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NATIONAL TRANSPORTATION SAFETY BOARD

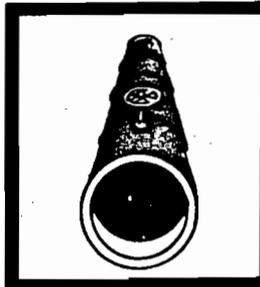
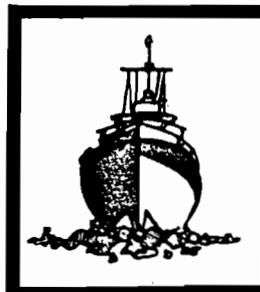
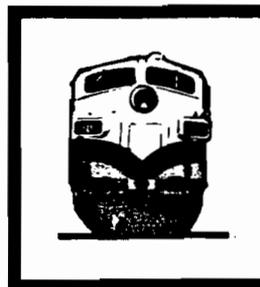
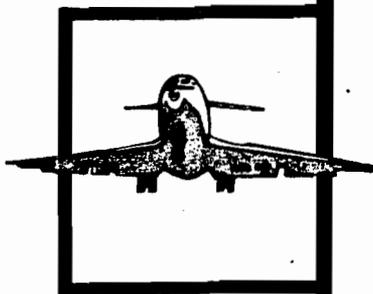
WASHINGTON, D.C. 20594

SAFETY REPORT

PROGRESS OF STATE LAWS ON ALCOHOL USE IN RECREATIONAL BOATING

NTSB/SR-88/01

UNITED STATES GOVERNMENT



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16. Abstract In 1983, the National Transportation Safety Board published a safety study examining the involvement of alcohol in recreational boating accidents and identifying a series of actions that could be undertaken by Federal and State agencies and private organizations to reduce alcohol and drug use by recreational boat operators. In the intervening 5 years, a number of governmental jurisdictions and private groups have acted to address this safety concern. At the time that the Safety Board issued its 1983 report, only three States had boating-while-intoxicated laws. Since then, the Safety Board has testified in some State legislatures which are considering boating-while-intoxicated legislation and has provided many others with appropriate factual information. Twenty-two States and the Virgin islands have enacted substantive laws that address this issue. However, 25 States have no such laws.			
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The Safety Board decided to undertake investigations of a small number of boating accidents with initial indications of drug or alcohol involvement. It was hoped that these investigations would illustrate the types and degrees of accidents continuing to occur in recreational boat operations.

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**NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C. 20594**



**SAFETY REPORT
PROGRESS OF STATE LAWS ON
ALCOHOL USE IN RECREATIONAL BOATING**

INTRODUCTION

In 1983, the National Transportation Safety Board published a safety study¹ examining the involvement of alcohol in recreational boating accidents and identifying a series of actions that could be undertaken by Federal and State agencies and private organizations to reduce alcohol and drug use by recreational boat operators. In the intervening 5 years, a number of governmental jurisdictions and private groups have acted to address this safety concern.

Boating accidents in the United States account for more fatalities than any other mode of transportation except for motor vehicles. In 1987, 1,036 recreational boating fatalities were reported to the U.S. Coast Guard--more than were killed in aviation, rail, or commercial marine travel.² The Safety Board's 1983 study, as well as subsequent studies by some States, showed a surprisingly large number of recreational boating accidents in which alcohol and/or drug use played a causal or contributory role. The Board's study concluded that at least 1/3 of all people killed in recreational boating accidents had a blood alcohol concentration (BAC) of 0.10 percent or higher. (Generally, States define intoxication of motor vehicle drivers as 0.10 percent BAC or more.)³

Recent State studies also have consistently found that alcohol is frequently involved in serious boating accidents. The most significant of these studies, a 2-year analysis of boating accidents completed in late 1985 by the California Department of Boating and Waterways, found that alcohol was a factor in approximately 59 percent of the fatal motorboat accidents.⁴ Seventy percent of the fatalities and injuries in these fatal boating accidents were passengers, water skiers, or swimmers--indicating that boat operators impaired by alcohol are dangerous not only to themselves, but also to other people. In 1987, Minnesota reported that in 58 percent of its accidents, boaters had some alcohol present in their systems, and that 30 percent of the boaters had a BAC of greater than 0.10 percent.⁵ Likewise, a study conducted by Maryland's Department of Natural Resources Marine Police in 1986 and 1987 found that 83 percent of those fatally injured in recreational boating accidents had

¹Safety Study--*Recreational Boating Safety and Alcohol* (NTSB/SS-83/02).

²U.S. Coast Guard, *Boating Statistics 1987*, COMDTPUB P16754.1, Washington, D.C., June 1988.

³See NTSB/SS-83/02.

⁴State of California, Department of Boating and Waterways, *Boating Safety Report: A Study of Alcohol-Related Accidents*, Sacramento, California, December 1985.

⁵State of Minnesota, Department of Natural Resources, *1987 Boating While Intoxicated Arrest Summary*, 1988.

alcohol in their systems and that 60 percent were above the State's presumptive level of intoxication of 0.08 percent BAC.⁶ While these numbers are important to gauge the breadth of the problem, it is individual accidents that bring home the stark reality of the tragedy caused by boat operators impaired by alcohol.

The progress report presented here will summarize 12 boating accidents investigated by the Safety Board in 1986-88 in which alcohol and/or drugs were involved. (See appendix A, which summarizes the 12 accidents.) In all of the accidents, alcohol and/or drugs were determined to be either causal or a contributing factor to the accident.

The Safety Board decided to undertake investigations of a small number of boating accidents with initial indications of drug or alcohol involvement to gather information regarding the circumstances of alcohol-involved accidents. It was hoped that these investigations would illustrate the types and degrees of accidents continuing to occur in recreational boating operations. Further, these accidents were investigated to provide information to assist State legislatures to determine the necessity for passing boating-while-intoxicated (BWI) laws.

The number of accidents investigated is too small to draw any valid statistical conclusions; however, they demonstrate the variety of circumstances in which alcohol-involved accidents occur. Nine of the 19 operators were tested for alcohol; 8 were positive. One operator was administered tests for illicit drugs; he tested positive. Of the eight positive alcohol tests, half had a BAC of more than 0.10 percent and half had less. Of those under 0.10 percent, the range was between 0.05 and 0.094 percent, levels the Safety Board considered impairing and contributing to the cause of these accidents.

The boats involved in the 12 accidents included 12 powered boats, 3 rowboats, 1 sailboat, 1 houseboat, 1 raft, and 1 kayak. Several accidents involved boats operating in areas of relatively high congestion or traveling to or from social events.

