

NPS Reference Manual 50B Occupational Safety and Health Program

Chapter 42 – Watercraft Safety

Approval for inclusion in Reference Manual 50B:

Signature: _____

Title: Associate Director, Visitor and Resource Protection

Table of Contents

42.1 Introduction	6
42.2 Scope	6
42.3 References	6
42.4 Definitions	6
42.5 Responsibilities	8
42.5.1 Washington Area Support Office (WASO) Associate Director, Visitor and Resource Protection (ADVPRP)	8
42.5.2 Regional Directors	8
42.5.3 National Boating Officer (NBO)	8
42.5.4 Regional (or equivalent) Boating Officer (RBO)	9
42.5.5 National Boating Safety Council (NBSC)	9
42.5.6 Superintendent	9
42.5.7 Park Boating Officer (PBO)	10
42.5.8 Operator-in-Charge (OIC)	10
42.5.9 Boat Operator	11
42.5.10 Crewmember	11
42.5.11 Persons Other than Crew	11
42.6 Program Elements	11
42.6.1 Distribution	11
42.6.2 Watercraft Safety Chapter Review	11
42.6.3 Waivers and Emergency Action	12
42.6.4 Other Requirements	12
42.7 General Boat Policies	12
42.7.1 Official Use	12
42.7.2 Transportation of Passengers	12
42.7.3 Boat Command Designation	13
42.7.4 Boat Control	13
42.7.5 Personnel Authorized to Operate NPS Boats	13
42.7.6 Seamanship and Conduct	13
42.7.7 Alcohol and Drugs	13
42.7.8 Smoking Restrictions	14

42.7.9 Additional NPS Policies	14
42.8 Qualification, Evaluation, and Designation	14
42.8.1 Introduction.....	14
42.8.2 Required Credentials and Training for Boat Operators	14
42.8.3 Personnel Record of Qualifications (ROQ).....	14
42.8.4 Training for Crewmembers	15
42.8.5 CPR and First Aid Training.....	15
42.8.6 Documentation	15
42.8.7 Currency Requirements.....	15
42.8.8 Delinquency.....	15
42.8.9 Boat Operator Currency Responsibilities.....	15
42.9 Safe Staffing Requirements	15
42.9.1 General.....	15
42.9.2 Succession to Command.....	15
42.9.3 Minimum Safe Staffing Levels	16
42.9.4 Dive Operations.....	16
42.9.5 Solo Operations.....	16
42.10 Boat Operating Procedures	16
42.10.1 Prior to Departure.....	16
42.10.2 Start-Up Procedures.....	19
42.10.3 Underway Operations.....	20
42.10.4 Shut-Down Procedures	20
42.10.5 Boat Clean-Up Procedures.....	20
42.10.6 Float Plan Delinquency.....	20
42.11 Boat Crew Duties and Watch Standing Performance	21
42.11.1 Crew Duties.....	21
42.11.2 Watch Standing	21
42.12 Required Minimum Equipment.....	22
42.12.1 Emergency Equipment	22
42.12.2 Communications and Navigation Equipment.....	23
42.12.3 Other Personal Protective Equipment	23
42.13 Emergency Procedures	23

42.13.1 Responsibility	23
42.13.2 Emergency Drills	23
42.13.3 Emergency Communications.....	23
42.13.4 Emergency Procedures	24
42.14 Accident and Incident Reporting and Investigation	24
42.14.1 Accident and Incident Reporting.....	24
42.14.2 Serious Accident and Incident Investigations	24
42.14.3 Major Accident and Incident Investigations	24
42.14.4 Minor Accident and Incident Investigations	25
42.14.5 Findings of Accident and Incident Investigations	25
42.14.6 Near Misses	25
42.15 Hazardous Materials/Waste Management and Pollution Prevention Control	25
42.15.1 Environmental Compliance.....	25
42.15.2 Hazardous Materials.....	25
42.15.3 Pollution Prevention Control.....	26
42.15.4 Marine Sanitation Devices.....	26
42.16 Boat Inspection Requirements	26
42.16.1 General.....	26
42.16.2 Responsibility	26
42.16.3 Inspection Procedures for Vessels under 40 Feet in Length including Trailers	27
42.16.4 Inspection Procedures for Vessels 40 Feet and Greater in Length	27
42.16.5 Canoes, Kayaks, Sailboats, and Rowboats.....	27
42.17 Boat Acquisitions, Alterations, and Repairs	27
42.17.1 Boat Acquisition.....	27
42.17.2 Marine Surveys	27
42.17.3 Alteration and Repair of Boats.....	28
42.17.4 Stability Standard	28
42.18 NPS Boat Visual Identification and Registration	28
42.18.1 General Requirements	28
42.18.2 Responsibility	28
42.18.3 Visual Identification	28
42.18.4 Exemptions.....	30

42.18.5 Flags.....	30
42.19 Maintenance	30
42.19.1 General.....	30
42.19.2 Types of Maintenance	30
42.19.3 Maintenance Record Keeping	31
42.19.4 Financial Support for Boat Maintenance.....	31
42.20 Weight Lifting Equipment Certification and Maintenance	31
42.20.1 General.....	31
42.20.2 Overhauls	32
42.20.3 New or Altered Structures and Equipment	32
42.20.4 Safety	32
42.21 Rigging Guidance	33
42.21.1 General.....	33
42.21.2 Inspection and Use.....	34
42.21.3 Wire Rope	34
42.21.4 Chain	35
42.21.5 Natural and Synthetic Rope.....	36
42.21.6 Slings.....	36
42.21.7 Rigging Hardware.....	36
42.22 Technical Appendices	38
Appendix 42.A: Roles and Responsibilities Chart.....	39
Appendix 42.B: Example Vessel Safety Briefing Checklist.....	40

42.1 Introduction

The National Park Service (NPS) relies on watercraft for a variety of essential operations, including natural resource management, law enforcement, facilities maintenance, and emergency response. Ensuring the safety of NPS personnel, volunteers, and passengers while operating watercraft is paramount to the success of these missions. This Watercraft Safety Chapter establishes the minimum standards and operational procedures necessary to promote safe, efficient, and responsible boat usage across all NPS units and programs.

By outlining key responsibilities, training requirements, emergency protocols, and equipment standards, this Chapter aims to enhance situational awareness and mitigate risks associated with watercraft operations. While this policy provides a foundation for safe boating practices, individual parks are to develop supplemental procedures tailored to their specific operational needs. Adherence to these protocols helps ensure not only the safety of NPS personnel but also the protection of park resources and visitors who utilize our waterways.

42.2 Scope

This Watercraft Safety Chapter establishes the minimum standards and procedures for the operation and management of NPS boats across parks and programs. The purpose of this Chapter is to offer guidance, enhance safety, and promote operational readiness by establishing general operating standards and procedures for all boats operated under NPS authority. While it sets essential protocols, it does not aim to address every possible situation or rule of safety.

All operators of NPS boats, along with non-NPS boats operated by employees and volunteers in an official capacity, are required to comply with the provisions set forth in this Chapter.

Additionally, each park is required to develop a Park Boating Supplement (PBS) to enhance this Chapter; however, the PBS cannot lower the minimum standards established herein or by Department of Interior (DOI) and NPS policies.

42.3 References

Detailed information for implementation is contained in the following references.

1. DOI Departmental Chapter 485 Chapter 22
2. DOI Motor Vehicle Handbook
3. 33 Code of Federal Regulations (CFR)
4. 46 CFR

42.4 Definitions

This section includes a list of words used in this Chapter to denote mandatory or permissive actions relevant to watercraft safety programs as well as other technical terms.

Name	Definition
Boat Operations Manual (BOM)	A document for an individual NPS boat, containing instructions, procedures (emergency and other), regulations, and guidelines derived from the boat's Annual Risk Assessment.
Booms and Frames	A structural member used for lifting, transferring, or supporting heavy weights. The lower part of the boom or frame is supported by a bracket or step, which allows the boom or frame to pivot while transferring loads to structure. Rigging mounted on ships structure supports booms and frames.
Crane and Davit	A machinery arrangement or self-contained structure, with associated reeving suitable for lifting loads through several dimensions of motion.
"May"	The procedure or standard is optional.
"Must"	The procedure or standard is mandatory.
Park Boating Supplement (PBS)	A park drafted document that contains guidelines and procedures for boat safety and operations specific to that park unit.
Safe Working Load (SWL)	This is the heaviest weight that an apparatus and its parts can safely handle together. The safe working load (SWL) of the apparatus can be restricted by the maximum rating of any component used with it.
"Should"	The procedure or standard is recommended.
Static Load Test	A load test conducted on newly installed, structurally repaired (e.g., by welding) or structurally overhauled (e.g., replacement of major structural sections) systems where a test weight equivalent to 125% of SWL is applied as a force by external means and held for not less than 5 minutes, to demonstrate structural adequacy of the equipment and foundation. No part of the equipment, fittings, and structure must take a permanent set, nor must degradation of any operating or control function occur as a result of the test.
Watercraft	As per DM 485 Ch 22 the definition: Boats and ships, collectively, that are propelled manually, by wind, or machinery (i.e., airboats, sailboats, inflatable rafts and other vessels), excluding seaplanes.
Winch	A stationary motor-driven or hand-powered machine used for hoisting or hauling, having a drum around which is wound a man-made rope, wire rope, or chain attached to the load being moved.

42.5 Responsibilities

This section addresses the responsibilities and requirements for all watercraft safety program related roles. A quick reference chart summarizing these responsibilities and requirements can be found in Appendix 42.A.

42.5.1 Washington Area Support Office (WASO) Associate Director, Visitor and Resource Protection (ADV RP)

The WASO ADV RP is responsible for:

1. Ensuring an NPS representative(s) is appointed to the DOI Watercraft Safety Work group.
2. Providing oversight and guidance regarding the NPS National Boating Program.

42.5.2 Regional Directors

Regional Directors are responsible for:

1. Administration of the region's Boating Program as specified in this policy.
2. Ensuring, at a minimum, the position of Regional Boating Officer (RBO) is assigned and will make reasonable efforts to identify and fill additional positions within the program, as they may deem necessary.
3. Striving to identify funding and other resources to develop and maintain the Boating Program for the region.
4. Designating a representative to participate in all NPS boat accident investigations.
5. Ensuring parks have the park-specific Boating Supplement, superintendent engagement, shared risk decision making, and vessel alignment to meet mission requirements.

