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Technical Report 2022 Basic Boating Knowledge – Core Plus Power (including Water-Jet Propelled)

FOR USE WITH:

ANSI/NASBLA 100-2022:
BASIC BOATING KNOWLEDGE – CORE

ANSI/NASBLA 103-2022:
BASIC BOATING KNOWLEDGE – PLUS POWER

INCLUDING
ANSI/ NASBLA 103.1-2022 SUPPLEMENT:
BASIC BOATING KNOWLEDGE -PLUS WATER-JET PROPELLED

A Technical Report prepared by the National Boating Education Standards Panel and registered with ANSI.

ESP TR 103.1-2022

YOUR BOATING DOLLARS AT WORK
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National Association of State Boating Law Administrators

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

Table of Contents

Technical Report 103-2022
Basic Boating Knowledge - Core Plus Power

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

ANSI/NASBLA 103-2022: Basic Boating Knowledge – Plus Power

including

ANSI/NASBLA 103.1-2022: Supplement –
Basic Boating Knowledge – Plus Water-Jet Propelled

Chapter 1 - Introduction

This Technical Report supports American National Standards (ANS) entitled *ANSI/NASBLA 100-2022: Basic Boating Knowledge – Core and ANSI/NASBLA 103-2022: Basic Boating Knowledge – Plus Power* (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 powerboating 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 Committee[1] 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.

[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.

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 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.

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. Previous standards for Basic Boating Knowledge – Power were released in 2015 and 2016.

The Technical Report

With the separation of NASBLA course approval procedure from Basic Boating Knowledge - Power standard, rationales in support of the content of the Standard, originally developed by NASBLA's Education Committee, would be removed from the Standard and published in a separate document. This Core Plus Power Technical Report updates previous editions of the Power Technical Report, published in 2018. This update 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*; *Basic Boating Knowledge – Plus Power*; and, *Supplement – Basic Boating Knowledge – Plus Water-Jet Propelled.*

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 maintains consistency and improves 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 103-2022: Basic Boating Knowledge - Plus Power" are combined, it establishes the minimum national content for basic **powerboating** courses*. These Standards address primary risk factors to mitigates 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 103-2022 Basic Boating Knowledge - Plus Power replace the previous powerboating knowledge standard, ANSI/NASBLA 103-2016: Basic Boating Knowledge – Power.

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, Coast Guard Auxiliary, U.S. Power Squadrons, U.S. Sailing, American Canoe Association (ACA), 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

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)

ASSESSMENT BEST PRACTICES – Part 3

For a NASBLA-approved course, the aggregate of assessments must consist of at least 50 questions. Test weights for assessments based the "ANSI/NASBLA 100-2022 Basic Boating Knowledge – Core" and "ANSI/NASBLA 103-2022 Basic Boating Knowledge - Plus Power" or as described in Assessment Best Practices - Part 4 are developed in accordance with a weighted assessment plan. This plan, first developed by subject matter experts as a USCG-funded research project, focuses on educational elements most vital to reducing boater accidents, injury, and death. See the NASBLA Policy for Course Approval for additional information.

ASSESSMENT BEST PRACTICES – Part 4

The state specific portion of the NASBLA-approved assessment must contain a MINIMUM OF 10 state specific information assessment questions written to the NASBLA item writing standards per the NASBLA Policy for Course Approval.

ASSESSMENT BEST PRACTICES – Part 5

Developing a passing score for each assessment should not be arbitrarily determined. Using court approved testing techniques (e.g., Angoff method, Ebel method) for establishing a passing score is recommended, but not required. If the test is submitted for NASBLA-approval, the minimum passing score will be determined by each state in which the course is authorized. In addition, the decision as to what happens when a student scores below the state-established threshold will be determined by the states.

Chapter 3 – Standard Details and Background

The chapter contains details of:

- ANSI/NASBLA 100-2022: Basic Boating Knowledge – Core;
- ANSI/NASBLA 103-2022 – Plus Power; and,
- ANSI/NASBLA 103.1 -2022: Supplement – Plus Water-Jet Propelled.

The contents are presented as follows:

Scope
- Core
- Plus Power

Section 1 Terminology
- Core
- Plus Power

Section 2 Boat Types
- Core
- Plus Power

Section 3 Required Equipment
- Core
- Plus Power

Section 4 Trip Planning
- Core
- Plus Power

Section 5 through 9 follow this same format.

The **Water-Jet Propelled supplemental** content is presented as a unit at the end of Section 9.

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.

Basic Boating Knowledge – Plus Power

Scope

This discipline-specific "Plus" standard, when combined with the "BSR/NASBLA 100-20XX: Basic Boating Knowledge – Core" standard, establishes minimum essential knowledge to reduce recreational powerboating risk factors. The combined standards are to be used for development of basic boating education courses and student assessment for power driven vessels. This standard applies to basic knowledge for recreational powerboating 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 Power

1.1 - See "Basic Boating Knowledge - Core" *(latest version)*

1.2 Discipline Specific

1.2.1 Define terms specific to the vessel and related equipment.

There are numerous terms specific to power vessels and related equipment; additional terms can be located in the Glossary of this Technical Report.
Propulsion systems / Wake/ Emergency cut-off switch/ towed water-sports/ beam/ length overall.

1.2.1 Sample Activity

1. Match definitions to words.
2. Given a drawing or photo of a vessel or vessels, have students point out various components or aspects and correctly match each.

1.2.1 Sample Question

1.2.1-1. What does the term beam mean?

A) The maximum width of the vessel
B) The maximum length of the vessel
C) The maximum size of the vessel
D) The maximum height of the vessel

1.2.1-2. What is the lowest part of the interior of a vessel?

A) Transom
B) Baggywrinkle
C) Tiller
D) Bilge

1.2.1-3. The measure of the waterline to the lowest part of the vessel where water can come on board is known as what?

A) Stern
B) Port
C) Lubber
D) Freeboard

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

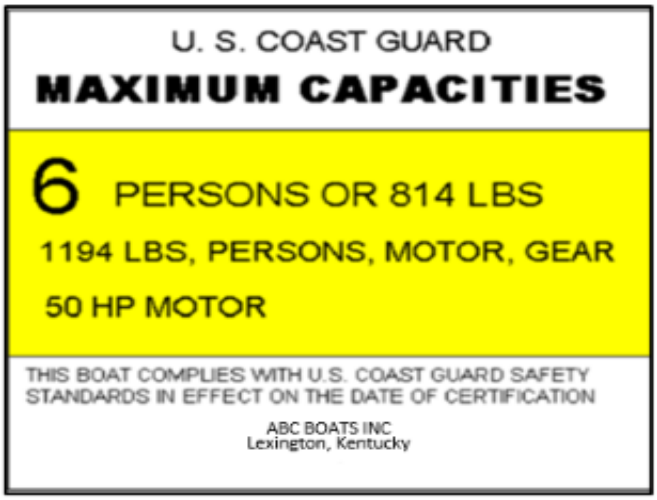
2.1-4. What hull shape is most suitable for heavy wave conditions?

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:

Number of people = (boat length (ft.) × boat width (ft.)) ÷ 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.)) X 15
C) Number of people = (boat length (ft.) × boat width (ft.)) X 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

2.4 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 Power

2.1 through 2.4 - See "Basic Boating Knowledge - Core" *(latest version)*

2.5 Discipline Specific

2.5.1 Describe the importance of complying with recommended horsepower ratings.

Boats are designed with horsepower limitations. An operator should reference the capacity plate for maximum horsepower ratings on vessels 20 feet and under. Manufacturers determine ratings based on 33 CFR 183.53. Some boat manufacturers voluntarily attach a capacity plate on vessels over 20 feet. Exceeding horsepower limits may cause a decrease in stability and can alter operating characteristics which can be dangerous, possibly resulting in injuries, property damage, and greater legal liability.

2.5.1 Sample Activity

1. Show pictures of capacity plates and have students interpret them.

2.5.1 Sample Question

2.5.1-1. Where can the maximum horsepower be indicated?

A) On the capacity plate
B) Bottom of the hull
C) At the helm
D) On the registration

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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• 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.

- ***1) requirements for carriage and wear including "readily accessible" versus "immediately available";***

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.

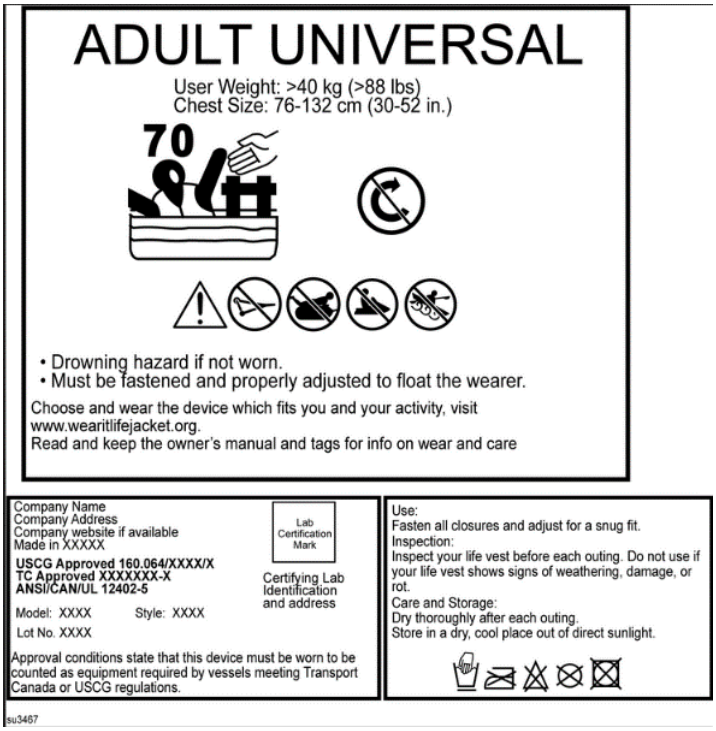
Lower Level numbers generally offer greater mobility, comfort, and style with good flotation for most people.