Table 1 provides basic facts about the 12 accidents. The accident summaries in this study vividly illustrate the unnecessary losses resulting from mixing drinking and boating. For example:

Brief No. CHI-86-FM-001

- About 2 a.m. on September 1, 1986, a 21-foot motorboat, headed in a westerly direction about 45 mph, collided with a 19-foot motorboat on Fox Lake near Indian Point, Illinois. Shortly before the collision, one of the two passengers aboard the 21-foot motorboat reportedly saw lights heading toward the boat and yelled to the operator to look out, but his warning was too late. The larger boat passed over the bow of the smaller boat, but it remained afloat. The bow of the smaller boat was shattered and the boat sank. (See figure 1.)

The operator and both passengers on the smaller boat and the operator of the larger boat received fatal injuries. One passenger was thrown from the larger boat and drowned. The other passenger remained aboard the larger boat and received minor injuries.

⁶State of Maryland, Department of Natural Resources, "Maryland's Alcohol Enforcement Program," Annapolis, Maryland, 1987.

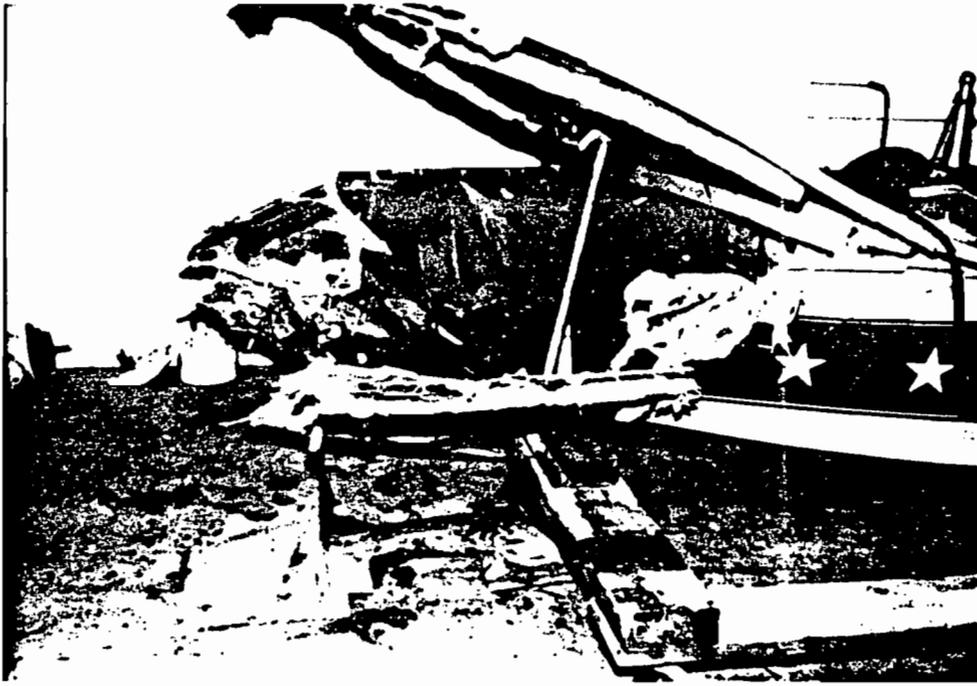


Figure 1.--Port side view of heavily damaged 19-foot motorboat in the Fox Lake, Illinois, accident.

The operator and two passengers on the 19-foot boat had BACs of 0.088, 0.087, and 0.062 percent, respectively. The operator of the 21-foot boat and the passenger who drowned both had cocaine present in their bodies; their BACs were 0.241 and 0.036 percent, respectively. The only survivor had a BAC of 0.147 percent.

Brief No. FTW-87-FM-010

- On May 17, 1987, a 17-foot, northbound motorboat collided with an 18-foot, southbound motorboat in the Neches River near Beaumont, Texas. The weather was hot and dry with a light haze which did not affect visibility. Shortly after 7 p.m., as the operator of the 17-foot boat was assisting a passenger who had fallen from her seat, another passenger screamed. The operator looked up and saw the 18-foot boat, but he did not have sufficient time to take evasive action before his boat collided with the bow of the 18-foot boat. Of the 10 occupants aboard the 17-foot boat, 8 were thrown from the boat; 1 sustained minor injuries, 5 sustained serious injuries, and 4 were either fatally injured or drowned. Of the six occupants aboard the 18-foot boat, the operator and four passengers also were thrown into the river; two sustained minor injuries, three sustained moderate injuries, and one required no medical treatment. (See figure 2.)

The operator of the 17-foot boat had a BAC of 0.117 percent 4 1/4 hours after the accident. The operator of the 18-foot boat refused the request of law enforcement personnel to submit to alcohol testing.

In its earlier study, the Safety Board addressed two particularly significant problems: the inadequate amount of information available to boaters on the effects of low levels of alcohol and weak enforcement of State boating laws.

Table 1.—Recreational boating accidents investigated by the Safety Board

<u>Brief No.</u>	<u>Location</u>	<u>Date</u>	<u>Time</u>	<u>Fatalities</u>	<u>Injuries</u>	<u>Accident</u>	<u>Vessel Involved</u>	<u>Alcohol (percent)</u>	<u>Information</u>
1	NYC-87-FM-0033 Lake Champlain near St. Alban's, VT	7/27/86	10:30 p.m.	2	4	Collision	Motorboat and Sailboat	Motorboat Operator 0.082 (B)	
2	CHI-86-FM-001 Fox Lake near Indian Point, IL	9/1/86	2:09 a.m.	5	1	Collision	Motorboat and motorboat	Mastercraft Operator 0.088 (B) Wellcraft Operator 0.241 (B)	
3	FTW-87-FM-011 Cow Bayou Orange County TX	4/21/87	9:10 p.m.	2	2	Collision	Motorboat and motorboat	17-ft Hydrostream Operator 0.094 (B)	Toxicological tests of operator of 17-ft vessel taken 3 hrs after accident
4	FTW-87-FM-010 Neches River Beaumont, TX	5/17/87	7:10 p.m.	4	11	Collision	Motorboat and motorboat	Starcraft Operator 0.117 (B)	Wellcraft operator reported alcohol- involved by Deputy Sheriff Toxicological tests of Starcraft operator taken 4 hrs after accident
5	NYC-87-FM-001 Lake Betset Middlefield, CT	6/2/87	9 p.m.	1	--	Capsizing	Rowboat	Reported by occupant of vessel	
6	DEN-87-FM-017 Animas River LaPlata, County Durango, CO	6/10/87	1 a.m.	1	--	Capsizing	Raft and kayak	Reported by witness	Operator of kayak reported raft operator was alcohol- involved; kayak operator was also alcohol-involved as reported by investigating officials
7	DEN-87-FM-019 Horseshoeth Reservoir Dam, Larimer County Ft. Collins, CO	6/27/87	3:10 a.m.	--	4	Ramming	Motorboat	Reported by operator of vessel	
8	MKC-87-FM-001 Lake of the Ozarks, Osage Beach, MO	8/2/87	1:30 a.m.	2	1	Collision	Motorboat and Houseboat	Motorboat operator 0.05 (B)	Toxicological tests of operator taken 3 hrs after accident

