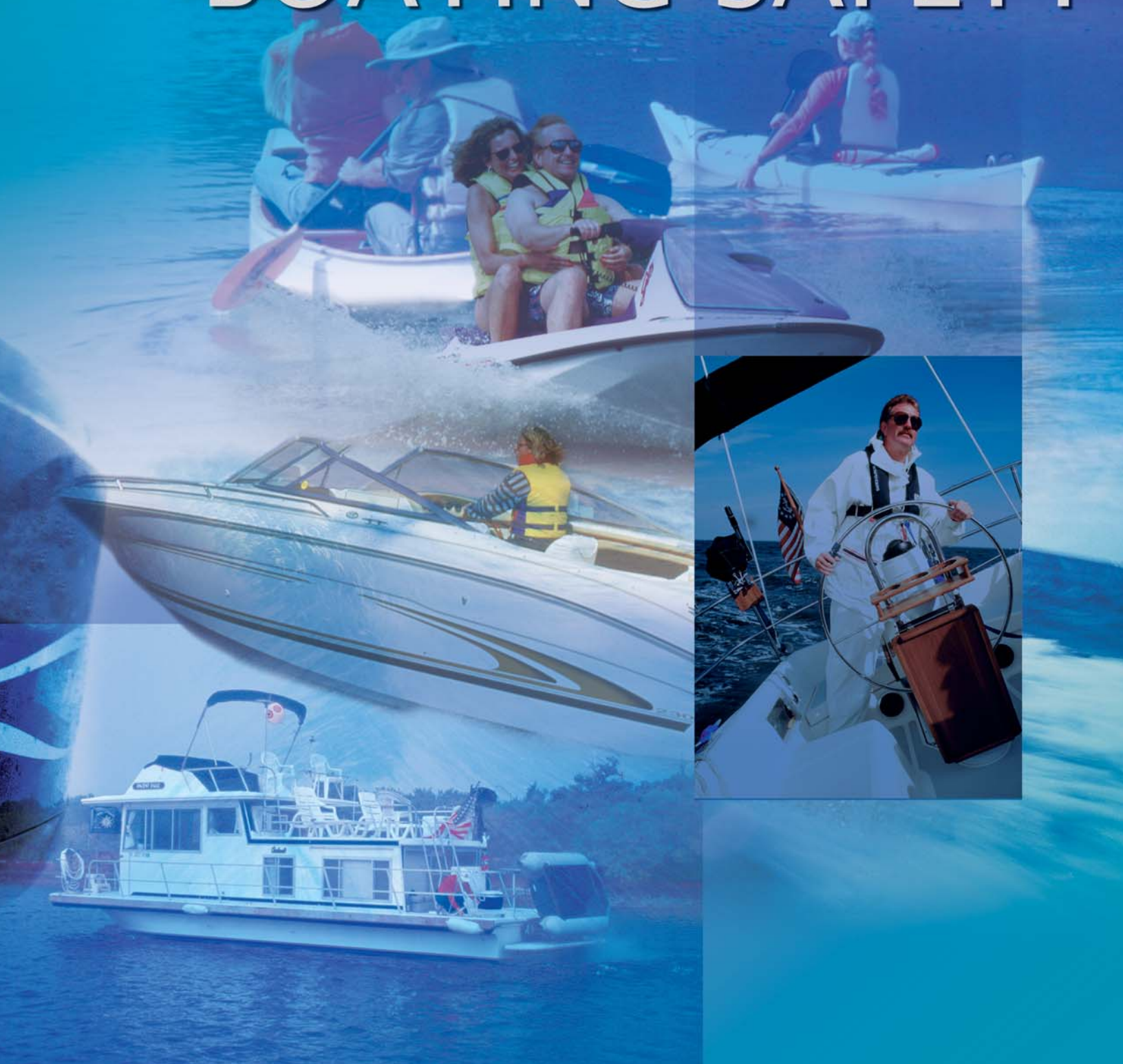
The Coast Guard Journal of Safety at Sea

U.S. Department
of Homeland Security

**United States
Coast Guard**

PROCEEDINGS
of the Marine Safety Council

Recreational BOATING SAFETY



PROCEEDINGS

July-September 2003 Vol. 60, Number 3

On the Cover

Clockwise photo credits for non-USCG images—Jetski: Timothy M. Smalley, © Minn. Dept. of Natural Resources; Sailor: Sporting Lives, Inc.; Powerboat: Today's Boating; Paddlers and Houseboat are USCG images. Back cover, clockwise from top—Hunters: Timothy M. Smalley, © Minn. Dept. of Natural Resources; Canoe: Sporting Lives, Inc.; Children: Timothy M. Smalley, © Minn. Dept. of Natural Resources.

Safer Boating

6 In the Beginning...The Federal Boat Safety Act of 1971

8 Smart Regulations Save Lives—A Regulatory History

12 Measuring the Safety of Recreational Boaters

16 Granting Safety with Nonprofit Organizations

18 Recreational Boating Safety State Grant Program

23 Marine Patrol Officers Play Important Role in Boating Safety

BOAT SMART. BOAT SAFE.
WEAR IT!

You're in Command

26 You're in Command. Boat Safely! The Genesis of the Initiative

29 Checking Vessel Safety to Reduce Risk

32 Education: The Foundation of Boating Safety

34 Accident Prevention: Don't Boat and Drink

37 Coast Guard Promotes PFDs

39 Engaging Recreational Boaters in Homeland Security

42 Waterways Management Involves Varied Issues

45 Pollution Prevention Through Education, Enforcement

Safety Improvements

47 Rescue 21: Answering the Call for Better Communications

51 Recreational Boating Product Assurance—The Consumer Product Safety Commission for Boats

58 The Recreational Boat Manufacturer Factory Visit Program

62 Coast Guard Increases Efforts to Warn of CO Hazards

65 Coast Guard Develops Maneuvering Rule to Reduce Collisions

66 Boat Testing: It's All in the Ride

Always On Deck

4 Assistant Commandant's Perspective

5 Champion's Point of View

68 PTP: An Extraordinary Success Story from the World of Boating Safety

72 Mariner's Seabag: Boating with History—Lewis and Clark

Nautical Queries
76 Engineering
78 Deck

Icon Credits:
All are USCG illustrations.

Assistant Commandant's Perspective

by Rear Adm. DAVID S. BELZ
Assistant Commandant for Operations

During its long history, assuring safety in the marine environment has been the U.S. Coast Guard's most traditional mission, and the personnel of the Coast Guard very rightly are proud of their heritage as "The Lifesavers."

According to the 2000 National Survey on Recreation and the Environment, 76 million Americans age 16 and over—more than one-fourth of our nation's population—participated in recreational boating, plus millions more youth. The states report 13 million registered vessels, which does not include millions more manually powered watercraft such as small sailboats, canoes and kayaks that are not required to be registered in most states. Billions are spent each year for boats and equipment or services connected to recreational boating. Recreational boating is big in the United States.

With both historical and statutory responsibility for boating safety on our nation's waterways, a core function of the Coast Guard's multi-mission service is coordinating the National Recreational Boating Safety (RBS) Program. Following enactment of the Federal Boat Safety Act of 1971, more responsibility for providing RBS services for the public was assumed by the states. After the terrible tragedy of September 11, 2001, and the Coast Guard's subsequent refocusing of efforts and transfer to the Department of Homeland Security, some may have been under the impression that the Coast Guard was out of the boating safety business. Not true! We will always provide those lifesaving services that are part of our core, and we must make sure that Americans are both safe *and* secure on the water.

As the world adjusts to the "new normalcy" of life after September 11, it is important that we do not lose focus on the Coast Guard's traditional missions. In this issue of *Proceedings*, we are providing an in-depth look at the RBS Program—going "back to the basics" if you will. There are many facets to the RBS Program—the Coast Guard's authority to assure product safety and safe operation through regulation, as well as our partnerships with the states and local law enforcement, industry and numerous boating organizations to address the many aspects of boating safety.

The RBS Program is an outstanding example of the ability of government at all levels and the private sector to work together for the benefit of the public, and has directly resulted in safer boating for millions of Americans. We will ensure that it continues to do so.

Adm. Thomas H. Collins
Commandant
U.S. Coast Guard

The Marine Safety & Security Council *of the* United States Coast Guard

Rear Adm. John E. Crowley
Chief Counsel
Chairman
U.S. Coast Guard

Rear Adm. Thomas H. Gilmour
Assistant Commandant
for Marine Safety, Security
& Environmental Protection
Member
U.S. Coast Guard

Rear Adm. David Belz
Assistant Commandant
for Operations
Member
U.S. Coast Guard

Cmdr. Laticia J. Argenti
Executive Secretary
U.S. Coast Guard

Steven Venckus
Legal Counsel
U.S. Coast Guard

Statement of Ownership, Management and Circulation

DIST (SDL No. 134)
A: ac(2): ebfghijklmnopqrsuv(1).
B: nr(50); cefgipw(10); bklqshj(5); xdmou(2); vyz(1).
C: n(4); adek(3); blo(2); cfgijmpqr tuvwyz(1).
E: ds(5); abcefghijklmnopqrtu vwyz(1).
E: kn(2).
F: abcdehjkloqst(1)
List TCG-06

Editorial Team

Albert G. Kirchner Jr.
Acting Executive Editor

Ellen Rosen
Managing Editor

Jesi Hannold
Senior Graphic Designer

Proceedings (ISSN 0364-0981) is published quarterly by the Coast Guard's Marine Safety, Security & Environmental Protection Directorate, in the interest of safety at sea under the auspices of the Marine Safety & Security Council. Special permission for republication, either in whole or in part, except for copyrighted material, is not required, provided credit is given to *Proceedings*. The views expressed are those of the authors and do not represent official Coast Guard policy.

Editorial Contact

NMCProceedings@ballston.uscg.mil

Editor, *Proceedings* Magazine
U.S. Coast Guard
National Maritime Center
4200 Wilson Blvd., Suite 730
Arlington, VA 22203-1804

Subscription Requests/Changes

Please include mailing label information when changing address.

www.uscg.mil/proceedings

ProceedingsDistribution@ballston.uscg.mil

Subscriptions, *Proceedings* Magazine
U.S. Coast Guard
National Maritime Center
4200 Wilson Blvd., Suite 730
Arlington, VA 22203-1804

View *Proceedings* Online at www.uscg.mil/proceedings

Champion's Point of View

by Rear Adm. Jeffrey J. Hathaway
Director of Operations Policy

Boats and boating have played an enormous role in the history of our country, and of the U.S. Coast Guard. Recreational boating is a means to forget the increasing stress of daily life, as well as savor the beauty and tranquility that can be found on our nation's waterways. I know that my family and I certainly enjoy it!

For many years, however, recreational boating has been second only to motor vehicles in the number of transportation-related fatalities in the United States. Approximately 700 to 800 people die each year in boating-related accidents. Most of those people die needlessly because they didn't take basic precautions, such as wearing a life jacket. Because of those facts, improvements in boating safety continue to be on the National Transportation Safety Board's "Most Wanted" list.

A lot of what you will read in this issue of *Proceedings* refers to the Federal Boat Safety Act of 1971 (FBSA). While the Coast Guard has always done search and rescue (SAR), FBSA established a program that is "preventive SAR." Has the FBSA been successful in fulfilling its goals? You decide. In doing so, consider this: Since the enactment of FBSA, the number of state-registered boats has increased from six million to 13 million—more than doubled—but the number of fatalities has plummeted from a record high of 1,754 in 1973 to a record low of 681 in 2001, and we estimate that more than 29,000 lives have been saved. You bet it's a success!

Unfortunately, our work isn't over. The number of fatalities for 2002 was back up to 750. We must—working with our partners—do more. We will.

by Capt. Scott H. Evans

Chief, U.S. Coast Guard Office of Boating Safety

The mission of the U.S. Coast Guard's Office of Boating Safety is to "minimize the loss of life, personal injury, property damage, and environmental impact associated with the use of recreational boats, through preventive measures, in order to maximize safe use and enjoyment of U.S. waterways by the public." That's a lot of words to say we are trying to ensure safe and enjoyable boating for the American public.

To accomplish this mission, we rely on the cooperative efforts, talents, and resources of many people: Our own dedicated personnel, of course; state and local governments; volunteers from various organizations, such as our own Coast Guard Auxiliary, the U.S. Power Squadrons, and hundreds of organizations in the National Safe Boating Council; partnerships with the boating industry and members of the private sector; as well as the individual boater.

We hope through the articles in this issue of *Proceedings* that more people will understand how varied our program is and become more aware of the things each of us can do to be safer on the water.

In the Beginning ...

The Federal Boat Safety Act *of* 1971

by Jeff Hoedt and Jeanne Timmons
U.S. Coast Guard Office of Boating Safety, Program Management Division

Al Marmo
U.S. Coast Guard retired

Background

Recreational boating has been a favorite pastime in our country for well more than a century. The late 1800s witnessed a true growth period in the number of sailboats, rowboats and canoes. Then, the advent of steam-powered and, later, gasoline-powered inboard engines had a big impact on participation, culminating in the development of the outboard motor around 1914.

The rising growth in boating participation also led to a rising safety concern. Unfortunately, the number of accidents and fatalities was growing with this increased activity. In response, Congress enacted boating safety laws in 1910 and 1918. The laws dealt with limited safety equipment carriage requirements and numbering (identification) of the vessels. The Motorboat Act of 1940 prescribed limited standards for motorboating equipment. But these acts were not enough. If noncommercial boat manufacturers chose not to build boats in accordance with such requirements as backfire flame control or ventilation, only the person who operated the boat could be cited for a violation of the law.

Following World War II, when our nation's economy experienced a major upswing, recreational boating in the United States went through another dramatic growth, with increasing boating accidents gaining attention and concern.

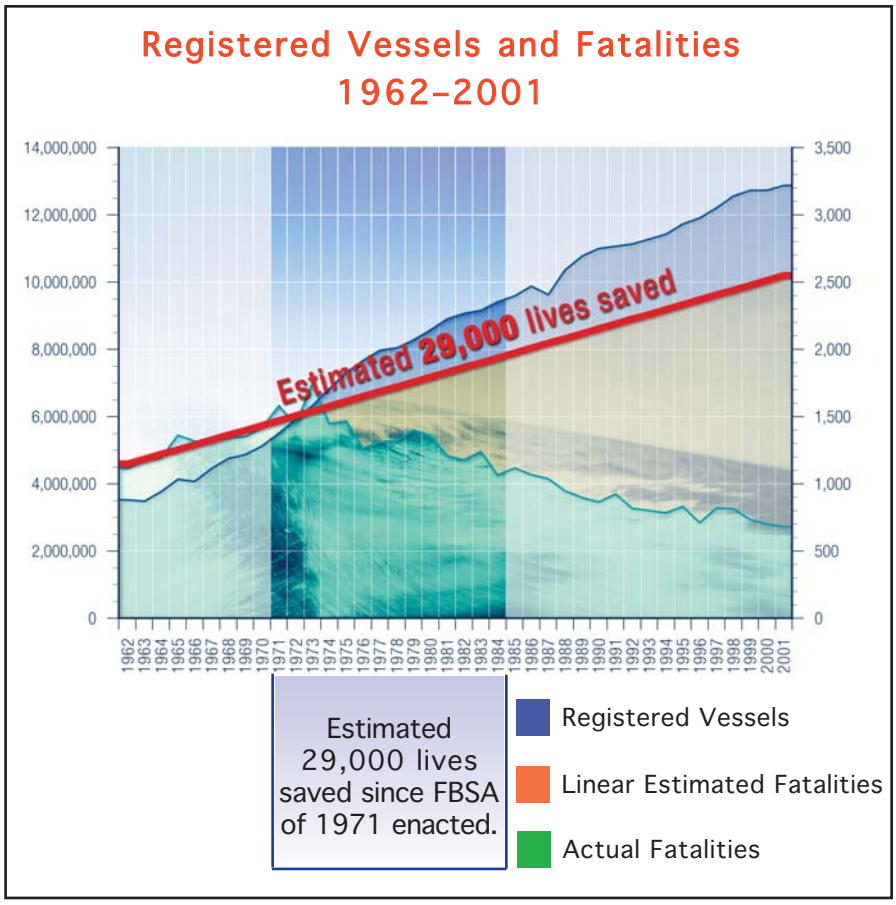
The U.S. Coast Guard was transferred from the Department of the Treasury to the Department of Transportation (DOT) when it was established on April 1, 1967. Boating safety was of immediate concern to DOT, and in June 1967, the secretary ordered a complete review of boating safety to determine the scope of the problem and mold remedial efforts. In response, the Commandant of the Coast Guard convened a study.

Congressional interest in boating safety was also running high and the House Committee on Government Operations conducted a study of how the Coast Guard was carrying out its responsibilities in promoting recreational boating safety (RBS). Hearings were held in 1967 and a report was issued in March 1968.

The fundamental conclusion of the Coast Guard's study, approved in January 1968, was that the imperfect safety record and anticipated growth in boating dictated that boating safety should be a significant element in the department's overall transportation safety program. In his Message to the Congress on the American Consumer, President Johnson spoke of desired improvements in the area of recreational boating safety, and proposed the Recreational Boat Safety Act of 1968.

Several considerations lent a sense of urgency to early passage of boating safety legislation. For one, annual fatalities in boating accidents were averaging four per day and many more boaters were involved in serious accidents resulting in injuries and severe property damage. During the summer of 1968 alone, 850 persons were killed in just five months.

Since the proposed RBS legislation contained provisions for broad new federal authority having a direct impact on various interest groups, its course to passage was long but carefully charted. Congressional committees had hearings in Washington, D.C., and at four locations across the country. Finally, the Federal Boat Safety Act of 1971 (FBSA), which gave broad new authority to the Secretary of Transportation, was signed into law on Aug. 10, 1971.



Purpose of the Act

The FBSA authorized a coordinated national boating safety program with broad new authority to the Secretary of Transportation, which was delegated to the Commandant of the Coast Guard. The act's policy and purpose concisely reflect the breadth of this new authority.

"It is hereby declared to be the policy of Congress and the purpose of this Act to improve boating safety and to foster greater development, use, and enjoyment of all waters of the United States by encouraging and assisting participation by the several States, the boating industry, and the boating public in the development of more comprehensive boating safety programs; by authorizing the establishment of national construction and performance standards for boats and associated equipment; and by creating more flexible regulatory authority concerning the use of boats and equipment. It is further declared to be the policy of Congress to encourage greater and continuing uniformity of boating laws and regulations as among the several States and the Federal government, a higher degree of reciprocity and comity among the several jurisdictions, and closer cooperation and assistance between the Federal government and the several States in developing, administering, and enforcing Federal and State laws and regulations pertaining to boating safety."

New Components of the FBSA

The FBSA was landmark legislation. The problem with previous boating legislation was that each requirement was part of the law passed by Congress. This meant it took an act of Congress to change, improve, or add new requirements as the need arose. The FBSA created a more flexible regulatory authority for the Coast Guard to address safety issues concerning the use of boats and associated equipment in a more timely manner.

Other components of the FBSA authorized the Coast Guard to establish comprehensive boating safety programs and created a new advisory council. The 21-member National Boating Safety Advisory Council provides direction to the Coast Guard on proposed and current boating safety regulations, and also provides insight into other major boating safety matters. Composed of equal representation from state boating safety officials, representatives of recreational vessel and associated equipment manufacturers, and representatives of national recreational boating organizations and the general public, this council has proven to be invaluable to the National Recreational Boating Safety Program.

The FBSA also expanded the jurisdiction of statutes from the "navigable waters of the United States" to "waters subject to the jurisdiction of the United States;" expanded the applicability of statutes from just recreational motorboats to all recreational vessels; and created a federal grant program whereby states could receive federal financial assistance to enhance their boating safety efforts, and national nonprofit organizations could compete for financial assistance to develop and implement various boating safety efforts.

We can be very proud of the accomplishments of the programs established as a result of the FBSA, but there still is much to be done. Fortunately, the legislative authority to continue to address those problems is available.

Smart Regulations Save Lives

A Regulatory History

by Carl Perry and Jeanne Timmons
U.S. Coast Guard Office of Boating Safety, Program Management Division

A Recent History

The Federal Boat Safety Act of 1971

While federal boating safety statutes were enacted in 1910, 1918, 1940 and 1958, a new chapter in recreational boating safety began on Aug. 10, 1971. It was on that date that the Federal Boat Safety Act (FBSA) became law. One of the unique characteristics of the FBSA was that, for the first time, the U.S. Coast Guard was responsible for promulgating regulations concerning requirements of manufacturers and carriage of safety equipment, such as personal flotation devices (PFDs).

Today, the FBSA is found in multiple chapters of Title 46 U.S. Code, many of which authorize promulgation of regulations. Examples include chapters 43 (Recreational Vessels), 61 (Reporting Marine Casualties), 123 (Numbering Undocumented Vessels), and 131 (Recreational Boating Safety).

Protocol for Developing Regulations

Many people may be most familiar with the regulations promulgated under Chapter 43 U.S. Code. Here, the Coast Guard's Recreational Boating Safety (RBS) Program establishes regulations that involve minimum requirements for boats and associated equipment, rather than what some may consider an "ideal" level. To build quality or safety into any product adds costs beyond those from basic supplies and labor. The person who buys a boat and other safety equipment necessary to the legal operation of that boat must ultimately pay these costs or choose not to purchase the item. As with most products, there is a minimum safety threshold below which an unacceptable number of accidents, deaths, and injuries occur. Exceeding that threshold achieves progressively smaller safety increments with increasingly larger cost increments. Thus, the Office of Boating Safety partners with both manufacturers and the public to find the best balance.

Each regulation the Coast Guard issues under this chapter must be safety-related and developed in

response to a demonstrated need. Further, 46 U.S.C. 4302(a)(1) specifically directs that regulations must be stated in terms of performance. By "performance" we mean specifying the load that a fitting must withstand, as opposed to specifying the dimensions of that fitting or the thickness of the material from which the fitting is constructed. The focus on performance results gives the manufacturer the widest discretion in designing and improving products, while still meeting the required level of safety. Therefore, it is unlikely that the Coast Guard will ever issue boating safety standards relating to the fit and size of components. However, if accident statistics indicate a problem in such an area, then a related performance standard may be issued.

Manufacturer Regulations Published Shortly after Enactment of the FBSA

The first regulations and standards applicable to manufacturers were adopted from industry standards published by the American Boat and Yacht Council (ABYC) and the Boating Industry Associations. The Coast Guard issued final rules in the Federal Register on Aug. 4, 1972 that established defect notification and boat identification requirements for all boats. The rules also established safety standards for loading, powering, and flotation for boats less than 20 feet in length. Soon thereafter, standards were published covering level flotation, electrical systems, fuel systems, ventilation, and start-in-gear protection.

The Coast Guard published regulations that require certain children to wear a PFD.... Keep your family safe.

Personal Flotation Devices– 33 CFR Part 175

In March 1973, the Coast Guard issued regulations to require the carriage of PFDs on non-motorized recreational vessels. Before the FBSA, only motorboats were subject to such carriage requirements. The regulations also classified PFDs into five types to indicate the general level of performance required of PFDs. Later, the Coast Guard issued regulations requiring PFD manufacturers to provide an information pamphlet with each PFD to help prospective buyers select the type best suited to their boating activities. Later regulationsrequired PFDs to be wearable, and allowed boaters to carry hybrid and inflatable ones.

Visual Distress Signals

In December 1979, the Coast Guard issued regulations to require the carriage of approved visual distress signals (VDS) on recreational vessels and vessels carrying six or fewer passengers for hire when operating on coastal waters. Recreational vessels less than 16 feet in length must carry VDS only at night while in coastal waters. These regulations, along with other RBS Program efforts, contributed to reducing the number of fatalities on coastal waters by giving the boater a means to alert others of a distress situation and reducing the time spent in trying to locate the boater after the distress has been reported.

Benefits of Regulations Enacted as a Result of the FBSA

Just two years after passage of the FBSA, in 1973, there was a record high 1,754 reported recreational boating fatalities and about six million registered boats. This represents approximately 30 deaths for every 100,000 registered boats. However, thanks in part to smart regulations nearly 20 years after implementation of the National RBS Program, the number of reported boating fatalities had dropped significantly to about 800 each year, even though the number of registered boats grew at a much faster rate. Then, by 2001, only 681 boating fatalities were reported, while the number of registered boats had grown to more than 12.8 million. This equates to only six deaths for every 100,000 registered boats.

There has also been a significant downward trend in the number of deaths caused by drowning. For instance, 82 percent of the boating deaths were caused by drowning in 1990 compared to 70 percent in 1999. Fatalities from capsizing have decreased from an annual average of 600 to less than 250; fatalities from flooding/sinking have decreased by 50 percent; and fatalities from fires and explosions have decreased from 20 to less than five per year.

Just two years after passage of the FBSA, in 1973, there was a record high 1,754 reported recreational boating fatalities and about six million registered boats. . . .

Then, by 2001, only 681 boating fatalities were reported, while the number of registered boats had grown to more than 12.8 million.