42.5.3 National Boating Officer (NBO)

The NBO is the functional head and communications focal point of the National Boating Program. The NBO will have substantial boating experience and Motorboat Operator Instructor Course Certification. This may be assigned as a collateral duty at the ADV RP's discretion. The NBO is responsible for:

1. Managing operator training program development (in conjunction with the DOI Watercraft Safety Work group).
2. Inspection program criteria and promulgation.
3. Digital content development and maintenance.
4. Developing and maintaining the program's organizational and communication structure.
5. Overseeing NPS national involvement in the Motorboat Operator Certification Course (MOCC) program and is the NPS representative on the DOI Watercraft Safety Work group, a subgroup to the DOI Safety and Health Council.
6. Approving experienced NPS MOICC operators to become Lead MOICC Instructors.
7. Recommending national boat safety policy, plans, and projects required to implement and sustain a national boating safety program via the National Boating Safety Council (NBSC 42.5.5).
8. Working with the appropriate national level offices on boating issues.

42.5.4 Regional (or equivalent) Boating Officer (RBO)

The RBO is the functional head and communications focal point of the Regional Boating Program working in coordination with the Regional Safety Manager (or equivalent). The RBO will have substantial boating experience and Motorboat Operator Instructor Course Certification. This may be assigned as a collateral duty (park or region-based) at the Regional Director's discretion. The RBO is responsible for:

1. Assisting in the development of regional boat directives, as necessary.
2. Providing guidance and issuing procedures to ensure a safe boating program to support NPS program needs.
3. Maintaining a boat inventory list, an instructor training list, and ensuring inspections as completed.
4. Providing operator training support, staffing guidance, and marine engineering assistance on boat alterations, boat design, and selection criteria.
5. Reviewing regional boating requests in the equipment replacement program (ERP) and making recommendations to the ERP.
6. Working with park facility managers, fleet managers, and superintendents on ERP.
7. Monitoring boat inventory and manual compliance for all:
 - a. Regional boats and operators.
 - b. Accident and incident reporting protocol and tracking.
 - c. Risk management development.

42.5.5 National Boating Safety Council (NBSC)

The NBSC membership includes the National Boating Officer (NBO), Regional Boating Officers, a rotating Park Boating Officer Representative, and an Office of Health and Safety (OHS) representative. The NBO serves as Chairperson, with an RBO as Co-Chairperson. The council may consult subject-matter experts (SMEs) or form working groups for specialized advice. For Requests for Interpretation, Opinion, or Review, the NBSC operates through consensus, requiring at least two-thirds of members for a quorum. In emergencies or when a quorum is unavailable, the NBO has the authority to make decisions directly.

The National Boating Safety Council (NBSC) is responsible for:

1. Developing, reviewing, and updating the boating chapter of RM-50B and coordinating with the Office of Health and Safety on finalizing revisions.
2. Reviewing standards and operating procedures related to boating, establishing criteria for Operational Risk Assessments, and promoting best safety practices.
3. Analyzing data on boating operations and incidents, addressing boating-related matters as requested, informing the OHS of significant issues, providing expert guidance, and reviewing incident reports to recommend actions to prevent recurrence.

42.5.6 Superintendent

The Superintendent ensures implementation of, and compliance with, policies for the safe use and management of boats within a park and any NPS programs operating therein. The Superintendent is responsible for:

1. Identifying operations at the park unit and corresponding need for boats.

2. Conducting an assessment to align vessel fleet size with mission requirements.
3. Reviewing and forwarding written requests for waivers of any requirement stipulated in this Chapter to the RBO.
4. Reviewing and approving the Park's Boating Supplement (PBS) annually.
5. Reviewing and approving NPS programs working within park waters (may not be directly supervised by the park).
6. Designating a Park Boating Officer (PBO).
7. Ensuring there are sufficient resources for training, maintenance, appropriate equipment purchases, professionally approved alterations and new constructions, and minimum safe staffing levels.
8. Ensuring that all boats are inspected in accordance with the provisions of this Chapter, and that resources are provided to address deficiencies for inspections identified within this Chapter.
9. Ensuring Operational Risk Assessments are completed for each vessel in accordance with this Chapter, and are incorporated into the boat operations manual.

42.5.7 Park Boating Officer (PBO)

The Park Boating Officer (PBO) serves as the representative for the entire park on all issues related to boat operations. In parks with larger or more complex boating activities, a Park Boating Work Group (PBWG) may be formed, consisting of the multiple PBOs and other individuals appointed by the Superintendent. If a park has multiple PBOs, the Superintendent will designate a senior PBO. The PBOs may be granted authority from the Superintendent to issue orders to terminate operations for any boats that are not in compliance with this Chapter or the Park's Boating Supplement. For boating programs not managed by park operations, the Regional Boating Officer (RBO) will designate an equivalent PBO.

The PBO may also participate in the National Boating Safety Council (NBSC) and chair the Park's Boating Work Group. Key responsibilities of the PBO include:

1. Facilitating safe and effective boating operations in the park.
2. Ensuring compliance with Department of the Interior (DOI) as well as the requirements outlined in this Chapter and the Park Boating Supplement (PBS).
3. Quickly addressing any conflicts or issues that arise during daily boat operations or maintenance with the park superintendent or their designee.
4. Keeping a comprehensive list of boats, operator training records, and ensuring that inspections are carried out.
5. Successfully completing the Motorboat Operator Certification Course (MOCC) training.
6. Conducting the annual risk assessment for the park and submitting it to the RBO.
7. Managing the certification processes for boat operators within the park and providing relevant information to the RBO upon request.

42.5.8 Operator-in-Charge (OIC)

The OIC is the single qualified boat operator responsible for the safe loading, operation, and unloading of a boat and all embarked personnel. The OIC is responsible for the completion of the float plan (see 42.10.1) and boat log (see 42.10.2). The OIC will be clearly identified in writing or verbally to all embarked personnel. In any case where more than one qualified Boat Operator is onboard, only one individual is designated the OIC. The OIC makes the decision whether to conduct, postpone, or cancel

operations based on weather, the status of the boat, available personnel, level of crew training, and other pertinent factors, any of which could result in an unacceptable level of risk (see 42.10).

42.5.9 Boat Operator

A Boat Operator must meet all requirements for certification and be designated according to this Chapter. Boat Operators are considered OIC of a boat if they are the only qualified operator aboard. If multiple qualified Boat Operators are aboard, only one will be designated and clearly identified as OIC as defined above (see 42.5.8). Multiple Boat Operators are required onboard during longer, more complex voyages, including overnight voyages, as defined in 42.9 of this Chapter. The Boat Operator(s) assists with the oversight of all personnel aboard and helps to ensure that operations are conducted safely and efficiently, in accordance with the OIC's instructions. The Boat Operator(s) reports directly to the OIC while underway.

42.5.10 Crewmember

A crewmember is an individual designated in writing and/or verbally by the OIC, and is capable of assisting in the operation of the boat including underway operations, docking, anchoring, communications, and emergency procedures. This individual must be able to assist the OIC in safely completing the mission. Crewmembers are required onboard during longer, more complex voyages and/or those voyages requiring the carriage of a large number of people, as defined in section 42.9 of this Chapter. Crewmembers report directly to the OIC or Boat Operator currently on watch. Crewmembers will be provided training appropriate for the vessels they will be on and missions they will assist with.

42.5.11 Persons Other than Crew

Persons Other than Crew include researchers, educators, volunteers, members of the media, interns, students, volunteers, or other personnel on board who participate directly in the planned operations, as documented in the Float Plan (see 42.10). All Persons Other than Crew will comply with this Chapter and follow the instructions and guidance of the OIC, Boat Operator(s), and crewmember(s). Any embarked person(s) who possesses skills and qualifications commensurate with a crewmember's duties may be designated as a crewmember at the discretion of the OIC. In this case, the embarked person/crewmember will not assume any mission-related duties until the duties as a crewmember are fulfilled.

42.6 Program Elements

This section describes the basic program elements for the watercraft safety program.

42.6.1 Distribution

This Chapter will be made available on the NPS Office of Policy page and will be made available to all NPS employees and contractors, as well as partners and volunteers that may use NPS boats as part of their work. As appropriate, this Chapter may be distributed to partner law enforcement entities or other interested parties upon request.

42.6.2 Watercraft Safety Chapter Review

Proposed changes to this Chapter will be reviewed by the NBSC. The NBO is responsible for communicating proposed updates to this Chapter to the Office of Health and Safety (OHS), with authority to make changes residing with ADVRP. Supporting documents will be updated as needed by the NBO. Updates will be posted on the NPS boating website to ensure access to boating program managers.

42.6.3 Waivers and Emergency Action

The procedures and standards outlined in this Chapter establish the necessary criteria to ensure the safe and efficient operation of NPS boats. Operators and crewmembers are not allowed to be scheduled for or participate in boating activities unless they meet the requirements set forth in this Chapter. Only the Associate Director for Visitor and Resource Protection (ADVRP) has the authority to approve waiver requests from park Superintendents, submitted via the Regional Director.

In emergency situations, actions that deviate from this Chapter may be required to prevent imminent death, physical harm, property loss, or environmental damage. Such actions should only be taken when they are necessary to minimize harm. Any deviations from the established requirements must be reported to the National Boating Officer (NBO) within 72 hours.

42.6.4 Other Requirements

This Chapter establishes the minimum standards and procedures for the operation and management of all NPS boats. Additional guidance, references, directives, and details can be found in DOI DM 485 Chapter 22, NPS RM-50B Chapter 11: Job Hazard Analyses (JHAs), the Park Boating Supplement, Annual Risk Assessments, Original Equipment Manuals (OEM), and relevant United States Coast Guard (USCG) and federal regulations.

1. **Park Boating Supplement.** Parks and their subordinate programs must develop additional guidelines and procedures for boat safety and operations, as long as these do not reduce the standards set forth in this Chapter. Any park-specific guidelines will be reviewed and approved annually by the Superintendent (or designee) and submitted to the Regional Boating Officer (RBO).
2. **Annual Risk Assessment.** Each park unit operating boats is required to conduct, document, and review an Annual Risk Assessment for all NPS boats. This assessment evaluates operational risks to personnel, boats, the environment, mission objectives, and public relations. Guidelines for this assessment are available on the NPS boating program website and can be tailored to meet each park's needs. The completed Annual Risk Assessment is an appendix to the Boat Operations Manual (BOM).
3. **Boat Operations Manual (BOM).** A specific BOM is required for each NPS boat, containing instructions, procedures (emergency and other), regulations, and guidelines derived from the boat's Annual Risk Assessment. A [template](#) for the BOM can be found on the NPS boating program website.
4. **Original Equipment Manual (OEM).** Technical manuals for equipment installed on NPS boats should be maintained onboard and serve as a reference for safe operations and maintenance. For smaller boats where carrying manuals onboard may be impractical, a laminated copy of the operating procedures is sufficient, provided that the full manuals are available ashore. The BOM will specify whether the manuals are intended to be kept onboard.

