

M-119 AI 4

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

ISSUED: June 4, 1980

Forwarded to:

Admiral John B. Hayes
Commandant
U.S. Coast Guard
Washington, D.C. 20593

SAFETY RECOMMENDATION(S)

M-80-30 through -35

About 0712 c.d.t., on August 30, 1979, the Peruvian freighter M/V INCA TUPAC YUPANQUI lost steering control and struck the butane barge PANAMA CITY moored at General American Transportation Corporation (GATX) dock No. 4, Good Hope, Louisiana. As a result of the collision, liquefied butane was released, vaporized, ignited, and exploded in a ball of fire. Twelve persons died as a result of the accident. Damage was estimated at \$10,500,000. 1/

The master of the INCA TUPAC YUPANQUI acted promptly to take evasive action when he realized the seriousness of the situation; however, there were two preventive actions which he could have taken before the steering failure which might have prevented the accident. First, the master should have posted the ship's carpenter on the bow to drop the anchors in an emergency, even if the pilot on the INCA TUPAC YUPANQUI did not think it necessary. If either anchor had been dropped before the collision, the ship's heading might have been changed sufficiently to avoid colliding with the barge. Because there were no personnel posted on the bow for this purpose, there was not sufficient time to drop an anchor before the collision. Second, the master should have posted someone in the steering engine room to operate the directional valves on the hydraulic pumps manually or to activate the manual hand pump in an emergency. A group of experts, during its investigation after the collision, found that the hydraulic pumps and the directional solenoids and valves operated properly. The collision might have been avoided if the steering engine had been operated manually using the directional valves on the pumps.

As a result of its investigation of an accident in New York harbor on June 2, 1973, 2/ the Safety Board recommended that the U.S. Coast Guard:

1/ For more detailed information read, "Marine Accident Report—Collision of Peruvian Freighter M/V INCA TUPAC YUPANQUI and U.S. Butane Barge PANAMA CITY, Good Hope, Louisiana, August 30, 1979" (NTSB-MAR-80-7).

2/ "Marine Casualty Report—SS C.V. SEA WITCH—SS ESSO BRUSSELS (Belgium) Collision and Fire, New York Harbor on 2 June 1973 with Loss of Life" (USCG/NTSB-MAR-75-6).

Establish a requirement for oceangoing vessels in designated restricted waters such as New York harbor to have the emergency steering station manned. This also should apply to foreign vessels. (Class II, Priority Followup) (M-76-2)

A requirement for the manning of steering enginerooms in certain waters of the United States was published as a proposed regulation by the Coast Guard in the Federal Register of May 6, 1976. As a result of comments received, this particular requirement was withdrawn for further study and was not included in the final rules published on January 31, 1977.

On February 24, 1977, the bulk sulfur carrier SS MARINE FLORIDIAN collided with the Benjamin Harrison Bridge over the James River near Hopewell, Virginia. The Safety Board's report of that accident ^{3/} stated that contributing to the cause of the collision was "the absence of a person on watch in the steering engineroom which contributed to the delay in activating the alternate steering engine." Based on the President's message of March 17, 1977, to Congress concerning measures for reducing pollution caused by tanker accidents, the Coast Guard issued final rules for improved steering gear on U.S. and foreign tank vessels over 10,000 gross tons on November 19, 1979. However, the Coast Guard has not issued any regulations to improve steering standards on foreign cargo ships such as the INCA TUPAC YUPANQUI.

The Safety Board discussed the need for improvements in marine steering reliability in a September 21, 1979, safety report which called for safety requirements applicable to both U.S. vessels and foreign vessels entering U.S. ports and waterways. ^{4/} Because of this accident, the Safety Board again recommends that the Coast Guard establish a requirement for the manning of emergency steering stations on all vessels over 1,600 gross tons in designated restricted waters and reiterates Recommendation M-76-2.

The exact cause of the steering casualty on the INCA TUPAC YUPANQUI could not be determined. However, the opening of the 0.8-amp fuse or the failure of the rectifier on the bridge relay board would have caused the complete loss of steering control from the bridge since both the wheel and pushbuttons were supplied with power through the same circuitry. If the ship lost only starboard control, the fire destroyed any evidence of how it happened. The rudder being found 30° to port can be explained by the slippage in the hydraulic lock allowing the rudder to be turned as the ship grounded.

This accident might have been prevented if the INCA TUPAC YUPANQUI had had two completely independent control systems. The group of experts found the steering engine motors, pumps, main rotary actuator, and solenoid control valves fully operational. Also, the motor controller in the engineroom for the starboard motor was undamaged. The Safety Board concludes that the malfunction must have occurred in the control system and most likely in the relay board. Although the ship was required to have independent power supplies to each pump in the steering engineroom by the 1960 Safety of Life At Sea (SOLAS) Convention and the American Bureau of Shipping rules, the ship was not required to have two separate and independent control systems as required for U.S. cargo ships by Coast Guard regulations (46 CFR 58.25-55). The Intergovernmental Maritime Consultative Organization (IMCO) is presently considering improved steering standards for cargo vessels. The Safety Board considers a requirement for two separate and independent control systems on foreign cargo vessels an important element for any new steering standards.