Recently Published Regulations
The following is a description of regulations that the Office of Boating Safety has recently published:

Wearing of PFDs by Certain Children Aboard Recreational Vessels (USCG-2000-8589)
This rulemaking established federal requirements for certain children aboard recreational vessels to wear PFDs in order to reduce the number of drowning fatalities. In an average year, nine out of every 10 victims who drowned was not wearing a PFD. The Coast Guard published a broad notice of request for comments about the need for, and alternatives to, federal requirements or incentives for individuals onboard boats to wear PFDs and published a more focused request for comments. The Coast Guard summarized the comments received and consulted with the National Boating Safety Advisory Council (NBSAC). NBSAC recommended that the Coast Guard propose federal requirements for children 12 years of age and under to wear PFDs. At its meeting in May 2000, NBSAC reviewed the issues and public comments and recommended that the Coast Guard proceed with a rulemaking for children 12 and under to wear PFDs when not in an enclosed area while the vessel is underway. NBSAC also recommended that the federal requirements not preempt existing state requirements. The Coast Guard published the Notice of Proposed Rulemaking (NPRM) on May 1, 2001 and consulted with NBSAC at its October 2001 meeting. NBSAC recommended that the Coast Guard proceed to a final rule as proposed.

The Final Rule was published on Feb. 27, 2002, and became effective on March 29, 2002. After the rule was published, a State Boating Law Administrator alerted us to potential enforcement problems resulting from differences between states, which had vessel length limitations, and the Coast Guard, which did not have vessel length limitations. At the same time, as the Coast Guard prepared guidance for boarding officers on the fine points of enforcement, the same potential enforcement problems with these differences were observed. The Coast Guard decided to withdraw the Final Rule as it stood and rectify the problem. As a result, a Final Rule (Withdrawal) was published on March 27, 2002, effective on publication. An Interim Rule was published on June 24, 2002 [67 FR 42488] that set a federal requirement and adopted all states' requirements that have requirements for children to wear PFDs. The Interim Rule became effective Dec. 23, 2002.

Raising the Threshold of Property Damage for Reports of Accidents Involving Recreational Vessels (USCG-1999-6094)
This rulemaking raised the federal threshold of damage to vessels and other property from $500 to $2,000 or more per accident. Because of inflation since the reporting threshold was last revised, the $500 threshold required the reporting of increasing numbers of minor incidents. Raising the federal threshold of damage to vessels and other property to $2,000 or more per accident provided for a consistent statistical base and reduced the administrative burden on the Coast Guard and state accident investigating personnel, as well as the reporting burden on the boating public. State casualty reporting systems may continue to require

submission of accident reports at a lower threshold than that required by the Coast Guard. The Coast Guard published a final rule on May 1, 2001, which became effective July 2, 2001. A Final Rule, partial suspension of rule with request for comments was published on June 26, 2001 to further consider a requirement to report all multi-vessel accidents. The Coast Guard published the Final Rule withdrawing the suspended provision on March 27, 2002 [67 FR 14643], effective upon publication.

Revision to Federal Blood Alcohol Concentration (BAC) Standard for Recreational Vessel Operators (USCG-1998-4593)

This rulemaking revised the federal standard of intoxication for operators of recreational vessels by lowering the federal Blood Alcohol Concentration (BAC) limit from .10 to .08. With respect to recreational vessels on navigable waters within state boundaries, the Coast Guard continues to adopt BAC limits enacted by respective state jurisdictions. This rulemaking revised the rule adopting state BAC limits to account for recent developments in state boating legislation by removing language referencing state statutory schemes that no longer exist. The rule added language to reference statutory schemes that have come into existence since the promulgation of the .10 federal BAC limit for recreational vessels. This rulemaking also inserted the words "under the influence of alcohol, or a dangerous drug in violation of a law of the United States" in place of the word "intoxication" where it appears in Titles 33 of the Code of Federal Regulations. That change affected only sections involving operators of recreational vessels. The purpose of that change is to bring those regulations into conformity with the language of 46 U.S.C. 2302(c), as amended by the Oil Pollution Act of 1990. The Final Rule was published on Jan. 10, 2001, effective on May 11, 2001.

Lives Saved Thanks to Smart Regulations

The Office of Boating Safety believes that the regulations that have been promulgated, along with other RBS efforts, such as promoting the benefits of PFD use, have significantly contributed to the decline in fatalities related to recreational boating. Because of these regulations, many recreational boaters are still cruising, fishing, skiing, relaxing, and enjoying our nation's waterways. The Office of Boating Safety will continue to do its part to advance safe boating for everyone.

Together, the Coast Guard and manufacturers are considering regulations to make personal watercraft safer. Page 10: Copyright © 2003 USCG and its licensors.

Measuring *the* Safety *of* Recreational Boaters

by Bruce Schmidt
U.S. Coast Guard Office of Boating Safety, Program Management Division

Recreational boating activity has grown at an amazing rate throughout the last several years, with approximately 76 million adult (age 16 and over) participants along with millions more youth now participating in the United States. The most significant increases in recent years are in personal watercraft (PWC) and canoe/kayak use. Further, the number of recreational boats has increased along with this growing participation. In 1962, there were 3.5 million state-registered recreational boats. By 2001, that number had grown to approximately 13 million (Figure 1), which does not include an estimated four million additional recreational boats that are non-motorized, exempting them from registration requirements in most states. With approximately one-third of the U.S. population enjoying recreational boating, our nation's waterways support a diverse population of vessel traffic with each segment having unique needs, user requirements, and a responsibility to operate their vessels in a safe manner.

Recreational boating participation soared following World War II and into the early 1970s. Unfortunately, so did the number of related accidents and fatalities. In 1973, there were 1,754 boating fatalities reported—a record high—and just more than six million state-registered recreational boats. That's when the U.S. Coast Guard and its partners implemented the National Recreational Boating Safety Program, which enhanced boat manufacturing standards, solicited the assistance of the states, and improved boating regulations. Thirty years later, more than twice as many state-registered boats are on the water, but 1,000 fewer reported fatalities (Figure 2). This downward trend in the number of reported boating fatalities is an incredible success story given the continually increasing number of boaters and registered boats.

The best available measures of safety in recreational boating are accident, injury and fatality rates that adjust the number of incidents to the changing boat population. It is important to note that factors such as the weather, the economy, and security concerns have an effect on the number and activity level of recreational vessels. Thus, the most meaningful measure of safety would be based on the exposure of boaters to the risks of boating, measured in passenger-hours, but such detailed, annual, nationwide information is not currently available. This is the challenge for the future as we strive to implement such a measurement to further define the problems and thus strive for even more effective resolutions.

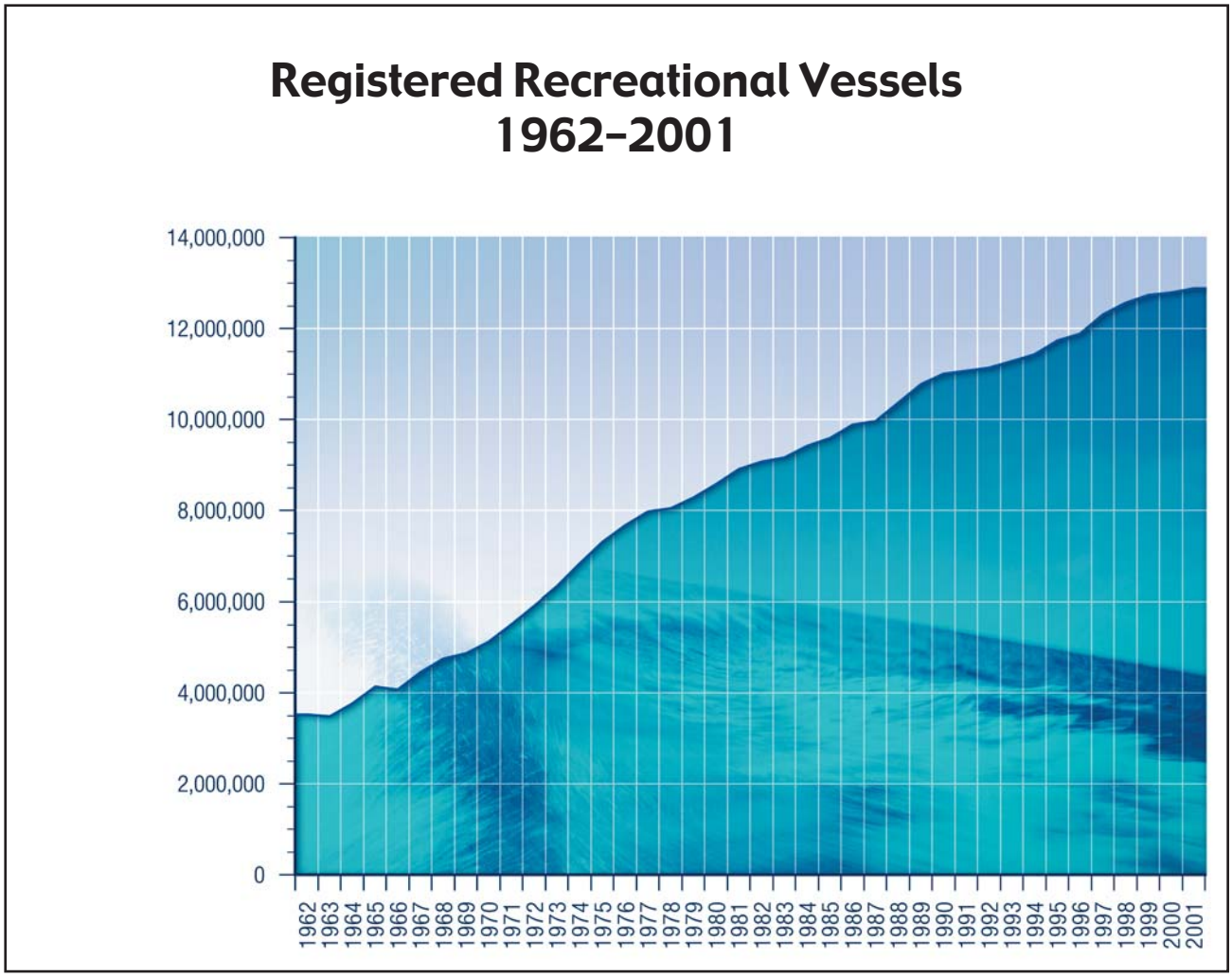


Figure 1

In 1963, there were 33 fatalities for every 100,000 state-registered vessels. Almost 40 years later, there are only six fatalities for every 100,000 vessels (Figure 3). While this boating fatality rate provides encouraging news, recreational boating deaths are still second only to highways in the number of transportation-related fatalities.

Additionally, the numbers of reported non-fatal accidents and injuries continue to remain at high levels. The primary causes of these accidents are operator inattention, careless/reckless operation, operator inexperience, operating at an excessive speed, and no proper lookout.

The latest accident statistics show seven out of every 10 boating deaths were caused by drowning. More alarming, of those victims who drowned, nine out of every 10 deaths might have been prevented if the boaters had simply worn their personal flotation device (PFD). From 1997 through 2001, approximately 470 lives could have been saved each year if drowning victims had worn their PFD. It is noteworthy to report that accident data show a strong downward trend in the number of boating deaths caused by drowning during the last 10 years. This data suggests that Recreational Boating Safety (RBS) outreach and awareness campaigns that encourage boaters to wear a PFD, and additional state laws requiring PWC riders and youth on boats to wear PFDs, are having an impact in saving lives.

The Coast Guard works diligently with the states and boating safety organizations to implement accident prevention and response measures. The success of these safety efforts is substantially dependent on the effectiveness of many state-run law enforcement and education programs, as well as education programs provided by various boat-

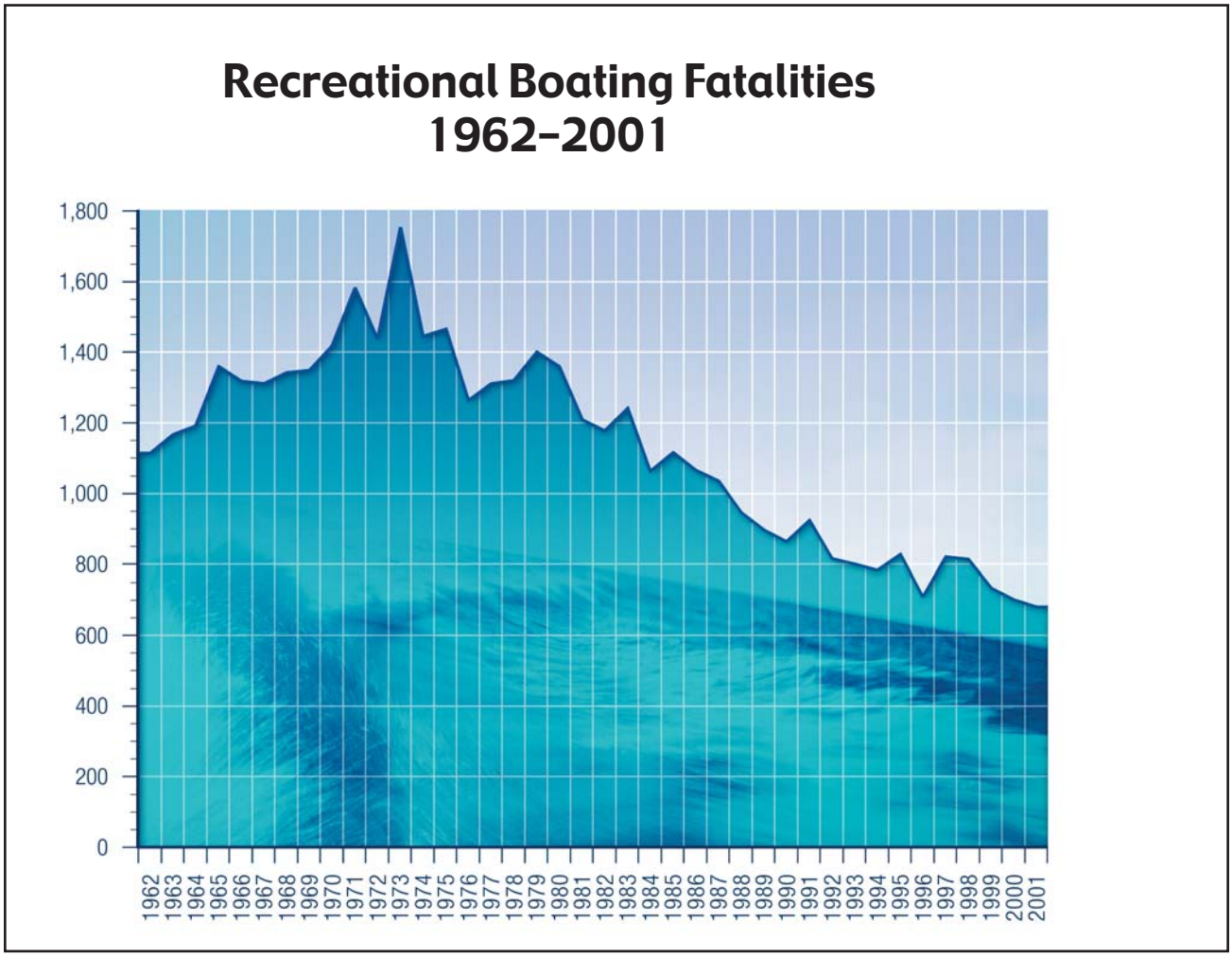


Figure 2

ing safety organizations. These combined efforts strive to alter boater behavior positively, but this is a difficult task.

Boaters increase their risk of being involved in a fatal accident when they overload and/or improperly load their small vessel (i.e., less than 20 feet in length) with passengers and/or gear. When these boaters consume alcohol, choose not to wear their PFD, and improperly distribute weight in the vessel, their risk increases significantly. Because these boaters ignored the inherent risks associated with recreational boating activity, the end result is a capsized vessel with the occupants falling overboard into an environment where they are unprepared to survive.

To reduce the number of reported accidents, injuries, fatalities and associated health care costs, the Coast Guard's Office of Boating Safety has implemented a risk-based decision-making (RBDM) process. This will facilitate better organized information about the probability of one or more negative outcomes (i.e., vessel collisions, capsizings, falls overboard, drownings) associated with the use of recreational vessels. Further, RBDM will help measure the effectiveness of RBS activities (i.e., education, outreach/awareness, product assurance) in minimizing risks associated with boating, as well as assist in making more prudent resource allocation decisions.

Using RBDM, observations show that accidents caused by lack of operator proficiency remain at an unacceptable level. The latest statistics show that only 22 percent of vessel operators involved in accidents reported receiving some form of boating safety instruction. Of the 681 boating fatalities in

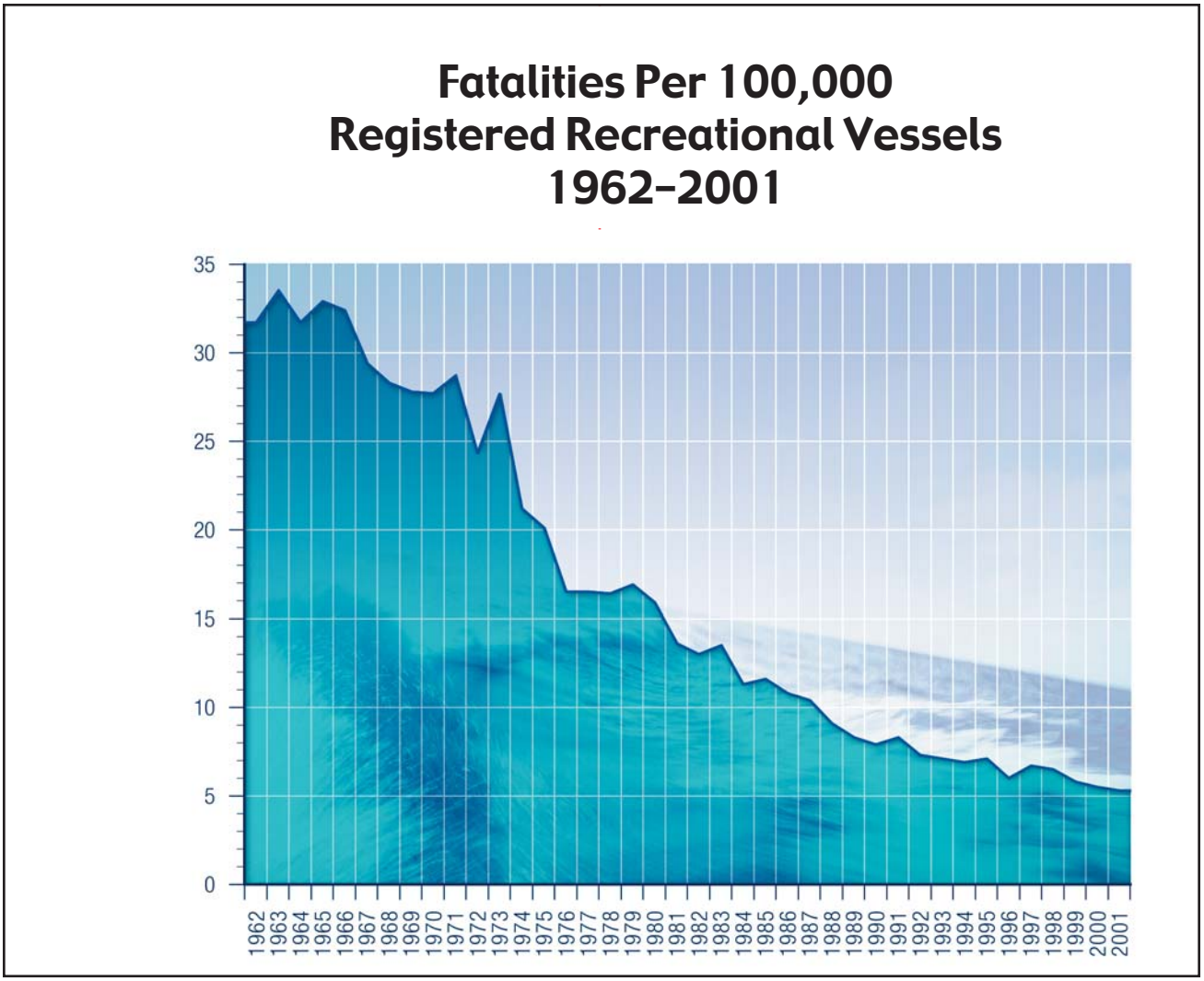


Figure 3

2001, only 11 percent occurred aboard boats where the operator reported receiving some form of boating safety instruction. By increasing the proficiency of boat operators, it is estimated that an annual reduction of 1,759 accidents, 1,192 injuries, and 76 fatalities. By increasing PFD wear, it is estimated that 323 lives can be saved each year. To help address the most reported type of boating accident—collisions—the Coast Guard Office of Boating Safety is pursuing a federal regulation regarding a Safe Maneuvering Standard for all recreational vessels. In efforts to modify the behavior of recreational boaters, a multi-year public outreach campaign titled "You're In Command" has commenced that provides safety information and resources to the boating public for safe operation of recreational vessels and associated equipment.

In conclusion, the Office of Boating Safety is committed to ensuring the safety of recreational boaters. Using comprehensive measures to define the problems, the Coast Guard will continue to work with all state partners and other organizations in developing effective programs to enhance compliance with safety standards for recreational boats and equipment; promote the wearing of PFDs by all boaters and enforce the wearing of PFDs by youths; improve boater behavior, skills and knowledge; intensify enforcement of boating-under-the-influence (BUI) statutes; and conduct Coast Guard Auxiliary/U.S. Power Squadrons Vessel Safety Checks and boating education courses to promote the safe operation of boats and use of safety equipment. The results will be more lives saved—always the mission of the Office of Boating Safety.

Granting Safety *with* Nonprofit Organizations

by Vickie Hartberger and Jeanne Timmons
U.S. Coast Guard Office of Boating Safety, Program Management Division

Supporting state boating programs through the Recreational Boating Safety (RBS) Grant Program is a very effective method of improving and coordinating individual state RBS efforts. However, some safety goals can be accomplished more efficiently and effectively through a coordinated effort at the national level. Section 13103(c) of Title 46, United States Code, provides that up to 5 percent of the grant funds appropriated for allocation to the states may be used to fund boating safety activities of national nonprofit public service organizations. Funding for the nonprofit organization grant program has grown from $650,000 in fiscal year (FY) 1985 to $3 million for FY 2003. Projects funded by this program range from small, one-time efforts that provide specific services or products, to multi-year endeavors affecting all aspects of the boating safety program.

Some projects are designed to fulfill a specific safety information/educational need while others involve research into common boating safety concerns. For example, the United Safe Boating Institute and the BOAT/U.S. Foundation have developed various boating safety materials to address concerns about fatalities of "nontraditional" boaters, such as hunters and fishermen, who may view boats merely as platforms for their sport. Also, JSI Research and Training is developing a national estimate of how often personal flotation devices (PFDs) are worn by recreational boaters. The American Boat & Yacht Council is conducting a valuable carbon monoxide workshop. The Marine Safety Foundation is conducting Personal Watercraft Accident Analysis, and the American Canoe Association and the U.S. Power Squadrons are developing and distributing safety materials on specific boating activities.

Some projects are designed to fulfill a specific safety information/educational need while others involve research into common boating safety concerns.

Other projects were designed to develop pilot programs for potential use by government agencies or private sector organizations. For example, the National Association of State Boating Law Administrators (NASBLA) is creating training seminars for marine patrol officers specifically addressing boating and alcohol enforcement.

Several grantee organizations have provided long-term support for boating safety activities through recurring grant projects. NASBLA, through its committees, promotes uniformity of laws on various boating safety issues, and produces a bimonthly publication, titled *Small Craft Advisory,* which provides boating safety information to thousands of boating safety personnel, representatives of government agencies and private sector organizations. The Power Squadrons conduct a national safe boating test. NASBLA has developed and is conducting national recreational boating accident investigation seminars to improve uniformity and completeness in accident reporting. More than 95 percent of the 250 to 300 seminar attendees each year are state or local boating safety personnel responsible for submitting accident data compiled in the annual boating statistics published by the U.S. Coast Guard. The National Safe Boating Council (NSBC) has hosted the annual National Boating Education Summit since 1984, which is now combined with the National Water Safety Congress' annual meeting. The combined event is known as the International Boating and Water Safety Summit. In conjunction with the Coast Guard and NASBLA, the NSBC also has conducted the annual National Safe Boating campaign since 1986.

While not specifically designed to aid only state efforts, several grant projects prove to be of great value to state authorities. NASBLA continues to study various aspects of boating under the influence of alcohol or drugs. To address the need for better boating accident data, the Center for Recreational Communication is conducting an analysis for nationwide boating accident data collection, and the Emergency Nurses Association is also collecting boating injury data on patients who have been treated in emergency rooms. Because of continued concerns about congestion on America's waters, a grant was awarded to the National Water Safety Congress to update a comprehensive guide to multiple-use waterway management that was developed under a previous grant several years ago.

With all of these exceptional projects being completed, the effectiveness of the National RBS Program has grown exponentially. To all of the partners in boating safety, thanks for the tremendous job that you do.

Grants help fund:

- Safety materials for nontraditional boaters
- National estimate of PFD use by recreational boaters
- Carbon monoxide workshop
- Personal watercraft accident analysis
- Safety materials on boating activities
- Safety course addressing alcohol use while on boats
- Uniformity of laws
- Publications
- National safe boating test
- Seminars to improve accident reporting
- International Boating & Water Safety Summit
- National Safe Boating Campaign
- Boating injury data and statistics
- Guide to multiple-use waterway management

Recreational Boating Safety State Grant Program

by Lynne Carliss, Audrey Pickup, Kathy Poole
U.S. Coast Guard Office of Boating Safety, Program Operations Division

and Jeanne Timmons
U.S. Coast Guard Office of Boating Safety, Program Management Division

The importance of the states' efforts as a component of the National Recreational Boating Safety Program cannot be overemphasized. About 80 percent of recreational boating fatalities each year occur on inland waters (lakes and rivers) where the U.S. Coast Guard has little or no presence, or on sole state waters where the Coast Guard has no jurisdiction. In both cases, states provide search and rescue and boating law enforcement. The Recreational Boating Safety (RBS) State Grant Program provides essential funding to assist the states in providing those critical services to millions of Americans each year.