42.7 General Boat Policies

42.7.1 Official Use

NPS boats are to be used for official government purposes only. In determining whether a use is official, all pertinent factors will be considered, including whether the use is essential to the completion of an operation, mission, or other legitimate NPS function or activity, and whether it is consistent with the purpose for which the boat is intended. OICs are responsible for the enforcement of this requirement.

42.7.2 Transportation of Passengers

When permitted by this Chapter or a BOM, non-mission critical personnel (passengers) may be transported on NPS boats. Any such arrangements will be prearranged and approved by the park superintendent (or designee) or as outlined in the PBS. Non-mission critical personnel may include members of the media, guests, volunteers, or service organization personnel. The OIC has the authority to deny passage to any personnel. Approvals will be granted when:

1. It is determined to be in the interest of the Government.
2. The embarked personnel will not interfere with NPS operations.
3. The transportation of passengers will not expose passengers and crew to unnecessary risk.

NPS vessels carrying passengers-for-hire must comply with all USCG regulations.

All federal and state requirements are to be followed as well as any other special considerations given to the safety of minors on NPS small boats.

The OIC may authorize the boarding and carriage of personnel in emergency situations involving the protection of life at sea.

For further guidance, consult NPS "Transportation of Non-official Passengers," DO 44 Chapter 3.15.

42.7.3 Boat Command Designation

The OIC has command authority over all Boat Operators, crewmembers, and other embarked personnel while aboard. The OIC is also responsible for ensuring the safe conduct of the mission and compliance with all NPS policies and applicable regional and program directives.

42.7.4 Boat Control

A boat, when underway, must have a designated OIC or Boat Operator in control at all times. In preparation for taking the MOCC or an MOCC module, personnel may practice elementary operating skills under the on-board supervision of an experienced operator who has completed MOCC training and is certified.

42.7.5 Personnel Authorized to Operate NPS Boats

Only those personnel whose credentials meet training and certification requirements as per this Chapter can be authorized to operate NPS boats. A Record of Qualification (ROQ) is required for each Boat Operator, identifying the specific operations and boats, or class of boats, for which that operator is qualified to operate. The record of qualification must be maintained on file by the PBO. Operators must meet the requirements as outlined in DM 485 Chapter 22.

42.7.6 Seamanship and Conduct

OICs will conduct boat operations in such a manner as to avoid unnecessary hazards. All Boat Operators and Crewmembers will exercise prudent judgment at all times and take proper action when dictated by emergencies that endanger life or property.

42.7.7 Alcohol and Drugs

The OIC and all operators and crewmembers are not to operate a boat or assist with operations within eight hours (or longer if impaired) of having consumed alcoholic beverages, or drugs that may detrimentally impact cognitive or motor abilities. The consumption of these substances is prohibited onboard NPS boats. Except for law enforcement and emergency operations, any person under the influence of alcohol, drugs, or narcotics will not be permitted aboard the boat. Live-aboard vessels may request an alcohol waiver from the appropriate regional director.

42.7.8 Smoking Restrictions

Smoking will be in accordance with Director's Order 50D Chapter 4.1.1.

42.7.9 Additional NPS Policies

Small boat operations are required to comply with all applicable NPS policies. Examples include:

1. RM-9 LE - Chapter 35 - Vessels
2. RM-4 Diving

42.8 Qualification, Evaluation, and Designation

42.8.1 Introduction

This section establishes standards and provides guidance for the evaluation, qualification, and designation of personnel involved in the operation of NPS boats. Each PBO will ensure that personnel are trained to achieve the stated qualifications and to maintain the level of proficiency and currency necessary to safely and effectively accomplish their assigned duties. The requirements described here are the minimum standard of personnel qualification.

42.8.2 Required Credentials and Training for Boat Operators

1. Department of Interior MOCC instructors may provide the Motorboat Operators Certification Course (MOCC) for NPS employees.
2. The Department of Interior MOCC (for motorboats only). DOI Talent is the repository for all training records for MOCC courses.
3. MOCC Refresher training - Every five years (for motorboats only).
4. All Boat Operator candidates will have appropriate experience, as determined by the PBO, to be designated as a Boat Operator. The class of boat, the boat's operating area(s), and boat's mission will be taken into account when determining an appropriate level of experience.
5. Record of Qualification (ROQ). These must be developed, on site, by parks. These will include:
 - a. Checklists (see 42.8.4 and examples).
 - b. Advanced/Continuing Education.
 - c. Local or program-specific training. Examples include (but are not limited to): surf operations, dive operations, towing nets, trailering, survey launch, ice, marine mammal operations.
6. Appropriate USCG License, if required.
7. Specialized Training Courses.
8. ROQ and Advanced/Continuing Education (see 42.8.3 and examples for minimum requirements).
9. CPR and First Aid.

42.8.3 Personnel Record of Qualifications (ROQ)

Boat Operators need to successfully complete a checkout process with their PBO (or designee) for each type of mission and boat on which the personnel will be employed. Upon completion of the checkout process, the PBO is to complete an ROQ (See [example](#) on NPS Watercraft Safety SharePoint page) for each person who will be operating any boat(s) within that park's boating program. The ROQ will be maintained by the PBO at the park. All records of training/qualifications may also be uploaded to the individual's [DOI Talent Record of Learning](#).

42.8.4 Training for Crewmembers

All Crewmembers are required to meet the training requirements defined in 42.5.10, and any additional standards set by the PBS. Crewmembers are required to receive boat-specific training and demonstrate to their PBO knowledge of the procedures and equipment carried aboard the boat(s) on which they will be employed.

42.8.5 CPR and First Aid Training

All Boat Operators should have (at a minimum) current certification in cardiopulmonary resuscitation (CPR), including the use of Automated External Defibrillators (AED) instruction when available, and First Aid. Refer to RM-4 (Diving Operations) for dive-specific requirements.

42.8.6 Documentation

Copies of all training certificates and operator qualification checklists for all Boat Operators will be maintained by the PBO for each park. Training records will be made available to the RBO upon request.

42.8.7 Currency Requirements

All Boat Operator ROQ Letters will be validated annually by the PBO to ensure currency of certifications, training requirements, and a measure of proficiency.

42.8.8 Delinquency

Boat Operators are deemed delinquent and prohibited from operating boats if they fail to maintain the required training and certification as outlined in this Chapter. The Park Boating Officer (PBO) is responsible for informing the employee's supervisor of the operator's delinquent status and the restriction from boat operations.

42.8.9 Boat Operator Currency Responsibilities

Although each PBO will maintain records of personnel qualifications, Boat Operators are responsible for tracking their own training and currency requirements in conjunction with the PBO.

Each Boat Operator should request training through their supervisor to maintain qualification and currency in advance of expiration dates, to ensure that their boat qualifications remain uninterrupted.

42.9 Safe Staffing Requirements

42.9.1 General

All NPS vessels are to be staffed by qualified operators and crewmembers to ensure that operations are conducted in a safe, efficient, and professional manner. Personnel who are on board primarily to conduct mission-related operations may assume crew duties only if the OIC has determined that the individual possesses the necessary skills and qualifications prior to assuming those duties. In this case, the embarked person/crewmember must assign higher priority to the crewmember duties. Boat crewmembers may, if conditions warrant, assist embarked personnel with their mission at the discretion of the OIC. When underway, all crewmembers will serve as lookouts when not tasked with other duties. Passengers will be encouraged to act as lookouts and inform crew if hazards or suspected hazards are identified.

42.9.2 Succession to Command

Chain of Command is addressed during the pre-departure briefings. Should the OIC become incapacitated, the next most qualified operator or crewmember will take the lead in maneuvering the boat to a position of safety and contacting emergency services to make necessary arrangements.

42.9.3 Minimum Safe Staffing Levels

All boats <40 feet. Minimum safe-staffing-level requirements are based on, but not limited to, the pre-departure Operational Risk Assessment, the PBS and BOM.

All boats 40 to 65 feet. Are to be staffed at a minimum by one OIC and one crewmember. Minimum safe-staffing-level requirements are based on, but not limited to, the pre-departure Operational Risk Assessment, the PBS and BOM.

All boats >65 feet. Are to be staffed by one OIC and one Boat Operator. Minimum safe-staffing-level requirements are based on, but not limited to, the pre-departure Operational Risk Assessment, the PBS and BOM.

Duration of Operations. For planned underway operations exceeding 12 hours in duration, an additional operator and enough qualified crewmembers are to be onboard so that each watch is staffed appropriately for the size and complexity of the boat (see also 42.11.2).

42.9.4 Dive Operations

When conducting dive operations from a boat, the boat is to be continuously staffed by a qualified Boat Operator. A minimum of one person on the surface, not involved in the diving, will be qualified to administer oxygen (see RM-4, Chapter 4: Diving Operations).

42.9.5 Solo Operations

When a boat less than 40 feet is operated by a single, unaccompanied Operator-in-Charge (OIC) who is not working closely with another boat, ship, dispatch center, or an onshore person actively monitoring the operations, a pre-departure Operational Risk Assessment is to be completed and approved by the Park Superintendent, the Park Boating Officer (PBO) (unless the PBO is also the OIC), or according to the guidelines outlined in the Park Boating Supplement (PBS). "Close conjunction" is defined as a situation where rescue resources or responses can be immediately notified by someone other than the affected operator in the event of a catastrophic emergency. Refer to the PBS for additional requirements related to solo operations.

42.10 Boat Operating Procedures

Compliance with each of the following procedures for boats is mandatory for all trips, whether planned or unplanned. Procedures specific to motorized vessels are identified.

42.10.1 Prior to Departure

Crew Reporting. Crewmembers for each mission will report to the OIC at a specific, predetermined time and place prior to departure.

Operational Risk Management. Before setting out, the Officer in Charge (OIC) and crew member(s) perform a pre-departure Operational Risk Assessment. Ensure that the mission, personnel, and boat align with the determinations outlined in the Annual Risk Assessment. The OIC and crewmember(s) will consider Operational Risk Management (ORM) principles when preparing to conduct boating operations.

