. Describes a boat whose bow and stern have sagged.

Hoist. To raise a sail or flag. Also, the length of a sail's luff.

Hull. Basic structure and shell of a boat.

Hydrofoil. A device designed to deflect a water stream thereby generating a force from it (e.g. rudder, keel, centerboard). Also, a vessel designed to have its hull raised clear of the water when moving at high speed by hydrofoils extended below the hull on struts.

Impeller. A rotor or wheel with blades mechanically driven to pump water or propel objects through water or other fluids or by the action of fluid flowing past it.

In Irons. Headed directly into the wind with no headway; the boat cannot be trimmed to fill on either tack. Also, "in stays."

Inboard. Toward the centerline of the boat; inside the boat.

Jack Lines. Lengths of rope, webbing, or wire running fore and aft, or athwart ships, to which safety harness tethers are attached. They can be run on either side of the vessel or on both sides, along the centerline, or secured inside the cockpit; also called trolley lines or jack stays.

Jack Stay. A stay that runs forward from the masthead over a jumper strut and back to the mast to stiffen the upper portion of a fractional-rigged mast.

Jammer. A rope clutch.

Jib Downhaul. A line from the head of a jib to a block near the tack and then leading aft. Used to

douse the jib without going forward.

Jibe. To change from one tack to another by turning the stern through the wind.

Jib-headed (Sail). A triangular sail.

Jib Sail. A triangular headsail set on a stay forward of the mast.

Jibsheet. A line attached to the clew of a jib used to adjust its angle to the wind.

Jibstay. The forwardmost stay supporting the mast, extending from the bow or bowsprit to the upper part of the mast.

Jiffy Reefing. A method of reducing the area of a sail by means of downhauls led through reef cringles in the sail, and through fairleads on the boom to winches or cleats.

Jigger. The mizzenmast or mizzen.

Jump When hoisting a sail, to haul on the halyard at the mast

Jumper Strut. Horizontal strut on the forward side of the mast to which the jumper stay is attached to keep the upper part of the mast straight.

Jury Rig. Makeshift repair or substitute.

Kedge. Move a boat by pulling it up to its anchor. Also, type of anchor.

Kedge off Use an anchor to haul a grounded boat off the bottom

Keel. Main centerline structural member (backbone) of a boat. Also, downward extension of hull to increase lateral resistance and stability.

Keelboat A sailboat that has a keel and ballast, usually combined

Ketch. A two-masted sailboat with the after mast stepped forward of the rudder post.

Knockdown. A temporary condition of excessive heel resulting from a sudden increase of wind force.

Knot. General term for securing a line to an object, another line, or itself. Also, unit of speed of one nautical mile per hour.

Land breeze. A wind that blows over water as a result of air cooling over the land.

Lanyard. Short line used as a handle or to secure an object.

Lapstrake. Type of hull construction with overlapping planks, clinkerbuilt.

Lateral Plane. Any surface or appendage that serves to inhibit lateral motion of a boat through the water.

Lay. To lay a mark is to be able to reach it in a single tack, close-hauled. Also, the lay of a line is the direction in which its strands are twisted.

Lay To. To lie without headway either to a sea anchor or to lines streamed over the side, or merely drifting (lying ahull).

Lazarette. Storage compartment in stern of boat.

Lazy Of, for example, a jibsheet, the windward one that's not under load

Lazy Jacks. The name given to part of the rigging on a sail boat, the purpose of which is to ease sail handling, particularly for short-handed crews. They enable the rapid dropping of a sail attached to a mast and boom by guiding it into the sailbag. The lazy jacks, usually on each side of the sail, are rigged between the mast and the top of the sailbag attached to the boom or the boom itself. Typically, they will be composed of several lengths of cordage and rigged from a single point on the mast dividing and spreading out to several points on the sailbag or boom.

Lead line. A line with a weight on the end used for taking soundings.

Lee Sheltered area to leeward of something (boat, building, island) that's protected from the wind

Leech The trailing edge of a sail

Lee (lee side). Side away or opposite that from which the wind blows, Also, area sheltered from the wind.

Lee Helm. A condition of balance that requires the tiller to be held to leeward to keep a boat on a straight course.

Lee Shore. One onto which wind or current can force a boat; shore to leeward of boat.

Leeboard. A pivoting board attached to the side of a boat to provide lateral resistance.

Leech. The after edge of a sail between the clew and the head.

Leech line. A light line sewn through the tabling in the leech of a sail used to control leech flutter.

Leeward. Direction away from the wind; downwind. (Pronounced "loo'ard.")

Leeway. Sideways movement of a boat through the water, caused only by the wind. Also, the angular difference between the course steered and the course through the water.

Leg. The distance covered on one tack when sailing to windward. Also, on a race course, the course between two successive marks.

Lever Arm. The distance through which a force acts.

Lie Ahull. To lie without headway, more or less broadside to the wind, with no sail set, drifting freely. A means of coping with heavy weather.

Lie To. See “Heave To”.

Lifeline. Plastic-coated wire rigged to stanchions around the periphery of the deck to assist in keeping personnel aboard.

Lift. A force generated on the leeward side of a sail by air passing over the airfoil shape. It is the force which drives a sailboat. Also, when sailing close-hauled, a wind that shifts aft to allow a change of course toward the wind direction.

Light Sails. Sails made of lightweight fabric for use in light wind.

Limber Holes. Openings through frames to permit water to drain to the lowest part of the bilge.

Line. A length of rope that has a specific purpose on board.

Line of Position (LOP). A line, usually plotted on a chart, along which the boat lies, as determined from a single observation. Also, a visual or electronic reference line from, or about, a known navigational aid.

Line Stopper (Rope Clutch). A clamp-type device that contains a cam for securing a line. It can be released quickly.

List. Inclination of a boat to one side due to weight distribution.

LOA. Length Overall.

Locker. A storage or stowage compartment.

Log. Instrument to measure distance or speed through the water. Also, a book in which all matters pertaining to navigation are recorded.

Long Splice. A method of permanently joining the ends of two ropes without increasing the diameter.

Loose Footed. A sail that is attached to the boom only at the tack and clew.

Luff. (1) To alter course towards the wind. Also, to head so close to the wind that the sails flutter. Also, the forward edge of a fore-and-aft sail.

Luff. (2) The fluttering of a sail when the boat is too close to the wind for the sail's trim

Luff .(3) To head up so that the sails luff

Luff Wire. A piece of wire rope sewn into the leading edge of a jib.

LWL. Load waterline; the length of a vessel from bow to stern at the waterline.

Main boom. The boom that supports the mainsail.

Mainmast. The principal mast on a sailboat.

Mainsail (mains'el). Boat's principal sail, set aft of main- mast.

Mainsheet. A line which controls the mainsail.

Make fast. To secure, as when tying a line to a cleat.

Marconi Rig. A rig having a three-sided or jib-headed mainsail.

Mark. Any object required by sailing instructions to be passed by a boat on a specified side. Its anchor line and objects attached temporarily or accidentally are not part of it.

Marline. Two-stranded twine used for whipping and seizing.

Marlinespike. A pointed steel tool used in splicing to open the strands of a rope or cable. See "Fid".

Mast. A vertical spar on which sails are set.