How it Began

Although the Federal Boat Safety Act (FBSA) of 1971 included many components that have significantly improved the safety of American boaters, one of the most important was establishment of the RBS Federal Financial Assistance Program to "encourage greater State participation and uniformity in boating safety efforts, and particularly to permit the States to assume the greater share of boating safety education, assistance, and enforcement activities" (46 U.S.C. 13101). Under the FBSA, funding for the State RBS Grant Program, which was provided from general revenue through the Coast Guard's Operating Expenses appropriations, was considered "seed money" for the short term to get states more involved in boating safety. Federal funding for the program was to decrease throughout a five-year period until that funding would be eliminated. However, because of the popularity of the program, Congress reauthorized it twice until it finally expired in 1979.

To continue the grant program, Congress needed to find "user fee" funds—instead of general revenues—for a program that benefited only a portion of the American public. This was accomplished when the program was reauthorized by the Recreational Boating Safety and Facilities Improvement Act of 1980 (the Biaggi Act). The Biaggi Act provided that a portion of the federal excise tax receipts attributable to motorboat fuel use would be transferred from the Highway Trust Fund to a new Recreational Boating Safety fund to pay for the State RBS Grant Program. In utilizing the fuel taxes being paid by boaters, the Biaggi Act ensured that those receiving the benefits of the program would also pay the costs. The first appropriations under this new mechanism were approved in 1982.

In 1984, Sen. Malcolm Wallop of Wyoming and then-Rep. (now Sen.) John Breaux of Louisiana sponsored legislation to create the Aquatic Resources (Wallop-Breaux) Trust Fund to improve

funding to the states for the RBS Program administered by the Coast Guard and the Sport Fish Restoration Program administered by the U.S. Fish and Wildlife Service. The legislation provided that the two separate funds for those programs would become individual accounts under the single umbrella of the new Wallop-Breaux Trust Fund. The state grant programs funded through Wallop-Breaux are excellent examples of *"user pays/user benefits,"* since all monies deposited into the trust fund are paid by boaters and fishermen. No general tax revenues are involved.

Wallop-Breaux Trust Fund receipts consist of federal excise taxes attributable to motorboat and small-engine fuel use and on sport fishing equipment, along with import duties on fishing equipment, yachts and pleasure craft. The Boat Safety Account is funded solely from motorboat fuel taxes. The Sport Fish Restoration Account receives a portion of the fuel tax as well as all other trust fund receipts. In 1984, total receipts in Wallop-Breaux were less than $150 million. In FY04, total trust fund receipts will reach $500 million, and by FY09 receipts are expected to exceed $560 million.

Subsequent reauthorizations of the RBS Program have provided for a combination of discretionary appropriations from the Boat Safety Account and transfer of mandatory funds from the Sport Fish Restoration Account. Since 1999, no discretionary appropriations have been provided from the Boat Safety Account. All funds for the RBS Program have been provided through transfer from the Sport Fish Restoration Account, which has enjoyed a permanent-indefinite (mandatory) appropriation of its receipts since 1951. For the five years from FY99 through FY03, the Coast Guard has received $59 million per year for the State RBS Grant Program. In addition, the Coast Guard receives $5 million per year from the Wallop-Breaux Trust Fund to coordinate and carry out the National RBS Program.

How it Works

The State RBS Grant Program is administered by the Coast Guard's Office of Boating Safety (G-OPB). To be eligible to participate in the grant program, a state recreational boating safety program must include:

- a vessel numbering (registration) system approved by the Coast Guard;
- a cooperative boating safety assistance program with the Coast Guard;

Only 13.5 cents of the 18.3 cents federal excise tax on gasoline attributable to motorboat use is being transferred to Wallop-Breaux. Legislation recently has been introduced by Rep. E. Clay Shaw Jr., of Florida to recover the remaining 4.8 cents of motorboat fuel taxes that is currently going to the General Fund. This would provide an additional $110 million per year for Wallop-Breaux.

- sufficient patrol and other activity to ensure adequate enforcement of state boating safety laws and regulations;
- a state boating safety education program, including the dissemination of information concerning the hazards of operating a vessel under the influence of alcohol or drugs; and
- a marine casualty reporting system.

All states, U.S. territories, and the District of Columbia participate in the RBS Grant Program.

Of the funds appropriated for the state RBS programs, the Coast Guard is authorized to retain not more than two percent for the costs of administering the State Grant Program, and up to 5 percent for grants to national nonprofit public service organizations to conduct national boating safety activities. The balance, along with unused prior-year administrative and grant funds, is allocated to the states in one-third shares as follows: divided equally among participating states; one-third prorated based on the number of vessels registered by the state; and one-third prorated based on the amount of the state's prior-year expenditures for boating safety.

Statute provides that federal funds paid for a state's boating safety program may be used for any of the following:

- providing facilities, equipment, and supplies for boating safety education and

law enforcement, including purchase, operation, maintenance, and repair;

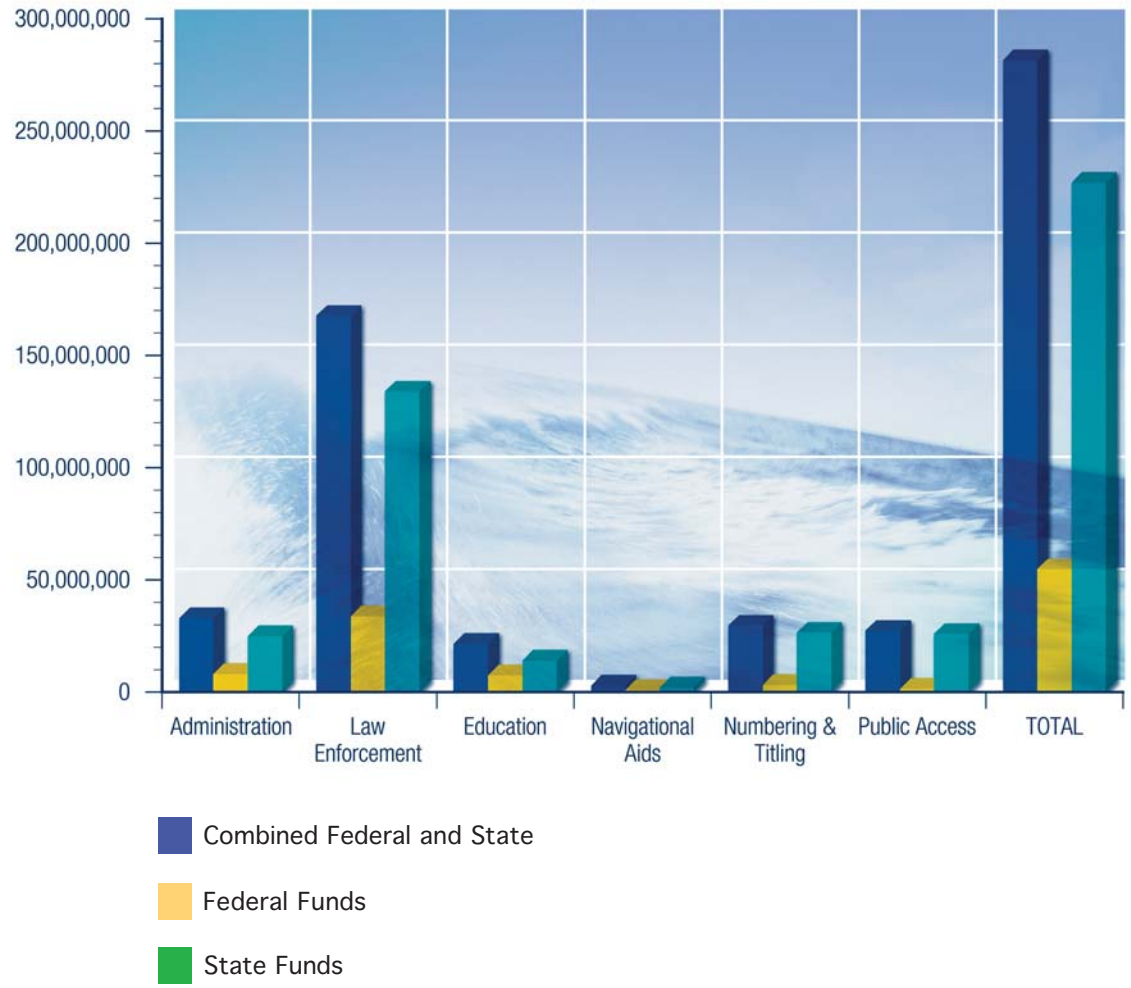
- training personnel in skills related to boating safety and to the enforcement of boating safety laws and regulations;
- providing public boating safety education, including educational programs and lectures, to the boating community and the public school system;
- acquiring, constructing, or repairing public access sites used primarily by recreational boaters;
- conducting boating safety inspections and marine casualty investigations;
- establishing and maintaining emergency or search and rescue facilities, and providing emergency or search and rescue assistance;
- establishing and maintaining waterway markers and other appropriate aids to navigation; and
- providing state recreational vessel numbering and titling programs.

Not more than one-half of a state's RBS program expenditures can be reimbursed by the Coast Guard. In other words, states must match the federal funds with their own dollar-for-dollar. Some states with small programs cannot use all of their allocated funds. However, many states spend significantly more on their boating safety programs. Nationally for the past decade, total state spending on boating safety each year has averaged four to five state dollars for each federal dollar provided.

State RBS Program expenditures are reported in six major categories:

Administration
Includes support services and facilities for other activities, such as fiscal and record-keeping functions of the program, as well as planning, legislative

FY02 Total Expenditures of Federal and State RBS Program



and regulatory functions, waterway management initiatives, and (in a few states) subgrant administration and auditing. A major facet of the states' RBS programs under this category would be their boating accident reporting systems. The information provided by these accident reports helps the Coast Guard understand the causes of accidents to more effectively address the issues that may prevent them.

Law Enforcement/SAR

Just as the majority of the Coast Guard's costs are for personnel and equipment, most RBS funds are spent by the states on personnel, training and equipment for boating law enforcement. The presence of officers on the water is a deterrent to unsafe boating behavior, thus reducing accidents and fatalities or injuries, as well as improving security of critical infrastructure such as nuclear facilities, dams and bridges. Along with the traditional enforcement duties of stopping violators and issuing citations or warnings, as well as search and rescue (or recovery) operations, enforcement includes many other functions. Among them are accident and stolen vessel investigations, or providing assistance to boaters. In many instances, a routine boarding to check for safety equipment can provide an opportunity to educate the boater on other safety issues, thus turning a potentially negative contact into a positive one.

Education

Boater education is one of the most important aspects of the states' RBS efforts because most boating accidents involve operators who have not taken a boating safety course. As a result, more states are moving toward mandatory education of at least some segments of the boater population, such as youth or operators of personal watercraft.

However, most boater education still is voluntary. Many sources are available, from the traditional classroom courses taught by volunteer instructors—such as the Coast Guard Auxiliary and U.S. Power Squadrons, or state boating safety officers—to more "tech" avenues via the Internet. The education segment also includes broader "awareness" approaches, such as radio and TV public service announcements, billboards or brochures aimed at boaters, and informational kiosks at boat ramps. Specific programs also have been developed for various problem areas (impaired operation, hunters and anglers who view their boats just as platforms for their sport, etc.).

Registration and Titling

In the Federal Boating Act of 1958, the Coast Guard was given the authority to approve vessel numbering systems implemented by the states and territories if they complied with the federal numbering system. Currently all states and territories have been approved to do so. Registration periods range from one year up to a maximum of three years. In addition to the revenue derived from registration fees, which can (along with state marine fuel taxes and general revenue funds) be used to provide matching dollars for federal RBS grant funds, state vessel registration systems provide information on the size and location of the boating population to help boating program staff identify where best to concentrate efforts. The information collected in the state registration systems will also be the backbone for the Vessel Identification System (VIS), which will provide a central database for all registered watercraft in the United States. In addition to its original purpose of assisting in interstate boat transfers and in tracking stolen vessels, VIS can be a significant factor in the Coast Guard's Maritime Domain Awareness initiatives by providing federal, state and local law enforcement personnel with centralized access to information on the 13 million registered recreational vessels in our country.

Navigational Aids

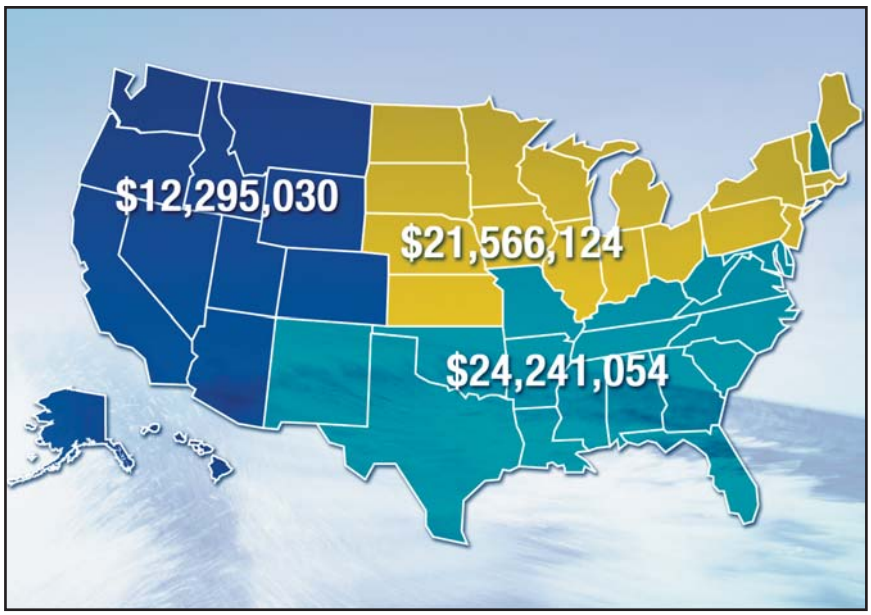
With more and more boats on the water, it is important to ensure that navigational aids are maintained and that waterway hazards and restricted zones are appropriately marked. As the number and variety of watercraft increases, these "signposts of the water" are essential for maintaining a sense of order in the traffic on our waterways.

Public Access

Improvements in boating access sites can also be important to state RBS programs since many boating accidents occur near access facilities where the waters are crowded. While providing safe and reliable access to lakes, rivers and the ocean, access sites also provide a contact point for boating safety information. For example, the Coast Guard Auxiliary and Power Squadrons often use them for their free Vessel Safety Checks (VSCs), and states locate kiosks with boating safety information at access sites. Access projects also can include related facilities, such as pumpout stations and restrooms, which help to keep our waters clean.

State Recreational Boating Program

FY 2003 Allocations



TOTAL FEDERAL ALLOCATIONS BY REGION

- Western States plus American Samoa, Guam, and the Northern Mariana Islands
- Northern States
- Southern States plus Puerto Rico and the Virgin Islands

State Budget Needs

Recreational boating safety programs in each state have been greatly improved by Wallop-Breaux funding. While boating safety programs have saved an estimated 29,000 lives, there is still much work to be done. As the number of recreational boaters increases, the demand for additional services also will continue to grow.

The National Association of State Boating Law Administrators (NASBLA) contracted with Responsive Management in Harrisonburg, VA, to conduct a national assessment of future funding needs for state Recreational Boating Safety Programs. The estimated funding needs were generated by creating a state-by-state valuation of expenditures per boat for each state in 2001 and applying that relationship to projected numbers of boats for 2004 and 2013. The report projects funding required to sustain RBS at current program levels; it does not quantify increased funding needed to address new initiatives and program expansions.

Current & Projected Number of Boats and State/Territorial Recreational Boating Safety (RBS) Expenditures

	2001 *Actual*	**2004** *Estimated*	**2013** *Estimated*
Total State RBS Expenditures	$ 265,801,346	$307,793,545	$477,932,430
Total Numbered Boats	12,736,759	13,316,102	$15,217,090

Copies of the full report with state-by-state as well as national numbers is available from NASBLA at **www.nasbla.org** *or by phone at (859) 225-9487.*

Marine Patrol Officers Play Important Role *in* Boating Safety

by Joe Carro
U.S. Coast Guard Office of Boating Safety, Program Operations Division

Courtesy Boston Whaler Commercial and Government Products, Inc.

One of the U.S. Coast Guard's most important partnerships is its relationship with the state marine patrols.

Marine Patrol Officers from the Texas Parks and Wildlife Department converse with a PWC operator. Courtesy Texas Parks and Wildlife Department.

The contributions of marine patrol officers in the overall success of America's boating safety programs cannot be overstated. In recognition of that fact, the Coast Guard hosts a course, titled Marine Patrol Officers Course (MPOC), that is specifically designed and tailored to these officers.

MPOC has become one of the real jewels of the National Recreational Boating Safety Program. The course, first established in 1983 as the National Boating Safety Instructors Course (NBSIC) was designed to train maritime law enforcement officers in the enforcement of boating safety laws and regulations.

Throughout the years, the target students and the school's mission have changed. Employing the train-the-trainer philosophy, these changes included developing instructor skills with the goal of creating instructors of boating safety for their respective home states and individual agencies.

Today's MPOC is the result of valuable feedback from students, instructors and lessons learned from a one-time prototype course, the Advanced Marine Patrol Officers Course (AMPOC), which provided an excellent test bed for curricula that marine patrol officers had been requesting for some time. The students—all graduates of previous NBSIC classes—received instruction and hands-on training in topics ranging from defensive tactics, tactical boat handling, navigation skills and boarding procedures, to a law enforcement survival swim.

AMPOC provided valuable information, including the realization that a course of this magnitude, while truly a great product, was not sustainable because it required the coordination of too many organizations. The Maritime Law Enforcement (MLE) School staff needed the help of many agencies and staff members, including the 41-foot UTB (Utility Boat) System Center at the Coast Guard Training Center in Yorktown, Va., boats and crews, and the Virginia Marine Resources Commission, which supplied small boats and additional personnel. Their involvement demonstrated interagency cooperation at its best.

Ever evolving and improving, the current curriculum includes the core classes of instructor development, boating safety carriage requirements, and boating under the influence (BUI) instruction, among others. It also includes updated versions of some previously offered classes, including navigation rules, stolen vessel investigation, and boating accident first-responder skills.

Both the stolen vessel and accident investigation classes bring yet other boating safety partners to the course, including representatives and instructors from the International Association of Marine Investigations (IAMI), and Underwriters Laboratories (UL).

The current MPOC is two weeks long and is conducted three times each year at the Coast Guard Training Center in Yorktown, Va. The training that officers receive at MPOC can be put to use immediately. Another added benefit is the improved networking among agencies. Three times a year 32 law enforcement officers and Coast Guard personnel interact for two intensive weeks of training, discussing boating safety issues, problems and concerns. These sessions, both formal and informal, have led to solutions for both simple and sometimes extremely complex concerns with boating safety, law enforcement and training.

The returns from government programs can sometimes be difficult to measure or gauge. This is not the case with MPOC. There is little doubt with this program that the boating public and the states have received an impressive return on their investment.

To date, the program has nearly 2,000 graduates—marine patrol officers from all 56 states and territories. They all have the same goal: to promote boating safety though education, enforcement and training. MPOC has helped provide the skills and knowledge to reach that goal.

The current Marine Patrol Officer's Course is the finest course of its type to be offered anywhere. The course is two weeks long and is conducted three times each year at the Coast Guard Training Center in Yorktown, Va. The instructors, borrowed from the Maritime Law Enforcement School staff, are subject matter experts and some of the finest instructors to be found anywhere.

Graduating class and instructors from the Marine Patrol Officers Course.

You're in Command. Boat Safely!

The Genesis of the Initiative

by John Malatak
U.S. Coast Guard Office of Boating Safety, Program Operations Division

Recreational boating fatalities continue to decline, but there are still far too many deaths, injuries, and accidents involving recreational boaters on our nation's waterways. An average of 700 recreational boaters die each year, and the great majority of them could easily have been prevented. Furthermore, while the number of recreational boating deaths is less than half what it was three decades ago, the number of accidents and serious injuries has climbed unabated. Responding to totally preventable recreational boating accidents consumes valuable resources of federal, state, and local maritime law enforcement, resources that could otherwise be focused on homeland security efforts on the water.

For some time it has been a goal of the U.S. Coast Guard's Office of Boating Safety (G-OPB) to unify its programs and funding relating to boating safety marketing and education under one multi-year outreach effort. The National Recreational Boating Safety Outreach Program officially began with the awarding of a task order to PCI Communications, Inc., an agency based in Alexandria, Va.

Marketing research began in September 2002 and concluded in late November with a report to the Office of Boating Safety, and to Coast Guard Auxiliary and U.S. Power Squadrons representatives. Among the key findings that will help to guide the outreach effort:

- Most boaters think they are "safe" already. They equate safety with equipment—life jackets, fire extinguishers, and radios—and danger with the behavior of "other boaters." Therefore, telling them to boat "safe" or "smart" is not enough; they must be encouraged to boat "safer," at a new level of safety. (Remember the drive defensively campaign that suggests you drive as if the "other guy" will do something stupid any minute? It's the same concept.)
- Recreational boating safety is suffering from concept clutter. There is so much information coming from so many different purveyors that little is being retained.
- The Vessel Safety Check program is known and well regarded, but few boaters know how to find a vessel examiner when they need a check.
- Boaters liked the idea of America's Boating Course (ABC), but many Auxiliary and Power Squadron members question if it may hinder their own classroom training and membership recruiting efforts.
- Though they are concerned about inebriat-

ed boaters, few boaters consider their own drinking to be a problem—and fewer still understand the effect of waterborne stressors.

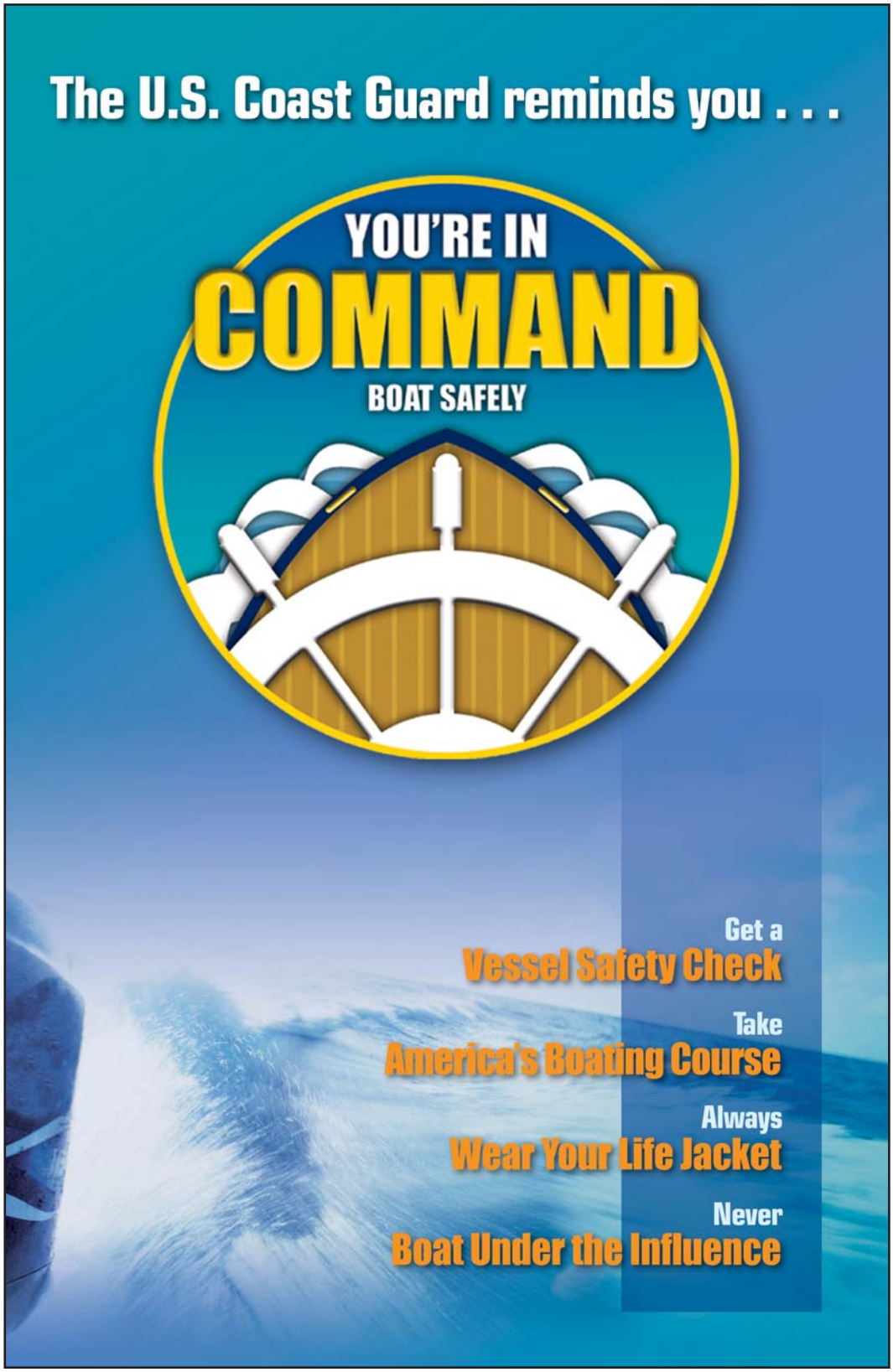
- Boaters may be motivated more by pocket book issues than fear of accidents—discounts on insurance premiums for taking safety measures or stiffer fines and penalties for violations provide the greatest leverage for behavior change.