Case No.	File No.	Location	Date	Time	Swamping	Rowing Boat (Jon boat)	Rowboat occupant/operator	Canoists involved in this swamping also were reported to be alcohol-involved
9	NYC-87-FM-002	Lake Mishnock, West, Greenwich, RI	8/16/87	11:30 p.m.	1	--	0.28 (B) and 0.34 (U)	Reported by operator
10	NYC-88-FM-001	Calves Island, Connecticut River Old Lyme, CT	10/17/87	7:30 p.m.	3	Motorboat		
11	NYC-88-FM-002	Connecticut River, Chester, CT	4/9/88	7:30 p.m.	1	Rowboat		Reported by operator
12	ATL-88-FM-001	J Percy Priest Lake, Nashville, TN	5/29/88	7:45 p.m.	2	Motorboat and motorboat		Apollo operator 0.20 (B)
Key:								
(B)--Blood								
(U)--Urine								
Totals:					21	27		
					Collisions: 6	Motorboats...12		
					Capsizing: 3	Rowboat...3		
					Swamping: 1	Sailboat...1		
					Grounding...1	Houseboat...1		
					Ramming...1	Raft...1		
						Kayak...1		

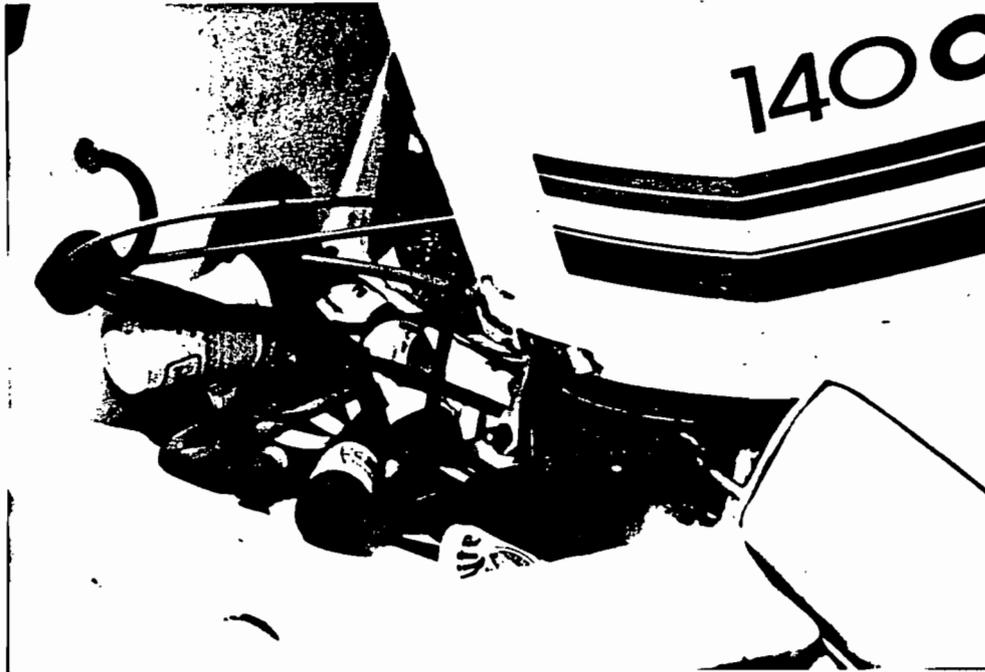


Figure 2.—Seventeen-foot motorboat (top photograph) heavily damaged in collision in which operator had been drinking (bottom photograph).

In its accident investigations, the Safety Board has found little or no information available to boat operators demonstrating that even low levels of alcohol (as little as 0.035 BAC) can affect their ability to operate a boat safely. (A 150-pound person could reach a 0.035 percent BAC level by drinking as few as 18 ounces of beer or 1 1/2 ounces of 86 proof whiskey in 1 hour.) Research completed for the Coast Guard indicates that individuals with this low level may exhibit significant impairment in relatively normal recreational boating operations. Peripheral vision, balance, and other information processing tasks are most immediately affected by the consumption of alcohol.⁷

Research completed in late 1987 by the National Academy of Sciences (NAS) provides additional information on the effects of low level alcohol. In 1986, Congress requested the NAS to study the effects of various alcohol levels on the performance of truckdrivers. The NAS Transportation Research Board brought together a group of nationally recognized experts who concluded that "performance of driving-related tasks decreases at any BAC above zero, and crash risk increases sharply as BAC rises."⁸ While the NAS study was directed toward truck driving skills, the Safety Board believes that its conclusion is also applicable to operating a boat. Also, the NAS study provides significant support for prohibiting the operation of any form of transportation at considerably less than 0.10 percent (BAC), the standard enforced in most governmental jurisdictions.

Further, the Safety Board's earlier study found that boaters need to be better educated about the impact that even a small amount of alcohol can have on the ability to operate a boat safely. The Safety Board recommended that several national organizations involved in boating safety education--the U.S. Coast Guard Auxiliary, the United States Power Squadrons, the American National Red Cross, the Boat Owners Association of the United States, the National Boating Federation, and the National Safe Boating Council, Inc.:

M-83-75

In cooperation with the United States Coast Guard, develop and incorporate into your safe boating courses materials on the hazards of alcohol use and its effects on recreational boat operators.

All of these organizations have accomplished the recommended action and have included information on the effects of alcohol and/or drugs on boat operators in training material distributed at both the State and national levels. This is a first step toward changing the basic attitudes of boaters toward drinking and boating.

Regarding the second problem, the Safety Board found that although State laws make it illegal to operate a boat while intoxicated, few States provide adequate legal tools for enforcement of the law. In most States, there is no defined level of intoxication such as there is for drunk driving. Further, many laws do not provide for chemical testing of blood or breath without the operator's consent. Finally, there is often no arrangement for routinely conducting toxicological testing on persons fatally injured in boating accidents.

