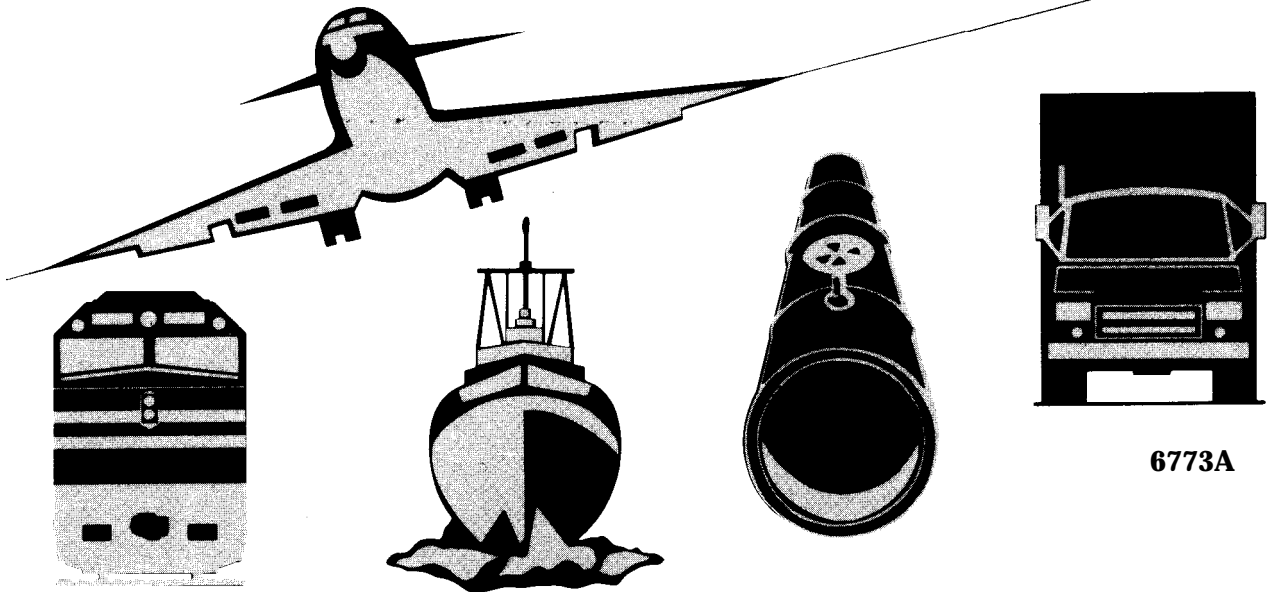


NATIONAL TRANSPORTATION SAFETY BOARD

WASHINGTON, D.C. 20594

SPECIAL INVESTIGATION REPORT

**POSTACCIDENT TESTING FOR ALCOHOL AND
OTHER DRUGS IN THE MARINE INDUSTRY AND
THE RAMMING OF THE PORTLAND-SOUTH
PORTLAND (MILLION DOLLAR) BRIDGE AT
PORTLAND, MAINE, BY THE LIBERIAN TANKSHIP
JULIE N ON SEPTEMBER 27, 1996**



6773A

Abstract: The 560-foot-long Liberian tankship *Julie N*, carrying a cargo of heating oil, collided with the south bascule pier of the Portland-South Portland (Million Dollar) Bridge in Portland, Maine, about 1105 on September 27, 1996. There were no injuries, but the collision resulted in a 33-foot-long hole in the vessel's hull beneath the waterline. About 4,000 barrels of oil spilled into the harbor. The vessel sustained about \$660,000 in damage, and the cost for cleanup of the oil was approximately \$43 million. Repairs to the Million Dollar Bridge were about \$232,000. Because of the continuing problems encountered in conducting postaccident testing for alcohol and drugs, this report contains additional sections devoted to the discussion and analysis of postaccident testing.

The safety issues discussed in this report are postaccident testing for alcohol and other drugs and port safety.

As a result of its investigation, the National Transportation Safety Board issued recommendations to the U.S. Coast Guard, Maine Department of Transportation, Federal Highway Administration, and American Association of State Highway and Transportation Officials.

The National Transportation Safety Board is an independent Federal agency dedicated to promoting aviation, railroad, highway, marine, pipeline, and hazardous materials safety. Established in 1967, the agency is mandated by Congress through the Independent Safety Board Act of 1974 to investigate transportation accidents, determine the probable causes of the accidents, issue safety recommendations, study transportation safety issues, and evaluate the safety effectiveness of government agencies involved in transportation. The Safety Board makes public its actions and decisions through accident reports, safety studies, special investigation reports, safety recommendations, and statistical reviews.

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OTHER DRUGS IN THE MARINE INDUSTRY AND THE
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BY THE
LIBERIAN TANKSHIP *JULIE N*
ON SEPTEMBER 27, 1996**

SPECIAL INVESTIGATION REPORT

**Adopted: May 5, 1998
Notation 6773A**

**NATIONAL
TRANSPORTATION
SAFETY BOARD**

Washington, D.C. 20594

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EXECUTIVE SUMMARY

The 560-foot-long Liberian tankship *Julie N*, carrying a cargo of heating oil, collided with the south bascule pier of the Portland-South Portland (Million Dollar) Bridge in Portland, Maine, about 1105 on September 27, 1996. The vessel had passed between the piers of the new Portland-South Portland bridge (Casco Bay Bridge) and was en route to the Rolling Mills terminal about 1.2 miles beyond the Million Dollar Bridge. The vessel was under the direction of a State-licensed docking master (pilot). After the collision, the pilot stated that as the vessel approached the bridge, he had issued three orders for port rudder to swing the bow to the left and then intended to order the rudder to hard starboard and to increase the engine speed from slow to half ahead to stop the swing and align the vessel for passage through the drawspan. However, the pilot inadvertently ordered the rudder to hard port instead of hard starboard. He recognized his error within seconds and ordered the rudder to hard starboard; given the narrowness of the bridge span, however, the shifting of the rudder occurred too late to avoid the collision.

There were no injuries, but the collision resulted in a 33-foot-long hole in the vessel's hull beneath the waterline. About 4,000 barrels of oil spilled into the harbor. The vessel sustained about \$660,000 in damage, and the cost for cleanup of the oil was approximately \$43 million. Repairs to the Million Dollar Bridge were about \$232,000.

After the accident, the pilot reported to a clinic for postaccident testing. However, he did not have his breath or blood tested for alcohol. The urine specimen collected for drug testing indicated that no drugs were present. The pilot stated that he was unaware that postaccident testing required a test of breath or blood for alcohol and that urine collection was solely for drug testing.

Over the course of 28 major accident investigations, the National Transportation Safety Board has observed confusion and a lack of

understanding on the part of marine employers and employees regarding postaccident testing requirements and responsibilities. In many of these accidents, including that involving the *Julie N*, the Safety Board has been unable to definitively rule out alcohol or drug use as a causal factor because of serious deficiencies in the testing process.

Because of the continuing problems encountered in conducting postaccident testing for alcohol and drugs, this report contains additional sections devoted to the discussion and analysis of postaccident testing.

The National Transportation Safety Board determines that the probable cause of the collision with the Portland-South Portland (Million Dollar) Bridge was the pilot's inadvertent order port (left) rudder instead of starboard (right) rudder. Contributing to the accident was the narrow horizontal clearance of the bridge drawspan, which afforded little leeway for human error. Contributing to the severity of the damage to the vessel and to the amount of oil spilled was a corner of the bridge pier that was not adequately shielded by the timber fender system.

The safety issues discussed in this report include:

- Postaccident testing for alcohol and other drugs, and
- Port safety.

As a result of its investigation, the Safety Board made recommendations addressing these issues to the U.S. Coast Guard, Maine Department of Transportation, Federal Highway Administration, and American Association of State Highway and Transportation Officials.

INTRODUCTION

The 560-foot-long Liberian tankship, *Julie N*, collided with the south bascule pier¹ of the Portland-South Portland (Million Dollar) Bridge in Portland, Maine, about 1105 on September 27, 1996. The vessel was under the direction of a State-licensed docking master (pilot). After the collision, the pilot stated that as the vessel approached the bridge, he had issued three orders for port rudder to swing the bow to the left and then intended to order the rudder to hard starboard to stop the swing and align the vessel for passage through the drawspan. However, the pilot inadvertently ordered the rudder to hard port instead of hard starboard. He recognized his error within seconds and ordered the rudder to hard starboard; given the narrowness of the bridge span, however, the shifting of the rudder occurred too late to avoid the collision. Since then, the State of Maine has replaced the bridge with one that has more horizontal clearance and an improved fender system more capable of buffering ship contact.

After the accident, the pilot reported to a clinic for postaccident testing. He submitted a urine specimen but did not have his breath or blood tested for alcohol. The pilot stated that he was unaware that postaccident testing required a test of breath or blood for alcohol and that urine collection was solely for drug testing.

The National Transportation Safety Board did not find evidence that drug or alcohol use was a causal factor in this accident or in the other major marine accidents that it has investigated since the *Exxon Valdez* in 1989. However, in many of these accidents, including that involving the *Julie N*, the

Safety Board has been unable to definitively rule out alcohol or drug use as a causal factor because of serious deficiencies in the testing process.

Over the course of 28 major marine accident investigations, the Safety Board has observed confusion and a lack of understanding on the part of marine employers and employees regarding postaccident testing requirements and responsibilities. Testing has been delayed as long as 42 hours or never even been conducted. On occasion, employers have been unsure of what samples to collect, preventing a complete or meaningful toxicological analysis.

The Safety Board does not plan to wait for a drug- or alcohol-related marine accident to address the problems associated with postaccident testing. Therefore, in addition to the port safety issues cited as contributing factors to the *Julie N* accident, this special investigation report will focus on the following postaccident testing issues:

- Timeliness of and accountability for testing,
- Testing and enforcement responsibilities, and
- Consistency of U.S. Coast Guard regulations with one another and with the regulations in other transportation modes.

As a result of this special investigation, the Safety Board is making recommendations to the Coast Guard to improve the postaccident testing process and its enforcement.

¹Pier supporting a leaf (roadway), counterbalance weight, and machinery of a bascule bridge. The term bascule, derived from the French word for seesaw, is a type of bridge that lifts at one end to a near-vertical position to permit vessels to move past the bridge.

INVESTIGATION

The Accident

The 560-foot-long Liberian tankship *Julie N* loaded a cargo of heating oil at Amuay Bay, Venezuela, and then departed Amuay Bay on September 21, 1996. The vessel proceeded directly to Portland, Maine, arriving at the Portland Sea Buoy on September 26 at 2200. All prearrival tests of the vessel's navigation equipment were conducted as required by Coast Guard regulations at 33 *Code of Federal Regulations* (CFR) 164.25 and found satisfactory. About 2215, a Portland bar pilot boarded the vessel near the sea buoy and brought it to the Diamond Island Roads General Anchorage B. The starboard anchor was let go at 2240 and the vessel was secure at 2248, awaiting high tide for docking the next morning. Shortly afterwards, the bar pilot departed the vessel. The draft upon arrival Diamond Island Roads anchorage was 34 feet, 11 inches (salt water), even keel.

The next morning, September 27, the crew completed the predeparture tests of the vessel's steering, propulsion, and navigation equipment required by Coast Guard regulations (33 CFR 164.25). All equipment was found in satisfactory condition. About 0930, the State-licensed docking master (pilot), who was to pilot the *Julie N*, boarded the tugboat *Captain Bill* at the Bath Iron Works (BIW) shipyard for the trip to the anchorage. The other tugboat that would be assisting in docking the vessel, *Fournier Boys*, was also present and proceeded with the *Captain Bill* en route to the anchorage.

About 1010, the tugs arrived in the anchorage; the pilot boarded the *Julie N* about 1015. Upon arriving on the vessel's bridge, the pilot met with the master and described the mooring arrangement and mooring lines needed at Rolling Mills Terminal, the vessel's destination in the inner harbor. The master had been to the Rolling Mills Terminal before with

another pilot, and he also had a diagram of the berth and the mooring line arrangement. The master advised the pilot that the vessel was on an even keel and that the draft was 34 feet 11 inches. The draft was confirmed by the master of the tug *Captain Bill*. The master stated that a pilot card listing the vessel's dimensions and maneuvering characteristics was posted in the wheelhouse. The pilot did not review the pilot card because he had piloted the vessel on one other occasion under a different master and recalled that the vessel handled well. The pilot said that for future reference, he regularly recorded the pilot card information of vessels that he had piloted, and he had referred to that information regarding the *Julie N* before boarding the vessel.

When the discussion about the mooring was completed, the pilot asked the master to raise the anchor and at about 1025 the crew began to do so. At the time, the *Julie N* was heading in a southerly direction due to the flood tide. The pilot had the tug *Captain Bill* take a position along the ship's port bow.

At 1030, the anchor was aweigh (clear of the bottom), and the pilot ordered the *Julie N's* rudder to hard starboard and had the *Captain Bill* come full ahead pushing on the ship's port bow. With the ship's engines at stop, the pilot used the tug to swing the ship's bow toward the Portland Pipeline Pier terminal, a heading of approximately 220°. At 1036, the pilot ordered slow ahead on the *Julie N's* engines and proceeded out of the anchorage with the *Captain Bill* continuing to push full ahead on the port bow. (See figure 1.) The third mate was operating the engine order telegraph and supervising the helmsman. When the pilot was out on the wings of the bridge, the master, who had accompanied the pilot, used a portable radio to relay the pilot's orders to the third mate and helmsman. The third mate received and acknowledged the orders from the

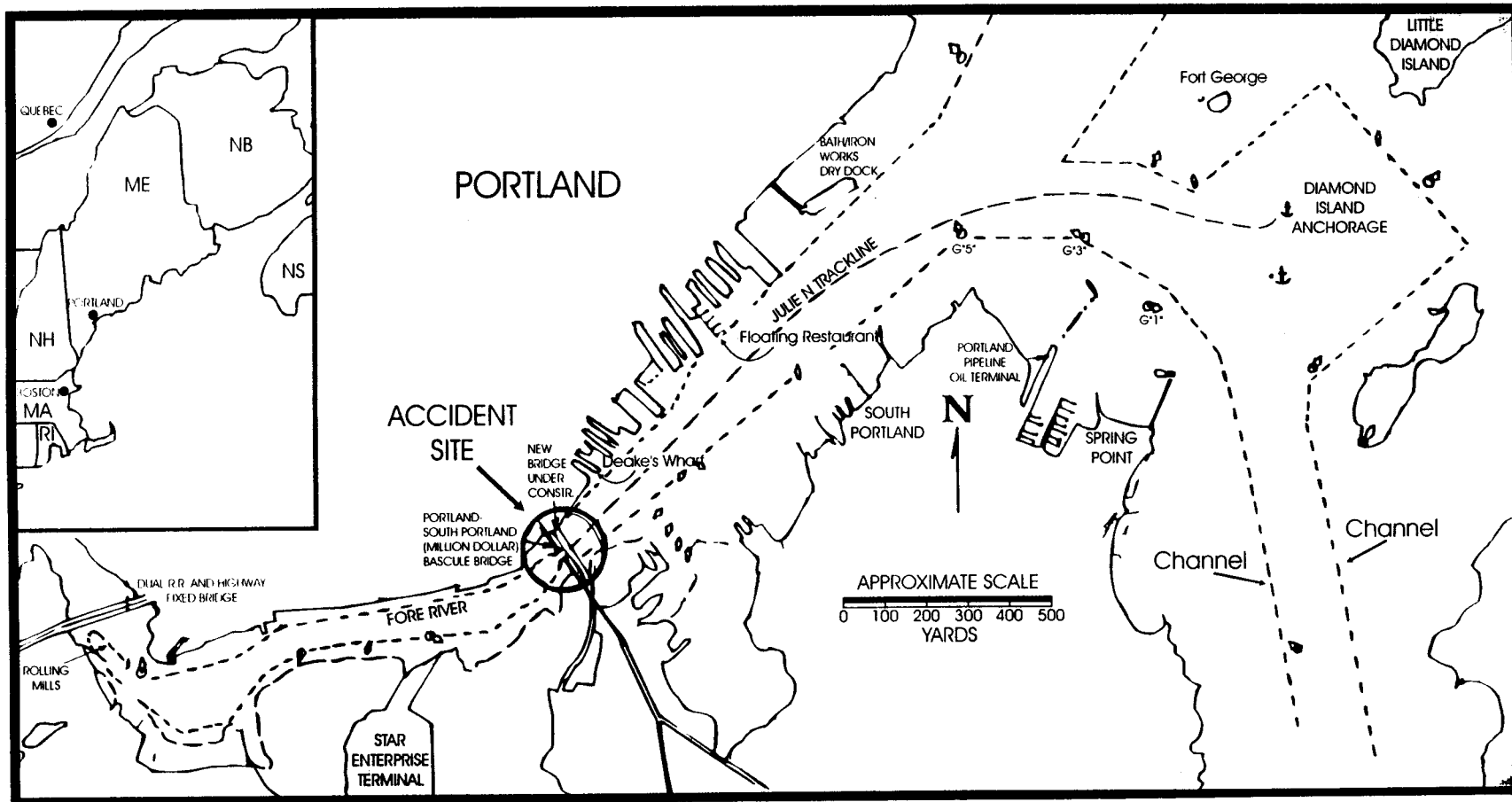


Figure 1—Chart of the area.

master on another portable radio. The deck cadet maintained the bell book.²

As the vessel proceeded out of the anchorage, the pilot made his first call on channel 13 VHF/FM radio to the bridge tenders (two operators on duty) at the Million Dollar Bridge to advise them that the *Julie N* was proceeding inbound and that a bridge opening would be needed. He said that he would call again when the ship passed the BIW drydock.

The last 30 minutes of flood tide (current)³ was still running when the ship entered the channel adjacent to Diamond Island anchorage. At 1040, when the *Julie N* was passing channel buoy G1, the pilot ordered the *Julie N*'s rudder amidships, stopped the *Captain Bill*, and ordered the tug to come along the ship's starboard bow and put up one assist line. The pilot also directed the *Fournier Boys* to take a position approximately 50 feet off the *Julie N*'s port bow. At 1043, the pilot reduced the vessel's engine speed to dead slow ahead. At 1044, the vessel passed channel buoy G3, and at 1048, it passed buoy G5. Shortly after passing buoy G5, the pilot commenced a slow port swing and steadied the vessel on a heading toward the end of the BIW drydock. As the vessel approached the BIW drydock, the pilot, using various rudder commands, put the vessel in another slow turn to the left. The pilot stated that after leaving the anchorage he used different rudder commands to get a feel for how the vessel handled at slow speeds. According to the pilot, the vessel handled well. The pilot also later stated that the crew responded promptly and correctly to his orders.

When the *Julie N* passed the BIW drydock, the pilot made his second radio call to the Portland bridge tenders. He advised them that the ship was passing the BIW drydock and that he would be asking for a maximum standard opening because of

²A record of engine orders transmitted to the engineroom. A similar record of orders received from the bridge, the engineroom bell book, was kept in the engineroom.

³The flood (rising) tide produced a northerly current in the vicinity of Spring Point and Diamond Island Anchorage.

the ship's high antennas. At this time, the pilot, using what he described as his "customary reference points" on shore, directed the vessel onto a southwesterly course favoring the Portland (north) side of the channel.⁴ The pilot kept the vessel at dead slow ahead, about 4.5 knots. Later, as the vessel passed a floating restaurant approximately 2,500 feet from the bridge, the pilot called the bridge tenders on VHF radio and asked for the opening of the bridge.

The pilot and one other pilot stated that while approaching the bridge, they determined the vessel's lateral position in the channel by observing the relative positions of a cargo manifold and a walkway at the Star Enterprise Terminal and a tree ahead on the bank of the river, as well as the north bridge fender system and lights on the fender system at night.

The pilot later explained that he normally conned⁵ an inbound ship from a position near the outboard side of the starboard bridge wing, which enabled him to judge the distance between the starboard side of the ship and the north fender system of the bridge. He stated that he normally tried to place the vessel so that there would be about 1 foot between the vessel's starboard side and the fender system protecting the bridge. The pilot and two other pilots later explained that the water between the forward part of the vessel and the pier acts as a cushion that tends to hold a vessel off of the pier.⁶ The pilot explained that at some point, about 1,000 feet from the bridge, he normally altered the vessel's heading to the left and then back to the right to approach the north fender system at a slight angle. The pilot stated that in this case, however, he was concerned with the *Julie N*'s antennas clearing the leafs of the open bascule span, which he stated provide a minimum clearance at the top of the leafs of about 85 feet. The pilot stated that he was also concerned about

⁴For an excerpt from the pilot's sworn testimony describing his piloting of the vessel, see page 35 of this report.

⁵To conduct or direct movements of a vessel by issuing steering and engine orders.

⁶The *Julie N* is 86.3 feet wide; the horizontal clearance in the drawspan of the Million Dollar Bridge was 98 feet.

the 11.2-foot high tide, which was 2 feet above normal, because it increased the possibility that the antennas could contact the bridge leafs. He stated that because of his concern about the antennas clearing the bridge, he had decided to place the vessel on the centerline of the bridge drawspan instead of passing very close to the fender system protecting the north bascule pier. The pilot noted that in November 1995, the north (Portland side) bascule leaf did not raise fully and that the bridge wing of the ship *Overseas New Orleans* had struck the leaf, causing damage to the vessel and bridge. The *Overseas New Orleans* was being piloted by another pilot at that time. With the *Julie N* on the centerline of the drawspan, there would be about 6 feet of clearance on each side of the vessel.

At the time, a new bridge (Casco Bay Bridge) located immediately downstream (east) of the Portland-South Portland (Million Dollar) Bridge was under construction, making it necessary for pilots to release the tug normally made fast (connected by a line to the larger vessel) on the starboard bow before passing the piers of the new bridge. (See figure 2.) The pilot stated that releasing the tug earlier rather than closer to the old bridge had no effect on how he piloted vessels through the drawspan of the old bridge. Also, a portion of the approach fender system for the south bascule pier had been removed to facilitate locating a construction barge near the pier. The pilot stated that the work barge did not encroach into the channel and had no effect on piloting ships through the bridge. Other pilots also stated that releasing the tug earlier and the bridge construction, such as the location of the work barge, had little effect on piloting vessels through the old bridge draw.

After making another minor heading adjustment and subsequently passing Deake's Wharf, approximately 1,000 feet from the Million Dollar Bridge, at approximately 1100, the pilot determined that the vessel was slightly more to the right than normal, but he was satisfied with the approach. An expanded trackline developed by the Safety Board based on the course recorder indicated that the

starboard side of the vessel was nearly in line with the north fender system as the pilot desired. (See figure 3.) The pilot stated that the last of the flood tide, that was flowing up river, may have moved the vessel a little to the right. The pilot later stated that he preferred a slight following current⁷ when proceeding through the bridge. At this time, the pilot released the *Captain Bill*, which was made up on the starboard bow and instructed the tug to back clear and take a position off the *Julie N*'s starboard quarter. The pilot, following customary practice, ordered the tug *Fournier Boys* to proceed ahead through the Million Dollar Bridge to await the vessel on the other side of the bridge.

The pilot started the normal port swing to bring the ship away from the Portland (north) side of the channel for final approach to the bridge. To start the turn, the pilot initially ordered port 5° and then port 10° of rudder. When the vessel did not start to swing to the left in response to the port 10°, the pilot ordered the rudder increased to port 20°. Moments later, the vessel's bow began to swing slowly to the left.

At 1104, the pilot ordered slow ahead on the vessel's engines. The *Julie N* was now slowly swinging to the left with port 20° of rudder. The pilot said he had intended to order the rudder to hard starboard and increase engine speed to half ahead when the bow of the vessel was almost on the center axis of the bridge opening. The pilot stated that the approach to the bridge was progressing correctly and that all he needed to do was order hard starboard rudder. He stated that, following the planned hard to starboard order, he had intended to reduce the rudder, possibly to starboard 20° or 10°, then amidships, and then possibly order port rudder.

About 1105, the pilot ordered hard port rudder instead of hard starboard. According to the pilot, he ordered half ahead immediately after the rudder command. When the *Julie N*'s master, who was passing the pilot's orders to the helmsman, repeated the order "hard to port," the pilot stated that he heard the repeated order and realized that he had

⁷A current flowing in approximately the same direction that the vessel is moving.



Figure 2—Aerial photograph of old and new bridges.

said port instead of starboard. The pilot said that he immediately yelled “hard to starboard.” (See figure 4.)

The master recalled that the vessel was approaching the bridge in a normal manner and that when the vessel was about three ships’ lengths from the bridge, the pilot ordered the rudder to port 10°; a few moments later, the pilot ordered the rudder to port 20°. According to the master, when the vessel was about one ship’s length from the bridge, the pilot ordered hard port rudder. This was quickly corrected by the pilot by an order for hard starboard.

According to the pilot, the vessel’s engines had already come up to half ahead rpm (60 rpm for 8.3 knots) and the rudder had gone over to hard port before he gave the correct order for hard to starboard. The pilot stated that issuing the incorrect order had allowed the vessel to overshoot the range. (Tests later revealed that the rudder would swing from port 20° to hard port 35° in about 6 seconds.) According to the pilot, the *Julie N* started to swing slowly to starboard in response to the hard starboard order, but moments later the port bow impacted the timber fendering extending from the south bascule pier and then struck the masonry pier and steel superstructure of the bridge. The pilot and crew estimated the time of collision at shortly past 1105. (See figure 5.)

After striking the South Portland pier, the vessel’s bow swung right and struck the fendering on the Portland (north) side of the bridge. At 1109, the pilot ordered the rudder to amidships and the engines to slow astern. At 1110, the pilot ordered engines stopped. The *Julie N*, due to its forward momentum, drifted through the drawspan. The master of the *Captain Bill* informed the pilot that the vessel’s antennas were passing clear of the bascule leaves of the bridge span, and the pilot acknowledged.

At the time, the extent of vessel damage was unknown, but the vessel was rapidly leaking oil into the water and settling noticeably by the bow. The

pilot requested the master of the tug *Captain Bill* to call the Star Enterprise Terminal in South Portland on his cellular telephone and inquire whether Star Enterprise could receive the *Julie N* at its terminal. The Star Enterprise terminal was the closest pier, being 1,200 feet away. The pilot believed that docking at that terminal would enable the vessel to be surrounded with oil containment booms about 20 to 30 minutes sooner than possible by proceeding to Rolling Mills. The pilot believed that mooring at the Star Enterprise terminal, besides reducing pollution, would prevent the vessel from possibly grounding and blocking the channel.⁸ Meanwhile, the pilot used dead slow ahead, stop, and slow astern engine orders to hold the ship in position, and he ordered the tug *Captain Bill* made fast on the starboard quarter and *Fournier Boys* made fast on the starboard bow. A few minutes later, about 1120, the master of the *Captain Bill* called back and informed the pilot that the Star Enterprise Terminal could not receive the *Julie N* because the cargo was not blended properly (not compatible with product in the Star Enterprise storage tanks). The pilot then ordered the *Julie N* to half ahead and proceeded toward the Rolling Mills Terminal.

The pilot stated that the vessel handled poorly because of the increased draft at the bow. The pilot continued upriver on various engine speeds until arriving in the turning basin. The two tugs assisted the ship into the Rolling Mills Terminal, where the line handlers were waiting, and the vessel’s lines were quickly put over to the dock. The first line was over to the dock at 1145. At 1210, the pilot released the tugs and oil containment booms were put in place around the vessel. The vessel was secure in its berth at the Rolling Mills Terminal at 1220. About 1230, the pilot left the vessel and went aboard the *Captain Bill*, which was moored nearby.

Injuries

No injuries occurred as a result of this accident.

⁸The channel depth listed on the chart varied from 35 to 36 feet mean low water but was somewhat less due to a lack of maintenance dredging. The high tide of 11.2 feet would increase the channel depth to approximately 45 feet at the bridge.

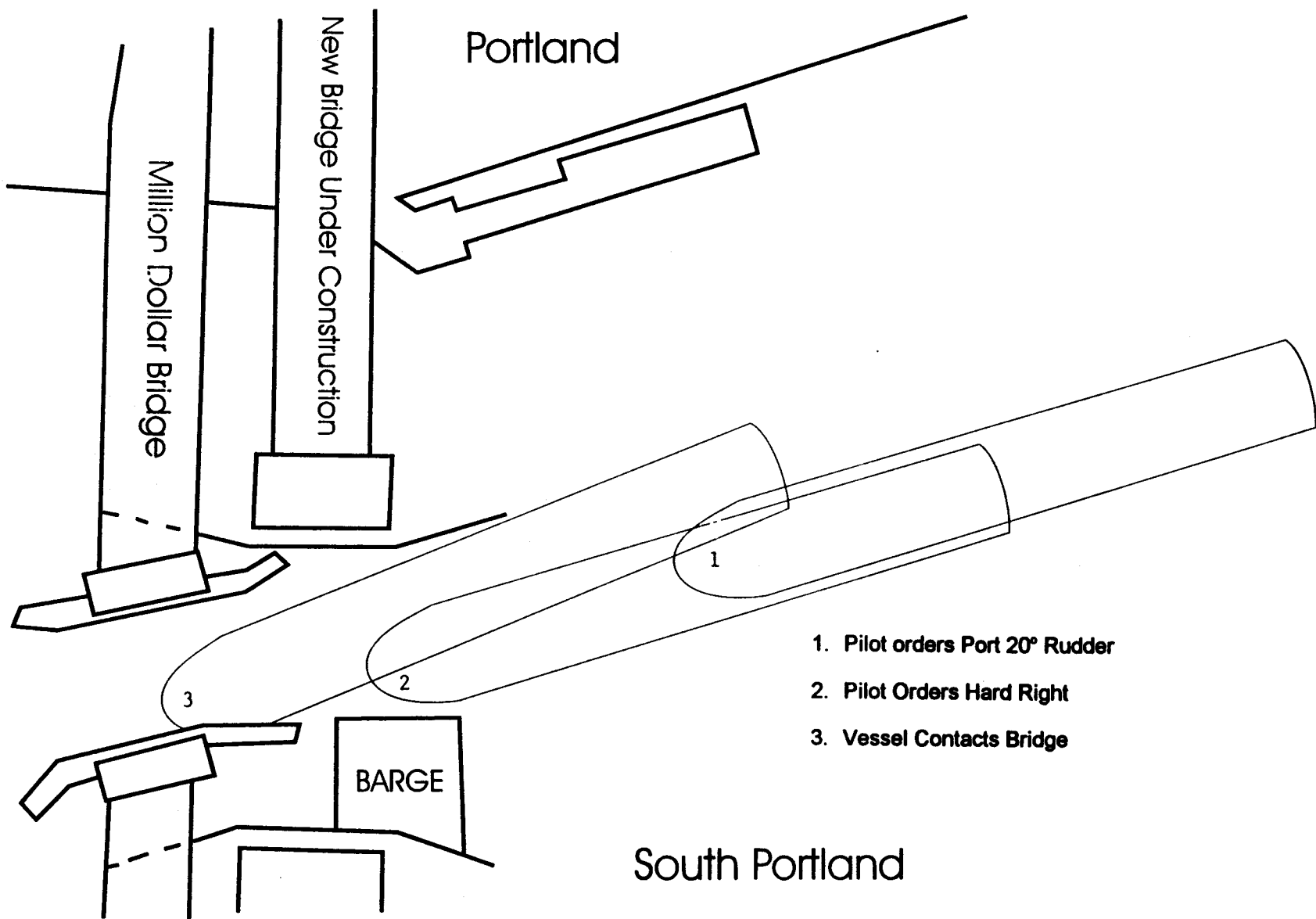


Figure 4—Sketch by the master of the vessel's approach to the pier.



Figure 5—Accident site (photograph by Mr. Bill Jewel, Portland, Maine).

Vessel Damage

From October 17 to 19, 1996, Lloyd's Register of Shipping surveyors and Coast Guard marine inspectors examined the damage to the bow, forward port-side hull plating, and the associated internal steel structure and piping. Overall damage to the port bow consisted of welded steel plating that was set-in (pushed inward into the hull), buckled, and torn, above and below the waterline. (See figure 6.) The collision penetrated the tankship's single hull (0.5-inch thick) and opened it to the sea from the forepeak ballast tank aft through the port heavy-fuel-oil deep tank, a void space, and the No. 1 port cargo oil tank.

The lowest tear in the steel hull plating, between longitudinal Nos. 17 through 21 near the turn of the bilge, extended aft horizontally about 33 feet overall and was approximately 13 feet wide. The tear began near the bottom of the forepeak ballast tank, just aft of the bulbous bow at frame No. 82, and ended in the No. 1 port cargo tank, at frame No. 72 ½. This large tear opened the heavy-fuel-oil tank, the void space, and the No. 1 port cargo oil tank to the sea. About midway between the upper and lower damage, the hull plating was set-in deeply and torn between frame Nos. 78 and 72 ½ and from longitudinal Nos. 26 through 31. The damage to the upper bow plating, from frame Nos. 72 through 81 between longitudinal Nos. 34 through 39, opened the forecabin compartment, the uppermost section of the fuel oil tank, and a void space to the atmosphere.