Mast Step. Fitting into which the butt of the mast sits.

Masthead. The top of the mast.

Masthead fly a wind vane fitted at the masthead.

Masthead Light A navigation light that shines on both sides of the boat in an arc from the bow to 22.5 degrees abaft the beam; used on a sailing vessel that is under power (also called a steaming light)

Masthead Rig. A sailboat with the jibstay attached to the top of the mast.

Mat. Fiberglass material formed of irregular chopped filaments of glass.

Maximum Draft. The greatest amount of fullness in a sail.

Messenger. A light line used to haul a heavier working line.

Mediterranean moor. To moor a boat by means of an anchor in the harbor and the stern tied to a quay or pier.

Mizzen. The fore-and-aft sail set on the mizzenmast. Also, called a jigger.

Mizzen Staysail. A triangular sail set from the mizzen masthead to the deck forward of that mast.

Moment. A force acting through a distance that tends to cause rotation.

Mooring. Permanent ground tackle to which a boat is attached or moored.

Motorsailing. Motoring while also using the sails for propulsion.

Multihull. A boat with more than one hull.

Nautical Mile. A unit of distance equal to one minute of latitude and equal to approximately 6076.1 feet or 1.15 statute miles.

No-sail zone. The zone in relation to the wind where the sails cannot generate power.

Off The Wind. Sailing on a reach or run.

Offing. A position on the sea at a safe distance from land.

Offshore. A direction away from the shore.

Onshore. Towards the shore, from seaward, as onshore wind.

On the Wind. Close-hauled.

Outboard. Toward the outside of a boat.

Outhaul. Device or line used to tension the foot of a sail.

Painter. Line tied to the bow of a dinghy to tow or secure it.

Palm. Leather glove-like device used as a thimble to push a needle through a line or a sail.

Pay Off. To head away from the wind.

Pay Out. Slacken or let out a line gradually.

Peak. The corner of a gaff-headed sail formed by the head and the leech. Also, the aft end of a gaff to which the peak of a gaff sail is set.

Pendant. Short rope serving as an extension of a line, chain, or cable with descriptive name based on use; e.g. mooring pendant. (Usually pronounced "pen'ant")

Pennant. A tapering flag.

Pier. Structure extending into the water from shoreline to provide dockage.

Pinch. To sail too close to the wind.

Pintle. See Gudgeon and Pintle.

Piston Hanks. A hank with a spring-loaded plunger sewn to the luff of a sail and used to attach the sail to a stay.

Pitching. Oscillation around the transverse axis; the rising and falling of the bow in waves.

Pitchpole. Capsize end over end.

Plow Anchor. An anchor shaped like a farmer's plow.

Point. To sail effectively close to the wind.

Point of sail. The direction a boat is sailing relative to the wind.

Pontoon. A moored floating structure to which a boat can be tied.

Port. Left side of boat when facing the bow. Also, toward the left. Also, opening in a boat's side, (e.g., port lite). Also, harbor.

Port Tack. Any heading where the main boom is on the starboard side of the boat.

Portlight. A window that can be opened.

Pram. Flat-bottomed dinghy with blunt bow.

Preventer. A line run forward from the aft end of the boom to a deck fitting to prevent accidental jibes.

Proa. A boat with two hulls of unequal size.

Prop wash. The flow of water off a turning propeller.

Puff. A short gust of wind.

Pulpit. A guardrail around the bow or stern.

Quarter. After part of a boat's side, e.g., port quarter. Also, direction 45° abaft the beam.

Quarter berth. A bed or bunk fitted into the aft quarter of a boat's accommodations.

Racing. The technical status of a boat entered in a race from the time of her preparatory signal until she has finished and cleared the finish line and marks, or has retired, or the race committee has signaled a general recall, postponement, or abandonment of the race.

Rake. The slope from the vertical, in the fore-and-aft direction, of a mast, transom, or deckhouse.

Range. Two or more objects in a line. Also, maximum distance at which an object may be seen. Also, distance between two points, such as a radar range to a navigational aid. Also, difference in elevation (height) between any successive pair of high and low tides.

Rating Rule. A mathematical formula to establish handicaps for racing boats of diverse size and design.

Reach. A point of sail between close-hauled and a run. Also, a distance, or fetch.

Reacher. A light-weight jib used for reaching.

Ready About. The helmsman's warning that he intends to tack.

Reef. To reduce the area of a sail.

Reef Knot. Same as a square knot.

Reef Points. Short pieces of line in a sail placed in a line parallel to the boom and used to secure unused material when sail is reefed.

Reeve. To pass a line through a block.

Relative Bearing. Direction of an object relative to a boat's heading measured clockwise from dead ahead.

Rig. To prepare a boat for sailing. Also, arrangement of spars and sails (e.g., as on a sloop).

Rigging. All the lines and gear used to support the spars and control the sails.

Righting Arm. Horizontal distance between the vertical line through the center of buoyancy and the vertical line through the center of gravity.

Righting Moment. The righting arm multiplied by the yacht's displacement.

Roach. The part of a sail that extends beyond a straight line from the head to the clew.

Rode. Anchor line.

Roller Furling. Reducing the area of a jib by rolling it around its luff wire.

Roller Reefing. Reducing the area of a sail by rolling it around the boom.

Rolling. Oscillation of a boat around a longitudinal axis.

Rope. Cordage made of natural or synthetic fibers; can be made of steel wire.

Rope Clutch. Line stoppers or rope clutches operate on a cam and lever principle. They take the load off of the winch, freeing the winch for use with a different line. They enable one winch to service several lines.

Round Turn. A complete turn of line around a cleat, bitt, or post.

Rudder. A flat board, blade, or plate hung on the aft end of a boat and used to steer the boat.

Rudder Post (stock). The shaft to which the rudder blade is attached. The tiller or other steering apparatus is affixed to the other end.

Run (or Running). Point of sailing with the wind astern.

Running Backstay. Stays that counteract forces from an inner forestay; must be tended as boat tacks or jibes.

Running Rigging. The lines used to raise, set, and trim the sails.

Safety Harness. Webbed belt-based assembly that, when attached to the vessel with a tether, physically connects you to the boat to prevent you from falling overboard or being separated from the boat.

Sail plan The arrangement of sails on a sailboat's rig

Sail Slides. Metal or plastic fasteners attached to the edge of a sail and that ride on a track on the mast or boom.

Sail Slugs. Small metal or plastic cylinders sewn to the edge of a sail which fit into a spar cove to attach the sail to the spar.

Sail tie. A length of webbing used to secure sails.

Sail Twist. Tendency for the top of a fore-and-aft sail to sag farther to leeward than the foot of the sail.

Sailcloth. Material from which sails are made.

Sailing by the lee. Sailing on a run with the wind on the same side of the boat as the mainsail.

Sailing Off. An intentional change of course away from the wind.

Schooner. A vessel with two or more masts rigged fore- and-aft, with the forward mast being shorter or equal in height to the aft mast.

Scope. Ratio of the length of the payed out anchor line (rode) to the height of the chock above the bottom of the body of water.

Scud. Thin, low, fast-moving clouds. Also, to run off before a strong wind.

Scull. To propel a boat with a single oar at the stern or with the rudder.

Scupper. An opening in the rail or bulwark to permit water to drain overboard.

