



National Transportation Safety Board
Washington, D.C. 20594

Safety Recommendation

Date: FEB 7 1995

In Reply Refer To: P-95-1 through -4

Honorable D. K. Sharma
 Administrator
 Research and Special Programs
 Administration
 Washington, D.C. 20590

About 11:55 p.m. on March 23, 1994, a 36-inch diameter pipeline owned and operated by Texas Eastern Transmission Corporation (TETCO) ruptured catastrophically in Edison Township, New Jersey, within an asphalt plant compound. The force of the rupture and of natural gas escaping at a pressure of about 970 psig (pounds per square inch gauge) excavated the soil around the pipe and blew gas hundreds of feet into the air, propelling pipe fragments, rocks, and debris more than 800 feet. Within 1 to 2 minutes of the rupture, one of several possible sources ignited the escaping gas, sending flames upward 400 to 500 feet in the air. Heat radiating from the massive fire ignited the roofs of several building roofs in a nearby apartment complex. Occupants, alerted to the emergency by noises from escaping gas and rocks hitting the roofs, fled from the burning buildings. Approximately 1,500 apartment residents were evacuated. Miraculously, no deaths directly resulted from the rupture and resulting fire. Most injuries were minor foot burns and cuts that the apartment residents sustained from the hot pavement and glass shards as they fled the complex. Damage from the accident exceeded \$25 million.¹

As a result of its investigation of this accident, the Safety Board concluded that the rupture of TETCO's Line 20 in Edison Township likely resulted from a crack in an excavation-caused gouge that grew to critical size. The Safety Board determined that the brittle properties of the pipe material at the operating temperature contributed to the catastrophic failure. The Safety Board also concluded that the inability of TETCO to promptly stop the flow of natural gas to the rupture contributed to the severity of the accident consequences.

¹ For more detailed information, read Pipeline Accident Report—Texas Eastern Transmission Corporation Natural Gas Pipeline Explosion and Fire, Edison, New Jersey, March 23, 1994 (NTSB/PAR-95/01).

The Safety Board believes that the Edison pipeline accident again demonstrates the need for improved pipeline safety measures, particularly in urban communities. The Board identified problems in a number of issue areas, including pipeline marking, damage prevention programs, rapid detection and shutdown, internal inspections, pipe toughness standards, and land use management. In its report of this accident, the Safety Board observed that Federal standards for pipeline safety continue to be deficient in these areas despite repeated recommendations that the Research and Special Programs Administration (RSPA) address and correct these matters.

The safety recommendations resulting from this investigation follow. The accident report supporting the findings and safety recommendations will be forwarded under separate cover. In that report, the Safety Board classified Safety Recommendations P-87-6 and -7 "Closed—Acceptable Response," and classified Safety Recommendation P-87-22 "Closed—Unacceptable Superseded." The Safety Board also reiterates the safety recommendations noted below.

The National Transportation Safety Board recommends that the Research and Special Programs Administration:

Expedite requirements for installing automatic- or remote-operated mainline valves on high-pressure pipelines in urban and environmentally sensitive areas to provide for rapid shutdown of failed pipeline segments. (Class II, Priority Action) (P-95-1)

Develop toughness standards for new pipe installed in gas and hazardous liquid pipelines, especially in urban areas. (Class II, Priority Action) (P-95-2)

Eliminate the exception for marking pipelines in Class 3 and 4 locations from existing standards and establish standards for permanent markings that identify the location of high-pressure natural gas and hazardous liquid pipelines in urban, industrial, and commercial areas, where marking is feasible. (Class II, Priority Action) (P-95-3)

Expedite the completion of the study on methods to reduce public safety risks in the siting and proximity of pipelines, modify that study to include consideration of building standards, and make the completed study widely available to local and State governments. (Class II, Priority Action) (P-95-4)

The National Transportation Safety Board reiterates to the Research and Special Programs Administration:

P-87-4


Require operators of both gas and liquid transmission pipelines to periodically determine the adequacy of their pipelines to operate at established maximum allowable operating pressures by performing inspections or tests capable of identifying corrosion-caused and other time-dependent damages that may be detrimental to the continued safe operation of these pipelines and require necessary remedial action.

P-90-21

Assess existing gas industry programs for educating the public on the dangers of gas leaks and on reporting gas leaks to determine the appropriateness of information provided, the effectiveness of educational techniques used, and those techniques used in other public education programs and based on its findings, amend the public education provisions of the Federal regulations.

Also, the Safety Board issued Safety Recommendations P-95-5 through -7 to the Texas Eastern Transmission Corporation, P-95-8 and -9 to the American Public Works Association, P-95-10 and -11 to the Interstate Natural Gas Association of America, P-95-12 and 13 to the Association of Oil Pipe Lines, P-95-14 and -15 to the American Petroleum Institute, P-95-16 and -17 to the American Gas Association, P-95-18 and -19 to the American Society of Civil Engineers, P-95-20 and -21 to the International City/County Management Association, and P-95-22 and -23 to the American Planning Association. If you need additional information, you may call (202) 382-0672.

Chairman HALL and Members HAMMERSCHMIDT and FRANCIS concurred in these recommendations.

By: 
Jim Hall
Chairman