^{3/} "Marine Accident Report—U.S. Tankship SS MARINE FLORIDIAN Collision with Benjamin Harrison Memorial Bridge, Hopewell, Virginia, February 24, 1977" (NTSB-MAR-78-1).

^{4/} "Safety Report—Progress Toward Improvements in Marine Steering Reliability" (NTSB-SR-79-1).

Immediately after the explosion, the GATX firefighting team assembled and went to the scene of the fire at GATX dock No. 4. By 0830, the Coast Guard firefighters and a local volunteer fire department had arrived. Later in the morning, other local volunteer fire departments also responded. At the specific request of the Coast Guard, the New Orleans fireboat DELUGE was sent to the fire.

There is no fire contingency plan for the Port of New Orleans, the second largest port in the United States. The response to this fire and explosion was on an ad hoc basis with no coordinated effort to assess the resources necessary to fight the fire and no designated person in charge of the firefighting efforts.

As a result of its March 15, 1972, special study, "Analysis of the Safety of Transportation of Hazardous Materials on the Navigable Waters of the United States," the Safety Board made the following recommendations:

The Office of Emergency Preparedness, the Coast Guard, and the U.S. Army Corps of Engineers [should] prepare emergency contingency plans, similar to the Houston Ship Channel plan, to respond to catastrophic accidents involving hazardous materials for those waterways which carry large quantities of these materials. These plans should include an inventory of firefighting and emergency equipment and response personnel available by regions. They should include the stockpiling of firefighting and other emergency equipment at strategic locations from which they can be dispatched to the scene of the casualty by air or other expeditious means. (M-72-14)

The Coast Guard, within its Captain of the Port areas of jurisdiction, [should] designate specific functions of firefighting and emergency operations in those areas in which risk of hazardous materials incidents are greatest. (M-72-15)

On November 7, 1972, the Coast Guard replied that it concurred with the recommendations but as yet has not fully implemented them.

As a further result of its investigation of the June 2, 1973, accident in New York harbor, 5/ the Safety Board recommended that the U.S. Coast Guard:

Expedite implementation of the Safety Board's 1972 recommendation to prepare emergency contingency plans to respond to catastrophic accidents involving hazardous materials for those waterways which carry large quantities of these materials. The contingency plan for New York harbor should be given priority. (Class II, Priority Followup) (M-76-9)

On February 18, 1977, the Coast Guard replied that "Contingency plans for accidents involving hazardous materials are presently in various stages of development at Coast Guard field units. New York is currently developing their plan."

As a result of its mid-1979 special investigation of the emergency response to transportation accidents, 6/ the Safety Board made the following recommendations to the U.S. Department of Transportation (DOT):

5/ op. cit.

6/ "Special Investigation Report--Onscene Coordination Among Agencies at Hazardous Materials Transportation Accidents" (NTSB-HZM-79-3).

Pursue action on Recommendation I-77-2 7/ and expand it to develop and disseminate guidelines for planning emergency responses to transportation accidents involving hazardous materials. These guidelines should clearly delineate the onscene command structure, establishment of a command post and communications, and structure of the coordination of efforts, and require control of access to the accident site. Furthermore, the relationships and responsibilities of the responding Federal, State, local, and private agencies should be clearly identified. (Class II, Priority Action) (I-79-5)

Develop a universal, highly visible means for identifying the onscene commander and command post at hazardous materials emergencies, and promote its use among Federal, State, and local government agencies and private organizations. (Class II, Priority Action) (I-79-6)

The Safety Board continues to urge the DOT and the Coast Guard to implement emergency contingency plans and reiterates recommendation M-76-9.

The explosion and fireball after the collision lasted less than a minute, yet the entire deckhouse on the INCA TUPAC YUPANQUI was destroyed. The fireball ignited combustible material in several staterooms and then spread throughout the accommodation spaces. The total destruction of the accommodation spaces indicated the widespread use of combustible materials. In two recent reports of accidents in which the accommodation spaces of vessels were destroyed by fire, 8/ the Safety Board concluded that the use of combustible materials in these spaces caused the fire to spread rapidly. If the INCA TUPAC YUPANQUI had been constructed with structural fire protection standards similar to those required on new U.S. vessels, the initial fires probably would have been confined and the extent of damage decreased. The crew might have been able to extinguish the initial fire before it spread throughout the accommodation spaces. The 1974 SOLAS Convention will require the use of noncombustible materials on tankers but not cargo ships like the INCA TUPAC YUPANQUI. In order to minimize the hazard to U.S. ports, the Safety Board concludes that all new ships subject to SOLAS Conventions should be prohibited from using combustible materials in the construction of accommodation spaces.