Sea Anchor. A drag-producing device, usually cone shaped, used to slow a boat's movement.

Sea Breeze. An onshore breeze - one that blows from over the water towards the shore, caused by the more rapid heating of the land in the daytime, with resulting rising air currents over the land and an inflow of air from the sea to replace it.

Sea Cock. A valve to close through-hull openings below the waterline.

Sea Room. Navigable water sufficient for safe maneuver- ing.

Secure. (1) To make fast (as a line)

Secure. (2) To make safe

Seagull striker. A braced strut above the forward crossbeam on a catamaran.

Seakindly. Describes a boat with easy motion.

Seaworthy. Said of a boat that is in fit condition to go to sea.

Secure. To cover openings and make movable objects fast.

Seize. To bind by many wrappings of small line.

Seizing. Small stuff for binding.

Self-tailer. A device on a winch that enables it to grasp and gather the tail of a line as it is wound in on the winch.

Self-tending. A sail that will change position by itself during a tack or jibe.

Separation. Detachment of air in a smooth laminar flow from the leeward side of a sail. See also Stall.

Set. True direction toward which a current flows.

Shackle. A U-shaped metal device with removable pin used to connect a sail, chain, line, or fitting.

Shackle key. A tool for tightening and loosening a shackle.

Sheave. The roller over which a line passes as it goes through a block. (Pronounced "shiv")

Sheer. The fore-and-aft vertical curvature of the deck.

Sheet. Line used to adjust a sail relative to the wind (e.g. a jibsheet is used to adjust a jib).

Sheet Bend. A knot used to join two ropes, usually of unequal diameter.

Short Splice. A method of permanently joining two ropes' ends.

Shroud. Standing rigging that supports a mast laterally.

Shroud Roller. A tube installed on the shrouds and designed to turn freely in order to minimize chafing of the sheets and sails.

Sidedeck. The deck between the trunk cabin and the gunwale.

Skeg. An extension of the keel, or a keel-like projection at the aft end of the hull, for protection of propeller and rudder.

Slab reefing. A system of reefing a sail by lowering it partway to remove a "slab" from exposure to the wind.

Slack. Not carrying any load, loose. Also, to ease or pay out a line.

Sloop. Single-masted sailboat with the mast stepped less than 40% of boat length aft of the bow and setting a mainsail and one or more triangular headsails.

Slot Effect. The effect on air flow between two sails that is caused by the mutual interaction of the sails.

Slugs. Sail slugs are used to secure mains or mizzens to their spars. They are short segments of cylindrical rod, plastic or stainless, attached outboard of the luff (and foot, if so rigged) and inserted in the slot of the spar.

Snap Shackle. A shackle with a retractable spring-loaded pin.

Snatch Block. A block with a hinged hook that can be opened to receive or release a line.

Snub. To stop a line running out by taking a turn around a bitt or cleat.

Spade Rudder. A rudder attached to the boat only by its stock.

Spar. Any shaft or pole used for the attachment of a sail, such as the mast, boom, yard, or sprit.

Speed Gradient. A marked difference in speed between two adjacent winds.

Spinnaker. A large, headsail set forward of the headstay and used when reaching or running.

Spinnaker Net. A web of light line hung in the foretriangle to prevent a spinnaker wrap where the spinnaker tends to wrap itself around the forestay.

Splice. Joining lines by interweaving the strands.

Spreader. A strut fitted to the side of the mast to hold one or more shrouds away from the mast.

Spritsail. A quadrilateral sail with its upper aft corner held by a shaft that extends from the mast diagonally across the sail to the corner.

Squall. A sudden, violent burst of wind, often accompanied by rain or snow. Persists longer than a gust, usually two minutes or more.

Square Knot. A knot used to join two lines of similar size; also called a reef knot.

Squaresail. A quadrilateral sail set from a yard on square riggers, that is most efficient when sailing down wind.

Stability. The ability of a boat to resist heeling and overturning.

Stall. The condition that arises when the airfoil (sail) or hydrofoil (rudder) is turned too far off and the flow of air or water separates from the foil; there is no longer an attached flow.

Stanchion. A vertical post or column used to support a deck or cabin top.

Standing Part. The part of a rope that is made fast.

Standing Rigging. Shrouds and stays supporting the mast.

Stand-On Boat. A term, from the Navigation Rules, used to describe the vessel that continues its course in the same direction at the same speed during a crossing or overtaking situation, unless a collision appears imminent.

Starboard. Side of a boat, or direction, to the right when facing toward the bow.

Starboard Tack. Any heading where the mainsail is carried on the port side of the boat. Normally, the wind is on the starboard side when on starboard tack, but may be on the port side when sailing by the lee.

Stays. Standing rigging that supports a mast fore and aft.

Staysail. A fore-and-aft triangular sail normally set upon a stay other than the headstay or jibstay.

Steaming light. A navigation light that shines on both sides of the boat in an arc from the bow to 22.5 degrees abaft the beam; used on a sailing vessel that is under power (also masthead light).

Steerageway. Enough speed to steer the boat.

Steering quadrant. A lever in the shape of a quarter circle attached to the rudder stock by which the steering cables turn the rudder.

Stem. The upright structural member or post of the bow, attached to the foremost part of a vessel's keel.

Stemhead. The top of the timber that forms the bow of the boat.

Stemhead Fitting. A metal casting made to fit over the top of a stemhead.

Stern. The after end of a boat.

Sternway. Movement stern first, as opposed to head- way.

Stiff. Stable, resistant to heeling. Opposite of tender.

Stock. The crossbar of an anchor.

Stop. Strap, line, or shock cord used to lash a rolled sail.

Storm Jib. A very small, strongly built jib set in heavy weather.

Storm Trysail. A small, strongly built sail used in place of the mainsail in storm conditions.

Stow. To put something in its proper place.

Strand. To drive a vessel ashore or aground. Also, one of the lays of a rope (the wound yarns or fibers that are woven with other strands to make a rope).

Stringer. A fore-and-aft structural member of a hull.

Stripping arm Part of a self-tailer

Swamp. To fill with water, but not to founder.

Systematic Wind. A wind created by flow from one air mass into another as opposed to wind created by localized heating and cooling.

Tabernacle. A hinge at the base of a mast; permits lowering the mast.

Tack. The lower forward corner of a mainsail or jib or the corner of a spinnaker that is near the spinnaker pole. Also, with star- board or port, describes the side opposite to that on which the mainsail is carried. Also, to change course by turning bow through the eye of the wind.

Tackle. An arrangement of line and blocks used to provide increased mechanical advantage.

Taffrail. The bulwark or rail across the stern of a vessel.

Tail. To haul on a sheet around a winch being cranked by another crew member.

Tail bag. A bag in which line tails are stowed to keep them tidy.

Tallboy. A tall narrow sail set close to leeward of the main, usually when a spinnaker is set.

Tang. A metal strap used to attach standing rigging to the masts.

Telltale. A wind direction indicator made of a bit of cloth, or other light material.

Thermal Expansion. Physical property of a material by which it expands as it is heated. Conversely, it contracts as it cools.

Thimble. A grooved metal loop, around which a rope or wire rope may be spliced, thus making the spliced eye more resistant to chafing.