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]

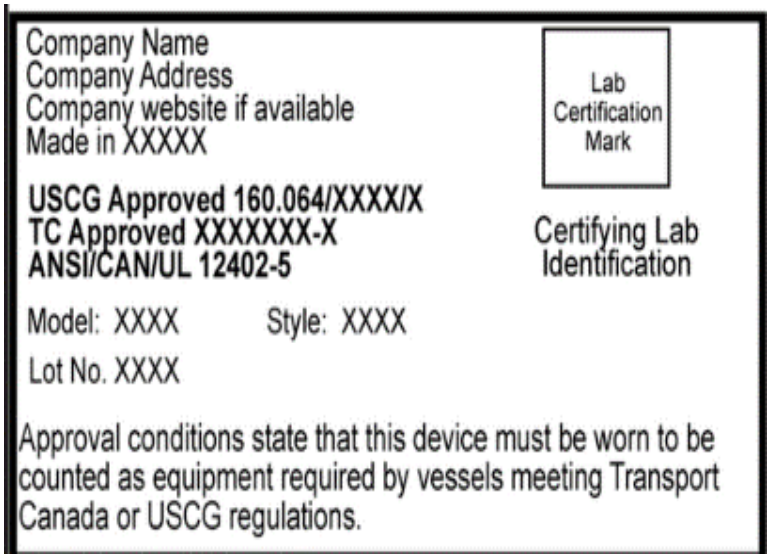
Graphic	Definition of graphic
	Not designed for use in whitewater.

[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.

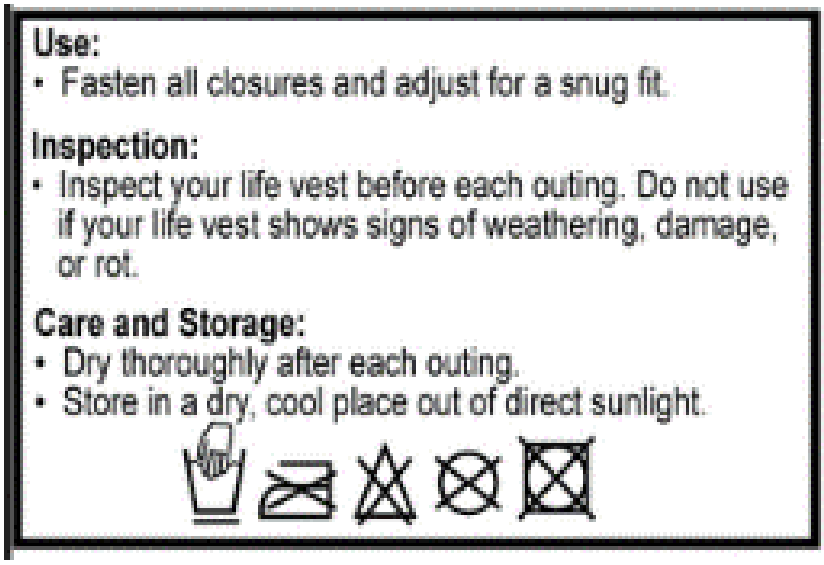
Example



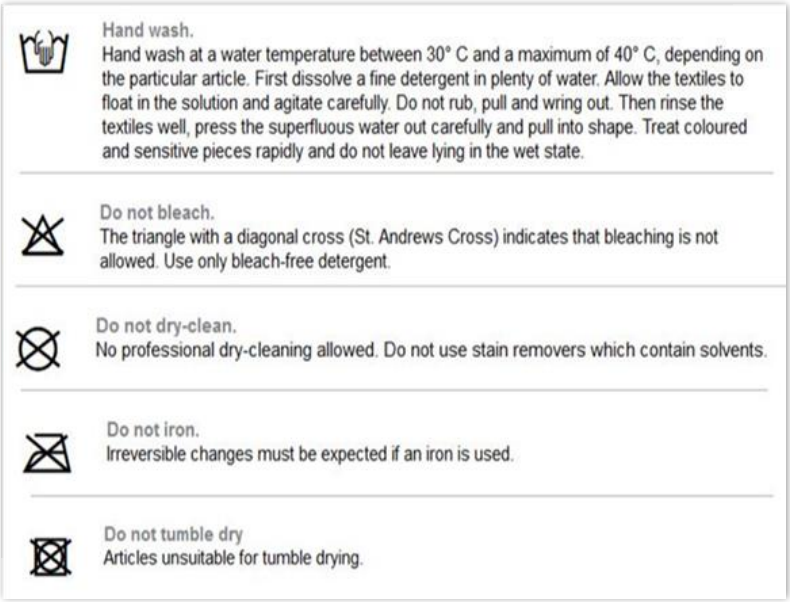
5. Care and Maintenance Instructions

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]



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

- ***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

- ***8) serviceability of inherent and inflatable life jackets;***

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) Webbings 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.

- ***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

3.2 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

3.3 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 Power

3.1 through 3.3 - See "Basic Boating Knowledge - Core" *(latest version)*

3.4 Discipline Specific

3.4.1 Describe fire extinguishers as legally required including:

- **carriage requirements;**

The U.S. Coast Guard specifies certain vessels are required to carry an approved, marine-type fire extinguisher. Motorboats less than 26 feet, propelled by outboard motors and not carrying passengers for hire, need not carry portable fire extinguishers if the construction of the boat will not permit the entrapment of explosive or flammable gasses or vapors. The number and types of fire extinguishers that must be carried for class "B" fires on boats of various sizes is specified by the U.S. Coast Guard.

For all MOTORBOATS, hand portable fire extinguishers are required if ANY one of the following conditions exist:

- Closed compartments under thwarts and seats wherein portable fuel tanks may be stored; OR
- Double bottoms not sealed to the hull or which are not completely filled with flotation material; OR
- Closed living spaces; OR
- Closed stowage compartments in which combustible or flammable materials are stowed; OR
- Permanently installed fuel tanks.

The complete federal regulations can be found at 46 CFR §25.30-20 Fire extinguishing equipment required.

NOTICE: As of 4/20/2022, Fire Extinguisher requirements for recreational boaters are moving from 46 CFR to 33 CFR Subchapter S. New regulations include enforcement of a 12-year fire extinguisher expiration dates. See additional information at: https://uscgboating.org/recreational-boaters/fire-extinguisher-faq.php

- **types needed for different types of fires;**

There are different types of fire extinguishers designed to put out the different classes of fire. Understanding fire classifications and selecting the appropriate fire extinguisher is an important consideration for a boater. The wrong extinguisher may make a fire emergency worse. For example, failing to use a B-rated extinguisher on flammable gases or liquids may endanger boaters by causing the fire to spread.

A key to understanding fire suppression, including fire extinguisher use, is removing one of the elements of the fire triangle - fuel, oxygen, or heat, thus extinguishing the fire. Knowing how specific fire extinguishers interact with different types of fire is essential to extinguishing the fire safely.

Fire is divided into five classes (A, B, C, D, and K) that are primarily based on the fuel that is burning. This classification system helps to assess hazards and determine the most effective type of extinguishing agent.

- Class A Fires involve common combustibles such as wood, paper, cloth, rubber, trash and plastics.
- Class B Fires involve flammable liquids, solvents, oil, gasoline, paints, lacquers and other oil-based products.
- Class C Fires involve energized electrical equipment such as wiring, controls, motors, machinery, or appliances.
- Class D Fires involve combustible metals such as magnesium, lithium and titanium.
- Class K Fires involve combustible cooking media such as oils and grease commonly found in commercial kitchens

https://www.osha.gov/sites/default/files/2019-03/fireprotection.pdf

- **importance of placing in "readily accessible" locations; and**

Boaters must be able to respond quickly in the event of fire by placing fire extinguishers in proper locations. A readily accessible location should be away from a potential source of fire. Anticipating the emergency by outfitting the vessel with the appropriate equipment and understanding how to use it could minimize risk *(Also see 7.7.1)*.

- **need for following manufacturer's recommendations for inspection and maintenance.**

All fire extinguishers must be regularly inspected and maintained. Boaters should consult the instructions provided by the fire extinguisher's manufacturer for proper maintenance procedures.

3.4.1 Sample Activity

1. Use these examples to assist students in recalling the types of fire extinguisher uses: A=Ash (extinguishes fuel which leave an ash residue such as wood and paper); B = Boom (extinguishes fires caused by gasoline and other explosives); C=crackle (extinguishes electrical fires) ; D=death (extinguishes metal fires); K=kitchen (extinguishes oils and grease kitchen fires).

3.4.1 Sample Questions

3.4.1-1. What kind of fire is a class B intended for?

A) Liquids
B) Solids
C) Electrical
D) Metals

3.4.1-2. What is a requirement for all fire extinguishers aboard a boat?

A) Red in color
B) Must be coast guard approved
C) Located at the helm
D) Located at the galley

3.4.1-3. What kind of fire is a class A intended for?

A) Liquids
B) Combustibles
C) Electrical
D) Metals

3.4.2 Describe the requirement, purpose and maintenance of a back-fire flame control device.

The U.S. Coast Guard requires that boats with gasoline engines be equipped with an acceptable means of backfire flame control. Boaters must understand the purpose and how to maintain installed devices.