About 2,000 barrels of bunker (fuel) oil was spilled from the forward fuel oil tank and slightly more than 2,000 barrels of the cargo of heating oil was spilled from No. 1 port cargo tank.

Before the *Julie N* arrived at Rolling Mills Terminal, Maritime Overseas Corporation (MOC) instructed the Marine Spill Response Corporation (MSRC)⁹ oil spill response vessel *Maine Responder* and OSRO Clean Harbors, Inc., to initiate the cleanup operation. The Coast Guard Captain of the Port Zone secured vessel traffic in Portland Harbor and established a marine safety

zone. The Million Dollar Bridge remained in the open position, pending inspection and repairs.

The cleanup was conducted by Amity Products Carriers as the owner of the *Julie N* and the "responsible party" under the Oil Pollution Act of 1990 (OPA 90). The cleanup lasted until November 14, 1997, and cost approximately \$43 million. This figure does not include claims for property or other damage. The cleanup operation resulted in the recovery of 78 percent of the spilled oil.

After the cargo was discharged, the vessel's ballast was adjusted to raise the bow and to list the vessel to starboard to facilitate temporary repairs at the Rolling Mills berth by BIW. When BIW completed the temporary repairs, the *Julie N* was examined again by Lloyd's surveyors and Coast Guard inspectors. Following the examination, the tankship was permitted to sail directly from Portland on October 19, 1996, to a shipyard in Europe, on a southerly course, at reduced speed, and ballasted as agreed with Lloyd's Register of Shipping and the Coast Guard. The *Julie N* arrived at the shipyard at Astano, Spain, on November 8, 1996, and departed on December 7, 1996, with all permanent repairs completed to the satisfaction of Lloyd's Register of Shipping.

The total cost of repairs was about \$660,000. This cost does not include the lost revenue, tank cleaning, or transit to the shipyard.

Bridge Damage

The Maine Department of Transportation (MDOT) conducted a postaccident condition survey on September 28, 1996, to ascertain the damage to the bridge. (See figure 7.) The survey indicated that pier 18 (South Portland side) had temporarily shifted over 4 inches horizontally and came to rest with a permanent horizontal set of 1 ¾ inches. The pier had also apparently moved upstream by a distance of 1 ¼ inches. The MDOT also inspected the underwater portions of the pier 18 channel face and initially found no

⁹MSRC is a company formed by the major oil and shipping companies to respond to major oil spills.

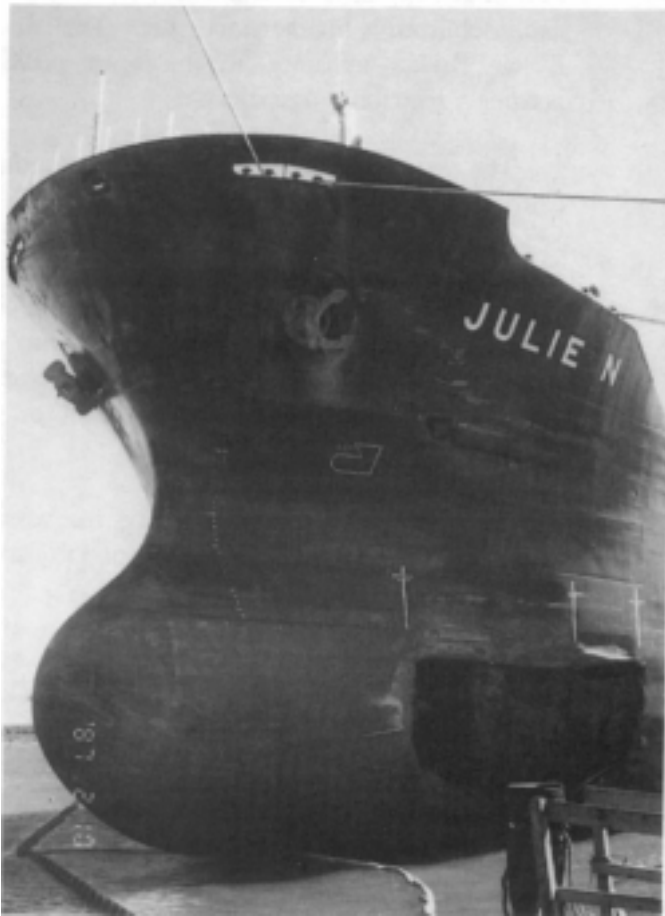
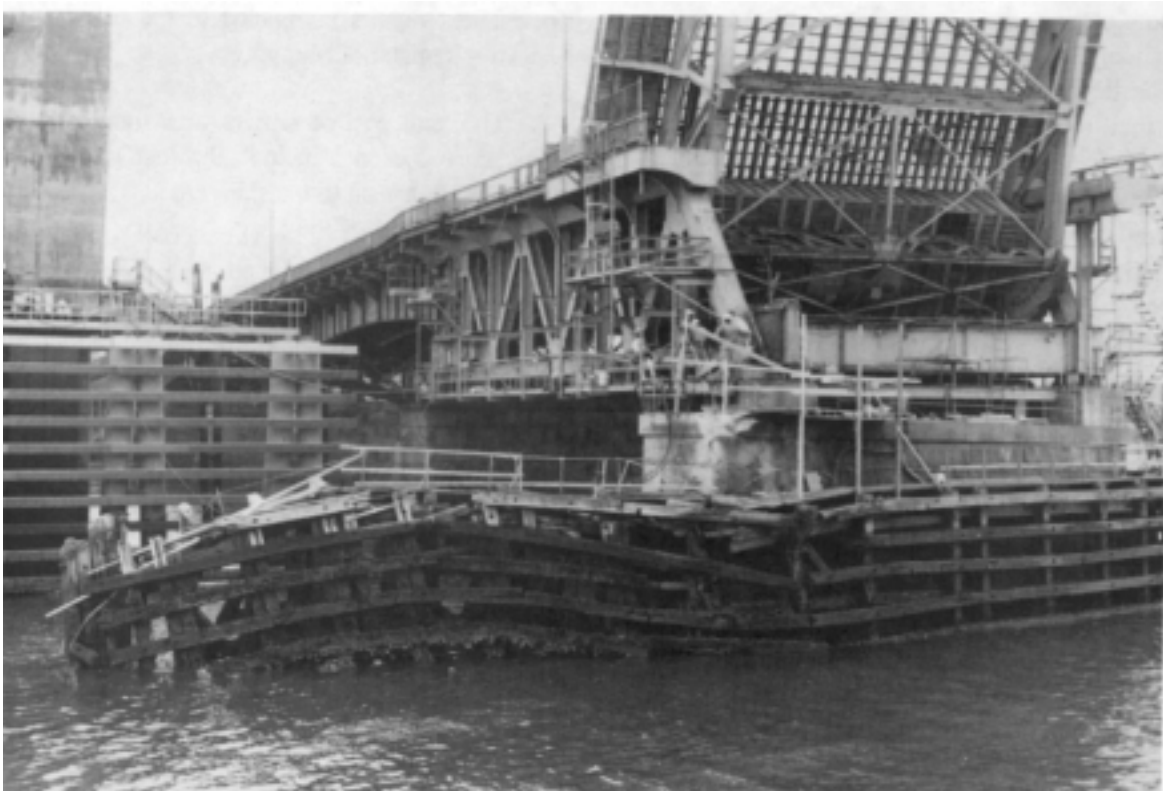


Figure 6—Vessel damage (*left*).

Figure 7—Bridge damage (*below*).



evidence of distress or disturbance of the marine growth covering the masonry.

Further underwater surveying on September 30, 1996, between piers 18 and 19 found “definite scraping and a section loss of concrete on the shaft [lower pier] below waterline exposing No. 9 [1 1/8 inch in diameter] reinforcing bar in outer corner [northeast corner] approximately 6 inches below stone course.” The spalled (chipped) concrete measured about 6 inches by 6 inches. (Superimposing of the frame of the vessel revealed that this corner of the pier had contacted the vessel, resulting in the approximately 33-foot-long tear in the vessel’s underwater hull. In addition, a section of granite pier cap was broken off the easterly end, channel side, of pier 18.) (See figures 8 through 10.)

Damage was also sustained by the superstructure. On pier 18, the live-load shoe was displaced several feet, along with the live-load girder and the pedestal-shaped shoe underneath the girder, which had rested on the concrete pedestal on the pier. (The live-load girder frames back into the transverse floor beam at the next panel point on the outside truss. The girder is stabilized by a brace attached to the end point of the truss. The end of the truss also bears on the concrete pedestal). In addition, the truss experienced movement of 1 to 2 inches, and the center lock of the leafs at the channel centerline was misaligned about 3 inches.

The MDOT hired the contractor building the new bridge to make the repairs, and the bridge was functioning again on September 29, 1996.

The cost of repairs to restore the bridge to normal operation was approximately \$32,000. In October 1996, the MDOT replaced the damaged wooden fender system at pier 18 with a steel structure that provided extra shielding for the corner of the pier that the vessel’s hull contacted to create the long underwater opening. The cost of the new fender system was about \$200,000, for a total cost of \$232,000.

History of the Portland-South Portland (Million Dollar) Bridge

The permit for the Portland-South Portland (Million Dollar) Bridge, issued by the Secretary of War in 1893, approved a bascule span providing a horizontal clearance of 100 feet. The bridge was designed in 1914 and opened to traffic in 1916. It replaced a swing-span bridge, and the south bascule pier (pier 18) of the new bridge incorporated the pivot pier of the old bridge. The bridge was originally owned by Cumberland County but was transferred to the MDOT in 1959.

The bridge consisted of 33 approach spans and a double-leaf bascule span over the channel. The bascule span was supported by piers 18 (south pier) and 19 (north pier).

According to the October 1986 MDOT report¹⁰ to the Coast Guard Marine Safety Office, Portland, Maine, 46 cases of bridge damage by various vessels occurred between January 1976 and May 1986. Two more cases were recorded in 1987 and one more in 1988. And, from 1989 to 1996, 22 collisions with the bridge or fender system were recorded. Over half of the collisions involved barges, usually empty barges, and the remainder involved ships.

Bridge Fender System (Past and Present and Repairs)—The original fender system protecting piers 18 and 19 consisted of wooden timber construction and afforded 100 feet of horizontal clearance. The original fendering system consisted of vertical oak buffer piles, about 43 feet long, placed from just below the mean low water line to about 5 feet below the top of the pier, with 5- by 12-inch horizontal timbers (wales). The bottoms of the piles were wedged into 10-inch-diameter round holes formed in the concrete footing.

A review of the MDOT’s bridge files indicated that the fendering system has been

¹⁰*Portland Bridge Fender Damage Summary of Bridge Operator Reports*, October 1986.

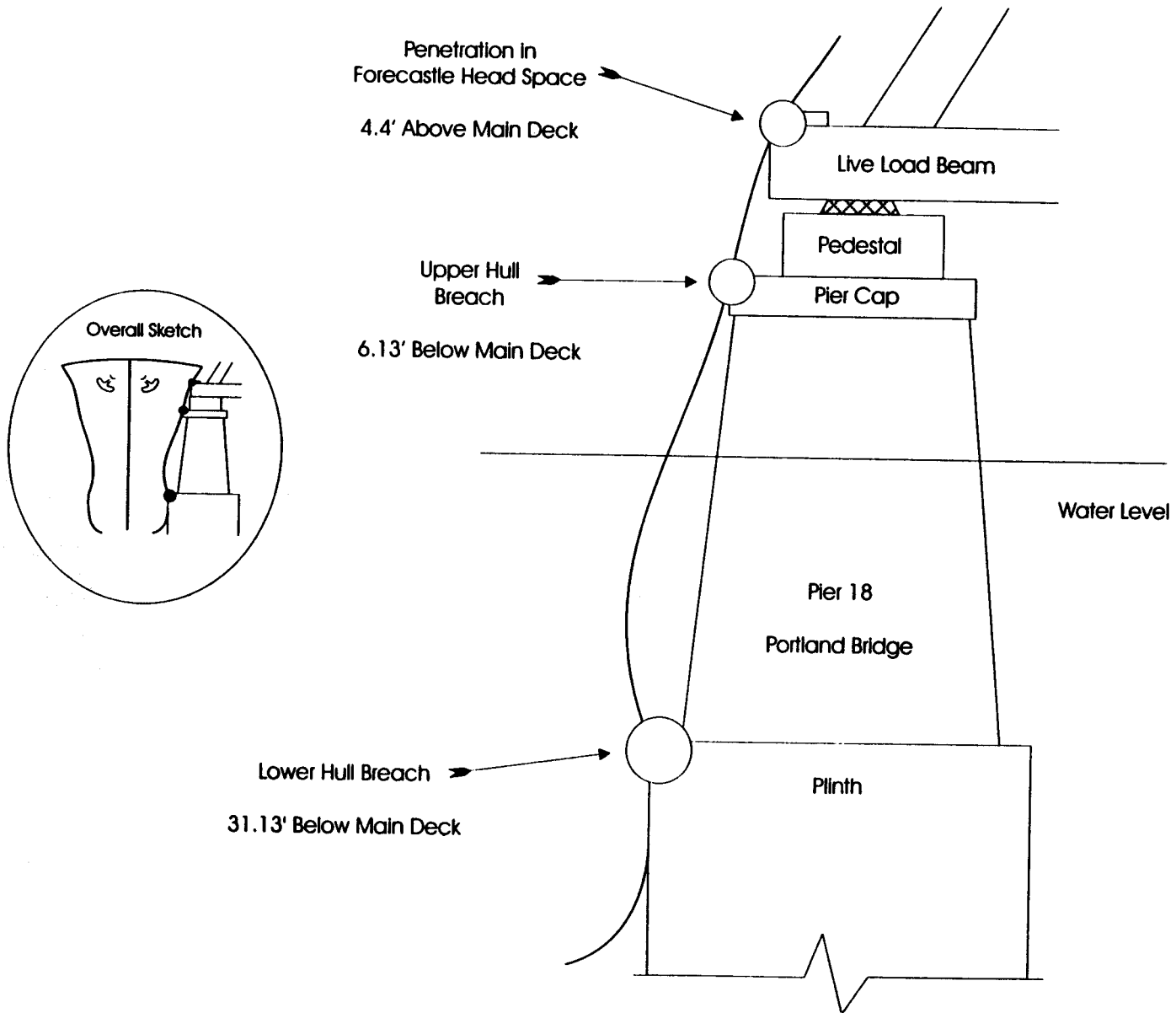
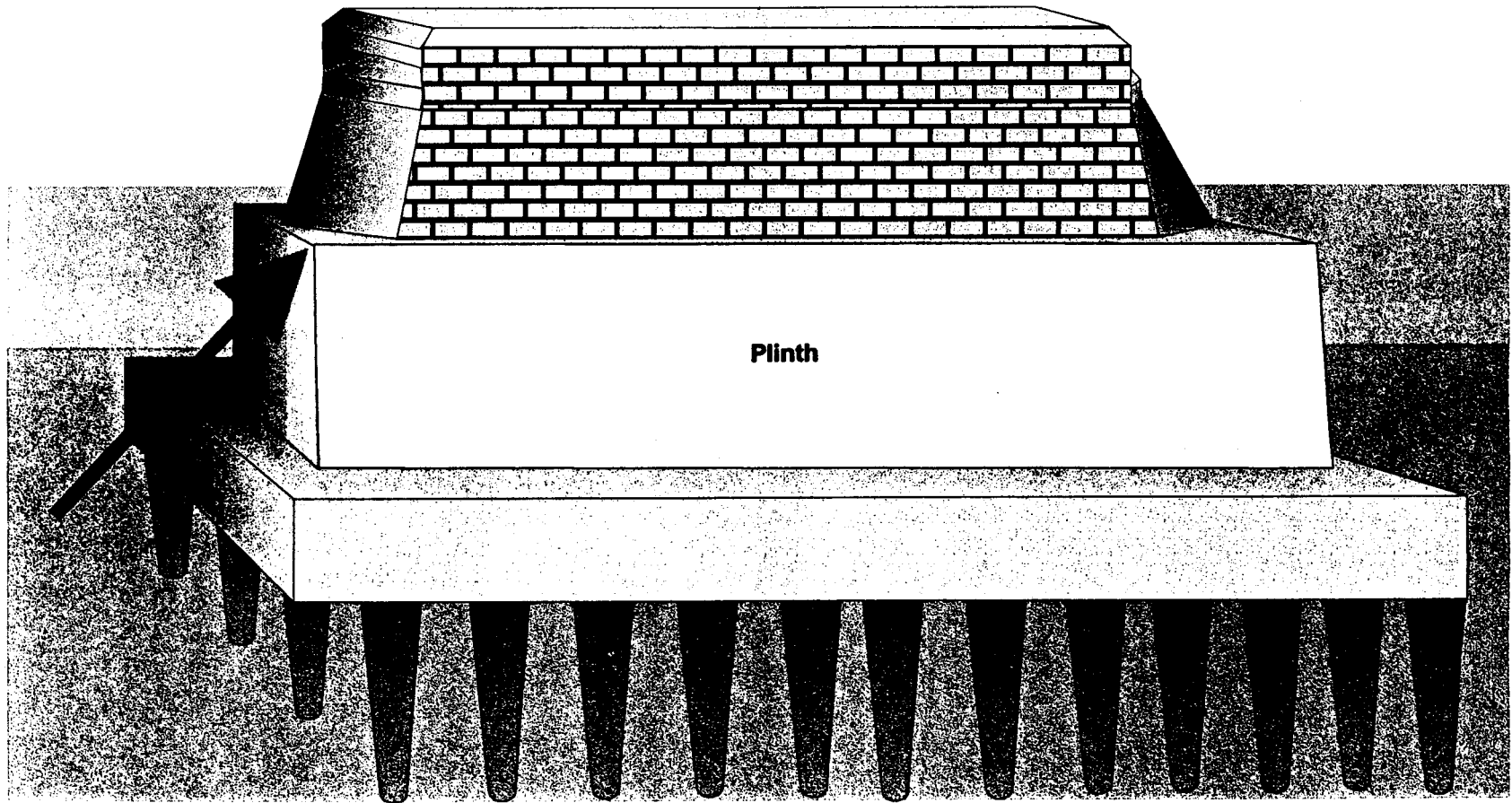


Figure 8—Outline of the vessel superimposed on the bridge pier.



**Figure 9—Diagram of pier 18 without the fender system.
(arrow indicates the area of contact with the lower hull).**

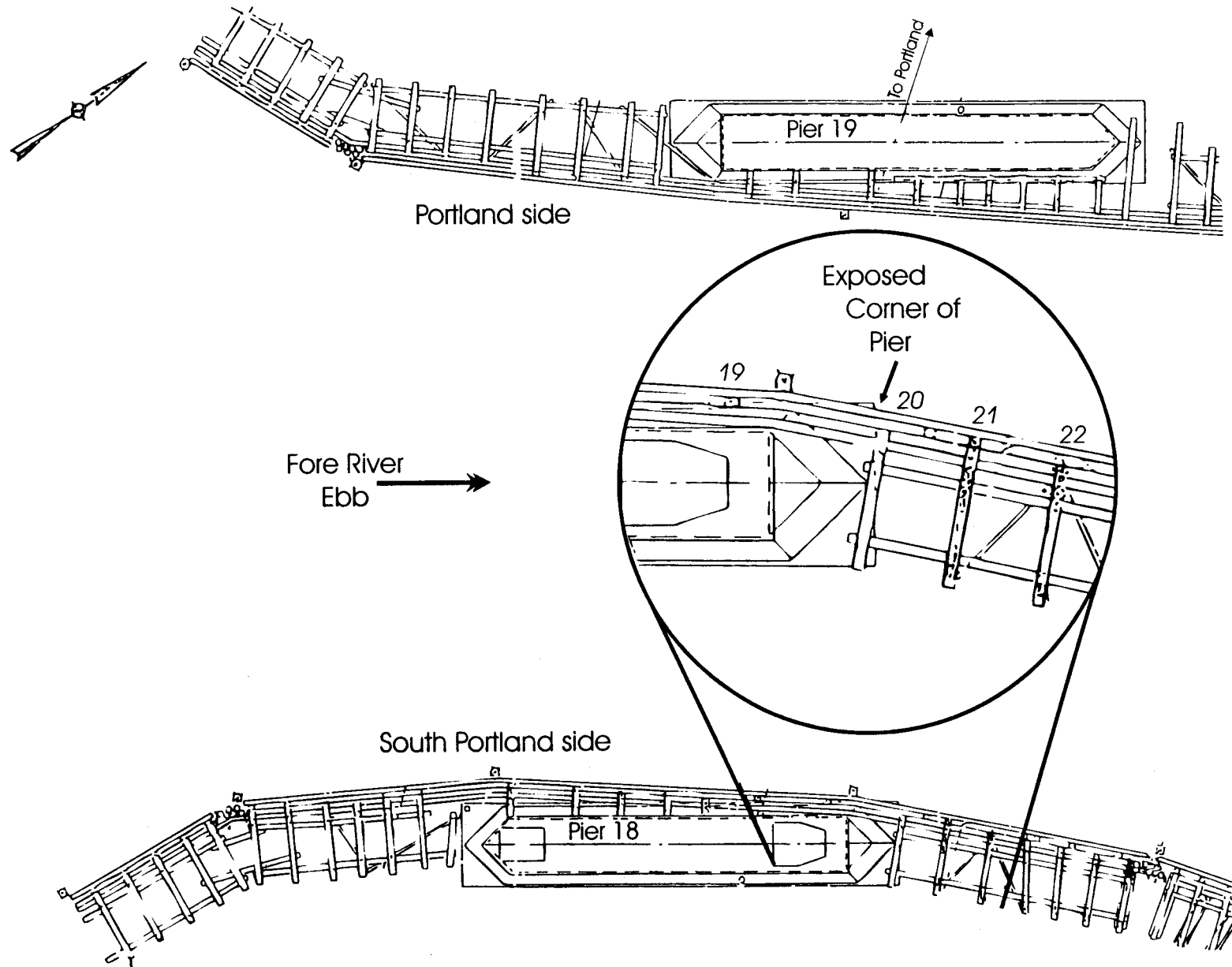


Figure 10—Plan of fender system showing exposed corner of pier.

changed many times since the initial construction. A major change occurred in 1949, following a change in channel alignment. The purpose of the 1949 alteration was to make the face of the fenders parallel to the revised channel axis. This resulted in decreasing the horizontal clearance to 97 feet 4 inches. MDOT records show that from 1949 to 1992, changes were made in the design of the structure, but the faces of the fender system remained parallel to the channel. No channel width data were given with the changes.

An underwater survey conducted by the MDOT after the *Julie N* accident indicated that the vertical piles along pier 18 were not in the sockets in the footing and that the fender system along the pier did not reach the bottom. Instead, the verticals of the fender system went below low tide while the bottommost wale remained above the mean low water line. It could not be determined when the full vertical timbers had been removed. According to a 1992 plan, the corner of the rectangular plinth (lower section of the pier) extends a short distance in front of the fender. (This was the corner which the vessel's hull contacted to initiate the 33-foot-long tear.) (See figure 10.) The 1992 plan shows the approach fender system flaring away from the piers; it consisted of a series of "bents,"¹¹ with a cluster of "dolphins"¹² at the end of six bents. An additional four bents increased the flare. Some of these bents had been removed before the accident to provide room for a barge being used for the construction work on the new bridge.

The new (temporary) steel fender system constructed soon after the accident and attached to pier 18 was designed to be stronger and stiffer than the wood fender system that had been in place at the time of the accident. The design was intended to provide better buffering of the corner that had pierced the hull of the *Julie N*.

¹¹A bent is a structure composed of vertical, horizontal, and/or diagonal members designed to distribute an imposed load into the bottom.

¹²A dolphin is formed by driving pilings into the bottom and bundling them together with a line, normally a steel rope.

Casco Bay Bridge—A new crossing of the Fore River between Portland and South Portland had been discussed since the early 1950s. In 1953, consultants conducted a study of a replacement bridge for the Cumberland County commissioners, the first of many such studies. The new bridge became a "project"¹³ in 1981. A draft Environmental Impact Statement (EIS) was issued in 1986; the final EIS was issued in 1988.

Construction of the bridge was to have begun in 1991. However, because of concern for approximately 3.1 acres of wetland, the Environmental Protection Agency did not issue an environmental permit until 1991. To reduce the use of wetland, the proposed bridge span was lengthened by 900 feet to move the span leading to the bridge closer to land. Approximately 2.5 acres of wetland were saved as a result. The redesign delayed the final design of the bridge until 1992 and construction until 1993, which increased the project's cost by about \$20 million.

In 1989, the Coast Guard issued a decision regarding a new bridge. Of the several alternate crossing sites considered, the "Modified Downstream Broadway (DS/B) Alternative" was selected for further project advancement to replace the Million Dollar Bridge. The new structure crosses the Fore River in a curvilinear line and incorporates a mid-level double-leaf bascule span over the navigation channel.

According to the Coast Guard decision, the bridge—

- Provides greater structural integrity than the existing bridge and reduces maintenance costs,
- Increases the efficiency of both motor vehicle and shipping operations,

¹³MDOT designation signifying that funds and employee time would be allocated.

- Provides adequate safety for vehicular, ship, bicycle, and pedestrian traffic,
- Complements the transportation and community plan for the region, and
- Accomplishes these needs in the most cost-effective manner.

The bridge permit was issued by the Coast Guard in 1992 and called for the following dimensions of the navigational opening:

- Horizontal clearance: 196.85 feet,
- Vertical clearance: minimum 55 feet above mean high water in the closed position with the center 100 feet of the span providing a minimum 65 feet vertical clearance, and
- Unlimited vertical clearance in the open position.

Most of bascule pier 18 of the Million Dollar Bridge was removed in September 1997, although some rubble remains, and old pier 19 was removed in mid-March 1998. The new Casco Bay Bridge, which is approximately 100 feet downstream of the Million Dollar Bridge's former location, was completed and opened to highway traffic on September 1, 1997.

Fender System for the New Bridge—The designers of the fender system protecting the new bridge elected to use an independent steel pile-supported system and rubber fenders mounted on the bridge piers. The design also included four 60-foot-diameter steel cells filled with gravel, located upstream and downstream of each bascule pier. The independent pile-supported system prevents contact with the piers for most collisions, while the rubber fender system on the piers is designed in anticipation of more serious

events, in which a vessel would penetrate and likely demolish part of the pile-supported system.

The pile-supported fender system consists of nine horizontal steel I beams (wales) attached to 36-inch-diameter steel piles spaced 9 feet apart along each pier face. The I beams are faced with protective timber strips. The fender system flares away from the channel alignment at an angle of 20° on the upstream and downstream side of each pier, passing directly in front of each of the 60-foot-diameter cells.

The pile-supported fender at each pier face was designed to absorb the energy caused by the collision of a 25,000-deadweight-ton¹⁴ vessel moving at 5 knots at an impact angle of 7°. The substructure and piers supporting the rubber fender system are designed to absorb the energy caused by a collision with a 50,000-deadweight-ton vessel moving at 5 knots and impacting at a 15° angle.

The fenders were designed to allow for up to 13.25 feet of flare (overhang) at the bow of a vessel. Thus, the superstructure of the bridge would not be contacted unless the flare of a passing vessel exceeded 13.25 feet. Vessels can have as much as 20 feet of flare at the bow, making contact with the superstructure inevitable for such vessels.

Crew Information

The *Julie N* was manned by a crew of 27 Korean nationals, all properly licensed or certificated by the Liberian government.

Master—The master, age 48, graduated from the Korean Merchant Marine Academy at Mogpo, Korea, in 1971 after a 5-year course of study in marine transportation. He had held a Korean master's license for 6 years. He also held a master's license issued by the Republic of Liberia in April 1992 and was qualified as a radar observer on oceangoing vessels of any gross tonnage. MOC records indicate that he had

¹⁴The *Julie N* had a deadweight tonnage (carrying capacity in long or in metric tons) of 29,994 tons.

been sailing for 17 years. He had been master of the *Julie N* for approximately 30 months and had served as master of the oceangoing ships *Canopus*, *Eliane*, *Pacific Hunter*, *Suzanne*, and *Allegre*. The master had attended various safety courses including Bridge Team Management, Tanker Safety and Crude Oil Washing, and a course outlining the hazards of drug and alcohol use.

Third Mate—The third mate, age 23, graduated from the Korean Merchant Marine Academy at Mogpo in 1995. He holds a second officer's license issued by the Republic of Liberia. He joined the MOC on March 18, 1995, and had sailed as a third officer for approximately 1½ years. The third mate had attended Bridge Team Management and other training.

Pilot—The pilot, age 54, has been the docking master pilot for Portland Tugboat and Ship Docking Company since September 1993. When a ship requests docking services from Portland Tugboat and Ship Docking Company, the company dispatches two of its tugboats and this pilot. Although self-employed when piloting, the pilot was still covered by Portland Tugboat and Ship Docking Company's drug testing program.

The pilot started his maritime career in 1968 as a deckhand aboard a 50-foot, 300-hp tug, the *Morania No. 4*, at a sand plant on Long Island, New York. In 1972, he obtained a license as an Operator of Uninspected Towing Vessels and became the master of the *Morania No. 4*. His duties involved towing sand scows¹⁵ throughout New York harbor.

During the 1970s, the pilot was promoted to master of several larger tugs. At that time, he sailed upon the waters of New York Harbor-Hudson River, all of the Erie Barge Canal, the

Great Lakes, and the St. Lawrence River as far as Ogdensburg, New York.

In 1980, he was transferred to the 3,600-hp tug, *Morania No. 20*, and worked as a mate for 6 months before assuming the position of master. In 1992, he served as master of the 4,200-hp tug *Morania No. 1*. While master of the *Morania No. 20* and *Morania No. 1*, he entered numerous ports along the Gulf of Mexico, the East Coast of the United States, and Puerto Rico, towing barges that ranged in size from 3,324 to 7,297 gross tons.

In late 1992, he was accepted by Portland Tugboat and Ship Docking Company as a docking master and entered an apprenticeship program that required him to ride as an observer on ships calling at Portland. Over the following 12 months, according to the pilot's records, he rode on more than 350 ships and 100 tugs and barges. During that period, he obtained an Unlimited First Class Pilot's license for Portland Harbor.

In September 1993, upon completion of his apprenticeship, he assumed the duties of full-time docking master pilot for Portland Harbor. Since that time, according to the pilot, he had piloted 1,028 vessels into and out of Portland Harbor; 655 of those vessels, ranging up to 93 feet in width, were piloted through the Million Dollar Bridge. These transits occurred during the day and the night and in all weather conditions common to the Portland area.

Pilot's Accident History—The pilot had been involved in two collisions with the bridge while piloting tugs and barges through it. The first accident occurred on May 2, 1986, while he was employed by *Morania*. He was piloting the tug *Morania No. 20*, towing barge No. 420. The barge collided with the steel of the bridge, putting the bridge out of service for 2 days for repairs costing about \$60,000. The second accident occurred December 13, 1995, while he was serving as the pilot directing the movement of the tugboat *Frederick Bouchard* and barge No. 120 during an outbound transit. During the

¹⁵Barges used for transporting sand, garbage, and miscellaneous bulk cargo are sometimes referred to as scows.

transit, the barge collided with the fendering system of the bridge.

The pilot testified at the Safety Board's March 1997 public hearing in Portland that the December 1995 accident with the *Frederick Bouchard* occurred between 2300 and 2400. The pilot stated that after the collision with the South Portland Bridge, the barge was taken to anchorage and that he understood that the captain planned to notify the Coast Guard of the accident. The pilot said that since he had another job in about 2 ½ hours, he took a tugboat back to the dock and walked to his apartment nearby. He said that he left a message with the Coast Guard by voice mail between 0200 and 0300 that he would return home about 0800. He stated that he completed the piloting job about 0600 and returned home. He further stated that he arrived at the Coast Guard office about 0800, met with two lieutenants, and gave them his report about the *Frederick Bouchard* accident.

Although the accident was not a serious marine incident, he said that at that time the officers asked him to take a "drug test." The pilot said that he called his secretary and asked her to set up a drug test and that he reported to a local occupational health clinic in the "late morning, early afternoon" for testing. After the test, he said that he forwarded the results to the Coast Guard. He said that he was not asked by the Coast Guard to take an alcohol test. Furthermore, he said that no one specified the type of samples (blood, breath, or urine) that he was to provide. He stated that he believed that the lab technicians would know which specimens to ask for.

Following an investigation of the collision, the Coast Guard issued a letter of warning to the pilot on November 20, 1996. This warning will be considered at any future proceedings involving the pilot's Merchant Mariner's credentials.

The Safety Board is aware of two instances where the pilot refused to submit to alcohol testing in connection with traffic violations. In 1990, while living in Florida, the pilot refused to be tested for alcohol after being stopped in Boca

Raton for speeding. The pilot told Safety Board investigators that he refused to be tested for alcohol in that instance because the officer who had stopped him was excessively rude. He was subsequently arrested, and his driver's license was administratively suspended. Later, the initial charges were dropped, and the police department sent the pilot a letter of apology. In 1993, the pilot was stopped in South Portland for speeding and was asked by the police to take a test for alcohol, which he declined. He was convicted of "driving to endanger" (a lesser charge than "operating under the influence"), and his driver's license was suspended for 1 month (November 16 through December 16, 1993).