Throat. Upper forward corner of a quadrilateral fore- and-aft sail.

Thwart. A transverse seat in a boat.

Thwartships. At right angles to the fore-and-aft line (see Athwartship).

Tiller. A lever attached to the upper end of a rudder stock, used by the helmsman to turn the rudder.

Toerail A rail fitted around the outside edge of the deck

Toggle. A U-shaped fitting linking a turnbuckle with a chainplate; it permits movement so the turnbuckle is not bent when the stay is pulled out of line. Also, a small wooden crosspiece at the end of a line, passed through an eye or loop of another line as when bending a flag onto a halyard.

Topping Lift. A line used to support a boom end and/or a spinnaker pole.

Topsides. The sides of a vessel between the water line and the deck.

Track. A metal piece on the after edge of a mast or top of a boom on which sail slides run. Also, a metal strip on deck for cars with blocks for adjusting sheet leads.

Trampoline A taut net strung between the hulls of a multihull

Transducer. Element of a depth sounder that translates electromagnetic pulses into ultrasonic pulses and vice versa. Usually, contains a barium titanate crystal.

Transom. The athwartship portion of a hull at the stern.

Trapeze. A line from the mast, that can be used by the crewman of a small boat to suspend himself outboard of the boat, thereby increasing the stability of the boat.

Traveller. A sail-positioning system composed of an athwartships track on which slides a car attached to blocks to permit positioning the main boom under load

Trim. To adjust the set of the sail. Also, refers to the attitude of a boat at rest in the water.

Trimaran. A vessel with three hulls.

Truck. The top of the mast.

True Wind. Actual direction and speed of horizontal air motion in relation to the earth's surface. Also, strength and direction of the wind felt on a boat not moving.

Trunk cabin. The raised part of the deck above the accommodations.

Turnbuckle. A tension-adjusting device for tightening wire rigging or cable, composed of threaded rods inside a threaded barrel.

Turning block. A block used to change the direction of a line, such as a sheet or halyard, to make hauling more convenient.

Two Block. A tackle that has been pulled to bring the blocks together. Also, a halyard that has been hoisted all the way.

Twist. In a sail, the difference between the angle of attack at the foot and at the head.

Under Bare Poles. Sailing (under way) with no sail set and being driven only by the force of the wind on hull, spars, and rigging, usually a heavy weather precaution.

Under Power. A sailboat being propelled by an engine even though sail may be set.

Underway. A vessel not at anchor, or made fast to the shore, or aground.

Unship. To remove an object from its regular place of use.

Up. To tighten a line as much as possible.

Upwind. In the direction from which the wind is blowing.

Vang. A line or purchase used to assist in positioning a boom or peak of a gaff.

Vector. A quantity that has both magnitude and direction, commonly represented by an arrow. The length of the arrow represents the magnitude; the direction in which the arrow flies represents the direction in which the quantity acts.

Veer. Change in direction of the wind in a clockwise direction in the Northern Hemisphere and a counterclockwise direction in the Southern Hemisphere: (see Back).

Vented loop A loop of plumbing raised above a boat's waterline with a vent to prevent back-siphoning

V-berth A berth in the forward cabin that follows the shape of the hull sides

Wake. Water surface turbulence left by a moving boat.

Warp. To maneuver a boat by hauling on a line fastened to a fixed object such as a cleat, pile, bollard or anchor. Also, the line used in warping. Also, a line streamed behind a boat to slow it down.

Wash. Turbulent flow of water left by a moving boat or as a result of a boat's turning propeller(s). Also, the rush or sweeping of waves on a bank, shore, or vessel.

Waterline Length (LWL). The measurement along the waterline from the point where the bow touches the water to the point where the stern emerges from the water.

Way. Movement of a vessel through the water, such as headway, sternway, or leeway.

Wear. Changing tacks by jibing instead of tacking.

Weather. The condition of the atmosphere at any given time and place. Also, the windward side.

Weather Helm. A condition of imbalance that requires the tiller to be held to weather to keep the boat on a straight course.

Well-Found. Having all necessary equipment on board, in good condition.

Wetted Surface. The portion of a vessel's exterior which is in contact with the water.

Wharf. Man-made structure parallel to the shoreline for loading, unloading, or making fast.

Whip. To bind the end of a rope with light line.

Whisker Pole. A pole used to hold the clew of a jib to windward when running wing-and-wing.

Winch. A geared drum turned by a handle and used to pull lines such as sheets and halyards.

Windage. Resistance to the wind.

Windlass. A winch, powered by hand or motor, for hauling anchors.

Wind's Eye. The exact direction from which the wind is blowing.

Windward (wind'ard). The direction from which the wind is blowing.

Wing-and(on)-Wing. Sailing on a run with the jib and mainsail set on opposite sides.

Winging the jib Sailing wing on wing

Working Jib. A normally-used jib that has an area about equal to the area of the foretriangle.

Working. Of a sheet, the one that is currently being used to trim the sail.

Woven Roving. Loosely woven fiberglass cloth.

Yaw. To swing off course due to wave action or bad steering, usually to one side and then the other.

Yawing Moment. A moment tending to rotate the hull about a vertical axis, usually due to disposition of the center of effort of the sails outboard of the center of resistance of the hull.

Yawl. A two-masted vessel whose mizzen is stepped abaft the rudder post.

Zephyr. A gentle breeze, perfect for a quiet evening sail.

Chapter 7 - References Consulted

The following references were used as references or noted as ‘authoritative literature’ for implementation of the American National Standard: ANSI/NASBLA 100-2022: Basic Boating Knowledge – Core and ANSI/NASBLA 103-2022: Basic Boating Knowledge – Plus Sailing.

ANSI/CAN/UL Standard for Personal Flotation Devices

American Sailing Association – www.asa.com

BoatUS Foundation – www.boatus.org

Code of Federal Regulations – Chapters 33, 46, 50

Giesbrecht, Gordon Ph.D. and Michael Ducharme

National Safe Boating Council – Safety Briefing

UL1123: Standard for Marine Buoyant Devices

UL1180: Standard for Fully Inflatable Recreational Personal Flotation Devices

UL12402-5: ANSI/CAN/UL Standard for Personal Flotation Devices – Part 5: Buoyancy Aids (Level 50) – Safety Requirements

U.S. Coast Guard - [A Boater’s Guide to the Federal Regulations for Recreational Boats](#)

U.S. Coast Guard Boating Accident Statistics and Report

U.S. Coast Guard Boating Website – www.USCGBoating.org

U.S. Coast Guard, *NAVIGATION RULES AND REGULATIONS HANDBOOK as published/maintained online Navigation Center* - www.navcen.uscg.gov

9.1 Resources:

[Western \(states\) Regional Panel on Aquatic Nuisance Species](#): <https://westernregionalpanel.org/>

Pacific States Marine Fisheries Commission, Aquatic Invasive Species Prevention Program: psmfc.org/program/prog-4?pid=17

US Fish and Wildlife Service: fws.gov/fisheries/aquatic-invasive-species.html

Bureau of Land Management – blm.gov/programs/fish-and-wildlife/fisheries-and-aquatics

CDFW's QZ website: wildlife.ca.gov/conservation/invasives/quagga-mussels

**ANSI/NASBLA 100-2022:
Basic Boating Knowledge – Core**

**ANSI/NASBLA 102-2022:
Basic Boating Knowledge – Plus Sailing**

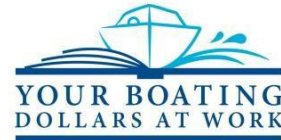


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American National Standard

ANSI/NASBLA 100-2022: Basic Boating Knowledge – Core



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American National Standard (ANS)

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National Boating Education Standards Panel

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NOTE: Membership on a panel or committee shall not in and of itself constitute an endorsement of the National Association of State Boating Law Administrators (NASBLA) or any document developed by the panel or committee on which the member serves.

