

MARINE CASUALTY REPORT

**COLLISION BETWEEN THE M/V JAMES L. HAMILTON,
M/V LASALLE AND TOW AND MOTORBOAT OH-5421-MC
ON 14 AUGUST 1971, WITH THE LOSS OF SEVEN LIVES**

**U.S. COAST GUARD
MARINE BOARD of INVESTIGATION REPORT
and COMMANDANT'S ACTION**

**ACTION BY
NATIONAL TRANSPORTATION SAFETY BOARD**

**DEPARTMENT OF TRANSPORTATION
WASHINGTON, D.C., 20590**

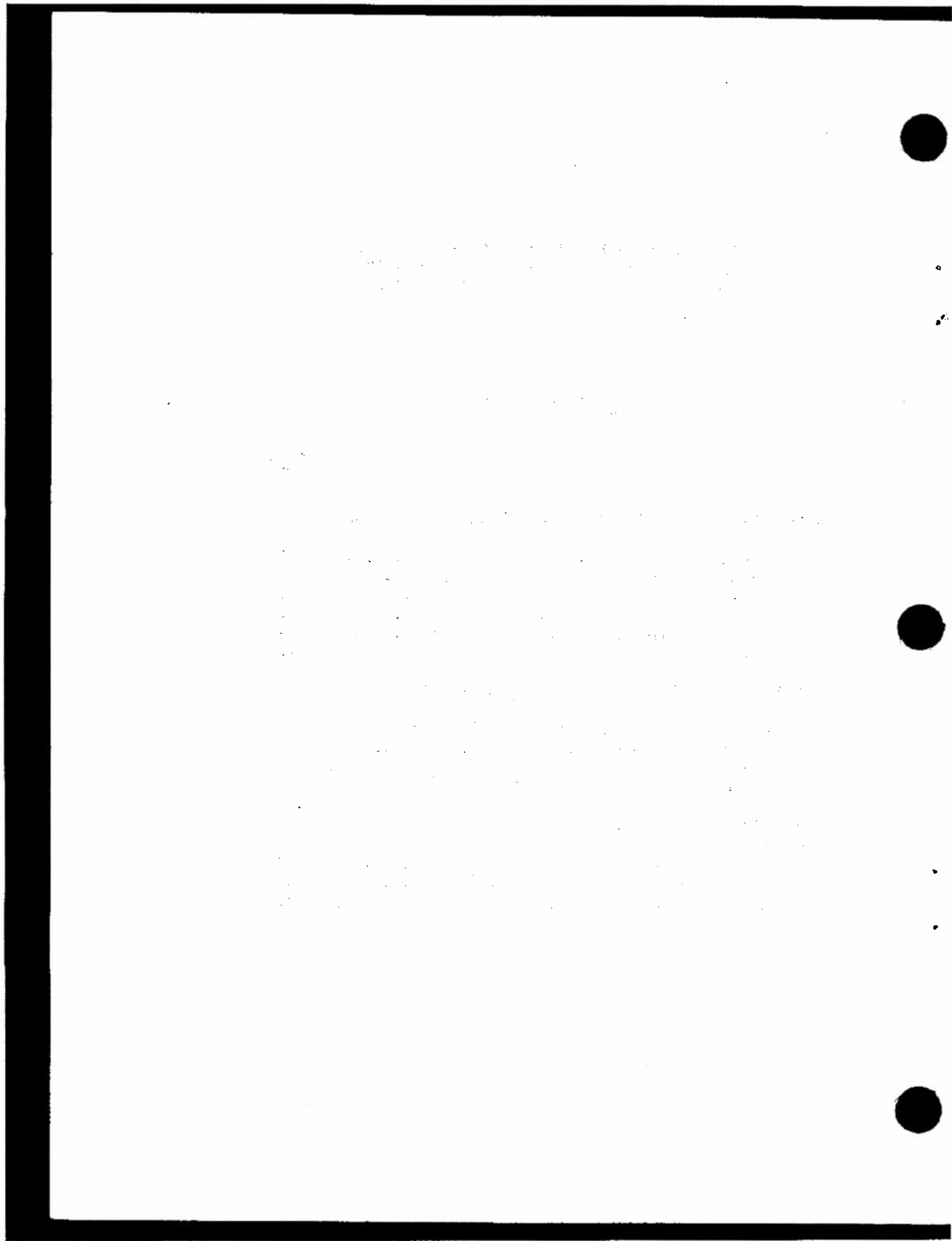
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NATIONAL TRANSPORTATION SAFETY BOARD
DEPARTMENT OF TRANSPORTATION
WASHINGTON, D.C. 20591

COLLISION BETWEEN THE M/V JAMES L. HAMILTON, M/V LaSALLE
WITH TOW, AND THE MOTORBOAT OH-5421-MC, on 14 AUGUST 1971
WITH THE LOSS OF SEVEN LIVES

ACTION BY THE NATIONAL TRANSPORTATION SAFETY BOARD

This casualty was investigated by a U.S. Coast Guard Marine Board of Investigation convened at Cincinnati, Ohio, on August 19, 1971. Representatives of the National Transportation Safety Board attended the proceedings as observers. The National Transportation Safety Board has considered only those facts in the investigative record which are pertinent to the Safety Board's statutory responsibility to determine the cause or probable cause of the casualty and to make recommendations.

SYNOPSIS

At 2210 e.d.t.,^{1/} on August 14, 1971, a 24-foot cabin cruiser and a tow of 15 barges collided at a point in the Ohio River about 9 miles southeast of Cincinnati. The barges were being pushed by two towboats, the JAMES L. HAMILTON and the LaSALLE. The rake of the starboard lead barge rolled the cabin cruiser on its side and submerged it beneath the tow. The crews of the towboats and many small craft operators immediately began a search for the 11 occupants of the cabin cruiser, all of whom were trapped under the barges. One adult and three children were saved; four adults and three children perished.

The National Transportation Safety Board determines that the probable cause of this collision was the failure or the inability of the operator of the cabin cruiser to see and recognize the tow until the collision was imminent and the failure of the captain of the HAMILTON to establish the whistle-signal communications with the cabin cruiser necessary for safe passage. Contributing to the accident were:

1. The towboat operator's reliance upon an excessively distant observation point to determine the boat's closest point of approach.
2. Obscuration of side-light visibility in an area of significant size in front of the tow, due to the lateral distance between side lights. This obscuration contributed to the

^{1/} All times used in this report are eastern daylight time, referred to a 24-hour clock.

disorientation of the cabin-cruiser operator, which, in turn, contributed to his choice of the wrong escape route.

3. A probable increase in the area of this side-light-obscured zone beyond that permitted by the rules, due to the resetting of these lights after they had been checked without any accurate alignment guides.
4. Lack of a visible outline of the barges to aid the operator of the cabin cruiser in identifying the tow, in determining its distance from his boat, and in selecting the shortest escape route.
5. The uncertainty of the captain of the HAMILTON as to the precedence of the various rules of the road. The requirement that boats under 65 feet in length "shall not hamper" vessels with tows apparently contributed to the captain's decision not to initiate any whistle signals when the vessels closed to within $\frac{1}{2}$ mile.
6. The absence of any authoritative interpretations of actions required under the "shall not hamper" rule, which apparently permitted a hazardous interpretation.

SUMMARY OF FACTS

On the evening of August 14, 1971, the towboat JAMES L. HAMILTON was pushing 15 barges up the Ohio River in the vicinity of Cincinnati. The HAMILTON has a length of 138 feet and a beam of 34 feet. Its pilothouse-controlled powerplant consisted of two 1,600-hp. diesel engines driving two propellers with kort nozzles. The pilothouse had typical large rectangular windows on all sides and was equipped with radio transmitter receivers, radar, a searchlight, and a swing meter. This was a routine operation for the captain and crew of the HAMILTON.

At about 2130, the towboat LaSALLE joined the tow on the HAMILTON's starboard side. The captain of the LaSALLE went into the HAMILTON's pilothouse to confer with the other captain. A wheelsman remained on watch in the LaSALLE's pilothouse. As an assisting vessel, the LaSALLE only pushed the tow and did not steer or otherwise affect its course.

The navigation lights on both the HAMILTON and the LaSALLE consisted of red and green side lights and two vertical amber lights at each vessel's stern. All of these lights were fitted with 60-watt lamps. When the LaSALLE joined the tow, its port side light was turned off.

The barges were arranged in five rows, with three barges abreast in each row. The tow was 105 wide and 1,125 feet long. The lead barges had raked bows for more efficient movement through the water. The deck of the loaded barges was about 4 feet above the water, whereas the deck of the starboard lead barge, which was empty, was about 10 feet above the water.

The navigation lights at the head of the tow consisted of two side lights, each located about 1 foot inboard from the forward and outer edges of its respective barge, and one 20-point (225°) amber light, located about 2 feet inboard on the centerline of the center lead barge. All three lights at the head of the tow were fitted with 100-watt lamps, which were powered from the HAMILTON's electric distribution board through a series of extension cords which led over the decks of the barges.

The side lights at the head of the tow were routinely checked every 3 hours by being lifted and turned around so that the captain in the pilothouse could see that they were burning brightly. These lights would then be replaced on deck and secured with a line. The HAMILTON has been notified at about 2120 that the barge's starboard running light was extinguished. The crew found the electric cord shorted at the base of the light, repaired it, and then held up the light toward the pilothouse for verification at about 2140.