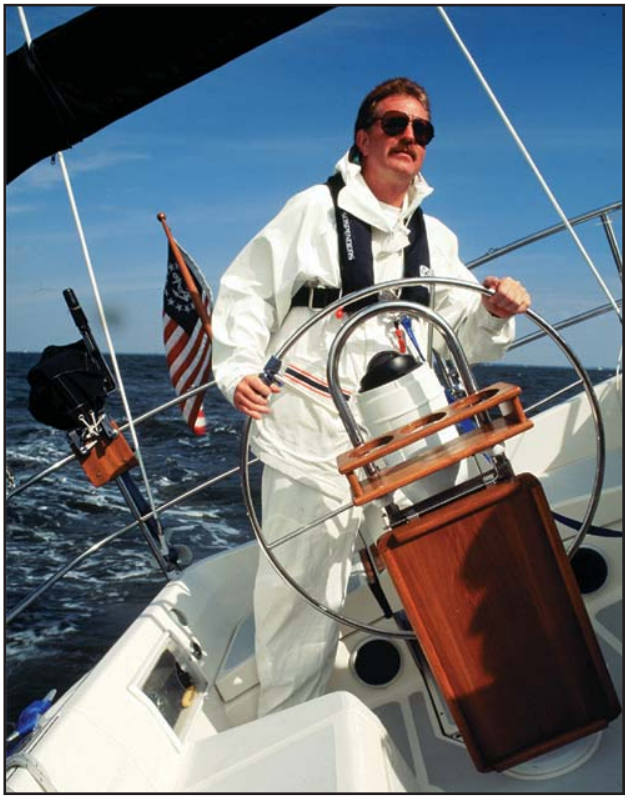
On the basis of this research, a strategy to unite the many messages of the National Recreational Boating Safety Outreach program was developed.

The goal was to brand boating safety—to create a nationwide identification for the idea of boating *safer*—and thus break through the oversupply of boating safety information. This would serve as an umbrella to bring together the disparate messages of recreational boating safety.

The team searched for a word theme that would serve the goals of the national outreach effort. After considering dozens of alternatives, the Office of Boating Safety selected the phrase, "You're in Command. Boat Safely!" A logo that graphically depicts the initiative and sets the look, feel, and color scheme, was also approved in early January 2003. The initiative will be consistently identified as: Brought to you by the U.S. Coast Guard.

The word theme and accompanying logo, which depicts a ship's wheel and bow breaking through waves, have tested well. Boaters immediately understood the message—that as captain (boat operator) they bear the responsibility for their behavior on the water. The graphic image places viewers at the helm,





You are in charge of your own safety on the water. Courtesy Sporting Lives, Inc.

accountable for their own safety and the safety of passengers and other boaters. The theme easily accommodates the various subthemes of the initiative, for example, You're in Command: Get a Vessel Safety Check, or You're in Command: Take America's Boating Course, etc.

The National Recreational Boating Safety Outreach Program will focus on making recreational boaters safer while enjoying their time spent on the water. Our outreach efforts will initially focus on the Four Principles of Safe Boating in Operation BoatSmart: **(1)** the importance of wearing life jackets, **(2)** boater education (specifically the ABC course), **(3)** Vessel Safety Check (VSC) Program (including educating to the potential dangers of carbon monoxide exposure), and **(4)** Boating Under the Influence (BUI). The Office of Boating Safety first developed materials to better market the VSC program and ABC, two joint cooperative efforts by the Coast Guard Auxiliary and the Power Squadrons. Work has begun on materials that target anglers and hunters, two boater populations that together constitute about one-third of all boating deaths. The main theme for these user groups will be the importance of wearing a properly fitting life jacket, since that is by far the biggest factor in these deaths.

The Office of Boating Safety has also developed a section on our You're in Command Resource Center Web site: **www.uscgboating.org**. Here, boating safety advocates can find an ever-expanding variety of tools, resources, images, and downloadable files to help promote You're in Command, VSC, ABC, BUI, life jacket wear, etc. We are also making great strides toward promoting the program through media relations and coalitions with manufacturers, dealers, other boating, hunting, angling, and outdoors interest groups, and associated industries. You can expect to see articles, public service announcements and features branded with You're in Command, first in Auxiliary, Power Squadrons, and the National Association of State Boating Law Administrators (NASBLA) publications, then later in the trade and general press.

You're in Command should be viewed as the external marketing tool for any and all Operation BoatSmart partners for the identified high-risk or "target" boaters in their region that need attention and the underlying factors (lack of PFD wear, lack of boater education, alcohol use, etc.). (See the related article on Operation BoatSmart partners on pages 68–71.) You're in Command helps unify the Four Principles, bringing resources and marketing assistance to take these messages more effectively to the boating public.

You're in Command, and the National Recreational Boating Safety Outreach program itself, will depend heavily upon the partnership and support of the Coast Guard Auxiliary and Power Squadrons. These two groups represent a huge network of dedicated and enthusiastic boating safety proponents who will now have access to the tools, resources, and national publicity they have long needed.

The Office of Boating Safety looks forward to working with the Auxiliary, Power Squadrons, NASBLA, the National Water Safety Congress, the National Safe Boating Council, and others throughout the You're in Command initiative. The energy, effort, and connections of the nation's two premier volunteer boating safety organizations, coupled with a communications agency, will be invaluable in our effort to change the behavior of recreational boaters, reduce accidents, and save lives on the nation's waterways.

Checking Vessel Safety *to* Reduce Risk

by Vann Burgess
U.S. Coast Guard Office of Boating Safety, Program Operations Division

"Get your FREE Vessel Safety Check Here"

is a sign seen at many marinas, boat ramps and marine supply stores around the country. Usually nearby are very courteous people wearing the insignia of the U.S. Coast Guard Auxiliary or U.S. Power Squadrons, busily inspecting boats. Many who see these signs ask, "So, what is a Vessel Safety Check?"

Vessel Safety Check (VSC) is a relatively new name for an established boating safety program known as the Courtesy Marine Examination (CME). The CME has long been associated with the Coast Guard Auxiliary, and involved a free examination of a person's boat. This examination checked for all required equipment and its condition, inspected the vessel's general seaworthiness, and provided a pleasantly presented "mini" education course on boating safely. Approximately four years ago, the CME underwent a re-engineering. The VSC is a result of that effort.

The VSC program is now a partnership between the Coast Guard Auxiliary and the Power Squadrons. This partnering effort has increased the work force, thereby increasing the number of boaters that can be reached annually.

The VSC is still a free, bow-to-stern inspection of a person's boat. These inspections are conducted by qualified Vessel Examiners (VEs) from either the Auxiliary or the Power Squadrons.

A Coast Guard Auxiliarist performs a vessel safety check, which can be completed in approximately 20 minutes.

Requirements for a VSC Decal Include:

- Display of Numbers
- Backfire Flame Control
- Navigation Lights
- MARPOL Trash Placard
- Navigation Rules
- Overall Vessel Condition (as applies):
  a. Deck Free of Hazards/Clean Bilge
  b. Electrical/Fuel Systems
  c. Galley/Heating Systems
- Registration/Documentation
- Personal Flotation Devices (PFD)
- Visual Distress Signals (VDS)
- Fire Extinguishers
- Ventilation
- Sound Producing Devices/Bell
- Pollution Placard
- Marine Sanitation Devices
- State and/or Local Requirements

Upon successful completion of this portion of the VSC, the boater will be awarded a decal for prominent display on the vessel to show the person met all the requirements and is a safe boater. A current decal is a sign to law enforcement officials and other boaters that this vessel is in compliance with both federal and state boating safety laws and regulations that apply to a vessel of its size. This does not necessarily mean the vessel will not be subject to a boarding by Coast Guard or state officials, but may be taken into consideration when officers decide which vessels to board.

CG Office of Boating Safety:
www.uscgboating.org

VSC Online:
www.vesselsafetycheck.org

CG Info Line:
(800) 368-5647

Another portion of the VSC takes a look at those safety items that may not be required, but also are important for a boater's safety, which include the following recommended and discussion items:

- Marine Radio
- Dewatering Device & Backup
- Mounted Fire Extinguishers
- Anchor & Line for Area
- First Aid and Person-In-Water Kits
- Inland Visual Distress Signals
- Capacity/Certificate of Compliance

Discussion Items (as applies):

- Accident Reporting/Owner Responsibility
- Offshore Operations
- Nautical Charts/Navigation Aids
- Survival Tips/First Aid Fueling/Fuel Management
- Float Plan/Weather & Sea Conditions
- Insurance Considerations
- Boating Check List
- Safe Boating Classes

The VSC is not a law enforcement action, and no fines or penalties can result from a failure to pass. As a matter of fact, a VSC may save the boater some money. Some insurance companies offer discounts to boaters who have successfully completed a VSC.

To have the vessel inspected, simply contact a member of the local Coast Guard Auxiliary or Power Squadrons. Phone numbers for both organizations are listed in phone directories. Announcements are often posted in the local newspaper when VSCs are going to be conducted at a local marina or boat ramp. Once a VE has been reached, the boater and the VE will agree on a time and location. A VSC takes approximately 20 minutes to complete, and is certainly time well spent.

The Coast Guard recommends that a boater get a VSC at the beginning of each boating season. Things can go wrong on the water with dangerous, even fatal, results. A VSC can go a long way towards reducing a boater's risk.

INSPECT YOUR EQUIPMENT

Before You Hit The Water

Education

The Foundation of Boating Safety

by Vann Burgess
U.S. Coast Guard Office of Boating Safety, Program Operations Division

"Education is the cornerstone to safer boating."

With the adoption of the National Boating Education Standards in September 1999, the recreational boating safety program moved from a reactive program to a proactive program. The National Association of State Boating Law Administrators (NASBLA) and its member organizations recognized that a large percentage of boating accidents were the result of a lack of basic boating skills and knowledge on the part of boat operators, and that regulatory enforcement reaches only a small percentage of the boating population. In order to reach a larger portion of the boating public, education was the key.

The main drive behind this initiative was a desire to set a new "standard of care" for boating education by establishing a minimum level of knowledge and skills to be taught by boating education professionals within a six- to eight-hour course of study. The general required topic areas are the boat, boating equipment, trip planning and preparation, marine environment, safe boat operation, emergency preparedness, other water activities, and boating education practices.

To address this issue, in 1999 an impressive group of boating safety professionals, chaired by Fred Messmann of the Nevada Division of Wildlife, was brought together. Developing recreational boating education standards crossed federal, state and organizational boundaries, so representatives from the states, U.S. Coast Guard's Office of Boating Safety, Coast Guard Auxiliary, U.S. Power Squadrons, National Safe Boating Council, National Water Safety Congress, Boat/US Foundation, and commercial providers were asked to join the task force. Through the hard work, long hours and cooperative efforts of this group, there is now a true national standard.

The success of these standards can be measured by

the importance course providers place on having the mark "NASBLA Approved and Recognized by the U.S. Coast Guard" on their course materials. The process that courses undergo for approval requires an in-depth effort. Completing the application, obtaining state, regional and final reviews, and receiving approval is not a simple process. But it is a vital one that helps maintain the high standards and quality of the program. A great deal of thanks goes out to those state and regional reviewers who manage this process. Without their dedicated support, our standards would be nothing more than a collection of papers.

With the standards in place, it now falls to all the stakeholders to ensure that these standards stay viable. This can be done only through continued cooperation and partnership. It took many to build the foundation, and it will take many to monitor and update this program as changes occur and technology grows.

The team that drafted the standards has come together again to address the next issue. The goal is to develop standards for testing the skills and knowledge factors that have been identified—standards relating to quality of the final exams; the style and types of questions that need to be asked; and the standard of care required to maintain the integrity of the examination process. In the end, there will be a national database of exam questions to support education (proficiency) standards and help ensure the lessons taught are the lessons learned. This phase should be completed by spring 2004.

Education is now more important than ever. With more and more boaters on the water each year, and with resources being diverted to growing security concerns, it is vital to get the word out and educate boaters on issues such as port closures and security zones under the "new normalcy."

Citizens need to be aware that they help support the United States at this time by being safe and following the established rules. This is accomplished by taking a boating safety course and being better prepared. In doing so, recreational boaters are less likely to be involved in an accident or find themselves in need of assistance, thereby allowing patrol vessels to remain on station to protect us from those who would do us harm.

With the four–year-long Lewis & Clark Bicentennial Commemoration, the Office of Boating Safety anticipates a surge of new boaters who want to experience the Corps of Discovery as it was in 1803. These boaters need to understand that putting that canoe in the Missouri or Snake River is not the same as it is in their favorite lake, nor are the river conditions the same as they were 200 years ago. They need to be educated on the potential dangers of locks and dams, how close is "too close" to a commercial tug and tow, that paddling against an 8-knot current is not an easy thing to do, and that they can die from a dip in water that is cooler than 50 degrees even on a sunny, 90-degree day.

Regulations, safer boats, and improved equipment will do little to reduce accidents and fatalities unless the boater is educated on the regulations, their boats limitations, and how to use the equipment they are required to carry.

Safety education at an early age promotes life-long life-saving skills. Courtesy Timothy M. Smalley, © Minnessota Department of Natural Resources.

Accident Prevention

Don't Boat and Drink

by Joe Carro
U.S. Coast Guard Office of Boating Safety, Program Operations Division

It is illegal under federal law and in all states to operate a vessel while under the influence of alcohol or a dangerous drug. Boating under the influence (BUI) can quickly turn an enjoyable outing on the water into a law enforcement situation or, at its worst, a boating accident resulting in the death or serious injury of a family member, friend, or other boater.

Every year scores of deaths, injuries, and property damage occur as a direct result of BUI. The way to prevent these incidents is clear: *Don't operate your vessel while under the influence!*

Many think that boating and alcohol have to go together. This is not the case (No pun intended!). Alcoholic beverages depress the body's central nervous system and affect vision, judgment, and motor skills. The "stressors" of your surroundings while boating also compound the effect of alcohol on the body. The heat of the sun, the pounding of the boat, and the noise from the engines all contribute to increase these effects.

The regulations also apply to the use of dangerous drugs. Illegal, and even legal, prescription drugs can have an adverse effect on your ability to operate a boat safely. If your prescription includes a warning about not operating machinery or a motor vehicle when taking that medication, you should also seriously consider not operating a vessel while taking that medication.

Some of the common questions regarding BUI are:

- Can I drink on my boat?
- What happens if the U.S. Coast Guard stops me?
- Can the local police also be involved?

First, yes—you and your guests may drink aboard your boat. If you choose to do so, be responsible. The BUI regulations apply to different vessels in different ways. For recreational vessels the regulations only apply to the operator. The vessel must also be in operation, and on a recreational boat that means underway.

Evidence of intoxication for processing a violation of BUI is based on the results of a chemical test and

or behavioral observations made by a boarding officer. This chemical test records an individual's blood alcohol content (BAC), usually on breath testing equipment, and behavioral observations are recorded on a field sobriety test performance report. The federal BAC standard is .08. Based on the test results, the boarding officer will determine whether a level of impairment is present and then take the appropriate law enforcement action. The good news is that these tests work both ways. If you are not intoxicated, those results will also be evident.

Alcohol depresses the body's central nervous system and impairs vision, judgment, and motor skills. Below: Bottle image copyright © 2003 USCG and its licensors.

On a vessel used for purposes other than recreation, the regulations apply to the entire crew and the vessel must also be in operation. "Operation" on these vessels includes anchored or conducting dockside operations, as well as being underway. The field sobriety testing standards still apply but the BAC level for these vessels is significantly lower at .04.

The second and third questions can be answered in combination. If the Coast Guard comes aboard your vessel, you can expect certain procedures to be followed. The boarding officer will introduce him/herself, tell you why they are there and ask if you have any weapons aboard. The boarding team will do a quick walk-around, known as an Initial Safety Inspection, to make sure there are no safety hazards present. Then the boarding will begin. They will ask for identification and the boat's registration and begin inspecting the vessel for compliance with what is referred to as "all applicable federal laws and regulations." Included in these regulations are life jackets, fire extinguishers and the BUI requirements.

If during a boarding it is determined that you are boating under the influence, the procedures can vary depending upon the vessel's location, the number of people onboard, and the boarding officer's assessment of the situation. Generally you will not be allowed to continue to operate the vessel, your voyage will be terminated and you will be cited for boating under the influence. Operation of the vessel may be turned over to another individual onboard if that individual is willing, sober and able to operate that vessel.

Federal Standards of Blood Alcohol Content

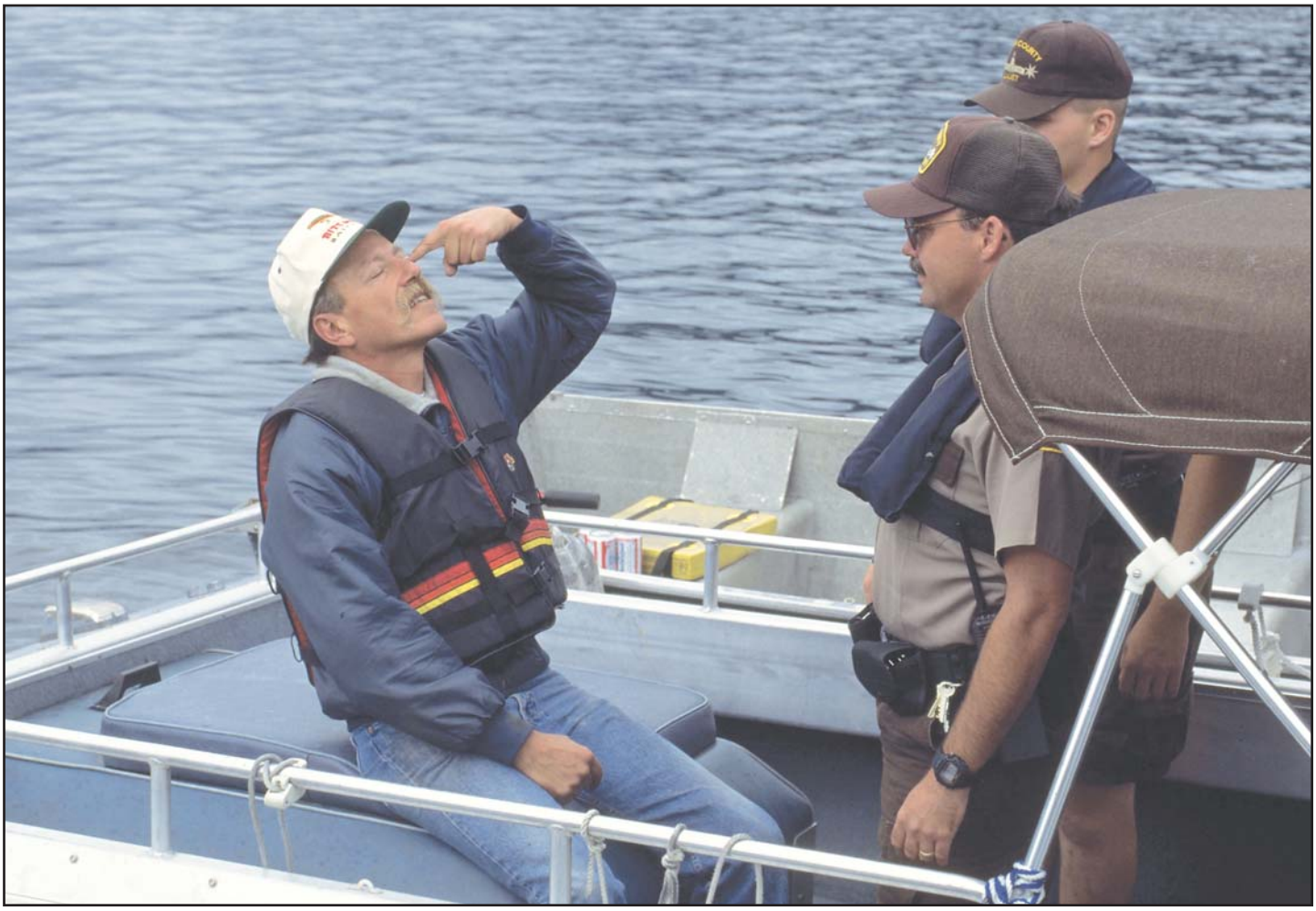
Recreational Vessels = .08

All other Vessels = .04

If cited, you may be offered a cab ride home or an opportunity to spend some time at a Coast Guard station, and if appropriate, your parents may be notified to take you home. Count on the local police, sheriff, or marine patrol officers being contacted. They will usually respond to assist with Coast Guard BUI cases. This assistance may be to offer a ride to place you in protective custody, or to place you under arrest.

In addition to being arrested by these marine patrol officers, you also will face fines and penalties assessed by the Coast Guard. Some may ask, "Isn't that double jeopardy?" The answer is, "No," you can face penalties from both agencies. Generally, vessels of intoxicated operators are kept at Coast Guard stations until the next day when owners can retrieve them.

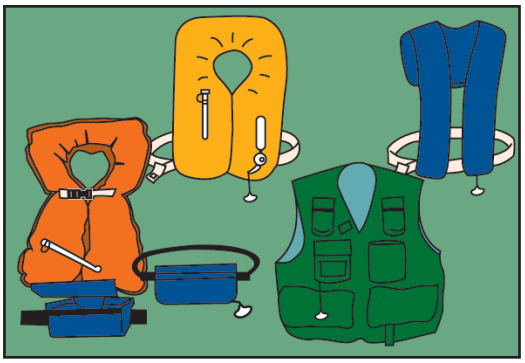
There are two reasons for our enforcement efforts: **(1)** to ensure an intoxicated individual does not operate a vessel, in order to reduce the threat of harm to self and others; and **(2)** to educate the recreational boating public on existing BUI regulations and the requirements for safe boating. We will continue our efforts to reduce the number of boating accidents, injuries and deaths related to intoxicated operators. To minimize risk to yourself, your passengers and other boaters, remember that you are in command on your recreational boat and you should not drink and drive. You are responsible for the passengers aboard and the safe operation of that vessel. Set the standard—don't drink and boat.

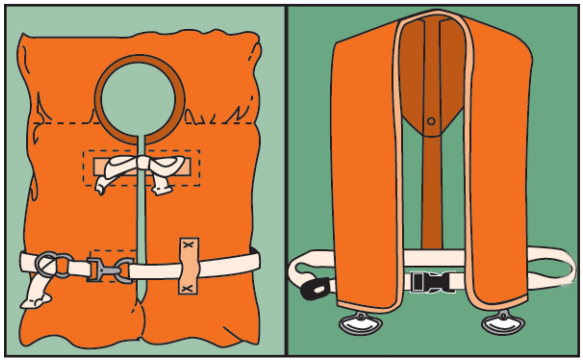


Marine Patrol Officers in Oregon perform a sobriety check on a vessel operator. Courtesy Oregon State Marine Board.

Coast Guard Promotes PFDs

by Phil Cappel
U.S. Coast Guard Office of Boating Safety, Product Assurance Division





The recurring theme of the U.S. Coast Guard's annual boating safety campaigns for the past several years has been to encourage the boating public to wear personal flotation devices (PFDs), or life jackets, to reduce the number of drownings. One of the most significant observations from these campaigns is that boaters don life jackets they *want* to wear, such as fishing and hunting vests, which are actually inflatable PFDs. Comfort and appeal, the Coast Guard has learned, are important factors in determining whether the boater will don a life jacket.

To improve the wear rate of PFDs, the Coast Guard supports the development of new and unique PFD designs that will provide the necessary flotation, but may use novel means to encourage boaters to wear them more often. To this end, the Coast Guard has been conducting several projects that promise to provide the flexibility for PFD manufacturers to explore unique designs:

- The Coast Guard is entering the last phase of developing a risk-base compliance-approval process using performance mod els for PFDs. This will replace the current Life Saving Index (LSI) used to evaluate new and unique PFD designs. The new approval process will provide a more objective method for making trade-off decisions on design features while maintaining an equivalent level of safety.

- The Coast Guard is creating a family of mannequins (male, female and child) to further develop and validate a computer simulation program. The program will provide a way to test PFD designs in virtual wave situations based on the design param eters of the PFD. This simulation, coupled with the new approval process, would allow a PFD manufacturer to beta test a design all the way through the approval

All jacket images above are courtesy the Office of Boating Safety's *Federal Requirements & Safety Tips*, which is available by calling the U.S. Coast Guard Infoline at (800) 368-5647.

New life jacket designs make wearing them easy and comfortable. Courtesy Timothy M. Smalley, © Minnessota Department of Natural Resources. Inset: Courtesy Sporting Lives, Inc.

process based solely on the specifications without having to construct a prototype.

The Coast Guard continues to approve an increasing number of inflatable PFDs. Currently, 22 Type III manual inflatables are approved, four Type V manual inflatables and 19 Type V automatic inflatables are approved. Initial perceptions are that inflatable PFDs, because they are much more comfortable than inherently buoyant PFDs, will increase the use of these lifesaving devices.