⁷Wyle Laboratories, *Alcohol and Pleasure Boat Operators*, prepared for the Coast Guard, Report Number CG-D-134-75, Washington, D.C., June 1975.

⁸National Academy of Sciences, Transportation Research Board, Special Report No. 216, *Zero Alcohol and Other Options: Limits for Truck and Bus Drivers*, Washington, D.C., 1987.

In October 1983, the Safety Board recommended that the governors and legislative leaders of various States improve their laws and enforcement programs to implement stronger programs:⁹

M-83-76

Adopt legislation to clearly define the level of legal intoxication for recreational boat operators in order to strengthen your State's enforcement program for reducing accidents, fatalities, injuries, and property damage caused by the use of alcohol.

M-83-77

Adopt legislation to allow a chemical test of blood, breath, or urine if a recreational boating operator is suspected of being intoxicated and toxicological tests in the event of a recreational boating accident fatality.

Most of the States responded favorably to both recommendations; consequently, the recommendations were placed in an "Open--Acceptable Action" status for those States. However, Arkansas, Oklahoma, and South Dakota have not yet responded; consequently, the recommendations were placed in an "Open--Unacceptable Action" status.

The Safety Board believed that if these recommendations were adopted by all States, they would provide the tools to implement an effective program for curbing alcohol and/or drug abuse on the water. The use of an objective definition of intoxication, such as a specific BAC level, would greatly simplify the task of law enforcement personnel who are called on to enforce BWI statutes. A chemical testing provision ("implied consent") applicable to boat operators would make it possible to perform the necessary testing to ascertain an accurate BAC level. Toxicological testing of all fatally injured boat operators would provide a better estimate of the proportion of accidents that involve alcohol and/or drugs.

The wisdom of this legislative approach was recognized by the Council of State Government's Committee on Suggested State Legislation. The committee voted to include a model BWI statute in the 1986 edition of *Suggested State Legislation*.

On December 14, 1987, as a result of the Safety Board's study, the Coast Guard published its final rule on alcohol involvement in recreational boating.¹⁰ This rule enables the Coast Guard to enforce the Federal prohibition against boating while intoxicated by establishing a standard of intoxication for recreational marine operators: 0.10 percent BAC. In addition, the rule describes a behavioral standard for determining intoxication. Refusal to submit to a test is admissible at a hearing and presumptive of intoxication. A law enforcement officer may direct an individual operating a boat to undergo a chemical test whenever reasonable cause exists.

Safety Recommendations M-83-76 and -77 also have engendered a positive response from the States. At the time the Safety Board issued its recommendations, only three States had BWI laws which defined intoxication and included implied consent provisions. Since then, the Safety Board has testified in some State legislatures that are considering BWI legislation and has provided many others with appropriate factual information. Twenty-two States and the Virgin Islands have enacted substantive laws that meet the intent of the recommendations. (See table 2.) However, since 1986, when bills were introduced in 24 States and enacted in only 6 States, the pace of legislative activity

⁹A similar Safety Recommendation, M-86-32, was issued to U.S. Territories on April 7, 1986.

¹⁰*Operating a Vessel While Intoxicated*, 52 FR 47626, December 14, 1987.

on this problem has slowed. In 1987, bills were introduced in 17 States and enacted in only 5 States. Despite continued Safety Board activity, in 1988, of the 14 States that considered BWI legislation, only Idaho and the Virgin Islands enacted laws--the smallest number of BWI laws in any year since publication of the Safety Board's 1983 report. Consequently, the Safety Board is concerned that some States may no longer consider improving these laws to be a priority.

Table 2.--States that have enacted BWI laws

<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>
Arizona	Florida	Alaska	California	Montana	Idaho
Louisiana	Indiana	Illinois	Georgia	Nevada	Virgin Is.
Maryland	Michigan	New Hampshire	Kansas	Utah	
	Pennsylvania	North Carolina	Minnesota	Wyoming	
	Wisconsin	Washington	New Jersey		
			New York		
			Ohio		

With the passage of tougher BWI laws, a number of new programs have been introduced to address impaired boat operators. The Safety Board has reviewed a number of innovative law enforcement techniques for minimizing the hazard of impaired boat operators. One highly successful approach to reduce alcohol-related accidents has been to target marine patrol resources on congested waterways. As an example of the impact such targeted patrols can have, at locations in Maryland where dedicated marine units (known as SWAMP patrols) were in action,¹¹ no recreational boating fatalities were reported in 1987. SWAMP patrols stopped 697 vessels and issued 170 citations; 12 persons were arrested for operating-under-the-influence. Forty-one percent of the vessels stopped had some type of alcohol on board. In the 5 years before it incorporated the SWAMP program, Maryland's overall boating fatality average was 29.2 deaths per year; the average annual fatality rate for the 5 years since the initiation of SWAMP operations is 16.2 deaths--a reduction of 44.5 percent. The use of marine patrol resources in this way also has been successful in Lake of the Ozarks, Missouri, and Lake Shasta, California. The Board believes that boating fatalities will continue to decline if targeted congested waterways are patrolled for boat operators under the influence of alcohol.

In summation, many efforts have been made since 1983 by numerous governmental and private organizations to reduce the losses from recreational boating accidents in which alcohol and/or drugs were involved. There has been some success. On June 1, 1988, the Coast Guard announced that fewer people died in recreational boating accidents in 1987 than in any previous year in which fatalities had been counted. The Coast Guard concluded that the decrease was the result of increasing awareness by boaters of the dangers of operating boats while drinking alcohol or using drugs.¹² Further, the National Association of State Boating Law Administrators has consistently led States' efforts to effectively address alcohol and drug issues through increased boating education and enforcement activities. Recently, the National Marine Manufacturers' Association wrote a letter to all governors encouraging stronger boating while intoxicated laws.

¹¹The acronym "SWAMP" means Safer Waterways Through Alcohol Monitoring Patrols. Data provided by Col. Jack Taylor, Marine Police, Department of Natural Resources, Maryland, in a presentation before the Northeastern States Boating Administrator's Conference, June 14, 1988, Lake George, New York.

¹²U.S. Coast Guard Press Release, CG 12-88, "Recreational Boating Fatalities at Record Low in 1987," Washington, D.C., June 1, 1988.

The Safety Board believes that the components to improve the safety level of recreational boat operations already exist. States without adequate BWI laws now need to enact such legislation which will give law enforcement agencies adequate tools for dealing with drunk boaters. National boating educational organizations should continue to expand their efforts to inform recreational boat operators of the hazards of alcohol use in boating operations.