1. **Accept No Unnecessary Risk.** Only take risks which are necessary to accomplish the mission.
2. **Make Risk Decisions at the Appropriate Level.** Decisions about risk should be made through discussion with the OIC and crewmember(s) conducting the operation, or activity at that moment. Effective risk management relies on the prudence, experience, judgment, intuition, and situational awareness of this individual. Should the OIC or crewmember(s) determine that the risk is beyond their control or conflicts with policy guidelines, the decision will be escalated to a

higher supervisory level.

3. **Accept Risk When Benefits Outweigh Costs.** Risk is inherent in boat operations. Risk is also related to gain; normally, greater potential gain requires greater risk. The goal of operational risk management (ORM) is not to eliminate risk, but to manage it so that missions can be fulfilled with the minimum amount of exposure to potential harm or loss.
4. **Integrate Risk Management into Planning and Operations at All Levels.** Discuss operations early and often to identify the best mitigations to reduce risk to as low as reasonably practicable.

For a template GAR or SPE worksheet, refer to NPS Operational Leadership Policy (RM-50B Chapter 46). If any signs of unacceptable risk are present, the OIC is required to take steps to mitigate those risks to an acceptable level using the “Risk Decision Authority” concept described in the Operational Leadership Policy Chapter.

To reduce risk, actions taken might include requiring additional crew members, reducing the scope of the mission, or carrying additional equipment aboard. Any modifications to the mission, personnel, or boat to mitigate risks will be documented in both the Float Plan and the boat's log and provided verbally to the appropriate personnel as designated in the PBS prior to departure.

The pre-departure Operational Risk Assessment is submitted with the float plan.

The OIC has the authority to cancel the operations if risks cannot be reduced to a level that supports the safe and successful outcome of the mission.

Boat Safety Briefing. The OIC ensures that both crew and passenger briefings occur prior to departure.

1. **Crew Briefing:** The OIC conducts a pre-departure briefing that reviews any prior mission planning and preparation and covers any updates. This briefing will be conducted far enough in advance to enable the crew to prepare adequately for any last-minute adjustments.

The next qualified Boat Operator or crewmember will be identified during this briefing and is to be prepared to take command of the boat in case of OIC incapacitation.

2. Confirm verbally with all aboard that:
 - a. The team is well rested and ready to work.
 - b. Everyone understands the mission and is capable of performing it.
3. **Passenger Briefing:** The OIC, Boat Operator, or a crewmember conducts a thorough safety briefing with all passengers immediately prior to getting underway for all embarked passengers. The briefing must include:
 - a. PFD wearing requirements, prior to boarding the vessel, and during all boating operations.
 - b. General boat familiarity and the locations of all safety systems and equipment carried aboard (fire extinguishers, life rafts, life rings, personal floatation devices, immersion suits, EPIRBs, signaling devices, etc.).
 - c. The procedures to follow during fire, abandon ship, person overboard, and other emergencies.
 - d. Any predetermined boarding and exiting procedures specific to each vessel and operation.
 - e. The required use of a kill switch will be emphasized as well (if applicable).

The use of a formal, written checklist detailing all of the topics covered during each safety briefing is strongly encouraged. (Refer to Appendix 42.B of this Chapter for the template briefing checklist).

Weather Forecast. The OIC is responsible for reviewing and being familiar with both prevailing and anticipated weather and sea conditions for the area in which the mission is planned. It is the OIC's responsibility to obtain a forecast by a qualified meteorological service (e.g., NOAA weather radio, National Weather Service website, local Coast Guard reports). The weather and sea condition information will consist of at a minimum (if applicable):

- River stage
- River flow changes (currents)
- Sea state
- Tides (and currents if necessary)
- Trends and forecasts for the departure location
- Proposed route, destination, and any alternate working areas

Based on weather and sea-state forecasts, the OIC will determine if observed conditions are suitable for operations. The OIC has the authority to cancel operations if it is determined that personnel safety or the safety of the boat will be subject to unnecessary risk.

Float Plan. Float plans must be submitted in writing, electronically, or with 24-hour dispatch regardless of voyage duration prior to departure. When 24-hour dispatch is used for float plan tracking, an SOP for vessel tracking must be in place. The OIC will submit the float plan, prior to departure, with an appropriate point of contact (POC).

1. If the OIC cannot prepare a written float plan prior to departure, the PBO or designee is to be notified of the float plan over the radio or phone. The PBO or designee will then put the information in writing and manage the float plan as required by this Chapter.
2. The float plan is to establish a specific tracking and check-in procedure that requires the OIC to report the boat's position and operations update at least once daily on multi-day trips.
3. The POC is responsible for determining whether a boat is overdue for arrival or check-in, and take appropriate action to either determine the location of the boat or initiate emergency response.

Use of NPS boats is to be documented in a float plan. Prior to using a boat, the operator will provide verbal or written notification to a reliable contact (e.g., supervisor or co-worker) with at least the following information:

- Description of boat
- List of occupants
- Confirmation that required emergency equipment is on board
- Point of departure
- Planned route
- Estimated time of departure
- Estimated time of return
- Means of contact (e.g., VHF radio, mobile phone, etc.), and contact schedule
- Purpose of the trip
- Description (if applicable) of vehicle(s) left at launch site(s)
- Action to be taken by Boat Operator if the trip is delayed
- Action to be taken by the float plan contact if the boat is overdue

- Recommended plan of action if overdue

In addition, the OIC should ensure that the name and contact number of a family member, significant other, or legal guardian is available for all passengers prior to the boat's departure. Personal Identifying Information (PII) will be handled in compliance with DOI policy.

Point of Contact. A specific POC is to be identified and established prior to departure, whether that departure is planned or unplanned. The POC is to be available by phone or radio throughout the duration of the mission. The POC and OIC will identify specific times at which the OIC will check in and the means of communication to be used.

A back-up emergency phone number(s) or alternative communication link will be included in the event the primary means of communication fails.

Fuel Planning (motorized). Fuel planning for each voyage should be based on efficiency and economy, but will not compromise safety. Careful considerations will be given to the weather conditions at the planned destination, and distances to alternate ports. Fuel will be carried aboard with an adequate reserve for the unexpected (e.g., rule of thirds - one third out, one third back, one third in reserve).

Boat Inspection. The OIC will ensure that a pre-mission inspection of the boat is completed in accordance with the applicable start-up procedures outlined in the BOM. In addition to the start-up procedures, the OIC must also:

- Inspect the log for maintenance discrepancies that have not been addressed.
- Not use the boat if it has been identified as not operational in the logbook or during the inspection until the mechanical or structural problem has been corrected.
- Ensure that all required safety, survival, and communication/navigation equipment specified in the PBS are aboard and in good working order.
- Ensure that the boat is properly fueled for the mission.
- Ensure all fluid levels are normal (e.g., oil, coolant, steering, etc.) and that adequate reserves are onboard.
- When applicable, ensure that the back-up motor or secondary means of propulsion is operational.
- Boat inspections should be conducted before and after vessel use and any deficiencies need to be reported to PBO.

42.10.2 Start-Up Procedures

Start-Up Procedures Checklist. All NPS boats are required to have a written checklist of start-up procedures, specific to each boat on board, to ensure safe operations. The OIC is responsible for ensuring the use of the checklist prior to every voyage. The checklist must be included in the BOM.

Boat Log Entries. For all boats, the OIC ensures that all start-up procedures are on board and identify the information to be logged prior to being underway. Boat log (logbook) entries should include but are not limited to:

1. Names of the: OIC, Boat Operators, and Crewmembers
2. Name/description of the mission
3. Date and Time Underway
4. Date and Time of Arrival
5. Items of Operational Interest

6. Problems or Incidents
7. Operational Area and/or Destination
8. Passengers

42.10.3 Underway Operations

Weather Updates. The OIC ensures that weather and sea condition updates are obtained at appropriate intervals, as well as at any time the weather conditions appear threatening or conflict with forecasted conditions, and/or any time enroute plans change.

Operations Under Adverse Conditions. Adverse weather conditions include, but are not limited to, low visibility, high winds, lightning, and/or high sea state, which could cause equipment or personnel emergencies. NPS boats will not be operated in known or forecasted conditions that exceed boat or personnel limitations.

The OIC has the authority and responsibility to cease operations, return to port, safe harbor, or not depart from port if it is determined there is unnecessary risk to either personnel or the safety of the boat. Any such decision should be based upon the results of the Operational Risk Assessment Form.

Float Plan Updates. The Float Plan is to be updated with the POC whenever the boat will exceed the estimated time of arrival or whenever enroute plans or operations change substantially.

Radio Transmissions. Use of the boat radios will be professional and limited to the conduct of normal marine radio traffic and government business.

42.10.4 Shut-Down Procedures

Use of Checklists. All NPS boats are required to have a written checklist of shut-down procedures specific to each boat. The OIC is responsible for ensuring the use of the checklist at the conclusion of each and every voyage.

Logbook Completion. The OIC ensures that all logbook entries are completed in a timely manner after the boat has been shut down. Entries should include, at a minimum:

1. Actual time of arrival
2. Final fuel information
3. Ending engine hours (if available)
4. Any changes to the original Float Plan
5. Any mechanical issues

Reporting Equipment Malfunctions. All equipment malfunctions and repairs are to be entered in the logbook and reported to the appropriate individual(s) as identified in the PBS on the day of discovery or conclusion of mission.

Float Plan Closure Procedures. Float Plans are to be closed, and notification of arrival made with the shore based POC within thirty minutes of arrival.

42.10.5 Boat Clean-Up Procedures

A post-mission inspection will be conducted in accordance with the Shut-Down Procedures Checklist in a timely manner after the boat is docked. The boat should be left in a state in which it could be immediately used if necessary.

42.10.6 Float Plan Delinquency

The Park Boating Supplement (PBS) is to include procedures for handling situations when boats are overdue including any park-specific guidelines (e.g., timeframes, notifications, outside resources, etc.). If a boat is overdue and search operations are initiated, or if it has been overdue for more than 6 hours, this will be reported to the Regional Boating Officer (RBO).

Examples include:

If a boat is overdue (has not returned within XX minutes of estimated time of arrival), the PBO, park dispatch operation or other designated person(s) are to:

1. Attempt to contact the boat by satellite/cell phone or HF/VHF radio.
2. Check the boat departure point, slip, dock, mooring personally or ask the local marina manager, U.S. Coast Guard, or any on-site personnel to do so, if practicable.
3. Notify the employee's supervisor and the Park Boating Officer if no contact is made after X hours of being overdue or if sunset is near.
4. Notify the USCG or appropriate federal/state/local Search and Rescue authorities of delinquency and be prepared to provide the Float Plan information, when appropriate.
5. Remain in the office or at the station until the boat has been contacted and either returns to the dock or has reached an alternate safe location.
6. Contact the Superintendent and commence Search and Rescue (SAR) operations if the boat is overdue X hours or more and communications cannot be established with the boat by the NPS or USCG.
7. Initiate boat location or SAR procedures when a vessel fails to meet regular check-in intervals of XX minutes.