This standard was developed under procedures of essential requirements for the American National Standards Institute. The Panel that approved the standard was balanced based on interest categories to ensure that individuals representing those with material interests in the standard had an opportunity to participate.

This standard, which is the result of extended and careful consideration of available knowledge and experience on the subject, is intended to provide minimum performance requirements.

National Boating Education Standards Panel meetings are open to the public. All contact regarding standards activity, interpretations, or meeting attendance should be directed to NASBLA ESP Staff at esp@nasbla.org.

REQUEST FOR INTERPRETATIONS

Upon written request, the Education Standards Panel will render an interpretation of any requirement of the standard. The request for interpretation should be clear and unambiguous. Requests should be presented to the ESP in a manner in which they may be answered in a “yes” or “no” fashion.

The Panel reserves the right to reconsider any interpretation when or if additional information which might affect it becomes available to the ESP. Persons aggrieved by an interpretation may appeal to the Panel for reinterpretation.

REQUEST FOR APPEALS

Any directly and materially affected interest who believe they have been or will be adversely affected by a Standard, or by the lack thereof, shall have the right to appeal substantive or procedural actions or inactions of the National Boating Education Standards Panel per Part XII of the [Panel Rules](#) (latest version) posted at www.nasbla.org under Advocacy > National Education Standards. As stated in the Rules, prior to the filing of a formal appeal, communication of the alleged actions or inactions, with mutual effort to informally resolve the dissatisfaction, shall be attempted and documented.

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FOREWORD

This standard defines general, entry-level knowledge a boater should possess for safe recreational boat operation. This consensus-based standard is designed to support course providers and raise the overall level of quality, availability, and consistency of instruction in entry-level recreational boater knowledge. This standard functions within a national system of standards for recreational boat operation.

It is recommended this standard be used in conjunction with any accompanying Technical Report.

The standard is organized as follows:

- The numerical identifiers assigned to each element are for ease of reference only, and do not imply any sequential process of learning or that the information only applies to that particular section.
- Individual numbered elements are organized for ease of reference. Each individual numbered element can be applied within other elements during design and delivery of instruction.
- All items listed after the word “including” are requirements of the standard. Additional items may be added.

REFERENCES

The following is a listing of all American National Standards for Basic Boating Knowledge. Additional listed references provide content to supplement this standard for specific boat types. Unless otherwise noted the latest version of referenced standards shall apply. NOTE: Per ANSI Essential Requirements, identification of products or services is not an endorsement of those products or services or their suppliers.

Source: NASBLA - National Association of State Boating Law Administrators, 1020 Monarch, Suite 200, Lexington, KY 40513. Phone: (859) 225-9487. Standards and ANSI-Registered Technical Reports are available at www.nasbla.org.

- 100-2022, Basic Boating Knowledge – Core
- 101-2022, Basic Boating Knowledge – Plus Human-Propelled
- 102-2022, Basic Boating Knowledge – Plus Sailing
- 103-2022, Basic Boating Knowledge – Plus Power
- 103.1-2022, Supplement - Basic Boating Knowledge – Plus Water-Jet Propelled

The following American National Standards for on-water boating skills provide information to guide on-water skill training which can be used to supplement the knowledge standards.

Source: ABYC - American Boat & Yacht Council, Inc., 613 Third Street, Suite 10, Annapolis, MD 21403. Phone: (410) 990-4460. Website: www.abycinc.org.

- EDU-1, On-Water Recreational Boating Skills - Power
- EDU-2, Skill-Based Human-Propelled Standard
- EDU-3, Skills-Based Sailboat Standard
- EDU-4, On-Water Instruction Standard

Education providers are also encouraged to use the National On-Water Standards (NOWS) Technical Support Documents (TSDs) that accompany each standard to support the design and implementation of on-water entry-level instruction. These documents are available for free download at www.usnows.org.

DEFINITIONS

For the purpose of this document the following definitions apply:

accident (n) – 1) An unforeseen and unplanned event or circumstance. 2) In boating, a general term referring to a recreational boating event that results in an injury, fatality, property damage, and/or vessel that is a total loss. *(Note: The boating safety community, including Marine Law Enforcement Agencies, are transitioning away from “accident” and to the term “incident.”)*

beginner (n) – A novice who has begun a course of instruction or is learning the fundamentals.

boat (n) – A small vessel for travel on water; Includes every description of watercraft used or capable of being used as a means of transportation on water.

boat (v) – To place in or bring into a boat, to go by boat.

entry-level (adj) – Of or being at the lowest level of hierarchy. The proficiency reached by a person who has successfully completed an appropriate amount of beginner instruction, or has achieved a sufficient level of experience, to be ready to pursue (or “enter” safely into) recreational boating.

human-propelled vessel (n) – Any vessel propelled by human power, typically with oars or paddles.

incident (n) – An occurrence of an action or situation that is a separate unit of experience. Something dependent on or subordinate to something else of greater or principal importance. *Also see “Accident”.*

knowledge (n) – Cognitive outcome of the learning process usually tested by verbal or written questions.

go-no-go (adj) – Being or relating to a required decision to continue or stop a course of action. Being or relating to a point at which a go-no-go decision must be made.

passenger (n) – Any person onboard, excluding the operator.

power-driven vessel (n) – Any vessel propelled by machinery.

sailing vessel (n) – Any vessel under sail provided that propelling machinery, if fitted, is not used.

standard (n) – According to the American National Standards Institute, 1) a recognized unit of comparison by which the correctness of others can be determined; 2) a set of characteristics or qualities that describes features of a product, process, or service.

skill (n) – The learned capacity, aptitude, or ability to do something.

underway (adj) – occurring, performed, or used while traveling or in motion.

underway (adv) – In motion: not at anchor or aground. A vessel is not at anchor, or made fast to the shore, or aground.

water-jet propelled vessel (n) – Any vessel propelled by machinery which powers a pump producing a jet of water.

vessel (n) –Any watercraft, including nondisplacement craft and seaplanes, used or capable of being used as a means of transportation on water.

American National Standard

Basic Boating Knowledge – Core

Scope

This standard establishes the essential knowledge needed to reduce recreational boating risk factors and mitigate their effects. This "Core" standard is designed to be combined with discipline-specific power, sail, and/or human-propelled "Plus" standards for development of basic boating education courses and student assessment. This standard applies to basic boating knowledge for all disciplines (power, sail, or human-propelled) of recreational boating in the U.S. states, territories, and the District of Columbia.

1.0 Terminology

1.1 Define and demonstrate knowledge of common nautical terms across all types of boating including vessel, port, starboard, bow, stern, stand-on, and give-way.