3.4.2 Sample Activity

1. Use a lighter and a piece of metal window screen to demonstrate how a back-fire flame arrestor works. While in a secure location, quickly pass the screen through the flame, noting how the flame is cut off. Use caution as the screen will heat quickly.

3.4.2 Sample Question

3.4.2-1. Which of the following is required to have a backfire flame arrestor?

A) A boat with a gasoline inboard engine
B) A boat with a propane stove for cooking
C) A speed boat with an outboard engine
D) A boat equipped with a diesel engine

3.4.3 Describe the purpose, requirements, and maintenance of ventilation systems.

Fuel vapors can collect in the bilge and explode. Boat owners are responsible for keeping their boats' ventilation in operating condition. In 46 CFR § 182.460 and § 185.352, the U. S. Coast Guard requires that all recreational boats which "use gasoline engines for electrical generation, mechanical power or propulsion" must be equipped with a functional ventilation system.

The mechanical exhaust for the ventilation of a gasoline machinery space must be operated prior to starting gasoline engines for the time sufficient to ensure at least one complete change of air in the space served, usually 4-5 minutes for larger vessels. It is advisable to open any closed engine and fuel departments to conduct a "sniff test", smelling for any signs of fuel vapors, prior to starting the engine.

3.4.3 Sample Activity

1. Using a boat on a trailer, explore the ventilation system, noting cowls, ducts, cowls, and blower.

3.4.3 Sample Question

3.4.3-1. Which of the following is required to have a backfire flame arrestor?

A) A boat with a gasoline inboard engine
B) A boat with a propane stove for cooking
C) A speed boat with an outboard engine
D) A boat equipped with a diesel engine

3.4.3-2. When underway making way, w*hich of the following best describes a ventilation system in operating condition?*

A) The outtake ducting and cowling scoops air into the boat's closed compartments.
B) The intake ducting and cowling removes air from the boat's closed compartments.
C) All hatches are open to create airflow.
D) The intake and outtake ducting and cowling provide a way to move air through the boat's closed compartments.

3.0 Required Equipment - Plus Power - *continued*

3.4.4. Describe the requirement, importance, types and proper wear, and use and maintenance of engine/propulsion cut-off devices.

(Also see 7.7.1 - propeller safety)

Emergency Engine Cut-off Device - A switch or other system that when activated in an emergency, provides the means to stop the propulsion engine.

Every year there are a number of incidents where people are struck by boat propellers. The Engine Cut-Off System (ECOS) is designed to shut down the engine and stop the boat should the operator be separated from the operating area of the vessel. This action provides the operator the opportunity to regain control of the boat, thus preventing people in the water from being struck by an uncontrolled vessel.

The U.S. Coast Guard requires operators of vessels less than 26 feet in length that are equipped with an engine/propulsion cut-off device to use it while underway at greater than displacement speed. The Engine Cut-Off Switch Link must be attached to the operator, activated, and working properly whenever the boat is operating on plane or greater than displacement speed. "On plane" means the boat has reached a speed that moves the boat from a "displacement" mode to a "planing" mode. The Engine Cut-Off Switch Link does not need to be attached when the vessel is idling or performing docking maneuvers.

Vessel operators need to check the state ECOS laws for the area in which they are operating to determine how these rules are applied and if additional vessels are regulated. Approved devices include mechanical lanyards with switches and wireless technology. The best advice to maintain compliance is to ensure its use.

Passengers should understand how to re-start the engine if needed should the operator fall overboard, and have a backup engine cut off system link (e.g., lanyard or ECOS key) for that purpose.

Check the function of the system prior to each departure as part of the pre-departure checklist. Follow the manufacturer's instructions for proper maintenance of your ECOS system. Operators need to ensure the proper operation of these devices prior to every voyage.

3.4.4 Sample Activity

1. Demonstrate proper attachment of the lanyard and also show options for wireless methods. If possible show example on a boat.

3.4.4 Sample Question

3.4.4-1. When should an engine cut-off lanyard be worn?

A) When operating at planing speed
B) When docking
C) When refueling
D) When anchoring

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

4.2 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

4.3 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.

72

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

4.4 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

4.5 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

4.6 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

4.7 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

4.8 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.

4.9 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

4.10 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 Power

4.1 through 4.10 - See "Basic Boating Knowledge - Core" *(latest version)*

4.11 Discipline Specific

4.11.1 Describe why regular inspections and maintenance of a powerboat, its components, and systems are important.

Machinery failure is consistently a leading cause of reported incidents. 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.

4.11.1 Sample Activity

1. Visit a boat dealership to discuss common maintenance needed on various types of boats.

4.11.1 Sample Question

4.11.1-1. Why is boat maintenance important?

A) Negligence in maintaining a boat may lead to an unsafe or disastrous experience.
B) Negligence in maintaining a boat will greatly increase its resale value.
C) A well-maintained boat will attract a lot more attention at the boat ramp.
D) A well-maintained boat is easier to start and stop on the water.

4.0 Trip Planning and Preparation - Plus Power - *continued*

4.11.2 Identify common vessel points of failure including through-hull fittings, motor, electrical system, fuel system, and operation of engine/propulsion cut-off device if installed.

Any system that fails and causes a disruption of a boating voyage could not only reduce the enjoyment of the trip but could also place the vessel and people onboard in danger or cause serious injury. Examples include: failure of a through-hull fitting can cause swamping; disruption of the electrical system can cause loss of electronic navigation and mechanical propulsion or steering; fuel system leakage can result in a fire or explosion; an inoperable engine cut-off device may prevent the vessel from re-starting.

4.11.2 Sample Activity

1. Show pictures or have examples of severely corroded through-hull fittings.

4.11.2 Sample Question

4.11.2-1. What can happen if a through-hull fitting fails?

A) The boat could potentially sink
B) The boat could catch fire
C) The boat will capsize
D) The engine will shut off

4.11.3 Describe powerboat trailer types; trailer towing preparation and procedures; vehicle and trailer handling factors and effects; and powerboat launch and retrieving preparation and procedures.

The majority of recreational boats in the U.S. are trailered to and from the water. There are a variety of styles of trailers to match the different types of hulls. Each trailer requires specific maintenance tasks. Failing to perform regular checks and maintenance can cause damage to the boat or cause an accident upon the roadways.

The tow vehicle should be matched to the load of the boat and trailer. A vehicle that is underpowered or too small can cause an incident on roadway.

The weight on the trailer must be properly balanced so that the trailer travels safely when transporting the boat over the roadways.

Boaters should be courteous when launching and retrieving boats in a manner that does not interrupt the smooth use of a boat launch facility.

Good trailering skills can help boaters avoid accidents and reduce conflicts on boat ramps. Boaters should practice trailering and backing skills away from busy dock areas.

4.11.3 Sample Activity

1. If possible, take students to a parking lot and explain different parts of the trailer.

4.11.3 Sample Question

4.11.3-1. What equipment is required to be on a trailer?

A) Tongue Jack
B) Lights
C) Guide posts
D) Winch

4.11.3-2. Boat trailers with too little tongue weight tend to do what?

A) Cause the trailer to fishtail
B) Make steering easier
C) Exceed the bumper capacity
D) Improve the braking of the vehicle

4.11.4 Describe proper procedures and safety concerns including ventilation when fueling a powerboat (gasoline, diesel).

Gasoline vapors are explosive. Exploding fuel vapors onboard vessels cause injuries and fatalities annually. Boats have different fuel systems than automobiles and water-side fueling stations deliver fuel at a much faster flow rate than road-side systems. The probability of explosion can be reduced by following established safe fueling and ventilation procedures.

All passengers should be sent ashore, however, it is important for the operator to stay with the vessel and monitor the operation until fueling is complete. Close all doors, windows, and hatches before fueling. Double-check the correct fuel for use (gasoline vs. diesel). When fueling, keep the nozzle in contact with the fuel intake. Ensure you are filling the fuel tank and not the water, sewage, rod holders, or other deck openings. Do not overfill the fuel tank, leave room for the fuel to expand. Fill portable containers onshore and ensure proper operation of the fuel vent. Open doors, windows, and hatches to ventilate when fueling is complete. Ventilate the boat and run the blower. (*Also see 3.4.3 - Ventilation system.)*

4.11.4 Sample Activity

1. Visit a fuel dock to observe, safe refueling of various types of power vessels.

4.11.4 Sample Question

4.11.4-1. What should you do when fueling an outboard boat with a portable tank?