Positions on the Ohio River are generally given by mileage points which have Pittsburg as their origin. The river charts, marked in 1-mile intervals, show a single channel line, which indicates the center of the preferred deep water channel. Where the LaSALLE joined the tow, at about mile 461, the channel line makes a slow bend to the left and then to the right over a distance of about 9 miles upriver.

Upon nearing mile 455, the captain of the HAMILTON noticed the lights of an approaching pleasure boat about 1/3 mile ahead. The river in this area is about 2,000 feet wide and the tow was following the channel line, slightly toward the north (Ohio) bank of the river. At first, the HAMILTON's captain was uncertain whether the pleasure boat and the tow would clear each other in a port-to-port passage. However, the captain saw the boat change course to starboard and concluded that a port-to-port passage would be made with about a 75-foot clearance. He did not attempt to check the approaching boat on the HAMILTON's radar, which was set on the 1-mile scale.

When the pleasure boat was about 200 feet from the lead barges, the captain saw it make a sharp left turn and cut across the front of the tow. The silhouette of the boat was, at that point, visible against a background of white lights at a powerplant 2 miles away on the north shore of the river. The HAMILTON's rudders were put hard to

port, and the boat disappeared in front of the high riding empty starboard barge. The captain of the HAMILTON switched on his carbon-arc searchlight, commenced blowing the danger signal, and rang the general alarm.

A geyser of water signaled the collision. The HAMILTON's engines were put astern, and the tow was backed to port. The LaSALLE's engines were stopped. After "Mayday" was broadcast from the HAMILTON's radio, many recreational boats in the vicinity left their moorings and came out to assist.

The pleasure boat that collided with the tow was a 24-foot cabin cruiser, Ohio Boat Number OH-5421-MC. The boat had departed earlier that day from the Shady Lane Boat Harbor, mile 455.1, on the Ohio side of the river. The boat's owner, his wife, their three children, another adult couple, a married lady, and her three children spent the afternoon picnicking and water skiing upriver. During that time, the owner and two of the other adults each consumed about five cans of beer. The party departed the picnic area about 1800 for the trip back to the boat harbor. The two men and the owner's ■■■ and ■■■ year-old sons took turns operating the boat. Since there was ample time before their planned arrival at the harbor, a speed of about 5 m.p.h. was maintained. The boat was stopped for a short period while plastic side curtains were rigged around the cockpit. As darkness fell, the navigation lights and the interior cabin lights were turned on. The boat was navigated by following the contours of the shoreline. Where the absence of shore lights made the shoreline invisible, a searchlight mounted on the cabin top was used to illuminate it.

About 10 minutes before the collision, as the boat approached the Shady Lane Boat Harbor, the owner left the cabin and took over operation of the craft. He sent one son forward and the other aft to prepare the mooring lines. After a few minutes on the bow, the ■■■ year-old son saw the approaching barges directly ahead. He did not see their lights. Having dropped the mooring line, the boy ran aft shouting, "Barge," tripped over a chain rail, and fell into the cockpit. His father immediately turned the steering wheel sharply to the left.

When the ■■■ year-old boy shouted, "Barge," his ■■■ year-old brother looked ahead and saw a barge with a dim red light slightly to his right and a dim light of unknown color far to his left. The ■■■ year-old then jumped overboard, before the barge struck. At the moment before the collision, the boys' mother looked through the cabin window for the shoreline and saw the dark bow of the barge as it crashed into the starboard side of the boat. She did not see any barge lights. As impact occurred, the ■■■ year-old daughter of one of the guests jumped over the port side of the stern.

The rake of the starboard lead barge of the tow pushed the starboard side of the cabin cruiser downward and submerged it. As the tow moved ahead, the barge rolled the boat over, tore off its superstructure, and

destroyed the entire port side of the hull. The boat, its occupants, and the two children who had jumped overboard were caught underneath the barges of the tow.

Search and rescue efforts were begun immediately. The captains of the two towboats and other crewmembers ran to the starboard line of barges. The girl who had jumped overboard came up between two barges and was submerged by the next oncoming barge. She finally popped out on the starboard side of the tow, where she was rescued by three men in an outboard motorboat. The owner's [redacted]-year-old son also emerged between two barges, was forced under by the next oncoming barge, and swam out to the starboard side. The captain of the HAMILTON dove in to help the boy hold onto a lifering so that he could be pulled aboard the LaSALLE. The boy's [redacted]-year-old brother repeatedly struck the bottom of a barge before he finally emerged on the starboard side of the tow and was rescued by the occupants of an outboard motorboat. The boys' mother, who could not swim, was carried under the tow with the boat and was recovered unconscious. Despite an intensive search, the remaining four adults and three children aboard the cabin cruiser perished. No autopsies were performed.

The weather at the time of the accident was clear, with negligible wind and an occasional light patch of mist on the river. It was a dark night, with no moon. The towboat operators and the cabin-cruiser survivors clearly saw lights on the shoreline and campfires of boaters on the beach. Some of these boaters ashore watched the tow as it passed and commented on the brightness of the lights at the head of the tow, followed by the very long span of invisible barges between those lights and the towboats.

The navigation lights on the cabin cruiser consisted of a combination red and green side light at the bow, a 360° masthead light amidships, and a 360° light on the starboard side of the stern. Several cabin lights were visible through the cabin windows and the hatchway aft. The operator was able to control the boat searchlight from the cockpit control station. None of the boat's navigation lights were seen by the towboat operators before the collision.

Lifesaving devices stowed in various locations aboard the cabin cruiser included four vest-type lifepreservers, six buoyant seat cushions, two ski belts, and one ski vest. All of these devices, except for the two ski belts, appeared to be Coast Guard approved. On the day of the accident, none of the boat's occupants wore a lifesaving device while aboard.

Prior to the collision, the engines, steering gear, and navigation lights on both the HAMILTON and the cabin cruiser were operating properly. The HAMILTON's radar was also operating satisfactorily on the 1-mile

scale. The HAMILTON's crew stated that they checked the lights on the lead barges after the collision and found them burning brightly.^{2/}

ANALYSIS

Determining the Risk of Collision

Before the cabin cruiser made the sudden, sharp turn to its left, the captain of the HAMILTON had concluded that the pleasure boat would pass down the port side of the tow, with perhaps a clearance of 75 feet. This determination was made visually in the dark when the outline of neither the cabin cruiser nor the head of the tow was visible. Moreover, any prediction of horizontal separation had to be projected to an invisible point more than 1,000 feet away. Even in daylight, when visible objects would provide a frame of reference for estimating angles, the difference between a 75-foot clearance and a collision at a point 1,000 feet ahead would constitute an angle of only about 4°. Therefore, the amount of clearance between the tow and the cabin cruiser was almost impossible to estimate visually.

Rules of the Road; Western Rivers recommends that the possibility of a collision between any two vessels maintaining constant course and speed can be determined by observing the relative bearing of one from the other. If the bearing is constant, a collision will occur at the location of the observer. This method, however, cannot be used to determine if a collision will occur at a point remote from the observer, e.g., at the end of a 1,000-foot-long tow.

The radar aboard the HAMILTON offered an alternate means of predicting whether or not a collision situation was developing. The plan view on the radarscope should have shown the outline of the lead barges and the position of the approaching boat, along with the vessels' relative movements and lateral separation. However, because the radar pip of the approaching boat was oversized in relation to the range scale and because the range resolution of the radar was limited, at a range of 1,000 feet, a separation of 75 feet between the vessels probably could not have been distinguished from the collision situation. The radar pip and tow outline would have merged in either case.

^{2/} For several years, the Coast Guard has conducted field tests in which the forward fixed amber centerline barge light on a few selected tows was replaced with a flashing amber light. Opinion surveys were conducted among persons who had seen such lights in operation. There was general agreement that these lights had increased conspicuity and were desirable replacements for the fixed amber light. Subsequently, the Coast Guard amended the navigation lighting regulations, effective September 1, 1972, to require a 20-point amber light having a flash rate of between 50 to 70 flashes per minute.

Effectiveness of the Barge Navigation Lights

On the western rivers, barge side lights are required to be visible for at least 2 miles and must show from dead ahead to two points ($22\frac{1}{2}^{\circ}$) abaft the beam. Each lamp must be shielded to prevent its light from being seen more than one-half point ($5-5/8^{\circ}$) inboard from the line extending directly ahead of it. This required alignment resulted in a triangular area in front of the HAMILTON's tow in which neither the red nor green side light was visible. The base of this triangle was the horizontal distance between the two lights, i.e., about 103 feet, and the apex was about 510 feet ahead of the barges, on the tow's centerline. Since side lights cannot be made with a sharp cutoff and since the lights on the HAMILTON's tow were reset after each periodic inspection without any guides, the exact dimensions of the side-light-obscured area ahead of the tow cannot be determined.

As a boat approaches a tow of barges head-on, the side lights should become brighter as the intervening distance is reduced. However, because the angle beyond cutoff is increasing, the side lights may actually become dimmer and give an erroneous impression that the boat is not getting any closer to the light. Thus, when a boat enters the side-light-obscured area, the operator may see no lights or he may see one or both of the lights very dimly. Only one of the four survivors of this accident saw lights on the tow. Since the side lights were very bright and were easily seen from shore, the cabin cruiser must have actually been in the side-light-obscured area before the ■■■-year-old recognized the barges.