2.0 Boat Types and Characteristics

2.1 Describe the types of boats and limitations of each (power-driven including jet-propelled, sailing, and human-propelled).

2.2 Determine a boat's capacity by locating and determining gross load capacity (total weight and number of persons) from the boat capacity plate.

2.3 Determine a boat's capacity if a capacity plate is not present.

2.4 Describe how to determine acceptable loading including the benefits and methods of stowing and securing gear and equipment properly aboard a boat.

3.0 Required Equipment

3.1 Describe how to select, use, and wear U.S. Coast Guard approved life jackets/ personal flotation devices (wearables and throwables) including:

- legal requirements for carriage and wear including “readily accessible” versus “immediately available”;
- label information indicating U.S. Coast Guard approval, size, performance, and limitations of use;
- appropriateness for activity and in accordance with the law;
- sizing and fit for intended wearer;
- importance of wearing the life jacket due to rapidly changing conditions including weather and water conditions, boat traffic, etc.;
- difficulty of putting on a life jacket in the water while under distress;
- maintenance of inherently buoyant and inflatable life jackets per manufacturer recommendations;
- serviceability of inherently buoyant and inflatable life jackets; and
- when to replace life jackets due to excessive wear or damage.

3.2 Describe required lights and sound signals for recreational boats as set forth in the most recent version of the *NAVIGATION RULES AND REGULATIONS HANDBOOK* as published/maintained on the United States Coast Guard’s online Navigation Center, including:

- common lighting configurations; and
- types of sound-producing devices required and use of such devices on recreational boats.

3.3 Describe visual distress signals for recreational boaters as set forth in 33 CFR § 175.110, including types and required visual distress signals on recreational boats.

4.0 Trip Planning and Preparation

4.1 Describe how to obtain and adhere to information regarding local, state, and federal laws and regulations including regulations for titling, registering or documentation of a boat.

4.2 Identify information sources for local weather and water conditions. Obtain and interpret the information for the length of the intended trip according to:

- boater skill level;
- boat capability pertinent to those conditions; and
- environmental conditions including low/high tide, submerged objects, sand bars, currents, etc.

4.3 Identify critical topics for a pre-departure briefing including safety equipment, first-aid kit, emergency and routine communications and procedures, falls overboard, line handling, etc. that should be described for crew and passengers and how it could be delivered.

4.4 List important considerations for personal preparation and readiness before departure, including health/medications, fitness, gear, supplies, hydration, clothing, etc.

4.5 Describe how to identify dangerous weather including strong winds, storms, lightning, hurricanes, fog and water conditions including high water, sand bars, currents, large waves and their importance in trip planning.

4.6 Describe how to obtain information about local hazards and local knowledge that may affect the safe operation of a recreational boat including use of charts or maps.

4.7 Describe the purpose and content of a float plan, to whom it should be submitted and when it should be cancelled.

4.8 Describe the importance of preventative maintenance including regular inspection and maintenance of boat and key components.

4.9 Identify examples of factors that would lead to a “go-no-go” decision, state the reasons why and how these factors influence decisions, and provide some safe, alternative options.

4.10 Describe why boats should be prepped away from a launching area in order to leave the ramp clear to facilitate efficient launching and retrieval.

5.0 Safe Boat Operation

5.1 Describe the purpose and content of a pre-departure checklist and operator responsibilities for passenger communication.

5.2 Describe the responsibilities for:

- operator proficiency;
- situational awareness;
- safety for everyone aboard and activity on, in or around the boat;
- regulations regarding controlled areas, areas of danger, exclusion areas;
- ensuring safe speed;
- careless, reckless, or negligent operations on the water;
- courteous operation and sharing the waterways;
- risk of collision and action to avoid collision; and
- safe use of lines and proper storage.

5.3 Describe when and how boating accidents/incidents must be reported.

5.4 Describe basic safe boating operation and good seamanship for recreational boaters to avoid capsizing, falls overboard, ejection, or injuries including:

- communication from the boat operator to passengers of intended actions;
- the importance of wearing a life jacket to reduce the risk of drowning;
- staying centered and low when moving around the boat;
- avoiding sudden moves;
- maintaining three points of contact;
- loading the boat properly, including safe seating locations for passengers and crew;
- changing water conditions;
- additional safety considerations inherent to all small watercraft to include stabilizing the boat for entering, boarding safely, movement in the boat including keeping the weight centered from side-to-side and bow-to-stern; and
- being prepared for unintended water entry.

5.5 Describe why boating under the influence of drugs or alcohol is unsafe.

6.0 Navigation

6.1 Describe typical navigation rule situations* and the operator's legal obligations regarding:

- Rules 2(a) and 2(b) - Responsibility;
- Rule 5 - Look-out;
- Rule 6(a) - Safe Speed;
- Rules 7(a), 7(d) - Risk of Collision;
- Rule 8 - Action to Avoid Collision;
- Rule 9 – Narrow Channels;
- Rule 13 - Overtaking;
- Rule 14(a), 14(b), 14(c) - Head-on Situation;
- Rule 15(a) - Crossing Situation;
- Rule 16 - Action by Give-way Vessel;
- Rule 17 - Action by Stand-on Vessel;
- Rule 18 (a-d) - Responsibilities Between Vessels; and
- Rule 19 (a-e) - Conduct of Vessels in Restricted Visibility.

**Disclaimer: The navigation rules contained in this standard summarize basic navigation rules for which a boat operator is responsible on inland waterways. Additional and more in-depth rules apply regarding various types of waterways, such as International Waters and Western Rivers, and operation in relation to commercial vessels and other watercraft. For a complete listing of the navigation rules, refer to the most recent version of the NAVIGATION RULES AND REGULATIONS HANDBOOK as published/maintained on the United States Coast Guard's online*

Navigation Center. For state-specific navigation requirements, refer to the state laws where you intend to boat. In those areas that Inland Rules do not apply, the equivalent International, Western Rivers or Great Lakes rule(s) may be substituted. It is the responsibility of a boat operator to know and follow all applicable rules."

6.2 Describe homeland security measures, including:

- keeping a safe prescribed distance from military and commercial ships;
- restricted operation in the vicinity of commercial activities and port operations;
- observing all security zones; and
- observing and reporting suspicious activities to proper authorities.

6.3 Identify the U.S. Aids to Navigation System (USATONS) and state its purpose.

6.4 Identify regulatory and informational markers and state their purposes including controlled, information, danger, and exclusion areas.

7.0 Emergency Preparedness and Response

7.1 Determine the obligation and ability to render assistance to an individual or boat in distress per 46 U.S. Code § 2304.

7.2 Describe capsizing/falls overboard post-incident response procedures including:

- putting on a life jacket if not already being worn;
- calling for assistance, use of communication devices, reporting location, number of people, description of boat, nature of distress;
- taking a head count;
- staying with the vessel when appropriate;
- signaling for assistance;
- using improvised floating aids;
- recognition of a person in the water in distress; and
- initiation of procedures to recover people in the water.