42.11 Boat Crew Duties and Watch Standing Performance

42.11.1 Crew Duties

All Boat Operators and Crewmembers are to be trained and qualified to perform the duties expected of them. This includes all equipment, such as cranes, A-frames, hydraulic units, anchor windlass/winches, davits, compressors, as well as all boats carried aboard and their engines. Drills and exercises will be used to prepare crew (See examples on [NPS watercraft safety page](#)).

42.11.2 Watch Standing

The supervisors and OIC will make every effort to avoid situations requiring that anyone be on duty in excess of 12 hours in one day. The number of watches and maximum duration of each watch should be stated in the BOM for that specific vessel.

If unforeseen events require personnel on duty for greater than 12 hours, the following applies:

1. All persons who are assigned as Operator are to be provided a minimum of 10 hours of rest in any 24-hour period.
2. The hours of rest may be divided, one of which will be at least six hours in length.
3. The requirements for rest periods laid down above need not be maintained in the case of an emergency.
4. Other requirements when applicable:
 - The PBO will require that watch schedules be posted where they are easily accessible when applicable.

- When required, a crewmember may be assigned duties as a watchstander either when the boat is underway or at anchor. As watchstander, the primary task is to stand a proper lookout, free of distractions, so that full focus can be applied to the environment of the boat.

42.12 Required Minimum Equipment

The safety, survival, and communication/navigation equipment specified in the PBS are the minimum required for safe operations. All survival equipment must be maintained and, at a minimum, inspected or tested monthly in accordance with best-management practices and guidance in the PBS (drills and frequencies). Additions and changes to these requirements may be necessitated by such considerations as boat configuration, type and duration of missions, area of operations, and proximity to Search and Rescue assets. Individual survival gear is to be placed in areas accessible to all Boat Operators, crewmembers, and passengers so as to be readily available in an emergency.

42.12.1 Emergency Equipment

The PBS must identify the minimum required safety, firefighting, and lifesaving equipment that is on board and maintained in a ready and serviceable condition before any NPS boat is operated. All lifesaving and firefighting equipment must be USCG or Safety of Life at Sea (SOLAS) approved, or otherwise be approved by the NBSC, when applicable.

1. **Emergency Position-Indicating Radio Beacon (EPIRB) and Personal Locating Beacons (PLB).** The PBS will address EPIRBs and their carriage requirements, along with the procedures for use. All EPIRBs and PLBs will be properly registered with the NOAA SARSAT program, and registrations must be current. Prior to departure, the OIC should ensure that the EPIRB/PLB battery is current and that the monthly test has been completed. In addition, EPIRB/PLB identification registration information will be reviewed at least annually to ensure that it contains valid emergency contact information. All parks should consider EPIRB and/or PLB use.
2. **Life Rafts/Floats.** Life rafts/floats of sufficient capacity to accommodate all persons on board are to be carried on all NPS boats over 65 feet in length in accordance with PBS or this Chapter. Smaller boats should also consider carrying life rafts/floats based on their operating environment and missions.
3. **Personal Flotation Devices (PFDs) and Cold Weather Survival.** All personnel are required to wear a PFD in open areas of boats less than 65 feet in length. The OIC can require occupants to wear a PFD in any area of the boat regardless of the length of the boat. A manually inflatable PFD is recommended for use in enclosed areas of boats to reduce the risk of entrapment in the event of capsizing. PFDs must be USCG-approved and appropriately rated for the type of boat, and designed for operational applications, durability and mission requirements. All PFDs are to be inspected, tested (if applicable) and maintained in accordance with the manufacturer's instructions. PFDs should be stored in a cool, dry place out of direct sunlight. All personnel using inflatable PFDs are required to be trained in their use, including an in-water practical session involving a treading water and oral inflation exercise.

Operating in cold weather and cold water requires identifying (in a risk assessment) ways to mitigate these risks using operational adjustments and/or appropriate PPE (e.g., USCG approved exposure suit, dry suit with thermal layering, etc.). Prior to use, personnel will be trained in the use of this equipment.

Cold-water (USCG < 70°F) protective equipment, such as exposure suits, dry suits and/or immersion suits, must be provided where cold-water conditions pose a hazard during boating operations and should be addressed in the PBS. All personnel on board will be trained in the use of this equipment.

42.12.2 Communications and Navigation Equipment

The distance from shore, support vessel, or inhabited land that the boat will operate from will determine the minimum communication and navigation requirements for boats. No NPS boat is authorized to be without a method of direct verbal communications with a shore facility or support vessel. All motorboats 18 feet and larger operated on open water must be outfitted with a Marine Band radio.

Ensure communication and navigation equipment are maintained in a ready and serviceable condition before any NPS boat gets underway.

42.12.3 Other Personal Protective Equipment

All persons aboard NPS boats, at all times, will wear protective footwear that is appropriate to the work that is being conducted. It is recommended that all personnel have appropriate foul-weather and sun protective gear, including long-sleeve shirts, long pants, and a hat on board the boat for use in unexpected weather conditions or emergencies. Special operations may require other safety equipment such as safety glasses, gloves, hard hats, safety harnesses, steel-toed shoes, sunscreen, etc., based on the Operational Risk Assessment. The PBS should address specific PPE needs at the park level.

42.13 Emergency Procedures

42.13.1 Responsibility

When an OIC experiences an underway difficulty or emergency, or believes that a situation exists that will create a difficulty or an emergency, the OIC must take the appropriate action to ensure the safety of the boat and embarked personnel. The OIC is encouraged to use all personnel on the boat in a judicious manner to assist in responding to the difficulty or emergency. The OIC may deviate from approved procedures when a greater emergency would result from strict compliance with the procedures set forth here.

42.13.2 Emergency Drills

OICs must hold emergency training and drills to maintain crew proficiency in emergency procedures. Drills should be realistic and include, at a minimum: person overboard, fire, abandon ship and emergency communications. Boat Operators, crewmembers and any others aboard at the time are required to participate.

1. **Aboard Vessels Under 40 Feet in Length.** Person-overboard, fire, abandon-ship and emergency communication drills/training are to be conducted annually for Boat Operators and crew. A safety briefing must be conducted immediately prior to getting underway for all embarked personnel explaining person-overboard, fire, abandon-ship and emergency communications procedures. Upon completion, all drills will be logged.
2. **Aboard Vessels 40 Feet or Greater in Length.** The PBS must have a list of drills and the frequency that they will be conducted. Upon completion, all drills will be logged.

42.13.3 Emergency Communications

All boats are to carry functional and suitable communications equipment.

As soon as practicable after completing the tasks necessary to stabilize an underway emergency or immediately if an emergency is catastrophic, the OIC is to furnish park dispatch or the USCG with a description and assessment of the situation, request any assistance necessary, state intentions for handling the emergency, and provide any other pertinent information. When time permits, the OIC should notify the designated POC on shore, in accordance with the PBS and Float Plans.

Vessels 40 feet in length or greater will include written instructions on the use of all communications

equipment carried aboard in the BOM. In addition, simple, thorough instructions on how to place an emergency distress call are to be posted next to each type of emergency-communications equipment.

42.13.4 Emergency Procedures

Each park will develop boat-specific emergency procedures (included in each BOM and PBS) for applicable emergency situations such as:

1. Abandon-Ship
2. Fire
3. Person-Overboard
4. Flooding
5. Launching a Raft
6. Donning Immersion Suits and PFDs
7. Making Distress Calls (Mayday) and Using Distress Signals
8. Activating the General Alarm
9. Reporting Inoperative Alarms

42.14 Accident and Incident Reporting and Investigation

42.14.1 Accident and Incident Reporting

Boat Program activities will follow all applicable laws and policy regarding the reporting of accidents or incidents. All NPS boating accidents and near misses are required to be reported in the Safety Management Information System (SMIS). Any accidents or incidents that meet NPS Serious Incident Notification requirements will be reported via the Leadership Notification Tool.

The Superintendent (or designee) will notify the RBO of a boat accident or incident when it involves any of the following (regardless of whether it meets the above thresholds):

1. Unintentional grounding for greater than 12 hours
2. Explosions
3. Sinking
4. Capsizing
5. Vessel fire
6. Collisions involving breach of hull integrity
7. Any incident which results in damage in excess of \$2,500 to the boat, its systems, or its equipment
8. Unintentional and extensive flooding of a vessel
9. Discharge of oil or any substance violating local, State, or Federal Regulations

42.14.2 Serious Accident and Incident Investigations

Accidents meeting the threshold of a Serious Accident will be investigated by the appropriate Serious Accident Investigation Team (SAIT).

42.14.3 Major Accident and Incident Investigations

Major accidents and incidents include injuries involving time away from work or restricted duty, or property damage in excess of \$10,000. Those major accidents or incidents not meeting the threshold of a national or regional SAIT may be investigated by the RBO. Subject Matter Expertise will be used in major accident investigations.

42.14.4 Minor Accident and Incident Investigations

For all other accidents and incidents meeting the reporting criteria (42.14.1), the Superintendent (or designee) will initiate an investigation and report findings. Findings and recommendations resulting from the investigation will be forwarded to the Regional Director and RBO.

42.14.5 Findings of Accident and Incident Investigations

Findings and lessons learned from an accident or incident investigation will be distributed by the RBO to the NBSC. The identity of the boat, personnel, and program or facility associated with the accident may remain anonymous.

42.14.6 Near Misses

Near misses will be entered into the Safety Management Information System (SMIS) and shared with the RBO for the purposes of lessons learned and safety metrics.

42.15 Hazardous Materials/Waste Management and Pollution Prevention Control

42.15.1 Environmental Compliance

All NPS boats must operate in full environmental compliance with Federal, State, local and NPS requirements. Policy provides guidance on responsibilities to ensure regulations are followed to protect the environment and promote environmental stewardship of our natural resources. Each park's PBO will assist with all environmental compliance requirements and work with the appropriate OIC and Program Managers to ensure compliance and that any problems are promptly identified and brought to the attention of the Superintendent.

42.15.2 Hazardous Materials

All hazardous waste generated is to be managed in accordance with Federal, State and local regulations. The transportation of hazardous waste is to be in accordance with [DOT regulations](#).

All hazardous materials/substances are the direct responsibility of the OIC, whether or not that OIC is using the materials directly.