The amber light on the center leading barge should have been visible at all times during the approach of the two vessels. The failure by all survivors to see this light is unexplained. Perhaps the significance of the light was not recognized. A 100-watt powered amber light, however, would have been difficult to overlook or ignore as the vessels drew closer and it would have illuminated the elevated port side of the starboard barge for a distance of about 8 feet back from the bow.

Detectability and Recognition of Navigation Lights

A long tow at night is very difficult to recognize, unless the observer is able to interpret correctly the navigation lights carried on the towboat(s) and barges. The long span of darkness between the lights at the head of the tow and the lights on the towboat(s) can easily make the vessels appear to be dissociated. Whether or not the operator of the cabin cruiser involved in this accident understood the lights at the head of the HAMILTON's tow is not known. He apparently had read some literature concerning boating safety. He had also used his boat at night on other occasions, although it is not known whether he had passed any tows.

The effectiveness of any navigation light depends, to an extent, on the night vision of the observer. The pilothouse on a commercial vessel

is generally isolated so that other shipboard lights cannot impair the operator's night vision. However, on small pleasure craft, the proximity of the operating station to other onboard lights often does result in a reduction of the operator's night vision. Although this was the case on the cabin cruiser involved in this accident, the navigation lights at the head of the tow were unusually bright and should have been seen long before the collision.

An autopsy was not performed to determine the physical condition of the boat operator. However, considering the time span during which the operator consumed the estimated five cans of beer, the Safety Board concludes that there probably would have been little or no impairment in the operator's faculties due to residual alcohol at the time of the accident.

It is extremely difficult to estimate the distance to a point source of light in a field of darkness. If the light is on a moving vessel, the speed, direction, and distance of that vessel are virtually undeterminable unless other familiar visual clues which have a size and distance meaning are available. Different colored lights of varying intensities can make the problem even more difficult. If prevention of collisions on water at night depends on a pilot's ability to visually determine distance and speed of the approaching craft, then recognizable objects with perceivable dimensions must be visible. The captain of the HAMILTON stated that he frequently turned his searchlight on to illuminate the lead barges at night when pleasure boats were in the vicinity. However, a more reliable means of making visible the outline of barges is needed. Hooded lights for self-illumination or a passive system using retroreflective materials to outline barge edges might be effective alternatives.

Reliability of the Barge Navigation Lights

The practice of moving the navigation lights on barges and then resetting them without any alignment guides is made necessary because of the lack of an automatic monitoring system and the unreliability of the circuit design and installation of these lights. In contrast, the navigation lights on the HAMILTON were supplied from a navigation light panel which automatically sounded a buzzer and illuminated a warning light when one of the towboat navigation lights failed. Such panels are required for all self-propelled vessels of 1,600 gross tons and over. The regulations do not require such automatic monitoring for barge lights, regardless of the size of the tow.

One reason given for not installing an automatic monitoring system for the barge lights has been that indicator circuits or devices running through jumpers over 1,000 feet of barges would be highly susceptible to damage. However, such monitoring circuits or devices need not be extended beyond the towboat. For example, a monitoring sensor, such as a current relay, could be installed in the pilothouse set to give visual and aural indications whenever current flow to a light is interrupted. In order to provide individual light monitoring, three separate relays and three separate light

circuits would be required. Another alternative, which has been proposed, is to drill a small hole in the back of each light fixture to allow the light to be checked from the pilothouse. Situations can develop in which small craft emerge so quickly from shore lines or from around river bends that even this type of monitoring would probably be inadequate.

Not only is there a need for automatic recognition of a failed navigation light, but there is also a need for the prompt repair of such a failure. Sending a man forward over 1,000 feet of barges to make these repairs is not a timely response, when the rapidity with which collision situations can develop on rivers at night is considered. On many vessels, double-filament or double-lamp navigation lights have been installed which permit immediate manual switching to the spare filament or lamp upon indication that the primary light has failed.

Rules of the Road

In Rules of the Road; Western Rivers, Rule 18(b) requires that when two vessels are approaching each other, whistle signals shall be exchanged to resolve the meeting maneuver by the time the vessels are within one-half mile of each other or within one-half mile of any tow being pushed. The vessel that is ascending the river shall give the first passing signal. If the ascending vessel fails to give such a signal within the required distance, the descending vessel shall blow the danger signal and, after waiting for an acknowledging danger signal, shall give a passing signal. Rule 23A requires that a vessel less than 65 feet in length which can maneuver easily shall not hamper the safe passage of a large vessel or vessel with tow that is ascending or descending a river. This rule does not indicate what changes, if any, are to be made in the whistle procedures. In this accident, the captain of the HAMILTON, which was the ascending vessel, gave no whistle signal. When questioned as to which vessel had the right of way, the captain stated that a small craft is required not to hamper the navigation of a large tow, whether it is ascending or descending the river. This understanding of the rules may imply that the towboat was not required to initiate whistle signals.

Risk of collision is recognized by the rules to exist either when the bearing of the other vessel does not change appreciably or when both of its side lights continue to remain visible. The HAMILTON's captain never saw either of the cabin cruiser's side lights even though he must have expected to see at least the red light for a port-to-port passage. At a distance of $\frac{1}{2}$ mile, the operator of the cabin cruiser should have been able to see all the navigation lights on the barges and the towboats, but he did not recognize a collision risk. Assuming each vessel's whistle could have been heard above the noise level aboard the receiving vessel, the procedure was available to accomplish a safe passage.

The doubts which arise from the problems which vessel operators encounter in determining distances and risks of collisions at night result in a wider latitude of actions than the rules intend. Also, situations

frequently occur in which a number of vessels are in one vicinity, and a whistle signal may create confusion as to whom the signal is directed. The regulation requiring boats to stay clear of tows may also cause towboat pilots to consider that the burden for collision avoidance and the need for initiating whistle signals has been shifted to the boat operator. Consequently, a pattern of reluctance to blow whistle signals has developed.

Licensing of River Towboat Operators

Because there was no existing licensing program to set minimum training and experience requirements, neither the captain of the HAMILTON nor the captain of the LaSALLE had been examined in his knowledge of Rules of the Road, navigation, or seamanship. The National Transportation Safety Board has previously commented on the need for a licensing program for operators of towing vessels.^{3/} This situation will be rectified by a law enacted in July 1972, which requires the licensing of operators of certain uninspected towing vessels. The Coast Guard is processing the necessary implementing regulations.

Survivability

The chance of survival of boat occupants in this type of collision is considerably less than that in other types of boat collisions. Since the barges force the boat and its occupants under the tow, personal lifesaving devices, even if worn before the accident, are ineffective. In fact, they may interfere with a survivor's ability to swim out from under the tow. In the underwater darkness, some of the swimmers in this accident may have headed in directions that kept them trapped beneath the tow longer than their endurance allowed.

CONCLUSIONS

1. Before entering the side-light-obscured zone ahead of the tow, the cabin-cruiser operator and the other boat occupants either failed to see or failed to recognize the approaching tow in the darkness. The lighting inside the cabin probably reduced their night vision.
2. After the boat entered the side-light-obscured zone and the oncoming tow was discovered, the corners of the tow could not be seen and the orientation could not be determined. Unable to see the closest escape route, the operator turned left instead of right.
3. The towboat operator was incorrect in his belief that the cabin cruiser would pass clear by 75 feet, since the cabin cruiser was in the path of the tow before it made the sharp left turn.

^{3/} National Transportation Safety Board, Study of Towing Vessel Safety and Accident Preventive Recommendations, adopted August 29, 1969; and Analysis of the Safety of Transportation of Hazardous Materials on Navigable Waters of the United States, adopted March 15, 1972.

4. The technique recommended in Rules of the Road for evaluating risk of collision by measuring the change in bearings of the other vessel is not reliable for the operator of long tows when bearings are taken from towboats.
5. The low reliability of the navigation-light installation on the barges resulted in operating practices which prevented maintenance of the proper light alignment and allowed an increase in the areas of obscurity in front of the tow. High-risk situations develop rapidly in river traffic at night so that loss of navigation lights is unacceptable.
6. Coast Guard regulations did not account for the variable characteristics of barges, tows, and navigation lights in such a way as to assure that navigation lights meet the requirements of the Rules of the Road.
7. The cabin-cruiser operator did not have adequate training and experience to cope with the ocean-type interpretive navigation light system. Tow lighting based on optimizing an operator's ability to see and recognize other vessels will make lack of training and experience less critical.
8. The usual procedures and lifesaving equipment for minimizing loss of life in most boating accidents are ineffective for boat barge collisions.
9. The collision could have been avoided by an exchange of whistle signals. However, the unknown relationship between Rule 23A and other rules of the road creates uncertainty as to the specific actions required of each vessel.

PROBABLE CAUSE

The National Transportation Safety Board determines that the probable cause of this collision was the failure or the inability of the operator of the cabin cruiser to see and recognize the tow until the collision was imminent and the failure of the captain of the HAMILTON to establish the whistle-signal communications with the cabin cruiser necessary for safe passage. Contributing to the accident were:

1. The towboat operator's reliance upon an excessively distant observation point to determine the boat's closest point of approach.
2. Obscuration of side-light visibility in an area of significant size in front of the tow, due to the lateral distance between side lights. This obscuration contributed to the disorientation of the cabin-cruiser operator, which, in turn, contributed to his choice of the wrong escape route.