Construction of docks in bends on the Mississippi River increases the risk of vessel collisions. Vessels transiting the river follow the points and bends custom. As the strongest current and the deepest water is located in the bends, downbound vessels tend to favor the bend side of the channel. If a vessel loses control in the bend, or a barge or any other floating object breaks loose, there is a high risk of colliding with a vessel moored alongside a pier located in a bend. The physical location of the GATX loading facility made it susceptible to such damage. Docks or piers that are constructed in straight portions of rivers are less vulnerable to collision. However, neither the U.S. Army Corps of Engineers nor the Coast Guard address this safety problem in their permit regulations.

7/ This recommendation was made on November 1, 1977, following the Safety Board's investigation of a railroad accident involving radioactive materials.

8/ "Marine Accident Report—Grounding of M/V DAUNTLESS COLOCOTRONIS in Mississippi River near New Orleans, Louisiana, July 22, 1977" (NTSB-MAR-78-5); "Marine Accident Report—Fire on Board the Canadian Bulk Carrier M/V CARTIERCLIFF HALL, Lake Superior, June 5, 1979" (NTSB-MAR-80-1).

If, due to restraints, facilities have to be constructed in the bends of the river, then cargo listed in 33 CFR 124.14(4)(b)(1) should be required to be loaded from the shore side of these facilities. If the PANAMA CITY had been loaded from the shore side of GATX dock No. 4, the barge would have been protected by the dock and the INCA TUPAC YUPANQUI might have caused only structural damage to the dock.

There is a need to minimize the potential danger associated with the carriage and transfer of liquefied gases by vessels in or near the Port of New Orleans. The collision of the INCA TUPAC YUPANQUI with the PANAMA CITY is an example of the destructive force of such cargoes. One method is for the Coast Guard to monitor the movement and transfer operations of such vessels in the port.

The Coast Guard has set minimum standards for the monitoring of the transfer operations of hazardous substances such as liquefied gases and 33 CFR 124.14 requires that operators report the arrival of any vessel carrying liquefied gases in the Port of New Orleans. However, the New Orleans Captain of the Port (COTP) does not routinely monitor the transfer of liquefied gas cargoes and has not applied the requirements of 33 CFR 124.14 to barges such as the PANAMA CITY. The Coast Guard has also stated that waterfront facilities are to be inspected every 6 months. GATX dock No. 4 had not been inspected for 14 months before the accident. The COTP was not aware that butane transfers were taking place at GATX dock No. 4 and thus had never monitored butane transfer operations at the dock. Furthermore, the COTP does not know how many liquefied gas barges pass through, or cargo transfers occur, in the Port of New Orleans during any given period of time.

In this particular accident, if the COTP had known that the PANAMA CITY was loading butane at GATX dock No. 4, the accident still would not have been prevented; however, when the accident was reported, the COTP would have known that a butane barge was involved and could have notified local emergency personnel accordingly. The Safety Board believes that the Coast Guard should have a better monitoring program for the carriage or transfer of liquefied gases in or near the Port of New Orleans, the second busiest port in the United States.

Therefore, in addition to reiterating recommendations M-76-2 and M-76-9, the National Transportation Safety Board recommends that the U.S. Coast Guard:

Make the requirement for two separate and independent steering gear control systems on cargo vessels a United States priority item at meetings of the Intergovernmental Maritime Consultative Organization. (Class II, Priority Action) (M-80-30)

Amend 33 CFR 164.15(c) to require that the ship's personnel assigned to drop the anchor in an emergency be stationed at the anchor windlass controls. (Class II, Priority Action) (M-80-31)

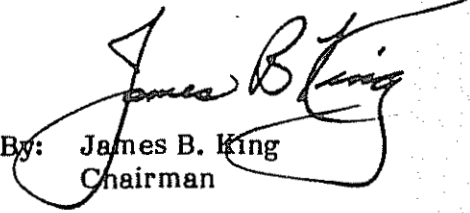
Seek international agreement to require all ships of more than 500 gross tons to use noncombustible materials in the construction of accommodation spaces. (Class II, Priority Action) (M-80-32)

Study the use of waterfront facilities, located in bends on the Mississippi River, for the transfer of cargoes of particular hazard listed in 33 CFR 124.14, and if necessary promulgate appropriate regulations to prohibit siting future facilities in bends. (Class II, Priority Action) (M-80-33)

Require vessels, loading or unloading cargoes of particular hazard as listed in 33 CFR 124.14, to conduct operations on the shore side of the facility, wherever possible, on the Mississippi River. (Class II, Priority Action) (M-80-34)

Increase the monitoring of vessels engaged in the carriage or transfer of liquefied gases in or near the Port of New Orleans. (Class II, Priority Action) (M-80-35)

KING, Chairman, DRIVER, Vice Chairman, McADAMS, GOLDMAN, and BURSLEY, Members, concurred in these recommendations.


By: James B. King
Chairman