7.3 Describe environmental stressors that impact recreational boating including:

- sun, wind, glare;
- dehydration;
- fatigue;
- heat factors including the effects of hyperthermia and how to prepare for, prevent, and respond to heat related events;
- cold factors (exposure) including the effect of hypothermia and how to prepare for, prevent, and respond to cold related events; and

- effects of cold water immersion and how to prepare for, prevent, and respond to a cold water immersion event, including the physiological effects of cold water immersion.

7.4 Describe storm and rough weather procedures and response.

7.5 Describe recommendations for carrying emergency communication and distress signaling devices on the vessel and on your person.

7.6 Describe proper methods of communication with other vessels and emergency hailing, including:

- VHF radio;
- Digital Selective Calling (DSC) and Mobile Maritime Service Identity (MMSI) number; and
- cell phone limitations.

8.0 Other Water Activities

8.1 Describe how to recognize a diver down flag, the International Code Flag A, and legal requirements for operating a boat in the vicinity of snorkeling and scuba diving activities.

8.2 Describe risks unique to hunters and anglers while boating.

9.0 Environmental Concerns

9.1 Describe the impact, risk, and mitigation of aquatic invasive species.

9.2 Describe how to adhere to state and federal laws and regulations regarding environmental protection including wildlife, littering, marine sanitation, oil pollution, and garbage.

####

Origin and Development of *Basic Boating Knowledge – Core*

ANSI/NASBLA 100-2022: Basic Boating Knowledge – Core was developed in 2019-2022 by the National Boating Education Standards Panel. It was adapted from work previously compiled by the Education and Outreach Committee of the National Association of State Boating Law Administrators and from other organizations within the boating education community.

####

This standard represents, as of the date of publication, the consensus of knowledgeable persons, currently active in the field of small craft, on knowledge components that contribute to small boat safety. The National Boating Education Standards Panel assumes no responsibility whatsoever for the use of, or failure to use, standards or technical information reports promulgated by it, their adaptation to any processes of a user, or any consequences flowing therefrom.

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ANSI/NASBLA 102-2022: Basic Boating Knowledge – Plus Sailing



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Carolyn Belmore		Joshua Underwood

This list represents the membership at the time the revised draft standard was presented for consensus ballot in 2021.

NOTE: Membership on a panel or committee shall not in and of itself constitute an endorsement of the National Association of State Boating Law Administrators (NASBLA) or any document developed by the panel or committee on which the member serves.

This standard was developed under procedures of essential requirements for the American National Standards Institute. The Panel that approved the standard was balanced based on interest categories to ensure that individuals representing those with material interests in the standard had an opportunity to participate.

This standard, which is the result of extended and careful consideration of available knowledge and experience on the subject, is intended to provide minimum performance requirements.

National Boating Education Standards Panel meetings are open to the public. All contact regarding standards activity, interpretations, or meeting attendance should be directed to NASBLA ESP Staff at esp@nasbla.org.

REQUEST FOR INTERPRETATIONS

Upon written request, the Education Standards Panel will render an interpretation of any requirement of the standard. The request for interpretation should be clear and unambiguous. Requests should be presented to the ESP in a manner in which they may be answered in a “yes” or “no” fashion.

The Panel reserves the right to reconsider any interpretation when or if additional information which might affect it becomes available to the ESP. Persons aggrieved by an interpretation may appeal to the Panel for reinterpretation.

REQUEST FOR APPEALS

Any directly and materially affected interest who believe they have been or will be adversely affected by a Standard, or by the lack thereof, shall have the right to appeal substantive or procedural actions or inactions of the National Boating Education Standards Panel per Part XII of the [Panel Rules](#) (latest version) posted at www.nasbla.org under Advocacy > National Education Standards. As stated in the Rules, prior to the filing of a formal appeal, communication of the alleged actions or inactions, with mutual effort to informally resolve the dissatisfaction, shall be attempted and documented.

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FOREWORD

This standard defines general, entry-level knowledge a boater should possess for safe recreational boat operation. This consensus-based standard is designed to support course providers and raise the overall level of quality, availability, and consistency of instruction in entry-level recreational boater knowledge. This standard functions within a national system of standards for recreational boat operation.

It is recommended this standard be used in conjunction with any accompanying Technical Report.

The standard is organized as follows:

- The numerical identifiers assigned to each element are for ease of reference only, and they do not imply any sequential process of learning or that the information only applies to that particular section.
- Individual numbered elements are organized for ease of reference. Each individual numbered element can be applied within other elements during design and delivery of instruction.
- All items listed after the word “including” are requirements of the standard. Additional items may be added.

REFERENCES

The following is a listing of all American National Standards for Basic Boating Knowledge. Additional listed references provide content to supplement this standard for specific boat types. Unless otherwise noted the latest version of referenced standards shall apply. NOTE: Per ANSI Essential Requirements, identification of products or services is not an endorsement of those products or services or their suppliers.

Source: NASBLA - National Association of State Boating Law Administrators, 1020 Monarch, Suite 200, Lexington, KY 40513. Phone: (859) 225-9487. Standards and ANSI-Registered Technical Reports are available at www.nasbla.org.

- 100-2022, Basic Boating Knowledge – Core
- 101-2022, Basic Boating Knowledge – Plus Human-Propelled
- 102-2022, Basic Boating Knowledge – Plus Sailing
- 103-2022, Basic Boating Knowledge – Plus Power
- 103.1-2022, Supplement - Basic Boating Knowledge – Plus Water-Jet Propelled

The following American National Standards for on-water boating skills provide information to guide on-water skill training which can be used to supplement the knowledge standards.

Source: ABYC - American Boat & Yacht Council, Inc., 613 Third Street, Suite 10, Annapolis, MD 21403. Phone: (410) 990-4460. Website: www.abycinc.org.

- EDU-1, On-Water Recreational Boating Skills - Power
- EDU-2, Skill-Based Human-Propelled Standard
- EDU-3, Skills-Based Sailboat Standard
- EDU-4, On-Water Instruction Standard

Education providers are also encouraged to use the National On-Water Standards (NOWS) Technical Support Documents (TSDs) that accompany each standard to support the design and implementation of on-water entry-level instruction. These documents are available for free download at www.usnows.org.

DEFINITIONS

For the purpose of this document the following definitions apply:

accident (n) – 1) An unforeseen and unplanned event or circumstance. 2) In boating, a general term referring to a recreational boating event that results in an injury, fatality, property damage, and/or vessel that is a total loss. *(Note: The boating safety community, including Marine Law Enforcement Agencies, are transitioning away from “accident” and to the term “incident.”)*

beginner (n) – A novice who has begun a course of instruction or is learning the fundamentals.

boat (n) – A small vessel for travel on water; Includes every description of watercraft used or capable of being used as a means of transportation on water.

boat (v) – To place in or bring into a boat, to go by boat.

entry-level (adj) – Of or being at the lowest level of hierarchy. The proficiency reached by a person who has successfully completed an appropriate amount of beginner instruction, or has achieved a sufficient level of experience, to be ready to pursue (or “enter” safely into) recreational boating.

human-propelled vessel (n) – Any vessel propelled by human power, typically with oars or paddles.

incident (n) – An occurrence of an action or situation that is a separate unit of experience. Something dependent on or subordinate to something else of greater or principal importance. *Also see “Accident”.*

knowledge (n) – Cognitive outcome of the learning process usually tested by verbal or written questions.

go-no-go (adj) – Being or relating to a required decision to continue or stop a course of action. Being or relating to a point at which a go-no-go decision must be made.

passenger (n) – Any person onboard, excluding the operator.

power-driven vessel (n) – Any vessel propelled by machinery.

sailing vessel (n) – Any vessel under sail provided that propelling machinery, if fitted, is not used.

standard (n) – According to the American National Standards Institute, 1) a recognized unit of comparison by which the correctness of others can be determined; 2) a set of characteristics or qualities that describes features of a product, process, or service.

skill (n) – The learned capacity, aptitude, or ability to do something.

underway (adj)– occurring, performed, or used while traveling or in motion.

underway (adv) – In motion: not at anchor or aground. A vessel is not at anchor, or made fast to the shore, or aground.

water-jet propelled vessel (n) – Any vessel propelled by machinery which powers a pump producing a jet of water.

vessel (n) –Any watercraft, including nondisplacement craft and seaplanes, used or capable of being used as a means of transportation on water.