A) Place the tank on the dock or shore to fill it
B) Hold the nozzle high to see what you are doing
C) Place the tank low in the boat to avoid spills
D) Move tank to the bow so wind blows fumes away

5.0 Safe Boat Operation - Core

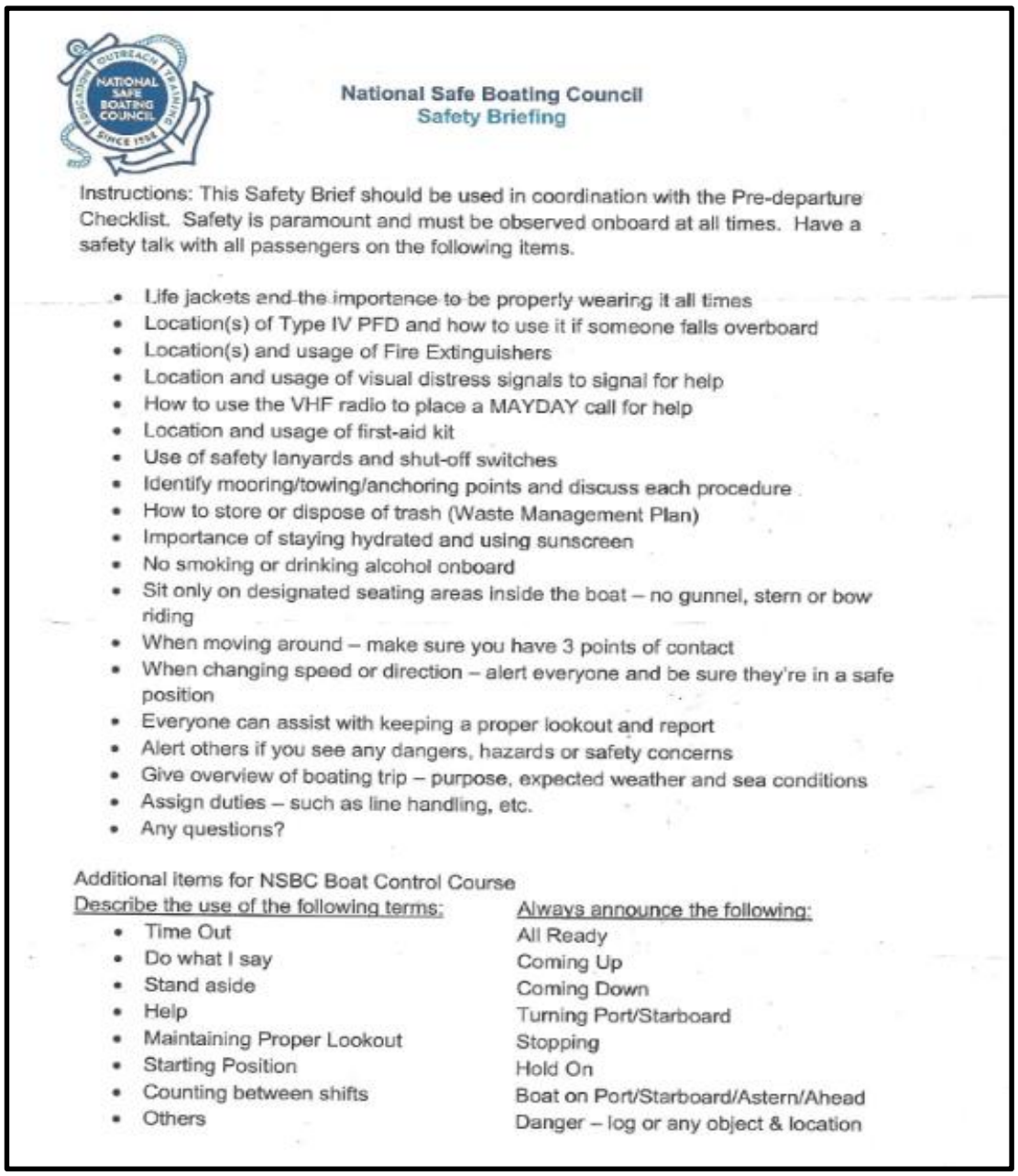
5.1 Describe the purpose and content of a pre-departure checklist and operator responsibilities for passenger communication.

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

5.2 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.

5.3 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.

5.5 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 Boat Operation - Plus Power

5.1 through 5.5 - See "Basic Boating Knowledge - Core" *(latest version)*

5.6 Discipline Specific

5.6.1 Describe responsibilities, impacts and hazards created by boat wakes.

Each operator is responsible for the boat's wake and can be held liable for damage or injuries to another vessel, people, docks, or shoreline caused by the wake. Operators should exercise caution when encountering the wakes of other vessels. Cross them at safe speeds and angles and alert passengers of potential dangers. Operators shall observe no wake zones and other regulations referencing speed and proximity to other vessels, structures and swim areas to avoid damage or injury. States may have specific regulations and rules regarding impacts and hazards created by boat wakes.

5.6.1 Sample Activity

1. In a tub of water using a toy boat, slosh the water around to show the boat's movement.

5.6.1 Sample Question

5.6.1-1. Why should boaters slow down while passing recreational fishing boats?

A) Motor noise may scare away the fish
B) The wake may cause injury or damage
C) Motor noise may disturb anglers
D) The wake may scare away the fish

5.6.1-2. When operating a boat near other boats or when entering a congested area, why should you watch your wake?

A) It may be used to estimate boat speed
B) It may cause personal injury or damage
C) It should not be more than three inches high
D) It can be used to judge clearance from other boats

5.0 Safe Boat Operation - Plus Power - *continued*

5.6.2 Describe arrival and departure procedures for docking and mooring, including:

- **safety considerations for operation in confined areas; and**
- **effects of environmental conditions (wind, current, seas).**

Significant vessel/property damage and injuries can result from docking and maneuvering of vessels in marinas and boat ramp areas, particularly in adverse weather conditions. Docking and maneuvering techniques, including the use of lines and fenders, vary depending on wind, current, location, degree of boat traffic, boat characteristics, size of boat and the skills/abilities of the boat operator. Operators should be proficient in close quarters operating skills and utilize lines, fenders and crew to safely dock and depart from marinas, boat ramps and moorings.

5.6.2 Sample Activity

1. Use model boat to show proper approach to a dock and the effects of wind and current.

5.6.2 Sample Question

5.6.2-1. Which of the following is recommended when docking your boat?

A) Put out fenders after you are secured to the dock
B) Use lines and cleats to help maneuver your boat
C) Remove all slack in your lines once you are tied up
D) Use full speed to maintain maneuverability

5.6.2-2. Which of the following is recommended when docking your boat?

A) Whenever possible, approach the dock with the wind and the current
B) Have your fenders and dock lines ready before you approach the dock
C) Have plenty of crew on hand to use hands and feet to fend off the dock
D) Only two dock lines are recommended – any more than that will get tangled

5.6.3 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 vessel 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 boat will swing around its anchor. When anchored, a boat may swing 360 degrees around the anchor. The water depth must be adequate for the vessel 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.

5.6.3 Sample Activity

1. Use a model anchor and place different sediments in a tray and show how it digs in.

5.6.3 Sample Question

5.6.3-1. For most anchoring situations, which is the best type of anchor line?

A) Floating polypropylene line
B) Three-strand twisted nylon
C) Natural hemp woven fiber
D) Double-braided Kevlar line

5.6.3-2. Which of the following should you do when anchoring?

A) Choose an anchorage that is next to other boats for company
B) Pick a reference point on shore to gauge if you are dragging
C) Anchor from the stern so you get breeze into the cockpit
D) Throw the anchor overhand to get it into shallow water

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.

6.2 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.

6.3 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

6.4 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 Power

6.1 through 6.4 - See "Basic Boating Knowledge - Core" *(latest version)*

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

7.3 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 capsize, 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

7.6 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 Power

7.1 through 7.6 - See "Basic Boating Knowledge - Core" *(latest version)*

Note: 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 provide assistance so far as they can do so without serious danger to their own vessel or the individuals on board their vessel. Assistance from other boaters can reduce the loss of life, injury or property damage resulting from boating accidents.

In any emergency situation, one of the first and most important steps is to ensure all aboard are wearing life jackets. After attending to the immediate emergency, a distress call should be made as soon as possible. (Also see Core 7.4.)

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

7.7 Discipline Specific

7.7.1 Describe common components of powerboat safety, including:

- **carbon monoxide dangers, sources, symptoms, and avoidance practices;**

Carbon monoxide (CO) causes the most nondrug poisoning deaths in the United States and has been identified as a serious problem on our nation's waters. Carbon monoxide is an odorless, colorless, tasteless gas that can be toxic in even small quantities. It is produced by engines, generators, grills and other equipment commonly used by boaters.

Symptoms include flu-like symptoms, such as headache, fatigue, and nausea. CO poisoning may be mistaken as sea-sickness.

Recreational boaters need to be aware of CO poisoning prevention practices such as regular boat inspections; the installation and maintenance of marine rated CO detectors in living spaces; heeding the warning alarm of the CO detector; the hazards of the 'station wagon effect' near the stern of the vessel; exhaust discharge from CO sources such as engines, generators, grills, and propane appliances; specific vessel design features that may allow for the accumulation of CO; and the danger of swimming or engaging in any activities (e.g., teak surfing) taking place near the exhaust of any vessel while it is in operation.

- **propeller safety;**

Powerboat propellers can inflict severe, devastating injuries. The boat operator and passengers may not recognize situations that may cause accidental contact with propellers. It is important for the operator to wear an engine cut-off device that will stop a powerboat if they are unexpectedly separated from the helm while underway. Stopping a boat is critical if the operator is ejected and prevents the "circle of death." The "circle of death" occurs when a boat continually circles around out of control, potentially striking people in the water.

Operators should make sure boat engines are turned off anytime people are in proximity of the propeller, such as when retrieving towed watersport participants, swimmers, or persons overboard. Use a ladder or re-boarding system at a safe distance from the propeller.

- **onboard fire-prevention and firefighting procedures;**

Everyone on the vessel should be familiar with the location and correct use of fire extinguishers. Extinguish a fire as quickly as possible to prevent a catastrophic event. Hands-on practice with fire extinguishers will increase your effectiveness in fighting a fire. The key to extinguish a fire is to eliminate one of the ingredients of the fire triangle: fuel, oxygen, or heat. (Also see 3.4.1.)

To put out a fire, remember PASS: Pull the pin; Aim at the base of the fire, Squeeze the handle, and Sweep the extinguisher along the base of the fire.

As soon as a fire is detected on board, turn off the engine and any system that may be contributing to the fire (electrical, fuel, etc.).

If you cannot put the fire out after expending all onboard fire extinguishers, prepare to abandon your vessel.