3. A probable increase in the area of this side-light-obsured zone beyond that permitted by the rules, due to the resetting of these lights after they had been checked without any accurate alignment guides.
4. Lack of a visible outline of the barges to aid the operator of the cabin cruiser in identifying the tow, in determining its distance from his boat, and in selecting the shortest escape route.
5. The uncertainty of the captain of the HAMILTON as to the precedence of the various rules of the road. The requirement that boats under 65 feet in length "shall not hamper" vessels with tows apparently contributed to the captain's decision not to initiate any whistle signals when the vessels closed to within $\frac{1}{2}$ mile.
6. The absence of any authoritative interpretations of actions required under the "shall not hamper" rule, which apparently permitted a hazardous interpretation.

RECOMMENDATIONS

The National Transportation Safety Board recommends that:

1. The Coast Guard develop and require use of illumination techniques for barges that will make them readily visible and recognizable when pushed ahead of towboats. As a minimum requirement such a system should outline the boundaries of the tow.
2. The Coast Guard include a cautionary note in the Rules of the Road; Western Rivers stating that even when bearings of an approaching vessel are changing, there can be a risk of collision with a long tow ahead of the towboat making the observations.
3. The Coast Guard require suitable side-light alignment and securing devices on the front of barge tows to insure that such light will comply with the alignment required by the Rules of the Road.
4. The Coast Guard upgrade the reliability of the navigation lights on barge tows by requiring that the circuits for these lights be automatically monitored to give an alarm in case of light failure, and by requiring redundant lights.

5. The Coast Guard clarify the effect on responsibilities for initiation of whistle signals in Rules of the Road, of the requirement that easily maneuverable vessels less than 65 feet shall not hamper large vessels or vessels with tows, and develop and publish authoritative interpretations of actions required in other frequently encountered operating situations in which the "shall not hamper" rule interacts with other rules.

BY THE NATIONAL TRANSPORTATION SAFETY BOARD:

Adopted this 20th day of December 1972:

[REDACTED]

[REDACTED], Chairman

[REDACTED]

[REDACTED], Member

[REDACTED]

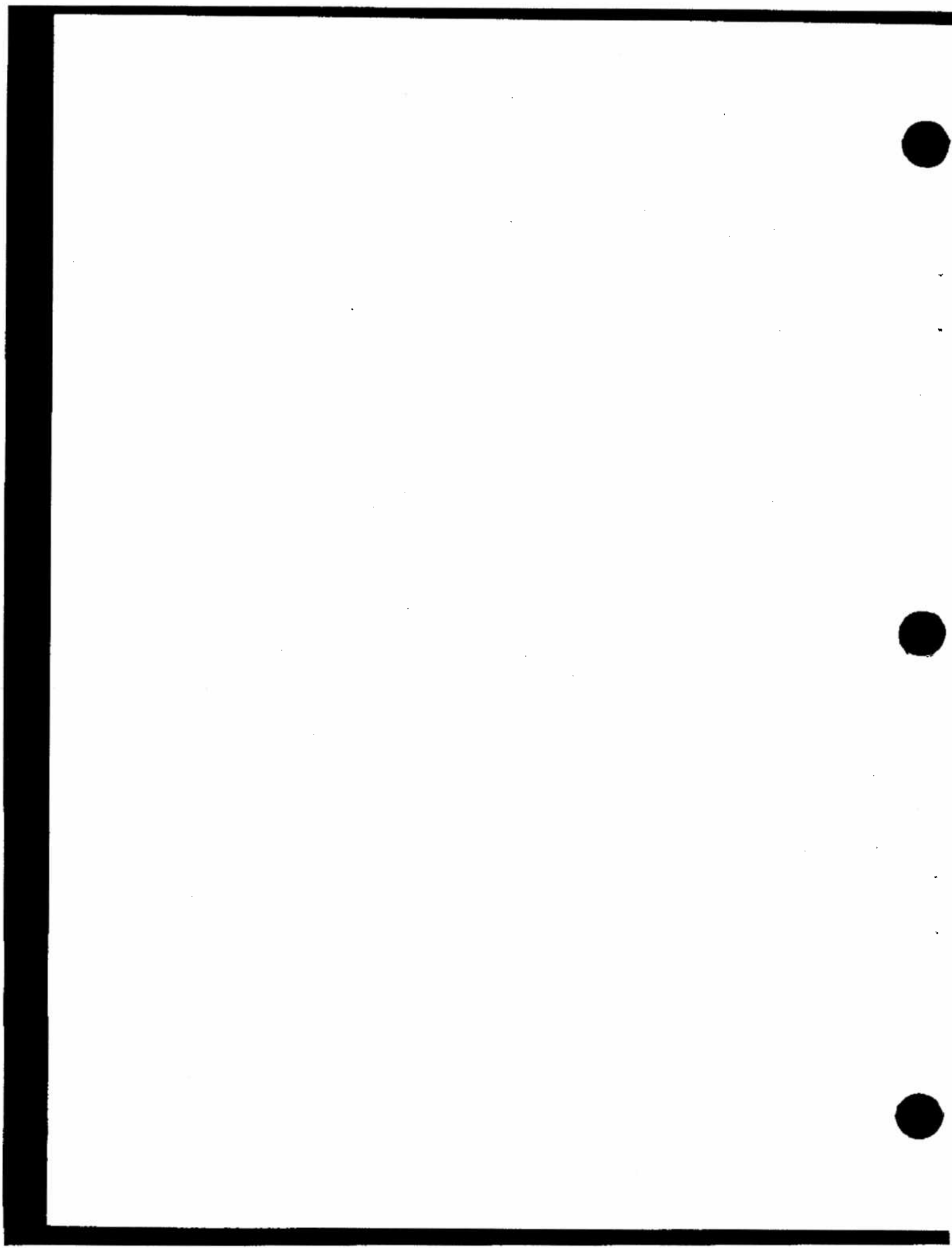
[REDACTED] Member

[REDACTED]

[REDACTED] Member

[REDACTED]

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DEPARTMENT OF TRANSPORTATION
UNITED STATES COAST GUARD

Address reply to:
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5943/JAMES L. HAMILTON -
LA SALLE - OH 5421 MC
A-2 Bd
24 FEB 1972

Commandant's Action

on

The Marine Board of Investigation convened to investigate circumstances surrounding the collision between the M/V JAMES L. HAMILTON, M/V LA SALLE and tow, and the pleasure motorboat OH 5421 MC on 14 August 1971 with loss of life

1. The record of the Marine Board of Investigation convened to investigate subject casualty has been reviewed; and the record, including the Findings of Fact, Conclusions and Recommendations, is approved subject to the following comments and the final determination of the cause by the National Transportation Safety Board.

SYNOPSIS OF FINDINGS OF MARINE BOARD OF INVESTIGATION

1. On 14 August 1971 the upbound river towing Motor Vessels, JAMES L. HAMILTON and LA SALLE pushing a fifteen barge tow and the downbound 24' cabin cruiser OH 5421 MC collided at Mile 455.0 Ohio River. The force of the impact caused the OH 5421 MC to be submerged under tank barge FMC 103. The tank barge FMC 103 was the forward starboard barge in the fifteen barge tow.
2. At the time of the collision there were eleven persons on board the pleasure craft OH 5421 MC. Seven persons lost their lives, one sustained injuries requiring hospitalization, and the remaining three survivors sustained minor abrasions and injuries. There were no injuries to any persons on either towing vessel or tow.
3. At a time just prior to the collision the Motor Vessel LA SALLE and the Motor Vessel HAMILTON with tow were making good approximately eight miles per hour upbound. The pleasure craft OH 5421 MC was proceeding at a speed estimated at five to fifteen miles per hour just prior to the collision. There were no passing signals sounded by either vessel. Just prior to the collision the pleasure craft OH 5421 MC turned to port

in front of the barge and tow. At the time the pleasure craft turned to port to cross the tow, the towboat turned to swing the head of the tow to port in an attempt to allow the boat to clear the tow. At a time just prior to impact the master of the HAMILTON sounded a series of short blasts on his whistle and started to back his engines full astern to swing his stern to port to bring the pleasure craft out on his starboard side.

4. The pleasure craft OH 5421 MC contacted the tank barge FMC 103 and passed underneath the tank barge surfacing approximately under the second barge in the line of the starboard side. Personnel on the towboat managed to pull aboard one of the survivors. The other three survivors were picked up by small craft in the area.

REMARKS

1. In concurrence with the Board's Conclusion No. 7, it is considered possible that a flashing amber light at the head of the tow might have attracted the pleasure boat operator's attention. A Board to inquire into the adequacy of lights has been convened.

ACTION CONCERNING THE RECOMMENDATIONS

1. Appropriate action is being taken to suitably recognize those persons who demonstrated meritorious conduct during the period following the collision.

2. A regulation has been proposed which would require a flashing amber light in lieu of the now required steady amber light at the head of a tow. This proposal will be on the agenda for the Public Hearings of the Marine Safety Council in March 1972. In addition, on 12 October 1971 the Commandant appointed a Board to inquire into the adequacy of lights for towing vessels and their tows upon the inland waters and Western Rivers of the United States. The Board has held Public Hearings at Cincinnati and St. Louis, but has not yet made its report and recommendations to the Commandant.

3. The recommendation that the Coast Guard consider action requiring the installation of an alarm device to warn the operator of towing vessels of malfunctions of navigational lights is not considered practical at this time. Indicator circuits or devices running through jumpers over 1000' of barges make them highly susceptible to unreliability and less of a check than present practice of direct periodic observation. Other means such as a small hole drilled in back of the light casing which could be observed from the pushing towboat as utilized on many tow vessels at present may be a better solution.

