

Log P-285c



# National Transportation Safety Board

Washington, D.C. 20594

## Safety Recommendation

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**Date:** November 24, 1986

**In reply refer to:** P-86-19 and -20

Mr. Philip Ashton  
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Company  
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About 3:55 p.m., eastern standard time, December 6, 1985, a natural gas explosion and fire destroyed the River Restaurant at 268 Main Street in Derby, Connecticut. Gas escaping from a broken gas main at a pressure of about one pound per square inch had escaped, migrated into the restaurant basement, ignited, exploded, and burned. Of the 18 persons inside the restaurant at the time, 6 were killed and 12 were injured; 1 passerby and 1 firefighter were also injured. After the accident the street adjacent to the restaurant was excavated where a 24-inch diameter sewer system had just been installed; an 87-year-old, 3-inch diameter, cast-iron natural gas main was found broken. <sup>1/</sup>

Although the failure of the 3-inch iron-cast gas main was not accompanied by the obvious, tell-tale signs such as loud hissing sounds of escaping gas, blowing dust and dirt, loss of service to downstream customers, or a sudden pressure drop in the gas system, there are certain known facts which help to determine the time and mode of failure. The examination of the earth around the broken pipe did reveal that the fracture and gas leakage were recent because the earth was neither dried out nor whitish in appearance both of which are typical of long-term gas leaks. The Safety Board's laboratory analysis of the failed pipe also showed that the fracture occurred very recently and very rapidly. Finally, the annual gas leak survey which had been conducted by an independent contractor on December 2 and 3, 1985, to comply with a regulatory requirement found no evidence of gas leakage over the area in Caroline Street where the break was later found to have occurred. Thus the break must have occurred between December 3 and December 6, 1985 within three days of the accident.

The Northeast Utilities Service Company makes each area superintendent responsible for providing inspection of pipelines in areas where excavation work is being done and where damage to the system could result. In addition it is the gas company's

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<sup>1/</sup> For more detailed information read Pipeline Accident Report—"Northeast Utilities Service Company, Explosion and Fire, Derby, Connecticut, December 6, 1985" (NTSB/PAR-86/02).

policy ". . . to patrol distribution gas mains to locate and identify conditions which could cause failure or leakage and consequent hazards to public safety." Further, the gas company has a policy for the protection and maintenance of its cast-iron gas mains which requires that its area superintendent, knowing the excavation work is being performed, ". . . shall determine whether the pipeline should be replaced or shall remain in place and be protected against damage."

Title 49 Code of Federal Regulations (CFR) 192.614 requires that gas companies have a written program to prevent damage to pipelines caused by excavation. The one call system may be used, but its use does not relieve the gas company of its responsibility.

The American Society of Mechanical Engineers (ASME) Guide Material provides specific actions that gas companies are suggested to take to comply with the regulations and to protect their systems.

Furthermore, 49 CFR 192.614, damage prevention programs requires that if a gas company is aware of construction activities close to its facilities it shall provide inspection "as frequently as necessary during and after the (construction) activities to verify the integrity of the pipeline." It further states that participation by the gas company in a one call system does not relieve the operator from compliance with this regulation.

Again, the ASME Guide Material for this Federal regulation recommends:

The operator should pay particular attention, during and after excavation activities to the possibility of joint leaks and breaks due to settlement when excavation activities occur near cast iron and threaded coupled pipe.

The Guide Material further recommends:

Where required, the inspection may include periodic full time surveillance and may include leakage surveys. The operator should consider maintaining field contact with the excavator during the excavation activities to avoid potential problems and to promptly resolve any problems that may arise.

The gas company did not take any of these Federally required or the ASME recommended steps to protect its cast-iron gas main in the face of construction work that involved deep excavation and backfill compaction.

The gas company also failed to patrol, adequately, its 3-inch diameter cast-iron gas main. It did not even assign a permanent gas company inspector to that segment for the 2 or 3 days of sewer construction.

Further, the gas company was aware that this contractor had already hit and ruptured gas service lines only days before. This is paradoxical since the gas company, at the preconstruction meeting, admonished the contractor about using care in working close to its cast-iron gas mains, but then ignored the regulations, guidelines, and its own procedures for the protection of the cast-iron pipe. The Safety Board is concerned about the gas company's lack of adequate attention to the integrity of its system during construction activities and to public safety.

Therefore, the National Transportation Safety Board recommends that Northeast Utilities Service Company:

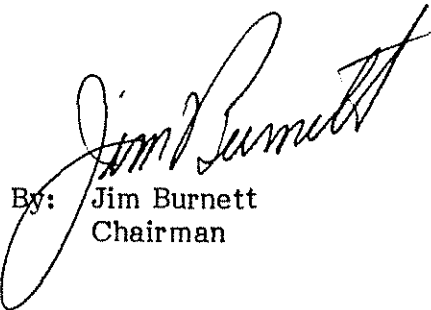
Emphasize in its training of operating personnel the importance of following the company procedures for patrolling and protecting its gas mains in proximity to excavation projects. (Class II, Priority Action) (P-86-19)

Consider the abandonment of cast-iron gas mains prior to any excavation work in their proximity. Where abandonment is not practical or feasible prior to the excavation work, assign inspectors to the job site to monitor the excavation work. (Class II, Priority Action) (P-86-20)

Also, as a result of its investigation, the Safety Board issued Safety Recommendations P-86-16 to the National Utilities Contractors' Association, P-86-17 to the American Gas Association and to the American Public Gas Association, and P-86-18 to the city of Derby, Connecticut.

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 actions taken as a result of its safety recommendations and 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-86-19 and -20 in your reply.

BURNETT, Chairman, GOLDMAN, Vice Chairman, and LAUBER and NALL, Members concurred in this recommendation.

  
By: Jim Burnett  
Chairman