Pilot's Preaccident Activities—According to the pilot's testimony to Safety Board investigators in October 1996, the pilot recalled sailing the *Irving Arctic* at the Mobile Terminal about midnight September 24, departing the ship about 0100 the morning of September 25. His drive home from the dock only took about 15 minutes.

On September 26 at 0630, the pilot sailed the *Panther*, a PanaMax ship at the Gulf Terminal, South Portland, ending that activity about 0700. Later, he continued his daily routine, picking up his mail and returning to his house to familiarize himself with a computer that he had just bought.

On the day of the accident, September 27, the pilot stated that he arose at 0700, his normal time. He made a pot of coffee, had a bowl of cereal, walked the dog, and then returned home to prepare for an 0800 meeting of the bridge contractors in South Portland. He attended the meeting to provide input on the new bridge construction. At the meeting, he engaged others in conversation about the new bridge and drank some orange juice. Two individuals at the meeting who were later contacted by the Safety Board stated that the pilot appeared to be rested and completely sober. He left the meeting at about 0930 to drive to BIW. There, he boarded the tugboat *Captain Bill* to take him to the *Julie N.*

Vessel Information

The *Julie N* was registered in Liberia, owned by Amity Products Carriers, Inc., Wilmington, Delaware, and operated by MOC, New York, New York. The vessel was built by Naikai Shipbuilding and Engineering Company, Ltd., Setoda, Japan, in 1982 and classified by Lloyd's Register of Shipping, London, England.

The vessel met the construction and equipment requirements of the Safety of Life at Sea Convention (SOLAS) 74, as amended, and of the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 (MARPOL 73/78).

The vessel was of all-welded, steel construction, had a single, continuous main deck, a straight raked stem, and a bulbous bow. The deckhouse, containing the crew accommodations and the navigation bridge, was located aft over the engine room.

Navigation bridge equipment included two radars with automatic radar plotting aid (ARPA) capability (one 3 cm and one 10 cm), depth sounder, radio direction finder, gyro compass, course recorder, global positioning system (GPS), Loran, and transit satellite navigation. The navigation equipment was examined and found to be in good working order. All charts and publications were found to be correct and up to date.

Because of the pollution cleanup efforts and containment booms around the vessel, an operational test of the vessel's steering was deferred for a few days. The Coast Guard conducted the test for the Safety Board when the booms were clear and the *Julie N's* steering was found to be satisfactory. The tests revealed that the rudder could be shifted from port 20° to hard port 35° in 6 seconds and that the rudder could be moved from hard port to hard starboard in about 28 seconds.

The principal characteristics of the *Julie N* are:

Length overall	560 feet (170.69 m)
Beam	86.3 feet (26.29 m)
Depth	48.9 feet (14.9 m)
Gross tonnage	18,477
Deadweight tonnage	29,994
Horsepower	11,200

Waterway Information

Portland Harbor is ice-free and offers secure anchorage to deep-draft vessels in all weather. It is the Atlantic terminus for pipeline shipments of petroleum products to Canada and handles considerable domestic and foreign commerce in petroleum products, wood pulp, paper, seafood products, and general cargo.

The outer harbor includes three deepwater general anchorages and the crude oil discharging berth for Portland Pipeline, which is dedicated to shipping crude oil to Canada. Diamond Island Roads, having a depth of 34 to 45 feet, is the principal deepwater anchorage in the outer harbor.

The main harbor consists of two areas: the outer part of the main harbor, which extends from the entrance of the Fore River to the Million Dollar Bridge, and the inner harbor, which extends from the Million Dollar Bridge to the head of deepwater navigation at the fixed railroad and highway bridges. Nearly all petroleum shipments entering Portland for distribution to the Northeast are received by terminals in the inner harbor. Some land and terminals are available in the inner harbor for expanded container operations.

The Federal project¹⁶ provides for a 45-foot-deep channel from the sea to Fort George, and 35 feet in the inner harbor and Fore River to the turning basin at the head of deepwater navigation.

¹⁶Federal project refers to the channel width and depth that the U.S. Army Corps of Engineers must maintain through regular dredging. In recent years, environmental concerns have limited the disposal of dredging spoils; hence, some maintenance dredging is behind schedule.

The mean range of the tide for Portland Harbor is 9.1 feet. The velocity of the tidal current in the outer harbor southwest of Diamond Island Ledge is about 1 knot; within the harbor, the current is about 0.5 knot along the general axis of the harbor (southwest-northeast). At the time of the accident, the tide was 11.2 feet, about 2 feet higher than normal, resulting in a slight flood current flowing upriver through the bridge. The 11.2 feet would be added to the channel depth of 35 to 36 feet to give a channel depth of approximately 45 feet. It is customary for tankships to enter the inner harbor at high water to discharge as the tide goes out.

Meteorological Information

At the time of the accident, the winds were light and variable, the visibility was good, and the tide was nearly high water slack. The temperature was about 60°F.

Medical and Pathological Information

Drug and Alcohol Testing of the Julie N's Pilot—The master and deckhand of the tugboat *Captain Bill* and the master of the *Julie N* stated that the pilot appeared to be completely sober, alert, and well-rested.

Shortly before 1230, after the accident and after the vessel was moored at Rolling Mills Terminal and the tugs had been released and the vessel was being boomed,¹⁷ the pilot left the ship. As the pilot proceeded down the gangway, he met the vessel's agent, who informed him that his (the pilot's) attorney was on board the tug *Captain Bill* at the end of the pier. The pilot then walked to the end of the pier and went aboard the tug to meet with his attorney.

About 1235, the pilot called the secretary at Portland Tugboat and Ship Docking Company from the tug to inform her of the accident. He requested that she call the Center for Health Promotion (CHP) and schedule a "drug" test for him. The secretary was already aware of the collision through a previous phone conversation

with one of the tugboat masters assisting in moving the *Julie N*. The secretary contacted the CHP scheduling department and said that the company would like to send one of its employees "for a drug test." (The CHP receptionist stated that the tugboat company secretary requested a "random drug screen.") An appointment was made for the pilot to report to the CHP at 1415 that day for drug testing. (A CHP representative later stated that an appointment is not necessary for postaccident testing and that the CHP would have offered to conduct the testing immediately if it had been aware that the testing was related to an accident.) The secretary then informed the pilot by cellular phone of his appointment time. The secretary was accustomed to making appointments for random drug testing and was unaware that postaccident testing was different or required any additional testing.

About 1215, about 1 hour and 10 minutes after the accident occurred, the first Coast Guard officer to board the *Julie N* arrived at Rolling Mills Terminal, while the *Julie N* was being moored. About 1230, either shortly before or after boarding the vessel, the officer was handed the pilot's attorney's business card and was told that the pilot and his attorney were on board the tugboat moored nearby. At approximately 1245, the officer briefed the Coast Guard Marine Safety Office on the overall situation. At this time, he mentioned that the pilot and his attorney were not on board the *Julie N* and that he had not made contact with nor spoken to them. The officer later stated that at the time, his first concern was controlling the oil spill rather than interviewing the pilot and crew about the accident.

The attorney for the pilot later stated that he had given his card to the Coast Guard officer on the vessel soon after the vessel docked and had informed the officer that he was the pilot's attorney and that the pilot was available for an interview. The attorney stated that he informed the officer that the pilot had a 1415 appointment for testing. Later, about 1345, the attorney said he informed the Coast Guard officer that it was necessary for the pilot to leave the area to make

¹⁷Deployment of floating barriers to contain or prevent the movement of oil floating on the water.

his 1415 appointment. According to the attorney, the Coast Guard officer agreed that the pilot should leave for the appointment.

Shortly after 1345, the pilot's attorney drove the pilot to the CHP for his scheduled testing, arriving at approximately 1350.

Meanwhile, about 1320, the Coast Guard Marine Safety Office called the Portland Tugboat and Ship Docking Company and asked the secretary whether postaccident testing was being done for the pilot. The secretary informed the Coast Guard that an appointment for testing the pilot had been made with the CHP.

When the pilot arrived at the CHP, he checked in at the reception desk in the lobby. He identified himself, though he did not mention that he had just been involved in an accident. At the time, film footage of the accident was being shown on the television set in the lobby, and the pilot stated that he did not want to acknowledge that he was associated with the accident. There was no discussion as to the type of testing to be done, and according to the pilot, he "assumed at all times that the Center would do whatever testing was necessary, including alcohol testing." The pilot provided a picture identification card as requested by the technician and signed a "Drug /Alcohol Consent and Release Form." He then received a urine specimen cup and was requested to provide a specimen. About 1429, the pilot provided a urine specimen in the collection area, as requested by the technician, and then returned and gave the specimen to the technician. At this time, he signed a second form, which he stated he did not read at the time. This form, later determined to be the "Federal Drug Testing and Control Form," had the box for "Random" checked as the reason for the test.

The technician later stated that the pilot appeared to be sober and did not display any indication of alcohol impairment.

"Random" testing was checked by the CHP technician on the form because random testing had been ordered by the Portland Tugboat and

Ship Docking Company. Random testing in the marine industry is solely for testing for the five drugs specified in U.S. Department of Transportation (DOT) and Coast Guard regulations¹⁸ and does not include random testing for alcohol. Personnel at the CHP were unaware that the pilot had been in an accident and therefore needed to provide an additional blood or breath sample for alcohol testing to comply with the requirements of postaccident testing. The pilot stated that he did not review his copy of the form until the issue of alcohol testing surfaced in press reports a few days later.

The pilot later stated that he believed the testing would include testing for alcohol and it was his belief that urine was the only specimen needed for both alcohol and drug testing. He also stated that he was unaware that the regulations required the testing of breath or blood to determine the presence of alcohol and that urine was not tested for alcohol. When asked what could be done to inform mariners of postaccident testing requirements, the pilot responded that posting signs in the urine sample collection area would have alerted him that urine alone was insufficient and that breath or blood testing was also required. The pilot stated that he would have complied with postaccident testing regulations had he known what to do.

The principal owner of the Portland Tugboat and Ship Docking Company, the company whose drug and alcohol testing program covered the pilot, also testified that he was unaware that a urine specimen was insufficient for postaccident testing. He said he thought that the urine specimen would be used for alcohol as well as drug testing. He stated that it was only because of the press coverage following the accident about the failure to test the pilot for alcohol that he

¹⁸The five drugs listed in DOT regulations at 49 CFR 40.21 and the Coast Guard regulations at 46 CFR 16.350 are marijuana, cocaine, opiates, phencyclidines (PCPs), and amphetamines. Random testing in the marine industry is solely for testing for the five drugs specified in the DOT and Coast Guard regulations. Coast Guard regulations do not include random testing for alcohol; however, DOT alcohol testing regulations provide for random testing for employees in other modes of transportation.

learned breath or blood testing was required to determine alcohol use.

One split of the original urine specimen was made, and the two split samples were sent to Roche CompuChem Labs in Research Triangle Park, North Carolina, by Airborne Express at approximately 1620 on September 27.

One urine sample was subjected to the prescribed 5-panel drug screen for marijuana, cocaine, opiates, phencyclidines (PCPs), and amphetamines as required by Coast Guard regulations at 46 CFR 16 and DOT regulations at 49 CFR 40. Written, negative test results were received by the CHP on September 30, 1996. The remaining urine sample was discarded by Roche CompuChem Labs on October 4, the prescribed 5 days following negative test results.

Drug and Alcohol Testing of the Julie N's Crew—The MOC has a program of random testing for both alcohol and drugs on its vessels. Each vessel is equipped with breath-testing equipment for alcohol testing, and the master and deck officers are trained to use the equipment. Urine collection and shipping containers are also carried on all MOC vessels.

Since 1994, the MOC has had a contract with an independent firm, Anderson/Kelly Associates, Inc., owners of International Collection for Substance Abuse Screening (ICSAS), to provide toxicology testing of crews on MOC vessels. The contract includes the testing of pilots if they are still on board, with testing costs to be paid by the MOC.

At 1207, on the day of the accident, the MOC requested the ICSAS to test all personnel on board the *Julie N*. The ICSAS then made arrangements with the CHP in Portland to conduct the breath testing and for Comprehensive Drug Testing Services in Portland to collect urine specimens. At 1240, the ICSAS advised the MOC that technicians were en route to the vessel. About 2 ½ hours after the accident, which included a few minutes' wait on the pier, two technicians were escorted aboard the *Julie N* to start the testing, which began at 1330. The

technicians elected to collect urine specimens first and conduct breath testing later. The breath testing did not commence until about 1620, more than 5 hours after the accident, and was not completed until nearly 1800. The master was among the last to be breath-tested.

About 1300, 2 hours after the accident, the Coast Guard Marine Safety Office in Portland called the MOC and informed them that "post serious marine incident testing" was required for all crewmembers involved in the incident. The MOC advised that efforts were underway to accomplish the testing.

All breath samples tested negative for alcohol, and all urine specimens tested negative for drugs.

A representative of the MOC stated that although the testing equipment was on board the *Julie N* and that the officers were trained in its use, the MOC elected to have the testing performed by its contractor. MOC policy is to have an independent testing agency conduct the testing when such an agency is readily available. According to the MOC,

independent agencies are experienced in both sample collection and chain of custody procedures, thereby guaranteeing valid test results. Employment of an independent agency also avoids any question of the propriety of self-testing.

However, the MOC stated that if circumstances preclude prompt independent testing, the breath-testing devices and urine collection kits carried on board would be employed by vessel personnel trained in their use.

The MOC also prefers using independent agencies for postaccident testing because "it avoids removing vessel personnel from critical postaccident duties for the considerable time required to complete the testing process." The MOC pointed out that the *Julie N's* officers were "totally engaged in stabilizing the vessel's

condition and seeking to minimize the outflow of oil” following the accident.

Accidents Involving Postaccident Testing Issues—The Safety Board has investigated a number of accidents where postaccident testing for alcohol and other drugs was not conducted properly. In many marine accidents investigated by the Safety Board, considerable time was required to collect breath or blood for alcohol testing or samples were never collected, as illustrated in table 1.

In some cases, marine employers failed to conduct postaccident testing because of their lack of understanding of the testing requirements set forth in Coast Guard regulations. For instance, the pilot of the *Julie N* and his tugboat company reportedly believed that urine was the sole specimen required and that it was tested for alcohol as well as drugs. In many instances, the Coast Guard had to initiate the postaccident testing process through informing or reminding the marine employer that the responsibility for testing resides with the employer and by providing information about how and where to obtain the services of a testing firm and or how to obtain the needed equipment.

Postaccident drinking can affect sample results and has been a factor in some accidents. In one case involving an explosion and fire on a tankship¹⁹ that had been undergoing welding repairs, it was necessary for the crew to abandon the vessel. Upon arrival ashore, some crewmembers began consuming alcohol at a local bar. No regulation currently prohibits postaccident drinking. In this accident, it was also necessary for the Coast Guard to explain to the marine employer’s representative that testing

is the responsibility of the marine employer and to provide information about obtaining the services of a testing agency.

Other investigations have been impeded because crewmembers or pilots were not available for testing, such as in the *Jupiter/Buffalo* accident, in which many crewmembers had gone ashore without being tested. On one occasion, most of the crew of an oceangoing ship was transported out of the country and consequently never available to investigators.²⁰ (For more information on the *Jupiter/Buffalo* accident and other accidents involving postaccident testing issues, see table 1.)

Postaccident Testing Regulations and Programs

Coast Guard Regulations—Coast Guard regulations governing postaccident testing for alcohol and “dangerous drugs”²¹ (marijuana, cocaine, opiates, phencyclidines (PCPs); and amphetamines) are found at 33 CFR 95 (*Operating a Vessel While Intoxicated*) and 46 CFR 4.06 (*Mandatory Chemical Testing Following Serious Marine Incidents Involving Vessels in Commercial Service*). Regulations for testing for dangerous drugs in the workplace for personnel on board U.S. commercial vessels are at 46 CFR 16. (See appendix B for these regulations.)

²⁰*Marine Accident Report—Investigation of the Fire on Board the Cypriot Bulk Carrier Protector Alpha at Kalama, Washington, on February 14, 1982* (NTSB/MAR-83-01).

²¹The term “dangerous drug” is used in the report to be consistent with terminology used in Coast Guard regulations at 46 CFR 4.06 and 46 CFR 16. The basis for the term “dangerous drug” is found at 46 U.S.C. 7702 (c)(2), which states: “...The Secretary shall require the testing of the holder of a license, certificate of registry, or merchant mariner’s document for use of alcohol and dangerous drugs in violation of law or Federal regulations. The testing may include preemployment (with respect to dangerous drugs only), periodic, random, reasonable cause, and postaccident testing.” In some parts of this report, the word “drug” may be used for brevity and means these five drugs.

¹⁹*Marine Accident Report—Investigation of the Explosion and Fire on Board the U.S. Tankship Omi Charger at Galveston, Texas, on October 9, 1993* (NTSB/MAR-94/04).

Table 1—Time elapsed before postaccident testing performed and types of testing performed after major marine accidents investigated by the Safety Board

Vessel	Breath/blood testing (hours)	Urine testing (hours)	Remarks
<i>Exxon Valdez</i> March 24, 1989	—/10.5	10.5	<ul style="list-style-type: none"> ▪ Testing delayed because of time necessary Coast Guard investigators to arrive at the scene and the several hours it took to locate a collector. ▪ Alcohol was a causal factor.
<i>World Prodigy</i> June 23, 1989	—/22	22	None.
<i>Aleutian Enterprise</i> March 22, 1990	—/—	42	<ul style="list-style-type: none"> ▪ Remote location. Lack of knowledge by the marine employer about postaccident testing. Urine specimen from master tested negative.
<i>Shinouosa/Chandy N</i> <i>Hellespont Faith</i> July 28, 1990	—/—	8	<ul style="list-style-type: none"> ▪ Coast Guard investigators on board soon after accident to interview crews observed no evidence of intoxication or drug use. Pilot of <i>Shinouosa</i> gave urine specimen in about 8 hours. All other urine collected over 24 hours later.
<i>Mandan</i> August 15, 1990	5.5/—	5.5	<ul style="list-style-type: none"> ▪ Pilot and master tested. ▪ Test results were negative for alcohol and drugs.
<i>Jupiter/Buffalo</i> September 16, 1990	—/—	Unknown/9.5	<ul style="list-style-type: none"> ▪ Coast Guard investigators reminded <i>Buffalo</i> of need for alcohol and drug testing about 6 hours after accident. Some crewmembers had gone ashore already; thus, no alcohol testing attempted of <i>Buffalo</i> crew. No one thought to test <i>Jupiter</i> injured that were hospitalized. Deceased <i>Jupiter</i> crewman tested negative for drugs.
<i>Sea King</i> January 11, 1991	—/—	—	<ul style="list-style-type: none"> ▪ Owner refused to test. Lack of authority at time to impose penalty against the owner for failure to test. Master rescued by Coast Guard soon after accident. ▪ Unknown whether alcohol or drugs involved.
<i>Queen Elizabeth 2</i> August 7, 1992	—/39	16–39	<ul style="list-style-type: none"> ▪ Remote location. Marine employer's instructions were to cooperate with Coast Guard in postaccident testing. ▪ Test results were negative for drugs.
<i>Fremont/</i> <i>Juraj Dalmatinac</i> December 21, 1992	—/— —/—	18 14–16	None.

Vessel	Breath/blood testing (hours)	Urine testing (hours)	Remarks
<i>Chris</i> May 28, 1993	—/7-7.5	7-7.5	▪ Coast Guard on scene a few minutes after the accident.
<i>Yorktown Clipper</i> August 18, 1993	—/—	18.5	▪ Remote location.
<i>Mauvilla</i> September 22, 1993	—/—	8	▪ Remote location.
<i>Omi Charger</i> October 9, 1993	—/—	5-18	▪ Postaccident drinking. Lack of knowledge by marine employer. Testing initiated by Coast Guard by informing marine employer of need for testing and how to obtain testing assistance.
<i>Noordam/ Mount Ymitos</i> November 6, 1993	7/— Yes/—	7-26 29-30	▪ No authority to conduct testing of foreign vessels in international waters. However, watchstanders volunteered for testing.
<i>El Toro</i> December 5, 1993	—/3-6	—	▪ Test results were negative for alcohol and drugs.
<i>All Alaskan</i> July 24, 1994	—/—	28	▪ Master not tested. Master boarded Coast Guard cutter about 3 hours after fire started but was not tested during the 3 days on board. Health clinic closed; thus, urine collection of crew delayed until next day.
<i>Seal Island</i> October 8, 1994	—/—	—	▪ In port at St. Croix, Virgin Islands. Lack of knowledge by the marine employer of testing requirements.
<i>Alaska Spirit</i> May 27, 1995	—/Postmortem	Not applicable	None.
<i>Royal Majesty</i> June 10, 1995	—/25-28	25-28	▪ No authority to conduct testing of foreign vessel in international waters. Remote location. Crew volunteered to be tested.
<i>Star Princess</i> June 23, 1995	Pilot 4/— Crew 8.5/—	4 8.5	▪ Test results were negative for alcohol and drugs (pilot).
<i>Scandia</i> January 19, 1996	9/—	15.7	▪ Remote location. Crew fighting fire and attempting to salvage barge. Coast Guard performed breath testing of crew for alcohol. ▪ Test results were negative for alcohol and drugs.
<i>Universe Explorer</i> July 27, 1996	—/—	34	None.

Vessel	Breath/blood testing (hours)	Urine testing (hours)	Remarks
<i>Julie N</i> September 27, 1996	Pilot —/— Crew 3-7/—	3 3-7	<ul style="list-style-type: none"> ▪ Lack of knowledge by the marine employer. ▪ Test results of pilot were negative for drugs. ▪ Breath testing of <i>Julie N</i> crew delayed by technicians who elected to collect urine specimens first. ▪ Test results were negative for alcohol and drugs.
<i>Dave Blackburn</i> October 23, 1996	9/—	9	None.
<i>Sundowner</i> December 7, 1996	—/16-17	16-17	<ul style="list-style-type: none"> ▪ No breath testing conducted because owner reported to Coast Guard that he had permitted the crew to engage in postaccident drinking. Testing consortium under contract not open after hours and on weekends, thus delaying specimen collection. ▪ Unknown whether alcohol or drugs involved.
<i>Bright Field</i> December 7, 1996	Pilot 1.5/— Crew 6.5-8.5/—	1.5 6.5-8.5	<ul style="list-style-type: none"> ▪ Coast Guard on board soon after accident; reminded owner of need for testing. Directly involved personnel were tested last. ▪ Test results were negative for alcohol and drugs.
<i>Cowslip/ Evergrade</i> May 14, 1997	<i>Cowslip</i> —/8.6-10 Pilot —/— <i>Evergrade</i> —/17.5-18.5	8.6-10 12.7 17.5-18.5	<ul style="list-style-type: none"> ▪ <i>Cowslip</i> is a Coast Guard cutter.
<i>Alaska I/ Hanjin Barcelona</i> February 11, 1998	6/— —/—	6 —	<ul style="list-style-type: none"> ▪ Saliva collected instead of breath for alcohol testing. ▪ No authority to test crew of <i>Hanjin Barcelona</i> because ship was a foreign vessel in international waters. ▪ Unknown whether alcohol or drugs involved.

As shown in table 2, 33 CFR 95 applies to all U.S. vessels (recreational and commercial) and to all foreign vessels (recreational and commercial) on the navigable waters of the United States. The applicability to foreign vessels is clearly stated at 33 CFR 95. Also, these regulations apply to U.S. vessels on international waters.

The regulations at 33 CFR 95 establish specific thresholds for alcohol intoxication: .04 percent blood alcohol concentration (BAC) for operators of commercial vessels and .10 percent BAC for operators of recreational vessels. In addition, 33 CFR 95 recognizes the following as evidence of intoxication: “(a) Personal observation of an individual’s manner, disposition, speech, muscular movement, general appearance or behavior, or (b) A chemical test.” Under 33 CFR 95, a law enforcement officer (including Coast Guard officers, warrant officers, or petty officers) or a marine employer may direct an individual to undergo the tests noted in table 2 when “reasonable cause” exists. Reasonable cause, according to 33 CFR 95, exists when the individual is directly involved in a marine accident meeting the criteria of Chapter 61 of Title 46, *United States Code* (46 U.S.C. 6101) (see table 2), or when the individual is suspected of being intoxicated.

The regulations at 33 CFR 95 formerly specified punitive measures against a marine employee for being intoxicated when operating a vessel²² but do not specify sanctions against the individual who fails or refuses to be tested or against the marine employer that fails to require crewmember testing. However, 33 CFR 95.040 does provide that if an individual refuses to submit or cooperate in the administration of timely testing when directed by a law enforcement officer based on reasonable cause, the individual shall be assumed to be intoxicated. Further, if the test is directed by the marine employer, then an individual’s refusal is

admissible as evidence in an administrative proceeding, which could result in the revocation or suspension of the license, certification, or document held by a U.S. seaman or the imposition of a civil penalty. The lack of authority to prescribe a penalty against the marine employer that fails to conduct testing was corrected in late 1996 by the Coast Guard Authorization Act of 1997 (46 U.S.C. 2115):

Civil penalty to enforce alcohol and dangerous drug testing

Any person who fails to implement or conduct, or who otherwise fails to comply with the requirements prescribed by the Secretary for chemical testing for dangerous drugs or for evidence of alcohol use, as prescribed under this subtitle or a regulation prescribed by the Secretary to carry out the provisions of this subtitle, is liable to the United States Government for a civil penalty of not more than \$1,000 for each violation. Each day of a continuing violation shall constitute a separate violation.

As noted in table 2, 46 CFR 4.06 applies to U.S. commercial vessels and to foreign commercial vessels on U.S. waters. U.S. commercial vessels include uninspected commercial vessels, such as most fishing and towing vessels, as well as inspected vessels.

The regulations at 46 CFR 4.06-1 require the marine employer owning or operating a vessel involved in a serious marine incident as defined in table 2 to “take all practicable steps to have each individual engaged or employed on board the vessel who is directly involved in the incident chemically tested for evidence of drug and alcohol use.” A law enforcement officer may determine that additional individuals are directly involved in the serious marine incident. In such cases, 46 CFR 4.06-1 requires the marine employer to take all practicable steps to have these individuals submit urine specimens and breath or blood specimens or both breath and blood specimens for chemical testing. In other words, testing for alcohol as well as for drugs is

²²The punitive measures formerly at 33 CFR 95.055 have been removed from the 1997 *Code of Federal Regulations*.

Table 2—Coast Guard regulations governing postaccident testing

	33 CFR 95	46 CFR 4.06
Applicability	<ul style="list-style-type: none"> ▪ Commercial vessels—U.S. and foreign flag ▪ Recreational vessels—U.S. and foreign flag 	<ul style="list-style-type: none"> ▪ U.S. commercial vessels ▪ Foreign-flag commercial vessels on U.S. waters
Intoxication standards for alcohol	<ul style="list-style-type: none"> ▪ Commercial vessels—.04 percent blood alcohol concentration (BAC) ▪ Recreational vessels—.10 percent BAC or State Standard 	None
Testing samples	General— <ul style="list-style-type: none"> ▪ Breath ▪ Blood ▪ Urine ▪ Saliva or other bodily fluids or tissues 	<ul style="list-style-type: none"> ▪ Urine ▪ Breath or blood or both
Criteria for testing	Accident meeting the criteria of 46 U.S.C. 6101: <ul style="list-style-type: none"> ▪ Death or serious injury to individual ▪ Material loss of property ▪ Material damage affecting seaworthiness or efficiency of vessel ▪ Significant harm to the environment <p style="text-align: center;">-OR-</p> Individual suspected of being intoxicated	Accident meeting the “serious marine incident” criteria of 46 CFR 4.03-2: <ul style="list-style-type: none"> ▪ One or more deaths ▪ Injury to passenger or crewmember requiring medical treatment beyond first aid or injury rendering crewmember unfit for routine vessel duties ▪ Property damage exceeding \$100,000 ▪ Loss of inspected vessel ▪ Loss of self-propelled vessel of 100 gross tons ▪ Discharge of 10,000 gallons of oil into navigable waters of the United States or reportable quantity of hazardous substance into navigable waters or atmosphere of the United States.
Penalties for refusal to test*	Suspension or revocation of employee’s license; none against marine employer	Suspension or revocation of employee’s license; none against marine employer
Testing responsibility and timeliness	Marine employer—as soon as practical	Marine employer—as soon as practical
Postaccident drinking	No prohibition	No prohibition
Testing equipment required	Not specified	<ul style="list-style-type: none"> ▪ Breath testing devices (oceangoing vessels) ▪ Urine specimen collection and shipping kits (only required on board if not obtainable in 24 hours)
*The Coast Guard received authority in late 1996, after the <i>Julie N</i> accident, to impose civil penalties on marine employers or anyone else failing to comply with the regulations for postaccident testing.		

required when a serious marine incident occurs under the jurisdiction of 46 CFR 4.06. Title 46 CFR 4.06 does not specify intoxication standards in terms of BAC.

Unlike 33 CFR 95, the regulations at 46 CFR 4.06-1 require U.S.-inspected vessels certified for unrestricted ocean routes and inspected vessels certified for restricted overseas routes to carry breath-testing devices that are capable of determining the presence of alcohol in a person's system. Also, U.S. vessels are required to carry urine specimen collection and shipping kits, unless such kits can be obtained within 24 hours of the serious marine incident. Neither 46 CFR 4.06 nor 33 CFR 95 specifies for what substances urine is to be tested. However, 46 CFR 4.06-1 does reference drugs detected by urinalysis cited at 46 CFR 4.06-50, a section of the regulations relating to duties of the medical review officer, and also references 46 CFR 16, which covers workplace testing and urine specimen collection and handling procedures for personnel on commercial vessels. (See appendix B.)

An employee's refusal to provide specimens is considered a violation of 46 CFR 4.06-1 and could subject a mariner [on a U.S. vessel] to suspension and revocation procedures against the mariner's Coast-Guard issued license, certificate, or document for service on board a commercial vessel. Also, such an individual can be removed from duties directly affecting the safety of a vessel's navigation or operations. The regulations at 46 CFR 4.06-1 do not list sanctions or punitive actions for marine employers that fail to comply with the regulations or for foreign vessel employees or state-licensed pilots who refuse to provide the required specimens for testing. However, as noted earlier in this section, the 1997 Coast Guard Authorization Act provides

authority for the Coast Guard to impose civil penalties on anyone failing to comply with the requirements for postaccident testing.

Omnibus Transportation Employee Testing Act of 1991—Because of its concerns about the time sensitivity of toxicological sampling, in 1989, the Safety Board recommended²³ to the DOT that both blood and urine samples be collected within 4 hours of a transportation accident. Subsequent Congressional concern about the possible use of alcohol by transportation workers resulted in the passage of the Omnibus Transportation Employee Testing Act of 1991 (the Act). The Act addresses transportation workers in the industries regulated by the DOT's operating administrations: the Federal Aviation Administration (FAA), Federal Highway Administration (FHWA), Federal Railroad Administration (FRA), and Federal Transit Administration (FTA).

The Act does not address the marine industry or the Coast Guard. At the time the Act became effective, the Coast Guard already had regulations²⁴ on alcohol misuse, including mandatory postaccident alcohol testing. The pipeline industry and its regulatory administration, the Research and Special Programs Administration (RSPA), were also excluded from the Act because it was reasoned that pipeline safety risks differ somewhat from risks experienced by forms of public transportation that carry people.

On February 15, 1994, the DOT operating administrations issued rules to implement the Act. At the same time, RSPA joined the other DOT operating administrations in issuing regulations to implement limited programs to prevent alcohol misuse by pipeline industry employees who perform safety-sensitive functions.

The rules implementing the Act establish priority provisions for postaccident alcohol testing.

²³Safety Recommendation I-89-006 was issued in a December 5, 1989, letter to the DOT and was classified "Closed—Unacceptable Action," on May 15, 1995.

²⁴Regulations at 33 CFR 95, 46 CFR 4.06, and 46 CFR 16.

The common preamble²⁵ to the rules of all five operating administrations states that:

as soon as practicable during the 8 hours following an accident, each employer shall test each surviving covered employee for alcohol, if that employee's performance of a safety sensitive function either contributed to an accident or cannot be discounted as a contributing factor to the accident.

The preamble also establishes the requirement to justify in writing testing delays of over 2 hours (4 hours in FRA regulations) and to cease attempts to test after 8 hours. Further, the preamble states, "After eight (8) hours have passed, the employer then shall cease attempts to administer the test and record why the employer was unable to administer a test." The preamble notes that after 8 hours, "...there is little likelihood of finding a meaningful alcohol concentration resulting from use preceding the accident."

Current Coast Guard regulations do not conform to the 1989 recommendation by the Safety Board to collect blood and urine samples within 4 hours or to the DOT's requirement to collect blood or breath samples for alcohol testing within 2 hours. Both Coast Guard regulations addressing postaccident sampling (33 CFR 95 and 46 CFR 4.06) call for testing "as soon as practicable," rather than requiring specific sampling times.