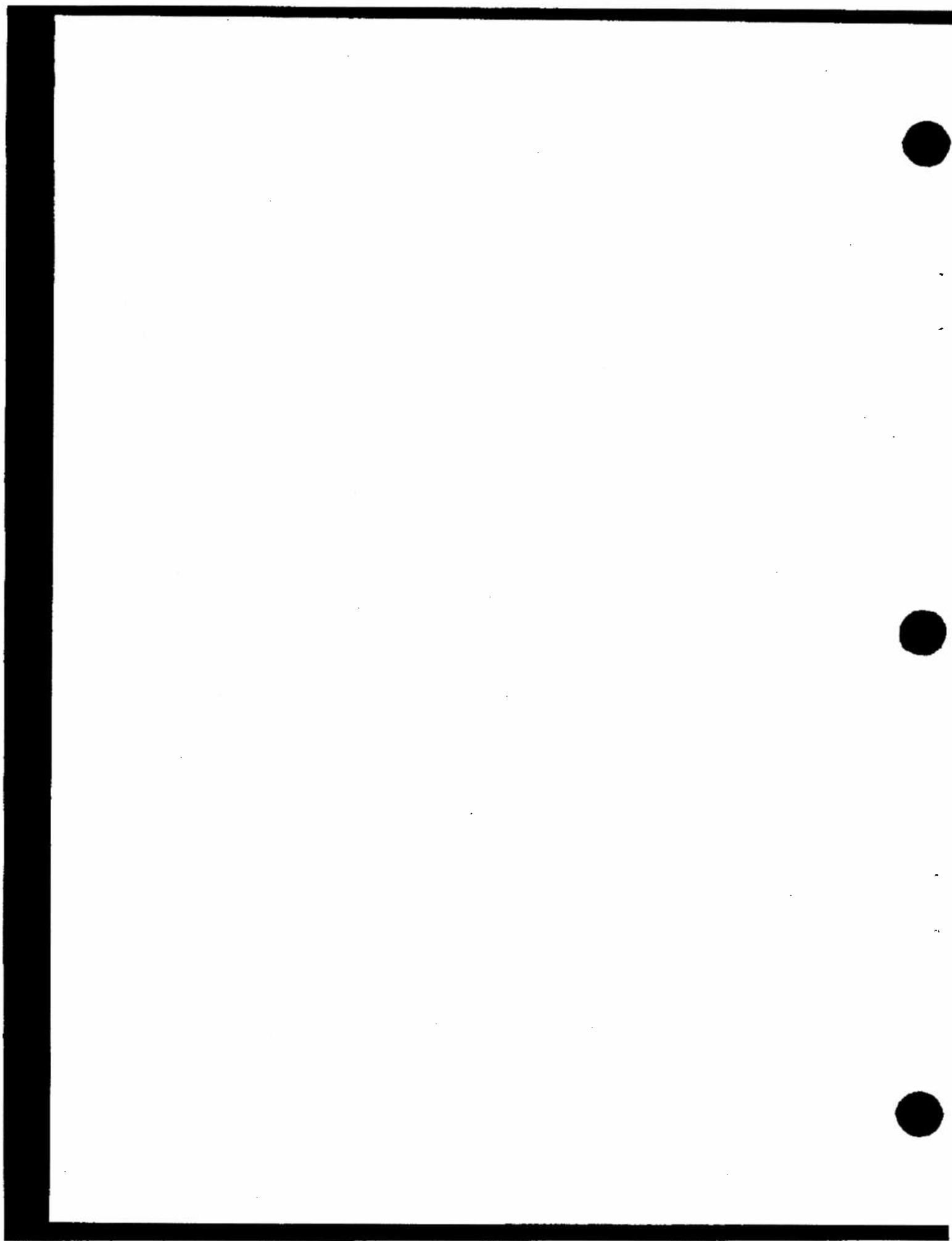
4. The U. S. Coast Guard continues to support Federal Legislation to require that the persons in charge of navigation watches of towing vessels be licensed for services by the U. S. Coast Guard.

5. The Coast Guard will continue to sponsor public education programs on boating safety through Coast Guard Units, Coast Guard Auxiliary and other boating organizations, with particular emphasis on reaching pleasure boatmen who are not members of organized boating groups.

6. The Coast Guard has expressed serious concern about the general lack of knowledge concerning the fundamentals of boating safety on the part of a majority of recreational boat operators. Various voluntary programs are being expanded and the possibility of a mandatory education - licensing requirement is being studied. This latter approach would require implementing legislation and no time frame has been established.



C. R. BENDER
Admiral, U. S. Coast Guard
Commandant





DEPARTMENT OF TRANSPORTATION
UNITED STATES COAST GUARD

MAILING ADDRESS:

Commanding Officer
Marine Inspection Office
4020 Federal Office Building
Cincinnati, Ohio 45202

5912/ Marine Board
of Investigation
22 December 1971

From: Marine Board of Investigation
To: Commandant (MVI)

Subj: M/V JAMES L. HAMILTON, M/V LA SALLE and tow, and
pleasure motorboat OH 5421 MC, collision 14 August
1971 at mile 455.0, Ohio River, with loss of life

FINDINGS OF FACT

1. At about 2210 EDST on 14 August 1971 the upbound river towing motor vessels JAMES L. HAMILTON and LA SALLE pushing a 15 barge tow, made up 3 abreast and 5 in line with the tank barge FMC 103 as the forward starboard barge, and the downbound 24' cabin cruiser OH 5421 MC collided at mile 455.0, Ohio River (U.S. Army Engineer District Louisville Chart No. 104). The force of impact caused the OH 5421 MC to be submerged under the tank barge FMC 103, to pass beneath it, and to emerge to the surface on the starboard side of the tow, approximately two hundred feet from the forward end of the tow. Seven of the eleven persons on board the pleasure craft lost their lives; one sustained injuries requiring hospitalization, incapacitating her for a period in excess of seventy-two hours, and the remaining three survivors sustained minor abrasions and injuries. There were no injuries to any persons on either towing vessel. The wreckage of the OH 5421 MC was beached on the right bank of the Ohio River near mile 455.0 and is considered a total constructive loss. There were no damages to the M/V JAMES L. HAMILTON, the M/V LA SALLE or the tow.

2. The vessels involved:

Name:	JAMES L. HAMILTON
Official Number:	288198
Home Port:	Wilmington, Delaware
Service:	Towing
Gross Tons:	527
Net Tons:	415
Length:	138.1'
Breadth:	34.1'
Depth:	9.8'
Propulsion:	Diesel
Horsepower:	3200

Year Built: 1962
Hull Material: Steel
Marine Document: Permanent enrollment No.
271 dtd 2-20-70
Owner: American Commercial Barge
Line Co.
P.O. Box 610, 1701 East
Market St.
Jeffersonville, Indiana
47130
Operator: Inland Tugs Co.,
P.O. Box 610
1701 East Market St.
Jeffersonville, Indiana
47130
Last inspected for Certification
by the Coast Guard: Uninspected

Master: The Master was Dennis Michael Mc Mahon, [REDACTED]
[REDACTED], Rock Island, Illinois, 61201. Captain [REDACTED]
[REDACTED] does not hold any Coast Guard issued licenses. He
holds a U. S. Merchant Mariners Document No. [REDACTED]
issued 2-24-71 at Memphis, Tennessee, endorsed for ordinary
seaman, wiper, tankerman grade A and all lower grades and
LFG products. Captain Mc Mahon was born in [REDACTED]. He served
four years in the U.S. Navy operating small craft. He has
never pursued a course of study of piloting, navigation or
radar operations; but he has served on river towing vessels as
deckhand and head deckhand from 1960 to 1963, as pilot on
uninspected river towing vessels from 1963 to 1966 and as
Master and relief Master on various uninspected river towing
vessels operated by American Commercial Barge Lines from
1966 to date. He has completed 20 round trips on the Ohio
River.

The pilothouse of the M/V JAMES L. HAMILTON is located
high and forward in the vessel and is built with large glass-
ed windows on all sides to afford all around visibility. In
addition to the windows it has a door on each side. It is
equipped with apparatus common to large river towing vessels
including radar, voice radio receiving and transmitting gear,
engine throttle and reversing controls, twin steering levers,
whistle controls and switches and directional controls for
the carbon arc searchlight. All essential controls are
within arms reach of the pilot. The radio gear is monitored
on channel 16 and is operable on the several frequencies
assigned for vessel use. The radar set is fitted with a
14 inch scope and has a series of range scales from one half
mile through forty miles. The most commonly used scales
for river navigation are the one half, one and two mile
scales. At the time of the casualty the radar was in operation
on the one mile scale and was operating satisfactorily on that
scale. All other equipment was functioning satisfactorily.

Name:	LA SALLE
Official Number:	263098
Home Port:	Wilmington, Delaware
Service:	Towing
Gross Tons:	331
Net Tons:	225
Length:	108.7
Breadth:	30'
Depth:	10.5'
Propulsion:	Diesel
Horsepower:	1800
Year Built:	1952
Hull Material:	Steel
Marine Document:	Permanent enrollment No. 42 dtd 7-26-71
Owner:	Commercial Transport Corp. P.O. Box 610 1701 East Market St. Jeffersonville, Indiana 47130
Operator:	Inland Tugs Company P.O. Box 610 1701 East Market St. Jeffersonville, Indiana 47130

Last Inspected for Certification
by the Coast Guard: Uninspected

Master: Walter Ray Morgan, [REDACTED] Granite City, Illinois, 62040. Captain Morgan does not hold any licenses issued by the U. S. Coast Guard. He holds a U. S. Merchant Mariners Document No. [REDACTED] issued 3-19-71 at Memphis, Tennessee, endorsed as tankerman, grade A and all lower grades. He was born in [REDACTED] and has served five years as deckhand and head deckhand, six months as pilot, and approximately five years as unlicensed Master and relief Master on uninspected river towing vessels. He has completed seven round trips on the Ohio River. He has never pursued a course of study of navigation, piloting or radar operation.