An inventory of all hazardous materials and a Safety Data Sheet (SDS) will be available for all hazardous materials carried aboard. Updated SDS sheets will be forwarded to the PBO and OIC with sufficient notice to prepare for shipment prior to getting underway, if not already on file.

Copies of each SDS will be available when the hazardous materials are loaded aboard.

The shipping party is responsible for explaining spill response procedures prior to departure to the OIC. This includes providing proper training or properly trained and equipped personnel for response, as well as a spill kit (provided by the shipper) containing the neutralizing agents, buffers, and/or absorbents in amounts adequate to address spills of a size equal to the amount of chemicals brought aboard. This spill kit is to accompany the chemicals when they come aboard. A spill response will be a collaborative effort between the OIC, the boat crew and any shipper personnel. The OIC will ensure that the spill kit is readily available.

Hazardous materials are to be offloaded in compliance with DOT regulations.

42.15.3 Pollution Prevention Control

1. Oil or oily water must never be intentionally discharged into the environment.
2. If bilges are contaminated with oil, NPS boats are to:
 - a. Have appropriately approved oil water separator (OWS) equipment or use oil absorbents if overboard discharge is necessary to ensure safe vessel operation.
- OR
- b. Retain all oily wastes on board for discharge to a shore-side disposal facility. This will require that the automatic bilge pump serving the boat engine compartment be secured during normal operations.
3. Oil absorbent materials may be used in the bilge to absorb oils. Ensure the oil absorbents are secured in the bilge to avoid clogging the bilge pump or its sensor.
4. Boat crews are to be trained with respect to boat environmental protection requirements. Exception to these procedures is permitted for the purpose of securing the safety of the boat and those on board or of saving life.
5. Boat Operators should develop refueling procedures to prevent accidental spills during refueling or maintenance of the boat. Boats are to keep a supply of oil absorbent materials onboard appropriate to size of vessel to respond to a spill of petroleum product.
6. Enact park spill response plan according to procedures in PBS.

42.15.4 Marine Sanitation Devices

All boats with installed toilet facilities will have an operable marine sanitation device (MSD) on board. Vessels 65 feet and under may use a Type I, II or III MSD. Vessels over 65 feet are to install a Type II or III MSD (historic vessels may use type I, II or III MSD). All installed MSDs are required to be US Coast Guard certified. US Coast Guard certified devices are so labeled except for some holding tanks, which are certified by definition under the regulations. See 33 CFR 159 for applicable regulations.

42.16 Boat Inspection Requirements

42.16.1 General

The Boat Inspection Program is designed to ensure that standards of safety are maintained at an acceptable level in order to minimize risk. NPS Inspection is required as outlined in this Chapter and DM 485 chapter 22. Boats requiring USCG inspections will be inspected according to those requirements.

The items of safety, survival, and communication/navigation equipment specified in the PBS are the minimum required for safe operations. All survival equipment is to be maintained, inspected or tested in accordance with best management practices and guidance in the PBS. Additions and changes to these requirements may be necessitated by such considerations as boat configuration, type and duration of missions, area of operations, and proximity to Search and Rescue assets.

Individual survival gear is to be placed in areas accessible to all Boat Operators, Crewmembers, and passengers to be readily available in an emergency.

42.16.2 Responsibility

The Superintendent is responsible for managing an annual inspection program for all boats and trailers. The PBO ensures appropriate routine inspections are conducted by OICs. The PBO will also ensure that all annual inspections are recorded and kept on file.

42.16.3 Inspection Procedures for Vessels under 40 Feet in Length including Trailers

Inspection parameters for each boat must be included in the boat's BOM and PBS.

42.16.4 Inspection Procedures for Vessels 40 Feet and Greater in Length

Inspection parameters for each boat are to be included in the boat's BOM and PBS. In addition to the above requirements, the inspection criteria for NPS boats 40 feet and larger are:

- 33 CFR Subchapters D, E, F, O, and S
- 46 CFR Subchapters C, S, and T
- USCG Navigation and Vessel Inspection Circulars (NVICs)
- Technical Standards of the American Boat and Yacht Council (ABYC)
- National Fire Protection Association Standard (NFPA) 302

Scheduling Inspections. Inspections must be done each calendar year. Records of inspection will be retained for each boat.

Inspection Report. Final approved inspection reports will be sent to the RBO. The original will be kept on file at the park. The report will detail the deficiencies observed, as well as noting any perceived risks to personnel, boat, environment, mission, etc.

42.16.5 Canoes, Kayaks, Sailboats, and Rowboats

Non-motorized boats are to conduct Annual Boat Inspections in accordance with the PBS.

42.17 Boat Acquisitions, Alterations, and Repairs

42.17.1 Boat Acquisition

Superintendents, or their designees, are to assess the suitability of a new or used motorboat, or a boat design, in relation to cost, mission requirements, operational risk, safety, and environmental compliance prior to initiating a boat purchase. The cost and needs assessment and any required marine survey will be forwarded to the RBO for approval in consultation with the park.

Superintendents, or their designees, are to notify the RBO:

1. Prior to a planned boat acquisition that would require significant alteration or modification to the boat after its delivery in order to meet mission requirements.

OR

2. Prior to any commitment to build a boat to Government-furnished technical specifications.

When a boat meets the criteria of the above, the Superintendent, or their designees, must ensure that contract specifications are written or reviewed by a professional marine engineer or a naval architect. The review is to ensure that the resultant boat will be properly configured with respect to safety systems, stability, mission capabilities, sound marine engineering practices, environmental compliance, and Section 42.18 of this Chapter, "NPS Boat Visual Identification and Registration."

42.17.2 Marine Surveys

A survey conducted by an accredited marine surveyor is required prior to any commitment that will result in acquisition (regardless of cost considerations) of vessels 40 feet and greater in length. The marine survey is to examine the condition and value of the boat as well as the structural integrity and

safety for its intended use. A marine survey is not required for a new boat or design.

42.17.3 Alteration and Repair of Boats

All significant proposed alterations to NPS boats are to be reviewed by the RBO to assess their potential impact on the boat. The PBO is to seek advice or guidance from a Marine Engineer to ensure that all modifications will not affect the safety, stability, and functionality of the boat prior to submitting to RBO.

Alterations and repairs are to be performed in accordance with applicable marine engineering standards, rules, instructions, and regulations.

Important Notice: *When conducting maintenance/repair of vessels or installed equipment, refer to both the vessel owner's manual and manufacturer specifications for installed equipment.*

For all significant alterations, Superintendents or PBO are to seek services from a professional marine engineer. Examples of significant alterations include the addition of structures or winches, the addition of any weight handling gear (e.g., A-frame, crane, articulated boom, and engine repowering), installation of electric generators, changing the dimensions of the boat, or the addition of a bow pulpit.

Records, such as drawings or weight and moment reports, resulting from the alteration of boats will be maintained at the park office.

42.17.4 Stability Standard

A USCG approved stability test is required for all boats having had alterations that may affect stability.

42.18 NPS Boat Visual Identification and Registration

42.18.1 General Requirements

A uniform identification scheme is necessary to develop and promote public recognition of NPS boat activities in the coastal environment. All NPS boats will comply with the visual identification and registration requirements specified in this Chapter.

42.18.2 Responsibility

NPS Programs that own boats are responsible for:

1. Complying as closely as practicable with the visual identification guidelines listed in this Chapter.
2. Maintaining an inventory of all boats in use.

42.18.3 Visual Identification

U.S. NPS Identification. *Marking is to consist of "U.S. NPS" or "U.S. National Park Service"¹.*

Furthermore, the park will determine the most appropriate location from the bow to the midline of the boat where "U.S. National Park Service" or "U.S. NPS" is to be placed on both the port and starboard sides of the boat.

NPS Arrowhead. Display of the NPS arrowhead is intended to promote public awareness of NPS programs.

1. Broadside Position
 - a. On boats that have a cabin, deck house, or a steering console, the NPS arrowhead is to be

¹ IPMD 114-60.600 - DOI Property Management

placed on both the port and starboard side of the cabin, deck house, or console at a location that is least obstructed from a clear broadside view when practicable. Arrowheads are to be sized to be as large as possible for the available surface area.

- b. On boats without a cabin, deck house, or steering console, NPS arrowheads are to be placed on the forward portion of both the port and starboard bow. Arrowheads are to be sized to be as large as possible for the available surface area.

2. Transom Position

- a. Boats with a full and un-obscured transom are to display the NPS Arrowhead centered on the transom. The Arrowhead is to be sized to be as large as possible for the available surface area.
- b. Catamarans, canoes, and other boats with either insufficient transom area to adequately display the NPS Arrowhead in a centered position, or boats with a transom obscured by a centerline notch, bracket, ramp, gate or other device, will display the NPS Arrowhead on the port side of the transom.

3. Optional Position

- a. An additional NPS Arrowhead may be displayed on the port and starboard bow of any class motorboat when the size of the bow provides adequate surface area, and it is determined that the additional NPS Arrowheads enhance the boat marking scheme.

Park-Specific Boat Marking

- 1. Parks and Programs may develop specific boat-marking schemes (i.e., boat names). Specific boat-marking schemes are to be applied consistently to all boats owned by the park.
- 2. NPS Parks and Programs may display the program name on their boats. Name lettering will follow the guidelines for boat name as closely as practicable.

Boat name and U.S. NPS Lettering Standards

- 1. Block-shape capital letters in Sans-Serif (Arial) type font.
- 2. A color providing contrast with the background hull color, usually black or forest green.
- 3. Letter Sizing

Boat Size	Minimum Letter Size
Less than 26 feet	Three inches
26 feet – 40 feet	Six inches
40 feet or greater	Six – nine inches

Boating Coloration

- 1. Hulls - The hull of motorized boats must comply with the following visual guidelines:
 - a. Fiberglass. Color must be that of pigment used in the original fiberglass layup. Programs acquiring new boats should specify a white hull when available.
 - b. Wood or Steel. Color must be white. Exemptions for existing boats painted colors other than white must be considered by the NPS Boat Safety Board on a case-by-case basis.
 - c. Aluminum Structures. Marine-grade aluminum hulls or structures are not required to be painted. If painted the color should be white.
- 2. Structures - The house, or any structure used to house cargo, personnel, or laboratory space that

extends above the main working deck, must be white (Aluminum is exempt).

3. Weight-Handling Equipment - Cranes, winches, or other weight-handling gear should be black.
4. Exterior Decks and Ladder Treads - To the extent possible, exterior decks and ladder treads must be gray. Boats of fiberglass construction are exempt from this requirement.
5. Masts and Rigging - Masts and rigging must be white or black.
6. Boot Top - Boot topping, if applied, must be black.