American National Standard

Basic Boating Knowledge – Plus Sailing

Scope

This discipline-specific "Plus" standard, when combined with the "Basic Boating Knowledge – Core" standard, establishes minimum essential knowledge to reduce recreational sailing risk factors. The combined standards are to be used for development of basic boating education courses and student assessment for sailing vessels. This standard applies to basic knowledge for recreational sail boating in the U.S. states, territories, and the District of Columbia.

1.0 Terminology

1.1 - See "Basic Boating Knowledge - Core" (*latest version*)

1.2 Discipline Specific

1.2.1 Identify and describe the functions of the parts of a typical small sailboat.

1.2.2 List and define directional terms relating to the sailboat.

1.2.3 List and define directional terms relating to the wind.

1.2.4 Describe visual and non-visual indicators that may be used to provide a sense of wind direction and strength.

2.0 Boat Types and Characteristics

2.1 through 2.4 - See "Basic Boating Knowledge - Core" (*latest version*)

2.5 Discipline Specific

2.5.1 Describe proper methods for boarding while keeping the sailboat reasonably stable.

2.5.2 Describe the purpose and functions of rudder, as well as the relationship between boat speed and rudder control. Describe the purpose and functions of the tiller, tiller extension, and steering wheel(s). Discuss their advantages and disadvantages.

2.5.3 Describe the functions of, and differences between, a ballasted keel and a centerboard or dagger board.

2.5.4 Define the basic force generated as air flows over a sail when sailing upwind and describe how this force propels the sailboat forward. Describe how the sail works differently when sailing straight downwind.

2.5.5 Describe what adjustments to the sails and rudder must be made to accommodate changes in wind direction and wind speed.

2.5.6 Describe and identify the following points of sail and sailboat positions relative to the wind: close hauled, close reach, beam reach, broad reach, run/directly downwind, by the lee, no sail zone/in irons.

2.5.7 Describe the purpose and identify the following course and tack changing maneuvers and their results: heading up, bearing away, tacking, gybing (jibing).

2.5.8 Describe the causes and risks associated with an accidental gybe and ways in which it can be prevented.

2.5.9 Describe methods of accelerating, decelerating, and stopping a sailboat.

2.5.10 Describe methods for getting the sailboat out of irons and under control onto a desired tack.

2.5.11 Describe how to place the sailboat in the safety position or how to heave-to, and the circumstances under which these maneuvers could be used.

2.5.12 Describe commands and responses for maneuvers such as heading up, bearing away, tacking, gybing, departure from and return to a dock, mooring, or shoreline, etc.

3.0 Required Equipment

3.1 through 3.3 - See ““Basic Boating Knowledge - Core” (*latest version*)

3.4 Discipline Specific

3.4.1 Describe required lights and sound signals for sail boats as set forth in the most recent version of the NAVIGATION RULES AND REGULATIONS HANDBOOK as published/maintained on the United States Coast Guard’s online Navigation Center including:

- common lighting configurations; and
- types of sound-producing devices required and use of such devices on sail boats.

4.0 Trip Planning and Preparation

4.1 through 4.10 - See ““Basic Boating Knowledge - Core” (*latest version*)

4.11 Discipline Specific

4.11.1 Describe examples of actions to be taken when a temporary increase in wind speed occurs. Describe the steps to be taken if sustained increased winds appear imminent.

4.11.2 Describe critical preventive maintenance that should be performed periodically on a typical small sailboat.

4.11.3 List maintenance issues that, if found during a pre-trip inspection, would require cancellation of the trip if not corrected before departure.

4.11.4 Describe importance of recognition of overhead hazards.

5.0 Safe Boat Operation

5.1 through 5.5 - See “Basic Boating Knowledge - Core” (*latest version*)

5.6 Discipline Specific

5.6.1 List items that must be checked periodically to avoid dangerous failures while sailing.

5.6.2 List important safe navigation responsibilities of a sailboat operator.

5.6.3 Describe the purpose and usage of each of the following knots: figure 8, square/reef, clove hitch, round turn & two half-hitches, cleat hitch, bowline, and sheet bend.

5.6.4 Describe various types of anchors, associated equipment, and their use. Describe the proper scope, anchoring and retrieval procedures, and safety considerations.

6.0 Navigation

6.1 through 6.4 - See “Basic Boating Knowledge - Core” (*latest version*)

6.5 Discipline Specific

6.5.1 Describe typical navigation rule situations and the operator’s legal obligations regarding:

- Rule 12(a) - Sailing Vessels
 - (i) - Starboard tack vs Port tack
 - (ii) - Windward vessel vs Leeward vessel
 - (iii) - Unclear situation

7.0 Emergency Preparedness and Response

7.1 through 7.6 - See “Basic Boating Knowledge - Core” (*latest version*)

7.7 Discipline Specific

7.7.1 Describe dynamic crew locations to help prevent capsizing a centerboard or dagger board sailboat and the effect of moving weight on board all sailboats.

7.7.2 Describe capsizing and how to prevent and recover from capsize including important safety considerations with regard to sail boats including rigging entanglements, enclosed spaces, etc.

7.7.3 Describe how to avoid running aground and recovery procedures from a grounding.

8.0 Other Water Activities

8.1 through 8.2 - See “Basic Boating Knowledge - Core” (*latest version*)

9.0 Environmental Concerns

9.1 through 9.2 - See “Basic Boating Knowledge - Core” (*latest version*)

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Origin and Development of *Basic Boating Knowledge – Plus Sailing*

BSR/NASBLA 102-2022: Basic Boating Knowledge – Plus Sailing was developed in 2019-2022 by the National Boating Education Standards Panel. It was adapted from work previously compiled by the Education and Outreach Committee of the National Association of State Boating Law Administrators and from other organizations within the boating education community.

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This standard represents, as of the date of publication, the consensus of knowledgeable persons, currently active in the field of small craft, on knowledge components that contribute to small boat safety. The National Boating Education Standards Panel assumes no responsibility whatsoever for the use of, or failure to use, standards or technical information reports promulgated by it, their adaptation to any processes of a user, or any consequences flowing therefrom.

Prospective users of the standards and technical information reports are responsible for protecting themselves against liability. The National Boating Education Standards are guides to achieving a level of knowledge and are not intended to preclude attainment of desired results by other means.