Name:	FMC 103
Official Number:	277172
Home Port:	South Charleston, West Virginia
Service:	Unmanned tank barge
Gross Tons:	676
Net Tons:	676
Length:	195'
Breadth:	35'
Depth:	10'
Propulsion:	None
Horsepower:	N/A
Year Built:	1961
Hull Material:	Steel

Marine Document

Consolidated certificate
of enrollment and license
No. 84, dtd 3-29-63.

Operator:

FMC Corporation,
8th and Ashby Street
South Charleston,
West Virginia, 25303

Last Inspected for Certification
by the Coast Guard:
Date and Port:

Huntington, West Virginia
This vessel was operating
on a permit to proceed and was
in the process of biennial
inspection which was com-
pleted on 20 August 1971
at Huntington, West Virginia

Name:

None

Ohio Boat Number:

OH 5421 MC

Home Port:

N/A

Service and type of vessel:

Pleasure motorboat, 24'
Chris Craft Cavalier,
cabin cruiser

Gross Tons:

5.06

Net Tons:

4.04

Year Built:

1964

Hull Material:

Plywood

Propulsion:

Inboard gasoline single
screw

Horsepower:

185

Marine Document:

State of Ohio certification
025419 dtd 5-27-71

Owner/Operator: Russell G. Hundley, [REDACTED]
Cincinnati, Ohio 45241. Mr. Hundley had owned three small
pleasure craft at various times over the past fifteen years.
His total experience as an operator was gained on weekends
during three summers in that period. He purchased the OH
5421 MC in May 1971 and operated that vessel for approximately
12 weekends, mostly during daylight hours and occasionally at
night. He had not enrolled in any course of study of
navigation and handling of small water craft.

3. Persons deceased or injured:

The following persons died as a result of this casualty.

Russell G. Hundley, Age [REDACTED]

Cincinnati, Ohio 45241

Terry Hundley, Age [REDACTED]

Cincinnati, Ohio 45241

Mrs. Mary Partin, Age [REDACTED]
[REDACTED]
Loveland, Ohio 45150

Randall J. Partin, Age [REDACTED]
[REDACTED]
Loveland, Ohio 45150

Arthur Lee Partin, Age [REDACTED]
[REDACTED]
Loveland, Ohio 45150

Lawrence Wayne Redmond, Age [REDACTED]
[REDACTED]
Sharonville, Ohio 45241

Mrs. Donna Redmond, Age [REDACTED]
[REDACTED]
Sharonville, Ohio 45241

The following persons were injured:

Mrs. [REDACTED] [REDACTED] Cincinnati, Ohio 45241	Hospitalized, incapacitated for more than 72 hours
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[REDACTED], Age [REDACTED] [REDACTED] Cincinnati, Ohio 45241	Minor injury and abrasions
--------------------------------------------------------------------	----------------------------

[REDACTED], Age [REDACTED] [REDACTED] Cincinnati, Ohio 45241	Minor injury and abrasions
--------------------------------------------------------------------	----------------------------

[REDACTED], Age [REDACTED] [REDACTED] Loveland, Ohio 45150	Minor injury and abrasions
------------------------------------------------------------------	----------------------------

4. The weather at the time of the casualty:

It was dark, visibility was good, estimated to be at least 4-5 miles. There was negligible wind and river surface was smooth. The river was at normal pool stage at 26.0 feet with a downstream current of approximately 0.6 MPH.

5. On 12 August 1971 the M.V. JAMES L. HAMILTON, pushing a tow of twenty-three barges departed the Dade Park Fleeting area located four miles above Evansville, Indiana on the Ohio River. The vessel was bound upstream to deliver and to pick up barges at several places on the river, below and above Cincinnati, Ohio. On the passage to Cincinnati barges were dropped off and

others were picked up. Some delay due to fog was encountered and a malfunction of the two mile scale on the radar was experienced, otherwise the trip was normal and without significant incident.

At approximately 2000 EDST on 14 August 1971 the vessel and its tow had passed through the six bridges crossing the Ohio River at Cincinnati and was proceeding upriver with engines at full ahead making a speed of about 6 miles per hour. The Master was in the pilothouse on watch, and was controlling the movement and direction of the vessel. The tow at this time consisted of fifteen barges made up three abreast and five in tandem and measured 105 feet across and approximately 1000 feet in length. Total length of the tow, including the towing vessel, was approximately 1125 feet. The HAMILTON was faced up and secured to the last barge in the center string. All barges were loaded with the exception of tank barge FMC 103 which was in light condition and which was located in the lead position in the starboard string of barges. Freeboard of the FMC 103 was estimated at 10 feet and at 4 feet for the other barges.

6. Shortly after 2100 EDST the Master was contacted by radio by the operator of a small boat in the vicinity and advised that the starboard navigation light at the head of the tow was extinguished. Several deckhands were sent forward and, upon examination of the light, found a short in the wiring within the lantern casing. While the men were working on the light the Master placed the beam of his searchlight in the area of the forward starboard corner of the tow to illuminate that area while the green light was extinguished. The Master verified that the defect was repaired and the light restored to normal operation by having the men physically lift each lantern and turn it about so that it could be seen from the pilothouse. This was done at approximately 2130 EDST.

7. Navigation lights displayed by the HAMILTON at this time consisted of the required red and green, port and starboard side lights and the two vertically placed amber stern lights. At the head of the tow the navigation lights consisted of portable red and green side lights placed on deck at the outboard corners of the lead corner barges, each located about one foot from the sides of the barge and about one and a half feet back from the forward edge of the headlog and lashed to a timberhead with line. An amber light was placed on deck and lashed to a cavel on the center of the lead barge about three feet from the forward end of the barge. The lights were housed in factory made standard navigation type portable lanterns, the side lights shaped to show the prescribed arc. They were not fitted with screens. Proper placement of the lights in their respective locations depended upon the judgment of the seaman assigned to the task as there were no guides or permanent benchmarks on the barges to insure accuracy of placement. The source of power for the navigation lights on

the barge was 110 volt alternating current provided through a series of 200 foot electrical cords which terminated in a portable multiple receptacle into which each navigation light cord was plugged. Size of the lamp bulbs for these lights were 100 watts. The circuit was fed through and protected by a circuit breaker in the switch box in the engine room. That portion of the tow from the head of the tow to the towing vessel was unlighted. The navigation lights for the towing vessel were fed through the navigation light panel in the wheelhouse which was alarmed to indicate malfunction of its navigation lights. The barge lighting system was not fitted with an alarm or device to indicate malfunction of the system. It was the practice for the barge lights to be checked for proper operation by a deckhand every three hours. The method employed involved the deckhand manually lifting and reversing each light and holding it up momentarily so that it could be seen from the pilothouse.

8. Shortly before 2130 EDST radio contact was made with the M.V. LA SALLE and, at the Master of the LA SALLE's request, arrangements were made for that vessel, also bound upstream but without tow, to join the HAMILTON's tow as far as Carntown, Kentucky, which is located at mile 441.5 Ohio River. The benefits of this arrangement were mutual: Both vessels would make a faster passage, LA SALLE would steer better and would make the passage with decks dry; since, when running without tow, with its blunt bow and low freeboard and with the full load of fuel and water it now had on board, it tended to run with foredecks awash at any speeds above slow speed. HAMILTON was slowed for a few minutes to allow LA SALLE to catch up and was slowed again as LA SALLE joined the tow. LA SALLE made up to the tow at about 2130 EDST at mile 460.9 and faced up to the starboard after barge leaving a gap between the two vessels of approximately 3 feet. The Master of that vessel then placed his rudders amidships, his engines on full ahead and, at the request of Captain Mc Mahon, secured his port side light. He then left his vessel and went to the pilot house of the HAMILTON leaving his head deckhand on watch in the pilothouse of the LA SALLE. LA SALLE now was displaying the starboard green side light and her two vertical amber stern lights; however, from the time of departure Cincinnati until joining the tow LA SALLE displayed only her red and green lights and two vertical amber lights on the stern. No change was made to navigation lights of the HAMILTON nor to those of the tow after repair of the defective starboard side light on the lead corner barge.

9. After the LA SALLE joined the tow speed increased from six to eight miles per hour. The Master of the HAMILTON still controlled the tow from his vessel which remained secured to

the after center barge. LA SALLE's rudders remained amidships and the deckhand in the pilot house stood by to answer the radio, control the throttle or to respond to voice commands from HAMILTON if necessary. Captain Morgan of the LA SALLE remained in HAMILTON's pilot house discussing towboat operations with Captain Mc Mahon, Master of the HAMILTON.