The regulations for the other DOT administrations implementing the Act also mandate random testing for alcohol, make it illegal to assume duty in safety-sensitive positions unless the BAC is below .02 percent, and require an individual involved in an accident to refrain from consuming alcohol for 8 hours. None of these provisions are contained in Coast Guard regulations. Regarding the provision on fitness to assume duty, the DOT selected the .02 level rather than .00, "because it represents the lowest level at which a scientifically accurate alcohol concentration" could "be measured

²⁵*Federal Register*, Vol. 59, No.31, February 15, 1994, pp. 7302-7338.

given the limitations of [then] any current technology (e.g., blood, breath)."²⁶

Coast Guard Actions on Postaccident Testing—Coast Guard officers, warrant officers, and petty officers assigned to the merchant marine safety program receive training in alcohol and drug testing regulations during the Coast Guard's 2-week accident investigation course (120 to 144 students trained per year). The curriculum includes 1.5 hours devoted to the requirements for alcohol and drug testing, and each student receives a handout containing a detailed discussion of the drug and alcohol testing regulations.

On November 15, 1994, the Coast Guard issued ALDIST 179/94 (COMDTNOTE 16722),²⁷ which provided additional guidance for postaccident testing. This directive stressed the importance of timeliness in postaccident testing for alcohol and other drugs and that the timeliness of alcohol testing is especially

²⁶*Federal Register*, Vol. 59, No. 31, February 15, 1994, p. 7319.

²⁷An ALDIST (short for All Districts) is a message to all Coast Guard activities and personnel that transmits information or guidance. A COMDTNOTE (short for Commandant Notice) provides information or guidance to Coast Guard activities and personnel. A COMDTNOTE normally applies for a specified time and may be disseminated by an ALDIST when rapid transmission is warranted. The ALDIST resulted from the Safety Board investigation of the grounding of the *RMS Queen Elizabeth 2* and resulting Safety Recommendation M-93-24, that the Coast Guard provide guidelines to Coast Guard boarding officers about informing marine employers of the employer's responsibility to conduct toxicological testing as soon as practicable and about providing assistance to the marine employer when necessary. Safety Recommendation M-93-24 was superseded by Safety Recommendation M-94-11, issued as a result of the Safety Board investigation of the collision of the U.S. Towboat *Chris* with the Judge Seeber Bridge in New Orleans, Louisiana. When ALDIST 179/94 was issued, Safety Recommendation M-94-11 was classified "Closed—Acceptable Action." For more information see *Marine Accident Report—Grounding of the RMS Queen Elizabeth 2, Vineyard Sound, Massachusetts, August 7, 1992* (NTSB/MAR-93/01) and *Highway Accident Report—Collision of the U.S. Towboat Chris With the Judge Seeber Bridge in New Orleans, Louisiana, May 28, 1993* (NTSB/HAR-94/03).

important because alcohol is eliminated rapidly from the body.²⁸

ALDIST 179/94 requires Coast Guard investigators to alert marine employers of “their responsibility” for postaccident testing. The directive clearly states that Coast Guard personnel shall not provide urine collection material or perform as collection site personnel. The directive does allow appropriately qualified Coast Guard personnel or other local law enforcement personnel to conduct breath testing for alcohol if such testing would be more timely than the testing arranged by the marine employer or if there is any concern that testing would not otherwise be accomplished.

Drug and Alcohol Program Inspector—In 1995, the Coast Guard created the Drug and Alcohol Program Inspector (DAPI) program to educate U.S. commercial vessel owners and operators and pilot associations about the Coast Guard’s drug testing program requirements (preemployment, periodic, random, serious marine incident, and reasonable cause testing) and related recordkeeping and reporting.

The program is now staffed by 11 inspectors, 1 for each Coast Guard District and 1 at Coast Guard headquarters. Currently, all are commissioned officers. The DAPIs visit companies to review records and explain the regulations. Discrepancies noted are normally provided to the operator in writing and followed up as necessary to ensure that compliance is

carried out. One function of the DAPI is to assist small operators in joining together to participate in a consortium.²⁹ The DAPIs also inspect testing clinics where specimens are taken to ensure such activities meet Coast Guard criteria.

While the DAPIs are primarily concerned with informing U.S. operating companies about their drug testing responsibilities under the regulations, they are available to provide technical advice on the Coast Guard drug and alcohol testing regulations to other Coast Guard personnel, and to respond to any inquiries from the public, including foreign operators whose vessels call at U.S. ports.

Marine Safety Office, Portland, Maine—Additional guidance on drug and alcohol testing following a serious marine incident for Coast Guard investigating officers and field office personnel of the Portland, Maine, Inspection Zone/Captain of the Port Zone (COTP),³⁰ can be found in Commanding Officer Instruction 16722.2. (See appendix C.) The instruction summarizes postaccident testing requirements and provides necessary information for marine employers, such as contact information for postaccident testing firms and for Coast Guard stations in the COTP Portland area.

Coast Guard Enforcement of Intoxication Regulations—The Coast Guard’s “Boating While Intoxicated” (BWI) program was established in 1989 to curb operation of recreational vessels by intoxicated

²⁸Alcohol is eliminated quickly from the body at an average rate of about .015 to .018 percent by weight per hour. In an 8-hour period, as much as .12 to .14 percent can be eliminated from the bloodstream. Cocaine is eliminated very quickly from the blood (in as little as 2 hours), although metabolites of the drug remain in the body much longer. Many other drugs, including over-the-counter and prescription medications, are eliminated much more slowly; a number of drugs with central nervous system effects can be detected in the blood and urine for days or weeks following ingestion.

²⁹A consortium is usually formed by an independent firm that will contract with vessel owners or operators to conduct the testing required by Coast Guard regulations (46 CFR 16 and 46 CFR 4.06) and to perform other services required by the regulations, including acquiring the services of a certified laboratory to perform the testing and of a medical review officer to review test results. For random testing, a consortium combines the marine employees of all vessel owners or operators into a single group or pool.

³⁰Coastal area from the Massachusetts-New Hampshire border to the Canadian border (see 33 CFR 3.05-15).

individuals. In June 1991, the program became Coast Guard-wide. The BWI program's enforcement objectives are to:

- Ensure an intoxicated operator does not operate a vessel, in order to reduce the threat of harm to self and to others, and
- Educate the recreational boating public regarding existing BWI regulations and safe boating requirements.

Boarding officers involved in the program must undergo an 8-hour training course that includes instruction in calibrating and using the ALCO Sensor III breath-testing device and in administering a field sobriety test. Boarding officers must repeat this training every 2 years. Boarding officers are authorized to direct recreational boaters to submit to a field sobriety test or breath test or both when "reasonable suspicion" of operator intoxication exists or when an accident meeting the criteria of 46 U.S.C. 61 has occurred. Boarding officers work closely with State law enforcement agencies and personnel. If a State has an established intoxication level, boarding officers will test individuals for exceeding the State-established level rather than the .10 percent BAC standard contained in 33 CFR 95.

Board of Harbor Commissioners Testing Program—Following the *Julie N* accident, the Board of Harbor Commissioners for the Harbor of Portland established a drug and alcohol testing program for State-licensed bar pilots and the State-licensed docking masters serving Portland harbor. (See appendix D.) The drug testing portion of the program is modeled on Coast Guard regulations and includes preemployment, random, and postaccident testing for drugs. The drug testing programs, consistent with Coast Guard regulations, targets the five drugs listed in 49 CFR 40 and 46 CFR 16.350.

The Harbor

Commissioners' program allows testing for other drugs that may be causal factors in an accident. The alcohol testing program specifies that breath testing will be used to test for alcohol. In addition to postaccident testing for alcohol, the program also establishes a procedure for random testing for alcohol, which exceeds Coast Guard requirements. This program became effective in December 1996.

Tests and Research

On November 7, 1996, Safety Board investigators rode the Bermudan-flag tankship *Kiowa* on an inbound transit of the bridge under similar conditions to the transit of the *Julie N*. The *Kiowa*, owned by the Koch Oil Company of Wichita, Kansas, was nearly the same length, breadth, and tonnage as the *Julie N*. The pilot on board had approximately 30 years of experience as a docking master in Portland Harbor and stated that he had never damaged the bridge. The pilot coned the vessel along the starboard side of the channel at slow ahead from a position on the outside of the starboard bridge wing. He explained that this location enabled him to best estimate the distance between the starboard side of the vessel and the fender system. At about 1½ ships' lengths from the bridge, the pilot used port 5° of rudder to move the vessel slightly to the left, and at about one ship's length, he ordered the rudder to starboard 5° to place the vessel on a very slight angle of a few degrees toward the right fender system. The pilot had previously explained that approaching the fender system at a slight angle enabled the vessel to be cushioned by the water between the bow and bridge pier. Once in the bridge drawspan, there was approximately 2 feet of clearance between the starboard side of vessel and the fender system. As the vessel passed through the drawspan, the pilot used starboard 5° to 10° of rudder to compensate for the cushioning effect between the forward starboard side of the vessel and the bridge pier. When the vessel's bridge, which was located aft over the engine room, entered the bridge drawspan, the pilot ordered hard starboard rudder and full ahead to start the vessel turning right as soon as it exited the drawspan.

Other Information

Pilot's Description of His Actions—The pilot made the following statements regarding his actions:

I proceeded down past the State Pier at a dead slow, giving different rudder commands, picking out the ranges that I normally steer on. There was nothing wrong with that ship. She handled very well. Came down to Vessel Services. I made another correction. Came down to Deake's Wharf, which is approximately 1,000 feet from the bridge, and the ship is now committed. I bring the ship out towards the South Portland side and felt that I was a little too far to starboard, whether it was just the last of the flood current that was on my port quarter, and everything seemed to be fine. The ship was handling fine. I had asked for port rudder to get over a little more to the left. I asked for port 5, port 10, and at port 20 she started to swing, which I wanted her to. I wanted her to come onto the center line.... Not only did I have to concern myself about getting the hull through the bridge, but I was more thinking about the antennas because we had just had a problem here in December of last year with the *Overseas New Orleans*. The Portland side of the bridge came down, and there was—took the bridge wing off the *Overseas New Orleans*. So with that in mind, I picked the middle of the channel, and when I felt I was in the shape that I wanted to be, I wanted to come hard to starboard, half ahead. It came out hard to port. When the captain repeated hard to port, it took me I don't know how long, I said to myself, 'I don't want that.' Then I realized...calling for 'port, port, port, port,' I said 'hard to port' instead of 'hard to starboard.'

Human Error—In the past, accidents involving human error³¹ were determined to have

³¹“An error occurs when a planned action fails to achieve its desired consequences.” From Reason, James, and Mycielska, Klara, *Absent-Minded? The Psychology of Mental Lapses and Everyday Errors*, Prentice-Hall, Englewood Cliffs, New Jersey, p. 12.

been caused by human error, with their explanation simply left at that. Today, much more can be said about how humans make errors. To learn about this behavior, researchers have found it necessary to agree upon a definition of human error and to classify the types of human error that occur based upon analysis of factors related to human error in accidents. Once an error has been categorized, countermeasures based upon what is known about that type of error can be suggested to reduce the likelihood of its reoccurring.

One example of a type of human error is a “slip,” which is defined as an action not in accord with the actor's intention, the result of a good plan but a poor execution.³²

Reason's and Mycielska's research (1982)³³ addressing commonly experienced errors and mental lapses helps to clarify what is known about the nature of slips:

Slips occur during the largely automatic execution of some well-established or routine sequence of actions; that is, one in which the demands upon continuous attention for moment-to-moment control are relatively small.

Slips appear to be associated with distraction or preoccupation. Or more precisely, they seem likely to occur when the limited attentional resource³⁴ is

³²Senders, John, and Moray, Neville, *Human Error: Cause, Prediction, and Reduction*, Lawrence Erlbaum Associates, Publishers, Hillsdale, New Jersey, 1982, p. 27.

³³Reason and Mycielska, p. 21.

³⁴According to Christopher Wickens' book on human performance, “Emphasis on the quantitative properties of attention owes much to an important paper published by [Neville] Moray in 1967. Moray proposed that attention is like the limited processing capacity of a general-purpose computer. This capacity could be allocated in graded amounts to various activities depending on their difficulty or demand for that capacity. The capacity concept emphasizes both the flexible and the sharable nature of attention or processing resources. Tasks demand more of these hypothetical resources (attention or mental effort) as they become more difficult or their desired level of performance increases. With fewer resources available for other tasks, performance will deteriorate.” For more information, see Wickens, Christopher D., *Engineering*

allocated to some external or internal matter that is unrelated to the ongoing activity.

Absent-mindedness appears to flourish in relatively familiar environments where there are few departures from the expected, and hence requires little in the way of outward vigilance.

Reason's and Mycielska's conclusions about human error yield general guidance for trying to understand the nature of the pilot's error, although it is difficult to correlate their conclusions about slips perfectly with the circumstances and events of the *Julie N* accident.

Port Safety—In 1990, the COTP established a Port Safety Forum consisting of pilots, vessel operators, shipping agents, terminal operators, environmentalists, oil spill response companies, and others having an interest in port safety, to consider how to avoid oil spills and how to respond in the event of a spill. The MDOT, which owns and is responsible for the Portland bridges, has not been a member of the Forum. The first meeting of the Forum was on June 18, 1990. The chairman was the COTP and the vice chairman was from the Office of Spill Response in the Maine Department of Environmental Protection. Soon the Forum started to explore other safety issues besides oil spill prevention and response. In some cases, advisory guidance, known as port safety protocols, were prepared once consensus had been achieved. Safety issues addressed by the Forum have included visibility requirements for vessel movements in the harbor and through the bridge, vessel moorings, under-keel clearance, tug and barge operations, abandoned vessel derelicts, maintenance dredging, heavy weather checklists for terminals, and pilot fatigue. During construction of the new bridge, Forum members met weekly with the

contractors building the bridge to coordinate vessel transits with critical construction phases that limited or prevented vessel movements to ensure that petroleum stocks were sufficient to last through the closure periods.

Million Dollar Bridge's Navigational Opening Dimensions—The minimum horizontal clearance between the fender faces of piers 18 (South Portland side) and 19 (north, or Portland, side) was 98.24 feet (measured by MDOT after the accident). In *Bridges Over the Navigable Waters of the United States*, a Coast Guard publication, the horizontal clearance is listed as 100 feet.

MDOT correspondence, dated June 6, 1985, lists the horizontal clearance as 96 feet +/-; a diagram prepared by the MDOT, dated November 19, 1985, indicates a horizontal clearance of 99.6 feet; and an internal MDOT memo, dated January 1991, suggests that 96 feet be used because of the many irregularities in the fender system. The pilot of the *Julie N* and a bridge tender on duty at the time of the accident stated that the horizontal clearance was 96 feet.

Because the bascule leafs in the fully open position overhang the channel, vertical clearance was limited for approximately 5 feet horizontally from each fender system. Thus, unlimited vertical clearance was confined to the central portion of the bridge span. According to a 1985 MDOT survey, there was a 5-foot overhang at pier 19 and a 3.9-foot overhang at pier 18, making unlimited vertical clearance available throughout approximately 90 feet of the central portion of the drawspan. This number differed depending on the reference. The *Julie N* pilot stated that unlimited vertical clearance was available for 85 feet of the channel width, which was also the width indicated on a August 11, 1985, MDOT sketch and endorsed in a January 1991 memo.

ANALYSIS

General

The pilot and members of the bridge watch were found by the Safety Board to be trained, experienced, and qualified to operate the *Julie N*.

The pilot of the *Julie N* was well-rested and the crew of the ship responded correctly to his commands; therefore, the Safety Board did not find fatigue or pilot-crew interaction to be factors in this accident. Also, all equipment on the vessel was operating satisfactorily, and the pilot testified to the good handling characteristics of the vessel. At the time of the accident, visibility was good, winds were light, and there was only a slight following current, which the pilot preferred.

Results of alcohol breath tests for the crew of the *Julie N* and results of drug testing performed on urine samples provided by the pilot and the crew were negative. Because the pilot was not tested, the Safety Board concludes that it cannot conclusively eliminate alcohol use as a causal factor in this accident. However, the statements of personnel closely associated with the pilot support that alcohol was not a factor affecting the pilot's performance. Accordingly, the Safety Board concludes that the human factors of fatigue, training, drug use, and pilot-crew interaction were not causal or contributing factors in the accident.

The Accident

Maneuver by the Pilot—The pilot stated that because of his concern that the bascule leaf might make contact with the vessel's starboard antenna, he had elected to maneuver the vessel to pass through the center of the drawspan rather than pass very close to the north fender system, his normal method of transiting the bridge. The pilot had issued three consecutive orders for port rudder to swing the vessel to the left. The pilot would most likely have altered the vessel's

heading to the left even if he had intended to pass close to the north fender system, since it was customary to swing the bow first away and then back toward the north fender system and take advantage of a cushioning effect of the displacement of the water between the north pier and the forward, starboard side of the vessel. The pilot's intended maneuver would have resulted in the vessel being only about 5 or 6 feet farther to the left than usual.

The pilot stated that he was satisfied that the approach to the bridge was progressing well and that all he had to do was to order hard starboard rudder to align the vessel on the centerline of the drawspan. The pilot characterized the effect of the inadvertent hard port rudder as causing his vessel, in effect, to overshoot the range. Overshooting a range usually means to turn too late and to proceed across a line of bearing through two known landmarks rather than to steady the vessel on the line of bearing. In this case, the center axis of the drawspan was the line of bearing on which the pilot desired to steady his vessel, an axis that the pilot had to visualize because it was not defined by any established range of objects.

The maneuver elected for piloting the *Julie N* through the bridge was a departure, albeit a small one, from the pilot's usual well-tested practice and involved some peculiarities not associated with his usual method. First, the ranges that the pilot viewed from the extreme end of the starboard bridge wing would appear differently as the vessel moved away from the north fender system. Also, the vessel was heading toward the left for a longer period of time, and the vessel's heading was continually swinging to the left. These peculiarities made the maneuver more complicated than usual and consequently required more judgment and evaluation by the pilot. Finally, successful execution of the maneuver heavily depended upon the application of a substantial amount of starboard rudder at a

fairly precise point to stop the left swing and align the vessel on the centerline axis of the drawspan for passage through the bridge.

The most critical factor in this maneuver was timing, probably a matter of 10 to 15 seconds, because the heading was swinging left and the bow was pointing toward the south pier; hence, a collision with the south pier would occur unless sufficient right rudder was applied in a timely manner. The combined effect of the left rudder, probably 20 to 30 seconds longer than desired, and the increase in propeller speed caused the bow to swing so far to the left that it was not possible to avoid a collision. Thus, the delay in applying right rudder because of the inadvertent order for hard port rudder allowed the collision to occur.

Human Performance—The pilot of the *Julie N* may have committed a mental error, or “slip,” when he unintentionally ordered “hard port” instead of “hard starboard” during the final lineup for passage through the bridge. A slip is an action not in accord with the actor’s intention, the result of a good plan but poor execution.³⁵ Reason and Mycielska offer three principles concerning slip that appear relevant to the pilot’s error. The first principle states:

Slips occur during the largely automatic execution of some well-established or routine sequence of actions; that is, one in which the demands upon continuous attention for moment-to-moment control are relatively small.

The pilot had made this passage hundreds of times during his 3-year tenure in Portland, thus qualifying the passage as routine. During each passage, the same landmarks were used for lineup and as cues for the next step in maneuvering, and the general plan of passage was always the same.

Slips ordinarily occur during routine actions that demand little of attentional resources. However, contrary to the first principle, this

particular piloting situation demanded a great deal of continuous attention because every action was critical. The second principle states:

Slips appear to be associated with distraction or preoccupation. Or more precisely, they seem likely to occur when the limited attentional resource³⁶ is allocated to some external or internal matter that is unrelated to the ongoing activity.

In this accident, the pilot appeared to be preoccupied with the height of the ship’s antennas located aft of the ship’s bridge. This concern was expressed in the pilot’s testimony in which the *Overseas New Orleans* incident was recalled.

Rarely in a ship’s operational environment are tasks one-dimensional. Ship conning requires that the pilot pay attention to several tasks at once. Tasks associated with maneuvering the ship—such as control of speed and heading, awareness of distances to objects, and radio calls—compete for a pilot’s attention. In this accident, navigating the ship in an unforgiving environment that required very precise ship movements made every element of the task that much more critical. The close tolerances for maneuvering made the pilot’s performance more sensitive to influencing factors such as fatigue or distraction, consequently making the job more susceptible to error. The third and final principle states:

Absent-mindedness appears to flourish in relatively familiar environments where there are few departures from the expected, and hence requires little in the way of outward vigilance.

Although “absent-minded” may be too strong a term to use in this case, it is unlikely that anyone would believe that the pilot was unfamiliar with the operating environment in and around the Portland harbor; thus, he should have been neither overly anxious nor overly vigilant.

³⁵Senders and Moray, p. 27.

³⁶Wickens, p. 366.

Systems and, similarly, jobs requiring human attention, must take into consideration the limitations of human abilities, as well as equipment, and be designed so that if human errors occur, they may be recognized quickly and recovered from without major catastrophes. In this case, the risk of hitting the bridge needed to be reduced by altering the environment. This risk reduction has been accomplished since the accident by replacing the old, narrow bridge with a new bridge having an opening roughly twice that of the beam of any vessel that has previously visited Portland. The extra room to maneuver greatly enhances a pilot's ability to recover the ship from an error such as the one the *Julie N* pilot admitted. The bridge's history of vessel contact shows that the error-causing potential of the environment had to be addressed.

In this case, countermeasures to reduce the likelihood and mitigate the consequences of a navigation error may have included improved bridge fender systems, permanent and agreed-upon navigation aids in the channel, or the construction of a much wider bridge and dredging of a deeper channel for improved maneuvering.

Generally, human errors such as slips, mistakes, and word-substitution occur frequently and ordinarily have only minor consequences. However, making an error during the transit of the Million Dollar Bridge resulted in a serious consequence, a collision with the bridge causing serious damage. The transit environment needed to be improved and was by virtue of installing the new bridge and fender system.

The Safety Board concludes that the pilot of the *Julie N* misspoke when he unintentionally ordered "hard port" instead of "hard starboard" during the final lineup for passage through the bridge.

Bridge Resource Management—Bridge Resource Management (BRM),³⁷ in the classic

or broad sense, had no role in the accident. However, team coordination, a component of BRM was very important. Due to the extremely short duration of the transit through the bridge, with time and space only for very minute changes in course, the coordination of bridge personnel and equipment was essential. Because lineup for passage through the Million Dollar bridge had to be precise, only the pilot's commands could be adhered to; thus, the master's role in the context of BRM was limited to maintaining a well-coordinated bridge crew so that the pilot's commands were carried out promptly and correctly. Even if during the transit the master believed that the ship was not making passage according to plan, the tight spaces for maneuvering and the short duration of the transit would have prevented him from intervening.

Transiting the Million Dollar Bridge

Evidence that navigating through the Million Dollar Bridge was a demanding task is apparent upon examination of the 20-year history of bridge contacts made by various ships and barges under the control of various ships' captains and pilots. According to the October 1986 MDOT *Portland Bridge Fender Damage Summary of Bridge Operator Reports* to the Coast Guard MSO in Portland, Maine, 46 cases of bridge damage caused by vessels occurred between January 1976 and May 1986. Two more cases were recorded in 1987 and one in 1988. From 1989 through 1996, 22 collisions with the bridge or fender system were recorded. The bridge tenders logged only those contacts in which

Reports—*Collision of the Netherlands Antilles Passenger Ship Noordam and the Maltese Bulk Carrier Mount Ymitos in the Gulf of Mexico, November 6, 1993* (NTSB/MAR-95/01); *Grounding of the United Kingdom Passenger Vessel RMS Queen Elizabeth 2 Near Cuttyhunk Island, Vineyard Sound, Massachusetts, August 7, 1992* (NTSB/MAR-93/01); *Grounding of the U.S. Tankship Star Connecticut, Pacific Ocean, near Barbers Point, Hawaii, November 6, 1990* (NTSB/MAR-92/01); *Collision Between the Greek Tankship Shinoussa and the U.S. Towboat Chandy N and Tow Near Red Fish Island, Galveston Bay, Texas, July 28, 1990* (NTSB/MAR-91/03); *Ramming of the Spanish Bulk Carrier Urduliz by the USS Dwight D. Eisenhower (CVN69), Hampton Roads, Virginia, August 29, 1988* (NTSB/MAR-90/01); and *Grounding of the Greek Tankship World Prodigy Off the Coast of Rhode Island, June 23, 1989* (NTSB/MAR-92/01).

³⁷For more information on BRM, see Marine Accident

damage to the bridge or fender system occurred. Frequent contact was a strong indication that the passage through the bridge was too narrow for modern shipping traffic.

The east corner of the south bridge pier, which the vessel struck to produce the 33-foot-long tear in the underwater hull, could have been better shielded by fendering, as it was following the accident. However, the corner had never been a problem before because large inbound and outbound vessels normally maneuver so as to pass very close to the north fender system, a procedure that kept large vessels away from the south pier. Hence, the potential risk to tank vessels posed by the corner was not recognized. However, large vessels proceeding outbound have occasionally made contact with the fender system around the west corner of the north bascule pier. Although occasional damage has occurred to the fender system, there is no record of any vessel being holed.

The bridge's fender system was not designed to protect the bridge from the types of vessels, which have steadily increased in size, that routinely navigate its draw. In addition, the fender system was insufficient to prevent damage to bridge elements from severe impacts. The Safety Board concludes that the bridge's fender system did not provide adequate protection for the bridge or for vessels navigating through its draw. The Safety Board believes that the Federal Highway Administration and the American Association of State Highway and Transportation Officials (AASHTO) should act together to inform State highway departments of the circumstances of this accident and recommend that the States evaluate the adequacy of fendering systems at bridge piers where the systems were not designed for the type and size of vessel currently using the waterway and may not be adequate to protect the bridge and take corrective action as necessary.

Improving the chances of successfully navigating the bridge would require altering the procedures, vessels, or environment so that the job is made easier. The Casco Bay Bridge,

completed in 1997, accomplished this by doubling the width of the opening for vessel traffic from 98 to 196 feet, which should reduce the number of bridge contacts by relaxing tolerances for passage and allowing pilots to recover from minor errors during lineup. This added space will give pilots a considerably larger margin for correcting an improper lineup.

Also, it is possible to design systems that are more error-tolerant. For example, fender systems can be designed to offer protection to the vessel as well as the bridge in case of an error in lineup or in conning the vessel. The much improved fender system at the new bridge is far more capable of buffering contact than the former timber fender system. The Safety Board concludes that the increased horizontal clearance and the improved fender system at the new bridge have greatly improved safety for the class of vessels that normally would have transited the old bridge and should reduce the likelihood of the bridge being struck by similar class vessels.

Assuming that those piloting the vessels through the bridge are not going to be able to align ships perfectly every time, plenty of clearance should be allowed (as the new bridge will provide for the class of vessels that transited the old bridge). Care in designing systems and processes should, when possible, also explore avenues or means for readily observing when an error is being made in time to make a correction. For example, the establishment of permanent ranges would provide an easily observable means for checking alignment for passage through the drawspan and would make it easier to detect errors in alignment and correct them. Also, a fixed set of range markers would enable the vessel's master to monitor the vessel's progress as it approaches and passes through the drawspan under the conn of the pilot. The ranges used for transiting the old bridge may be adequate for pilots experienced in conning the type and size of vessels that have traditionally called at Portland, particularly through the new wider bridge with its wider opening. However, impermanent landmarks used for ranges such as a tree or a catwalk at one of the terminals would

not be something that a master of a vessel calling at Portland could use or even know about. Further, a well-established range might prove to be very valuable to experienced pilots should wider vessels or vessels with greater freeboard, such as container vessels, start to call at Portland. When used, such ranges would give immediate feedback to pilots and masters about their precise position for lineup. In addition to more immediate feedback, these ranges should be much more accurate than the naturally occurring landmarks currently used by pilots. The Safety Board concludes that establishing a range of navigation marks and lights would contribute to safe navigation in the area where the accident occurred. The Safety Board believes that the Coast Guard should evaluate the benefit of a permanent set of ranges for vessel pilots and masters to use for navigating through the Casco Bay Bridge and establish such ranges if justified.

Port Safety

Since any navigational improvement, such as a wider bridge opening, can result in increased vessel traffic, often by larger and different types of vessels, new safety problems are likely to be encountered in the accident area. As the character of marine traffic changes over time, the margin of safety initially attributable to the greater clearance of the new bridge may decrease as increasingly larger vessels transit the bridge. Larger tankships are already operating and could start to call in Portland. Also, land area is available upstream of the bridge; therefore, port development (such as container ship operations) above the bridge is possible. Container ships with extensive sail areas may introduce problems in piloting and ship control that differ significantly from any associated with piloting tankships of the size that have historically called at Portland. Thus, the introduction of the different classes of vessels that can now transit the new bridge may require changes in the piloting methods used to conn some vessels through the bridge. Also, new operational guidelines may be needed to meet changes in the character of navigation.

The Port Safety Forum, by bringing together those having various interests in the port, appears to offer an appropriate means to assess the needs of navigation safety on a continuing basis and to help develop operational guidance for vessels calling at various ports in the COTP Zone. In Portland, any future operational guidance for vessels would likely involve guidance on how and when to transit the new bridge. To ensure that the Port Safety Forum is regularly apprised of any problems associated with navigation through the bridge or with the bridge itself, including observations by the bridge tenders, the Safety Board concludes that participation in the Port Safety Forum by a representative of the MDOT who is familiar with bridge design or bridge maintenance would apprise the Port Safety Forum of problems involving the Casco Bay Bridge. Therefore, the Safety Board believes that the MDOT should nominate a representative familiar with bridge design or bridge maintenance to participate on the Portland Port Safety Forum. The Safety Board also concludes that in order to be recognized and used by vessel masters and pilots, operational guidance developed by the COPT or the Port Safety Forum should be published in a readily available publication such as the *U.S. Coast Pilot*. Therefore, the Safety Board believes the Coast Guard should ensure that operational guidance for vessels navigating Portland Harbor developed by the Port Safety Forum or by the COPT is published in a source readily available to vessel masters and pilots, such as the *U.S. Coast Pilot*.

Postaccident Testing

Testing of the Julie N's Pilot and Crew—

The failure of the pilot to be tested for alcohol demonstrates that there continues to be a lack of understanding of Coast Guard regulations, particularly by marine employers. The pilot's understanding that only urine was required for postaccident testing was not unique; the belief was also shared by the principal owner of the tugboat company with which the pilot was associated. Further, the fact that urine is usually collected but that breath or blood is frequently not tested suggests there may be a prevalent

belief that urine is the sole specimen required for postaccident testing. Also, the Safety Board has observed in its marine investigations that where any attempt to conduct postaccident testing for alcohol and other drugs is made, it is usual for only urine specimens to be collected, and that breath testing is rarely accomplished. If breath testing is done, it nearly always is conducted too late to achieve meaningful results.

It is possible that the requirement for U.S. companies and vessels to conduct urine collection for the required preemployment, periodic, and random drug testing may inadvertently cause marine employers to believe that urine is the sole specimen needed. Because there are no requirements for random alcohol testing on U.S. and most foreign vessels, mariners and shipping companies are unlikely to be familiar with alcohol testing and may never experience breath or blood testing for alcohol unless involved in a marine accident. In this accident, the secretary at the pilot's tugboat company was accustomed to making appointments for random testing, the type of testing normally done by the testing clinic.

The pilot knew that the secretary for the tugboat company was aware of the accident, and he stated that he believed the secretary understood that he was to be tested because of his involvement in the accident. Hence, he believed that the secretary knew the purpose of the testing and had communicated the proper instructions to the testing clinic. The pilot stated that when he was asked to sign a form provided by the receptionist (which had the box for random testing checked) certifying that the sample was his, he merely signed without reading or questioning it as he considered that signing was simply a required step in the process. Again, this appears to be a likely action by someone who had not adequately informed himself about postaccident testing requirements in the Coast Guard regulations, an obligation of a licensed officer. This was not an isolated example of unfamiliarity with postaccident testing requirements. The continuing, lack of understanding of these regulations over their nearly 10 years of existence suggests that past

efforts by the Coast Guard to educate the marine industry about postaccident testing have not achieved the desired results. The Safety Board concludes that the pilot was not tested for alcohol because of the failure of the Coast Guard to adequately address the industry-wide problem of postaccident alcohol and drug testing.

The operator of the *Julie N* had a contract with a firm specializing in toxicology testing. The *Julie N* operator informed the contractor a few minutes after the accident and directed the contractor to test all personnel on board the *Julie N*. About 1330, some 2½ hours after the accident, which included a few minutes wait on the pier, two technicians were escorted on board to start the testing. The technicians elected to collect urine specimens first and conduct breath testing later. Thus, breath testing did not commence until about 1620, more than 5 hours after the accident, and was not completed until nearly 1800. Moreover, the master, the crewmember most directly involved in the accident, was among the last to be tested. In this case, the vessel operator had made a proper effort to be prepared by having a testing firm under contract and by notifying that firm in a timely manner to begin the testing. However, the decision by the testing technicians to delay breath testing until the urine specimens were collected greatly diminished the possibility of detecting alcohol. Nothing in the regulations stated or indicated that testing for alcohol should be conducted first and urine specimen collection should be conducted afterwards; hence, the testing technicians did not violate any regulations. This demonstrates that despite preparations by the vessel operator and timely orders to the testing contractor to conduct the testing, it is possible to conduct less than adequate testing and not be in violation of the regulations. Consequently, the Safety Board concludes that Coast Guard regulations for postaccident testing do not communicate clearly that alcohol testing is more time-sensitive and should be conducted as early as possible and before collecting urine specimens. The Safety Board believes that the Coast Guard should incorporate language into the postaccident testing

regulations that clearly states alcohol testing is more time-sensitive and therefore should be conducted ahead of drug testing.