The Coast Guard also has approved the first 1F inflator mechanism for inflatable PFDs. This device provides an almost-foolproof method for the user of an inflatable PFD to determine whether the PFD is properly charged and ready for use. It will also greatly improve the reliability of inflatable PFDs.

Additionally, the Coast Guard continues to provide financial support to the PFD Standards Technical Panel coordinated by Underwriters Laboratories. The STP continues to explore ways to improve both the performance and the wear rate of PFDs either through technical recommendations or changes to the standards.

With these initiatives, the Coast Guard seeks to increase the wear rate and reliability of PFDs. The importance of wearing lifejackets will continue to be emphasized in all annual boating safety campaigns to encourage boaters to wear them, and in the process, save lives.

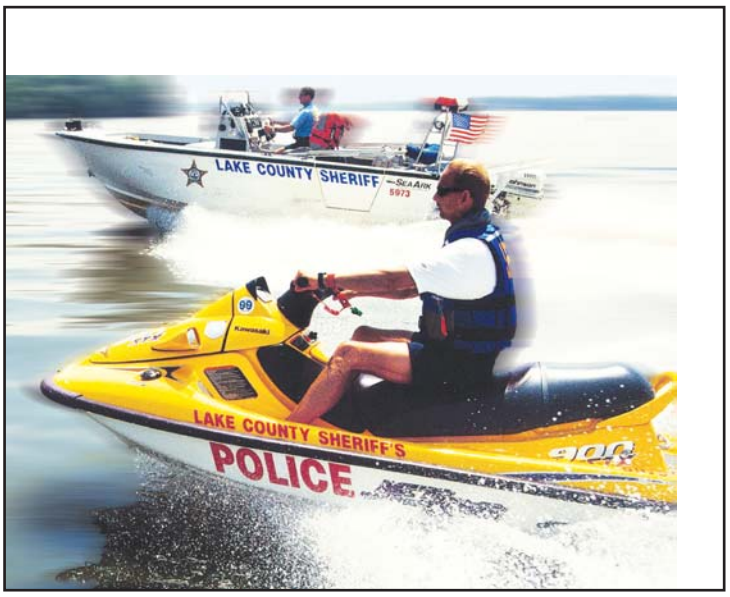
Engaging Recreational Boaters *in* Homeland Security

by Joe Carro
U.S. Coast Guard Office of Boating Safety, Program Operations Division

The U.S. Coast Guard's transition from the Department of Transportation to the Department of Homeland Security in March 2003 brought many new challenges and reflected our greater focus on making our waterways more secure. While there has been much attention on such Coast Guard initiatives as the Marine Safety and Security Teams (MSSTs) and the Sea Marshals program, the Office of Boating Safety has been working on security-related programs that involve recreational boaters.

One of the projects that this office is involved with is the development and standardization of various harbor and water watch initiatives. We didn't break ground on these programs, but we do think they are great ideas, and we will promote and support them.

The first one we became familiar with was Operation *On Guard*. This program began in Florida as a joint agency public outreach campaign to get waterfront users and boaters informed and provide a mechanism for reporting suspected terrorist activity.



Officers in Lake County, Ill. on patrol. Courtesy Personal Watercraft Industry Association.

The Marina Operators Association of America (MOAA), along with the Coast Guard, U.S. Customs Service, FBI, and others, all worked together to make *On Guard* a homeland security success story to be used as a model for other initiatives.

On Guard was not the only program moving forward to answer a common question asked by boaters, "What can we do to help?" All around the country other grass roots programs were taking shape. In Mobile, Ala., the Community Coastal Watch Program was taking off. In Detroit, Mich., the River Watch program was established. Those cities' respective Marine Safety Offices sponsored

both of these programs. Other programs were underway in California, Alaska, South Carolina, and elsewhere.

NATIONAL RESPONSE CENTER (800) 424-8802

Now there is an initiative to bring all these regional programs together under one national umbrella. There have been many meetings and phone calls, and the work continues. What began as a one-day national kickoff for *On Guard* in May 2003 soon transitioned into a three-day workshop beginning at the U.S. Capitol building and ending in a hotel conference room.

Representatives from around the country were invited to attend—the Coast Guard, Coast Guard Auxiliary, U.S. Power Squadrons, the National Safe Boating Council (NSBC) and professional marine industry representatives, including shipping, port facility, and marina operators.

With nearly all facets of the marine community represented, the question of who would have the national oversight of these program initiatives was soon answered. Responsibility would fall to the Office of Port Security, (G-MP), headed by Rear Adm. Larry Hereth.

It looked like the original water watch program had grown up. With the number of regional programs also growing, the next logical step was to bring them together under a national program, feeding off the local programs.

One of the established mechanisms to help this happen would be better use of the nearly 100 Harbor Safety and Security Committees (HSSCs) around the country. These HSSCs are generally established in key port cities and are primarily involved with commercial vessels and port facility

The Coast Guard Cutter *Shearwater* is dwarfed by the looming USS *Theodore Roosevelt*, lined with sailors in summer whites, as the aircraft carrier approaches its mooring in Norfolk, Va. Photo by Public Affairs Officer John Masson, USCG.

operations. There was a general lack of input and representation from the recreational boating community with the HSSCs. This needed to be remedied, and has been addressed with the establishment of recreational boating subcommittees. Representatives from these subcommittees now provide input to the HSSCs.

Everything to make these programs successful is in place and working. There is good, established infrastructure for implementation and support of both regional and national programs. Draft Commandant Instructions have been developed, memorandums of understanding have been signed, and budget and communication systems are in place.

One area that is still under construction is a training program to ensure standardization nationwide. We must have standardized training programs, reporting procedures, and a standardized message. In June, a regional meeting was held in Washington, D.C. with representatives from federal, state, and local groups, in which these topics were discussed.

The answers to some questions were simple, others more complex. For example, developing a standardized training program would require some thought and discussion, since activity that is considered unusual in one area may be standard practice in another. Developing reporting procedures would be easier, however, because there were already established guidelines, procedures, and reporting checklists in place. The National Response Center (NRC), which receives all incoming phone calls to its toll free phone number, (800) 424-8802, helped make this easy. They provided a representative from their command who displayed the report sheets used to record information received at the NRC.

The final results and a deliverable product are as yet unknown. The plan and the programs continue to move forward. Soon a national program including training, reporting, and a feedback process will be implemented.

Implementing the program, and moving it from the local level to the regional and national levels, will also be a challenge. It will happen with the help and dedication of the many people involved—from Coast Guard commands that encouraged their personnel to participate, to the marina operators, to the Power Squadrons and Coast Guard Auxiliarists who will assist by incorporating homeland security agendas into their established training programs. All will have contributed something positive to a great program that will help keep America safe from waterfront terrorist activity. Whether it is keeping an eye on a power-generating facility or maintaining a security zone around a Navy warship, waterway users will know what is "suspicious" or what "out of the ordinary" looks like, and the proper procedures for reporting these incidents.

A 25-foot Defender Class small boat from Boat Forces D.C. conducts a homeland security patrol on the Potomac River. Photo by Public Affairs Officer Zach Zubricki, USCG.

Waterways Management Involves Varied Issues

by Vann Burgess
U.S. Coast Guard Office of Boating Safety, Program Operations Division

Photodisc.

Our nation's waterways constantly face challenges such as user conflicts, negative environmental impacts, and, now more than ever, risks to homeland security. To complicate matters, our waterways and ports are more crowded; the recreational boating population has grown; traffic from commercial vessels, both foreign and domestic has increased; and high-speed ferries now ply the waters. The impact of these challenges reaches beyond our waterways to affect virtually everyone in this country. For example, consider the following annual figures:

- $1 trillion in cargo moved in vessels
  - 95 percent of all overseas trade
  - 25 percent of all domestic trade
- 350 billion tons of cargo shipped
- 3.5 billion barrels of oil shipped
- 90 million commercial vessel passengers
- 76 million recreational boaters
- 13 million recreational state-registered vessels
- 29,000 commercial fishing vessels

It is safe to say that everyone has in their homes something they use everyday that at one point was moved on our nation's waterways.

The U.S. Coast Guard's Office of Waterways Management is working on an initiative to involve all stakeholders in issues related to the Marine Transportation System (MTS). As part of that effort, the Office of Waterways Management held a Recreational Boater Engagement Workshop to obtain input from many of the major players in the recreational boating world. The sponsors were overwhelmed by the knowledge and experience of the attendees and extremely pleased with the quality feedback that was provided. The Waterways Management staff already knew that they would *like* to have the boaters' input on MTS issues, but the workshop showed them just how very much they *need* the input and support of the recreational boaters.

One of the action items resulting from the workshop was to get the recreational boating communi-

Broward County Sheriff's agents stop a "suspicious vessel" from entering a restricted area during an exercise with the Coast Guard in Port Evreglades, Fla. Photo by Public Affairs Officer Carleen Drummond, USCG.

ty more involved with Harbor Safety and Security Committees (HSSCs). To date, approximately 100 HSSCs are around the country, most located in major port cities. These committees are either federally or state mandated, or locally organized. The committees are supposed to encompass those who have a stake in the local port, including shipping interests, environmental groups and the recreational boater.

While not by design, most of these committees have been dominated by the commercial vessel and facilities operators. This is due in large part to the lack of participation by the recreational boating community, which, in some instances, may not even have been aware of the existence or importance of an HSSC. In cooperation with the Office of Waterways Management and the Office of Boating Safety, the Coast Guard Auxiliary has agreed to facilitate the establishment of Recreational Boating Subcommittees to help ensure participation of the recreational boating community on HSSCs.

Actions are underway to establish subcommittees in seven key ports and use the lessons learned to establish future subcommittees throughout the nation. The initial seven are currently being organized in Providence, R.I.; Charleston, S.C.; Houston-Galveston, Texas; Los Angeles/Long Beach and San Francisco, Ca.; and Tampa and Jacksonville, Fla. These subcommittees are comprised of members from organizations such as the Coast Guard Auxiliary, Power Squadrons, the National Boating Federation (and members from local yacht clubs and marinas), the National Safe Boating Council, marine dealers, and anyone else with an interest in the boaters' issues in a particular port area. The subcommittees will then designate representatives to carry the issues to the HSSC.

We have also discovered that there are some cases in which states may be involved in HSSCs but may not be including their boating law administrators (BLAs). We are strongly urging the BLAs to actively participate in HSSCs, and possibly even on the Recreational Boating Subcommittees. The influence an HSSC has on decisions involving multiple-use waterways is substantial.

Homeland security is yet another important issue that needs to be addressed. Our waterways are a vital part of the country, and *must* be protected. The Coast Guard or any single state alone cannot accomplish this job. Even with our combined efforts, effective protection of our waterways must include the active participation of the boating public. We must reach out to them, educate them on what to look for and how to report suspicious activities, and, most importantly, listen to them. Americans are always ready and willing to protect their homeland, but often they must be invited to participate.

Most people tend to boat where they live, and as such they are somewhat familiar with the characteristics of the waters on which they boat. An event

that may entice boaters into unfamiliar waters is the Lewis and Clark Bicentennial Commemoration, which kicked off on Jan. 18, 2003, and will run for four consecutive years (See related article on the Lewis and Clark Bicentennial Commemoration on page 72–75). We are concerned that large numbers of people may go boating in areas in which they have little or no real understanding, in crafts they don't normally operate.

While we have addressed many concerns about safety and the environmental impact of the Lewis and Clark Bicentennial, we must continue to educate the public on these concerns. We must also work closely with commercial mariners and keep them informed of events taking place on various sections of the waterways. We want to preclude the possibility of a tug and barge rounding a turn and unexpectedly encountering a large flotilla of small recreational craft (many of which will be operating in unfamiliar areas and under unfamiliar conditions).

From a waterways management perspective, all events associated with the Lewis and Clark Bicentennial that are to take place on or adjacent to the water may require permitting from either the Coast Guard or the state. Permitting is not just an exercise in multi-form governmental bureaucracy; it actually starts a process to notify all concerned parties of what is going to take place, what safeguards are in place, and who is responsible. It essentially opens a communications channel to help prevent unpleasant surprises, as well as providing an appropriate response plan should things go wrong.

Event planners should submit applications for permits for all activities on or near the water. Even if they don't think they meet the criteria for requiring a permit, they should submit an application anyway. It is better to submit an application and have the issuing authority decide it is not needed than to not submit an application and find out too late that one was indeed required. Failure to be appropriately permitted can result in fines and even closure of the event.

With marine trade expected to nearly triple in the next 20 years, port infrastructures aging and undersized, ships increasing in size and speed, and a conservative estimate of a 65 percent growth in recreational boaters to more than 130 million by the year 2020, our waterways are more important to us than ever before. They are also threatened more now than ever because of growth and associated environmental impacts, as well as the very real security threat to our homeland.

We face many challenges and some hard choices, but if our waterways are to survive we must be prepared to manage this vital natural resource. Through our continued cooperation and team effort, together we will meet the challenge.

Photodisc.

Pollution Prevention Through Education, Enforcement

by Joe Carro
U.S. Coast Guard Office of Boating Safety, Program Operations Division

One of the biggest challenges facing the U.S. Coast Guard today is maintaining the protection of our delicate environment from various types of pollution. We have all heard about headline-grabbing oil spill disasters, including the *Exxon Valdez* incident in Prince William Sound, Alaska; the *New Carissa* accident off the Oregon coast; and most recently, the *Prestige* sinking off the coast of Spain. The recreational boating community looks at the importance of pollution prevention and protection of natural resources on a somewhat smaller scale than the huge spills mentioned above.

Preventing the pollution of local lakes, rivers and coastal waters is something we should all be concerned with and can take positive action toward through education and law enforcement. Below are some of the regulations required by the Coast Guard, the states and other partners while educating the boating public on this important issue.

Oil Pollution

In addition to state and local regulations, the Coast Guard requires that:

> *"All U.S. vessels (no matter where they are operating) and all vessels equipped with propulsion machinery operating on the Territorial seas and internal waters of the U.S., including other waters that the Federal Government may exercise authority over, must be in compliance with the oil pollution regulations contained in the Federal Water Pollution Control Act."*

Simply put: *All* boats operating within the territorial waters of the United States must comply with oil pollution regulations.

Some of the details of this regulation include:

- Vessels must have the capacity to retain any oily mixtures onboard and be equipped to discharge them to a reception facility.
- Oily mixtures may be retained in the bilge but not intentionally drained into the bilge.
- A bucket and sponge may be acceptable as a means of transfer to an oil reception facility.
- Vessels greater than 26 feet in length must be equipped with a "pollution placard." This is the placard that states that the Federal Water Pollution Control Act prohibits the discharge of oil and can result in substantial fines and imprisonment if found in violation.

Improper Discharge of Garbage
This is probably the most visually unpleasant and obvious problem we come across on a daily basis.

In July 1990 the Coast Guard began enforcing federal regulations dealing with the disposal of plastics and garbage in U.S. waters. The details of this regulation are too long and complicated to address all aspects of the regulations here; however, there are key pieces that are essential.

For starters, one cannot throw plastics into the water *anywhere*. Other kinds of trash and garbage described in the regulations, such as paper, rags, food, and dunnage (lining and packing materials that float), may be legally dumped into the water depending on a vessel's location. Local rules and regulations play a big part in determining these areas.

Untreated Sewage Discharge from Vessels
The regulations governing installed toilets, marine sanitation devices (MSDs), and the discharge of sewage into the waters of the United States are also lengthy and may vary from state to state. Coast Guard enforcement is generally limited to ensuring that the equipment onboard is properly installed, Coast Guard-certified, and being used in the manner it was intended.

If a vessel is equipped with an installed toilet, it must also be outfitted with an MSD. Type I and Type II MSDs are known as flow-through devices, that is, the raw sewage is treated and then pumped out into surrounding waters. Type III MSDs are generally holding tanks, incinerators, macerators or the like that do not treat the waste but hold it onboard until the vessel is at a location where it can be pumped out at a shore-side facility or discharged into waters where it is legally authorized to do so.

In many places the Environmental Protection Agency has established strict regulations regarding the discharge of sewage, treated or untreated. These areas, known as No Discharge Zones, have many special requirements, and boaters who have one in their area should be familiar with these regulations.

Other regulations deal with the paperwork required on certain vessels. The one that specifically relates to the recreational boating program is the Waste Management Plan. This is a written plan required on vessels that are greater than 40 feet in length, ocean-going, engaged in commerce, or equipped with a galley and berthing facilities. The plan must detail how garbage is to be collected, processed, stored and discharged, and who will be in charge of carrying out the plan.

There are regulations that cover just about all types of pollution and almost anything else that may harm the environment. Pollution prevention is truly a national concern. Although we have many tools at our disposal to help clean up after a pollution incident has occurred, the best way to help protect the environment is through *prevention*, of which education and enforcement are the best tools. We must use them both.

Pollution is collected during a morning clean-up of the Wolf River Harbor. Photo by Yeoman Sam Rich, USCG.

U.S. COAST GUARD RESCUE 21

SAVING LIVES IN THE 21st CENTURY

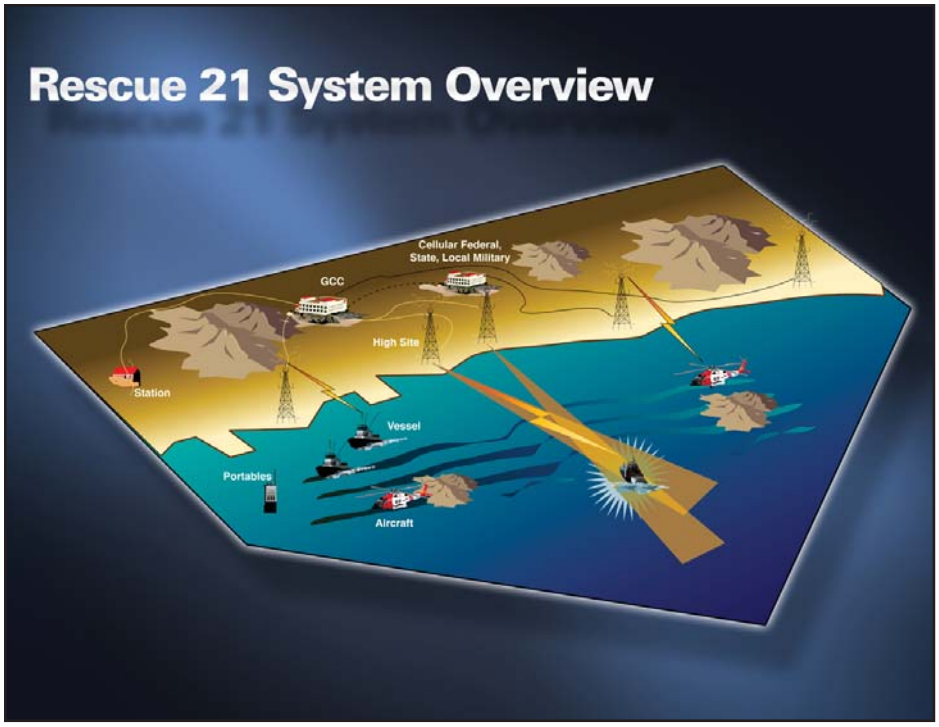
Answering *the* Call *for* Better Communications

by Lt. j.g. Sam Edwards
Rescue 21 Public Affairs Officer

Like many recreational boaters, you probably spent several days this summer fishing with your children or cruising the Intracoastal Waterway with friends. As a responsible captain, you've likely invested in life jackets and filed float plans to ensure the safety of your passengers. The U.S. Coast Guard is preparing now to make the next boating season even safer by modernizing its short-range communications system to better hear boaters' distress calls. The new system, known as Rescue 21, will help take the "search" out of search and rescue, so the Coast Guard can arrive directly to you if you need help.

> **"Rescue 21 has come at the right time. It will have a positive impact on all our mission areas resulting in improved performance and a safer, more secure nation. Rescue 21 represents a quantum leap forward in coastal command and control and distress communications. It will enhance our homeland security capabilities as well as other safety and security missions, bringing tremendous benefits to the Coast Guard and the American public."**
>
> ***~ Adm. Thomas H. Collins, Commandant, U.S. Coast Guard***

Rescue 21 brings the Coast Guard's communications system into the 21st century to ensure the public's maritime safety. Today, more than 80 million boaters on 13 million vessels use our waters, the greatest number in our history. More Americans have access and are utilizing our waterways for recreation, commerce and tourism, resulting in more waterway traffic, and therefore, emergencies. On average, the Coast Guard annually conducts 40,000 search and rescue cases and saves 4,000 lives. Most emergency service communications systems are now equipped with state-of-the-art systems that make it easier to be contacted by the public, to identify



callers and provide interoperability with internal branches and external organizations. It is essential that the Coast Guard have this same capability.

The Coast Guard currently uses the National Distress and Response System (NDRS) to monitor for distress calls and coordinate the response. The system consists of a network of VHF-FM antenna high sites with analog transceivers. These antennas allow the Coast Guard to receive distant transmissions and relay them to regional (group) communication centers and rescue boat stations.

The Need and the Project

Coast Guard search and rescue responses involve multi-mission stations, cutters, aircraft and boats linked by communications networks. Unfortunately, the existing communications system, the backbone to the Coast Guard's short-range communications, is more than 30 years old. With identified communications gaps, and out-of-date and non-uniform equipment, the system is ready for a complete replacement and modernization.

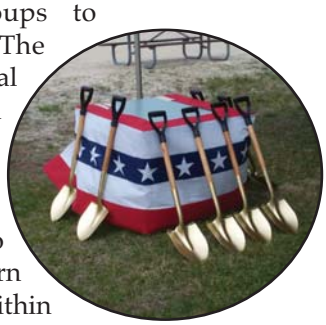
The Coast Guard recognized during the early 1990s that its communications system was becoming obsolete. However, replacing such a complex and vital national system is a huge undertaking. To accomplish this major task, the Coast Guard invited major corporations to try their hand at designing a new communications system using proven technologies, and help launch Coast Guard communications into the 21st century.

Between December 1999 and September 2002, three systems integration contractors (SICs) competed for the best design to improve the NDRS. With the decision made and announced on Sept. 24, 2002, the Coast Guard and professionals with General Dynamics Decision Systems, the contract winner, began to build the system. As the largest IT project in Coast Guard history, this nationwide project encompasses 95,000 miles of coastline. To effectively manage and execute the contract, it was segmented into manageable regional deployment, centered around Coast Guard Groups.

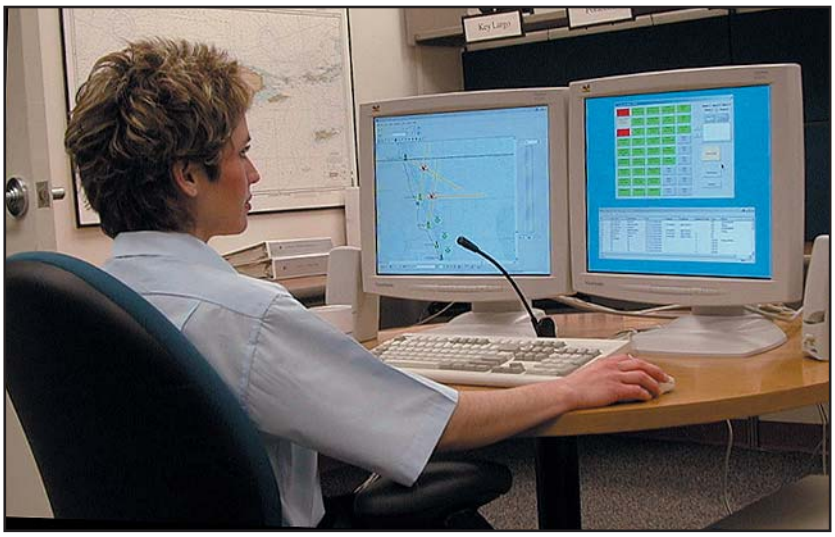
The Coast Guard is currently preparing infrastructure for Groups Atlantic City, N.J., and Eastern Shore, Va., where Rescue 21 will be initially operational. High sites have been selected that promise the desired coverage out to approximately 20 nautical miles from shore. In the near future, improved human systems interfaces will be installed at the Groups' communications centers to help watchstanders perform their responsibilities. Rescue 21 will allow Coast Guard watchstanders to record, play back and index distress calls and view them in an easy-to-understand digital format.

After these installations are complete, Rescue 21 will undergo a comprehensive series of tests to assure it meets the Coast Guard's operational requirements. Only after thoroughly testing the system will the Coast Guard declare Rescue 21 operational in Groups Atlantic City and Eastern Shore.

Concurrently, Rescue 21 is being prepared in the Seattle and Port Angeles, Wa., St. Petersburg, Fla., and Mobile, Ala., groups to expedite deployment. The deployment for the coastal waters of the continental United States will be completed by September 2005; groups in Alaska, Hawaii, Guam, Puerto Rico, and along the Western Rivers and Great Lakes within the United States will be completed by September 2006.



So, what will the new system do?
The most obvious improvement will be filling in coverage gaps in the current VHF-FM system. Rescue 21 enables the Coast Guard to receive a call from a one-watt radio as far as 20 miles from the territorial sea baseline. Since most radios can operate at five watts or more and most antennae are at least two meters above the water, Rescue 21 significantly improves boaters' probability of detection. The new system also will have increased channel capacity, which allows for simultaneous communications on six channels (including VHF 16). Rescue 21 will allow the Coast Guard to continuously monitor Channel 16, even while transmitting.