The tow proceeded at an estimated eight miles per hour following the river channel, which in this area runs slightly closer to the Ohio side than the Kentucky side. When about mile 455.2 the Master of the HAMILTON saw what he recognized as the lights of a small boat at a distance of approximately one third mile ahead. Although the radar was operating and set to the one mile scale it was not used at this time for sighting or while navigating with respect to this small boat; however, it had been used earlier that evening by the Master to locate and identify objects on the scope as small craft. The boat appeared to be to his port side slightly to the left of the center of his tow but, nearer the Ohio bank. Captain Mc Mahon estimated its speed heading down river to be 15 MPH. At first sighting it appeared questionable as to whether the boat would clear to port; however, moments later, when at a distance between eight hundred to one thousand feet, it was observed to change course slightly to its starboard and it then appeared to the Master of the HAMILTON to steady up on a heading which would have permitted it to effect a safe port to port passing, clearing the tow at an estimated distance of seventy-five feet. When the distance between the head of the tow and small boat had decreased to about two hundred feet the small boat appeared to change course drastically, veering sharply to port, crossing the head of the tow from port to starboard. Upon seeing the small boat's turn to port the Master started to swing the head of the tow to port in an attempt to allow the boat to clear the tow. Passing signals were not sounded by either the small boat or the tow.

The small boat continued across the bows of the lead barges at an angle of nearly ninety degrees, or almost broadside, as estimated by Captain Mc Mahon, until at a distance of about fifty feet it was obscured from the Master's view by the bow of the tank barge FMC 103. What appeared to be the beam of the small craft's searchlight directed vertically was then observed from the HAMILTON's pilot house. Impact occurred seconds later as the small craft struck the rake of the barge FMC 103 inboard of the port corner. The time as determined by Captain Mc Mahon was 2210 EDST. At or just before the impact the Master of the HAMILTON sounded a series of short blasts of his whistle, switched on the searchlight and lit up the port corner of the tow, sounded the general alarm to alert his crew and started to back his engines full astern

to swing his stern to port so as to permit the small craft, which had gone under the starboard lead barge FMC 103, to surface along the starboard side of the barges rather than to pass under the full length of the tow. As he left the wing of the HAMILTON's bridge Captain Morgan ordered the LA SALLE's engines stopped. He did not reverse his engines, fearing that his vessel's unguarded propellers would endanger persons from the small craft who might have passed under the length of the tow. Two large pieces of wreckage of the small craft and considerable flotsam were seen to emerge to the surface of the starboard side of the tow, appearing from under the second barge in line. At this time there was still way on the tow.

10. Captain Morgan of the LA SALLE, crossed over to the LA SALLE on his way to the starboard side of the starboard string of barges, pausing momentarily to instruct his crew to follow him with lifejackets and liferings.

Captain Mc Mahon, who was relieved of the controls of the HAMILTON by his pilot within minutes of the collision, also went to the after starboard barge followed by several members of his crew who were awakened by the head deckhand and the sound of the general alarm bells.

Captain Morgan had gone about fifty feet forward on the barge when he saw a young girl close aboard in the water. He took a lifering from the man behind him and passed it to the girl. He then went another few feet forward and passed a lifering to a young boy as he floated by, all the time shouting for them to hold on to the liferings. At this point he saw the wreckage of the small boat float by.

Captain Mc Mahon arrived on the barge in time to see the liferings passed to the survivors. It appeared to him that the second survivor, the small boy, later identified as [REDACTED], was injured and unable to hold the lifering. He jumped into the river, grabbed the boy, and held him afloat until they both were pulled on board the LA SALLE by the crew. The tow's headway and the current caused the wreckage and the survivors to drift aft of the tow. The other survivor, later identified as [REDACTED], managed to hold the lifering and was pulled from the water by one of several small boats attracted to the area by the HAMILTON's whistle signals and lights.

11. On 14 August 1971 the cabin cruiser OH 5421 MC was launched at Shady Lane Boat Harbor; at mile 455.1 right bank, Ohio River and departed there at approximately 1200 EDST. There were eleven persons on the boat at this time which included Mr. Russell G. Hundley, his wife [REDACTED], their children Gary, Larry and [REDACTED]; Mr. Lawrence Redmond and his wife Donna, Mrs [REDACTED] and her children, Theresa [REDACTED] and [REDACTED]. Mr. Hundley, Mr. Redmond and Mrs Partin's husband worked for the

same company. The families were friends, and the Redmonds and Partins had been guests on board the boat on other occasions. Of the group Mrs. Partin, Randall Partin and Mrs. [REDACTED] were known as non-swimmers. The other eight persons could swim with varying degrees of proficiency.

The group got underway somewhat later than anticipated because they were hailed when only a short distance out of the harbor by a disabled boat which they towed back to the harbor. They then resumed the trip, and while enroute, several persons operated the boat at various times and at least one person water skied. Of those on board Mr. Hundley was the most experienced boatman, the others having gained what experience they had on the several previous short trips made on OH 5421 MC.

12. Lifesaving devices carried on board included six buoyant seat cushions, four bouyant vest type life preservers and one ski vest, all of which were approved or similar to types of items for which Coast Guard approvals have been issued. Two ski belts and three inflatable air mattresses - types for which no approvals have been issued - were also aboard. The floatable gear was stowed in various places on the boat and it was used that day only while swimming or while water-skiing. None of the persons wore lifesaving devices while underway on either the upbound or downbound trips.

13. The party unloaded the picnic gear at a sand bar, locally called Drybar, at mile 437, on the left bank of the river where they cooked and ate their food. In the picnic supplies there were two twelve packs of beer and one half pint of vodka. In the course of the day thirteen or fourteen cans of beer were consumed, approximately five of them by Mr. Hundley, and the remainder by Mr. Redmond and Mrs. Partin, between the time of departure from the boat harbor and time of the incident. During the day Mrs. [REDACTED] mixed two drinks of vodka and collins mix for herself and Mrs. Redmond; however, after tasting them, they were discarded as unpalatable. Some of the party swam in the river and others returned to the boat and water skied until approximately 1800 EDST. The party then re-loaded the gear and departed the area at about 1830 EDST. The trip to Shady Lane Boat Harbor was begun at a slower than normal speed, the boat moving through the water on an even keel at a speed estimated by the survivors to be about five miles per hour. The engine, steering apparatus, horn and lights were operating satisfactorily.

14. The boat passed New Richmond, Ohio, then passed the Beckjord Power Plant proceeding in the channel but nearer the Ohio shore. At one point, the boat was stopped with engines idling,

while the plastic cockpit side curtains were rigged. Mr. Hundley, Mr. Redmond, Arthur Partin and [REDACTED] steered the boat at various times. [REDACTED], age [REDACTED], controlled the boat for a period of 30 to 45 minutes up to approximately 5 to 10 minutes prior to the expected arrival at the Boat Harbor. For most of this period the 5 adults were in the lighted cabin; however, on occasion Mr. Redmond came up to the cockpit or Mr. Hundley looked out from the hatchway into the cockpit.

Shortly before dark the navigation lights were turned on. [REDACTED] and Arthur Partin navigated by frequently, but intermittently switching the searchlight on and directing its beam toward the shore to estimate the distance from Ohio banks and to sight other objects in the water. The searchlight was mounted on the cabin top just forward of the boat controls and windshield and was situated slightly below the eye level of the person operating the boat. Navigation lights displayed were a red and green combination light on the bow, and an all around white light amidships above the windshield and an all around white light on the after starboard corner. Several lights were lit in the cabin area and light from these shone through the hatchway into the cockpit control area and through the windows of the cabin forward.

About 5 to 10 minutes prior to the collision when the boat was a short distance up river from the Shady Lane Boat Harbor, Mr. Russell Hundley left the lighted cabin area and took over control of the boat. He continued to navigate the boat as had those before, in that he used the searchlight to estimate his position relative to the bank. He instructed Larry Hundley to go forward and [REDACTED] to stay aft to prepare the lines for mooring. [REDACTED] went forward and began to break out the forward line. Mr. Hundley, [REDACTED], [REDACTED] and Mr. Redmond were in the cockpit at this time and the three ladies were in the cabin. The whereabouts of the two younger children is not certain as they were moving from place to place in the boat, but for a few minutes just prior to the incident they were on the foredeck with [REDACTED] who was standing at the forward rail.

A few minutes after [REDACTED] arrived on the foredeck and while arranging the mooring line on the deck he saw the barges off the starboard side, very close, coming, towards the boat. He did not see any of their lights. He ran back along the starboard side of the boat toward the cockpit shouting "Barge". As he arrived at the edge of the house he tripped over the chain rail and fell into the cockpit. [REDACTED], still seated in the stern of the cockpit with [REDACTED], saw Mr. Hundley turn the boat's wheel to the left and at that moment saw the barge approaching from the right side of the boat. Mrs. Hundley, seated in the cabin had, from time to time, gotten up to look out of the cabin window to observe various points

along the bank. Her first indication of danger was the sight of the brown bow of the barge as it came into the cabin through the starboard side of the boat.

██████████ saw the barges after ██████████ shouted and he noticed a light, which he described as a dim red light, on their forward end.

The barge FMC 103 collided with the starboard side of the OH 5421 MC. The force of impact and the headway of the barges drove the small craft under the tank barge FMC 103 and under the next successive barge where it bumped along, disintegrating as it went, finally emerging from under the tow on the starboard side. The survivors left the boat in various ways. ██████████ and ██████████ jumped from the boat just at impact; Mrs. Hundley and ██████████ were thrown clear while under the water. All were bumped along under one or more of the barges until surfacing on the starboard side of the tow. Mrs. Hundley had no recollection of events after impact; however, a small boat pulled her from the water and brought her to the dock at Shady Lane Harbor. ██████████ Hundley was swept under the tow, struck the bottom of the barges several times as he attempted to surface. Finally, he swam to his left and emerged in the same general vicinity of the other survivors, where he was picked up by one of the searching small craft.