In this case, an accident investigator in the Coast Guard MSO called the tugboat company and the operator of the *Julie N* to remind both companies that post-serious-marine-incident testing was needed. Both companies assured the Coast Guard caller that testing was already being arranged. The Coast Guard caller did not explain the requirements for such testing. The positive responses from the two companies that testing had already been arranged would not have suggested that the Coast Guard representative needed to provide further explanation. However, a brief explanation to the pilot's tugboat company that post-serious-marine-incident testing involved the testing of breath or blood as well as urine might have been sufficient to alert the testing clinic that the testing was for postaccident purposes.

Coast Guard Role in Postaccident Testing—Not since the *Exxon Valdez* accident in 1989, in which alcohol use was found to be a causal factor, has the Safety Board found alcohol or drug use to be a casual factor in any marine accident it has investigated. However, alcohol or other drugs could not be ruled out in numerous accidents investigated by the Safety Board, as indicated in table 1, because the postaccident testing was either not done or was delayed so long as to make the testing meaningless. An effective postaccident testing program is needed so that any use of alcohol or other drugs by any person in a safety-sensitive position can either be detected or scientifically eliminated as a casual factor. An effective program also may serve as a deterrent to the use of alcohol or dangerous drugs by personnel performing safety-sensitive duties, such as watchstanding. The *Julie N* and five subsequent accidents (see table 1) illustrate that postaccident testing is not yet a reliable process for examining the factors of probable cause or for accurately assessing influences on safety attributable to alcohol or drugs.

The regulations at 33 CFR 95 and 46 CFR 4.06 both place the responsibility for testing on the marine employer, but neither set of regulations contain any enforcement provisions that could be applied to the marine employer. Lacking enforcement, the Coast Guard had to rely upon education and persuasion to get marine employers to recognize and carry out their responsibilities under the regulations for postaccident testing. The Coast Guard's efforts to acquire compliance voluntarily have produced positive results, as evidenced by the fact that the MOC, the operator of the *Julie N*, had a standing contract for drug and alcohol testing and also had breath-testing devices and urine collection kits on its foreign vessels and had trained personnel on its vessels to use the equipment. Even in accidents involving foreign vessels in international waters near the United States, such as the *Noordam*, *Mount Ymitos*, and *Royal Majesty* accidents,³⁸ vessel crews voluntarily complied with Coast Guard requests that postaccident testing be conducted.

However, persuasion, which may be adequate in the case of conscientious marine employers, has its limitations. It appears that one of the missing factors in postaccident testing has been a lack of enforcement capability. The recently acquired authority in 46 U.S.C. 2115 to impose civil penalties on marine employers, as well as others, for failing to comply with the postaccident testing regulations is a valuable new tool for the Coast Guard. The fact that the Coast Guard now has this authority should be conveyed to all Coast Guard personnel involved in enforcing the postaccident testing regulations, to include providing guidance on how this authority should be used. The Coast Guard can convey information on this new authority in its ongoing educational efforts designed to inform marine

³⁸For more information, see Marine Accident Reports—*Collision of the Netherlands Antilles Passenger Ship Noordam and the Maltese Bulk Carrier Mount Ymitos in the Gulf of Mexico, November 6, 1993* (NTSB/MAR-95/01) and *Grounding of the Panamanian Passenger Ship Royal Majesty on Rose and Crown Shoal Near Nantucket, Massachusetts, June 10, 1995* (NTSB/MAR-97/01).

employers about their responsibilities for postaccident testing. Knowledge that enforcement authority now exists may persuade more marine employers to place a higher priority on postaccident testing and to make preparations to conduct testing, such as acquiring contracts with independent testing firms or consortia, which could improve postaccident testing. (For additional information on civil penalties applicable to marine postaccident testing regulations and postaccident testing regulations in other transportation modes, see appendix E.)

The Safety Board concludes that because the Coast Guard now has the needed authority to enforce its postaccident testing regulations, it should make enforcing these regulations a high priority and should develop a Service-wide program with procedures and guidance to ensure that postaccident testing is an effective, reliable process for accident investigation and enforcement. The Safety Board believes that the Coast Guard should institute a task force that will evaluate deficiencies in past postaccident alcohol and drug testing performance and use "lessons learned" to implement a program that ensures testing is performed in a manner that will produce meaningful results.

In past accidents, it has been necessary for the Coast Guard to explain in detail and persuasively that postaccident testing is the responsibility of the marine employer. In addition, the Coast Guard has often furnished the marine employer with the addresses of clinics that can conduct the testing, a procedure that probably has resulted in some improvement in drug testing but has not resulted in timely testing for alcohol. The Safety Board recognizes that testing for alcohol is solely a postaccident requirement and that different individuals are normally involved in each accident; thus, it appears likely that an employer whose vessel experiences its first accident may be uninformed about testing requirements for such an event. This means that testing may be delayed until the employer is informed by the Coast Guard. This procedure may not enable an employer that is unprepared or unfamiliar with postaccident

testing requirements to arrange for timely alcohol testing. Even a well-informed vessel operator may have other responsibilities following an accident that may require a higher priority than postaccident testing and thus result in delayed testing for alcohol. Accordingly, it appears that the present procedure for testing will continue to result in unacceptable delays in alcohol testing, unless the Coast Guard becomes more actively involved in ensuring that marine employers make reasonable efforts to conduct timely testing.

The Coast Guard routinely performs breath testing for alcohol of operators of recreational vessels when such operators are involved in incidents or appear to be operating improperly. It would appear feasible for Coast Guard personnel currently performing breath testing of recreational vessel operators to conduct breath testing for alcohol of the individuals on commercial vessels that are directly involved in serious marine incidents. Coast Guard personnel who are assigned to perform law enforcement or port safety functions normally would be able to be on scene to conduct breath testing for alcohol much sooner than the owner/operator or the owner/operator's testing contractor. In the *Julie N* accident, a Coast Guard representative was able to board the vessel about 1230; hence, it would have been possible to initiate breath testing of the few individuals directly involved in the accident at that time, less than 2 hours after the accident.

Requiring trained Coast Guard personnel to perform testing of individuals on commercial vessels that are involved in serious marine incidents would not appear to represent a significant increase in workload, and such a procedure would most likely result in timely testing for alcohol. Also, ALDIST 179/94, issued in 1994, allowed for breath testing for alcohol to be conducted by appropriately trained Coast Guard personnel if such testing would be more timely than that arranged by the marine employer.

The primary responsibility for postaccident testing for alcohol and other drugs in the marine

industry should remain with the employer, as in all other transportation modes. It is the marine employer's responsibility to crew the vessel with well-qualified personnel and to ensure proper performance and conduct by crewmembers on board the vessel, to include ensuring that crewmembers are not impaired by alcohol or other drugs. An extension of the marine employer's responsibilities in this area occurs when an accident takes place in a remote location well away from Coast Guard units. In such cases, postaccident testing must be performed by the vessel's crew or by technicians provided by the owner. However, the Safety Board concludes that although the primary responsibility for postaccident testing for alcohol and other drugs should remain with the marine employer, the timeliness of postaccident alcohol testing on commercial vessels could be greatly improved by having Coast Guard personnel conduct breath testing of crewmembers involved in an accident. Therefore, the Safety Board believes that the Coast Guard should implement a procedure for Coast Guard personnel to conduct breath testing of mariners who are involved in a serious marine incident, as defined by 46 CFR 4.03-2, when testing by the marine employer will not or can not take place within 2 hours of the accident.

In the *Julie N* accident, the pilot left the vessel before the first Coast Guard representative arrived. The vessel's agent was aware of the pilot's location. Also, the pilot's attorney stated that he had informed the Coast Guard officer on scene that the pilot was standing by and that the pilot had an appointment for postaccident testing. Later, he reminded the officer when it was time for the pilot to depart the area for the scheduled testing and that the officer had concurred. Thus, it appears that the pilot had good reason to believe that he was free to leave the area for testing. Also, the pilot was readily available for interview the next day and participated in the Safety Board's deposition proceedings.

However, in some other accidents, marine pilots and crewmembers have not been available. Unless the crew is placed under subpoena, nothing prevents the crew of a foreign vessel from being transported out of the

country. Accordingly, it should be required, when feasible, that the entire crew, including the marine pilot, remain with the vessel for breath testing by the Coast Guard or until given permission by the Coast Guard to leave the vessel. The Safety Board concludes that requiring the crewmembers and pilot involved in a marine accident to remain with the vessel, when it is safe to do so, for breath testing by the Coast Guard would help to ensure that these individuals are tested for alcohol in a timely manner. Therefore, the Safety Board believes that the Coast Guard should establish a requirement in the postaccident testing regulations that the crew and pilot of a vessel involved in a serious marine incident will remain with the vessel, when it is safe to do, for breath testing for alcohol, until permitted by the Coast Guard to leave the vessel.

The regulations at 46 CFR 4.06 require U.S. oceangoing ships to carry breath-testing devices and to have urine specimen collection and shipping kits readily available.³⁹ The Safety Board considers the intent of this requirement to be a reasonable effort to enable postaccident testing to be carried out expeditiously. Unfortunately, the option allowing vessels to forgo carrying the urine collection and shipping kits if they can be obtained in 24 hours can defeat the intent of the regulation and lead to unacceptable delays in testing. Eliminating the 24-hour option and requiring the equipment to be on board would eliminate the need to acquire this equipment on a time-consuming case-by-case basis and then transport the equipment to the vessel. Having the equipment on board would also make it possible for the vessel's officers to conduct testing when Coast Guard or shoreside technicians cannot reach the vessel in a timely manner. Because most oceangoing ships entering

³⁹The *Julie N* had such equipment on board, but MOC, the operator of the vessel, elected to have an independent contractor perform the testing. MOC only allows crewmembers to perform postaccident testing when an independent testing agency is not readily available.

U.S. ports are foreign vessels,⁴⁰ it appears likely that marine casualties will probably involve such vessels as frequently as U.S. vessels. This is borne out by the data in table 1, which show that over half of these accidents on U.S. navigable waters investigated by the Safety Board involved foreign vessels. Accordingly, the Safety Board concludes that foreign, as well as U.S. vessels, should be required to carry breath-testing devices and urine specimen collection and shipping kits on board so that postaccident testing can be carried out in a timely manner. Therefore, the Safety Board believes that the Coast Guard should establish a requirement in the postaccident testing regulations that foreign commercial vessels on the navigable waters of the United States, as well as U.S. oceangoing vessels, must have on board breath-testing devices capable of determining the presence of alcohol in a person's system and urine specimen collection and shipping kits.

Having the breath-testing and urine collection and shipping kits on board is important for timely testing, but knowledge about how to use the devices is also crucial. Accordingly, the Safety Board concludes that a vessel plan for conducting postaccident testing would ensure that the marine employer and vessel personnel would be aware of the requirements for postaccident testing, trained to use the testing and collection equipment on board, and informed about where to send urine specimens for analysis. Therefore, the Safety Board believes that the Coast Guard should establish a requirement in the postaccident testing regulations that foreign vessels on the navigable waters of the United States and oceangoing U.S. vessels have a postaccident testing plan that:

- Identifies the crewmembers who will conduct the testing,

- Sets forth the qualifications for crewmembers assigned to conduct the testing,
- Establishes procedures for the care of specimens, including chain of custody,
- Lists the records to be prepared, and
- Provides identification and addresses for testing laboratories that can process urine specimens or testing firms that may assist or conduct postaccident testing for vessels in U.S. ports.

Coast Guard Regulations for Postaccident Testing

Lack of Uniformity in Regulations—The lack of uniformity between 33 CFR 95 (*Operating a Vessel While Intoxicated*) and 46 CFR 4.06 (*Mandatory Chemical Testing Following Serious Marine Incidents Involving Vessels in Commercial Service*) regarding when to test and what specimens to collect for what purpose probably contributed to the misunderstanding expressed by the pilot of the *Julie N* and the principal owner of the tugboat company that only urine was needed for postaccident testing.

A review of the postaccident testing regulations revealed that they are difficult to comprehend due in part to being located in two different places in the CFR (33 CFR 95 and 46 CFR 4.06) and because the regulations state different things. In fact, it appears that no relationship exists between the two bodies of regulations. For example, a statement in 33 CFR 95 clearly states that it applies to foreign vessels on U.S. waters, as well as to U.S. vessels anywhere. The rules at 46 CFR 4.06 do not clearly state that they are applicable to foreign vessels. Further, the location of the rules in Title 46, normally considered as being intended for U.S. vessels; the references to 46 CFR 16, the

⁴⁰According to data collected by the U.S. Customs Service and collated by the Bureau of the Census, there were 85,330 port calls (arrival of vessels) in U.S. ports in 1996 by foreign vessels and 10,170 by U.S. vessels. Some port calls were made by the same vessel, as it is common for a vessel to visit more than one U.S. port during a voyage to the United States.

drug testing program for U.S. vessels; the requirements for breath-testing devices and collection kits for U.S. vessels; and the reference to administrative procedures against the license or certification of (U.S.) mariners all convey that 46 CFR 4.06 was written to apply solely to U.S. vessels.

Differing requirements and definitions were also noted that could be the root cause for much of the confusion about postaccident testing. While 33 CFR 95 clearly establishes the legal levels of intoxication for commercial vessel operators, 46 CFR 4.06 does not provide standards for alcohol intoxication. For testing purposes, 33 CFR 95 lists several specimens including breath, blood, urine, saliva, or other bodily fluids. However, the regulations at 46 CFR 4.06 add some clarity and narrow the choices by requiring urine and breath or blood specimens.

Neither of the sets of regulations clearly identifies the purpose—drugs or alcohol—for which the specimens will be tested. It is possible to deduce that breath will be used for alcohol testing because of a requirement for U.S. vessels to carry breath-testing devices capable of detecting alcohol in a person’s system. Similarly, it can be deduced that urine will be used for detecting drugs because of a reference to the “urinalysis report indicating the presence of a dangerous drug or drug metabolite” a few sections later in the regulations. A reference to alcohol detected through analysis of blood suggests that blood is used for alcohol testing. The Safety Board continues to find that mariners and marine employers are not accurately informed about what to do for testing following an accident. This situation could be improved readily by inserting a minimal amount of text to explain that:

- Breath or blood is required for alcohol testing, and
- Urine is required solely for determining the use of dangerous drugs.

A simple, clear explanation of the purposes of the two categories of specimens would help eliminate confusion and misconceptions about postaccident testing and would assist the Coast Guard in its continuing effort to inform the public about testing requirements. Accordingly, the Safety Board concludes that including text in the regulations to clarify that breath or blood specimens are for alcohol testing and that urine specimens are for determining the presence of dangerous drugs would help to inform the marine industry that both urine and breath or blood specimens are required for postaccident testing. Therefore, the Safety Board believes that the Coast Guard should incorporate language into the postaccident testing regulations that clearly states that breath or blood specimens are for determining the presence of alcohol and that urine specimens are used to determine the presence of dangerous drugs.

The two sets of rules also have different thresholds for initiating postaccident testing. In 33 CFR 95, testing is required when an individual is involved in a marine accident as defined somewhat generally at 46 U.S.C. 6101, using broad language such as “material loss of property” and “material damage affecting seaworthiness or efficiency,” whereas in 46 CFR 4.06, the threshold is a “serious marine incident,” as defined very specifically at 46 CFR 4.03-2. The definition of “serious marine incident,” which includes discharges of oil of 10,000 gallons or more, appears to be well-crafted to provide a reasonable threshold for accidents involving commercial vessels that are serious enough to warrant testing and to exclude lesser accidents where the consequences would not be severe. The Safety Board concludes that adopting the “serious marine incident” criteria described in 46 CFR 4.03-2 as the criteria for initiating postaccident testing involving commercial vessels would provide uniform, easily understood conditions for initiating testing. To provide uniformity, the Safety Board believes that the Coast Guard should adopt the criteria for “serious marine incident” described at 46 CFR 4.03-2 as the criteria for initiating postaccident

testing for commercial vessels in the regulations at 33 CFR 95 and in any future combined regulations.

Priority for Testing—The *Julie N's* crew did not commence alcohol testing until more than 5 hours after the accident because the testing technicians elected to collect urine specimens first. These actions complied with the current regulations. The regulations at 33 CFR 95 and 46 CFR 4.06 do not specify a time limit for postaccident testing or set a priority for alcohol testing. The regulations at 33 CFR 95 are rather equivocal and state that when an individual must undergo testing, the individual will be directed to undergo testing “as soon as practical.” The regulations at 46 CFR 4.06 are somewhat more definitive, stating that an individual who must undergo testing “shall provide the specimens as soon as practical.” The term “as soon as practical,” common to both sets of regulations, is the sole admonition for expediting postaccident testing and the meaning of this phrase is left to be determined by the marine employer. However, the regulations at 46 CFR 4.06 also direct the marine employer to take “all practical steps to have individuals tested as soon as the marine employer determines that an accident is likely to become a serious marine incident.” The Safety Board recognizes the prudence in this particular requirement because it is the marine employer who likely will be first to determine the extent of damages or amount of oil spilled or expected to be spilled.

However, the provision in the regulations at 46 CFR 4.06-20, which requires the marine employer to ensure that urine specimen collection and shipping kits are readily available, but does not require the equipment to be maintained on board each vessel if it can be obtained within 24 hours, seems to convey an undesirable meaning to the term “readily available.” This 24-hour waiver clearly sends a disquieting message that “readily available” can be construed to mean available within 24 hours and that it is acceptable to delay the start of testing by a full day. In short, it conveys the impression that the regulations require little priority for postaccident testing.

Clearly, this is not desirable for drug testing and is unsatisfactory for alcohol testing, when the purpose of such testing is to ascertain if drugs or alcohol were causal factors in an accident. In this regard, the Safety Board recommended to the DOT in 1989 that both blood and urine samples be collected within 4 hours of a transportation accident.

The preamble to the testing regulations adopted in other DOT administrations⁴¹ pursuant to the Omnibus Transportation Employee Testing Act of 1991 sets a 2-hour time period for alcohol testing. It is recognized that circumstances may delay testing and, to account for such circumstances, the regulations for all other transportation modes require the employer, when alcohol testing is not carried out within 2 hours,⁴² to prepare and maintain a written record stating why the testing was not accomplished within 2 hours. The regulations recognize that testing for alcohol is unlikely to provide meaningful results after 8 hours and thus require the employer to cease attempts to test for alcohol after 8 hours and to record why testing was not accomplished. The written record explaining why testing was not accomplished in accordance with the regulations must be made available to the appropriate administration for review. Because alcohol is eliminated very quickly from the body and because the rate of elimination can vary among people, testing very soon after an accident affords the best opportunity to ascertain whether alcohol could be a casual factor in the accident. Furthermore, testing within 2 hours appears to be feasible in many marine accidents occurring on U.S. navigable waters. Adopting the requirement of most of the other DOT administrations to conduct alcohol testing within 2 hours and adopting a requirement for the marine employer to prepare and maintain a written record

⁴¹Federal Aviation Administration, Federal Railroad Administration, Federal Highway Administration, Federal Transit Administration, and Research and Special Programs Administration.

⁴²The regulations for railroad employees ultimately settled on a 4-hour limit for alcohol testing, with efforts to test for alcohol ceasing after 8 hours. Any testing delays must be documented.

explaining why testing for alcohol was not accomplished within 2 hours, in addition to a requirement to document why testing was not accomplished in 8 hours, when attempts to test would cease, offers a plan for timely postaccident alcohol testing and a means for the Coast Guard to improve oversight of such testing. The requirement for a written record of failure to test will emphasize to the marine employers that timely testing for alcohol is needed and is expected to raise the priority for testing in relation to other postaccident responsibilities and concerns. The information in the written record will enable the Coast Guard to ascertain how closely the various marine employers are complying, determine whether adjustments in the program are needed, and decide whether enforcement action is called for. Accordingly, the Safety Board concludes that adopting a requirement that marine employees be tested within 4 hours of an accident for drugs and within 2 hours of an accident for alcohol, with attempts to test for alcohol ceasing after 8 hours, and adopting a requirement for documenting testing delays or failures would result in more timely testing and facilitate effective oversight by the Coast Guard. Therefore, the Safety Board believes that the Coast Guard should establish a requirement that postaccident testing for drugs begin within 4 hours of a serious marine incident and postaccident testing for alcohol begin within 2 hours of a serious marine incident, with attempts to test ceasing for alcohol after 8 hours, and establish a requirement that the marine employer document any testing delays or failures.

Need to Consolidate Postaccident Testing Regulations—Some editing and rewriting of 46 CFR 4.06 would be sufficient to eliminate gaps and make the regulations easier to comprehend; a greater amount of changing would be necessary to make 33 CFR 95 more comprehensive for commercial vessels. Confusion regarding postaccident testing requirements and procedures will persist as long as two different sets of regulations exist on postaccident testing that say different things. To address this problem, two options appear feasible: (1) Rewrite and consolidate both sets of

regulations to make them identical, or (2) Locate the consolidated regulations solely in either Title 33 (33 CFR 95) or Title 46 (46 CFR 4.06).

Title 33, *Navigation and Navigable Waters*, covers numerous operational topics,⁴³ the majority of which pertain to all vessels transiting U.S. waters or visiting U.S. ports. For example, information and requirements concerning aids to navigation, vessel traffic service, navigation equipment and publications required for all vessels on U.S. waters, vessel equipment testing requirements before entering or departing U.S. ports, and oil spill equipment and pollution plans for all vessels transporting petroleum products to U.S. ports are all found in Title 33 of the regulations. Because the majority of the Title 33 regulations pertain to foreign vessels operating on U.S. waters, as well as U.S. vessels, Title 33 is a logical location for the regulations concerning *Operating a Vessel While Intoxicated* (33 CFR 95). Moreover, the standards for intoxication are guidance for safe navigation and are consistent with Title 33. The regulations at 33 CFR 95 establish alcohol intoxication standards for recreational vessel operators, and this is a logical location, considering that the regulations pertaining to marine parades and regattas and boating safety are all part of Title 33. Hence, Title 33 is a logical place in the Coast Guard regulations for commercial vessel operators and mariners, as well as the recreational boating public, to seek information on alcohol and drug abuse.

Unlike the regulations at Title 33, the Coast Guard regulations at Title 46 are almost exclusively concerned with U.S. commercial vessels and U.S. mariners and are directed at marine employers. The first part of Title 46, Subchapter A, *Procedures Applicable To The Public*, and Part 4 of Subchapter A, *Marine Casualties Investigations*, are widely recognized as applicable to foreign vessels that experience a marine accident on U.S. waters as well as to U.S.

⁴³Of the 16 subchapters in Title 33 relating to Coast Guard functions, 12 are of interest to all vessels, including foreign vessels.

vessels anywhere. Accordingly, the location of regulations for *Mandatory Chemical Testing Following Serious Marine Incidents Involving Vessels in Commercial Service* at 46 CFR 4.06 is logical. However, Title 46, because it is largely devoted to U.S. mariners and vessels, does not invite or attract the attention of foreign vessel operators until they become involved in a marine accident.

The Safety Board concludes that the guidance to conduct testing following marine accidents, being operational in nature and applicable to all vessels, would fit best in Title 33 of the *Code of Federal Regulations*. Because one of the purposes of postaccident testing is to determine intoxication from alcohol, the standards for intoxication should be a part of the testing regulations to avoid the need to refer to other parts of the regulations which can be time-consuming and result in confusion. The Safety Board further concludes that renaming and expanding 33 CFR 95, *Operating a Vessel While Intoxicated*, by incorporating the present regulations at 46 CFR 4.06, *Mandatory Chemical Testing Following Serious Marine Incidents Involving Vessels in Commercial Service*, into 33 CFR 95 would eliminate the confusion caused by two sets of regulations, contribute to better understanding of the intent of the regulations, achieve improved postaccident testing, and demonstrate that postaccident testing applies to all vessels experiencing a serious marine incident on U.S. waters.

In combining the two sets of rules, every effort should be made to make them complete in themselves to eliminate the need for cross-referencing to other regulations, and especially to U.S. law (as is done in 33 CFR 95.001(a)), which is open to wider interpretation than regulations. The Safety Board appreciates the language currently at 33 CFR 95.005(a) that clearly states that postaccident testing regulations are applicable to all vessels on the navigable waters of the United States, including foreign vessels. Retaining such, or similar, language in any combined regulations would eliminate any misconception and clarify that all

commercial vessels experiencing a serious marine incident on U.S. waters must conduct postaccident testing for alcohol and other drugs. Therefore, the Safety Board believes that the Coast Guard should expand the regulations at 33 CFR 95 to incorporate the provisions for postaccident testing currently found at 46 CFR 4.06 with a minimum of cross-referencing to other regulations, so that postaccident testing requirements are easy to read and comprehend and are found in one part of the regulations.

Regulations of Other Modes Pursuant to the Omnibus Transportation Employee Testing Act of 1991

The preamble to the testing regulations adopted in other DOT administrations pursuant to the Omnibus Transportation Employee Testing Act of 1991 established an additional requirement concerning postaccident drinking that appears appropriate to commercial marine vessels. This requirement prohibits anyone involved in an accident from consuming alcohol for 8 hours following the accident.

In one recent accident involving an explosion on a tankship that was undergoing welding repairs, it was necessary to evacuate the crew. Once ashore, some crewmembers involved began drinking in a local bar. The crewmembers claimed ignorance of any postaccident testing requirement, and there was no regulation to prohibit postaccident drinking. While the need for individuals involved in a serious accident to refrain from consuming alcohol may be obvious, there is little reason to believe that individuals involved will automatically avoid alcohol. Further, someone who regularly consumes alcohol may be disposed to do so following the stress that can be associated with an accident. Thus, there is a need for a regulation against postaccident drinking.

A clear regulation applicable to commercial vessels, including foreign vessels on U.S. waters, would probably be sufficient to obtain compliance in most cases. Also, it would enable the Coast Guard to take enforcement action when

warranted. Accordingly, the Safety Board concludes that adopting a requirement prohibiting individuals involved in a marine accident from consuming alcohol within 8 hours of the accident would help to ensure that such individuals can be tested to determine their blood alcohol concentration at the time of the accident. The

Safety Board believes that the Coast Guard should establish a provision in the postaccident testing regulations that prohibits mariners involved in an accident from consuming alcohol for 8 hours afterwards, or until breath or blood and urine specimens are collected, or until released by the Coast Guard.

CONCLUSIONS

Findings

1. Because the pilot was not tested, the Safety Board cannot conclusively eliminate alcohol use as a causal factor in this accident.
2. The human factors of fatigue, training, drug use, and pilot-crew interaction were not causal or contributing factors in the accident.
3. The pilot of the *Julie N* misspoke when he unintentionally ordered “hard port” instead of “hard starboard” during the final lineup for passage through the bridge.
4. The bridge’s fender system did not provide adequate protection for the bridge or for vessels navigating through its draw.
5. The increased horizontal clearance and the improved fender system at the new bridge have greatly improved safety for the class of vessels that normally would have transited the old bridge and should reduce the likelihood of the bridge being struck by similar class vessels.
6. Establishing a range of navigation marks and lights would contribute to safe navigation in the area where the accident occurred.
7. Participation in the Port Safety Forum by a representative of the Maine Department of Transportation who is familiar with bridge design or bridge maintenance would apprise the Port Safety Forum of problems involving the Casco Bay Bridge.
8. In order to be recognized and used by vessel masters and pilots, operational guidance developed by the Captain of the Port or the Port Safety Forum should be published in a readily available publication such as the *U.S. Coast Pilot*.
9. The pilot was not tested for alcohol because of the failure of the Coast Guard to adequately address the industry-wide problem of postaccident alcohol and drug testing.
10. Coast Guard regulations for postaccident testing do not communicate clearly that alcohol testing is more time-sensitive and should be conducted as early as possible and before collecting urine specimens.
11. Because the Coast Guard now has the needed authority to enforce its postaccident testing regulations, it should make enforcing these regulations a high priority and should develop a Service-wide program with procedures and guidance to ensure that postaccident testing is an effective, reliable process for accident investigation and enforcement.
12. Although the primary responsibility for postaccident testing for alcohol and other drugs should remain with the marine employer, the timeliness of postaccident alcohol testing on commercial vessels could be greatly improved by having Coast Guard personnel conduct breath testing of crewmembers involved in an accident.
13. Requiring the crewmembers and pilot involved in a marine accident to remain with the vessel, when it is safe to do so, for breath testing by the Coast Guard would help to ensure that individuals involved are tested for alcohol in a timely manner.
14. Foreign, as well as U.S. vessels, should be required to carry breath-testing devices and urine specimen collection and shipping kits on board so that postaccident testing can be carried out in a timely manner.

15. A vessel plan for conducting postaccident testing would ensure that the marine employer and vessel personnel would be aware of the requirements for postaccident testing, trained to use the testing and collection equipment on board, and informed about where to send urine specimens for analysis.
16. Including text in the regulations to clarify that breath or blood specimens are for alcohol testing and that urine specimens are for determining the presence of dangerous drugs would help to inform the marine industry that both urine and breath or blood specimens are required for postaccident testing.
17. Adopting the “serious marine incident” criteria described in 46 CFR 4.03-2 as the criteria for initiating postaccident testing involving commercial vessels would provide uniform, easily understood conditions for initiating testing.
18. Adopting a requirement that marine employees be tested within 4 hours of an accident for drugs and within 2 hours of an accident for alcohol, with attempts to test ceasing for alcohol after 8 hours, and adopting a requirement for documenting testing delays or failures would result in more timely testing and facilitate effective oversight by the Coast Guard.
19. The guidance to conduct testing following serious marine incidents, being operational in nature and applicable to all vessels, would fit best in Title 33 of the *Code of Federal Regulations*.
20. Renaming and expanding 33 CFR 95, *Operating a Vessel While Intoxicated*, by incorporating the present regulations at 46 CFR 4.06, *Mandatory Chemical Testing Following Serious Marine Incidents Involving Vessels in Commercial Service*, into 33 CFR 95 would eliminate the confusion caused by two sets of regulations, contribute to better understanding of the intent of the regulations, achieve improved postaccident testing, and demonstrate that postaccident testing applies to all vessels experiencing a serious marine incident on U.S. waters.
21. Adopting a requirement prohibiting individuals involved in a marine accident from consuming alcohol within 8 hours of the accident would help to ensure that such individuals can be tested to determine their blood alcohol concentration at the time of the accident.

Probable Cause

The National Transportation Safety Board determines that the probable cause of the collision with the Portland-South Portland (Million Dollar) Bridge was the pilot’s inadvertent order to port (left) rudder instead of starboard (right) rudder.

Contributing to the accident was the narrow horizontal clearance of the bridge drawspan, which afforded little leeway for human error. Contributing to the severity of the damage to the vessel and to the amount of oil spilled was a corner of the bridge pier that was not adequately shielded by the timber fender system.