Questions relating to visual markings should be directed to the RBO.

42.18.4 Exemptions

Requests to exempt a boat or to deviate from the standards described in Section 42.18.3 of this Chapter must be transmitted to the Regional Boating Officer for approval.

Law Enforcement Boats will conform to the standards identified in RM-9.

42.18.5 Flags

All NPS Flags/Pennants. When practical, all boats will follow the policy and procedures regarding the flying of NPS flags or pennants.

Sizes. The flag of the United States must be the highest flag flown aboard a boat when other flags are flown in conjunction with the flag of the United States. Other flags may be equal in size but not larger than the flag of the United States. Flags of the United States will comply with minimum size requirements for each class of boat as follows:

Boat Category	US Flag Size
16 feet or smaller	Determined by the PBO
16 feet – 26 feet	12 inches by 18 inches
26 feet – 40 feet	16 inches by 24 inches
40 feet or greater	20 inches by 30 inches

Dive Flag. NPS vessels conducting dive operations are to display a dive flag that complies with local laws and regulations.

42.19 Maintenance

42.19.1 General

Each park is to establish a Boat Maintenance Program. The objective of the Boat Maintenance Program is to ensure all boats and trailers are capable of meeting all scheduled operational requirements with all systems and equipment fully functional. Optimization of boat readiness is accomplished by preventing and minimizing hull, mechanical and electrical system deficiencies, problems or failures that compromise safety and degrade a boat's mission capabilities.

42.19.2 Types of Maintenance

Preventative Maintenance. Preventative Maintenance outlines minimum maintenance requirements and procedures for hull, mechanical and electrical systems aboard a boat. Procedures are prescribed for inspecting, cleaning, fluid and filter changes, and reconditioning machinery and equipment such as cranes, davits, and wire ropes, to counter the effects of wear and tear, age and environment. Use manufacturer's specifications or recommendations for maintenance schedules. Rescue and survival

equipment is to be maintained according to the manufacturer's specifications, or technical manuals.

Corrective Maintenance. Corrective Maintenance is the performance of a scheduled or unscheduled task to restore a boat or equipment after failure has occurred. In most cases, a failure will have a detrimental effect on the boat's operational capabilities, the operating environment, or the safety of personnel.

Alterations. Alterations may improve system performance or a boat's capability by changing the configuration to meet operational, safety, or economic requirements.

42.19.3 Maintenance Record Keeping

Every boat is to have a predetermined boat maintenance schedule as a part of the Boat Operations Manual. All boat maintenance and repairs are to be logged or recorded for each boat and filed with the PBO or designee as outlined in the PBS. Parks may optionally add the Boat Maintenance Program to their PBS.

42.19.4 Financial Support for Boat Maintenance

Each park/program will provide adequate financial support for all maintenance requirements for all the boats in that park/program's possession. Sufficient funds should be in place for all annual repairs, dry-dock periods, and mid-season upkeep and repairs.

Boats which cannot be adequately funded will be removed from service and disposed of according to property regulations.

42.20 Weight Lifting Equipment Certification and Maintenance

42.20.1 General

This section describes the full rated capacities and Safe Working Load (SWL) limits of booms, cranes, davits, A & J frames, and winches on NPS Boats. It also defines the purpose and extent of tests, inspections and safety precautions for this equipment.

1. Risk Assessments. An Operational Risk Assessment, conducted annually, guides the development of the BOM for each apparatus. Prior to each use of all weight handling apparatuses the parameters (environmental factors, personnel, load, etc.) of operations will be evaluated and compared to established baselines identified in the guide.
2. Capacities and Limits. This directive does not take into consideration the effects of other loading forces (e.g., boat acceleration and momentum, drag, and snags) which may increase the total weight being supported by an apparatus and associated components.
3. References. All boats having booms, cranes, davits, frames, and winches used for weight lift are to comply with the requirements of this document, except as indicated within this section and references below.
 - a. This Chapter - Section 42.10
 - b. 29 CFR 1960, Basic Program Elements for Federal Agencies
 - c. 29 CFR 1919.1, Gear Certification – Purpose and Scope
 - d. 29 CFR 1919 Subpart C, Duties of Persons Accredited to Certificate Vessels Cargo Gear
 - e. 29 CFR 1919 Subpart D, Certification of Vessels Cargo Gear
 - f. 29 CFR 1919 Subpart E, Tests and Proof loads
 - g. ASME B30

- h. OSHA OMCA GD 93/2 (Rev 8/10)(B) (forms)

OSHA's accreditation program does not apply to USCG inspected vessels. Uninspected vessels are required to have their cargo handling gear certified under OSHA's Maritime Cargo Gear Certification Regulations (29 CFR Part 1919).

42.20.2 Overhauls

Overhaul of components are to be based on equipment condition or evidence of problems.

1. Inspection and testing may be waived if the system is evaluated by diagnostic means.
 - a. Diagnostic means are conducted by the manufacturer in a controlled environment.
 - b. A certificate of inspection and test results will be issued by the manufacturer.
2. General. This level is to accomplish the requirements of the quadrennial inspection after overhaul, plus if required, the requirements in the manufacturer's technical manual.
3. Inspection. The following components should also be inspected during an overhaul:
 - a. Inspect and overhaul all pneumatic components as required.
 - b. Inspect and overhaul all hydraulic components to include pumps, motors, control valves, accumulators, rams, etc. as required.
 - c. 125% of the SWL of the boom or frame. The test is to include rotation of the test load through a range of motion that the equipment is required to perform in service. The weight handling system must be able to stop, start and hold the test load at any position within the service area.
 - d. Rated Load Tests (100% of SWL Limit) are to be conducted while underway to prove the installation of a wire and man-made rope, fitting, or other repair conducted underway.

42.20.3 New or Altered Structures and Equipment

Prior to installing any new boom, crane, davit, frame, or winch on board an NPS Boat, the PBO is to contact a qualified marine engineer for assistance. The replacement of components in kind does not require the PBO to contact a marine engineer, but the below steps are required to be completed prior to use.

1. Commercially manufactured apparatuses and components are to be tested at 125% of the intended use. Tests are to include rotation of the test load through a range of motion that the equipment is required to perform in service. The weight handling system must be able to stop, start and hold the test load at any position within the service area.
2. Experimental and in-house constructed apparatuses and components are to be initially tested at 150% of the designed safe working load. Tests are to include rotation of the test load through a range of motion that the equipment is required to perform in service. The weight handling system must be able to stop, start and hold the test load at any position within the service area.
3. Rated Load Tests (100% of Working Load Limit) are to be conducted while underway to prove the installation of a wire and man-made rope, fitting, or other repair conducted underway.

42.20.4 Safety

Stability Documentation

1. Boats with booms, cranes, davits, frames or winches should have vessel stability documentation (Stability and Loading Data Booklet or equivalent), which addresses the stability of the vessel with the weight handling equipment in use.

2. Where the stability of the vessel limits the operational capability of the weight handling equipment, a graphic safety placard is to be prominently displayed at the equipment operator's station to describe the limitation, and graphically show the safe working zone and safe working load while operating at sea.
3. When considering a boat's stability characteristics during testing procedures, specified test loads are to be maintained within limits that can be handled safely. If any of the test loads result in an excessive list (as specified by the boat manufacturer) or the immersion of the deck edge, the load is to be reduced accordingly to stay within those limits.

Label Plates

1. Engraved or stenciled label plates are to be installed on booms, cranes, davits, and frames to document the Safe Working Load (SWL), test weights, and date of certification of the load test.

Safety Precautions

The following safety precautions are to be observed when conducting weight handling equipment tests:

1. To prevent excessive damage in the event of equipment failure during tests, dunnage is to be placed under test loads and each load is to be kept as close to the deck as possible.
2. Wire ropes, slings, straps, chains, rings, shackles, and other loose gear are to be tested, or stamped with weight tested limits by the manufacturer as per 29 CFR 1919. 31.
3. To prevent loads from moving off center during an equipment test, preventer lines or cables are to be rigged athwartships from the test load. At minimum, the breaking strength of the preventers are to be greater than or equal to the test load.

Documentation of Test Results

1. The results of the inspections and tests prescribed are to be entered or included in the boat's records or logs.
2. The date and type of the most recent inspection is to be stenciled on the boom, crane, davit, or frame in the vicinity of the Label Plate, in a position clearly legible by any individual.

42.21 Rigging Guidance

42.21.1 General

This section describes the use and inspection of rigging equipment and is defined as a system of lines, chains, and tackle used to control, haul, hoist, retrieve, support, or tow a load or objects used on board NPS boats.

All boats having rigging on board will take into consideration the guidance within this document, except as indicated by the manufacturer's instructions or references below.

1. Relevant DOI or NPS policies
2. This Chapter, Section 42.21
3. 29 CFR 1910 Occupational Safety & Health Standards
4. 29 CFR 1915 Safety & Health for Shipyard Employment
5. 29 CFR 1918 Safety & Health for Longshoring
6. 29 CFR 1919 Subpart E, Tests and Proof loads
7. 29 CFR 1926 Safety & Health for Construction

Rigging Training is required for all personnel involved in rigging, crane, and weight lifting operations. Training can be obtained through DOI Talent: Scientific Boat Operations- Gear over the side. A subject matter expert in historic rigging, including both standing and running rigging is to be consulted/used to inspect all historic rigging for safety. To maintain historic integrity, these vessels may be exempted from the following sections. All exemptions and justifications are to be outlined in the PBS and BOM.

42.21.2 Inspection and Use

Rigging equipment is to be initially inspected and the load capacity marked by the manufacturer. If the gear is manufactured in-house, proof testing is to be conducted to the tables listed below and documented.

Article of Gear	Proof Load
Chain, ring, hook, shackle or swivel	100 Percent in excess of the safe working load.
Single sheave block	300 Percent in excess of the safe working load.
Multiple sheave block	100 Percent in excess of the safe working load.
Pitched chains used with hand-operated blocks and rings, hooks, shackles or swivels permanently attached thereto.	50 Percent in excess of the safe working load.
Hand-operated blocks used with pitched chains and rings, hooks, shackles or swivels permanently attached thereto.	50 Percent in excess of the safe working load.

Rigging should be subsequently tested in accordance with Section 42.20, Weight Lifting Equipment Certification and Maintenance, of this Chapter, or be in accordance with recommendations of the rigging manufacturer and the equipment manufacturer.

Rigging equipment must not be loaded in excess of its recommended safe working load (SWL).