- **onboard flooding prevention and flooding procedures;**

Vessel owners and operators need to ensure the watertight integrity of their vessel, both underway and while moored or docked. All through-hull connections, especially for inboard engines, generators and exhausts need to be outfitted and maintained to prevent flooding. Through-hull and other fittings should be inspected regularly by marine professionals. If your vessel is taking on water, try to determine where the water is coming from. Shut down machinery that might be the cause, keep the boat afloat by beginning dewatering procedures, try to fix, plug or slow the leak. Close watertight doors and hatches, drains, and discharges that can siphon water into the boat if they sink below the water line.

- **precautions and procedures for groundings;**

According to the U.S. Coast Guard statistics, 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 to avoid groundings can reduce or eliminate fatalities, injuries, boat damage, damage to submerged objects and responses by public and private entities for rescue and salvage operations. It is important to be familiar with the waters where you boat. Know how to use appropriate navigation electronic equipment and carry local charts or maps.

If your boat is grounded, stop the engine. Before attempting to free your vessel, determine if your vessel is taking on water and assess for other damage. If applicable, lift the outdrive. If not taking on water, determine if you can safely free the vessel or need outside assistance.

- **precautions and procedures for towed water sports and wake sports;**

Due to the dynamic nature of towed water sports, boat operators must always consider the path of the towed participant, as the operator is in control. It is imperative that the operator maintain a safe distance from other boats or fixed objects so that the participant does not unintentionally come in contact with these hazards.

Tremendous forces can be exerted upon the towed participants while being towed. The vessel operator must travel at a speed which will not cause physical harm to the participants should they fall or encounter waves. The operator should be aware that the rate at which they turn can greatly increase these forces. They must be aware of the length of towline and the age of the participant and operate their vessel accordingly.

Towed watersport devices may have recommended tow speeds and participation capacities, as well as age and weight ranges. States have specific laws addressing life jacket wear, ski-flags, observers, distance from shore and other boats for safe operation, length of tow line, etc.

- **warnings against towing other watercraft; and**

You must decide the best course of action when asked to tow a disabled vessel or require a tow. Although it is customary among boaters to offer what assistance you can, you are not obligated to tow another vessel. As a Good Samaritan, assist as possible, but do not endanger your crew or vessel. Provide aid by contacting the Coast Guard and/or a professional tow service.

There are important factors that must be taken into consideration in making the determination to tow another vessel. The primary issue is the safety of all persons aboard both the potential tow vessel and the vessel seeking assistance. Operators must consider their skill, experience, and weather conditions. It may be in everyone's best interest to call for professional assistance (if available). Towing another vessel requires specialized training and proper equipment which is outside the scope of Basic Boating Knowledge.

- **the use of an engine/propulsion cut-off device.**

See section 3.4.4.

7.7.1 Sample Activities

1. Show an empty water bottle that has been "filled up" with carbon monoxide (CO) from a car or boat. *Note: Do not try to actually fill the bottle with CO. This exercise is only to make a point.* Ask the class to note what they see. (Nothing- CO is colorless and odorless).

2. Using a boat available in the parking lot, have students look at the propeller to illustrate the proximity of it to swimmers in the water behind the boat.

7.7.1 Sample Questions

7.7.1-1. What is a characteristic of carbon monoxide?

A) Smells like propane.
B) Has a light blue color.
C) Harmless to humans.
D) It is odorless.

7.7.1-2. What should an operator do to prevent propeller strike injuries?

A) Keep a proper lookout at all times.
B) Ensure everyone is wearing a life jacket.
C) Attach engine cut-off device.
D) Put boat in neutral gear during re-boarding.

8.0 Other Water Activities - Core

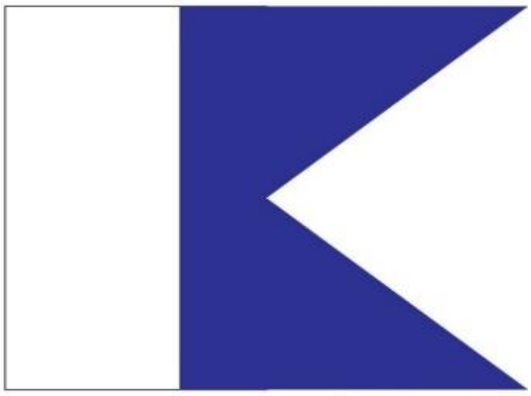
8.1 Describe how to recognize a diver down flag, the International Code Flag A, and legal requirements for operating a boat in the vicinity of snorkeling and scuba diving activities.

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 Power

8.1 through 8.2 - See "Basic Boating Knowledge - Core" *(latest version)*

8.3 Discipline Specific

8.3.1 Describe special accident/incident risks unique to water-jet propelled vessels including personal watercraft (PWC), such as:

Operators must understand the unique handling characteristics of water-jet propelled vessels and applicable regulations to operate safely and legally. Water-jet propelled watercraft are controlled differently from other boats, and each model has its unique characteristics. Operators of water-jet propelled vessels need to consult their owner's manual and understand the handling characteristics. The jet drive propulsion system is highly responsive to slight steering turns. This responsiveness may encourage operators to attempt dangerous maneuvers.

- **off throttle loss of steering;**

Some water-jet propelled craft lose the ability to steer when the operator releases the throttle. Newer technology may reduce off-throttle steering loss.

- **stopping including braking and reverse systems;**

A properly used lanyard cut-off switch stops the watercraft when an operator falls overboard, preventing the operator from being stranded or the watercraft running uncontrolled.

- **re-boarding a PWC; and**

Operators must be able to re-board the vessel after falling off. When a person falls off, the PWC may overturn and must be up-righted following the manufacturer's instructions to avoid damage. Generally, the easiest way to re-board a PWC from the water is from the stern. Re-boarding the PWC may be more difficult because of rough water or physical limitations. New operators should practice their skills with an experienced operator who can guide them on controlling the craft and making safe boating decisions.

When recovering a person from the water, the PWC should be powered off to prevent injuries.

- **safe loading procedures and capacity limits.**

PWC's are not required to have capacity plates. *(See Core 2.2 and 2.3.)* Operators should follow the manufactures instructions and state laws.

8.3.1 Sample Activities

1. Use videos or additional information to demonstrate PWC operation and safety.
2. Discuss that all power boat operators should know about and use engine cut-off devices, but it is a legal requirement for PWC use in most states.
3. Provide a PWC as a visual aide to discuss unique characteristics of water-jet propelled watercraft.
4. Show and discuss videos from the Personal Watercraft Industry Association.

8.3.1 Sample Questions

8.3.1-1. Which action is most likely to cause the loss of steering ability in a water-jet propelled watercraft?

A) Over-steering
B) Under-steering
C) Running at maximum throttle
D) Releasing the throttle control

8.3.1-2. Which action is most likely to cause the loss of steering ability in a water-jet propelled watercraft?

A) Over-steering
B) Under-steering
C) Running at maximum throttle
D) Releasing the throttle control

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 A Boater's Guide to the Federal Requirements for Recreational Boats and Safety Tips – 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.

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.)

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.

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.

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.

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 Power

9.1 through 9.2 - See “Basic Boating Knowledge - Core” *(latest version)*

Basic Boating Knowledge – Plus Water-Jet Propelled

Scope

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

Description: This supplement focuses on operational characteristics of two principle water-jet propelled vessels currently available to the recreational boating public; Personal Watercraft (PWC) and Jet Boats. Water Jet-Pack types of vessels such as Jet-Lev, Fly-Boards and Hover Boards are not addressed in this education standard.

1. Terminology - Plus Water-Jet Propelled

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

1.2 Discipline Specific

Definitions:
Impeller - The rotating mechanism in the pump that increases the pressure of the water; it serves the same function as a propeller of a boat.

Intake – The opening in the hull through which water is pulled into the impeller of the jet pump.

Intake grate – A device covering the intake intended to prevent foreign objects from damaging the jet pump.

Jet nozzle - Device used for directing the stream of water that propels and steers the PWC. (sometimes referred to as "*steering nozzle.")*

PWC (personal watercraft) - an inboard jet-propelled watercraft designed for a person to sit, stand, or kneel on rather than sit in.

Reverse bucket – A device used to redirect the stream of water to enable the PWC to move backward.

Wash - water pushed out from jet nozzle, can be at a high velocity

1.2.1 - See “Basic Boating Knowledge - Plus Power” *(latest version)*

Note: A personal watercraft (PWC) is exempt from many of the requirements that other boats must comply with: including display of capacity information, safe loading information, flotation requirements, electrical systems, fuel systems, and powered ventilation. The Operator must still comply applicable with state laws.

1.2.1 Sample Activity

1. Match definitions to words. Show and identify parts of a PWC.

1.2.1 Sample Question

1.2.1-1. What is an intake?

A) The opening in the hull through which water is pulled into the impeller of the jet.

B) Device used for directing the stream of water that propels and steers the PWC.

C) A device used to redirect the stream of water to enable the PWC to move backward.

D) Where the air enters the engine compartment.

2.0 Boat Types and Characteristics - Plus Water-Jet Propelled

2.1 through 2.4 - See "Basic Boating Knowledge - Core" *(latest version)*

2.5 Discipline Specific

2.5.1 - See "Basic Boating Knowledge - Plus Power" *(latest version)*

2.5.2 Describe how a water-jet propelled propulsion system works.

Water-jet propelled vessels use a high-powered waterjet to drive the vessel. The vessel uses a mechanical method to turn an impeller that pulls water from outside the vessel and forces it rapidly out. This action creates the thrust required to move the vessel forward.

Water-jet propelled vessels rely on thrust to steer. Without thrust to push the vessel's stern, it will not change direction. Some water-jet propelled vessels have enhanced steering and braking abilities to mitigate this hazard.