RECOMMENDATIONS

As a result of its investigation of this accident, the National Transportation Safety Board makes the following recommendations:

--to the U.S. Coast Guard:

Evaluate the benefit of a permanent set of ranges for vessel pilots and masters to use for navigating through the Casco Bay Bridge and establish such ranges if justified. (M-98-69)

Ensure that operational guidance for vessels navigating Portland harbor developed by the Port Safety Forum or by the Captain of the Port is published in a source readily available to vessel masters and pilots, such as the *U.S. Coast Pilot*. (M-98-70)

Incorporate language into the postaccident testing regulations that clearly states alcohol testing is more time-sensitive and therefore should be conducted ahead of drug testing. (M-98-71)

Institute a task force that will evaluate deficiencies in past postaccident alcohol and drug testing performance and use "lessons learned" to implement a program that ensures testing is performed in a manner that will produce meaningful results. (M-98-72)

Implement a procedure for Coast Guard personnel to conduct breath testing of mariners who are involved in a serious marine incident, as defined by 46 CFR 4.03-2, when testing by the marine employer will not or can not take place within 2 hours of the accident. (M-98-73)

Establish a requirement in the postaccident testing regulations that the crew and pilot of a vessel involved in a serious marine incident will remain with the vessel, when it is safe to do so, for breath testing for alcohol, until permitted by the Coast Guard to leave the vessel. (M-98-74)

Establish a requirement in the postaccident testing regulations that foreign commercial vessels on the navigable waters of the United States, as well as U.S. oceangoing vessels, must have on board breath-testing devices capable of determining the presence of alcohol in a person's system and urine specimen collection and shipping kits. (M-98-75)

Establish a requirement in the postaccident testing regulations that foreign vessels on the navigable waters of the United States and oceangoing U.S. vessels have a postaccident testing plan that identifies crewmembers who will conduct the testing; sets forth the qualifications for crewmembers assigned to conduct the testing; establishes procedures for the care of specimens, including chain of custody; lists the records to be prepared; and provides identification and addresses for testing laboratories that can process urine specimens or testing firms that may assist or conduct postaccident testing for vessels in U.S. ports. (M-98-76)

Incorporate language into the postaccident testing regulations that clearly states that breath or blood specimens are for determining the presence of alcohol and that urine specimens are used to determine the presence of dangerous drugs. (M-98-77)

To provide uniformity, adopt the criteria for “serious marine incident” described at 46 CFR 4.03-2 as the criteria for initiating postaccident testing for commercial vessels in the regulations at 33 CFR 95 and in any future combined regulations. (M-98-78)

Establish a requirement that postaccident testing for drugs begin within 4 hours of a serious marine incident and postaccident testing for alcohol begin within 2 hours of a serious marine incident, with attempts to test for alcohol ceasing after 8 hours, and establish a requirement that the marine employer document any testing delays or failures. (M-98-79)

Expand the regulations at 33 CFR 95 to incorporate the provisions for postaccident testing currently found at 46 CFR 4.06 with a minimum of cross-referencing to other regulations, so that postaccident testing requirements are easy to read and comprehend and are found in one part of the regulations. (M-98-80)

Establish a provision in the postaccident testing regulations that prohibits mariners involved in an accident from consuming alcohol for 8 hours afterwards, or until breath or blood and urine specimens are collected, or until released by the Coast Guard. (M-98-81)

--to the Maine Department of Transportation:

Nominate a representative familiar with bridge design or bridge maintenance to participate on the Portland Port Safety Forum. (M-98-82)

--to the Federal Highway Administration:

Inform, in cooperation with the American Association of State Highway and Transportation Officials, State highway departments of the circumstances of this accident and recommend that the States evaluate the adequacy of fendering systems at bridge piers where the systems were not designed for the type and size of vessel currently using the waterway and may not be adequate to protect the bridge and take corrective action as necessary. (M-98-83)

--to the American Association of State Highway and Transportation Officials (AASHTO):

Inform, in cooperation with the Federal Highway Administration, State highway departments of the circumstances of this accident and recommend that the States evaluate the adequacy of fendering systems at bridge piers where the systems were not designed for the type and size of vessel currently using the waterway and may not be adequate to protect the bridge and take corrective action as necessary. (M-98-84)

BY THE NATIONAL TRANSPORTATION SAFETY BOARD

JAMES E. HALL
Chairman

ROBERT T. FRANCIS II
Vice Chairman

JOHN A. HAMMERSCHMIDT
Member

JOHN J. GOGLIA
Member

GEORGE W. BLACK, JR.
Member

May 5, 1998

APPENDIX A

INVESTIGATION

The National Transportation Safety Board was informed by the U.S. Coast Guard of the accident about 1500, during the afternoon of September 27, 1996, and at 1800, launched a team of investigators that arrived in Portland, Maine, shortly before midnight. The Safety Board team comprised an Investigator-in-Charge, an operations investigator, a marine engineer, a human performance investigator, and a civil engineer with expertise in bridge construction.

On September 28, Safety Board and Coast Guard investigators from the Marine Safety Office in Portland interviewed key crewmembers of the *Julie N* and the pilot on board the vessel. The crewmembers included the master, third mate, deck cadet, helmsman, chief mate, boson, second mate, and the engineering officers.

At the start of his interview, the pilot provided investigators with a signed statement describing the maneuvering of the vessel in which he clearly stated that he had inadvertently called for hard port rudder instead of hard starboard rudder immediately before the accident. Two days later, the pilot voluntarily joined investigators aboard a Coast Guard cutter to proceed through the port and the bridge to describe in detail the various navigation marks that he used in piloting large ships in and out of Portland harbor and to explain in detail the events leading to the accident.

During the next few days, other witnesses were interviewed, including a local professional photographer who had been in a small boat

upstream of the bridge photographing the approach of the *Julie N* to the collision and afterwards. The investigation benefited greatly from the fine quality photographs taken by the photographer. Two other State-licensed docking masters, who had regularly piloted vessels through the Million Dollar Bridge, were interviewed. Also interviewed were the master of the *Captain Bill*, one of the tugboats standing by to assist in the docking of the *Julie N*, two bridge tenders on duty, and a Cianbro construction worker on the new bridge, who witnessed the accident. By Tuesday afternoon, October 1, 17 witnesses had been interviewed.

On Wednesday and Thursday, October 2 and 3, 1996, sworn testimony was taken from 12 of the witnesses interviewed. Parties participating in the proceedings included the Coast Guard; the Maritime Overseas Corporation, the operator of the vessel; the Board of Harbor Commissioners for Portland Harbor; the Maine Department of Transportation; and the American Pilots Association.

The Safety Board conducted a public hearing in Portland on March 13 and 14, 1997, to acquire additional information about (1) postaccident testing regulations and practices for determining the presence of alcohol and other drugs and (2) port risk assessment pertaining to navigation of large tankships in Portland harbor. Parties at the public hearing were the Coast Guard, the Maritime Overseas Corporation, the Board of Harbor Commissioners for Portland Harbor, and the Maine Department of Transportation.

APPENDIX B

COAST GUARD DRUG AND ALCOHOL TESTING REGULATIONS

- Title 33, Part 95 (33 CFR 95)—Operating a Vessel While Intoxicated
- Title 46, Subpart 4.03-2 (46 CFR 4.03-2)—Serious Marine Incident
- Title 46, Subpart 4.03-4 (46 CFR 4.03-4)—Individual Directly Involved in a Serious Marine Incident
- Title 46, Subpart 4.03-5 (46 CFR 4.03-5)—Medical Facility
- Title 46, Subpart 4.03-6 (46 CFR 4.03-6)—Qualified Medical Personnel
- Title 46, Subpart 4.03-7 (46 CFR 4.03-7)—Chemical Test
- Title 46, Subpart 4.05 (46 CFR 4.05)—Notice of Marine Casualty and Voyage Records
- Title 46, Subpart 4.06 (46 CFR 4.06)—Mandatory Chemical Testing Following Serious Marine Incidents
 Involving Vessels in Commercial Service
- Title 46, Part 16 (46 CFR 16)—Chemical Testing

Coast Guard, DOT

§95.010

SUBCHAPTER F—VESSEL OPERATING REGULATIONS

PART 95—OPERATING A VESSEL WHILE INTOXICATED

Sec.

- 95.001 Purpose.
- 95.005 Applicability.
- 95.010 Definition of terms as used in this part.
- 95.015 Operating a vessel.
- 95.020 Standard of intoxication.
- 95.025 Adoption of State standards.
- 95.030 Evidence of intoxication.
- 95.035 Reasonable cause for directing a chemical test.
- 95.040 Refusal to submit to testing.
- 95.045 General operating rules for vessels inspected, or subject to inspection, under Chapter 33 of Title 46 United States Code.
- 95.050 Responsibility for compliance.
- 95.055 Penalties.

AUTHORITY: 46 U.S.C. 2302, 3306, and 7701; 49 CFR 1.46.

SOURCE: CGD 84-099, 52 FR 47532, Dec. 14, 1987, unless otherwise noted.

§ 95.001 Purpose.

(a) The purpose of this part is to establish intoxication standards under 46 U.S.C. 2302 and to prescribe restrictions and responsibilities for personnel on vessels inspected, or subject to inspection, under Chapter 33 of Title 46 United States Code. This part does not preempt enforcement by a State of its applicable laws and regulations concerning operating a recreational vessel while intoxicated.

(b) Nothing in this part shall be construed as limiting the authority of a vessel's marine employer to limit or prohibit the use or possession of alcohol on board a vessel.

§ 95.005 Applicability.

(a) This part is applicable to a vessel (except those excluded by 46 U.S.C. 2109) operated on waters subject to the jurisdiction of the United States, and to a vessel owned in the United States on the high seas. This includes a foreign vessel operated on waters subject to the jurisdiction of the United States.

(b) This part is also applicable at all times to vessels inspected, or subject

to inspection, under Chapter 33 of Title 46 United States Code.

[CGD 84-099, 52 FR 47532, Dec. 14, 1987; CGD 84-009, 53 FR 13117, Apr. 21, 1988]

§ 95.010 Definition of terms as used in this part.

Alcohol means any form or derivative of ethyl alcohol (ethanol).

Alcohol concentration means either grams of alcohol per 100 milliliters of blood, or grams of alcohol per 210 liters of breath.

Chemical test means a test which analyzes an individual's breath, blood, urine, saliva and/or other bodily fluids or tissues for evidence of drug or alcohol use.

Controlled substance has the same meaning assigned by 21 U.S.C. 802 and includes all substances listed on Schedules I through V as they may be revised from time to time (21 CFR Part 1308).

Drug means any substance (other than alcohol) that has known mind or function-altering effects on a person, specifically including any psychoactive substance, and including, but not limited to, controlled substances.

Intoxicant means any form of alcohol, drug or combination thereof.

Law enforcement officer means a Coast Guard commissioned, warrant, or petty officer; or any other law enforcement officer authorized to obtain a chemical test under Federal, State, or local law.

Marine employer means the owner, managing operator, charterer, agent, master, or person in charge of a vessel other than a recreational vessel.

Recreational vessel means a vessel meeting the definition in 46 U.S.C. 2101(25) that is then being used only for pleasure.

Underway means that a vessel is not at anchor, or made fast to the shore, or aground.

Vessel includes every description of watercraft or other artificial contrivance used, or capable of being used, as a means of transportation on water.

Vessel owned in the United States means any vessel documented or numbered under the laws of the United

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States; and, any vessel owned by a citizen of the United States that is not documented or numbered by any nation.

[CGD 84-099, 52 FR 47532, Dec. 14, 1987; CGD 84-099, 53 FR 13117, April 21, 1988]

§95.015 Operating a vessel.

For purposes of this part, an individual is considered to be operating a vessel when:

(a) The individual has an essential role in the operation of a recreational vessel underway, including but not limited to navigation of the vessel or control of the vessel's propulsion system.

(b) The individual is a crewmember (including a licensed individual), pilot, or watchstander not a regular member of the crew, of a vessel other than a recreational vessel.

§95.020 Standard of intoxication.

An individual is intoxicated when:

(a) The individual is operating a recreational vessel and has an alcohol concentration of .10 percent by weight or more in their blood;

(b) The individual is operating a vessel other than a recreational vessel and has an alcohol concentration of .04 percent by weight or more in their blood; or,

(c) The individual is operating any vessel and the effect of the intoxicant(s) consumed by the individual on the person's manner, disposition, speech, muscular movement, general appearance or behavior is apparent by observation.

[CGD 84-099, 52 FR 47532, Dec. 14, 1987; CGD 84-099, 53 FR 13117, April 21, 1988]

§95.025 Adoption of State standards.

(a) This section applies to recreational vessels on waters within the geographical boundaries of a State having a statute defining a percentage of alcohol in the blood for the purposes of establishing that a person operating a vessel is intoxicated or impaired due to alcohol.

(b) If the applicable State statute establishing a standard for determining impairment due to alcohol uses the terms "under the influence," "operating while impaired," or equivalent terminology and does not separately de-

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fine a percentage of alcohol in the blood for the purpose of establishing "intoxication," the standard containing the highest defined percentage of alcohol in the blood applies in lieu of the standard in §95.020(a). If the applicable State statute contains a standard specifically applicable to establishing intoxication, in addition to standards applicable to other degrees of impairment, the standard specifically applicable to establishing intoxication applies in lieu of the standard in §95.020(a).

(c) For the purposes of this part, a standard established by State statute and adopted under this section is applicable to the operation of any recreational vessel on waters within the geographical boundaries of the State.

§95.030 Evidence of intoxication.

Acceptable evidence of intoxication includes, but is not limited to:

(a) Personal observation of an individual's manner, disposition, speech, muscular movement, general appearance, or behavior; or,

(b) A chemical test.

[CGD 84-099, 53 FR 13117, April 21, 1988; CGD 84-099, 53 FR 13117, Apr. 21, 1988]

§95.035 Reasonable cause for directing a chemical test.

(a) Only a law enforcement officer or a marine employer may direct an individual operating a vessel to undergo a chemical test when reasonable cause exists. Reasonable cause exists when:

(1) The individual was directly involved in the occurrence of a marine casualty as defined in Chapter 61 of Title 46, United States Code, or

(2) The individual is suspected of being in violation of the standards in §§95.020 or 95.025.

(b) When an individual is directed to undergo a chemical test, the individual to be tested must be informed of that fact and directed to undergo a test as soon as is practicable.

(c) When practicable, a marine employer should base a determination of the existence of reasonable cause, under paragraph (a)(2) of this section, on observation by two persons.

[CGD 84-099, FR 47532, Dec. 14, 1987; CGD 84-099, 53 FR 13117, Apr. 1, 1988]

Coast Guard, DOT**§ 95.055****§ 95.040 Refusal to submit to testing.**

(a) If an individual refuses to submit to or cooperate in the administration of a timely chemical test when directed by a law enforcement officer based on reasonable cause, evidence of the refusal is admissible in evidence in any administrative proceeding and the individual will be presumed to be intoxicated.

(b) If an individual refuses to submit to or cooperate in the administration of a timely chemical test when directed by the marine employer based on reasonable cause, evidence of the refusal is admissible in evidence in any administrative proceeding.

§ 95.045 General operating rules for vessels inspected, or subject to inspection, under Chapter 33 of Title 46 United States Code.

While on board a vessel inspected, or subject to inspection, under Chapter 33 of Title 46 United States Code, a crewmember (including a licensed individual), pilot, or watchstander not a regular member of the crew:

(a) Shall not perform or attempt to perform any scheduled duties within four hours of consuming any alcohol;

(b) Shall not be intoxicated at any time;

(c) Shall not consume any intoxicant while on watch or duty; and

(d) May consume a legal non-prescription or prescription drug provided the drug does not cause the individual to be intoxicated.

§ 95.050 Responsibility for compliance.

(a) The marine employer shall exercise due diligence to assure compliance with the applicable provisions of this part.

(b) If the marine employer has reason to believe that an individual is intoxicated, the marine employer shall not allow that individual to stand watch or perform other duties.

§ 95.055 Penalties.

An individual who is intoxicated when operating a vessel in violation of 46 U.S.C. 2302(c)—

(a) Is liable to the United States Government for a civil penalty of not more than \$1,000; or

(b) Commits a class A misdemeanor, as described in 18 U.S.C. 3551 *et seq.*

[CGD 92-007, 57 FR 33261, July 27, 1992]

§4.03-2 Serious marine incident.

The term *serious marine incident* includes the following events involving a vessel in commercial service:

(a) Any marine casualty or accident as defined in §4.03-1 which is required by §4.05-1 to be reported to the Coast Guard and which results in any of the following:

- (1) One or more deaths;
 - (2) An injury to a crewmember, passenger, or other person which requires professional medical treatment beyond first aid, and, in the case of a person employed on board a vessel in commercial service, which renders the individual unfit to perform routine vessel duties;
 - (3) Damage to property, as defined in §4.05-1(f) of this part, in excess of \$100,000;
 - (4) Actual or constructive total loss of any vessel subject to inspection under 46 U.S.C. 3301; or
 - (5) Actual or constructive total loss of any self-propelled vessel, not subject to inspection under 46 U.S.C. 3301, of 100 gross tons or more.
- (b) A discharge of oil of 10,000 gallons or more into the navigable waters of the United States, as defined in 33 U.S.C. 1321, whether or not resulting from a marine casualty.
- (c) A discharge of a reportable quantity of a hazardous substance into the navigable waters of the United States, or a release of a reportable quantity of a hazardous substance into the environment of the United States, whether or not resulting from a marine casualty.

[CGD 86-067, 53 FR 47077, Nov. 21, 1988]

§4.03-4 Individual directly involved in a serious marine incident.

The term *individual directly involved in a serious marine incident* is an individual whose order, action or failure to act is determined to be, or cannot be ruled out as, a causative factor in the events leading to or causing a serious marine incident.

[CGD 86-067, 53 FR 47077, Nov. 21, 1988]

§4.03-5 Medical facility.

The term *medical facility* means an American hospital, clinic, physician's office, or laboratory, where blood and urine specimens can be collected according to recognized professional standards.

[CGD 86-067, 53 FR 47077, Nov. 21, 1988]

§4.03-6 Qualified medical personnel.

The term *qualified medical personnel* means a physician, physician's assistant, nurse, emergency medical technician, or other person authorized under State or Federal law or regulation to collect blood and urine specimens.

[CGD 86-067, 53 FR 47077, Nov. 21, 1988]

§4.03-7 Chemical test.

The term *chemical test* means a scientifically recognized test which analyzes an individual's breath, blood, urine, saliva, bodily fluids, or tissues for evidence of dangerous drug or alcohol use.

[CGD 86-067, 53 FR 47077, Nov. 21, 1988]

Subpart 4.05—Notice of Marine Casualty and Voyage Records

§ 4.05-1 Notice of marine casualty.

(a) Immediately after the addressing of resultant safety concerns, the owner, agent, master, operator, or person in charge, shall notify the nearest Marine Safety Office, Marine Inspection Office or Coast Guard Group Office whenever a vessel is involved in a marine casualty consisting in--

(1) An unintended grounding, or an unintended strike of (allison with) a bridge;

(2) An intended grounding, or an intended strike of a bridge, that creates a hazard to navigation, the environment, or the safety of a vessel, or that meets any criterion of paragraphs (a) (3) through (7);

(3) A loss of main propulsion, primary steering, or any associated component or control system that reduces the maneuverability of the vessel;

(4) An occurrence materially and adversely affecting the vessel's seaworthiness or fitness for service or route, including but not limited to fire, flooding, or failure of or damage to fixed fire-extinguishing systems, life-saving equipment, auxiliary power-generating equipment, or bilge-pumping systems;

(5) A loss of life;

(6) An injury that requires professional medical treatment (treatment beyond first aid) and, if the person is engaged or employed on board a vessel in commercial service, that renders the individual unfit to perform his or her routine duties; or

(7) An occurrence causing property-damage in excess of \$25,000, this damage including the cost of labor and material to restore the property to its condition before the occurrence, but not including the cost of salvage, cleaning, gas-freeing, drydocking, or demurrage.

(b) Notice given as required by 33 CFR 160.215 satisfies the requirement of this section if the marine casualty involves a hazardous condition as defined by 33 CFR 160.203.

Subpart 4.06—Mandatory Chemical Testing Following Serious Marine Incidents Involving Vessels in Commercial Service

SOURCE: CGD 86-067, 53 FR 47078, Nov. 21, 1988, unless otherwise noted.

§ 4.06-1 Responsibilities of the marine employer.

(a) At the time of occurrence of a marine casualty, a discharge of oil into the navigable waters of the United States, a discharge of a hazardous substance into the navigable waters of the United States, or a release of a hazardous substance into the environment of the United States, the marine employer shall make a timely, good faith determination as to whether the occurrence currently is, or is likely to become, a serious marine incident.

(b) When a marine employer determines that a casualty or incident is, or is likely to become, a serious marine incident, the marine employer shall take all practicable steps to have each individual engaged or employed on board the vessel who is directly involved in the incident chemically tested for evidence of drug and alcohol use.

(c) The determination of which individuals are directly involved in a serious marine incident is to be made by the marine employer. A law enforcement officer may determine that additional individuals are directly involved in the serious marine incident. In such cases, the marine employer shall take all practicable steps to have these individuals tested in accordance with paragraph (b) of this section.

(d) The requirements of this subpart shall not prevent vessel personnel who are required to be tested from performing duties in the aftermath of a serious marine incident when their performance is necessary for the preservation of life or property or the protection of the environment.

(e) The marine employer shall ensure that all individuals engaged or employed on board a vessel are fully indoctrinated in the requirements of this subpart, and that appropriate vessel personnel are trained as necessary in the practical applications of these requirements.

(f) Each marine employer shall implement the testing requirements of this subpart in accordance with the implementation schedule provided in 46 CFR 16.205 and 16.207.

§ 4.06-5 Responsibilities of individuals directly involved in serious marine incidents.

(a) Any individual engaged or employed on board a vessel who is determined to be directly involved in a serious marine incident shall provide blood, breath or urine specimens for chemical tests required by § 4.06-10 when directed to do so by the marine employer or a law enforcement officer.

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(b) If the individual refuses to provide blood, breath or urine specimens, this refusal shall be noted on Form CG-2692B and in the vessel's official log book, if one is required.

(c) No individual may be forcibly compelled to provide specimens for chemical tests required by this part; however, refusal is considered a violation of regulation and could subject the individual to suspension and revocation proceedings under part 5 of this chapter and removal from any duties which directly affect the safety of the vessel's navigation or operations.

§ 4.06-10 Required specimens.

Each individual required to submit to chemical testing shall, as soon as practicable, provide the following specimens for chemical testing:

(a) Urine specimens, collected in accordance with § 4.06-20 and part 16 of this chapter.

(b) Blood or breath specimens, or both, collected in accordance with § 4.06-20.

§ 4.06-20 Specimen collection requirements.

(a) All inspected vessels certificated for unrestricted ocean routes, and all inspected vessels certificated for restricted overseas routes, are required to have on board at all times a breath testing device capable of determining the presence of alcohol in a person's system. The breath testing device shall be used in accordance with procedures specified by the manufacturer.

(b) The marine employer shall ensure that urine specimen collection and shipping kits meeting the requirements of § 16.330 of this part are readily available for use following serious marine incidents. The specimen collection and shipping kits need not be maintained aboard each vessel if they can otherwise be readily obtained within 24 hours from the time of the occurrence of the serious marine incident.

(c) The marine employer shall ensure that specimens required by § 4.06-10 are collected as soon as practicable following the occurrence of a serious marine incident.

(d) When obtaining blood, breath, and urine specimens, the marine employer shall ensure that the collection process

is supervised by either qualified collection personnel, the marine employer, a law enforcement officer, or the marine employer's representative.

(e) Chemical tests of an individual's breath for the presence of alcohol using a breath testing device may be conducted by any individual trained to conduct such tests. Blood specimens shall be taken only by qualified medical personnel.

§ 4.06-30 Specimen collection in incidents involving fatalities.

(a) When an individual engaged or employed on board a vessel dies as a result of a serious marine incident, blood and urine specimens must be obtained from the remains of the individual for chemical testing, if practicable to do so. The marine employer shall notify the appropriate local authority, such as the coroner or medical examiner, as soon as possible, of the fatality and of the requirements of this subpart. The marine employer shall provide the specimen collection and shipping kit and request that the local authority assist in obtaining the necessary specimens. When the custodian of the remains is a person other than the local authority, the marine employer shall request the custodian to cooperate in obtaining the specimens required under this part.

(b) If the local authority or custodian of the remains declines to cooperate in obtaining the necessary specimens, the marine employer shall provide an explanation of the circumstances on Form CG-2692B (Report of Required Chemical Drug and Alcohol Testing Following a Serious Marine Incident).

§ 4.06-40 Specimen handling and shipping.

(a) The marine employer shall ensure that blood specimens collected in accordance with §§ 4.06-20 and 4.06-30 are promptly shipped to a testing laboratory qualified to conduct tests on such specimens. A proper chain of custody must be maintained for each specimen from the time of collection through the authorized disposition of the specimen. Blood specimens must be shipped to the laboratory in a cooled condition by any means adequate to ensure delivery

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within twenty-four (24) hours of receipt by the carrier.

(b) The marine employer shall ensure that the urine specimen collection procedures of §16.310 of this part and the chain of custody requirements of §16.320 are complied with. The marine employer shall ensure that urine specimens required by §§4.06-20 and 4.06-30 are promptly shipped to a laboratory complying with the requirements of 49 CFR part 40. Urine specimens must be shipped by an expeditious means, but need not be shipped in a cooled condition for overnight delivery.

§4.06-50 Specimen analysis and follow-up procedures.

(a) Each laboratory will provide prompt analysis of specimens collected under this subpart, consistent with the need to develop all relevant information and to produce a complete analysis report.

(b) Reports shall be sent to the Medical Review Officer meeting the requirements of 49 CFR 40.33, as designated by the marine employer submitting the specimen for testing. Wherever a urinalysis report indicates the presence of a dangerous drug or drug metabolite, the Medical Review Officer shall review the report as required by 49 CFR 40.33 and submit his or her findings to the marine employer. Blood test reports indicating the presence of alcohol shall be similarly reviewed to determine if there is a legitimate medical explanation.

(c) Analysis results which indicate the presence of alcohol, dangerous drugs, or drug metabolites shall not be construed by themselves as constituting a finding that use of drugs or alcohol was the probable cause of a serious marine incident.

[CGD 86-067, 53 FR 47078, Nov. 21, 1988, as amended by CGD 90-053, 58 FR 31107, May 28, 1993]

§4.06-60 Submission of reports and test results.

(a) Whenever an individual engaged or employed on a vessel is identified as being directly involved in a serious marine incident, the marine employer shall complete Form CG-2692B (Report of Required Chemical Drug and Alcohol

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Testing Following a Serious Marine Incident).

(b) When the serious marine incident requires the submission of Form CG-2692 (Report of Marine Casualty, Injury or Death) to the Coast Guard in accordance with §4.05-10, the report required by paragraph (a) of this section shall be appended to Form CG-2692.

(c) In incidents involving discharges of oil or hazardous substances as described in §4.03-2 (b) and (c) of this part, when Form CG-2692 is not required to be submitted, the report required by paragraph (a) of this section shall be submitted to the Coast Guard Officer in Charge, Marine Inspection, having jurisdiction over the location where the discharge occurred or nearest the port of first arrival following the discharge.

(d) Upon receipt of the report of chemical test results, the marine employer shall submit a copy of the test results for each person listed on the CG-2692B to the Coast Guard Officer in Charge, Marine Inspection to whom the CG-2692B was submitted.

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- 16.370 Medical Review Officer.
16.380 Release of information.

Subpart D—Employee Assistance Programs

- 16.401 Employee Assistance Program (EAP).

Subpart E—Management Information System

- 16.500 Management Information System requirements.

APPENDIX A [RESERVED]

APPENDIX B DRUG AND ALCOHOL TESTING
MANAGEMENT INFORMATION SYSTEM (MIS)
DATA COLLECTION FORM

AUTHORITY: 46 U.S.C. 2103, 3306, 7101, 7301, and 7701; 49 CFR 1.46.

SOURCE: CGD 86-067, 53 FR 47079, Nov. 21, 1988, unless otherwise noted.

Subpart A—General**§ 16.101 Purpose of regulations.**

(a) The regulations in this part provide a means to minimize the use of intoxicants by merchant marine personnel and to promote a drug free and safe work environment.

(b) These regulations prescribe the minimum standards, procedures, and means to be used to test for the use of dangerous drugs.

(c) As part of a reasonable cause drug testing program established pursuant to this part, employers may test for drugs in addition to those specified in this part only with approval granted by the Coast Guard under 49 CFR part 40 and for substances for which the Department of Health and Human Services has established an approved testing protocol and positive threshold.

§ 16.105 Definitions of terms used in this part.

Chemical test means a scientifically recognized test which analyzes an individual's breath, blood, urine, saliva, bodily fluids, or tissues for evidence of dangerous drug or alcohol use.

Crewmember means an individual who is:

(a) On board a vessel acting under the authority of a license, certificate of registry, or merchant mariner's document issued under this subchapter, whether or not the individual is a member of the vessel's crew; or

PART 16—CHEMICAL TESTING**Subpart A—General**

- Sec.
16.101 Purpose of regulations.
16.105 Definitions of terms used in this part.

Subpart B—Required Chemical Testing

- 16.201 Application.
16.205 Implementation of chemical testing programs.
16.207 Conflict with foreign laws.
16.210 Pre-employment testing requirements.
16.220 Periodic testing requirements.
16.230 Random testing requirements.
16.240 Serious marine incident testing requirements.
16.250 Reasonable cause testing requirements.
16.260 Records.

Subpart C—Standards for Chemical Testing for Dangerous Drugs

- 16.301 Procedures for Transportation Workplace Drug Testing Programs.
16.310 General.
16.320 Chain of custody.
16.330 Specimen handling and shipping.
16.340 Test laboratory requirements.
16.350 Specimen analyses.
16.360 Specimen analysis reports.

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(b) Engaged or employed on board a vessel owned in the United States that is required by law or regulation to engage, employ, or be operated by an individual holding a license, certificate of registry, or merchant mariner's document issued under this subchapter, except the following:

(1) Individuals on fish processing vessels who are primarily employed in the preparation of fish or fish products, or in a support position, and who have no duties that directly affect the safe operation of the vessel;

(2) Scientific personnel on an oceanographic research vessel;

(3) Individuals on industrial vessels who are industrial personnel, as defined in this chapter; and

(4) Individuals not required under part 15 of this subchapter who have no duties that directly affect the safe operation of the vessel.

Dangerous drug means a narcotic drug, a controlled substance, or a controlled-substance analog (as defined in section 102 of the Comprehensive Drug Abuse and Control Act of 1970 (21 U.S.C. 802)).

Dangerous drug level means the amount of traces of dangerous drugs or drug metabolites in an individual's breath, blood, urine, saliva, or body fluids or tissues.

Drug test means a chemical test of an individual's urine for evidence of dangerous drug use.

Employer means a marine employer or sponsoring organization.

Fails a chemical test for dangerous drugs means that the result of a chemical test conducted in accordance with 49 CFR part 40 is reported as "positive" for the presence of dangerous drugs or drug metabolites in an individual's system by a Medical Review Officer in accordance with that part.

Intoxicant means any form of alcohol, dangerous drug, or combination thereof.

Marine employer means the owner, managing operator, charterer, agent, master, or person in charge of a vessel, other than a recreational vessel.

Medical Review Officer means an individual designated by the employer to carry out the duties specified in § 16.370 of this part.

Operation means to navigate, steer, direct, manage, or sail a vessel, or to control, monitor, or maintain the vessel's main or auxiliary equipment or systems. Operation includes:

(a) Determining the vessel's position, piloting, directing the vessel along a desired trackline, keeping account of the vessel's progress through the water, ordering or executing changes in course, rudder position, or speed, and maintaining a lookout;

(b) Controlling, operating, monitoring, maintaining, or testing: the vessel's propulsion and steering systems; electric power generators; bilge, ballast, fire, and cargo pumps; deck machinery including winches, windlasses, and lifting equipment; lifesaving equipment and appliances; firefighting systems and equipment; and navigation and communication equipment; and

(c) Mooring, anchoring, and line handling; loading or discharging of cargo or fuel; assembling or disassembling of tows; and maintaining the vessel's stability and watertight integrity.

Passes a chemical test for dangerous drugs means the result of a chemical test conducted in accordance with 49 CFR part 40 is reported as "negative" by a Medical Review Officer in accordance with that part.

Positive rate means the number of positive results for random drug tests conducted under this part plus the number of refusals to take random tests required by this part, divided by the total number of random drug tests conducted under this part plus the number of refusals to take random tests required by this part.

Refuse to submit means that a crewmember fails to provide a urine sample as required by 49 CFR part 40, without a genuine inability to provide a specimen (as determined by a medical evaluation), after he or she has received notice of the requirement to be tested in accordance with the provisions of this part, or engages in conduct that clearly obstructs the testing process.

Serious marine incident means an event defined in 46 CFR 4.03-2.

Sponsoring organization is any company, consortium, corporation, association, union, or other organization with

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which individuals serving in the marine industry, or their employers, are associated.

Vessel owned in the United States means any vessel documented or numbered under the laws of the United States; and any vessel owned by a citizen of the United States that is not documented or numbered by any nation.

[CGD 86-067, 53 FR 47079, Nov. 21, 1988; 53 FR 48367, Nov. 30, 1988, as amended by CGD 90-014, 56 FR 31033, July 8, 1991; CGD 90-053, 58 FR 31107, May 28, 1993; CGD 93-051, 59 FR 26792, June 3, 1994; 59 FR 62226, Dec. 2, 1994; CGD 91-223, 60 FR 4525, Jan. 23, 1995]

Subpart B—Required Chemical Testing

§ 16.201 Application.

(a) Chemical testing of personnel must be conducted as required by this subpart.

(b) If an individual fails a chemical test for dangerous drugs under this part, the individual will be presumed to be a user of dangerous drugs.

(c) If an individual holding a license, certificate of registry, or merchant mariner's document fails a chemical test for dangerous drugs, the individual's employer or prospective employer shall report the test results in writing to the nearest Coast Guard Officer in Charge, Marine Inspection (OCMI). The individual shall be denied employment as a crewmember or removed from duties which directly affect the safe operation of the vessel as soon as practicable and shall be subject to suspension and revocation proceedings against his or her license, certificate of registry, or merchant mariner's document under 46 CFR part 5.

(d) If an individual who does not hold a license, certificate of registry, or merchant mariner's document fails a chemical test for dangerous drugs, the individual shall be denied employment as a crewmember or removed from duties which directly affect the safe operation of the vessel as soon as possible.

(e) An individual who has failed a required chemical test for dangerous drugs may not be reemployed aboard a vessel until the requirements of

§ 16.370(d) of this part and 46 CFR part 5, if applicable, have been satisfied.

[CGD 86-807, 53 FR 47049, November 11, 1988, as amended by CGD 90-014, 56 FR 31034, July 8, 1991]

§ 16.205 Implementation of chemical testing programs.