Another Rescue 21 improvement is the use of direction-finding technology that will detect a distressed vessel's bearing with plus or minus two degrees of accuracy. Commercial and recreational boaters will not need to buy any new equipment; all existing marine-band radios are compatible with Rescue 21. Rescue 21's direction-finding capability reduces the Coast Guard's search area for a received transmission to about 25 square miles and gives rescue vessels a line of bearing to follow to the distressed vessel.

The Coast Guard has received and responded to marine-band radio transmissions for many years, but now Rescue 21 will allow the Coast Guard to receive critical boater information through Digital Selective Calling (DSC). A boater using a DSC capable radio should register for a Maritime Mobile Service Identity (MMSI) number, and then enter this number into the radio. Also, the boater should connect the radio to an integrated Global Positioning System (GPS) receiver. A properly registered DSC radio will allow a boater to transmit vital vessel and location information at the touch of a red button. However, *failure to properly set up a vessel's DSC radio could result in the Coast Guard receiving a distress call with no idea of who sent it, or from where, and no ability to direction find because of the nature of DSC's short transmission!* Follow up DSC distress notifications by contacting the Coast Guard via VHF 16. The Coast Guard will want to know the nature of the distress, how many persons are aboard, and other information to help them prepare to assist you.

Rescue 21 helps Coast Guard watchstanders understand received transmissions. Through Rescue 21's human systems interface, watchstanders can use a geographical display of the Group's Area of Responsibility and see the direction of received transmissions. Also, Rescue 21 will digitally record communications for filtering and playback.

Asset tracking is a new capability that will permit operations centers to know where Coast Guard assets are at any given time. Also, Rescue 21 is designed to allow seamless response by Coast Guard and other federal, state, and local agencies by complying with the Association of Public Safety Communications Officials' (APCO) Project 25 standard, which encourages interoperability among public safety organizations. Greater interoperability improves search and rescue response, enhances homeland security protection and positively affects the Coast Guard's role in other maritime operations.

Finally, Rescue 21 reduces system down time to assure the Coast Guard remains *Semper Paratus* (Always Ready). The Coast Guard is providing for critical function recovery within 24 hours and full system recovery within seven days. Operational availability restoration is required in any case, even natural disaster and conventional warfare.

Now that you know a little more about the system, it's easy to see why the Coast Guard is so excited for Rescue 21 to help save lives in the 21st century!

For more information about Rescue 21: Saving Lives in the 21st Century, visit us at **www.uscg.mil/rescue21**.

Every Mariner Needs a Marine-band Radio!

When search and rescue is involved, less time spent searching saves lives. This is why it is so important to notify the Coast Guard immediately of your distress situation. Current technology allows many Americans to rely on their cell phones for most of their daily communications needs. Is it alright to depend on your cell phone when you're on boating trips?

✓ The Coast Guard does not recommend the use of cell phones for distress calling as they are point-to-point communication devices.

Moreover, cell phone companies do not always provide full coverage of coastal regions. Rescue 21, on the other hand, employs radio technology, providing full coverage out to 20 nautical miles. Radios emit broadcast signals that can be received by towers and other vessels or aircraft within range of the transmission, which increases your probability of rescue.

✓ Use your DSC radio!

Rescue 21 will enable the Coast Guard to receive Digital Selective Calling (DSC) broadcasts. DSC radios allow a boater to transmit vital vessel and location information at the touch of a red button. Two small but very important preparations are necessary to help the Coast Guard receive your vital distress information. First, boaters must connect their DSC radio to the vessel's Global Positioning System (GPS) to provide the location information. Second, register for a Mobile Maritime Service Identity (MMSI) number. You can do this easily by filling out the registration card included with your DSC radio or logging onto www.boatus.com/mmsi/ and following the instructions there.

Performing these two simple steps could save your life.

Recreational Boating Product Assurance

The Consumer Product Safety Commission for Boats

by Alston Colihan
U.S. Coast Guard Office of Boating Safety, Product Assurance Division

As the owner or passenger on a recreational boat, you likely have noticed a label that reads, "This boat complies with U.S. Coast Guard safety standards in effect on the date of certification." You may have wondered what those safety standards are, and who certifies that the boat manufacturer has met those standards.

The U.S. Coast Guard Office of Boating Safety, which was established in 1968, was tasked with developing a comprehensive set of regulations and safety standards under the authority of the Federal Boat Safety Act of 1971 (FBSA). The provisions of the FBSA, now re-codified as part of Title 46 of the United States Code (46 U.S.C. Chapter 43), differ from earlier federal boating acts, specifically the Motorboat Act of 1940 and the Federal Boating Act of 1958, because they gave the Coast Guard the authority to establish comprehensive boating safety programs; authorized the establishment of national construction and performance standards for boats and associated equipment; and created a more flexible regulatory authority regarding the use of boats and associated equipment.

The earlier acts required the owners/operators of recreational boats to install or carry specific safety items on their boats such as flame arresters on carburetors, approved personal flotation devices (PFD) and fire extinguishers. The FBSA shifted much of the burden of regulations from owners and operators to the manufacturers of recreational boats and associated equipment.

With Authority Comes Responsibility

The statutes require us to consider the need for (whether there are sufficient accident statistics) and extent to which regulations or standards will contribute to boating safety and to consider relevant available boating safety standards, statistics and data, including public and private research and development, testing and evaluation. The standards must be minimum safety standards, stated insofar as practicable, in terms of performance. We also cannot compel substantial alteration of a recreational vessel or item of associated equipment that is in

Photo credit: Copyright © 2003 USCG and its licensors.

existence, or the construction or manufacture of which is begun before the effective date of the regulation. Subject to that limitation, however, we may require compliance or performance to avoid a substantial risk of personal injury to the public. Recently, for example, after several fatalities were traced to a serious carbon monoxide accumulation problem involving houseboats with swim platforms located above auxiliary generator exhaust ports, we wrote letters to all known houseboat manufacturers and persuaded six of them who built boats with that particular installation to recall several model years' worth of past production and make corrections.

We are also required to consult with the National Boating Safety Advisory Council, whose 21 members are divided equally between state boating law officials, representatives from the boating industry and representatives of the boating public. The council was established to further ensure that all boating safety regulations and standards are needed and are reasonable, considering the hazard the regulation is intended to correct. Last October the council completed a five-year regulatory review of all the Coast Guard safety standards applicable to manufacturers of recreational boats. Among the council's recommendations were 14 amendments to the Display of Capacity Information, Safe Loading, Safe Powering and Flotation Standards.

"The manufacturer's self-certification of compliance statement indicates to the consumer that a boat complies with applicable safety standards in effect on the date of certification."

Manufacturer Regulations

Following passage of the FBSA in 1971, the first regulations applicable to manufacturers of recreational boats were adopted from industry standards published by the American Boat and Yacht Council (ABYC) and the Boating Industry Associations, now the National Marine Manufacturers Association (NMMA). The *Federal Register* of Aug. 4,1972 promulgated a set of regulations covering defect notification, manufacturer self-certification and boat identification; and safety standards covering capacity information, safe loading, safe powering, and flotation for boats less than 20 feet in length. Between 1977 and 1980, other standards were published covering level flotation, electrical systems, fuel systems, ventilation and start-in-gear protection. More recently, regulations were published that will require manufacturers of all new uninspected commercial vessels and recreational vessels that equip their boats with navigation lights, to install navigation lights that are certified to meet the navigation rules.

The federal statutes (46 U.S.C. 4310) contain a provision that requires defect notification. Manufacturers of boats and certain items of "designated" associated equipment are required to notify first purchasers (and second purchasers if their names and addresses are known) about: **(1)** a defect that creates a substantial risk of personal injury to the public, and **(2)** failure to comply with a Coast Guard safety standard. The statutes also require manufacturers to remedy such defects or noncompliances at their sole cost and expense.

The Coast Guard monitors an average of 73 recall campaigns annually. A manufacturer's duty to conduct defect notification lasts for a period of 10 years after the boat or item of designated associated equipment was manufactured. While we have the authority to compel a manufacturer to conduct defect notification, manufacturers typically start the majority of the recall campaigns voluntarily.

NOTE: *While the term "associated equipment" is used repeatedly in the statutes and regulations involving recreational boating safety, the regulations in 33 CFR Part 179.03 limit the applicability of the requirement for defect notification to designated associated equipment; i.e., inboard engines, outboard engines, sterndrive units and inflatable personal flotation devices approved under 46 CFR 160.076.*

Once the Coast Guard receives a report of a recall from a manufacturer, the information is entered into a database. The Recreational Boating Product Assurance Division uses the database to monitor when Campaign Update Reports are due; to quickly gather significant information about specific recall campaigns; to evaluate a manufacturer's diligence in conducting a campaign; and to evaluate the need for safety standards addressing specific problems. The Coast Guard has a toll-free customer information line: (800) 368-5647. The Infoline representatives have read-only access to the database. Individuals owning a boat can call the infoline to find out whether their boat or engine is involved in a manufacturer recall, and how to contact a manufacturer to inquire about getting their boat, engine or inflatable PFD corrected.

Compliance Labels

The statutes (46 U.S.C. 4302(a)(3)) also authorize the Coast Guard to require or permit the display of labels for the purpose of certifying or evidencing compliance with federal regulations and safety standards for boats and associated equipment. Boat manufacturers and U.S. importers of foreign-built boats must self-certify compliance with applicable Coast Guard safety standards. The manufacturer's self-certification of compliance statement indicates to the consumer that a boat complies with applicable safety standards in effect on the date of certification. Manufacturer self-certification is the same as is used in the automobile industry.

Manufacturers of all boats also evidence compliance by means of a 12-character hull identification number (HIN). The HIN is a unique serial number a manufacturer or U.S. importer affixes to each boat.

The states also assign a HIN to individuals who build boats for their own use and not for the purposes of sale. The Manufacturer Identification Code (MIC) that a state uses consists of a state abbreviation followed by the letter "Z."

In a typical year, as many as 4,000 manufacturers and importers with active manufacturer identification codes build boats for the purposes of sale to the public. The HIN enables identification of the manufacturer of nearly every boat in existence, the year the boat was built and the applicable safety standards.

Manufacturers of monohull boats less than 20 feet in length, except sailboats, canoes, kayaks and inflatables, are required to affix a Coast Guard maximum capacities label (33 CFR 183, Subpart B). The label displays a boat's maximum persons capacity in terms of a whole number of persons as well as the number of pounds, and a maximum weight capacity in pounds. If a boat is outboard powered, the label also displays a maximum horsepower capacity. The purpose of the capacity label is to provide operators and prospective purchasers with basic safe loading and outboard horsepower information for calm water conditions. The Coast Guard maximum capacities label requirement is a manufacturer requirement. There is no concurrent federal legal requirement for the owner or operator to adhere to the capacities specified on the label. However, some states consider overloading or overpowering prima facie evidence of operator negligence; some manufacturers will not allow

How to Read Your Hull Identification Number

ABC00001A304

CHARACTERS 1–3 (ABC) = Manufacturer Identification Code (MIC)
*** Assigned by U.S. Coast Guard.**

CHARACTERS 4–8 (00001) = Serial Number
*** All remaining characters are assigned by the manufacturer.**

CHARACTER 9 (A) = Month of Manufacture

CHARACTER 10 (3) = Year of Manufacture

CHARACTERS 11–12 (04) = Model Year

> *"... some insurance companies will not pay insurance claims if damage to a boat was the result of capacity label violations."*

warranty claims for boats that are overpowered; and some insurance companies will not pay insurance claims if damage to a boat was the result of capacity label violations.

Manufacturers of these same boats are also subject to the safe loading standard (33 CFR 183, Subpart C) which is used to calculate a maximum persons capacity in pounds and a whole number of persons, and a maximum weight capacity (persons, motor and gear for outboard boats and persons and gear for inboards and manually propelled boats). That information is displayed on the Coast Guard maximum capacities label. The Coast Guard safe loading standard is based on physical tests in which the boat is put in a tank full of water to determine maximum displacement and maximum list, which along with the weight of the boat are the three most important criteria for determining safe loading capacities. The NMMA, whose member manufacturers build 80 percent of the boats sold in this country, relies upon measuring each boat model's internal dimensions and then uses a computer program to determine maximum persons and maximum weight capacities. The NMMA manufacturers build their boats to meet a variety of ABYC standards in addition to the minimum federal regulations. Historically, very few of the NMMA-certified boats have failed compliance testing for safe loading.

The maximum capacities label displays a boat's maximum number of persons to be onboard, as well as a maximum weight capacity. "If a boat is outboard powered, the label also displays a maximum horsepower capacity." This information is figured for calm water conditions.

The safe powering standard (33 CFR 183, Subpart D) is used to determine a maximum safe horsepower capacity for outboard powered boats less than 20 feet in length for display on the maximum capacities label. In the safe powering standard, the maximum horsepower capacity is dependent upon a number of factors including boat length, transom width, transom height and whether or not the boat has a flat bottom and hard chines or remote wheel steering.

The purpose of the flotation standard (33 CFR 183, Subparts F, G and H) is to provide a suitable platform for the rescue of a boat's occupants in the event of capsizing or swamping and, in some cases, to reduce deaths due to hypothermia. The standard is divided into three subparts. Depending upon whether a boat is: **(1)** manually propelled or rated for two horsepower or less, or **(2)** rated for an outboard engine of more than two horsepower, or **(3)** powered by an inboard or sterndrive, the standard requires varying amounts and locations for flotation material. Inboard boats and sterndrive boats are required to have "basic flotation." Basic flotation requires sufficient flotation material to support the submerged weight of the boat and two-fifteenths of the maximum persons capacity. Should an inboard or sterndrive boat capsize or swamp, some portion of its hull will float above the surface of the water, giving survivors of the accident some-

thing to cling to until rescued. Outboard powered boats rated for more than two horsepower are required to have the more stringent "level flotation." Level flotation requires sufficient flotation to support the swamped weight of the boat, the swamped weight of the engine and 50 percent of the persons capacity. Should an outboard boat rated for more than two horsepower capsize or swamp, level flotation will make it float in a level attitude, enabling accident victims to re-enter the swamped boat and stay seated with 50 percent of their bodies out of the water. Manually propelled boats and boats rated for two horsepower or less are required to comply with a lesser level flotation requirement.

The Electrical and Fuel System Standards (33 CFR 183, Subparts I and J) apply to boats with permanently installed gasoline engines for electrical generation, mechanical power or propulsion. They do not apply to outboard powered boats or boats with portable equipment. Their purpose is to prevent fires and explosions onboard gasoline-powered recreational boats, and to provide sufficient fuel system integrity to aid in controlling fires in the early stages.

The ventilation standard (33 CFR 183, Subpart K), together with the present electrical and fuel system standards, is intended to significantly reduce the probability of gasoline vapors collecting in the boat where they can be easily ignited causing a fire or explosion. The standard applies to all boats fueled by gasoline, including outboards, and has requirements for both natural and powered ventilation systems.

The start-in-gear protection (SIGP) standard (33 CFR 183, Subpart L) applies to outboard motors (and their related remote controls), which are capable of developing more than 115 pounds of static thrust. The purpose of SIGP is to reduce accidents that may result when an outboard motor is started in gear producing a sudden movement of the boat, which causes its occupants to either fall inside the boat or be thrown overboard.

Beginning Nov. 1, 2003, domestic manufacturers of all newly manufactured uninspected commercial vessels and recreational vessels will have to install navigation lights (33 CFR 183, Subpart M) certified to meet the navigation rules. These regulations align the navigation light requirements with those for all other vessels.

Education and Enforcement

Several education and enforcement mechanisms help assure the integrity of the manufacturer certification program.

Manufacturer Outreach: The Coast Guard publishes the regulations and standards and provides them free of charge to manufacturers (they are also available via the Internet through the Coast Guard Office of Boating Safety Web site: **www.uscgboating.org**). The Coast Guard also has test procedures, and compliance guidelines that are available for most of the safety standards and regulations. There is a video, "So You Want to Be a Boat Builder," and personnel are under contract to the Coast Guard to visit factories and educate manufacturers about how to comply. Personnel in the office are able to answer most reasonable questions about how to go about complying with the standards.

Factory Visits: Since Jan. 8, 2001, 14 compliance associates working under a Coast Guard contract for Resource Network International (RNI) of Silver

> ***"Manufacturers of boats and certain items of 'designated' associated equipment are required to notify first purchasers ... about:***
>
> - ***a defect that creates a ... risk of personal injury to the public, and***
> - ***failure to comply with a Coast Guard safety standard."***

Spring, Md., have been conducting recreational boating factory visits. The purpose of the factory visit program is to emphasize the need to comply with federal safety standards and regulations; to ensure each manufacturer understands the regulations; to assist manufacturers in certifying compliance with the regulations; and to educate manufacturers about the availability of voluntary standards and recommended practices.

U.S. Coast Guard Infoline

(800) 368-5647

Compliance Testing: A second means used for detecting violations of boating safety regulations is the purchase of boats on the open market, then having them tested by independent laboratories under contract to the Coast Guard. This method is particularly appropriate for determining compliance with the safe loading and flotation regulations, wherein the boat must be immersed in a test tank of water. Boats are selected for testing on the basis of suspected irregularities. This means a high percentage of the boats tested fail to pass one or more of the applicable regulations. In FY 2002, 39 boats were purchased and tested for compliance with the safe loading, safe powering and flotation standards.

To meet the Coast Guard's safe loading standard, a boat is put in a tank of water to determine maximum displacement and list. In FY 2002, 39 boats were purchased and tested for compliance with the safe loading, safe powering and flotation standards."

The Coast Guard also has a voluntary test program, which is administered free-of-charge to boat manufacturers. A manufacturer that has built a boat to comply can offer it for pickup and transportation to the testing facility at the Coast Guard's expense. With the voluntary test program, the *manufacturer* can ensure that the boat complies with the safe loading, safe powering and flotation standards. The *Coast Guard* can expand the number of boats tested without incurring the costs of buying them on the open market and also ensure that they will not have to be recalled at a later date. During FY 2002, about 40 manufacturers participated in the voluntary test program.

A third source of reports of violations of boating safety regulations is the manufacturers and boat builders that have produced the nonconforming products. Manufacturers are usually not aware that they have failed to comply with a given regulation. However, when they do discover such a violation or if they discover a defect that they believe creates a substantial risk of personal injury to the public, they usually report it in order to reduce any possible penalty and to place themselves in a better position to defend against civil liability law suits that might arise from the violation.

Again, while the Coast Guard has the authority to compel a manufacturer to conduct defect notification, manufacturers typically start the majority of the recall campaigns voluntarily.

Not surprisingly, a fourth means for detecting violations on the part of one manufacturer is reports from competitors. Manufacturers that post legal weight capacities on their boats are naturally quite perturbed when they discover that a competitor is apparently unlawfully posting a higher weight capacity on a comparable product.

While the majority of the consumer complaints received do not involve failure to comply with an applicable Coast Guard safety standard or a defect, which creates a substantial risk of personal injury to the public, each complaint is investigated on a case-by-case basis. Many consumers report prob-

> "... only a small fraction of all non-fatal boating accidents occurring in the United States are reported to the Coast Guard, state or local law enforcement agencies."

A Coast Guard officer talks with a recreational boater during a boater safety patrol. Photo by Public Affairs Officer Kyle Niemi, USCG.

lems that are better suited for remedy under their manufacturers' warranties. We also learn about problems involving boats and associated equipment from marine surveyors, state boating safety and law enforcement personnel, and other Coast Guard units.

One of the challenges to developing safety standards is finding the statistics to justify them. Current regulations (33 CFR 173.55) require the operator of any vessel, numbered or used for recreational purposes, to file a Boating Accident Report (BAR) when, as a result of an occurrence that involves the vessel or its equipment: **(1)** a person dies; **(2)** a person is injured or requires medical treatment beyond first aid; **(3)** damage to vessels totals $2,000 or more, or there is a complete loss of any vessel; or **(4)** a person disappears from the vessel under circumstances that indicate death or injury. The Recreational Vessel Casualty Reporting System does not include every accident involving a recreational vessel. Some accidents are not in the system because they are not required to be reported. Many more accidents are not reported because boaters may be unaware of the law and difficulty in enforcing the law. The Coast Guard believes that only a small fraction of all non-fatal boating accidents occurring in the United States are reported to the Coast Guard, state or local law enforcement agencies. As a result, the Office of Boating Safety regularly searchs the Internet for reportable boating accidents. For accidents that may have been caused by a substantial risk defect or failure to comply with a Coast Guard safety standard, we dispatch accident investigation experts to the scene to assist state and federal accident investigators.

Members of the Product Assurance Division actively participate in national technical committees and societies such as the ABYC, the National Fire Protection Association, the Society of Automotive Engineers, Society of Naval Architects and Marine Engineers, the American Boat Builders and Repairers Association, Underwriters Laboratories, the National Association of State Boating Law Administrators and the Fiberglass Fabricators Association for the purpose of developing industry standards for adoption in lieu of development of detailed Coast Guard regulations. The Coast Guard safety standards are minimum standards because they must be based upon a demonstrated need. However, the majority of the boats manufactured or imported into the United States are built to comply with the more stringent, voluntary standards. Therefore, the Coast Guard's involvement is important in developing recommended practices and safety standards for improving and promoting the design, construction, equipage, and maintenance of small craft.

The Recreational Boating Product Assurance Division is also involved in a variety of research projects and federal grants covering crashworthiness, crash helmets for riders of personal watercrafts, occupant protection, safe powering, propeller injury protection, carbon monoxide poisoning prevention, PFD wear, and off-throttle or no throttle steering.

The next time you're in a boat that has a label that reads, "This boat complies with U.S. Coast Guard safety standards in effect on the date of certification," you'll know what it means.

The Recreational Boat Manufacturer Factory Visit Program

by Richard Vance Kanehl
U.S. Coast Guard Office of Boating Safety, Product Assurance Division

As of June 2003, the U.S. Coast Guard database of Recreational Boat Manufacturer Identification Codes (**uscgboating.org/recalls/mic_database.htm**) indicated approximately 4,000 in-business recreational boat manufacturers and importers. This number has remained relatively stable with an influx and loss of approximately 10 percent of boat manufacturers each year. The Recreational Boating Product Assurance Division of the Coast Guard Office of Boating Safety is responsible for overseeing the implementation, maintenance, and enforcement of federal recreational boat safety regulations. The Factory Visit Program is the primary method for the Office of Boating Safety to ensure that recreational boat manufacturers are complying with the safety regulations.

Background

Among other things, the Federal Boat Safety Act of 1971 authorized the Coast Guard to establish national construction and performance standards for manufacturers of recreational boats and to develop enforcement mechanisms. This includes (as listed in 33 CFR § 181-183) the display of capacity information, safe loading, safe powering and flotation standards for monohull boats of less than 20 feet in length, except sailboats, canoes, kayaks and inflatables. The Coast Guard has also published standards covering electrical systems, fuel systems and ventilation systems applicable to all boats with permanently installed gasoline engines for electrical generation, mechanical power, or propulsion.

From the early 1970s to the mid-1980s, personnel from Coast Guard district offices conducted boating safety enforcement, including factory visits. From 1988-1995, designated Coast Guard military and civilian personnel from the Marine Safety and Inspection Offices conducted the visits. In 1995, the Coast Guard decided to only conduct factory visits when there was direct evidence that a boat or its components contained a safety defect that presented a potential injury or death hazard to the recreational boating public.

For the next several years, the factory visits were only conducted on an as-needed basis. However, organizations such as BOAT/US, and the American Boat & Yacht Council (ABYC) expressed concern to Congress that this arrangement was inadequate to ensure the safety of the boating public. As a result, the Transportation Equity Act for the 21st Century (TEA-21) directed the Coast Guard to revise and strengthen the recreational boat compliance programs.

The Factory Visit Program was renewed as a pilot program in 2001 through a private contractor. Factory visits are now completed by "compliance associates" who have an extensive background in boat construction standards. The contract personnel have received training from ABYC to ensure standardization of procedures and knowledge of federal regulations. Since many manufacturers had not been visited in several years, the primary emphasis of the pilot program was to verify and substantiate the nationwide boat building and importer industry and to ensure their basic compliance with the boating safety standards. It is important to note that the emphasis of the Factory Visit Program has been to provide education and guidance on building safer boats, rather than compliance enforcement.