2.5.2 Sample Activity

1. Using a PWC on a trailer, point out the water-jet propulsion system and describe how it works.

2.5.2 Sample Question

2.5.2-1 Which action is most likely to cause the loss of steering ability in a water-jet propelled watercraft?

A) Over-steering
B) Under-steering
C) Running at maximum throttle
D) Releasing the throttle control

2.5.3 Describe how to determine acceptable loading, passenger and operator placement based on:

- **capacity and related information;**

When a capacity plate is not present on a jet-propelled vessel, passenger capacity is generally determined by the number of manufacturer installed seats, or as given in the vessel manual. States and other jurisdictions may have more specific requirements related to the capacity of PWCs.

- **passenger placement and special considerations such as occupant balance points; and**

Consideration must be taken into account for loading a water-jet propelled vessel operator and passengers onto the vessel (particularly PWC), where the vessel needs to be kept upright and stable while people are boarding. As with other vessels, three contact points is recommended for operators and passengers particularly on a PWC to prevent from falling overboard.

- **legal requirements for observer and seating placement.**

When participating in towed water sports, always have a seat available for the person being towed and a method to observe them behind you. Some states may require a person of a minimum age to serve as an observer. On a PWC this would require seating space for three people. Always consult the laws in your area of operation. It is recommended that there be no person or other obstruction between the operator and steering mechanism. On a PWC, the operator should sit securely on the seat and place both feet on the deck; some states require these conditions for both operators and passengers. Some states also have regulations concerning passenger age / height restrictions.

2.5.3 Sample Activity

1. Provide students with a manual for a PWC. Ask them to locate the capacity of the vessel in the manual.

2.5.3 Sample Question

2.5.3-1. When a capacity plate is not present how can you determine safe load limits?

A) There is no capacity limit if no plate is present
B) By under-steering and maintaining balance
C) By running at maximum throttle and maintaining balance
D) By reading the owner's manual

2.5.4 Describe start-up, shut down, operating controls and characteristics.

Every PWC and water jet propelled vessel is manufactured differently. Always consult the owner's manual for specific operating details. PWCs and most water jet propelled boats require that the engine cut-off switch be engaged before the engine will start. If the engine does not start, check to ensure the cut-off switch is in the run position.

Move the vessel to an area free from weeds, debris and deep enough to avoid sucking sand into the jet intake. Sucking debris into the jet could cause impeller damage, engine overheating, or injury to people behind the jet nozzle.

Be sure that there is no one behind the jet nozzle or near the intake at start-up. When the engine is started, water will immediately begin to be sucked in and exit the nozzle. This will also cause the vessel to move at a slow speed.

Use the owner's manual to ensure the operator knows where all vessel controls are located and understands how to use them. Approach the final destination slowly; a jet-propelled vessel requires throttle to steer unless equiped with off-throttle steering. Do not operate in shallow water. If needed, stop your vessel in shallow water and walk it to shore. Make sure to remove the engine cut-off switch link (lanyard) when done.

If so equipped, when operating a jet-propelled vessel in reverse, the handling of the vessel becomes sluggish. Shift a jet-propelled vessel into reverse when the forward speed is minimal.

2.5.4 Sample Activity

1. Show videos of PWCs in use including how thrust is produced by the engine.

2.5.4 Sample Question

2.5.4-1. What happens when the cut-off switch detaches?

A) The engine stops
B) The engine continues to run at idle
C) The PWC goes into reverse
D) The PWC will head to shore

3.0 Required Equipment - Plus Water-Jet Propelled

3.1 through 3.3 - See "Basic Boating Knowledge - Core" *(latest version)*

3.4 Discipline Specific

3.4.1 through 3.4.4 - See "Basic Boating Knowledge - Plus Power" *(latest version)*

4.0 Trip Planning and Preparation - Plus Water-Jet Propelled

4.1 through 4.10 - See "Basic Boating Knowledge - Core" *(latest version)*

4.11 Discipline Specific

4.11.1 through 4.11.4 - See "Basic Boating Knowledge - Plus Power" *(latest version)*

4.11.5 Describe the need for regular preventive maintenance.

Periodic maintenance checks and lubrication will keep your water-jet propelled watercraft in the safest and most efficient condition possible. Proper maintenance keeps the exhaust emissions and sound levels within regulated limits. Consult your vessel's owner's manual on how and when to perform recommended maintenance.

4.11.5 Sample Activity

1. Provide students with an owner's manual for a PWC. Ask students what things need to be checked yearly? What things need to be checked monthly? What things need to be checked before every outing?

4.11.5 Sample Question

4.11.5-1. What is something that can be done to make sure your PWC operates efficiently?

A) Change oil after every outing
B) Check the pin in the propeller to insure it is in good condition
C) Perform regular maintenance as outlined in the owner's manual
D) Check to make sure there are no rips in the seat fabric

4.11.5-2. Why should periodic maintenance be performed on your jet propelled watercraft?

A) It reduces the efficiency of the watercraft's engine.
B) It keeps your watercraft in a safe operating condition.
C) It's the best way to increase your watercraft's resell value.
D) It helps keep your contact information current at the dealership.

5.0 Safe Boat Operation - Water-Jet Propelled

5.1 through 5.5 - See "Basic Boating Knowledge - Core" *(latest version)*

5.6 Discipline Specific

5.6.1 through 5.6.3 See "Basic Boating Knowledge - Plus Power" *(latest version)*

5.6.4 Describe the hazards of jet intake and wash relative to safety risks to a person near a jet intake and exit, including focused stream of water to any swimmer or object, and zone of awareness.

The water-jet propelled vessel operator and passengers should avoid getting too close to the engine intake, or to the water-jet nozzle, as water-jet thrust under pressure can cause serious injuries or death. Debris, sand or pebbles could be sucked in and discharged at high pressure out the jet nozzle, potentially harming people nearby. Long hair, loose clothing, life jacket straps, and tow lines can also get sucked into the intake and cause injury to the person or damage to the jet drive. Operators need to be aware of persons and objects around their vessel and near the jet intake. Turn off the vessel and detach engine cut-off switch link when near people or objects in the water. Before attempting to remove debris caught in the intake, turn the engine off and remove the engine cut-off switch link. *Also reference 2.5.4 above.*

5.6.4 Sample Activities

1. Have students go through several scenarios to outline the action they would take if: a passenger falls overboard; they need to collect a tow rope; what to do if debris gets stuck in their jet drive system.
2. Using a PWC on a trailer, point out the water-jet propulsion system and describe how it works and explain how to clear debris from the intake.

5.6.4 Sample Question

5.6.4-1. What should an operator of a PWC do if a passenger falls off the PWC?

A) Let go of the throttle and turn off the vessel
B) Turn sharply towards the person in the water
C) Keep throttle engaged
D) Keep engine on while passenger reboards the PWC

5.6.4-2. What should be done before attempting to remove debris caught in the intake?

A) Contact law enforcement and report a boating incident
B) Pry off the engine intake cover and rinse it with fresh water
C) While the engine is idling, use your hand to identfy the debris
D) Turn the engine off and remove the engine cut-off switch link

5.6.5 Describe common practices for docking, mooring and beaching a water-jet propelled watercraft.

All safe docking, mooring and beaching practices apply to water jet propelled vessels. Keep in mind, a minimum amount of forward water-jet thrust is always generated when the engine is idling, an important consideration when departing from the dock and returning to the dock. When departing the dock, ensure you have room to maneuver. A water-jet propelled vessel needs to have some amount of throttle applied to enable steering. Refer to your vessels owner's manual for use of off-throttle steering, braking, or reverse systems that may be utilized on your vessel to help with docking procedures.

Water-jet propelled vessels should not be operated in shallow water to avoid damage to the drive system from debris sucked up into the system and to avoid damaging the environment. To beach a vessel, the vessel should be turned off well away from the shore, and walked in to beach the vessel.

5.6.5 Sample Activity

1. Have students pretend they are loaning their prized PWC to a friend. Discus what they would tell their friend about docking the PWC to ensure this is done correctly, safely, and so they remain friends.

5.6.5 Sample Question

5.6.5 Why should you stop your PWC in 3' deep water (or deeper) and walk it to the beach?

A) To avoid splashing the people on the beach
B) To avoid sucking debris into the impeller and damaging the engine
C) To show off your swimming skills
D) To protect the hull of the PWC from scrapes

5.6.6 Describe water-jet propelled watercraft operational characteristics, including:

- **slow (idle speed) operation and maneuvering;**

Apply controlled thrust to maintain proper control and maneuverability of vessel. Pulsing the throttle assists with turning at low speeds. Check owner's manual for information on any off-throttle steering capabilities if so equipped.

- **braking;**

Braking capabilities can vary widely in different vessels. Braking occurs when thrust is redirected or mechanically blocked when placing the vessel in reverse. Check the vessels owner's manual to determine if your vessel has braking capabilities. PWCs may go a long distance before coming to a stop, so operators need to be aware of this potential hazard. When braking, make sure no one is traveling directly behind the vessel.

- **reverse;**

Water-jet propelled vessels are normally very limited in reverse. If so equipped, when operating a jet-propelled vessel in reverse, the handling of the vessel becomes sluggish. Operators should shift into reverse only when the forward speed is minimal. Refer to your owner's manual to learn more about your vessels capabilities in reverse.