BY THE NATIONAL TRANSPORTATION SAFETY BOARD

/s/ JAMES L. KOLSTAD
Acting Chairman

/s/ JIM BURNETT
Member

/s/ JOHN K. LAUBER
Member

/s/ JOSEPH T. NALL
Member

/s/ LEMOINE V. DICKINSON, JR
Member

December 17, 1988

**APPENDIX
RECREATIONAL BOATING ACCIDENTS INVOLVING ALCOHOL AND/OR DRUGS**

**NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C. 20594**

Brief No.: NYC-87-FM-0033

Vessels: Glastron Motorboat, Vermont registration No. VT 5781A, 19 feet long, built in 1983
Tartan Sailboat

Accident Type: Ramming

Location: Southeast Bay of Butler's Island, Lake Champlain, near St. Albans, Vermont

Date: July 27, 1986

Time: About 2230

Property Damage: \$10,000 (estimate)

Injuries: Glastron Tartan

Fatal	2	0
Nonfatal	4	0
None	0	4

Description of the Accident

About 2130 on July 27, 1986, six persons boarded a Glastron motorboat at St. Albans Pavilion on Lake Champlain, near St. Albans, Vermont, for a pleasure ride. The sky was overcast and the night was dark with good visibility. The air temperature was 60° F, and the water temperature was 60° F to 65° F. About 2230, the boat entered a small bay, Southeast Bay, Butler's Island, Vermont, where the occupants went ashore. About 15 minutes later, they reboarded the motorboat. None of the occupants were wearing the personal flotation devices that were in the boat. The operator reportedly guided the boat slowly away from shore, accelerated the boat rapidly for about 5 seconds, and rammed into the port side of an anchored sailboat. At impact, two occupants who were seated in the bow of the motorboat were thrown into the water and drowned; the other four occupants were injured and hospitalized; the four occupants in the sailboat were uninjured.

The sailboat, along with several other boats, had been anchored in the bay since early evening. Conflicting statements were made as to whether the sailboat displayed an anchor light at the time of the accident. None of the motorboat occupants saw the sailboat before impact.

A blood sample taken from the motorboat operator about 3 hours after the collision determined that his blood alcohol concentration was 0.082 percent. The operator had been drinking during the afternoon and just before the boat's departure from St. Albans Pavilion, although the survivors said that he had not had anything to drink while on the boat.

Probable Cause

The National Transportation Safety Board determines that the probable cause of the ramming of the Tartan sailboat by the Glastron motorboat was the failure of the motorboat operator due to his alcohol-impaired condition to detect the presence of the sailboat before accelerating his boat.

**NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C. 20594**

Brief No. : CHI-86-FM-001

Vessels: 4Winns Motorboat, Model 211 Liberator,
21 feet long, built in 1985
Mastercraft Motorboat, 19 Skier,
19 feet long, built in 1978

Accident Type: Collision

Location: 300 yards south of Indian Point, Fox Lake, Illinois

Date: September 1, 1986

Time: 0209

Property Damage: Substantial

Injuries:	<u>4Winns</u>	<u>Mastercraft</u>
Fatal	2	3
Nonfatal	1	0
None	0	0

Description of the Accident

About 2150 on August 31, 1986, the 4Winns departed the Blarney Island, a bar on a lake north of Fox Lake, Illinois, for the Juke Box Saturday Night, a bar on the south shore of Fox Lake. About 0200, the 4Winns departed the Juke Box Saturday Night with the operator and two passengers for a pleasure ride. Meanwhile, about 1730, the operator and two women on the Mastercraft had returned to their boat dock after a day of water skiing. The father of the two women last saw them at 1930, when he left Fox Lake for his home. The whereabouts of the Mastercraft and its occupants from 1930 until 0200, September 1, 1986, are not known.

About 0200, a witness on shore sighted the Mastercraft about 1/3 mile southwest of the accident scene heading in an easterly direction at a slow speed. The 4Winns was heading in a westerly direction about 45 mph. About 0209, a passenger on the 4Winns saw lights heading toward the boat and yelled to the operator to look out just before the port forward side of the 4Winns collided with the bow of the Mastercraft and passed over it. The port side and stern drive of the 4Winns was damaged in the collision, but it remained afloat. The bow of the Mastercraft was shattered and it sank. All three occupants of the Mastercraft and the operator of the 4Winns were fatally injured; one passenger was thrown from the 4 Winns and drowned. The only survivor received minor injuries and remained on board the 4Winns.

The operator and the two occupants of the Mastercraft had blood alcohol concentrations (BAC) of 0.088, 0.087, and 0.062 percent, respectively. The operator on the 4Winns and the passenger who drowned were both found to have cocaine present in their urine, and their BACs were 0.241 and 0.036 percent, respectively. The injured person had a BAC of 0.147 percent.

Probable Cause

The National Transportation Safety Board determines that the probable cause of the collision between the 4Winns and the Mastercraft motorboats were the excessive speed of the 4Winns under the condition of darkness and the failure of both operators to determine risk of collision because their judgment was impaired by alcohol.

**NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C. 20594**

Brief No.: FTW-87-FM-011

Vessels: Hydrostream Motorboat, Texas registration No. TX 5579 YX, 17 feet long, built in 1978
Hydrostream Motorboat, Texas registration No. TX 9429 YX, 18 feet long, built in 1978

Accident Type: Collision

Location: Cow Bayou, Orange County, Texas

Date: April 21, 1987

Time: 2110

Property Damage: \$12,000 (estimated)

Injuries:

	<u>17-foot boat</u>	<u>18-foot boat</u>
Fatal	0	2
Nonfatal	2	0
None	0	0

Description of the Accident

About 2210 on April 21, 1987, a 17-foot motorboat was southbound in Cow Bayou, Orange, Texas, with two occupants on board. At the same time, an 18-foot motorboat was northbound with two occupants on board. The weather was overcast, warm, and dry. Neither boat was equipped with navigation lights.

The 17-foot southbound motorboat was moving from an area of intense artificial light into an area of waterway without lighting when the 18-foot northbound motorboat reportedly turned hard toward the west bank of the waterway and directly across the path of the southbound boat. The bow of the southbound boat struck the turning boat broad on the starboard side, penetrated the hull, and continued through to the operator's station.

Both occupants on the 17-foot motorboat sustained moderate injuries, and both occupants on the 18-foot motorboat sustained fatal injuries. Investigating officials reported that large quantities of beer were found on board both boats, and testing of a blood sample drawn more than 3 hours after the collision revealed a blood alcohol concentration (BAC) of 0.094 percent for the operator of the 17-foot motorboat. Autopsy records indicated a zero percent BAC for the operator of the 18-foot motorboat; sample dilution precluded a valid test for the presence of drugs. Test samples from the passenger on the 18-foot motorboat revealed the presence of marijuana.

