

Log # 14-364B



# National Transportation Safety Board

Washington, D.C. 20594  
Safety Recommendation

Date: October 1, 1990

In reply refer to: M-90-63 through -65

Honorable John A. Knauss  
Under Secretary and Administrator  
National Oceanic and Atmospheric Administration  
Herbert Hoover Building  
Room 5128  
14th and Constitution Avenue, N.W.  
Washington, DC 20230

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.<sup>1</sup>

Four different charts produced by the National Oceanic and Atmospheric Administration (NOAA) (Nos. 11332, 11340, 11341, and 11342) depict the accident site. The pipeline, known as the High Island lateral pipeline, was charted on all the charts except No. 11340. A NOAA representative told Safety Board investigators that the pipeline was not charted on No. 11340 because the small scale of that chart precluded such details. A second offshore natural gas pipeline located slightly east of the High Island pipeline was not shown on any of the four charts.

Also, the charts depicting the accident area indicate that the depth of water at the accident site was about 6 feet. Depth measurements taken by divers after the accident indicate that the actual water depth was about 10 feet. A NOAA representative stated that the range of tides in the Gulf of Mexico is about 1 foot and could not account for the difference between the charted and the actual depths. He could not reconcile the difference in the

<sup>1</sup> 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.)

depths and was not aware of any plans by NOAA to perform a new hydrographic survey of the area. He further stated that the depth soundings printed on the charts of the accident area were the result of a hydrographic survey conducted in 1964.

A NOAA representative stated that NOAA is not required by law or regulation to mark submerged pipelines on navigation charts. NOAA, however, recognized that submerged pipelines may constitute a hazard to navigation; in its Cartographic Order No. 00379 dated June 28, 1979, the agency stated that certain underwater pipelines "convey hazardous materials under high pressure, such as mineral products or gas, presenting not only pollution potential but the danger of explosion or fire." The order cited a third hazard: the movement of unburied or unanchored pipelines caused by natural forces. Because of the danger from pollution, explosion and fire, and movement, NOAA directed in Order No. 00379 that submerged pipelines were to be charted in purple or magenta on navigation charts.

NOAA has received information about the location of submerged pipelines through the U.S. Army Corps of Engineers (the Corps), the Minerals Management Service (MMS) of the U.S. Department of the Interior and its predecessor, the Offshore Office of the Bureau of Land Management. Secondary sources of information about pipeline locations are State government agencies and private companies. A NOAA representative indicated that most of the information received is unsolicited. He also stated that the Corps is required to submit information to NOAA concerning submerged pipelines in the navigable waters of the United States; NOAA also receives similar information from the MMS. The NOAA representative indicated that MMS selects "the large flow pipelines" and sends the information to NOAA. Although NOAA reserves the right to print or not to print the information, the NOAA representative stated that all of the pipelines reported to NOAA have been charted. NOAA, however, does not attempt to locate and mark all submerged pipelines on all navigation charts. The NOAA representative stated he thought it would be impossible to chart all of the pipelines in the Gulf of Mexico without obliterating other, equally important information.

In addition to charting the location of certain submerged pipelines, NOAA prints a cautionary note on some navigation charts about submarine pipelines and cables. The cautionary note indicates the symbol used to mark the location of pipelines and cables, and warns the mariner to use caution when anchoring, dragging, or trawling. NOAA also publishes precautionary information concerning submerged pipelines in the "United States Coast Pilot."

Although navigation charts can help the mariner identify the location of submerged pipelines and do provide some precautionary warnings, the current criteria for marking submerged pipelines and the precautionary notes on the charts do not provide sufficient information to the mariner.

Although the HI lateral pipeline was marked on the larger scale navigation charts for the area (not on the smaller scale charts), the charts would not indicate whether or not the pipeline was buried. The charts also did not indicate that a second natural gas pipeline was in the immediate

vicinity. Consequently, mariners cannot depend exclusively on navigation charts to locate and avoid submerged pipelines.