- **neutral;**

Water-jet propelled vessels normally do not have neutral, however newer models may have this feature. Refer to your owner's manual to see if your vessel is equipped with a neutral feature and how this feature works. Most vessels operate at "idle speed" rather than neutral. *Also see 5.6.4.*

- **constant motion when engine is running (transmission in neutral);**

Water-jet propelled vessels will be in motion (forward or reverse) as soon as the engine is turned on, there may not be a neutral operation for the vessel. Operators need to be aware of this characteristic of water-jet engines when operating. *Also see 5.6.4.*

- **stopping the boat's motion (station keeping);**

Water-jet propelled vessels normally do not have neutral operation setting and may not be equipped with neutral, brakes, reverse, or off-throttle steering. Check your owner's manual to see if your vessel is equipped with any of these features. In the absence of these features, to hold station a series of short thrusts of throttle may be necessary. Operators should be aware of their vessel's limitations in stopping abilities and the ability to hold station and operate their vessel accordingly. *Also see 5.6.4.*

- **operation in shallow water (maintain manufacturer's recommended minimum water depth);**

Do not operate in shallow water. If needed, walk your vessel a safe distance to and from the shore. *Also see 2.5.4.*

- **boarding and disembarking boat safely;**

Because of the hazards of the impeller and jet wash, vessels should be turned off and the engine cut-off link detached when boarding or disembarking from the vessel. In addition, PWCs may be difficult for passengers to board when not docked or moored. Reboarding can be a strenuous activity. A suitable method of reboarding should be provided, or PWC operators and passengers should practice reboarding to ensure they can be successful in deep water. *Also see 2.5.3.*

- **use of retractable rear step and stowage;**

Some PWC are equipped with a boarding ladder to assist passengers in boarding a PWC from the water. Consult the PWC for specific operating instructions. To avoid serious injury, when using the boarding ladder, the PWC engine should be turned off and the engine cut-off switch link removed to prevent accidental starting.

- **high speed operational control issues;**

Operators of PWC and water jet propelled vessels must take into account the unique handling characteristics of these vessels at high speed. Operators must understand that these vessels do not have brakes, need throttle to steer, and may require a long distance to stop.

- **dangers of operating beyond skill and ability of operator;**

PWC and water jet propelled vessels are generally high-performance vessels. Given that they have different handling characteristics than traditional boats, inexperienced operators can easily injure themselves or others without the proper handling experience. Operators should gain experience at slow speeds and controlled conditions before attempting advanced maneuvers or engaging in towed watersports. Operating a PWC beyond one's skill or ability may result in property damage, injury, or death.

- **weight capacity passenger overloading; and**

The PWC should have proper seating available at all times for all persons onboard and those being towed. See owner’s manual for the maximum number of persons to comply with capacity limits. *Also see 2.5.3.*

- **understanding weather conditions and changing water effects for safe operations while underway.**

Operators should pay continuous attention to water depth levels if operating in areas with fluctuating water levels. If caught in stormy weather, PWC operator's should avoid taking waves on the vessel's beam and should take waves at a 90-degree angle (directly at the bow) to avoid capsizing. The operator should keep the PWC in forward motion and avoid returning to idle speed.

5.6.6 Sample Activity

1. Show videos that illustrate the different operating characteristics and vessels with different mechanisms that assist in maneuverability, such as off-throttle steering or braking equipment.

5.6.6 Sample Question

5.6.6-1. If encountering large wakes, what should a PWC operator do?

A) Take the wake along the PWC's beam
B) Take the wake along the PWC's stern
C) Take the wake perpendicular to the bow
D) Come to a complete stop

6.0 Navigation - Plus Water-Jet Propelled

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

7.0 Emergency Preparedness and Response - Plus Water-Jet Propelled

7.1 through 7.6 - See "Basic Boating Knowledge - Core" *(latest version)*

7.7 Discipline Specific

7.7.1 - See "Basic Boating Knowledge - Plus Power" *(latest version)*

7.7.2 Describe how to prevent capsizing including these factors:

- **stern wake;**
- **environmental conditions (water state and wind);**
- **turning; and**
- **load versus thrust.**

Capsizing is common for PWCs and this hazard can be mitigated by following some safety practices. A PWC's stern wake can swamp the foot well, adding extra weight to the PWC making it unstable and prone to capsizing. To avoid this, make gradual slow-downs instead of abrupt slow-downs. In addition, waves and wind can cause a PWC to also become unstable. Plan to encounter waves at a 90-degree angle to mitigate making the vessel unstable. Abrupt turns can cause the vessel to become unstable, making it difficult for passengers to hold on. Avoid abrupt turns and communicate with passengers about changes in direction.

Operational characteristics may be different when carrying passengers or towing individuals.

7.7.2 Sample Activity

1. Show video footage of PWC capsize and recovery.

7.7.2 Sample Question

7.7.2-1. What action of a PWC operator may cause the vessel to capsize?

A) Gradually slowing down

B) Encountering large waves/wakes perpendicular to the bow of the PWC

C) Making sharp turns without slowing down or informing your passengers

D) Making gradual turns and inform passengers of changes in speed or direction

7.7.3 Describe the process for righting a capsized personal watercraft.

1. PWCs will have a decal on the stern of the vessel to illustrate the correct process for righting a capsized PWC. If the placard has been removed or worn off, check with your owner's manual. Failure to right the PWC correctly may cause water to enter the intake and cause the PWC to fail to restart and possibly damage the engine. When the watercraft is capsized, do not attempt to restart the engine.

7.7.2 Sample Activity

1. Show the decal on the back of PWC.

7.7.2 Sample Question

7.7.2-1. What information may be found on a PWC's stern?

A) A decal on how to correctly right the craft if it capsizes
B) A decal indicating the number of people you can safely tow
C) A decal with the type of engine oil required
D) A decal listing the required safety equipment

8.0 Other Water Activities - Plus Water-Jet Propelled

8.1 through 8.2 - See “Basic Boating Knowledge - Core” *(latest version)*

8.3 Discipline Specific

8.3.1 - See “Basic Boating Knowledge - Plus Power” *(latest version)*

9.0 Environmental Concerns - Plus Water-Jet Propelled

9.1 through 9.3 - See “Basic Boating Knowledge - Core” *(latest version)*

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 are 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-1 On-Water Power Standard (American National Standard) and the separate Technical Support Document supporting this standard are available for free download at the American Boat & Yacht Council (ABYC) https://abycinc.org/store/ListProducts.aspx?catid=&ftr=edu%201.

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, America 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 National Boating Education Standard. Course providers seeking NASBLA review and course approval must first complete and submit the application package electronically including: the completed application, course materials, chapter assessments, final exam (minimum of two versions), signed Terms and Conditions document, all completed appendices, and application fee. 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
Advanced Education	*NBSAC NASBLA*	Any course of instruction that goes beyond a basic boating safety course that is NASBLA approved.
ANSI	*ANSI*	American Nation Standards Institute
ANSI Essential Requirements	*ANSI ESP*	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.
Approved Scope of Activity	*ANSI NASBLA*	"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."
conformity assessment	*ANSI*	Methods of evaluating whether products, processes, systems, services and personnel comply with a standard.
consensus	*ANSI*	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
consensus	*ESP*	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.
consensus body	*ANSI* *ESP*	The group that approves the content of a Standard and whose vote demonstrates evidence of consensus.
course	*NASBLA*	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.
course	*NOWS*	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.
Course Provider	*NASBLA*	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.
curriculum	*NOWS*	A high level plan or overarching framework for all the experiences individuals will engage in as part of a 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.
ESP	*NASBLA*	Means the National Boating Education Standards Panel. See "Consensus body."
Executive Board	*ESP*	The Executive Board of the National Association of State Boating Law Administrators.
experiential learning	*NOWS*	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.
government unique standards	*Federal*	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
in good standing	*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.
Incorporation by Reference	*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.
instructional design	*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.
in-writing	*ANSI*	Communication sent by either mail or electronic mail (email).
knowledge	*ESP*	Cognitive outcome of the learning process. Usually tested by verbal or written questions.
lesson	*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.
meeting	*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.
National Technology Transfer and Advancement Act (NTTAA)	*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
non-consensus standard	*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
on-water education	*NBSAC NASBLA*	Any course of instruction that is boat based for skills development, regardless of the level of the course content
Panel	*ESP*	Means the National Boating Education Standards Panel. See “Consensus body.”
performance standard	*ANSI*	states requirements in terms of required results with criteria for verifying compliance but without stating the methods for achieving required results
prescriptive standard	*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
power-driven vessel	*Nav Rules*	Any vessel propelled by machinery.
resolved	*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.
restricted visibility	*Nav Rules*	Any condition in which visibility is restricted by fog, mist, falling snow, heavy rainstorms, sandstorms, or any other similar causes.
sailing vessel	*Nav Rules*	Any vessel under sail provided that propelling machinery, if fitted, is not used.
skills	*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.
small boat	*ESP*	In reference to the standards, a 'small boat' includes all boats less than 26 feet in length.
Standard	*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.
standard	*NOWS*	A definition of the qualities or characteristics used to judge desired level of acceptability.
Standard	*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.
standards development	*ESP*	The overall process and procedures associated with reviewing, revising, reaffirming, withdrawing, and approving standards.

TERM	*Source*	Definition
Standards Panel	*ESP*	Means the National Boating Education Standards Panel. See “Consensus body.”
standardization	*ANSI*	A broad range of activities and ideas – from the actual development of a standard to its promulgation, acceptance and implementation.
state	*NASBLA*	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.
substantive change	*ANSI*	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.
syllabus	*NOWS*	Identifies the specific topics that will be examined, or the experiences that will be provided, during a particular course.
teaching	*NOWS*	To show or explain how to do something where the focus is to develop or transfer knowledge and understanding.
Technical Report	*ANSI* *ESP*	A document registered with ANSI which informs a user on technical considerations for use of a Standard.
template	*NOWS*	The specific form, structure, or framework used to prescribe how something is configured, organized or designed.
training	*NOWS*	Learning experiences where the priority focus is to develop or transfer skills and behaviors through instruction and practice.
TSD	*NOWS*	Technical Support Document
unresolved	*ANSI*	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.
underway	*Nav Rules*	A vessel is not at anchor, or made fast to the shore, or aground.
vessel	*Nav Rules*	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
voluntary consensus body	*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.
voluntary consensus standards	*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.**] **

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§ 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.*

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†† 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.