(a) When a vessel owned in the United States is operating in waters that are not subject to the jurisdiction of the United States, the testing requirements of §§ 16.210 and 16.230 do not apply to a citizen of a foreign country engaged or employed as pilot in accordance with the laws or customs of that foreign country.

(b) Upon written request of an employer, Commandant (G-MOA) will review the employer's chemical testing program to determine compliance with the provisions of this part.

[CGD 90-014, 56 FR 60930, Nov. 30, 1991, as amended by 59 FR 62226, Dec. 2, 1994; CGD 96-072, 60 FR 50461, Sept. 29, 1995; CGD 96-041, 61 FR 50726, Sept. 27, 1996; CGD 95-028, 62 FR 51196, Sept. 30, 1997]

EFFECTIVE DATE NOTE: At 62 FR 51196, Sept. 30, 1997, § 16.205 was amended by removing paragraphs (a) through (e) and redesignating paragraphs (f) and (g) as (a) and (b), effective Oct. 30, 1997. For the convenience of the user, the superseded text is set forth as follows:

§ 16.205 Implementation of chemical testing programs.

(a) Each employer who employs more than 50 employees required to be tested under this part was required to implement the pre-employment testing program required by this part not later than July 21, 1989, and the serious marine incident and reasonable cause testing programs required by this part no later than December 21, 1989. The random testing program required by this part shall be implemented no later than October 1, 1991.

(b) Each employer who employs from 11 to 50 employees required to be tested under this part was required to implement the pre-employment, serious marine incident and reasonable cause testing programs required by this part no later than December 21, 1989. The random testing program required by this part shall be implemented no later than October 1, 1991.

(c) Each employer who employs 10 or fewer employees required to be tested under this part was required to implement the pre-employment, serious marine incident and reasonable cause testing programs required by this part no later than December 21, 1989. The random testing program required by this

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part shall be implemented not later than October 1, 1991.

(d) [Reserved]

(e) The periodic testing requirements of § 16.220 apply to physical examinations performed after December 21, 1990.

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§ 16.207 Conflict with foreign laws.

(a) This part applies to the testing of all U.S. crewmembers onboard U.S. vessels operating in waters that are subject to the jurisdiction of a foreign government on and after January 2, 1997; however, implementation may be delayed until July 1, 1997.

(b) Employers for whom compliance with this part would violate the domestic laws or policies of another country may request an exemption from the drug testing requirements of this part by submitting a written request to Commandant (G-MOA), at the address listed in § 16.500(a).

[CGD 95-011, 61 FR 66613, Dec. 18, 1996]

§ 16.210 Pre-employment testing requirements.

(a) No marine employer shall engage or employ any individual to serve as a crewmember unless the individual passes a chemical test for dangerous drugs for that employer.

(b) An employer may waive a pre-employment test required for a job applicant by paragraph (a) of this section if the individual provides satisfactory evidence that he or she has:

(1) Passed a chemical test for dangerous drugs, required by this part, within the previous six months with no subsequent positive drug tests during the remainder of the six-month period; or

(2) During the previous 185 days been subject to a random testing program required by § 16.230 for at least 60 days and did not fail or refuse to participate in a chemical test for dangerous drugs required by this part.

[CGD 90-053, 58 FR 31107, May 28, 1993, as amended by CGD 93-051, 59 FR 28792, June 3, 1994]

§ 16.220 Periodic testing requirements.

(a) Except as provided by paragraph (c) of this section, and §§ 10.209(h) and 12.02-9(f) of this subchapter, an appli-

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cant for an original issuance or a renewal of a license or a certificate of registry (COR), a raise in grade of a license, a higher grade of COR, an original issuance of a merchant mariner's document (MMD), the first endorsement as an able seaman, lifeboatman, qualified member of the engine department, or tankerman, or a reissuance of an MMD with a new expiration date shall be required to pass a chemical test for dangerous drugs. The applicant shall provide the results of the test to the Coast Guard Regional Examination Center (REC) at the time of submitting an application. The test results must be completed and dated not more than 185 days prior to submission of the application.

(b) Unless excepted under paragraph (c) of this section, each pilot required by this subchapter to receive an annual physical examination must pass a chemical test for dangerous drugs as a part of that examination. The individual shall provide the results of each test required by this section to the REC when the pilot applies for a license renewal or when requested by the Coast Guard.

(c) An applicant need not submit evidence of passing a chemical test for dangerous drugs required by paragraph (a) or (b) of this section if he or she provides satisfactory evidence that he or she has—

(1) Passed a chemical test for dangerous drugs required by this part within the previous six months with no subsequent positive chemical tests during the remainder of the 6-month period; or

(2) During the previous 185 days been subject to a random testing program required by § 16.230 for at least 60 days and did not fail or refuse to participate in a chemical test for dangerous drugs required by this part.

(d) Except as provided by paragraph (b) of this section, an applicant is required to provide the results of only one chemical test for dangerous drugs when multiple transactions are covered by or requested in a single application.

[CGD 91-223, 60 FR 4525, Jan. 23, 1996]

§ 16.230 Random testing requirements.

(a) Marine employers shall establish programs for the chemical testing for

dangerous drugs on a random basis of crewmembers on inspected vessels who:

(1) Occupy a position, or perform the duties and functions of a position, required by the vessel's Certificate of Inspection;

(2) Perform the duties and functions of patrolmen or watchmen required by this chapter; or,

(3) Are specifically assigned the duties of warning, mustering, assembling, assisting, or controlling the movement of passengers during emergencies.

(b) Marine employers shall establish programs for the chemical testing for dangerous drugs on a random basis of crewmembers on uninspected vessels who:

(1) Are required by law or regulation to hold a license issued by the Coast Guard in order to perform their duties on the vessel;

(2) Perform duties and functions directly related to the safe operation of the vessel;

(3) Perform the duties and functions of patrolmen or watchmen required by this chapter; or,

(4) Are specifically assigned the duties of warning, mustering, assembling, assisting, or controlling the movement of passengers during emergencies.

(c) The selection of crewmembers for random drug testing shall be made by a scientifically valid method, such as a random number table or a computer-based random number generator that is matched with crewmembers' Social Security numbers, payroll identification numbers, or other comparable identifying numbers. Under the testing frequency and selection process used, each covered crewmember shall have an equal chance of being tested each time selections are made and an employee's chance of selection shall continue to exist throughout his or her employment. As an alternative, random selection may be accomplished by periodically selecting one or more vessels and testing all crewmembers covered by this section, provided that each vessel subject to the marine employer's test program remains equally subject to selection.

(d) Marine employers may form or otherwise use sponsoring organizations, or may use contractors, to con-

duct the random chemical testing programs required by this part.

(e) Except as provided in paragraph (f) of this section, the minimum annual percentage rate for random drug testing shall be 50 percent of covered crewmembers.

(f) The annual rate for random drug testing may be adjusted in accordance with this paragraph.

(1) The Commandant's decision to increase or decrease the minimum annual percentage rate for random drug testing is based on the reported random positive rate for the entire industry. All information used for this determination is drawn from the drug MIS reports required by this part. In order to ensure reliability of the data, the Commandant considers the quality and completeness of the reported data, may obtain additional information or reports from marine employers, and may make appropriate modifications in calculating the industry random positive rate. Each year, the Commandant will publish in the FEDERAL REGISTER the minimum annual percentage rate for random drug testing of covered crewmembers. The new minimum annual percentage rate for random drug testing will be applicable starting January 1 of the calendar year following publication.

(2) When the minimum annual percentage rate for random drug testing is 50 percent, the Commandant may lower this rate to 25 percent of all covered crewmembers if the Commandant determines that the data received under the reporting requirements of 46 CFR 16.500 for two consecutive calendar years indicate that the positive rate is less than 1.0 percent.

(3) When the minimum annual percentage rate for random drug testing is 25 percent, and the data received under the reporting requirements of 46 CFR 16.500 for any calendar year indicate that the positive rate is equal to or greater than 1.0 percent, the Commandant will increase the minimum annual percentage rate for random drug testing to 50 percent of all covered crewmembers.

(g) Marine employers shall randomly select a sufficient number of covered crewmembers for testing during each calendar year to equal an annual rate

§ 16.240

not less than the minimum annual percentage rate for random drug testing determined by the Commandant. If the marine employer conducts random drug testing through a consortium, the number of crewmembers to be tested may be calculated for each individual marine employer or may be based on the total number of covered crewmembers covered by the consortium who are subject to random drug testing at the same minimum annual percentage rate under this part or any DOT drug testing rule.

(h) Each marine employer shall ensure that random drug tests conducted under this part are unannounced and that the dates for administering random tests are spread reasonably throughout the calendar year.

(i) If a given covered crewmember is subject to random drug testing under the drug testing rules of more than one DOT agency for the same marine employer, the crewmember shall be subject to random drug testing at the percentage rate established for the calendar year by the DOT agency regulating more than 50 percent of the crewmember's function.

(j) If a marine employer is required to conduct random drug testing under the drug testing rules of more than one DOT agency, the marine employer may—

(1) Establish separate pools for random selection, with each pool containing the covered crewmembers who are subject to testing at the same required rate; or

(2) Randomly select such crewmembers for testing at the highest percentage rate established for the calendar year by any DOT agency to which the marine employer is subject.

(k) An individual may not be engaged or employed, including self-employment, on a vessel in a position as master, operator, or person in charge for which a license or merchant mariner's document is required by law or regulation unless all crewmembers covered by this section are subject to the random testing requirements of this section.

[CGD 90-014, 56 FR 31034, July 8, 1991, as amended by 59 FR 62227, Dec. 2, 1994]

46 CFR Ch. I. (10-1-97 Edition)**§ 16.240 Serious marine incident testing requirements.**

The marine employer shall ensure that all persons directly involved in a serious marine incident are chemically tested for evidence of dangerous drugs and alcohol in accordance with the requirements of 46 CFR 4.06.

§ 16.250 Reasonable cause testing requirements.

(a) The marine employer shall require any crewmember engaged or employed on board a vessel owned in the United States that is required by law or regulation to engage, employ or be operated by an individual holding a license, certificate of registry, or merchant mariner's document issued under this subchapter, who is reasonably suspected of using a dangerous drug to be chemically tested for dangerous drugs.

(b) The marine employer's decision to test must be based on a reasonable and articulable belief that the individual has used a dangerous drug based on direct observation of specific, contemporaneous physical, behavioral, or performance indicators of probable use. Where practicable, this belief should be based on the observation of the individual by two persons in supervisory positions.

(c) When the marine employer requires testing of an individual under the provisions of this section, the individual must be informed of that fact and directed to provide a urine specimen as soon as practicable. This fact shall be entered in the vessel's official log book, if one is required.

(d) If an individual refuses to provide a urine specimen when directed to do so by the employer under the provisions of this section, this fact shall be entered in the vessel's official log book, if one is required.

§ 16.260 Records.

(a) Employers shall maintain records of chemical tests which the Medical Review Officer reports as *positive* for a period of at least 5 years and shall make these records available to Coast Guard officials upon request. Records of tests reported as *negative* shall be retained for one year.

(b) The records shall be sufficient to:

Coast Guard, DOT.**§ 16.340**

(1) Satisfy the requirements of §§ 16.210(b) and 16.220(c) of this part.

(2) Identify the total number of individuals chemically tested annually for dangerous drugs in each of the categories of testing required by this part including the annual number of individuals failing chemical tests and the number and types of drugs for which individuals tested positive.

[CGD 86-067, 53 FR 47079, Nov. 21, 1988, as amended by CGD 91-223, 60 FR 4526, Jan. 23, 1996]

Subpart C—Standards for Chemical Testing for Dangerous Drugs

§ 16.301 Procedures for Transportation Workplace Drug Testing Programs.

Drug testing programs subject to this part shall be conducted in accordance with 49 CFR part 40, Procedures for Transportation Workplace Drug Testing Programs. This subpart summarizes requirements for drug testing programs contained in those regulations. Those regulations should be consulted to determine the specific procedures which must be established and utilized. Drug testing programs required by this part shall use only drug testing laboratories certified by the Department of Health and Human Services (DHHS).

§ 16.310 General.

(a) *Collection site.* The employer shall ensure that the collection site is adequate to provide for the collection, security, temporary storage, and shipping of specimens to a certified drug testing laboratory.

(b) *Security.* Procedures shall provide for the collection site to be secure. Collection sites dedicated solely for specimen collection must be secure at all times. Collection sites which are not dedicated solely for specimen collection must be secured during specimen collection.

(c) *Access to authorized personnel only.* No unauthorized personnel shall be permitted in any part of a collection site when specimens are collected nor shall unauthorized personnel be allowed access to stored specimens.

(d) *Privacy.* Procedures for collecting urine specimens shall allow for individ-

ual privacy unless there is reason to believe that a particular individual may alter or substitute the specimen to be provided.

(e) *Integrity of specimens.* Collection site personnel shall take precautions to ensure that each specimen is not adulterated or diluted during the collection process.

§ 16.320 Chain of custody.

(a) A chain of custody for each specimen to be chemically tested shall be established and maintained from the time of specimen collection through the testing of the specimen.

(b) If a specimen is not immediately prepared for shipment, it shall be safeguarded during temporary storage.

(c) Every effort shall be made to minimize the number of persons handling specimens.

§ 16.330 Specimen handling and shipping.

(a) The employer shall obtain a specimen collection and shipping kit to be used to collect specimens and ship them to the certified drug testing laboratory.

(b) The specimen collection and shipping kit, as required by 49 CFR part 40, shall contain:

(1) Plastic urine specimen bottles in a sufficient quantity to accommodate the people to be tested;

(2) Means for sealing and identifying specimen bottles;

(3) Chain of custody forms;

(4) A set of step-by-step instructions which describe the proper procedures to be followed during specimen collection, handling, and shipping; and

(5) Shipping materials.

(c) The marine employer shall ensure that specimens are promptly shipped to a certified testing laboratory meeting the requirements of § 16.340. Chain of custody documents must accompany each specimen from the time of specimen collection through shipment to and testing by the laboratory.

(d) Specimens shall be shipped by an expeditious means.

§ 16.340 Test laboratory requirements.

(a) The employer shall ensure that all chemical testing for dangerous

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drugs required by this part is conducted by a DHHS certified laboratory.

(b) The laboratory shall meet the requirements of 49 CFR part 40.

§ 16.350 Specimen analysis.

(a) Each specimen shall be analyzed in accordance with 49 CFR 40.29, which requires testing for—

- (1) Marijuana;
- (2) Cocaine;
- (3) Opiates;
- (4) Phencyclidine (PCP); and
- (5) Amphetamines.

(b) A specimen which indicates the presence of a dangerous drug at a level equal to or exceeding the levels established in 49 CFR 40.29 is reported to the Medical Review Officer as positive.

[CGD 90-053, 58 FR 31107, May 28, 1993]

§ 16.360 Specimen analysis reports.

(a) The laboratory shall report all test results as required by 49 CFR 40.29(g). Reports are made within an average of five days after receipt of a specimen by the laboratory.

(b) The laboratory reports as negative all specimens which are negative on the initial test or negative on the confirmatory test. Only specimens confirmed positive are reported positive to the Medical Review Officer for a specific drug or drug metabolite.

[CGD 86-067, 53 FR 47079, Nov. 21, 1988, as amended by CGD 90-053, 58 FR 31107, May 28, 1993]

§ 16.370 Medical Review Officer.

(a) The employer shall designate or appoint a Medical Review Officer (MRO) meeting the qualifications of 49 CFR 40.33. If the employer does not have a qualified individual on staff to serve as MRO, the employer may contract for the provision of MRO services as part of its drug testing program.

(b) The MRO shall review and interpret each confirmed positive test result in accordance with 49 CFR 40.33.

(c) If the MRO verifies a laboratory confirmed positive report, the MRO shall report the positive test result to the employer or the employer's designated agent.

(d) Before an individual who has failed a required chemical test for dangerous drugs may return to work

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aboard a vessel, the MRO shall determine that the individual is drug-free and the risk of subsequent use of dangerous drugs by that person is sufficiently low to justify his or her return to work. In addition, the individual shall agree to be subject to increased, unannounced testing for a period as determined by the MRO of up to 60 months.

[CGD 86-067, 53 FR 47079, Nov. 21, 1988; 53 FR 48367, Nov. 30, 1988, as amended by CGD 90-053, 58 FR 31107, May 28, 1993]

§ 16.380 Release of information.

(a) Except as provided for in this part and in § 4.06-60 of this chapter, an employer shall not release individual test results or other personal information for anti-drug program records.

(b) Individual results from drug tests required by this part may be released if the individual tested signs a specific authorization for the release of the results to an identified person.

(c) Nothing in this section shall prevent an individual tested under this part from obtaining the results of that test.

Subpart D—Employee Assistance Programs**§ 16.401 Employee Assistance Program (EAP).**

The employer shall provide an Employee Assistance Program (EAP) for all crewmembers. The employer may establish the EAP as a part of its internal personnel services or the employer may contract with an entity that will provide EAP services to a crewmember. Each EAP must include education and training on drug use for crewmembers and the employer's supervisory personnel as provided below:

(a) *EAP education program:* Each EAP education program must include at least the following elements: display and distribution of informational material; display and distribution of a community service hot-line telephone number for crewmember assistance, and display and distribution of the employer's policy regarding drug and alcohol use in the workplace.

(b) *EAP training program:* An EAP training program must be conducted for the employer's crewmembers and

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supervisory personnel. The training program must include at least the following elements: the effects and consequences of drug and alcohol use on personal health, safety, and work environment; the manifestations and behavioral cues that may indicate drug and alcohol use and abuse; and documentation of training given to crewmembers and the employer's supervisory personnel. Supervisory personnel must receive at least 60 minutes of training.

Subpart E—Management Information System

§ 16.500 Management Information System requirements.

(a) All marine employers shall collect the drug and alcohol testing program data identified in this section for each calendar year, January 1 to December 31. Marine employers shall submit this data to the Coast Guard by March 15 of the following year. The data shall be submitted to Commandant (G-MOA), 2100 Second Street, SW, Washington, DC, 20593-0001.

(b) All marine employers shall collect the following drug and alcohol testing program data:

(1) Number of covered employees.

(2) Number of covered employees subject to testing under the anti-drug rules of more than one DOT agency because of the nature of their assigned duties, identified by each agency.

(3) Number of drug and alcohol tests by test type. The drug test types are pre-employment, random, post-accident and reasonable cause. The alcohol test types are post-accident and reasonable cause.

(4) Number of positive drug test results verified by a Medical Review Officer (MRO) by test type and type of drug(s). Number of alcohol tests resulting in a blood alcohol concentration of .04 percent by weight or more by test type.

(5) Number of negatives reported by a MRO by type of test.

(6) Number of applicants denied employment based on a positive drug test result verified by an MRO.

(7) Number of marine employees with a positive drug test result verified by an MRO, who were returned to duty in a covered position, having met the requirements of § 16.370(d) and part 5 of this chapter.

(8) Number of marine employee drug test results that MROs verify positive for more than one drug or combination of drugs.

(9) Number of covered employees who refused to submit to a drug test required under this part.

(10) Marine employee training and education information.

(c) The data listed in paragraph (b) of this section must be submitted on Form CG-5573, which is reproduced in appendix B to this part and may be obtained at any Officer in Charge, Marine Inspection. All items on the form must be completed. Data may be submitted by consortia or other employer representatives on behalf of a marine employer. Reports submitted in this manner may be on one form, but must also be accompanied by a list of marine employers for whom the report is submitted. Unless submitting the report on their own behalf, each marine employer must notify the Coast Guard (Commandant (G-MOA)) in writing of the consortium or representative that will submit the employer's data, and remains responsible for ensuring that the data is submitted and is accurate.

(d) Marine employers that conduct operations regulated by another Department of Transportation Operating Administration must submit appropriate data to that Operating Administration for those employees covered by that Operating Administration's regulations.

[CGD 91-019, 58 FR 68277, Dec. 23, 1993, as amended by CGD 95-072, 60 FR 50461, Sept. 29, 1995; CGD 98-041, 61 FR 50726, Sept. 27, 1996]

APPENDIX A [RESERVED]

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**APPENDIX B - DRUG AND ALCOHOL TESTING MANAGEMENT INFORMATION SYSTEM
(MIS) DATA COLLECTION FORM**

INSTRUCTIONS

This reporting form includes four parts. Collectively, these parts address the data elements required in the United States Coast Guard (USCG) and the U.S. Department of Transportation (DOT) drug and alcohol testing regulations. The form is preceded by instructions which outline and explain the information requested and indicate the probable sources for this information. The four sections, the page number for the instructions, and the page location on the reporting form are:

<u>Section</u>	<u>Instructions Page</u>	<u>Reporting Form Page</u>
A. MARINE EMPLOYER INFORMATION	i	1
B. COVERED EMPLOYEES	i	1
C. MARINE EMPLOYEE DRUG TESTING INFORMATION	ii-iv	2
D. MARINE EMPLOYEE ALCOHOL TESTING INFORMATION	iv-v	2

Page 1 **MARINE EMPLOYER INFORMATION** (Section A) requires the company name for which the report is done and a current address. Below this, a signature, typed or printed name, title, date, and current telephone number (including the area code) are required from the person certifying the correctness and completeness of the form.

Page 1 **COVERED EMPLOYEES** (Section B) requires a count of employees (including prospective employees who were pre-employment tested) who were subject to testing under the USCG/DOT drug testing regulations. The most likely source for this information is the employer's personnel department. The count should include all covered employees working for the company during the reported year.

Additional information must be completed if your company employs personnel who perform duties covered by the drug and alcohol rules of more than one DOT operating administration. **NUMBER OF EMPLOYEES COVERED BY MORE THAN ONE DOT OPERATING ADMINISTRATION**, requires that you identify the number of employees under the appropriate additional operating administration(s).

The following instructions are to be used as a guide for completing the drug testing information in the USCG/DOT Drug and Alcohol Testing MIS Data Collection Form. A sample testing results table with a narrative explanation is provided on pages ii-iii as an example to facilitate the process of completing the form correctly.

Section C is used to summarize the drug testing results for applicants and covered employees. There are four categories of testing to be completed. Items necessary to complete this table include:

- 1) the number of specimens collected in each testing category;
- 2) the number of specimens tested which were reported negative and verified positive for any drug(s); and
- 3) individual counts of those specimens which were verified positive for each of the five drugs.

Do not include results of quality control samples submitted to the testing laboratory in the table.

A sample table with detailed instructions is provided.

Page 2

MARINE EMPLOYEE DRUG TESTING INFORMATION (Section C) requires information for drug testing by category of testing. Each part of this table must be completed for each category of testing. These numbers do not include refusals for testing. A sample of the table with example numbers is presented on page iii.

Three types of information are necessary to complete the left side of this table. The first blank column with the heading "NUMBER OF SPECIMENS COLLECTED," requires a count for all collected specimens by testing category. It should not include refusals to test. The second blank column with the heading "NUMBER OF SPECIMENS REPORTED NEGATIVE," requires a count for all completed tests by testing category that were reported negative by your Medical Review Officer (MRO).

The third blank column with the heading "NUMBER OF SPECIMENS VERIFIED POSITIVE FOR ONE OR MORE OF THE FIVE DRUGS," refers to the number of specimens provided by job applicants or employees that were verified positive. "Verified positive" means the results were verified by your MRO.

The right hand portion of this table, with the heading "NUMBER OF SPECIMENS VERIFIED POSITIVE FOR EACH TYPE OF DRUG," requires counts of positive tests for each of the five drugs for which tests were done, i.e., marijuana (THC), cocaine, phencyclidine (PCP), opiates, and amphetamines. The number of specimens verified positive for each drug should be entered in the appropriate column for that drug type. Again, "verified positive" refers to test results verified by your MRO.

If an applicant or employee tested positive for more than one drug; for example, both marijuana and cocaine, that person's positive results would be included once in each of the appropriate columns (marijuana and cocaine).

SAMPLE MARINE EMPLOYEE TEST RESULTS TABLE

The following example is for Section C, **MARINE EMPLOYEE DRUG TESTING INFORMATION**, and summarizes pre-employment testing results. The procedures detailed here also apply to the

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other categories of testing in Section C which require you to summarize testing results for employees.

- A** Urine specimens were collected for 157 job applicants for covered positions during the reporting year. This information is entered in the first blank column of the table in the row marked "PRE-EMPLOYMENT".
- B** The MRO for your company reported that 153 of those 157 specimens from applicants were negative (i.e., no drugs were detected). Enter this information in the second blank column of the table in the row marked "PRE-EMPLOYMENT".
- C** The MRO for your company reported that 4 of those 157 specimens from applicants were positive (i.e., a drug or drugs were detected). Enter this information in the third blank column of the table in the row marked "PRE-EMPLOYMENT".
- D** With the 4 specimens that tested positive, the following drugs were detected:

Specimen	Drugs
#1	Marijuana
#2	Amphetamines
#3	Marijuana and Cocaine (Multi-drug specimen)
#4	Marijuana

Marijuana was detected in three (3) specimens, cocaine in one (1), and amphetamines in one (1). This information is entered in the columns on the right hand side of the table under each of these drugs. Two different drugs were detected in specimen #3 (multi-drug) so an entry is made in both the marijuana and the cocaine column for this specimen.

TYPE OF TEST	NUMBER OF SPECIMENS COLLECTED	NUMBER OF SPECIMENS REPORTED NEGATIVE	NUMBER OF SPECIMENS VERIFIED POSITIVE FOR ONE OR MORE OF THE FIVE DRUGS	NUMBER OF SPECIMENS VERIFIED POSITIVE FOR EACH TYPE OF DRUG				
				Marijuana (THC)	Cocaine	Phencyclidine (PCP)	Opiates	Amphetamines
PRE-EMPLOYMENT	157	153	4	3	1	0	0	1

A
B
C
D

Note that adding up the numbers for each type of drug in a row ("NUMBER OF SPECIMENS VERIFIED POSITIVE FOR EACH TYPE OF DRUG") will not always match the number entered in the third column, "NUMBER OF SPECIMENS VERIFIED POSITIVE FOR ONE OR MORE OF THE FIVE DRUGS". The total for the numbers on the right hand side of the table may differ from the number of specimens testing positive since some specimens may contain more than one drug.

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- Page 2** Below the table for **MARINE EMPLOYEE DRUG TESTING INFORMATION** is a box with the heading "Number of persons denied a position as a covered employee following a verified positive drug test". This is simply a count of those persons who were not placed in a covered position because they tested positive for one or more drugs.
- Page 2** Also following the table for **MARINE EMPLOYEE DRUG TESTING INFORMATION**, you must provide counts for employees who have tested positive and have returned to work in a covered position during the reported period. This information should be available from the personnel office and/or drug program manager.
- Page 2** **SPECIMENS VERIFIED POSITIVE FOR MORE THAN ONE DRUG** requires information on specimens that contained more than one drug. First, indicate the **NUMBER OF VERIFIED POSITIVES**. Then specify the combination of drugs reported as positive by placing the same number in the appropriate columns. For example, if marijuana and cocaine were detected in 3 specimens, then you would write "3" as the number of verified positives and "3" in the columns for "Marijuana" and "Cocaine". If marijuana and opiates were detected in 2 specimens, then you would write "2" as the number of verified positives and "2" in the columns for "Marijuana" and "Opiates".
- Page 2** **EMPLOYEES WHO REFUSED TO SUBMIT TO A DRUG TEST** requires a count of the **NUMBER OF COVERED EMPLOYEES** who refused to submit to a random or non-random (pre-employment, post-accident, or reasonable cause) drug test required under the USCG regulation.
- Page 2** **DRUG AND ALCOHOL TRAINING** requires information on the number of covered employees and supervisory personnel who have received the required drug and alcohol training during the current reporting period.

The following instructions are to be used as a guide for completing the alcohol testing information for the USCG/DOT Drug and Alcohol Testing MIS Data Collection Form. A sample testing results table with a narrative explanation is provided on page v as an example to facilitate the process of completing the form correctly.

Section D is used to summarize the alcohol testing results for covered employees. There are two categories of testing to be completed in this table. Items necessary to complete this table includes:

- 1) the number of alcohol tests performed for each testing category; and
- 2) the number of test results which were equal to or greater than 0.04.

A sample table with detailed instructions is provided.

- Page 2** **MARINE EMPLOYEE ALCOHOL TESTING INFORMATION (Section D)** requires information for post-accident and reasonable cause alcohol testing. These numbers do not include refusals for testing. A sample table with example numbers is presented on page v.

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Two types of information are necessary to complete this table. The first blank column with the heading "NUMBER OF TESTS" requires a count of all alcohol tests performed for each testing category.

The second blank column with the heading "NUMBER OF TEST RESULTS EQUAL TO OR GREATER THAN 0.04" requires a count of positive tests.

SAMPLE MARINE EMPLOYEE TEST RESULTS TABLE

The following example is for Section D, MARINE EMPLOYEE ALCOHOL TESTING INFORMATION, which summarizes post-accident and reasonable cause testing results.

A

Tests were conducted on 6 employees in covered positions during the reporting year. This information is entered in the first blank column of the table in the row marked "POST-ACCIDENT". The test results for these 6 employees were the following:

Employee	Results
#1	0.08
#2	0.00
#3	0.00
#4	0.04
#5	0.00
#6	0.02

B

The test results for 2 of the employees in covered positions were equal to or greater than 0.04. Enter this information in the second blank column of the table in the row marked "POST-ACCIDENT".

TYPE OF TEST	NUMBER OF TESTS	NUMBER OF TEST RESULTS EQUAL TO OR GREATER THAN 0.04
POST-ACCIDENT	6	2
REASONABLE CAUSE	10	1

A

B

Please note that the sample data collection form also has information for REASONABLE CAUSE testing on line two. For REASONABLE CAUSE testing, 10 tests were conducted and 1 was equal to or greater than 0.04.

v

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USCG DRUG AND ALCOHOL TESTING MIS DATA COLLECTION FORM

OMB No. 2115-0003

YEAR COVERED BY THIS REPORT: 19__

A. MARINE EMPLOYER INFORMATION

Company _____
 Address _____

I, the undersigned, certify that the information provided on this United States Coast Guard Drug and Alcohol Testing Management Information System Data Collection Form is, to the best of my knowledge and belief, true, correct, and complete for the period stated.

Signature _____ Printed Name _____ Date _____
 Title _____ Phone Number _____

Title 18, U.S.C. Section 1001, makes it a criminal offense subject to a maximum fine of \$10,000, or imprisonment for not more than 5 years, or both, to knowingly and willfully make or cause to be made any false or fraudulent statements or representations in any matter within the jurisdiction of any agency of the United States.

B. COVERED EMPLOYEES

COVERED EMPLOYEES						
EMPLOYEE CATEGORY	NUMBER OF USCG COVERED EMPLOYEES	NUMBER OF EMPLOYEES COVERED BY MORE THAN ONE DOT OPERATING ADMINISTRATION				
		FAA	FWA	FRA	FTA	REPA
Crewmembers						

- READ BEFORE COMPLETING THE REMAINDER OF THIS FORM:**
- All items refer to the current reporting period only (for example, January 1, 1994 - December 31, 1994).
 - This report is only for testing **REQUIRED BY THE UNITED STATES COAST GUARD (USCG)**:
 - Results should be reported only for employees in **COVERED POSITIONS** as defined by the USCG drug and alcohol testing regulations.
 - The information requested should only include testing for: marijuana (THC), cocaine, phencyclidine (PCP), opiates, and amphetamines using the standard procedures required by DOT regulation 49 CFR Part 40; and alcohol using the standard procedures required by USCG regulations 33 CFR Part 95 and 46 CFR Parts 4 and 16.
 - Information on refusals for testing should only be reported in the table entitled "EMPLOYEES WHO REFUSED TO SUBMIT TO A DRUG TEST". Do not include refusals for testing in other sections of this report.
 - Do not include the results of any quality control samples submitted to the testing laboratory in any of the tables.
 - Complete all items: **DO NOT LEAVE ANY ITEM BLANK**. If the value for an item is zero (0), place a zero (0) on the form.

The United States Coast Guard estimates that the average burden for this report form is 31 minutes. You may submit any comments concerning the accuracy of this burden estimate or any suggestions for reducing the burden to: Commandant, U.S. Coast Guard Headquarters (G-MM); 2100 2nd St., S.W.; Washington, D.C. 20593-0001; OR Office of Management and Budget, Paperwork Reduction Project (2115-0003); Washington, D.C. 20503.

REVERSE OF CG-5673 (11-88)

This part of the form requires information on VERIFIED POSITIVE and REPORTED NEGATIVE drug tests. These are the results that are reported to you by your Medical Review Officer (MRO).