Probable Cause

The National Transportation Safety Board determines that the probable cause of the collision between the two motorboats was the apparent sudden change of course by the northbound boat across the bow of the southbound boat and the failure of the southbound boat operator to see and avoid the northbound boat due to his alcohol-impaired condition. Contributing to the cause of the collision was the absence of navigation lights on both boats.

**NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C. 20594**

Brief No. : FTW-87-FM-010

Vessels: Starcraft Motorboat, Texas registration TX 1716, CR
17 feet long, built in 1976
Wellcraft Motorboat, Texas registration TX 8563EA,
18 feet long, built in 1986

Accident Type: Collision

Location: Neches River, Beaumont, Texas

Date: May 17, 1987

Time: 1910

Property Damage: \$17,000 (estimated)

Injuries:

	<u>Starcraft</u>	<u>Wellcraft</u>
Fatal	4	0
Nonfatal	6	5
None	0	1

Description of the Accident

About 1400 on May 17, 1987, a Starcraft motorboat with 6 occupants on board departed Riverfront Park, on the Neches River, at Beaumont, Texas, where raft races were being held. After proceeding upstream, the Starcraft moored to a houseboat, and the occupants joined a party that was in progress on the houseboat. About 1800, the operator and nine passengers departed the houseboat in the Starcraft and proceeded upstream at an estimated speed of 30 to 35 mph. The boat operator later stated that he had consumed 10 to 12 beers during the afternoon.

Meanwhile, about 1630, the operator of a Wellcraft departed Riverfront Park and proceeded upstream to an island to meet friends. The boat operator told law enforcement personnel that he had consumed three to five beers during the day. About 1900, the operator and five passengers departed the island in the Wellcraft and proceeded downstream at an estimated speed of 30 to 35 mph. The weather was hot and dry with a light haze which did not affect visibility.

About 1910, the Starcraft was traveling upstream in a bend in the river closer to the west bank than to the east or outside bend of the river. The operator of the Starcraft was assisting a passenger who had fallen from her seat when another passenger screamed. The operator said that he looked up and saw the Wellcraft so close to his boat that he did not have time to take any evasive maneuver. The operator on the Wellcraft stated that the Starcraft "appeared to be heading at somewhat of an angle toward the dock on the west side of the river. As I saw him, I cut my boat as hard to the right as I could. When I first realized the other boat was closing on me, I guess we were about 60 feet apart."

The bow of the upstream Starcraft collided into the port bow of the downstream Wellcraft. At impact, the operator of the Starcraft and eight of his nine passengers were thrown from the boat. Of the Starcraft's 10 occupants, 1 sustained only minor injuries, 5 sustained serious injuries, and 4 were either fatally injured or drowned. The operator and four passengers on the Wellcraft also were thrown into the water. Of the Wellcraft's six occupants, two sustained minor injuries, three sustained moderate injuries, and one required no medical treatment.

The operator of the Starcraft had a blood alcohol concentration of 0.117 percent 4 1/4 hours after the accident. A deputy sheriff reported that the operator of the Wellcraft was "very loud, very belligerent, and very visibly intoxicated." The Wellcraft operator refused the request of law enforcement personnel to submit to alcohol testing.

Probable Cause

The National Transportation Safety Board determines that the probable cause of the collision between the Starcraft and the Wellcraft was the failure of both vessel operators to detect the other vessel in time to take collision avoidance actions due to their alcohol-impaired conditions.

**NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C. 20594**

Brief No. : NYC-87-FB-001

Vessel: Homemade, flatbottom wooden rowboat,
7 feet long

Accident Type: Capsizing

Location: Lake Beseck, Middlefield, Connecticut

Date: June 2, 1987

Time: 2100

Property Damage: None

Injuries: 1 Fatal
0 Nonfatal
2 None

Description of the Accident

About 1900 on June 2, 1987, two brothers (ages 18 and 21) and a friend (age 16) boarded a homemade rowboat at their home on Lake Beseck, Connecticut. The older brother and the friend had begun drinking beer and bourbon about 1300 that afternoon. The younger brother said that he had been drinking that day as well. The rowboat was not equipped with personal flotation devices and was designed to accommodate only two adults. The lake was calm, the air temperature was 72° F, and the water temperature was 68° F.

The younger brother said that his brother carried a 3/4 empty bottle of bourbon onto the boat and was "really drunk" when the group departed. When they were about 150 yards from shore, the occupants intentionally began rocking the boat and eventually capsized it, casting the occupants into the water. The older brother, who reportedly was a good swimmer, drowned while attempting to swim ashore. No toxicological tests were performed since Connecticut does not require that such tests be performed on boating accident fatalities.

Probable Cause

The National Transportation Safety Board determines that the probable cause of the capsizing of the rowboat was reckless rocking of the overloaded boat by the occupants who were impaired by alcohol.

**NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C. 20594**

Brief No. : DEN-87-FM-017

Vessels: Trek-Blazer Kayak (one-person), 13 feet long,
Rubber Fishing Raft (two-person), 7 feet long

Accident Type: Capsizing

Location: Animas River, La Plata County, Durango, Colorado

Date: June 10, 1987

Time: 0100

Property Damage: None

Injuries: 1 Fatal
0 Nonfatal
1 None

Description of the Accident

At 0100 on June 10, 1987, the operator of the Trek-Blazer Kayak and the operator of a rubber fishing raft were attempting to put into shore on the Animas River, 10 miles north of Durango, Colorado. As the raft neared shore, the raft operator stood up in the raft, lost his balance, and fell onto the after port of the kayak, causing the kayak to capsize. The operator of the kayak extricated himself from the capsized craft and, when he surfaced, saw the capsized rubber raft floating down river. The raft operator has not been located and is presumed to have drowned.

The operator of the kayak stated that both he and the raft operator has been consuming alcoholic beverages before the accident and that the raft operator had not been wearing a personal flotation device. An investigating officer on scene said that the kayak operator had difficulty walking and speaking and that there was a strong odor of alcohol on his breath. No toxicological tests were performed since Colorado does not require such tests on persons involved in boating accidents.

Probable Cause

The National Transportation Safety Board determines that the probable cause of the capsizing of the rubber raft was the unbalancing of the raft by the operator in his alcohol-impaired condition.

**NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C. 20594**

Brief No. : DEN-87-FM-019

Vessel: Bayliner Motorboat, Model Eagle, Colorado registration
No. CL 4920BL, 19 feet long, built in 1981

Accident Type: Ramming

Location: Horsetooth Reservoir Dam, Fort Collins, Larimer County, Colorado

Date: June 27, 1987

Time: 0310

Property Damage: \$12,000 (estimated)

Injuries: 0 Fatal
4 Nonfatal
0 None

Description of the Accident

About 0310 on June 27, 1987, a 19-foot Bayliner was moving at a high speed in a north-northwesterly direction when it rammed into the base of the Horsetooth Dam, Fort Collins, Colorado. A witness to the accident picked up the four occupants, transported them to shore, and called for medical assistance. Three occupants suffered broken legs and the fourth suffered broken ribs and a ruptured spleen. The weather was clear and calm, the temperature was 68° F, and the visibility was poor.

An investigating officer recovered 2 unopened bottles of wine cooler and 18 unopened and 6 empty cans of beer from the boat and surrounding area. The operator of the boat said that he and the other occupants had been drinking for about 3 hours before the accident. No toxicological tests were performed since Colorado does not require such tests on persons involved in boating accidents.

Probable Cause

The National Transportation Safety Board determines that the probable cause of the ramming was the operator's reckless operation of the Bayliner motorboat while impaired by alcohol.

**NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C. 20594**

Brief No.: MKC-87-FM-001

Vessels: Chris Craft Motorboat, Missouri registration No. MO 3136 AT, 20 feet long, built in 1977
River Queen Houseboat, O.N. 299620, 38 feet long, built in 1966

Accident Type: Collision

Location: Lake of the Ozarks, at the 21-mile mark of the Osage River, Osage Beach, Missouri

Date: August 2, 1987

Time: 0130

Property Damage: \$8,000

Injuries:

	<u>Motorboat</u>	<u>Houseboat</u>
Fatal	0	2
Nonfatal	1	0
None	0	4

Description of the Accident

About 0130 on August 2, 1987, a houseboat was drifting at mile 21 on the Osage River, Lake of Ozarks, Missouri. The vessel's navigation lights were on and a gas lamp was lighted in the cabin. The six occupants on the houseboat were positioned as follows: two were forward outside the cabin, one was forward inside the cabin, three were at the stern outside the cabin, one was on the port side, and two were on the starboard side. The weather was clear, visibility was fair in darkness, the winds were light, and the water was calm. The air temperature was 76° F, and the water temperature was 88° F.

Shortly afterward, a Chris Craft motorboat collided with the houseboat's starboard outboard drive, rode over the rail, struck the two people located at the stern on the starboard side, struck the ladder leading from the starboard after side of the cabin to the upper deck, and came to rest with the bow embedded in the top after starboard corner of the cabin of the houseboat. None of the occupants on the houseboat saw or heard the motorboat until the collision. The owner of the houseboat asked the operator of the motorboat if he saw any of the houseboat's lights; he replied, "No, I didn't see anything."

The occupant on the port side of the houseboat was knocked into the water but was unhurt. One occupant on the starboard side of the houseboat was knocked into the water and was found dead floating in the lake 3 days later. The other person on the starboard side was pronounced dead at the scene.

The only other person to receive injuries was the motorboat operator. He was taken to a hospital. His blood alcohol concentration was determined to be 0.05 percent 3 hours after the collision.

Probable Cause

The National Transportation Safety Board determines that the probable cause of the collision between the motorboat and the houseboat was the reckless operation of the motorboat due to the operator's alcohol-impaired condition.

**NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C. 20594**

Brief No.: NYC-87-FM-002

Vessel: Unregistered rowing boat (jon boat),
10 feet long, aluminum hull

Accident Type: Swamping

Location: Lake Mishnock, West Greenwich, Rhode Island

Date: August 16, 1987

Time: 2330

Property Damage: None

Injuries: 1 Fatal
0 Nonfatal
1 None

Description of the Accident

About 2300 on August 16, 1987, four men launched three small boats from a private dock at a residence on the shore of Lake Mishnock. Two men boarded a 10-foot aluminum jon boat (a flat-bottom rowing boat), and the other two men each boarded a canoe. The three vessels departed the dock and were maneuvered into the lake. The boat was not equipped with personal flotation devices. The lake was calm, the night was dark, and the weather was clear. The air temperature was 69° F, and the water temperature was 72° F.

About 2330, when the vessels were about 70 to 80 feet from shore, the boat occupants began to splash each other, and the boats began to bang together. The occupants of the jon boat leaned to the same side, and the boat filled with water and swamped. Also, one of the canoes capsized. The jon boat occupants started to move the swamped boat to the shore; one was pulling it and the other was pushing it. After about 5 minutes, the one pushing the boat started to swim to shore. He was reported to be a good swimmer, but he drowned in his attempt to reach shore.

Both jon boat occupants reportedly had been drinking heavily, and the canoe occupants stated that they also had been drinking. The victim's blood alcohol concentration was 0.28 percent, and his urine contained 0.34 percent alcohol. No toxicological tests were performed on the surviving occupants since Rhode Island does not require such tests to be performed on persons involved in boating accidents.

Probable Cause

The National Transportation Safety Board determines that the probable cause of the capsizing of the jon boat was reckless boat operation by occupants who were impaired by alcohol. Contributing to the loss of life was the lack of personal flotation devices for the jon boat occupants.

**NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C. 20594**

Brief No.: NYC-88-FB-001

Vessel: Wellcraft Scarab Motorboat, Connecticut registration No. CT777AG, 30 feet long, built in 1981

Accident Type: Grounding

Location: Calves Island, Connecticut River, Old Lyme, Connecticut

Date: October 17, 1987

Time: 1930

Property Damage: Substantial

Injuries: 0 Fatal
3 Nonfatal
1 None

Description of the Accident

On the afternoon of October 17, 1987, the operator of a Wellcraft Scarab high-performance motorboat departed his dock at Wethersfield, Connecticut, and headed down the Connecticut River. About 1630, he picked up two passengers at Middletown, Connecticut, and about 1730, he picked up a third passenger at Haddam, Connecticut. The last passenger brought a case of beer aboard the boat. The boat continued downstream to the Old Saybrook Lighthouse, but the operator turned the boat around because of rough water and started back upriver. About 1920, the operator stated that he proceeded at slow speed while passing underneath the Interstate 95 Highway Bridge, north of Old Saybrook. It was dark and the bridge lights were on. After passing underneath the bridge, the operator accelerated the boat engine to 2,700, or 30 to 35 mph. The operator stated that shortly after he increased the engine rpm, he felt the rear of the boat strike something in the water, the boat suddenly veered to the right, and he was unable to steer the boat. The operator further stated that the throttle became stuck and the boat continued to increase its speed. The boat then grounded at high speed on Calves Island, which is north of the bridge on the right side of the Calves Island Bar Channel.