Factory Visits

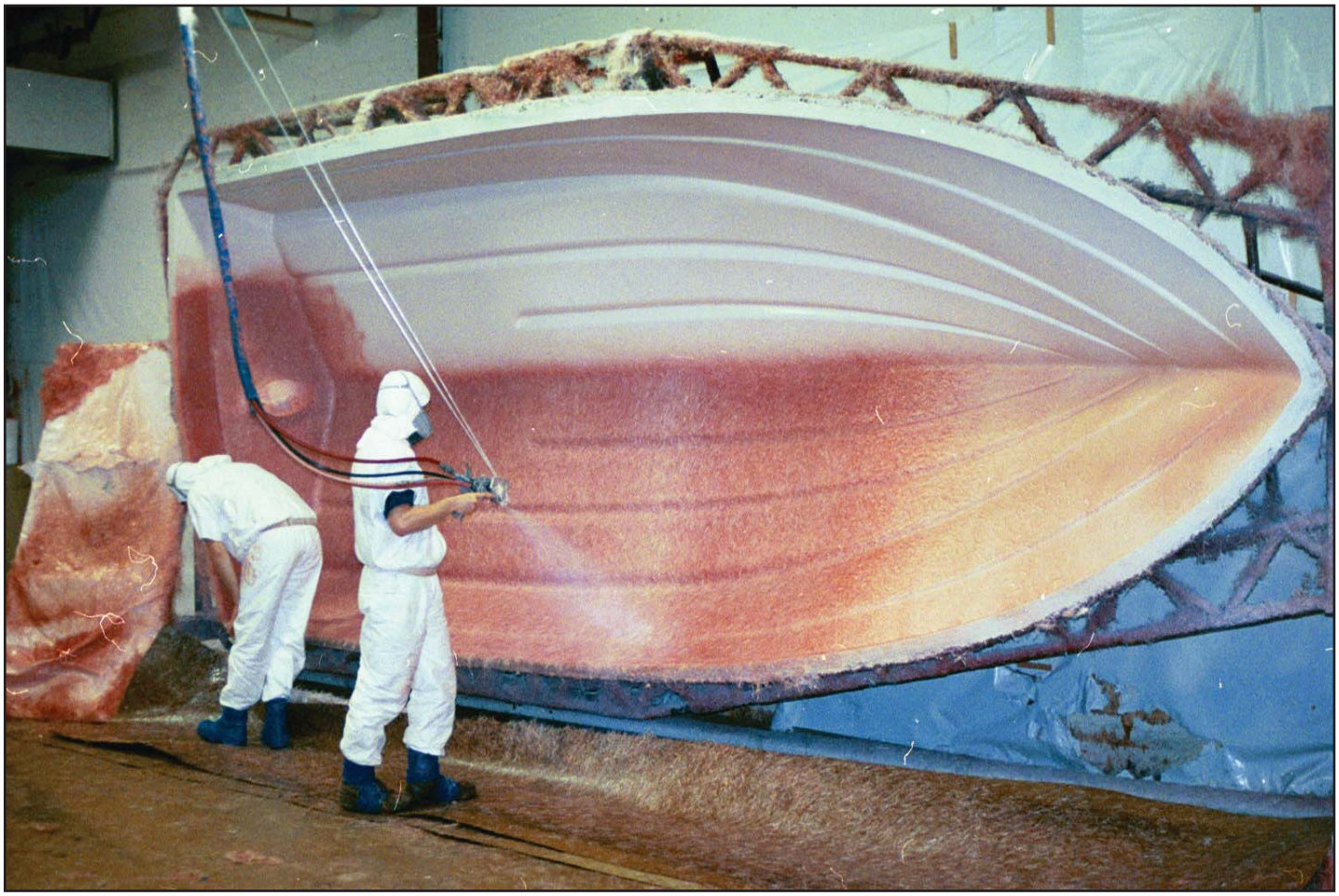
There are two main types of factory visits: inspection and education.

Inspection Factory Visit

This occurs when boat manufacturers have a vessel on the premises available for inspection. Boats—from partially completed hulls to completed units waiting for delivery—are reviewed for compliance with the federal regulations applicable to that type of boat. Regardless of whether a boat is available for inspection, the quality of components, such as foam and fuel lines, construction drawings and business recordkeeping are reviewed.

Education Factory Visit

While many manufacturers have boats on-site, some manufacturers build to order or use just-in-time delivery and remove the vessel the moment it is completed. New manufacturers often have not completed vessels or even begun construction efforts. When this is the case, the compliance associates complete an Education Factory Visit. While the ideal situation is to review a completed boat, the boat manufacturers still view these visits as being of much value. Not only are their immediate questions answered, but they also learn that they have access to a resource that provides knowledgeable interpretations of regulations, which ensures that



Boat factory workers lay up a fiberglass hull. Photo by Peter Eikenberry, USCG.

new product lines are less likely to have defects. Reviewing procedures and plans can also prevent timely and costly mistakes once construction begins.

Typical Factory Visit

The purpose of the typical technical factory visit is to educate boat manufacturers on federal safety regulations. First, the local compliance associate writes the manager of a manufacturing company in their area, requesting and explaining the purpose of a visit. During the visit, the compliance associate asks to see the plant, the construction process and current boat production. During an examination of current production, the inspector looks for:

- Non-compliance with federal regulations involving safety standards applicable to the boat manufacturer;
- Incorrect installation of equipment, such as navigation lights, according to federal regulations; and
- Construction practices that differ from recognized voluntary industry safety standards.

Once the inspection is completed, violations or potential violations of federal regulations are identified.

Potential noncompliance items that cannot be confirmed by inspection, such as amounts of flotation material that seem insufficient, are discussed, and management's calculations and test procedures reviewed.

When possible, foam and other component samples are obtained. This is helpful when a test lab, contracted by the Coast Guard, buys boats on the open market to physically test them for compliance with certain standards.

Violations of the federal regulations are discussed with the manufacturer and voluntary compliance is encouraged to increase boating safety, as well as to

Photo by George Denny.

A recreational boat factory. Photo by Peter Eikenberry, USCG.

help create good customer relations. Practices related to voluntary industry standards are also discussed. The manufacturer receives a written report of all noted violations.

Accomplishments

Since 2001, the Factory Visit Program has conducted more than 3,500 factory visits at recreational boat manufacturing plants throughout the country. Most of these visits focused on manufacturers of boats that are subject to federal safety standards. Manufacturers of boats not subject to federal safety standards, e.g., sailboats, canoes, kayaks and inflatables, were visited less frequently.

Conclusion

With the renewed Factory Visit Program, the Coast Guard has greatly increased the percentage of vessels that are assured to be compliant with federal safety regulations, thereby increasing the overall safety level of boats used by the recreational boaters in the United States. The original program, from 2001 until present, concentrated on providing all boat manufacturers with a basic level of understanding of the federal safety regulations. As the program moves into a new contract in January 2004, there will be an even greater emphasis on assisting boat builders resolve more complex problems and helping them incorporate proven safety measures. Educational materials, such as a CD containing easy-to-understand interpretive guides of the regulations, will also provide every level of boat builder with a more comprehensive understanding of the potential ways to build better and safer boats for the public.

Coast Guard Increases Efforts *to* Warn *of* CO Hazards

by Richard Blackman
U.S. Coast Guard Office of Boating Safety, Product Assurance Division

Ongoing research has shown the extent of carbon monoxide (CO) poisoning on recreational boats is greater than had been previously recognized. Outdoor CO poisoning is a growing problem with the advent of such recent activities as "teak surfing" or "dragging" on boats with rear swim platforms. In this activity, the boat pulls individuals while they hang on to the swim platform, usually without life-jackets. At certain speeds they are able to body surf on the wake of the boat. While teak surfing, however, participants are breathing heavily concentrated CO from the propulsion engine exhaust stream behind the boat.

The U.S. Coast Guard has redoubled its efforts to encourage development of technical solutions as well as public education efforts to reduce injuries and deaths related to CO. These efforts have resulted in increased attention to CO poisoning issues, and cooperation by boat and equipment manufacturers to add CO safety to the boat design process. CO detectors are commonly installed in interior spaces. More generator exhaust outlets are now located away from areas where people congregate on the boat.

In March 2003 the Coast Guard Office of Boating Safety, in partnership with the National Institute of Occupational Safety and Health, convened a workshop to discuss CO poisoning, and updated attendees on a variety of alternatives to mitigate or eliminate CO hazards. This two-day conference was attended by more than 80 participants including boat and equipment manufacturers, recreational operators, medical personnel, research organizations, and regulators. Presenters noted the incidence of outside CO poisoning is increasing. A number of deaths previously reported as caused by drowning are a direct result of incapacitation due to CO poisoning. On a positive note, many manufacturers are introducing new technologies to minimize or eliminate CO poisoning. Several houseboat manufacturers have re-routed exhaust outlets for generators using a vertical dry stack exhaust system or added an emission control device to the exhaust stream to remove CO before the exhaust gas is introduced into the air. An associated equipment manufacturer introduced a device to automatically detect CO and shut off the generator as well as sounding an alarm. These technological solutions are available and, although none is perfect, all can be used singly or simultaneously to reduce occurrences of CO poisoning among recreational boaters. The workshop participants jointly commit-

Safety Tips

carbon	oxygen
6	8
C	O
12.0107(8)	15.9994(3)

- Turn off gasoline-powered generators with transom exhaust outlets when the swim platform is in use.
- Boaters should familiarize themselves with the locations of all CO sources and exhaust outlets on their boats.
- Swimmers should never enter the cavity beneath a swim platform containing generator or main engine exhaust outlets.
- Never allow "teak surfing" or dragging on boats.
- Ensure towlines for water toys are sufficiently long to completely avoid the exhaust stream.
- Boat engines should be shut off when people are entering or leaving the water from water activities.

Everyone needs to be aware of the dangers of CO poisoning associated with:

- **improperly ventilated interior spaces**
- **exhaust outlets**
- **rafting-up**
- **teak surfing**
- **water activities on, or near, swim platforms near a generator or main engine**

ted to continuing efforts to find technological solutions to the problem.

The Coast Guard is also continuing to develop educational materials to increase recreational boat owner and operator awareness of the CO hazards inherent in the operation of gasoline-powered generators and main propulsion engines.

The Coast Guard is concerned with the serious health risk from CO poisoning and seeks to prevent loss of life and personal injury. For further information about CO and other recreational boating safety publications, visit **www.uscgboating.org**.

This houseboat has its swim platform above the exhaust port—a cause of carbon monoxide poisoning.

Coast Guard Develops Maneuvering Rule *to* Reduce Collisions

by Richard Blackman
U.S. Coast Guard Office of Boating Safety, Product Assurance Division

The U.S. Coast Guard Boating Accident Report Database recorded 681 boating fatalities in 2001. Of the total fatalities, 119, or 17 percent, resulted from collisions, either with a fixed object such as a pier, a floating object like a navigation buoy, or another vessel. Open motorboats and personal watercraft were involved in 71 percent of the reported collisions. When reviewed by vessel length, 66 percent of collisions involved vessels less than 21 feet in length.

In light of the large percentage of smaller craft (less than 21 feet) involved in collisions and the number of fatalities resulting from these collisions, the Office of Boating Safety has started developing a safe maneuvering regulation that will likely be applied to all vessels less than 21 feet in length. The regulation would require that all vessels propelled by waterjet, outboard, sterndrive, or inboard engines meet specified minimum maneuverability standards.

As a first step in the development of the regulation, maneuverability tests are being conducted at the Coast Guard's contracted recreational boat test facility in Solomons Island, Md. A variety of outboard, sterndrive, and water jet-propelled boats are being tested on prototype courses to develop and validate the appropriate specifications for a test course. The goal of this testing is to formulate a test procedure that is not unnecessarily restrictive, but will properly demonstrate that a vessel has the capability to maneuver to avoid a collision.

Once suitable test parameters are defined, the Coast Guard will solicit comments on the draft regulation from the boating industry and the public through a notice of proposed rulemaking published in the *Federal Register*. All comments received will be evaluated and, if all negative comments can be properly addressed, the rulemaking will move forward to the implementation of a final rule. Through this rulemaking action, the Coast Guard hopes to substantially reduce the number of boating collisions and thereby reduce the resultant deaths and injuries.

The goal of maneuverability tests on all vessels less than 21 feet-long is to ensure that each make of vessel is able to avoid a collision. Courtesy Coast Guard Office of Boating Safety.

Boat Testing

It's All in the Ride

by Peter Eikenberry
U.S. Coast Guard Office of Boating Safety, Product Assurance Division

Chief Warrant Officer Doug Luper, a test driver, takes one of the test boats through a course.

In addition to testing boats for compliance with federal regulations, the U.S. Coast Guard Office of Boating Safety's Recreational Boating Product Assurance Division is also actively involved with voluntary standards organizations and with the International Organization for Standardization (ISO) in testing boats to validate proposed voluntary standards. As part of this effort, the division recently provided to the American Boat and Yacht Council (ABYC) the facilities of its testing contractor and boats from the safe loading and flotation testing program to conduct on-the-water testing of an ISO standard. The purpose of the testing was to validate the ISO powering standard for tiller-steered boats and compare the results to the U.S. standard for safe powering. The test was a joint effort of the Coast Guard, its testing contractor Potomac Management

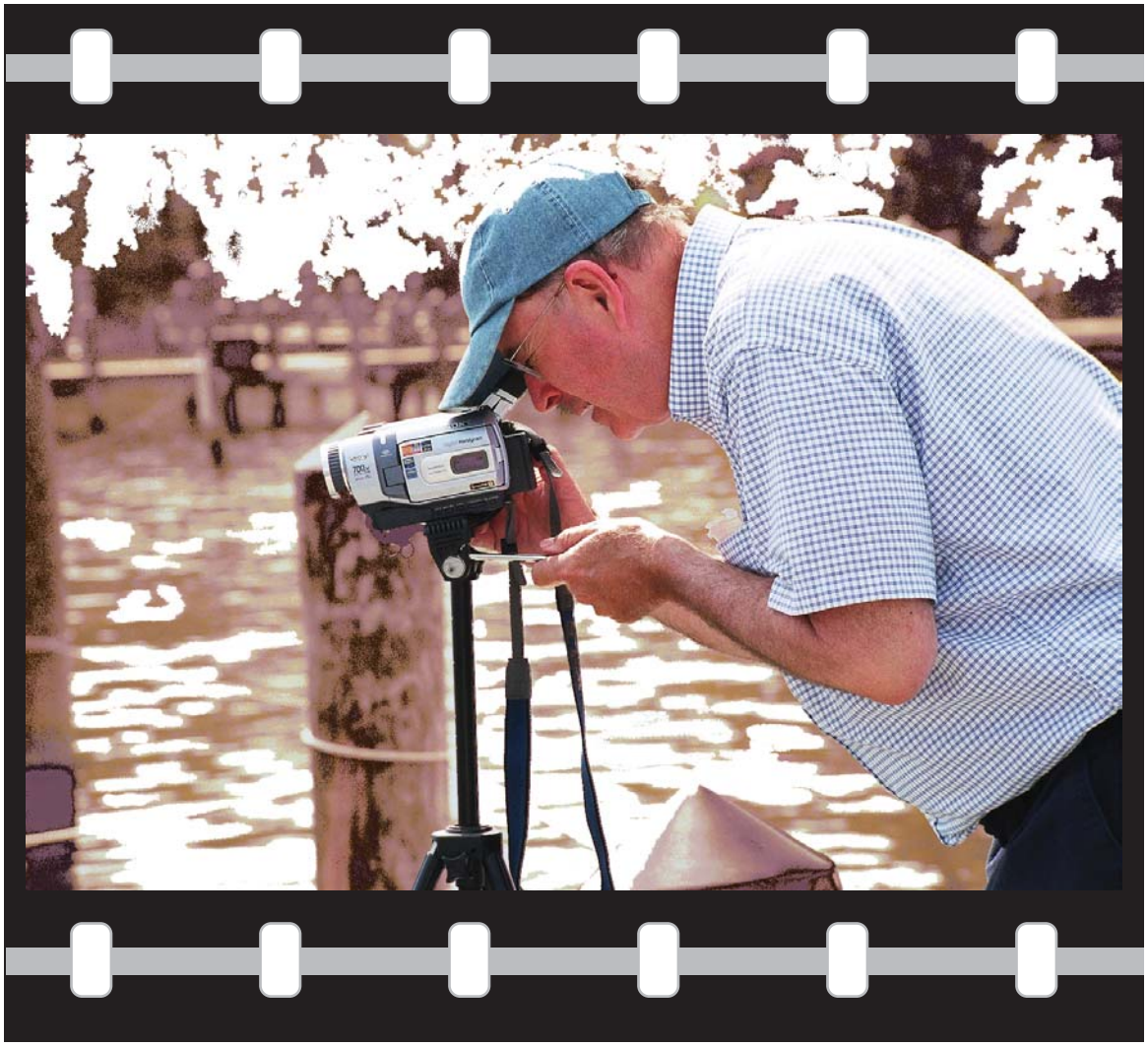
Group, Inc. (PMG), ABYC, Imanna Laboratories, and volunteers from the boating industry.

The Coast Guard contracts out the testing of boats as part of its ongoing efforts to enforce federal regulations for recreational boat manufacturers. The boats are tested for compliance with safe loading, flotation, and horsepower ratings. Normally, 80 boats are tested per year; 40 of those boats are volunteered for testing by boat manufacturers, and the contractor purchases the other 40 anonymously because of concerns that the boats may not comply. In the following program, the Coast Guard used the same testing contractor and boats from the compliance test program.

Gary Larimer, a naval architect from the Office of Boating Safety, headed up the arrangements for the boats and facilities, and Chief Warrant Officer Doug Luper, who handles safety defect reports, acted as test driver. PMG provided the boats and engines, and helped with the setup of the boats and the course. ABYC staff and volunteers assisted with setting up the boats, recording the data, and video taping the tests, and also acted as course wardens to keep other boats from straying onto the course during a test.

The ISO standard uses a barrier avoidance test to evaluate how much power the boat can safely carry and still avoid running into or through a barrier. An imaginary, or virtual, barrier is set up by placing buoys in a line and placing a third buoy at some distance perpendicular to that line. The distance between the line and the third, or turn buoy, is determined by the speed of the boat to be tested. The faster the boat, the farther away the buoy is placed. The boat is fitted with the manufacturer's recommended horsepower outboard engine. It is then accelerated in a straight line toward the barrier. As it passes the turn buoy the boat is turned as quickly as it can be, without endangering the passenger or flipping, or making some other wild maneuver. If the boat can safely turn without crossing the line, then it passes. If not, it must attempt the test again at a slower speed or reduced horsepower.

Testing occurred during a period of three days. Many of the boats did not successfully pass with the horsepower recommended by the manufacturer. One boat spun out, giving all present, especially the driver, a scare. The results of these and similar boat tests indicate the importance of the Coast Guard boat testing effort and its role in improving the safety of recreational boaters.



Gary Larimer records test data.

An Extraordinary Success Story From *the* World *of* Boating Safety

by Jo Calkin
U.S. Coast Guard Office of Boating Safety, Program Operations Division

You may be amazed when you stop to consider that one of the smallest divisions in the U.S. Coast Guard has been instrumental in saving the lives of 29,000 recreational boaters throughout the past 30 years. Even more extraordinary is the fact that although the Coast Guard Office of Boating Safety is a part of the Operations Directorate, the office personnel have no assets assigned to support them in their very important mission. They have no ships, no boats, not one helo, nor a plane. Their responsibilities do not include teams of enforcement officers, national maritime communications systems nor search and rescue capabilities standing by ready to respond to those in distress.

It is difficult to believe such an exceptional feat: thousands of boaters' lives saved by a couple of dozen people working out of a little corner of Buzzard's Point (Coast Guard headquarters in Washington, D.C.). How was this monumental task accomplished? The answer is quite simple—Partnerships!

As a result of these partnerships—one of the core principles of Prevention Through People (PTP)—the Office of Boating Safety and its many partners have realized tangible success: lives saved. In this article, we will define a "partner," describe qualities of successful partnerships, and introduce (or reintroduce) you to some of the Office of Boating Safety's partners.

What is a Partner?

Interestingly, the nautical term "partners" means a framework of timber around a hole in a ship's deck that supports a mast, capstan, pump, etc. In other words, a joint effort, a collaboration, a union to create, expand and strengthen opportunities. Those who partner with the Office of Boating Safety share the devotion to saving lives on the water, using individual and collective resources wisely, enacting smart and fair policies, educating recreational boaters, and ensuring that the safe pursuit of the "joy of boating" is available to all.

The Coast Guard's thousands of partners are diverse. Some represent associations, corporate entities, coalitions, private and public industry, and state and federal government agencies, while others are volunteers who represent various groups and organizations. This massive team is dedicated to preventing accidents, injuries and fatalities

of millions of recreational boaters. This amazing, multi-faceted partnership is truly a PTP success story and indeed a story the Coast Guard is proud to tell.

To appreciate the significance of these partnerships, it is important to understand the vision of Coast Guard leadership. In his most recent State of the Coast Guard Address, Adm. Thomas Collins declared, "Most readiness does not just depend on better capacity and capability. We need the key partnerships that have already proven so valuable to our effectiveness. We need to further strengthen these relationships."

Crew in a Coast Guard Jayhawk conduct a joint drill with Utah State Parks crew. Courtesy Utah Division of Parks and Recreation.

The Commandant provided further direction by stating, "Capability, capacity and partnerships—three key ingredients to be ready and sustaining operational excellence." For us to achieve this expectation we must "build strategic partnerships to enhance mission outcomes at all levels—federal, state and local; international, regional and bilateral; public and private—to bring clarity to mission planning and execution and leverage the capabilities of Coast Guard forces and force structure."

Qualities of Successful Partnerships

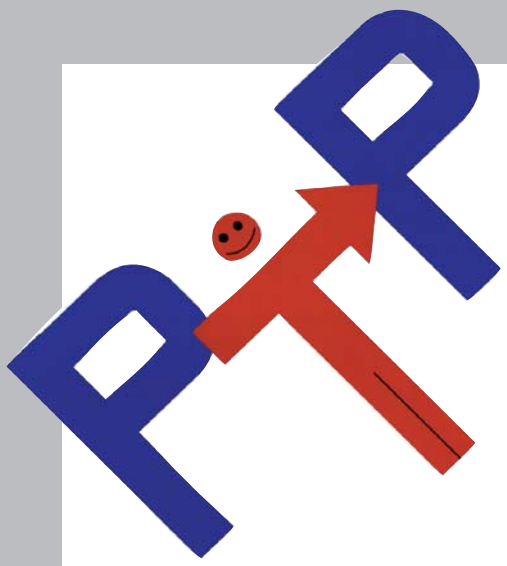
Successful partnerships are not made by chance, they are designed. The process involved in developing and negotiating a partnership is as important as the partnership itself. It should be created and nurtured around underlying principles, specific processes and objectives. Successful partnerships have a clear scope that includes considerations of the boundaries of time, resources and outcomes. To truly understand a successful partnership we should examine the following qualities:

- A partnership is a close cooperation having common interests, responsibilities, privileges and power. Each of these groups or parties is called a partner.
- Partners agree upon missions, values, goals, and measurable outcomes of the partnership.
- Partnerships are characterized by mutual trust, respect, genuineness and commitment.
- Partners build upon identified strengths and assets, but also address the need for improvement.
- Partners balance power among each member and share resources.
- Partnerships maintain clear, open and accessible communication; they listen to each other, develop a common language and validate/clarify the meaning of terms.
- Partners establish roles, norms, and processes after considering everyone's input.
- Partners welcome feedback from all stakeholders with the goal of continuously improving the partnership itself and its outcomes.
- Partnerships take time to develop and evolve.
- Partners share the credit for their accomplishments (See pages 70–71).

Moving Forward

As we are now poised to transform our Coast Guard to meet the demands of the 21st century, the Commandant's Direction 2002 guidance specifies that, *"We must be forever vigilant and always ready for the call*. To ensure the high level of performance America expects and deserves, we will take affirmative steps to improve current and future readiness."

With this direction in mind, the Office of Boating Safety is now moving forward smartly with possibly the greatest partnership endeavor in the history of the Coast Guard—a new initiative titled, "You're in Command. Boat Safely!" This is the new National Recreational Boating Safety Outreach Program of the Office of Boating Safety. With the strength and support of the five Operation BoatSmart partners, who represent hundreds of thousands of individuals across the nation, we will work together to make the words of Adm. Collins really happen: "Capability, capacity and partnerships—three key ingredients to be ready and sustaining operational excellence."



Sharing the Credit

The Coast Guard is very proud to recognize our
Partners in Boating Safety who have helped us make the waters safer:

National Association of State Boating Law Administrators

The National Association of State Boating Law Administrators (NASBLA) is a professional association consisting of state, commonwealth, and provincial officials responsible for administering and/or enforcing state boating laws. Non-voting membership is open to others on an associate basis. Since its founding in 1959, NASBLA's mission has been to protect, promote and enhance safe and enjoyable boating on our nation's waters, and to foster partnerships and cooperation among recreational boating safety interests.

National Water Safety Congress

Established in 1951, the National Water Safety Congress (NWSC) is a nonprofit organization that promotes safe recreational use of our nation's waterways. Membership includes agencies, organizations, manufacturers and concerned citizens interested in promoting recreational boating and water safety. The congress has a membership of nearly 300 individuals representing nearly 90 federal, state and local government agencies, nonprofit organizations and private corporations. The purpose of the NWSC is to promote and further the cause of boating and water safety throughout the nation by helping establish water safety councils.

National Safe Boating Council

The National Safe Boating Council, Inc. (NSBC) was organized in September 1958 under the name National Safe Boating Committee. The NSBC's diverse membership includes more than 200 individual members who joined in direct support of the council's programs and more than 300 organizations from the United States and Canada. Of these organizations, approximately 71 percent are non-profits and 29 percent are for-profits. The mission of the NSBC is to reduce the number of accidents and enhance the boating experience. The NSBC is the nation's foremost coalition for the advancement and promotion of safer boating through education.

U.S. Power Squadrons

Organized in 1914, U.S. Power Squadrons (USPS) is a non-profit, educational organization dedicated to making boating safer and more enjoyable by teaching classes in seamanship, navigation and related subjects. Members are boating families who contribute to their communities by promoting safe boating through education. USPS has some 60,000 members organized into 450 squadrons across the country and in some U.S. territories. USPS is the world's largest non-profit boating organization and has been honored by three U.S. presidents for its civic contributions. Each squadron's activities involve the three primary objectives of USPS: providing community service, providing continuing education, and enjoying the friendship and camaraderie of fellow members.