NOAA had recognized before the accident that submerged pipelines may constitute a hazard to navigation, and, as policy, had directed that submerged pipelines are to be marked on navigation charts. NOAA, however, had not established any criteria for charting submerged pipelines. In the absence of such criteria, NOAA accepted whatever information was provided to it by other agencies such as the Corps, the MMS, and some State agencies. As a result, agencies without the expertise in developing navigation charts have decided which pipelines should be marked on navigation charts, without consistent determination of the degree of hazard presented.

Because NOAA has the responsibility for producing navigation charts, NOAA should seek the advice of the Office of Pipeline Safety within the Research and Special Programs Administration (U.S. Department of Transportation), the MMS, the Army Corps of Engineers, the U.S. Coast Guard, the States, and the pipeline and fishing industries, and then determine criteria for marking submerged pipelines on navigation charts. NOAA can chart those pipelines that potentially pose the greatest hazards to navigation without obscuring other navigation information by using criteria to determine the extent of hazard such as the product carried, the operating pressures of the pipeline, whether the pipeline was ever buried and to what depth, and the level of vessel activity where the pipeline is located. The Safety Board believes that with proper application of such criteria, NOAA will be able to chart all pipelines of comparable hazard to the mariner.

The current precautions on the navigation charts do not adequately warn the mariner of the hazards from submerged pipelines that may be unburied. According to statements made to investigators by personnel from the commercial fishing industry, it appears that much of the fishing and shrimping industry perceives that submerged pipelines generally are buried (or at least do not present a significant safety hazard to navigation). Because of this perception, NOAA's warnings on navigation charts should state that not all pipelines were required to be buried, and those that were originally buried may have become exposed over time. The precautionary information published in the "Coast Pilot" also needs to be more explicit about the burial of submerged pipelines and the exercise of caution when vessels operate near them.

The large difference between the charted depth of water and the measured depth at the accident site raises doubt about the accuracy of the other soundings marked on the charts of the area. If the accuracy of the information on the chart is uncertain, the value of the chart to the mariner is severely lessened. Although it is possible that the discrepancy between the charted and measured soundings may be confined to the area in which the accident occurred, NOAA should take immediate steps to verify that the soundings throughout the areas covered by charts 11332, 11341, and 11342 are accurate, and if necessary, to conduct a new hydrographic survey of these areas.

Therefore, as a result of this accident, the National Transportation Safety Board recommends that the National Oceanic and Atmospheric Administration:

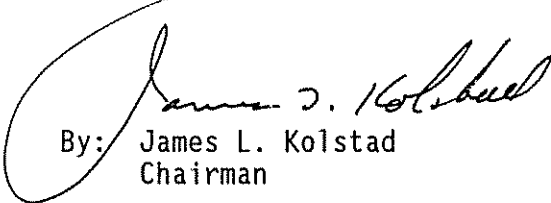
Seek the advice of the Research and Special Programs Administration, the Minerals Management Service, the U.S. Army Corps of Engineers, the U.S. Coast Guard, States, and representatives of the pipeline and fishing industries about the marking of submerged pipelines on navigation charts, and then implement charting criteria based on the potential hazards to marine operators. (Class II, Priority Action) (M-90-63)

Revise the warnings on navigation charts and in the "Coast Pilot" to caution mariners that submerged pipelines may not be safely buried and that the operation of a vessel in depths of water comparable to its draft can endanger the vessel and its crew. (Class II, Priority Action) (M-90-64)

Verify that the soundings indicated on navigation charts numbered 11332, 11341, and 11342 are accurate, and, if necessary, conduct a new hydrographic survey of these areas. (Class III, Longer Term Action) (M-90-65)

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. Coast Guard, U.S. Department of the Interior, Minerals Management Service, U.S. Army Corps of Engineers, Interstate Natural Gas Association of America, the 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