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National Transportation Safety Board

Washington, D.C. 20594
Safety Recommendation

Date: October 1, 1990

In reply refer to: M-90-61 and -62,
P-90-32 and -33

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On October 3, 1989, the United States fishing vessel NORTHUMBERLAND struck and ruptured a 16-inch-diameter natural gas transmission pipeline about 1/2 nautical mile offshore in the Gulf of Mexico, and about 5 1/3 nautical miles west of the jetties at the entrance to Sabine Pass, Texas. Natural gas under a pressure of 835 psig was released. An undetermined source on board the vessel ignited the gas, and within seconds, the entire vessel was engulfed in flames. The fire on the vessel burned itself out on October 4. Leaking gas from the pipeline also continued to burn until October 4. Of the 14 crewmembers, 11 died as a result of the accident.¹

When the accident occurred, the NORTHUMBERLAND was in shallow waters and close to shore, which was normal and usual for its trade. The major constraint to the vessel's operation in the area was its draft. The water depth and the estimated draft of the vessel at the time of the accident were both about 10 feet. Consequently, the bottom of the vessel was close to the sea bottom or slightly penetrating the bottom when it struck the pipeline.

The pipeline was not fully buried when it was struck by the NORTHUMBERLAND. Diving surveys conducted after the accident established that the unburied segments of the pipeline were not confined to a limited length, but extended for as much as 400 feet in the immediate accident area. The quantity and type of marine growth found on the pipeline indicated that the pipeline had been unburied for a prolonged period. Damage to the concrete coating also indicated that the pipeline had been previously struck by other vessels or equipment towed by vessels.

¹ Additional information is given in the accident report. (National Transportation Safety Board, 1990. Fire on board the F/V NORTHUMBERLAND and rupture of a natural gas transmission pipeline in the Gulf of Mexico near Sabine Pass, Texas, October 3, 1989. Pipeline Accident Report NTSB/PAR-90/02. Washington, DC.)

The master had sufficient experience as the master of a vessel operating in the offshore waters of Texas and Louisiana to have been very familiar with these waters. Statements made by the master during the postaccident investigation indicated that he had no specific knowledge of the presence and location of submerged pipelines in these waters. Although he was aware that submerged pipelines existed in the Gulf of Mexico, he believed that all submerged pipelines were buried beneath the seabed and were required to be maintained in that condition. Officials of the company that owned and operated the vessel also believed that submerged pipelines were buried and maintained in that condition. As a result, the company did not train its vessel masters about the potential dangers of submerged pipelines and did not have any policies regarding the operation of its vessels near submerged pipelines. Based on his training and experience, the master consequently had no reason to be concerned about submerged pipelines.

The Safety Board has been concerned that the perception held by the company may not be an isolated situation. Statements by officials from another commercial fishing company and from an association for the shrimping industry indicate that the same perception may be held by most of the commercial fishing industry in the Gulf of Mexico.

Other pipelines in the Gulf of Mexico may also be unburied and therefore may pose a hazard to vessels and crews when vessels operate in depths of water comparable to their drafts. To address the lack of knowledge about submerged pipelines within the fishing industry, the Safety Board issued Safety Recommendation P-90-3 on February 22, 1990, recommending that the Department of Transportation develop and distribute an advisory notice or use other means to caution marine vessel operators in the gulf that submerged pipelines may be unprotected.

In a response dated May 30, 1990, the DOT provided copies of warnings issued by the Office of Pipeline Safety (OPS) of the Research and Special Programs Administration (RSPA) and by the Coast Guard. The Coast Guard issued a Local Notice to Mariners in May 1990 for the Gulf of Mexico region that warned mariners about the hazards of submerged pipelines. The advisory notices issued by the OPS and the Coast Guard were satisfactory responses to the recommendation, which has been classified as "Closed--Acceptable Action."

However, the Safety Board remains concerned that the efforts by OPS and the Coast Guard to warn pipeline operators, commercial fishermen, and other mariners may have only a temporary effect. Therefore, a continuing program is needed to educate commercial fishermen and other marine operators about the potential danger to their vessels from exposed pipelines in shallow waters. The Safety Board believes that the Coast Guard, as the primary Federal agency responsible for navigation safety in U.S. waters, should develop and implement a program to educate fishermen and other marine operators about submerged pipelines. Moreover, the Coast Guard should also work with fishing and other marine industry representatives to develop practices in vessel operations that could be adopted to lessen the likelihood of vessels striking exposed submerged pipelines.

After the Coast Guard's Marine Safety office (MSO) in Port Arthur, Texas, was notified of the accident, personnel at the office attempted to telephone the Minerals Management Service (MMS) to learn information about the pipeline and the identity of the pipeline owner. However, there was no response at any of the telephone numbers listed for the MMS in the MSO's local contingency plan for emergency pollution response. The Captain of the Port stated that MSO personnel had assumed the numbers to be 24-hour numbers but subsequently determined they were regular business numbers. The MSO in Port Arthur, as the Coast Guard office responsible for mitigating water pollution incidents and for ensuring navigation safety in the area, had a need to know the identity of the owner of the pipeline as soon as possible after the accident occurred. Because accidents involving offshore pipelines may result in catastrophic spills, explosions, or fires, an MSO must be able to identify the pipeline and the product involved to make necessary decisions concerning the safety of the port area. An MSO must therefore have readily accessible information to make the proper identification and to make contact with the pipeline owner.