U.S. Coast Guard Auxiliary

Established by Congress in 1939 as the original Coast Guard Reserve, today's Auxiliary works together with the active duty Coast Guard, reserves, and civilians in boating safety, Maritime Domain Awareness and homeland security missions. With a membership of 36,000, the Auxiliary supports the Coast Guard in non-law enforcement missions such as search and rescue, marine environmental protection, safety patrols, public education, vessel safety checks, and Coast Guard Academy introduction programs for youth. Coast Guard Auxiliarists volunteer more than two million hours annually for the benefit of other boaters, their families, and the American public.

American Boat and Yacht Council

Since its founding in 1954, the American Boat and Yacht Council (ABYC) has been the preeminent standards-writing organization in the U.S.'s recreational boating field. ABYC publishes *Standards and Technical Information Reports for Small Craft* to aid manufacturers in the design, construction, equipage and maintenance of small craft. ABYC standards were used as the basis for developing the Federal Safety Regulations. ABYC keeps its standards current through technical committees

comprised of representatives from industry, government and the public with Coast Guard representation. They also communicate with one another regarding boating safety problems and work closely to find acceptable resolutions.

National Marine Manufacturers Association

National Marine Manufacturers Association (NMMA), formed in 1979, is dedicated to creating, promoting and protecting an environment where members can achieve financial success through excellence in manufacturing, selling, and servicing their customers. Its membership of 1,400 fulfill the mission to devote many of its resources to public policy advocacy. Representing the recreational boat manufacturing industry, NMMA serves as an important line of communication between the Coast Guard and industry. The organization also acts as a sounding board for possible regulatory initiatives, a receptacle for industry-wide complaints, a collector and distributor of regulatory interpretations, and a mediator for resolving broad boating safety issues.

Lewis and Clark Bicentennial Celebration

The Coast Guard is currently participating in a large, collaborative effort to commemorate the bicentennial of the Lewis and Clark expedition. Partners include the U.S. Army Corps of Engineers, U.S. Forest Service, National Park Service, Bureau of Land Management, Bureau of Reclamation, U.S. Fish & Wildlife and the Natural Resources Conservation Service. Events for the four-year celebration that began on Jan. 18, 2003 include 10 land-based signature events as well as water re-enactments on portions of the trail. The Coast Guard is primarily focusing on issues of both public safety and environmental impact directly related to water-based events.

National Boating Safety Advisory Council

The National Boating Safety Advisory Council (NBSAC) was created by the Federal Boat Safety Act of 1971. The 21 volunteer members are appointed by the Secretary of Homeland Security to provide advice and direction to the Coast Guard on proposed and current boating safety regulations, and also to provide insight into other major boating safety matters. Composed of equal representation from state boating safety officials, representatives of recreational vessel and associated equipment manufacturers, and representatives of national recreational boating organizations and the general public, this council has proven to be invaluable to the National Recreational Boating Safety Program.

Marine Patrol Officers Course

Recognizing the importance of partnerships with state and local law enforcement agencies, the Marine Patrol Officer Course (MPOC) was established in 1983 as the National Boating Safety Instructors Course (NBSIC). Throughout the years, the target students and the school's mission have changed. The current MPOC is the finest course of its type to be offered anywhere. The course is two weeks long and is conducted three times each year at the Coast Guard Training Center located in Yorktown, Va. The instructors, borrowed from the Maritime Law Enforcement School staff, are subject matter experts and some of the finest instructors you will find. They have created solutions for both simple and sometimes extremely complex boating safety, law enforcement and training concerns.

Corporate Partnerships

Throughout the past decade, the Coast Guard has collaborated with numerous corporate entities that have contributed to the development, production and dissemination of safe boating educational information. For example, Metlife P&C, Allstate and State Farm insurance companies have been valuable assets in educating and emphasizing to the boating public the importance of being responsible on the water. The generosity of donations and in-kind contributions from these companies is a true testimony of their concern to make a difference in saving the lives of recreational boaters in America.

Operation BoatSmart Partners

Operation BoatSmart (OBS) is a combined and coordinated effort of NASBLA, NSBC, Coast Guard Auxiliary, USPS, NWSC and Coast Guard. The operational side of the Coast Guard participates and supports the OBS partners in working toward their goal of reducing boating fatalities. Under the direction of the Area Commanders, each Coast Guard District's recreational boating specialist is involved in many of the activities that occur at the local level. The OBS organizations have agreed to work as a coalition to promote a common boating safety message, greater "presence" with the boating public, and synergy of effort in recreational boating safety operations. These partners reach out to other stakeholders in industry, business, recreation, and government to make boating safer.

Boating *with* History

Lewis and Clark

by Vann Burgess
U.S. Coast Guard Office of Boating Safety, Program Operations Division

Two hundred years ago, President Thomas Jefferson commissioned two officers, Captains Meriwether Lewis and William Clark, to explore and map the newly acquired lands to the West. In so doing, he set in motion a journey that would take the brave members of the Corps of Discovery more than 4,000 miles—on the waters of the Ohio, Missouri, Snake, and Columbia Rivers, over the Rocky Mountains to the Pacific— without a single loss of life attributable to the water. Today we recognize this remarkable accomplishment with the Bicentennial Commemoration of the Lewis and Clark Expedition.

The Bicentennial Commemoration of the Lewis and Clark Expedition began with a re-enactment of the commissioning of the Corps of Discovery at Monticello on Jan. 18, 2003. The four-year commemoration of this historical event will include 15 signature events, eight of which will either have activities on, or adjacent to, the water.

The U.S. Coast Guard is a signatory of the Memorandum of Understanding (MOU) of the Federal Inter-Agency Working Group for the Lewis and Clark Bicentennial Commemoration. Under the MOU, agencies of the federal government agree to collaborate in commemorating the Bicentennial of the Lewis and Clark Expedition. The Coast Guard's primary focus to date has been to address issues of public safety and environmental impact directly related to water-based events, such as re-enactments of the Corps of Discovery. As a result, partnerships have been forged between the U.S. Coast Guard Office of Boating Safety and Waterways Management and other federal agencies including the U.S. Army Corps of Engineers, U.S. Forest Service, National Parks Service, Bureau of Land Management, Bureau of Reclamation, U.S. Fish and Wildlife, and the Natural Resources Conservation Service.

The Water and Public Safety Subcommittee was formed to address specific safety concerns. This subcommittee is co-chaired by the Office of Boating Safety and the U.S. Army Corps of Engineers, and includes members from the Federal Inter-Agency MOU Working Group, as well as representatives from the U.S. Air Force Rescue Coordination Center, National Association of State Boating Law Administrators (NASBLA), Coast Guard Auxiliary, and the U.S. Power Squadrons. The primary focus of this group is to ensure successful coordination of the national search and rescue response, and to inform event planners and the boating public of the overall safety concerns of participating in water-based activities related to the bicentennial commemoration.

While there are many public safety issues surrounding the commemoration, those that concern boaters include such issues as the types of vessels and number of users on

busy waterways, the remoteness of much of the trail and lack of effective communications, and if trouble arises, who and how long will it take to respond.

A large number of visitors are expected along the Lewis and Clark Trail during the commemoration—including the water portions along the rivers—because the event is being widely advertised by the Bicentennial Council and event planners. In addition to the advertising, there have been several televised documentaries on Lewis and Clark, there has been a best selling book, and since September 11, people have taken a renewed interest in things patriotic and historical.

Even though Lewis and Clark enjoyed a successful and safe journey from a boating standpoint, the rivers are not the same bodies of water they were in the early 1800s. There are now dams and locks to contend with. The U.S. Army Corps of Engineers is responsible for 4,700 of the 5,000 miles of rivers along the Lewis and Clark trail. There are 20 locks and dams on the Ohio, two locks and dams on the Mississippi, six dams requiring portage on the Missouri, and eight more locks and dams on the Snake and Columbia. One lock has a lift of 110 feet. Even experienced boaters accustomed to boating on coastal waters or lakes may find themselves in danger. Turbulent currents in lock chambers, violent waters below dams, and the deceptively placid areas above spillways can trap the unwary. Underwater wing dams extending from the shore can wreck propellers and cause serious injury to boaters. The unfamiliar procedure for passing through a lock will baffle many boaters, with unpredictable results. Be warned, not all locks will lock through small pleasure craft due to the dangers involved. When making travel plans, call ahead to make sure you can get to where you're going.

Those expected to travel portions of the trail are expected to do so in a variety of watercraft, from small outboards to larger cabin cruisers, from canoes and kayaks to personal watercraft, from period replicas to jet boats. Those who are used to operating on placid inland lakes or the relative calm of our nation's coastal waters are in for a few surprises. There is quite a bit of difference in operating on our western rivers with their twists and turns, varying bottom topography, and an ever-present current. The challenges are compounded by the effects on water levels and strength of the currents from rainfall far from the river.

Now take all these different watercraft with operators of widely varied experience, place them in a narrow and moving body of water, throw in the excitement of re-enactors in period costume and replica watercraft, with a sprinkling of on-shore activities, and you have a recipe for conflicts and accidents. Add to all this one other major concern, the fact that the Missouri, Ohio, and Columbia Rivers are major commercial waterways. Literally, millions of tons of cargo move up and down these water superhighways every day, carried in large part by tugs and barges. The most dramatic conflict may be the gross mismatch between a loaded, descending barge in tow and an underpowered recreational vessel blundering into its path. It's very difficult to control a large tow when headed downstream in a swift current. The towboat is often backing its engine to retard the speed, and the controls are much less effective then. Recreational boaters frequently underestimate the speed of these vessels, and carelessly cross ahead of them. The tow itself blocks the pilot's view ahead, and a small boat may be completely hidden by the barges.

Since these large tows are restricted in their ability to maneuver, another important consideration regarding on-water events and re-enactments is that of getting the appropriate marine event permits either from the Coast Guard, Army Corps of Engineers, or state authority. Permitting is not just an exercise in multi-form governmental bureaucracy. The permitting process is a mechanism that allows all concerned parties to be notified about what is going to take place, what safeguards are in place, and who is responsible. It opens a channel of communications so that people don't get unpleasant, unexpected surprises. We must work closely with the commercial industry and keep it informed of events taking place where there is the very real possibility of rounding a corner with a tug and barge, and encountering a large flotilla of small recreational craft operating in an unfamiliar area under unfamiliar conditions. It also provides for an appropriate response should something go wrong.

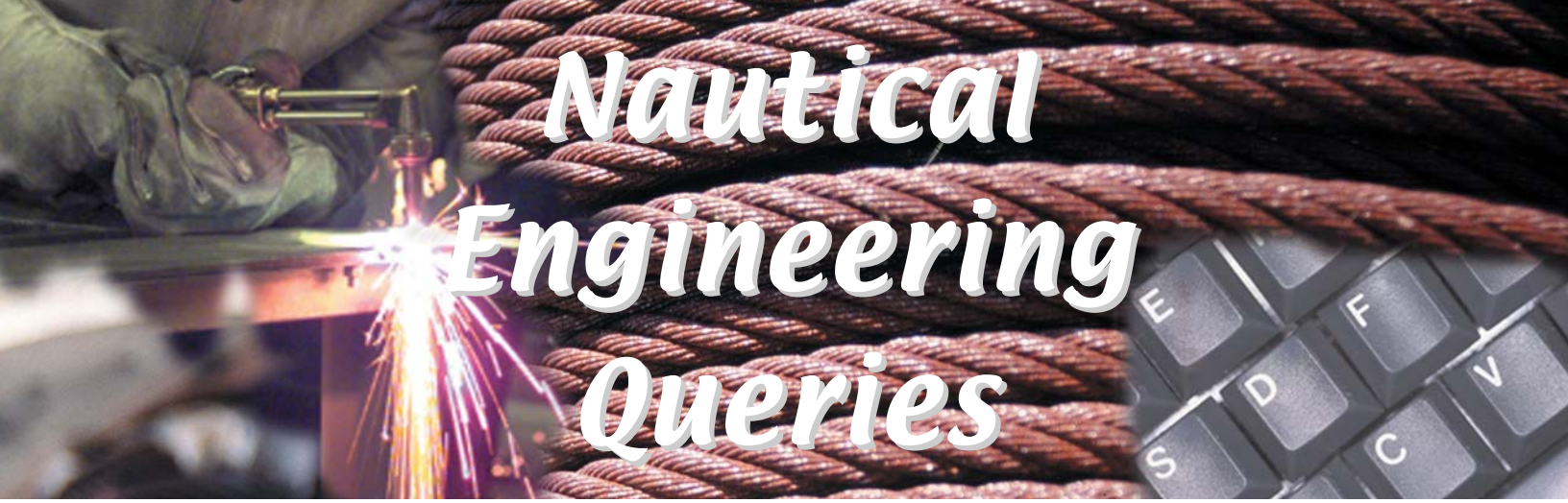
The Lewis and Clark Trail crosses some of the most beautiful landscape our nation has to offer, and many miles of it are in remote wilderness areas. With the possibility of larger numbers of inexperienced boaters striking out on their own in these areas, the chances of them having difficulties is relatively high, while the chances of bystander rescue is low. What may be a minor inconvenience in their home waters can become a serious matter in these remote areas. For instance, if a boater capsizes his canoe on a summer day in a lake or river in Florida, the water is warm, self-rescue is relatively easy, and the chance of a passerby assisting is pretty high. No big deal. Take the same summer day, and the same situation, only place it in the rivers and lakes along the trail in Montana, and things get a bit more serious. The area is remote with little chance of even being seen by a passerby, the waters are mountain-fed and icy cold year round, and even if

you are able to rescue yourself and get to shore, hypothermia is a very real threat. Assistance is needed, but how do you contact it?

In the remote areas of the trail, communications will be difficult at best. Due to the topography, radios are in large part useless. Cellular phone towers are virtually non-existent, and not many people are willing to invest in a satellite phone. There is now, however, something available to those who choose to venture into the backcountry. They are called Personal Locater Beacons, or PLBs. Approved for use in the United States by the Federal Communications Commission (FCC) in July 2003, these PLBs operate much in the same manner as marine Emergency Position Indicating Radio Beacons (EPIRB). The PLB emits a signal on 406mhz to a satellite system, which in turn sends a signal to the U.S. Air Force Rescue Coordination Center (AFRCC). Once a signal is confirmed as genuine, and its location identified, the AFRCC can then contact the appropriate state or local resource for response. PLBs are relatively lightweight and compact, and therefore easy to add to a pack. The average cost is between $350 and $500, but models with a global positioning system (GPS) interface can be more. Users must register PLBs with the National Oceanic and

Atmospheric Administration (NOAA). The registration information will provide rescuers with vital information such as your name, address, phone numbers, and most important of all, someone to contact if you are in trouble. Remember, if you plan to visit the more remote areas of the trail, leave a copy of your itinerary with your contact person. If you are going by boat, leave a float plan. The more information rescuers have, the better off you'll be if trouble arises.

The Bicentennial Commemoration of the Lewis and Clark Expedition is a wonderful opportunity to walk in the footsteps of history, and to discover what a truly beautiful country we live in, but do so safely: plan ahead; take a boating safety course; always wear your life jacket when on the water; make sure your boat is ready and get a free vessel safety check from a local member of the Coast Guard Auxiliary or Power Squadrons; and remember, boating and alcohol don't mix. Boating under the influence of alcohol and dangerous drugs is illegal, and it adds a degree of danger you can live without. Follow the trail, and follow the example of Lewis and Clark. Boat Safely.



Nautical Engineering Queries

1. A vessel has eight B-II CO_2 fire extinguishers. How many spare charges must the vessel carry?

A. 0 B. 1 C. 2 D. 4

Correct Answer A: *Regulation 46 CFR 95.50-15 states that, "... spare charges shall be carried for at least 50 percent of each size and variety...of hand portable fire extinguisher...." Portable CO_2 extinguishers are not "readily rechargeable" on board a vessel and "spare charges" as indicated would not be carried for this type of extinguisher classification. The regulation continues to state that "...if the unit cannot be "readily recharged" by the vessel's personnel, one* spare unit *of the same classification is to be carried in lieu of* spare charges *for all such units of the same size and variety."*

2. The function of the loop seal, as typically provided on a flash type evaporator, is to _____.

A. aid in establishing a vacuum in the first stage via the second stage
B. transfer the distillate produced in the first stage to the second stage
C. aid in establishing a vacuum in the second stage via the first stage
D. aid in developing a vacuum in the shell of the salt water feed heater

Correct Answer B: *Due to the pressure difference between the first and second stages, a loop seal is provided and transfers the distillate produced in the first to the second stage while maintaining the pressure differential between stages.*

3. Injection lag in a diesel engine may be caused by _____.

A. a higher cetane number of fuel oil
B. the diesel fuel used having a high viscosity
C. mechanical rigidity in the lube pump mechanism
D. a decrease in the fuel pump delivery pressure

Correct Answer B: *higher viscosity fuel will contribute to an increased delay of the fuel being forced across the injector tip, resulting in injection lag.*

4. Intercoolers installed on starting air compressors reduce the possibility of _____.

A. dust entering the high pressure stage
B. lube oil carbonization
C. discharge pulsations
D. interstage vapor lock

Correct Answer B: *By compressing air in stages and cooling it prior to entering the next stage, the temperature of each stage discharge is significantly lowered. Hence, intercooling aids in reducing the carbonization of the lube oil in comparison to compressing air without adding intercoolers.*

5. A short circuit in the armature of a DC motor will cause the motor to _____.

A. run fast
B. hum when energized
C. spark at the brushes
D. fail to start

Correct Answer C: *Brush Problems and Probable Causes–Brush Sparking–short circuit in the armature winding. A short circuit, commonly called a short, is a low resistance current path in the coil of a DC armature and will be indicated by excess current and the smell of burning insulation in addition to the visual indication of sparking at the brushes. Any abrupt change in current flow may cause brush sparking.*

6. Which of the processes listed occurs during the charging of a lead-acid storage battery?

A. Negative plates change to lead peroxide.
B. Positive plates change to lead peroxide.
C. Both plates change to lead peroxide.
D. Both plates change to lead sulfate.

Correct Answer B: *In a fully charged battery, the positive plates contain pure lead peroxide.*

7. The most common type of AC service generator found aboard ship is the stationary _____.

A. electromagnetic field, revolving armature
B. electromagnetic field, oscillatory armature type
C. armature oscillatory electromagnetic field type
D. armature, rotating electromagnetic field type

Correct Answer D: *When large power units are required, it becomes difficult to sufficiently insulate slip rings, which are a frequent source of trouble. Because of this, most large power-producing AC generators are designed with a stationary armature and a rotating magnetic field. In the majority of synchronous machines, and in ALL of the larger units, magnetic flux is produced in the rotor poles and swept across stationary armature windings. In synchronous alternators, as in all electromagnetic devices, voltage is determined by relative motion between conductors and lines of magnetic flux.*

8. Which type of flux should be used when soldering electrical wire connections and electronic components?

A. Silver flux
B. Rosin flux
C. Solid flux
D. Alkalide flux

Correct Answer B: *Rosin flux is used to remove oxide films on metals being joined; otherwise the metals will not properly fuse and is widely used for light solder work, such as wire connections.*

9. The part of a fuse that melts and opens the circuit is made of _____.

A. copper and antimony
B. steel and babbitt
C. aluminum or beryllium alloy
D. zinc or an alloy of tin and lead

Correct Answer D: *Generally, fuses are made of zinc or of an alloy of tin and lead. Due to its high resistance and melting point being lower than that of copper, it will melt before the copper wires become too hot.*

---

1. Reference: 46 CFR 95.50-15
2. Reference: Marine Engineering – Harrington
4. Reference: Modern Marine Engineer's Manual; Vol. 1; Osbourne
5. Reference: Naval Ship's Technical Manual
6. Reference: Basic Electricity NAVPERS 10086-A
7. Reference: Electricity One-Seven, Mileaf & Modern Marine Engineers Manual II, Osbourne
8. Reference: Basic Electricity NAVPERS 10086-A
9. Reference: Basic Electricity, Marcus

Nautical Deck Queries

1. International and Inland: A power-driven vessel is underway and fishing with trolling lines. This vessel __.

A. must keep out of the way of sailing vessels

B. must sound a one prolonged, two short blast signal in restricted visibility

C. is the stand-on vessel when overtaking power-driven vessels

Correct Answer A: *By definition, this vessel is not "engaged in fishing" because it is using "trolling lines (or other fishing apparatus) which do not restrict maneuverability." Therefore, the rule for an ordinary power-driven vessel applies, mandating that the vessel trolling keeps clear of the vessel under sail.*

2. Which statement about a simple conic chart projection is true?

*Conic Projections–**Simple Conic:** A single tangent cone is used. The latitude at which the cone is tangent is the "standard parallel." **Secant Conic:** The cone is tangent at two latitudes i.e., two standard parallels, cutting a "secant" of the earth. **Lambert Conformal Conic:** A secant conic in which the spacing of the parallels is altered so that the distortion is the same along these parallels as it is along the meridians. **Polyconic**: A series of cones used to eliminate the limitation in latitude that can exist with a secant cone and improve quality of presentation with regard to equal-area.*

A. It is an equal-area projection.

B. It is a conformal projection.

C. Meridians appear as curved lines with this type of projection.

D. The scale is correct along any meridian.

Correct Answer D: *The parallels of latitude are concentric circles and the distance along any meridian between consecutive parallels is correct, in relation to the distance on earth. Since the distortion along the standard parallel (where the cone is tangent to the earth) is minimal, a simple conic projection can be used to map an area having a wide spread of longitude if the spread in latitude is relatively small.*

3. What shall be conducted during a fire and boat drill?

A. All watertight doors in the vicinity of the drill shall be operated.

B. All lifeboat equipment shall be examined.

C. Fire pumps shall be started and all exterior fire main outlets opened.

Correct Answer B: *Title 46 of the Code of Federal Regulations, 46 CFR 199.180, requires "checking the operation of watertight doors, fire doors, . . . in the drill area."*

4. The color of the flare sent up by a submarine indicating that a torpedo has been fired in a training exercise is ___.

A. white B. green C. yellow D. red

Correct Answer B: *Green or black is used under training exercise conditions only to indicate that a torpedo has been fired or that the firing of a torpedo has been simulated. By this signal, merchant ships are to be aware of naval activity in their vicinity.*

5. The line of position determined from a sight with an observed altitude (Ho) of 88°45.0′ should be _____.

High Altitude Sight–This sight was made within a few minutes of local apparent noon (LAN) at a location where the sun is crossing the observer's meridian very close to his/her zenith.

A. reduced to the meridian and plotted as a latitude line.

B. calculated as a longitude line

C. plotted by using an intercept from an assumed position D. plotted as an arc around the GP of the body.

Correct Answer D: *The geographic position (GP) of the celestial body (typically the sun) is the point on earth directly beneath it. It is the point from which an observer would have the sun at his/her zenith. In this case, the observer is 75 nautical miles (90° - 88°45.0′) from the sun's GP. The arc of the circle (drawn on the chart with a compass) is a portion of the circle of equal altitude. All observers on the circumference of this circle would observe the sun at an altitude of 88°45.0′ at this moment in time.*

6. When fighting a fire in a space containing an IMO "Class 1" hazardous cargo, the most effective fire fighting procedure is to __.

Class 1 Hazardous Material, i.e.: Explosives–This class is defined in the International Maritime Dangerous Goods (IMDG) Code. "Class 1" is similarly defined in 49 CFR 173.50: "Any substance or article . . . which is designed to function by explosion or which, by chemical reaction within itself, is able to function in a similar manner . . . ."

A. shut down the ventilation and exclude all air to smother the fire B. use water from fire hoses or a sprinkler system
C. activate the fixed CO_2 firefighting system D. use high-expansion foam

Correct Answer B: *Water is always best for extinguishing a "general combustible" fire. Given the volatility of this particular material, more than one fire-fighting procedure may need to be used. The action indicated in choice "A" or "C" may have to be accomplished first, before a hose team can access the space.*

7. The center of flotation of a vessel is _____.

Note: The center of flotation is a point on the waterplane which represents the fulcrum that the vessel pivots about as it trims. As cargo is loaded, the change in trim may be calculated by dividing the moment created by the load by the "moment to trim one inch." Since the shape of the waterplane area of a self-propelled vessel changes with draft, the location of the center of flotation will vary longitudinally as the shape of the plane changes.

A. the center of volume of the immersed portion of the vessel
B. the center of gravity of the waterplane
C. the point at which all the vertical downward forces of weight is considered to be concentrated
D. the point at which all the vertical upward forces of buoyancy is considered to be concentrated

Correct Answer B: *This point is the center of gravity of only the waterplane and must not be confused with the (three-dimensional) center of gravity of the vessel. Reference:* LaDage and VanGemert, Stability and Trim for the Ship's Officer, Cornell Maritime Press, *1990.*

8. Vessels should maintain a sharp lookout, especially from December through March, when navigating the right whale's only known calving grounds, which lie off the coasts of _____.

Note: In accordance with 50 CFR 224.103, it is unlawful to approach within 500 yards of a right whale. If a right whale is discovered within 500 yards, the vessel must: "Steer a course away from the right whale and immediately leave the area at a slow safe speed."

A. Nova Scotia B. Maine and Massachusetts
C. Georgia and NE Florida D. California and Mexico

Correct Answer C: *This is the locale of the calving grounds and is designated a "Critical Habitat for Marine Mammals" by 50 CFR 226.203.*

U.S. Department of Homeland Security

United States Coast Guard

National Maritime Center
4200 Wilson Blvd., Suite 630
Arlington, VA 22203-1804

Official Business
Penalty for Private Use $300