A witness in a sailboat about 500 feet north of the bridge stated that he heard the motorboat approaching the bridge and then observed it illuminated in the bridge lights as it passed underneath. He stated that the engine pitch was constant as the boat passed the bridge and that it remained constant until the crash. Two or 3 seconds after the motorboat passed under the bridge, the witness heard the boat crashing through weeds. He maneuvered his sailboat to Calves Island, where he encountered one of the boat's passengers, who appeared to be intoxicated.

Physical evidence indicated that the boat grounded on the shore of the island, struck a wooden dock that had washed up onto the island 73 feet from the water's edge, and vaulted 85 feet from the dock. While in mid-air, the boat flipped over 180° and came to rest on the island in an inverted position. The operator and passengers apparently were thrown clear. One of the passengers was seriously injured, two passengers received minor injuries, and the boat operator was uninjured.

The operator stated that during the trip he had consumed several cans of beer; however, the passengers stated that the operator was not intoxicated. When the operator was interviewed at the hospital by a Connecticut Department of Environmental Protection officer several hours after the accident, the officer did not observe any behavior or actions or detect any odor of alcohol to indicate that the operator was intoxicated. The operator declined to submit to a blood test. No toxicological tests were performed since Connecticut does not require such tests on persons involved in boating accidents.

Probable Cause

The National Transportation Safety Board determines that the probable cause of the grounding of the Wellcraft was excessive speed for the condition of visibility. Contributing to the accident was the operator's alcohol-impaired condition.

**NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C. 20594**

Brief No.: NYC-88-FM-002

Vessel: Northline aluminum flat bottom rowboat
12 feet long

Accident Type: Capsizing

Location: Connecticut River, Chester, Connecticut

Date: April 9, 1988

Time: 1930

Property Damage: Unknown

Injuries: 1 Fatal
1 Nonfatal
0 None

Description of the Accident

About 1730 on April 9, 1988, the operator and one passenger put a 12-foot-long aluminum rowboat into the Connecticut River at the Chester Marina, Chester, Connecticut, for a trip to Selden Island. The boat was propelled by a 7.5-horsepower outboard engine. They arrived at Selden Island about 1735 and remained there for about 2 hours. About 1930, the two men boarded the boat for the return trip to the marina. According to the operator, about midway between the island and the marina, as the boat emerged from behind Selden's Island, the water became rough. The operator slowed the boat to about 5 mph and turned it into the waves. While turning into the waves, the boat capsized, throwing both occupants into the water. At the time, the river was choppy, the weather was overcast with good visibility, the air temperature was 50° F, and the water temperature was 48° F. The boat was not equipped with personal flotation devices.

The operator stated that he began swimming toward Selden Island with the passenger behind him. The passenger reportedly was a good swimmer, but when the operator reached the island and looked back for his companion, he could not see him. The operator was rescued the following day. The passenger's body was recovered 2 days later, and the autopsy stated that he died of asphyxia due to drowning.

The operator stated that both men had consumed several beers before beginning the trip. No toxicological tests were performed since Connecticut does not require such tests to be performed on persons involved in boating accidents.

Probable Cause

The National Transportation Safety Board determines that the probable cause of the capsizing of the rowboat was the inability of the operator to execute a turn in rough river conditions due to his alcohol-impaired condition. Contributing to the loss of life was the failure of the boat operator to provide a personal flotation device for his passenger.

**NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C. 20594**

Brief No.: ATL-88-FM-001

Vessels: Apollo 18-foot Jet Boat, Tennessee registration No. TN 9311 AZ
AlumaCraft 14-foot, V-Hull Fishing Boat, Tennessee registration No. TN 5516 B

Accident Type: Collision

Location: J. Percy Priest Lake, Nashville, Tennessee

Date: May 29, 1988

Time: 7:45 p.m.

Property Damage: \$1,000 (estimate)

Injuries:

	<u>AlumaCraft</u>	<u>Apollo</u>
Fatal	2	0
Nonfatal	0	0
None	3	1

Description of the Accident

At 7:45 p.m. on May 29, 1988, a northbound Apollo 18-foot Jet Boat was racing another boat on the J. Percy Priest Lake, Nashville, Tennessee. At the same time an AlumaCraft boat with the owner/operator and four passengers was proceeding southbound on the lake to a dock area. Witnesses said that the Apollo boat operator drove his boat directly into the AlumaCraft boat. The AlumaCraft operator's said that he steered his boat to the right and decreased his speed. However, the Apollo boat collided at a 90° angle with the forward port bow of the AlumaCraft boat. One passenger on the AlumaCraft boat was thrown into the water and did not resurface. The Apollo boat then skimmed over the AlumaCraft boat and came down on the passenger who had been thrown into the lake. One passenger was killed and one passenger was seriously injured and died June 2; two passengers and the boat operator were not injured.

Both the Apollo boat and the boat that it was racing left the scene of the accident. The AlumaCraft boat, which was equipped with a 20-horsepower Mercury outboard motor, remained afloat and was towed to a boat ramp.

About an hour after the accident, the Nashville Metropolitan Police Department learned the identity of the operator and received a description of the Apollo boat from witnesses. One witness who had talked to the Apollo boat operator earlier in the day said that he was "very intoxicated." Shortly after the Apollo boat docked, police arrested and charged the operator with vehicular homicide and aggravated assault. The arresting officer reported that Apollo boat operator had a "strong smell of alcoholic beverage, slurred speech, bloodshot eyes, and was very unsteady on his feet." The bow of the Apollo boat was damaged.

The Apollo boat operator admitted to police that he had been drinking. However, he refused a blood alcohol test at a local hospital. At the police station, he remarked to an officer, "I made a mistake, it was just an accident. I had been drinking." A search warrant was obtained to withdraw a quantity of blood sufficient to perform a blood alcohol test and drug screen. The specimen was taken at 4 a.m. on May 30, about 6 1/2 hours after the operator was arrested. The toxicological test was negative for drugs but showed a blood alcohol concentration of 0.20 percent.

The Tennessee Boating Safety Act prohibits a person from operating any motorboat or vessel in a reckless or negligent manner so as to endanger the life, limb, or property of any person. It also prohibits a person from operating any motorboat or vessel while intoxicated or under the influence of alcohol.

Probable Cause

The National Transportation Safety Board determines that the probable cause of the collision was the excessive speed of the Apollo Jet Boat and the failure of the operator to determine risk of collision because of his alcohol-impaired condition.