All purchased and fabricated rigging equipment must meet applicable OSHA standards of having a minimum safety factor rating of 5:1.

Defective rigging is to be removed from service and destroyed if possible.

Rigging equipment, when not in use, is to be removed from the immediate work area and properly stored and maintained in a safe condition. It should be stored dry and out of the sun.

All eye splices are to be made as per the manufacturer's guidance and instructions. Rope thimbles of proper size are to be fitted in the eye, except that in slings the use of thimbles will be optional.

Hooks, shackles, rings, pad eyes, and other fittings that show excessive wear or which have been bent, twisted, or otherwise damaged must be removed.

Custom or experimentally designed grabs, hooks, clamps, or other lifting devices, and similar materials are to be marked to indicate the safe working loads, and proof-tested before use to 150% of the determined rated load.

42.21.3 Wire Rope

Wire ropes are to be visually inspected for obvious deficiencies or defects prior to use.

Replacement of the wire rope is required if one or more of the following conditions exist:

1. Where the rope diameter has been reduced below allowable limits:

Normal Rope Diameter	Maximum Allowable Diameter Reduction
5/16" and smaller	1/64"
3/8" to 1/2"	1/32"
9/16" to 3/4"	3/64"
7/8" to 1-1/8"	1/16"
1-1/4" to 1-1/2"	3/32"

2. Six broken wires in one rope lay length or three wires in one strand lay length of weight handling system or general-purpose wire.
3. Three broken wires in one rope lay length for all standing rigging wire.
4. One broken wire within one rope laid length of any end fitting.
5. Wear of 1/3 the original diameter of outside individual wires.
6. Evidence of large areas of pitting due to corrosion.
7. Evidence of heat damage on an area of the wire where the load is carried. Passing a rope over a frozen or non-turning sheave or contact with structural members of the equipment can generate heat.
8. Kinking, crushing, shock loading or any other damage resulting in deterioration of the rope structure.
9. Evidence of internal corrosion, broken wires on the underside of strands, excessive nicks or core failure.
10. The rope construction has been distorted by kinking, crunching, bird-caging or other distortion damage.

Wire rope must not be secured by knots.

Eyes in wire rope bridles and slings must not be formed by wire rope clips or knots. Hand splices or swaged eyes may be as per the manufacturer's guidance and instructions.

Wire rope clips must not be used for splicing, connecting, or end for ending rope.

42.21.4 Chain

Only alloyed chain is used in rigging. Alloy is metal chain made by combining two or more metallic elements to give greater strength and, depending on the grade of alloy resistance, to corrosion.

Chain is to be inspected before initial use and prior to each time of use.

When used with alloy steel chains, hooks, rings, oblong links, pear-shaped links, welded or mechanical coupling links, or other attachments are to have a rated capacity at least equal to that of the chain.

Shop hooks and links, makeshift fasteners formed from bolts, and rods are not to be used.

Chain is to be discarded if any of the following are observed:

- Cracks or breaks
- Excessive wear, nicks, or gouges. Minimum thickness of chain link must not be less than 87% of

the original thickness at any body of a link²

- Stretched chain links or components
- Bent, twisted, or deformed chain links or components
- Evidence of heat damage
- Excessive pitting or corrosion
- Lack of ability of chain or components to hinge freely
- Weld spatter
- Other conditions that compromise use of the chain

42.21.5 Natural and Synthetic Rope

Fiber rope is not to be used if it is frozen, subjected to acids, or excessive heat. Protect fiber rope from abrasion by padding with chafing gear.

All splices and eye splices in ropes and slings are to be made strictly in accordance with fiber rope manufacturer's recommendations.

Knots may not be used in lieu of splices. Knots in fiber ropes may reduce the safe load rating by as much as 50% of the original rating.

42.21.6 Slings

Slings along with their fittings and fastenings, are to be inspected before operations and as necessary during use.

Welded alloy steel chain slings are to have an affixed, durable permanent identification tag stating size, grade, rated capacity, and sling manufacturer.

Wire rope slings are to have an affixed durable permanent identification tag stating the diameter, rated load, lifting capacity in vertical, choker, basket configuration, and date placed in service.

Each synthetic web sling is to be marked or coded by the manufacturer and show:

- Name or trademark of the manufacturer.
- Rated capacities for the type of hitch.
- Type of material.

42.21.7 Rigging Hardware

Drums, sheaves, and pulleys are to be smooth and free of surface defects that may damage rigging.

In no case will the safe diameters of drums, blocks, sheaves, or pulleys be reduced in replacement of such items unless compensating changes are made in terms of the rigging used and the safe loading limits.

Drums, sheaves, or pulleys having eccentric bores, cracked hubs, spokes, or flanges are to be removed from service.

Connections, fittings, fastenings, and attachments used with rigging are to be of good quality, of proper size and strength, and installed in accordance with recommendations of the manufacturer.

² National Association of Chain Manufacturers

Shackles are to meet 29 CFR 1915.113(a).

1. Only marked shackles (marked by manufacturer with name or trademark of manufacturer, rated load and size) are to be used. Shackles are to be maintained by the user, so markings are legible throughout the life of the shackle.
2. Each new shackle body should be marked by manufacturer to show name or trademark of manufacturer, grade, material type or load rating, and have a safety factor of 5:1.
3. Only load rated marked shackles may be used.
4. Shackles used in rigging should either be bow shackles that can be “moused or plastic (zip) tied” to secure the pin, or pin is secured by a cotter pin.
5. Shackles are to be discarded if any of the following are observed:
 - a. Shackles must not be eccentrically loaded
 - b. Any parts worn more than 10% of original dimensions
 - c. Bent, twisted, distorted, stretched, elongated, cracked, or broken load bearing components
 - d. Excessive pitting or corrosion, nicks or gouges
 - e. Indication of heat damage
 - f. Missing or illegible manufacturer’s name or trademark or rated load identification
 - g. Body spread
 - h. Makeshift or sub-standard pins not supplied by original manufacturer
 - i. Any field modification is evident

Hooks are to meet 29 CFR 1915.113(b).

1. The manufacturer's recommendations are to be followed in determining the safe working loads of the various sizes and types of specific and identifiable hooks. Any hook for which the manufacturer's recommendations are not available is to be tested to twice the intended safe working load and marked before it is put into use. Records are to be maintained with the dates and results of such tests.
2. Hooks must be discarded if any of the following are observed:
 - a. Missing or illegible rated load marking or stamps
 - b. Excessive heat exposure, pitting and corrosion
 - c. Modification from welding, drilling, grinding, or other alterations that reduces the hook’s ability to hold its SWL
 - d. Cracks, nicks, or gouges of 5% of the original thickness
 - e. Wear exceeding 10% (or as recommended by the manufacturer) of the original dimension of a hook or at the load pin
 - f. Deformation, bend, twist, or the increase of the opening not to exceed 5% of a hook
 - g. Inoperative locks and latches

Drums

1. Drums are to have sufficient rope capacity with recommended rope size and reeving to perform all hoisting and lowering functions in accordance with the manufacturer’s instructions.
2. At all times at least three full wraps (not layers) of rope are to remain on the drum. Natural,

synthetic or heavily lubricated ropes may require more wraps.

3. The drum end of the rope is to be anchored to the drum with an arrangement approved by the manufacturer.
4. Grooved drums are to have the correct groove pitch and depth of groove for the diameter of the rope.
5. The flanges on grooved drums are to project beyond the last layer of rope a distance of either 2 in (5 cm) or twice the diameter of the rope, whichever is greater.
6. The flanges on un-grooved drums are to project beyond the last layer of rope a distance of either 2 1/2 in (6.3 cm) or twice the diameter of the rope, whichever is greater.

Sheaves

1. Sheaves are to be compatible with the size of rope used, as specified by the manufacturer.
2. Sheaves are to be inspected to ensure they are of correct size, properly aligned, and in good condition.
3. When rope is in a sheave, the sheave is to be equipped with a keeper to prevent rope from riding or jumping.

Eye bolts

1. Eye Bolts are only to be loaded in the plane of the eye and not loaded at angles of less than 45° to the horizontal.
2. Discard if wear exceeding 10% of its the original dimension.
3. Seat Shoulder Eye Bolts firmly against material part.
4. Do not exceed safe working load of rated capacity.
5. Fit all Eye Bolts firmly and tightly in the hole.
6. Do not paint or coat Eye Bolts (Inspection is difficult).
7. Engage full thread to obtain capacity rating.
8. Add one half turn to align plane of Eye Bolt.

42.22 Technical Appendices

Appendix 42.A: Roles and Responsibilities Chart

Appendix 42.B: Example Vessel Safety Briefing Checklist

Appendix 42.A: Roles and Responsibilities Chart

Task/Activity	WASO ADVRP	Regional Directors	National Boating Officer	Regional Boating Officer	Superintendent	Park Boating Officer
Appoint NPS representative to DOI Watercraft Safety Work group	A	C	R	I	I	I
Provide oversight and guidance for NPS National Boating Program	R	A	C	I	I	I
Administer the region's Boating Program	I	R	C	A	I	I
Assign Regional Boating Officer (RBO)	I	R	I	A	I	I
Identify funding/resources for the Boating Program	I	R	C	I	A	I
Designate representative for NPS boat accident investigations	I	R	I	A	I	I
Ensure parks have park-specific Boating Supplements	I	C	I	I	R	A
Manage operator training program development	I	C	R	I	I	I
Develop and maintain boating program communication structure	I	C	R	I	I	I
Oversee NPS involvement in Motorboat Operator Certification Course (MOCC)	I	C	R	I	I	I
Review and approve Park's Boating Supplement (PBS)	I	I	I	I	A	R
Conduct annual risk assessment for the park	I	I	I	I	A	R
Ensure compliance with boating safety policies and procedures	I	I	I	I	A	R

Legend:

R: Responsible (the person(s) who actually does the work)

A: Accountable (the person who is ultimately accountable for the task)

C: Consulted (the person(s) who need to give input before the work can be done)

I: Informed (the person(s) who need to be kept updated on progress or decisions)

Appendix 42.B: Vessel Safety Briefing Checklist Required Topics

The following are examples of items to discuss during a vessel safety briefing.

1. Personal Flotation Devices (PFDs)
2. Emergency Procedures (examples)
 - Man Overboard
 - Fire
 - Taking on Water
 - Capsizing
3. Safe Movement & Boarding
4. Emergency Equipment

Example Topics (Include as Appropriate)

- Life Rafts
- Restroom (Head)
- Seasickness
- Ladders/Stairs