Although the MSO in Port Arthur has since revised its local contingency plan to include after-hours numbers for the MMS and is also collecting telephone numbers and points of contact for pipeline companies within its zone, comparable efforts are needed wherever submerged pipelines traverse navigable waters. The Safety Board is concerned that other Captains of the Port or MSOs do not have information about all submerged natural gas and hazardous liquid pipelines that traverse their zones. Therefore, the Safety Board believes that the Coast Guard should require all Captains of the Port and MSOs to have this information.

The investigation of the NORTHUMBERLAND accident revealed many deficiencies in Federal regulations and practices to protect and inspect submerged pipelines. Consequently, in Safety Recommendation P-90-5 to the DOT, issued February 22, 1990, the Safety Board recommended that the Department determine effective methods of inspection, maintenance, and protection for offshore pipelines in shallow waters of the Gulf of Mexico. In response to the recommendation, DOT stated that a Federal task force, under the sponsorship of OPS, had been established in February 1990 to develop solutions to the hazards that may exist between offshore pipelines and fishing vessels in the Gulf of Mexico. Other participating agencies included the MMS, the Coast Guard, the U.S. Army Corps of Engineers (the Corps), the National Oceanic and Atmospheric Administration, and the States of Texas and Louisiana. The OPS has indicated that by October 1, 1990, the task force will have completed a report on the long-term regulatory and administrative projects to be initiated by each agency.

Since the recommendation was issued, however, the Safety Board has become concerned that the safety problems with submerged pipelines are not confined to the offshore areas of the Gulf of Mexico. A submerged pipeline under a river, shipping channel, or other body of water is also susceptible to being unburied and damaged or ruptured by a vessel. For example, on January 2, 1990, a submerged 12-inch pipeline transporting heating oil was ruptured in the Arthur Kill channel between Staten Island, New York, and

Linden, New Jersey. Evidence indicates that the pipeline was struck possibly by a passing ship or dredge.

Although the Federal task force is addressing safety issues involving commercial fishing vessels and offshore pipelines in the Gulf of Mexico, the Safety Board now believes that the scope of the initial recommendation needs to be expanded to evaluate the level of safety that exists for all submerged pipelines located under navigable waterways. The evaluation should address the issues and problems concerning the practices of the both the fishing and pipeline industries, the jurisdiction over submerged pipelines, the deficiencies in regulatory standards for submerged pipelines, the inadequacy of enforcement and oversight, and the need for improved communication and coordination. Because the RSPA, through the OPS, is the primary Federal agency for pipeline safety, the Safety Board believes that RSPA, with the assistance of the MMS, the Coast Guard, and the Corps, should build on the work of the current Federal task force and develop and implement effective methods and requirements to bury, protect, inspect the burial depth of, and maintain all submerged pipelines in areas subject to damage by surface vessels and their operations. The Safety Board has therefore classified Safety Recommendation P-90-5 as "Closed--Superseded."

While the standards are being developed for the protection of submerged pipelines, measures are also needed to increase communication and coordination between and among government and industry groups. The Safety Board therefore believes that the Coast Guard, the MMS, and the Corps should assist the RSPA with implementation of permanent measures to increase the coordination and communication between and among Federal and State regulatory agencies, and the pipeline, fishing, and marine industries.

Therefore, as a result of this accident, the National Transportation Safety Board recommends that the U.S. Coast Guard:

With the assistance of fishing and marine industry representatives, (1) establish and implement an ongoing program to educate fishing vessel operators about the potential dangers to their vessels from submerged pipelines, and (2) develop practices that can be adopted in vessel operations to lessen the likelihood of vessels striking submerged pipelines. (Class II, Priority Action) (M-90-61)

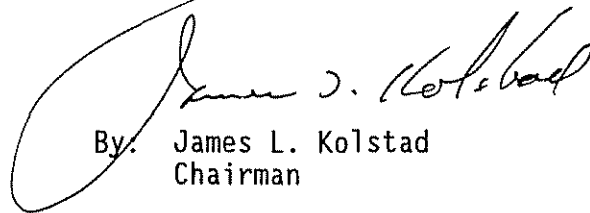
Require all Captains of the Port to have access to information about the number, location, and owners of all submerged hazardous liquid and natural gas pipelines that traverse their zones. (Class II, Priority Action) (M-90-62)

Assist the Research and Special Programs Administration with the development and implementation of effective methods and requirements to bury, protect, inspect the burial depth of, and maintain all submerged pipelines in areas subject to damage by surface vessels and their operations. (Class II, Priority Action) (P-90-32)

Assist the Research and Special Programs Administration with the implementation of permanent measures to increase the coordination and communication between and among Federal and State regulatory agencies, and the pipeline, fishing, and marine industries. (Class II, Priority Action) (P-90-33)

Also as a result of its investigation, the Safety Board issued recommendations to the Zapata Haynie Corporation, Natural Gas Pipeline Company of America, U.S. Department of Transportation, Research and Special Programs Administration, U.S. Department of the Interior, Minerals Management Service, U.S. Army Corps of Engineers, National Oceanic and Atmospheric Administration, Interstate Natural Gas Association of America, American Gas Association, American Public Gas Association, American Petroleum Institute, National Fish Meal and Oil Association, Louisiana Shrimp Association, and National Council of Fishing Vessel Safety and Insurance.

KOLSTAD, Chairman, COUGHLIN, Vice Chairman, LAUBER, BURNETT, and HART, Members, concurred in these recommendations.



By: James L. Kolstad
Chairman