C. MARINE EMPLOYEE DRUG TESTING INFORMATION

TYPE OF TEST	NUMBER OF SPECIMENS COLLECTED	NUMBER OF SPECIMENS REPORTED NEGATIVE	NUMBER OF SPECIMENS VERIFIED POSITIVE FOR ONE OR MORE OF THE FIVE DRUGS	NUMBER OF SPECIMENS VERIFIED POSITIVE FOR EACH TYPE OF DRUG				
				Marijuana (THC)	Cocaine	Phencyclidine (PCP)	Opiates	Amphetamines
PRE-EMPLOYMENT								
RANDOM								
POST-ACCIDENT								
REASONABLE CAUSE								
Number of persons denied a position as a covered employee following a verified positive drug test:								
Number of marine employees with a positive drug test result verified by an MRO, who were returned to duty in a covered position, having met the requirements of 46 CFR 16.370 (d) and 46 CFR Part 5:								
SPECIMENS VERIFIED POSITIVE FOR MORE THAN ONE DRUG								
NUMBER OF VERIFIED POSITIVES	Marijuana (THC)	Cocaine	Phencyclidine (PCP)	Opiates	Amphetamines			
EMPLOYEES WHO REFUSED TO SUBMIT TO A DRUG TEST							Number	
Covered employees who refused to submit to a random drug test required under USCG regulations:								
Covered employees who refused to submit to a non-random drug test required under USCG regulations:								
DRUG AND ALCOHOL TRAINING							Number	
Covered employees who have received initial training on the consequences, manifestations, and behavioral cues of drug and alcohol use as required by USCG drug and alcohol testing regulations:								
Supervisory personnel who have received initial training on the specific contemporaneous physical, behavioral, and performance indicators of probable drug and alcohol use as required by USCG drug and alcohol testing regulations:								

D. MARINE EMPLOYEE ALCOHOL TESTING INFORMATION

TYPE OF TEST	NUMBER OF TESTS	NUMBER OF TEST RESULTS EQUAL TO OR GREATER THAN 0.04
POST-ACCIDENT		
REASONABLE CAUSE		

APPENDIX C

POSTACCIDENT TESTING POLICY FOR THE U.S. COAST GUARD MARINE SAFETY OFFICE, PORTLAND, MAINE

U.S. Department
of Transportation



United States
Coast Guard

Commanding Officer
US. Coast Guard
Marine Safety Office

P.O. Box 108
Portland, ME 04112-01 OS
Phone (207) 780-3251

MAR 10 1997

COMMANDING OFFICER INSTRUCTION 16722.2

Subj : SERIOUS MARINE INCIDENT CHEMICAL TESTING

Ref: (a) Title 46 Code of Federal Regulations, Part 4
(b) Title 33 Code of Federal Regulations, Part 95
(c) COMDT COGARD Washington DC 151917Z Nov 94, ALDIST
179/94 Post Casualty Chemical Testing
(d) COMDTINST 16000.10, MSM Vol V

1. PURPOSE. This instruction provides guidelines for Investigating Officers and their Field Office Supervisors in ensuring that alcohol and drug (chemical) testing be performed as soon as practicable in a case of a serious marine incident.

2. DISCUSSION. When a marine casualty, discharge of oil, or release of a hazardous substance occurs, the marine employer is required to make a timely, good faith determination as to whether the occurrence is, or is likely to become, a serious marine incident. A marine employer shall require all persons (not limited to crewmembers) onboard the vessel whom the employer determines to be directly involved in a serious marine casualty to be chemically tested for dangerous drugs and alcohol. It is Coast Guard policy that serious marine incident chemical testing be done as soon as practicable to provide useful results for investigative purpose. However, the Coast Guard personnel will not provide urine collection materials or perform as the collection site person.

3. ACTION. All Marine Safety Field Office Supervisors and Investigating Officers shall ensure compliance with the requirements of this instruction.

4. RESPONSIBILITY

a. Field Office Supervisors and Investigating Officers must be familiar with the requirements in references (a) through (d) and carry them out accordingly.

b. Upon receiving a report of marine casualty, the Field Office Supervisor and Investigating Officer must immediately evaluate the casualty to determine if the case is a serious marine incident or likely to become one. If the accident is or will become a serious marine incident, the Investigating Officer must inform the marine employer and the master of the vessel immediately about the requirement of post casualty chemical testing. The testing must be conducted "AS SOON AS PRACTICABLE AFTER ADDRESSING THE SAFETY CONCERNS OF THE VESSEL. "

c. The Investigating Officer may provide a copy of Post-accident Drug and Alcohol Testing Overview (enclosure 1) and a copy of List of Suggested Collection Sites (enclosure 2) to assist the marine employer if necessary in ensuring timely chemical testing.

d. The Investigating Officer shall follow up with the marine employer to determine when and where the drug and alcohol test will be performed.

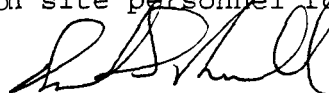
e. If the Investigating Officer determines that alcohol testing will be delayed, the nearest Coast Guard Station (enclosure 3) shall be contacted immediately to conduct breath alcohol testing per reference (c). CGDONE(m) Program Guidance states that the Alto-sensor equipment may be better used by stations and other law enforcement units to avoid creditability conflicts during Suspension and Revocation Hearings. However, this testing does not relieve the employer from having the required chemical test for dangerous drugs performed. The Investigating Officer must emphasize to the marine employer that both drug and alcohol testing must be performed as soon as practicable,

f. When responding to a marine incident, the Investigating Officer shall quickly determine who is directly involved with the accident and make observations for signs of alcohol or other intoxicants. Normally, the physical symptoms of people under the influence of alcohol include: the individual's manner (furtive, trying to avoid face to face), disposition (belligerent, threatening) , speech (slurred) , muscular movement (jerky, clumsy) , general appearance (disheveled, glassy eyed) , or behavior (confrontational). The Investigating Officer shall also be aware of the smell of alcoholic beverage on the individual's clothes or breath.

g. The Investigating Officer shall provide the marine employer a Marine Accident Report Form (CG-2692) and a Coast Guard form CG-2692B, Report of Required Chemical Drug and Alcohol Testing Following a Serious Marine Incident.

h. In case of an accident involving a foreign vessel, the shipping agent of the vessel must also be immediately notified of the chemical testing requirement.

i. The Investigating Officer or any other Coast Guard personnel shall not perform as collection site personnel for any chemical testing.



BURTON S. RUSSELL

Encl: (1) Post-accident Drug and Alcohol Testing Requirements
(2) List of Suggested Collection Site for Marine Employers
(3) List of Coast Guard Stations

copy to: CGDONE (m)
DAP I
GP Portland
GP Southwest Harbor

POST ACCIDENT DRUG AND ALCOHOL TESTING REQUIREMENTS
What do the regulations require?

When a marine casualty, discharge of oil, or release of a hazardous substance occurs, the marine employer needs to make a timely, good faith determination as to whether the occurrence is or likely to become a serious marine incident. A marine employer shall require all persons (not limited to crewmembers) on board the vessel(s) whom the employer determines to be directly involved in a serious marine incident to be chemically tested for dangerous drugs and alcohol. 46 CFR 4.06

Who is responsible for the testing?

The marine employer has the ultimate responsibility for ensuring that the requirements of the federal requirements of post-accident testing be carried out. Employees must provide a urine sample for drug testing, and a blood or breath sample for alcohol testing, when directed by their marine employer or any law enforcement officer. 46 CFR 4.06

What is a serious marine incident?

A serious marine incident, as defined by 46 CFR 4.03-2, includes the following events:

1. A discharge of 10,000 gallons or more of oil into navigable waters of the United States, whether or not resulting from a marine casualty.
2. A discharge of a reportable quantity of a hazardous substance into navigable waters or into the environment of the United States, whether or not resulting from a marine casualty.
3. A marine casualty or accident that is required by 46 CFR 4.05-1 to be reported to the Coast Guard which results in any of the following:
 - a. One or more deaths;
 - b. An injury to any person (including passengers) which requires medical treatment beyond first aid, and, in the case of a person employed on board a commercial vessel, which renders the person unable to perform routine vessel duties;
 - c. Damage to property in excess of \$100,000.00
 - d. Actual or constructive loss of any inspected vessel; or
 - e. Actual or constructive total loss of any uninspected, self-propelled vessel of 100 gross tons or more.

How long do I have to collect the sample?

The regulations do not set a specific time limit but require collections "as soon as practicable." They also state that the regulations shall not prevent a person from performing duties in the aftermath of an accident to protect lives, property, or the environment. Each case will be different, however it should be noted evidence of alcohol can leave the body quite quickly.

ENCLOSURE (1)

What if something becomes a serious marine incident a week later?

The marine employer must make a honest decision of whether or not a certain incident is likely to become a serious marine incident. Some information, such as the cost of property damage or the amount of oil spilled, may not be available for days or months. If the employer determines that something is likely to become a serious marine incident, the employer shall determine who was directly involved and order testing. The Coast Guard understands that the employer can honestly fail to predict if an event could become a serious marine incident. Also, an employee often will report that he/she had an accident some time ago and now wants to see a doctor. There is no precise time limit in the regulations to guide an employer as to when it is "too late" to test.

Who is "DIRECTLY INVOLVED" in a serious marine incident?

An individual whose order, action or failure to act is determined to have, or cannot be ruled out as, having caused or contributed to a serious marine incident is "directly involved". A law enforcement officer, such as a Coast Guard officer or a state or local police officer may also determine that a person was directly involved in a serious marine incident. If this happens, the marine employer shall then take all practicable steps to collect the required samples.

Specimen Collection Equipment

Urine collection and shipping kits must be maintained aboard vessels, unless they can be readily obtained within 24 hours of an incident. Inspected vessels certificated for unrestricted ocean routes must have a breath testing device on board to test for alcohol.

Post-Accident Reporting Requirements

A Coast Guard form CG-2692B, Report of Required Chemical Drug and Alcohol Testing Following a Serious Marine Incident, must be submitted to the appropriate Officer in Charge, Marine Inspection following any serious marine incident. This form should be submitted along with a form CG-2692, Report of Marine Incident, Injury or Death, if a CG-2692 is required to be submitted. The drug test results will not always be available when the CG-2692 and CG-2692B are submitted. The marine employer must report the test results, positive or negative, when they receive them.

Acknowledged by: _____ Date: _____ Time: _____
 Investigating Officer: _____ Date: _____ Time: _____

Company Name	Address	City	ST	Zip	Point of Contact	Telephone Number	Fax Number	Lab Used	MRO
Affiliated Health Care	30 Summer Street Suite 1	Bangor	ME	04401	Jackie Gill	207-942-3409	207-941-0873	MedExpress Memphis TN	Med Review Charlotte, NC Drug Free Little Rock, AK
St. Andrews Hospital	P.O. Box 417	Boothbay Harbor	ME	04538	Marissa Castillo	207-633-2121 Ext. 371/372	207-633-7414	CompuChem RTC, NC	Dr. Ken Thompson Insight Ocala, FL
Occupational Medicine Associates	323 Marginal Way	Portland	ME	04101	Ward Graffam Steven Johnson	207-773-6707	207-773-5745	CompuChem RTC, NC	Dr. Steven Johnson
Center For Health Promotion	1600 Congress Street	Portland	ME	04102	Denise Gay	207-774-7751	207-828-5140	CompuChem RTC, NC	Dr. Susan Upham Dr. Betsey Buehrer Dr. David Dickison
Health Connections	859 Commercial Street	Rockport	ME	04856	Janice Chase	207-596-7244	207-596-0388	Corning Nat'l Baltimore, MD	Dr. Alice Chartrande
EMSI	778 Main Street	South Portland	ME	04106	Beverly Nixon	207-871-8600	207-871-1818	Corning Clinical San Diego, CA	Greystone Health Sciences
Occupational Health Excellence of Maine	21 Donald B. Dean Drive	South Portland	ME	04106	Penny Leask	207-775-3288	207-775-4747	CompuChem RTC, NC	Dr. William Boucher
Occupational Health & Rehabilitation	600 Southborough Drive	South Portland	ME	04106	Mary Kenney Peter Senger	207-772-3645	207-871-7183	MedExpress Memphis, TN	Dr. Robert Meyer
AdMed, Ltd.	2301 University Drive Bldg 21	Bismark	ND	58504-7595	Kenneth Will	800-767-5191	701-258-2637	LabOne, Inc. Overland Park, KS	Dr. Bennett Plainfield, IN
Compliant Network of New England	370 Harvey Road	Manchester	NH	03103	John Quintal	603-623-1100	603-627-1168	Clinical Ref Lab Lenexa, KS	Dr. Windler Manchester, NH
The Maritime Consortium	P.O. Box 25345	Alexandria	VA	22313-0345	Sara Ross	800-775-6985	800-764-2350	MedExpress Memphis, TN	Dr. Ken Thompson Insight Ocala, FL
Drug Testing Consultants	P.O. Box 706	Fairfax	VA	22030-0706	Robert Schoening	800-944-8378	703-352-7124	Occ Med Assoc	Dr. Ian McDonald

ENCLOSURE (2)

LIST OF COAST GUARD STATIONS IN THE COTP PORTLAND AOR

USCG Station Boothbay Harbor, ME	(207) 633-2664 (207) 633-2661 (SAR)
USCG SARDET Eastport, ME	(207) 853-2845 (SAR)
USCG Station West Jonesport, ME	(207) 497-2134 (207) 497-5700 (SAR)
USCG Station Portsmouth Harbor, NH	(603) 436-4415 (603) 436-4414 (SAR)
USCG Station Rockland, ME	(207) 596-6667 (207) 596-6666 (SAR)
USCG Station South Portland, ME	(207) 767-0363 (207) 767-0364

APPENDIX D

**PORTLAND BOARD OF HARBOR COMMISSIONERS
DRUG AND ALCOHOL POLICY**

**BOARD OF HARBOR COMMISSIONERS
for the HARBOR of PORTLAND**

Pilot Alcohol and Drug Policy Testing Procedures

Adopted December 12, 1996

1.0 POLICY STATEMENT

1.1 It is the intent of this policy to assure compliance with Federal and State laws and regulations regarding drug and alcohol testing of pilots licensed by the Board of Harbor Commissioners for the Harbor of Portland (the "Board") to operate or provide service to vessels in the Harbor of Portland (the "Harbor").

1.2 The Board has a strong commitment to the health, safety and welfare of all persons working, traveling or recreating in or near the Harbor. Therefore the Board seeks to license pilots who are free of illegal and abused drugs and alcohol, and protect pilots and the public from the adverse effects of alcohol and drug abuse. The Board also seeks to protect the reputations of pilots against unfounded allegations of substance abuse.

The Board requires applicants seeking pilot's licenses to undergo an alcohol and drug test to detect the presence of alcohol and drug abuse substances in the body. Any applicant with a positive pre-license test may be denied a license by the Board by reason of the positive test.

1.3 Studies indicate that the use and misuse of alcohol or drugs, whether prescribed or illegal, impairs the ability of a pilot to perform assigned duties, particularly those involved in safety sensitive operations, and may endanger the pilot, co-workers, the public, and public and private property. The Board seeks to prevent pilots from using alcohol and drugs when the use of such is illegal or in any way endangers the public.

2.0 DRUG AND ALCOHOL TESTING

2.1 All applicants for pilot's license shall be required to pass a drug and alcohol test as a prerequisite to being granted a license

2.2 Pilots shall remain free from the abuse of alcohol and controlled substances. A pilot may be tested at any time while on duty, or immediately before or after being on-duty, based on the following:

2.2.1 Reasonable suspicion that the pilot (see definition, reasonable suspicion):

2.2.1.1 has unlawfully used illicit drugs and/or abused controlled substances; or

2.2.1.2 has reported for work under the influence of or has illicitly ingested controlled substances or alcohol during work hours.

2.2.2 Post-Accident following involvement in a piloting accident as defined in section 5.10 below.

2.2.3 Random selection equivalent to that mandated under 49 CFR.

2.2.4 Returning to duty following a confirmed positive test. (see section 5.11 and 5.12)

3.0 RESPONSIBILITY

It is the responsibility of the Board to administer and enforce this policy and the procedures as outlined. An offer of employment by the Board for a position classifying as a “pilot” under this policy shall not be deemed to be final, nor shall a prospective employee have the right to accept any offeror suggestion of an offer of employment until such time as a drug test evaluation has been received and cleared by the Board. Any work performed by an individual for or in behalf of the Board prior to such approval shall not involve the operation of any Board vessel prior to testing. Any applicant for a pilot’s license issued by the Board shall submit results of drug and alcohol tests as a prerequisite for issuance of a license.

The Board will contract for specimen collection, medical review and testing. It is the responsibility of the Board to see that employees and licensees have notice of and are familiar with these drug and alcohol policies and procedures.

4.0 DEFINITION(S)

4.1 Alcohol and Drug Test - A generally accepted and proven test methodology or methodologies as recommended by the Rules and Regulations under CFR 49 Part 653, Prevention of Prohibited Drug Use in Transit Operations and CFR 49 Part 382, Substances and Alcohol Use and Testing, and 49 CFR Part 40, Procedures for Transportation Workplace Drug Testing Programs. This test method determines whether an individual has ingested or otherwise used the substance in question within a period of time before the test.

4.2 Breath Alcohol Technician (BAT) - Professional trained and certified in the use of an evidential breath testing device (EBT).

4.3 Applicant - A person who has applied to the Board for a pilot’s license, including current pilots applying for re-licensing.

4.4 Medical Review Officer (MRO) - Physician responsible for reviewing all **test** results for confirmation prior to communicating same to the Board. The MRO must protect the confidentiality of the individual involved.

4.5 NIDA - The National Institute on Drug Abuse (also known as Substance Abuse and Mental Health Services Administration, or SAM HSA), or other successor agency.

4.6 Pilot - Any person licensed by the Board of Harbor Commissioners, including State licensed bar pilots and State licensed docking masters, and also including Board of Harbor Commissioners staff operating any Harbor Commission patrol vessel

4.7 Positive Test - Alcohol and Drug tests results that meet or exceed the standards outlined under 49 CFR.

4.8 Random Testing - A scientific method used to select pilots for testing at random. This method will be performed throughout the year, and will involve the annual testing of a minimum of 50% for drugs and 25% for alcohol of a pool that includes all pilots, as that term is defined in this policy, with the individuals tested being selected at random. The minimum percent to be tested may decrease in subsequent years based upon the number of confirmed positive test results.

4.9 Reasonable suspicion - A belief based on specific facts and reasonable inferences drawn from those facts that a pilot is under the influence of drugs or alcohol to the extent that job performance maybe impaired or the ability to perform the job safely may be reduced. Circumstances which constitute a basis for determining "reasonable suspicion" may include, but are not limited to:

4.9.1 a pattern of abnormal or erratic behavior;

4.9.2 information provided by a reliable and credible source, and confirmed by a second reliable and credible source;

4.9.3 direct observation of drug or alcohol use;

4.9.4 presence of the physical symptoms of drug or alcohol use (i.e., glassy or bloodshot eyes, alcohol odor on breath, slurred speech, poor coordination and/or reflexes).

4.10 Substance Abuse - The use of alcohol, prescription or over the counter drugs, any of which impairs the ability of a pilot to perform the job safely and effectively, or the use of illegal drugs or other controlled substances without a valid prescription.

5.0 PROCEDURE(S) FOR TESTING

5.1 Drugs to be Tested For:

When chemical drug and alcohol screening is required under the provisions of this policy, a breath test and/or urinalysis test will be given to detect the presence of the following drug groups:

5.1.1 Alcohol (ethyl)

5.1.2 Amphetamines

5.1.3 Cocaine

5.1.4 Opiates

5.1.5 Phencyclidine (PCP)

5.1.6 THC (Marijuana)

5.1.7 Other substances as required by applicable federal or state law

5.2 Testing Techniques

5.2.1 Drug Testing: Drug testing is accomplished by analyzing the pilot's urine specimen (urinalysis). Specimens will be collected at an off-site facility selected by the Board. The testing facility must assure that specimen collection be done in a dignified, professional and confidential manner. Once the pilot provides a urine specimen, it is sealed and labeled by a certified/authorized agent of the testing facility. A chain of custody document is completed in the presence of the employee, and the specimen is shipped to a SAMHSA certified laboratory.

All urinalysis procedures are required to include split-specimen techniques. Each urine sample is subdivided into two containers and labeled as primary and split specimens. Both specimens are forwarded to the laboratory. Only the primary specimen is used in the urinalysis. In the event of a confirmed positive test result, the split specimen may be used for a second confirmation test if requested by the pilot.

During testing an initial screening test is performed. If the test is positive for one or more drugs, a confirmation test will be performed for each individual drug using gas chromatography/mass spectrometry (GC/MS) analysis. This test ensures that over-the-counter medications are not reported as positive results.

If the analysis of the primary specimen results in a confirmed positive test, the pilot may within 72 hours request that the split specimen also be tested at the SAMHSA laboratory of his choice. The second test is at the pilot's expense unless the test results are negative, in which case the Board shall reimburse the pilot.

All test results are reviewed by a physician Medical Review Officer (MRO) prior to results being reported to the Board. In the event of a positive test result, the MRO will first contact the pilot via telephone and conduct an interview to determine if there are any alternative legitimate reasons for the positive result (such as over-the-counter or prescription medications). If the MRO determines there is a legitimate medical explanation for the presence of drugs, the result will be reported as negative.

5.2.2 Alcohol Testing: Alcohol testing will be conducted using an evidential breath testing (EBT) device. The test breath must be performed by a certified Breath Alcohol Technician (BAT) trained in the use of the EBT and alcohol testing procedures. Post-accident tests conducted by law enforcement personnel will be acceptable.

Two (2) breath tests are required to determine if an individual is over the alcohol concentration limit permitted. Any result of less than 0.02 concentration is considered a negative result. Any result of greater than **0.02** requires a confirmation test. A confirmed test of 0.04 or greater is considered a positive result.

5.3 Applicant Testing: General Standard

Applicants for pilot's licenses will be required to undergo a chemical drug and alcohol test before being licensed.

5.4 Current Pilot Testing: General Standard

5.4.1 The Board may require a currently licensed pilot to undergo drug and alcohol testing if there is reasonable suspicion by the Board that the pilot is under the influence of drugs or alcohol during work hours.

5.4.2 The Board is required to document the specific facts, symptoms, or observations which formed the basis that reasonable suspicion existed or did not exist to warrant the testing of a pilot.

5.4.3 The Board shall require a currently licensed pilot to undergo post-accident drug and alcohol testing if the pilot is involved in a work-related serious marine incident as that term is defined in 45 CFR §4.03-2 and applied to the United States Coast Guard.

5.4.4 All current and future pilots shall be subject to Random Testing,

5.4.5 Pilots having had a confirmed positive test will be subject to re-testing at the time they return to work. After returning to work, they will be subject to follow-up testing without notice for up to 60 months.

5.5 Prior Notice of Testing Policy

The Board shall provide written notice of its drug and alcohol testing policy to all pilots who are subject to the policy and all applicants. The notice shall contain the following information:

5.5.1 the need for drug and alcohol testing;

5.5.2 the circumstances under which testing may be required;

5.5.3 the procedure for confirming an initial positive drug test result;

5.5.4 the consequences of a confirmed positive test result and the appeal procedures available;

5.5.5 the consequences of refusing to undergo a drug and alcohol test;

5.5.6 the right to explain a positive test result and the appeal procedures available; and

5.5.7 the availability of drug abuse counseling and referral services.

5.6 Notice and Consent

Before a drug and alcohol test is administered, pilots will be asked to sign a consent form authorizing the test and permitting the release of test results to the Board. The chemical screen consent form shall provide space to indicate current or recent use of prescription and over-the-counter medication.

5.7 Applicant Testing

Before the Board may grant a pilot's license, the applicant must show proof of a negative drug test and a negative alcohol screening test.

5.8 Reasonable Suspicion Testing.

Any Board member, employee or pilot receiving information indicating a reasonable suspicion of substance abuse by a pilot shall refer the information to the United States Coast Guard. In the event the United States Coast Guard performs reasonable suspicion testing of any pilot required to comply with this Policy, the pilot shall cause the results of the test to be provided to the MRO, who, after confirmation, will forward them to the Board.

5.9 Random Testing

Random testing shall be performed quarterly or more frequently throughout the year, and shall initially involve testing a minimum of 50% for drugs and 25% for alcohol per year of a pool that includes all pilots. The pilots tested shall be selected at random and the tests shall be unannounced. Random testing of pilots shall be conducted only during the on-duty hours of the pilot being tested or immediately before or after being on-duty.

5.10 Post-Accident Testing

Post-accident drug and alcohol testing will be conducted on any pilot involved in a work-related serious marine incident as that term is defined in 46 CFR §4.03-2 and applied to the United States Coast Guard. In the event the United States Coast Guard performs post-accident testing of any

pilot required to comply with this Policy, the pilot shall cause the results of the test be provided to the MRO, who, after confirmation, will forward them to the Board. A police officer from the City of Portland or South Portland may perform the test and provide the results to the MRO, who, after confirmation, will forward them to the Board.

5.11 Return-To-Duty Testing

Any pilot returning to duty following a confirmed positive test must be subjected to a return-to-duty test following the same guidelines described in section 5.6. The test must show a verified negative result prior to the employee returning to duty.

5.12 Follow-Up Testing

5.12.1 A pilot returning to work following a confirmed positive test shall be subject to unannounced follow-up testing for a period of not less than 12 months and not more than 60 months. A mandatory minimum of six (6) tests any time during the first twelve (12) months is required. Pilots subject to follow-up testing must also remain in the random pool.

5.12.2 Follow-up tests may be used to determine whether or not the drug is still being used.

5.13 Refusal to Consent: Applicants

An applicant who refuses to consent to a drug and alcohol screening test will be denied a license.

5.14 Refusal to Consent: Pilots

A pilot who refuses to consent to a drug and alcohol screening test when selected for random testing, or when reasonable suspicion of drug and alcohol use has been identified, is subject to license suspension or revocation. The reason(s) for the refusal shall be considered in determining the appropriate disciplinary action.

5.15 Confirmation of Chemical Test Results

5.15.1 A pilot or job applicant whose drug test yields a positive result, confirmed by the MRO, will be given a second test. The second test will use a portion of the same test sample withdrawn from the pilot for use in the first test.

5.15.2 If the second test confirms the positive test result, the pilot will be notified of the results by the MRO, who will offer the pilot an opportunity to discuss the results. The MRO will then notify the Board of the results in writing. The letter of notification shall identify the particular substance found and its concentration level.

5.16 Consequences of a Confirmed Positive Test Result

5.16.1 Applicants: Applicants will be denied licenses if their initial positive test results have been confirmed.

5.16.2 Pilots: If a pilot's positive test result has been confirmed, the Board shall suspend or revoke the license.

5.17 Confidentiality of Test Results

5.17.1 All information from a pilot's or applicant's drug and alcohol test is strictly confidential. Disclosure of test results to any other person, agency or organization is prohibited unless written authorization is obtained from the pilot or applicant, or unless disclosure is required by a superseding law or in accordance with the exceptions listed in 5.17.2 below. The results of a positive drug test shall not be released by the MRO to the Board until confirmed. The records of unconfirmed positive test results and negative test results shall be destroyed by the testing laboratory. All positive test results will be maintained by the MRO, and reported to the Board, where they will be kept on file.

5.17.2 Exceptions to these confidentiality provisions are limited to a decision maker in arbitration, litigation, or administrative proceedings arising out of a positive drug or alcohol test or other violation of these rules.

5.18 Privacy in Chemical Testing

5.18.1 Urine samples shall be provided in a private rest room stall or similar enclosure so that pilots may not be viewed while providing the sample. Street clothes, bags, briefcases, purses, and other containers shall not be carried into the test area. The water in the commode, if any, shall be colored with dye to protect against dilution of test samples.

5.18.2 An applicant or employee may waive the right to privacy and provide the urine sample in the presence of a witness (of the same gender) and not be required to disrobe and wear a hospital gown.

5.19 Laboratory Testing Requirements

5.19.1 All chemical drug and alcohol testing of pilots and applicants shall be conducted at medical facilities or laboratories selected by the Board pursuant to this Policy, with the exception of a breath test for alcohol performed by a South Portland or Portland police officer, which may be conducted at a police station. To be considered as a testing site, a medical facility or lab must submit in writing a description of the procedures that will be used to maintain test samples. Factors to be

considered by the Board in selecting a testing facility include in addition to NIDA (SAMHSA) certification:

5.19.1.1 Testing procedures which ensure privacy to pilots consistent with the prevention of tampering;

5.19.1.2 Methods of analysis which ensure reliable test results, including the use of gas chromatography/mass spectrometry to confirm positive test results;

5.19.1.3 Chain-of-custody procedures which ensure proper identification, labeling and handling of test samples; and

5.19.1.4 Retention and storage procedures which ensure reliable results on confirmatory tests of original samples.

5.20 Second Confirmation Test

5.20.1 The pilot may request from the MRO a second confirmation test of the same sample within 72 hours of notice that the first test was positive.

5.20.2 The cost of the second confirmation test must be paid in advance by the pilot. If the test is negative, the Board shall reimburse the pilot for the cost of the test.

5.20.3 The second confirmation test will be performed by a NIDA (SAMHSA) certified laboratory selected by the pilot.

BOARD OF HARBOR COMMISSIONER FOR THE HARBOR OF PORTLAND
Pilot Breath Test &/or Urinalysis Consent Form

The Board of Harbor Commissioners for the Harbor of Portland ("Board") has a strong commitment to the health, safety and welfare of all persons in or near the Harbor. Use and misuse of alcohol or drugs, whether prescribed or illegal, impairs the ability of a pilot to perform necessary and essential duties related to the piloting of vessels, and may endanger the pilot, co-workers, the public, and public and private property. The Board seeks to prevent pilots from using alcohol and drugs when the use of such is illegal, or in any way endangers the public. The Board also seeks to protect the reputations of pilots against unfounded allegations of substance abuse.

The Board may require a currently licensed pilot to undergo drug and alcohol testing consisting of: random testing; post-accident testing; reasonable suspicion and follow-up testing. Refusal to be tested may subject a pilot to license suspension or revocation.

I CONSENT TO BREATH TESTS AND URINE SAMPLE COLLECTION AND TESTING FOR ALCOHOL AND CONTROLLED SUBSTANCES.

I UNDERSTAND THAT A POSITIVE TEST RESULT WILL RENDER ME UNQUALIFIED TO OPERATE A VESSEL IN THE HARBOR AND MAY RESULT IN SUSPENSION OR REVOCATION OF MY LICENSE.

THE MEDICAL REVIEW OFFICER CONTRACTED BY THE BOARD WILL MAINTAIN THE RESULTS OF MY TEST. NEGATIVE AND POSITIVE RESULTS WILL BE REPORTED TO THE BOARD. IF THE RESULTS ARE POSITIVE, THE CONTROLLED SUBSTANCE WILL BE IDENTIFIED. THE RESULTS WILL NOT BE RELEASED TO OTHER PARTIES WITHOUT MY WRITTEN CONSENT.

I UNDERSTAND THE ABOVE CONDITIONS AND HEREBY AGREE TO COMPLY WITH THEM.

Test(s) to be administered (check appropriate test(s)):

Urinalysis for drug use

Breath test for alcohol use

Pilot's name (please print)

Date

Pilot's signature

Social security number

APPENDIX E

ACROSS-AGENCY SUMMARY OF FEDERAL POSTACCIDENT TESTING REGULATIONS

Agency/applicable CFR	Required specimens	Responsible for test	Timeliness requirements	Penalties for noncompliance
USCG 46 CFR 4 46 CFR 16 33 CFR 95	Blood or breath or both; urine Breath, blood, urine, and saliva or other bodily fluids or tissues	Employer or law enforcement officer	A	<ul style="list-style-type: none"> ▪ \$1,000 per violation, per day until violation corrected. ▪ FY 99 USCG reauthorization proposes increase to \$5,000.
FRA 49 CFR 219	Blood and urine; breath	Employer	A, B, C	<ul style="list-style-type: none"> ▪ Schedule of penalties at 49 CFR 219, Appendix A. ▪ Fines range from \$5,000 to \$10,000 depending upon the offense.
FHWA 49 CFR 382 49 CFR 391	Breath and urine	Employer	A, D, E, F	<ul style="list-style-type: none"> ▪ Penalties applied according to 49 U.S.C. 521b.
RSPA 49 CFR 199	Breath and urine	Employer	A, D, E, G	<ul style="list-style-type: none"> ▪ Civil penalties at 49 CFR 190.223. Maximum fine of \$25,000 per day, per offense up to \$500,000. ▪ Criminal penalties include \$25,000 fine or imprisonment not to exceed 15 years or both.
FTA 49 CFR 653 49 CFR 654	Breath and urine	Employer	A, D, E, G	<ul style="list-style-type: none"> ▪ Suspension of grantee's eligibility for Federal and State funding. ▪ Criminal violations applied according to 18 U.S.C. 1001.
FAA 14 CFR 121	Breath and urine	Employer	A, D, E, G	<ul style="list-style-type: none"> ▪ Revocation of employer certification.

Timeliness Requirements

- A—As soon as practicable after accident, test for alcohol and drugs.
- B—If no alcohol or drug testing performed within 4 hours, record why not promptly done.
- C—If no alcohol or drug testing performed within 8 hours of notifying supervisor of the accident, cease attempts to test.
- D—If no alcohol testing performed within 2 hours, record why not done.
- E—If no alcohol testing performed within 8 hours, cease attempts to test and record why not done.
- F—If no drug testing performed within 32 hours, cease attempts to test and record why not done.
- G—Obtain drug test no later than 32 hours after accident.