All four survivors were brought to the Shady Lane Boat Harbor where they were transferred to ambulances and taken to local hospitals for examination. The three younger survivors who sustained minor abrasions and bruises were treated and released. Only Mrs. ██████████ was hospitalized for further observation and treatment of injuries.

17. Numerous persons along the bank saw the tow passing up river. A group of members of the U.S. Coast Guard Auxiliary, attending a rendezvous on the Kentucky bank of the river about one quarter mile below the collision area, watched the tow pass just minutes before the collision. A number of this group, some of whom were experienced night time boaters, recognized the tow as it approached and noticed that its lights were then burning brightly. They were attracted to the incident by the whistle signals, the lights and the stopping of the tow. Several of these Coast Guard Auxiliarists and other nearby recreational boaters immediately began a search of the area. Shortly afterward they recovered three survivors and Mr. Lawrence Redmond's body from the river. They continued to search the area for several hours after the collision, but with negative results except that debris and the wreckage of the boat which was later beached at 9 Mile Creek on the Ohio bank were found. The JAMES L. HAMILTON placed its tow against the Ohio bank and conducted a thorough search of the tow including between all barges. The LA SALLE was broken out of the tow shortly after the collision and, assisted by local small boats, searched the area throughout

the night. The following morning, the tow was completely disassembled and searched, but again with negative results. The bodies of the other deceased were located during the following two days as a result of extensive dragging and diving efforts by local volunteer fire department and life squad members. Death certificates issued by Kentucky authorities attribute the cause of death to "Drowning due to boat accident".

18. The Board examined the wreckage of the OH 5421 MC where it had been beached on the Ohio bank near 9 mile creek. There were two large pieces remaining. These were the hull and canopy top. The entire port side was sheared away and external fittings on deck were missing or crushed into the plywood. The starboard side of the hull was holed and indented. The outlines of the indent were of the approximate dimensions of a standard towing knee found on river barges. The control console, some machinery and the engine were intact. The remaining internals were adrift, crushed or missing. Some life saving devices which were salvaged by the search parties were placed near the wreckage; however, these devices were not available for examination by the Board, having been removed by persons unknown.

19. In 1969, the Commander, Second Coast Guard District in cooperation with several towing and barge companies conducted an experiment in the upper Mississippi River in which the steady amber light required at the head of the tow was replaced with a flashing amber light. In 1970, this experiment was extended to the Ohio River. Six of the witnesses who appeared before this Marine Board of Investigation had seen tows displaying the flashing amber lights. All testified that in their opinion flashing amber lights were an improvement in barge lighting as they served to draw attention to the tow and thereby provided a definite and early notice of the tow's presence. The flashing light also appeared to them to be more noticeable than a steady light when observed against background lighting. There were no expressions of disadvantages of the flashing amber lights by any of the witnesses. There was comment relative to problems connected with identification and marking the unlighted portions of long tows between the headlog of barges and the towing vessel.

CONCLUSIONS

1. That the casualty was caused by the failure of the owner/operator of the motorboat OH 5421 MC to keep a proper lookout with consequent failure to observe the tow of the JAMES L. HAMILTON in time to take necessary action to avoid the collision.
2. The assumption of control of the motorboat OH 5421 MC by the owner/operator immediately after leaving the lighted cabin and without allowing sufficient time for his eyes to adjust for proper night vision; his use of the searchlight, mounted directly in front of him; the presence of several persons on the bow of the boat obstructing his visibility are considered as probable factors contributory to his failure to see the oncoming tow.
3. That the owner/operator of the motorboat OH 5421 MC demonstrated poor judgement in that he permitted his boat to be operated for a long period of time by an inexperienced person, an [REDACTED] year old child, unsupervised or at best partially supervised by an inexperienced adult, at night and on a part of the river where other pleasure craft and large commercial tows were likely to be encountered.
4. There is evidence which indicates that, by adhering to its original intended course, close to the Ohio bank, the boat might have passed clear of the tow.
5. There is no evidence which indicates that the consumption of five cans of beer by the owner/operator of OH 5421 MC or that his general physical condition were causal factors.
6. That the incident may have been prevented or its effects mitigated:
 - a. Had the owner/operator, as the most experienced boatman on board, personally controlled and navigated the boat after dark.
 - b. Had there been a proper lookout or some person on board OH 5421 MC designated to watch for other craft from a position outside the cockpit area.
 - c. Had the deceased been wearing life saving devices.
 - d. Had the owner/operator availed himself of courses of instruction in boating safety sponsored by local boating organizations.
 - e. Had the Master of the M.V. JAMES L. HAMILTON blown a whistle signal to initiate passing agreement as required by the Western River Rules 33 USC 343 (Rule 18b).

7. The effect on this case of a flashing amber light on the head of the tow, had it been so equipped, cannot be determined; however, evidence adduced strongly suggests a need for further study of this problem, looking toward early implementation of a change in the existing lighting for barges of long tow. The flashing amber light in lieu of a steady amber light is an alternative which is believed to have merit.

8. There is evidence of violation of the Western Rivers Rules of the Road on the part of the Master of the M.V. JAMES L. HAMILTON as follows:

a. Failure to sound by whistle signal; as the ascending vessel, a proposal for passage, as required by 33 USC 343 (Rule 18b).

b. Failure to immediately signify by sounding the danger signal, doubt as to the intentions of OH 5421 MC, as required by 33 USC 349, (Rule 24a).

c. Failure to maintain a proper lookout as required by 33 USC 351 (Rule 26).

d. Failure to display a green light on the forward starboard side of the tow, while underway at night, for a period of 30 minutes prior to the incident, as required by 33 USC 316, 33 CFR 95.29(a), (Rule 7(b)). This violation is not considered as contributory to the casualty.

e. Failure to provide screens for the side lights of the lead barges in the tow as required by 33 USC 312, (Rule 3).

f. Failure to carry the three tow head lights at approximately the same height above the surface of the water as required by 33 USC 316, 33 CFR 95.29(f) (Rule 7(b)). The effect of this violation on this incident cannot be determined; however, it is standard operating practice on the Western Rivers to locate tow head lights on the decks of the forward barges in a tow regardless of possible variations in freeboard or the height of the lights above the surface of the water.

9. There is evidence of violation of the Western River Rules of the Road, not contributory to the casualty, on the part of the Master of the M.V. LA SALLE as follows:

a. Failure to display central range lights when operating without a tow prior to joining the tow of the M.V. JAMES C. HAMILTON as required by 33 USC 316, (Rule 7a).

b. Failure to display a red port light while pushing another vessel ahead as required by 33 USC 312, (Rule 3b).

10. There is evidence of violation of the Western River Rules of the Road on the part of the motorboat OH 5421 MC as follows:

a. Failure to maintain a proper lookout as required by 33 USC 351, (Rule 26).

b. Failure to operate in a manner so as not to hamper the safe passage of the larger vessel with tow that was ascending the river as required by 33 USC 348 (Rule 23a).

c. Failure to sound a danger signal followed by a passing signal when the vessels were within one half mile of each other and passage agreement had not been reached as required by 33 USC 343, (Rule 18b).

11. There is no evidence that any personnel of the Coast Guard or any other government agency caused or contributed to this casualty.

12. That the actions of Captain McMahon in bringing [REDACTED] to safety are considered meritorious and are a worthy subject of separate correspondence as are the efforts of those pleasure boatmen who participated in the rescue of Mrs. [REDACTED] and [REDACTED] and in the fruitless nightlong search for other survivors.

RECOMMENDATIONS

1. That the Coast Guard immediately study the existing navigation lights required on vessels and tows operating on the Western Rivers of the United States looking toward implementation of early radical changes in the existing lights. Consideration of the use of the flashing amber light at the head of tows as a substitute for the now required steady amber light is recommended. It is further recommended that the Coast Guard study also consider changes in the rules which would provide for lighting of the now unlighted barges of long tows between the head of the tow and the towboat.
2. That the Coast Guard consider action which would require the installation of an alarm, appropriate device, or other means which would serve to warn the pilot or operator of the towing vessel of any malfunction or failure of the required navigation lights on the tow as well as those on the towboat.
3. That the U. S. Coast Guard continue to support the enactment of Federal Legislation to require that the persons in charge of navigation watches of towing vessels shall be licensed for such services by the U. S. Coast Guard.
4. That the Coast Guard continue to sponsor public education programs on boating safety through Coast Guard units, the Coast Guard Auxiliary and other boating organizations. with particular emphasis on reaching pleasure boatmen who are not members of organized boating groups.
5. That consideration be given to licensing of pleasure boatmen as a means of fostering a viable public education program.
6. That a report of violation be forwarded to Commander, Second Coast Guard District for appropriate administrative penalty action in connection with evidence of violation of the Rules of the Road by the M.V. LA SALLE and by the M.V. JAMES L. HAMILTON.
7. That no further action concerning the evidence of violation of the Rules of the Road by the OH 5421 MC be taken since its owner/operator is deceased.

[REDACTED]
C. T. NEWMAN,
Captain, U. S. Coast Guard
Chairman

[REDACTED]
W. L. WEBSTER,
Captain, U. S. Coast Guard
Member

[REDACTED]
M. J. STEWART,
Commander, U. S. Coast Guard
Member and Recorder