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 Power.

ANSI/CAN/UL Standard for Personal Flotation Devices

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

Appendix – The Standards

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

ANSI/NASBLA 103-2022:
Basic Boating Knowledge – Plus Power

ANSI/NASBLA 103.1-2022: Supplement –
Basic Boating Knowledge – Plus Water-Jet Propelled

This National Boating Education Standard, as overseen by the National Boating Education Standards Panel (ESP), is the product of voluntary consensus of representatives of federal and state government, industry, nonprofit organizations, and public sectors. It is intended as a guide to aid the boating community in the design and implementation of boating courses and boater education.

ESP will review this standard at least every five years, at which time it may be reaffirmed, revised, or withdrawn. ESP welcomes written comments on the Standard during open public comment periods via http://esp.nasbla.org/esp/. Requests for interpretation may be submitted at any time via esp@nasbla.org.

American National Standard

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

Produced under a grant from the Sport Fish Restoration and Boating Trust Fund, administered by the U.S. Coast Guard.

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The list above represents the membership at the time the draft standard was presented for public review in 2019.

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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 in actions 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.

Contents Page

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.

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American National Standard

ANSI/NASBLA 103-2022: Basic Boating Knowledge – Plus Power

Produced under a grant from the Sport Fish Restoration and Boating Trust Fund, administered by the U.S. Coast Guard.

American National Standard (ANS)

Approval of an American National Standard requires review by American National Standards Institute (ANSI) that the requirements for due process, consensus, and other criteria for approval have been met by the standards developer. Consensus is established when, in the judgment of the ANSI Board of Standards Review (BSR), substantial agreement has been reached by directly and materially affected interests. Substantial agreement means much more than a simple majority, but not necessarily unanimity. Consensus requires that all views and objections be considered, and that a concerted effort be made towards their resolution. The use of American National Standards is completely voluntary; their existence does not in any respect preclude anyone, whether that person has approved the standards or not, from manufacturing, marketing, purchasing, or using products, processes, or procedures not conforming to the standards. The American National Standards Institute does not develop standards and will in no circumstances give an interpretation of any American National Standard. Moreover, no person shall have the right or authority to issue an interpretation of an American National Standard in the name of the American National Standards Institute. Requests for interpretations should be addressed to the secretariat or sponsor whose name appears on the title page of this standard.

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Published by
National Association of State Boating Law Administrators
1020 Monarch Street, Suite 200, Lexington, KY 40513

National Boating Education Standards Panel

Jeffrey Wheeler, Chair

Paul Alber	Kim Jackson	Harry Munns
Bob Brandenstein	Ernie Lentz	Amanda Perez
Bob Beck	Eric Lundin	Tim Spice
Carolyn Belmore	Joseph McCullough	Walt Taylor
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REQUEST FOR APPEALS

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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 Power

Scope

This discipline-specific "Plus" standard, when combined with the "ANSI/NASBLA 100-2022: Basic Boating Knowledge – Core" standard, establishes minimum essential knowledge to reduce recreational powerboating risk factors. The combined standards are to be used for development of basic boating education courses and student assessment for power driven vessels. This standard applies to basic knowledge for recreational powerboating 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 Define terms specific to the vessel and related equipment.

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 the importance of complying with recommended horsepower ratings.

3.0 Required Equipment

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

3.4 Discipline Specific

3.4.1 Describe fire extinguishers as legally required including:

- carriage requirements;
- types needed for different types of fires;
- importance of placing in “readily accessible” locations; and
- need for following manufacturer’s recommendations for inspection and maintenance.

3.4.2 Describe the requirement, purpose and maintenance of a back-fire flame control device.

3.4.3 Describe the purpose, requirements, and maintenance of ventilation systems.

3.4.4. Describe the requirement, importance, types and proper wear, and use and maintenance of engine/propulsion cut-off devices.

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 why regular inspections and maintenance of a powerboat, its components, and systems are important.

4.11.2 Identify common vessel points of failure including through-hull fittings, motor, electrical system, fuel system, and operation of engine/propulsion cut-off device if installed.

4.11.3 Describe powerboat trailer types; trailer towing preparation and procedures; vehicle and trailer handling factors and effects; and powerboat launch and retrieving preparation and procedures.

4.11.4 Describe proper procedures and safety concerns including ventilation when fueling a powerboat (gasoline, diesel).

5.0 Safe Boat Operation

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

5.6 Discipline Specific

5.6.1 Describe responsibilities, impacts and hazards created by boat wakes.

5.6.2 Describe arrival and departure procedures for docking and mooring, including:

- safety considerations for operation in confined areas; and
- effects of environmental conditions (wind, current, seas).

5.6.3 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)*

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 common components of powerboat safety, including:

- carbon monoxide dangers, sources, symptoms, and avoidance practices;
- propeller safety;
- onboard fire-prevention and firefighting procedures;
- onboard flooding prevention and flooding procedures;
- precautions and procedures for groundings;
- precautions and procedures for towed water sports and wake sports; and
- warnings against towing other watercraft; and
- the use of an engine/propulsion cut-off device.

8.0 Other Water Activities

8.1 through 8.2 - See “Basic Boating Knowledge - Core” *(latest version)*

8.3 Discipline Specific

8.3.1 Describe special accident/incident risks unique to water-jet propelled vessels including personal watercraft (PWC), such as:

- off throttle loss of steering;
- stopping including braking and reverse systems;
- re-boarding a PWC; and
- safe loading procedures and capacity limits.

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 Power

ANSI/NASBLA 103-2022: Basic Boating Knowledge – Plus Power 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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American National Standard

ANSI/NASBLA 103.1-2022: Supplement - Basic Boating Knowledge – Plus Water-Jet Propelled

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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
Supplement - Basic Boating Knowledge – Plus Water-Jet Propelled

Scope

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

Description: *This supplement focuses on operational characteristics of two principle water-jet propelled vessels currently available to the recreational boating public; Personal Watercraft (PWC) and Jet Boats. Water Jet-Pack types of vessels such as Jet- Lev, Fly-Boards and Hover Boards are not addressed in this education standard.*

1. Terminology

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

1.2 Discipline Specific

1.2.1 - See “Basic Boating Knowledge - Plus Power” *(latest version)*

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 - See “Basic Boating Knowledge - Plus Power” *(latest version)*

2.5.2 Describe how a water-jet propelled propulsion system works.

2.5.3 Describe how to determine acceptable loading, passenger and operator placement based on:

- capacity and related information;
- passenger placement and special considerations such as occupant balance points; and
- legal requirements for observer and seating placement.

2.5.4 Describe start-up, shut down, operating controls and characteristics.

3.0 Required Equipment

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

3.4 Discipline Specific

3.4.1 through 3.4.4 - See “Basic Boating Knowledge - Plus Power” *(latest version)*

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 through 4.11.4 - See “Basic Boating Knowledge - Plus Power” *(latest version)*

4.11.5 Describe the need for regular preventative maintenance.

5.0 Safe Boat Operation

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

5.6 Discipline Specific

5.6.1 through 5.6.3 See “Basic Boating Knowledge - Plus Power” *(latest version)*

5.6.4 Describe the hazards of jet intake and wash relative to safety risks to a person near a jet intake and exit, including focused stream of water to any swimmer or object, and zone of awareness.

5.6.5 Describe common practices for docking, mooring and beaching a water-jet propelled watercraft.

5.6.6 Describe water-jet propelled watercraft operational characteristics, including:

- slow (idle speed) operation and maneuvering;
- braking;
- reverse;
- neutral;
- constant motion when engine is running (transmission in neutral);
- stopping the boat's motion (station keeping);
- operation in shallow water (maintain manufacturer's recommended minimum water depth);
- boarding and disembarking boat safely;
- use of retractable rear step and stowage;
- high speed operational control issues;
- dangers of operating beyond skill and ability of operator;
- weight capacity passenger overloading; and
- understanding weather conditions and changing water effects for safe operations while underway.

6.0 Navigation

6.1 through 6.4 - See "Basic Boating Knowledge - Core" *(latest version)*

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 - See "Basic Boating Knowledge - Plus Power" *(latest version)*

7.7.2 Describe how to prevent capsizing including these factors:

- stern wake;
- environmental conditions (water state and wind);
- turning; and
- load versus thrust.

7.7.3 Describe the process for righting a capsized personal watercraft.

8.0 Other Water Activities

8.1 through 8.2 - See “Basic Boating Knowledge - Core” *(latest version)*

8.3 Discipline Specific

8.3.1 - See “Basic Boating Knowledge - Plus Power” *(latest version)*

9.0 Environmental Concerns

9.1 through 9.2 - See “Basic Boating Knowledge - Core” *(latest version)*

####

Origin and Development of *Basic Boating Knowledge – Plus Water-Jet Propelled*

ANSI/NASBLA 100-2022: Supplement - Basic Boating Knowledge – Plus Water-Jet Propelled 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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ANSI/NASBLA 103.1-2022: Supplement - Basic Boating Knowledge – Plus Water-Jet Propelled (Incorporates accepted and accepted in principle comments from review periods ending 12/5/2019, 9/29/2020, 3/1/2021, and 6/21/2021.). Accepted by Panel via Consensus Ballot – 6/21/21. ANSI recognized as American National Standard – 2/10/2022.