



Log P-313E

National Transportation Safety Board
Washington, D.C. 20594
Safety Recommendation

Date: MAR - 6 1996

In reply refer to: P-96-11 and -12

Mayor William Heydt
City of Allentown
435 Hamilton Street, Room 528
Allentown, Pennsylvania 18101-1699

About 6:45 p.m. on June 9, 1994, a 2-inch-diameter steel gas service line that had been exposed during excavation separated at a compression coupling about 5 feet from the north wall of John T. Gross Towers, an eight-story retirement home operated by the Allentown Housing Authority at Allentown, Pennsylvania. The failed UGI Utilities, Inc., service line released natural gas at 55 psig pressure, and the escaping gas flowed underground to Gross Towers. The gas passed through openings in the building foundation, entered the mechanical room through floor vents, and migrated to other building floors.

About 6:58 p.m., the natural gas that had accumulated within the building was ignited, causing an explosion. A second explosion occurred about 5 minutes later. At the time of the explosion, many of the residents were out of the building. The accident resulted in 1 fatality, 66 injuries, and more than \$5 million in property damage.¹

The National Transportation Safety Board determines that the probable cause of the explosion and fire was the failure of the management of Environmental Preservation Associates, Inc., (EPAI) to ensure compliance through project oversight with its own excavation requirements and those of the Occupational Safety and Health Administration. (The EPAI had an excavation adjacent to the UGI service line.) Contributing to the accident was the failure of the EPAI workmen to notify the UGI that the line had been damaged and was unsupported.

Because the city's fire inspectors saw on May 23 that the service line was unsupported, they could have prevented the accident. They showed proper concern about the safety of the line, especially after a piece of asphalt pavement fell on it and deformed it. However, not having been instructed to do otherwise, both inspectors relied on the EPAI foremen's assessment that the line was safe. It would have been more prudent of them to ask the pipeline owner for the assessment.

¹For more information, read Pipeline Accident Report *UGI Utilities, Inc., Natural Gas Distribution Pipeline Explosion and Fire, Allentown, Pennsylvania, June 9, 1994* (NTSB/PAR-96-01).

The Safety Board concludes that the likely reason the fire inspectors did not tell the operator that its service line was damaged was because the inspectors did not understand the importance of notifying operators so the effects on a facility could be assessed by the operators and necessary action taken. Had the inspectors notified the UGI, it, the Safety Board believes, would have taken the necessary corrective actions, and the accident would not have happened.

The Safety Board believes that the city should encourage its inspectors to report any damage to the facility owner and thus ensure that the potential effect on public safety is assessed by a qualified person. Consequently, the Safety Board encourages Allentown to cooperate with the UGI by instructing its inspectors to report observed or suspected damage to the facility owners.

Had the EPAI told the UGI on May 23 that the EPAI's excavation had left the gas line exposed and unsupported, the UGI would have had an opportunity to take corrective action. Additionally, the information probably would have convinced the company that it needed to inspect the project and tell the EPAI foreman about the need to take precautions and use the UGI's emergency telephone number if he had an emergency. However, the EPAI workcrew were not trained in what damage should be reported to a buried-facility owner.

On the day of the accident, when the line and coupling separated, the EPAI could have limited the consequences. When the EPAI foreman was told about the strong odor of gas within the building, he should have immediately called "911." Contrary to his postaccident statement, telephone records show that he did not attempt to call "911" until after the explosion. Had he immediately reported the emergency to the fire department, it would have known almost 15 minutes before the explosion, giving it enough time to respond, notify the UGI, initiate evacuations and building ventilation, and, using the UGI responders, shut off the flow of gas into the building, which would have either prevented the explosion or reduced its force. The Safety Board concludes that the consequences of this accident could have been significantly reduced had the foreman promptly called "911" and had his helpers promptly told the occupants of the building to evacuate.

Instead of calling "911," although it was after normal business hours, the foreman first called the UGI's Lehigh Division business office (the EPAI had not obtained and provided the foreman with the UGI's 24-hour emergency telephone number). Even after contacting the UGI, he did not say, and the UGI did not question, whether the odor of gas had been detected within the building. Had the UGI known that gas was already in the building, it probably would have told him to evacuate the occupants, which he could have done with the help of his crew and the bystanders. The UGI probably also would have notified the fire department, thus giving it more time to respond.

The Safety Board's report² on a July 22, 1993, pipeline accident, which cost 2 lives and injured 12 persons, also involved excavation damage and issues similar to the ones in this

²Brief of Pipeline Accident: *Northern States Power Company Gas Pipeline Accident, July 22, 1993, St. Paul, Minnesota (DCA-93-MP-011)*.

accident. The report discussed how important it is for excavators to notify local emergency-response agencies promptly. In that accident, the excavator notified the pipeline operator promptly after gas was released, but he did not notify the local response agencies until more than 20 minutes later. Had the fire department been notified earlier, it might have been able to save lives and prevent injuries.

Before the Allentown accident, the EPAI workcrew had not had any formal training in excavation and trenching or in actions to take as a unit to protect lives and property in an emergency. The lack of training may account for why the crew did not shore the excavation site or tell the UGI that the gas line was unsupported. The crew foreman, despite not having any information about the construction of the gas line, said that he thought the entire line was welded tubular steel. His assumption may have led him to believe that the line could be adequately supported by crossbucks. In any event, he made a critical choice in assuming that it would be safe to leave the gas line uncovered and exposed for 2 weeks. A more prudent course of action would have been to immediately inform the UGI that the line was exposed.

The Safety Board concludes that the excavation crewmembers did not evacuate the residents and the foreman did not call the fire department before the explosion because they had not been trained in handling an emergency.

The National Transportation Safety Board therefore issues the following safety recommendations to the city of Allentown:

Instruct fire and other city inspectors to advise facility owners, such as gas companies, immediately about any suspected damage to their buried facilities or any lack of structural support. (Class II, Priority Action) (P-96-11)

Require as an excavation-permit condition that the excavator instruct his workmen in how to help members of the public in the immediate vicinity of an emergency, how to notify the local response agencies and the owner of a damaged facility, and how to evacuate anyone who might be in danger. (Class II, Priority Action) (P-96-12)

Also, the Safety Board issues Safety Recommendations P-96-2 to the Research and Special Programs Administration; P-96-3 to the States and the District of Columbia; P-96-4 through -6 to UGI Utilities, Inc.; P-96-7 to Environmental Preservation Associates, Inc.; P-96-8 through -10 to the Governor of the Commonwealth of Pennsylvania; P-96-13 to the International Association of Fire Chiefs; P-96-14 through -16 to the Department of Housing and Urban Development; P-96-17 and -18 to the Allentown Housing Authority; P-96-19 to the Associated General Contractors; and P-96-20 to the National Utility Contractors Association.

The National Transportation Safety Board is an independent Federal agency with the statutory responsibility "to promote transportation safety by conducting independent accident investigations and by formulating safety improvement recommendations" (Public Law 93-633). The Safety Board is vitally interested in any action taken as a result of its safety recommendations.

Therefore, it would appreciate a response from you regarding action taken or contemplated with respect to the recommendations in this letter. Please refer to Safety Recommendations P-96-11 and -12 in your reply. If you need additional information, you may call (202) 382-0670.

Chairman HALL, Vice Chairman FRANCIS, and Members HAMMERSCHMIDT and GOGLIA concurred in these recommendations.

By: 
Jim Hall
Chairman