



# National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

P-2910

Date: April 20, 1990

In reply refer to: P-90-6

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In a 7-month period beginning September 16, 1988, the National Transportation Safety Board investigated 5 natural gas accidents in the Kansas City-Topeka area that involved the gas distribution systems owned by Kansas Power and Light Company (KPL). Corrosion damage was involved on each of the 3 gas service lines and the 2 cast iron gas mains. Each of the gas lines involved were installed before the Federal minimum gas pipeline safety regulations became effective and the failures on the gas service lines involved customer-owned pipe that had not been protected against corrosion damage. These accidents killed 4 people, injured 12 others and destroyed 4 houses.<sup>1</sup>

Two and possibly three of the accidents experienced by KPL may have been prevented or at a minimum, the consequences markedly reduced had excess flow valves been installed on the service lines at their connection to the gas main. The Safety Board has advocated the use of excess flow valves since 1971 and in 1981, based on its study findings<sup>2</sup>, the Safety Board recommended that the Research and Special Programs Administration (RSPA) of the U.S. Department of Transportation require excess flow valves be installed on all new and renewed high-pressure gas distribution service lines. Although RSPA currently has no plans to require the installation of excess flow valves, one

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<sup>1</sup>For more detailed information, read Pipeline Accident Report--"Kansas Power and Light Company, Natural Gas Pipeline Accidents, September 16, 1988, to March 29, 1989," (NTSB/PAR-90/01).

<sup>2</sup>National Transportation Safety Board Special Study--"Pipeline Excess Flow Valves" (NTSB/PSS-81/1).

gas operator's experience with excess flow valves was discussed in a recent article.<sup>3</sup> In this article, the Assistant Vice President of Bay State Gas Company (Bay State)<sup>4</sup> reviewed his company's 13-year history with excess flow valves installed on gas service lines. The purpose of installing these valves was to reduce the number of emergency situations resulting from excavation-caused damages. Based on its successful trial experience with these valves, in 1977, Bay State Gas Company establish a policy calling for the installation of excess flow valves in all intermediate- and high-pressure<sup>5</sup> service lines and it now has more than 40,000 such valves in its gas system. Bay State Gas has found these valves to provide increased public and employee safety at a nominal cost and that they operate dependably and automatically to stop the flow of gas to the service line should it be damaged substantially. In 1987, Bay State experienced 34 closures of excess flow valves where the valve prevented a potentially hazardous situation from developing when service lines were broken because of excavation damage.

While excess flow valves are used by some gas operators primarily to stop the flow of gas from excavation-caused damages to service lines, the valve will shut off the flow of gas no matter what the source of the damage so long as the increased flow rate is sufficient to cause the valve to operate. Also, the cost of an excess flow valve and its installation in a gas service line connection to a gas main, when performed at the time a service line is being initially constructed or when being renewed or replaced, is about the same as the cost of purchasing and installing a home smoke detector. The experiences of Bay State support the Board's contention of the benefit to public safety provided by excess flow valves and the Safety Board urges KPL to install excess flow valves on all new and renewed single family, residential high pressure gas service lines.

Nationwide, there are about 8 million bare and coated unprotected gas service lines that will be replaced or renewed and thousands of new gas services installed during the next several years on which excess flow valves could be installed economically. However, the Research and Special Programs Administration of the U.S. Department of Transportation does not require the installation of excess flow valve protection for gas service lines nor when a gas customer's service line is installed, renewed, or replaced, do gas operators generally advise customers about the safety advantages of excess

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<sup>3</sup>"Bay State Gas Reduces Costs and Improves Safety Record: Automatic Shut-off Valves," Paul LaShoto, Assistant Vice President for Operations, Pipeline & Gas Journal, November 1989, p. 30.

<sup>4</sup> Bay State is the largest independent gas company in New England and serves more than 250,000 customers in Massachusetts.

<sup>5</sup> The term "high pressure" as define in the Federal regulations is any pressure in which the gas pressure in the gas main is higher than the pressure provided to the customer. However, many in the gas industry use the term "intermediate pressure" to mean gas pressures between 10 and 30 psig and the term "high pressure" to mean pressures from 30 to 60 psig.

flow valves and offer them an opportunity to have one installed at cost even if the customer is willing to pay for it.

Considering RSPA's already long delay for requiring the installation of excess flow valves and the thousands of gas service lines that will be installed, renewed, or replaced each year, the Safety Board believes that gas operators need to advise customers of the safety advantage of excess flow valves and the costs of installing excess flow valves when other work is scheduled to be performed and then, provide those customer's an opportunity to have an excess flow valve installed at the customer's expense. The Safety Board believes that many properly informed customers would be willing to pay for the added protection just as the public has elected to invest in smoke and other types of detectors to enhance family safety in the home.

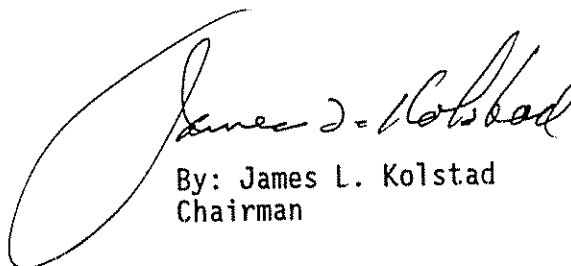
Therefore, the National Transportation Safety Board recommends that both the American Gas Association and the American Public Gas Association:

Encourage its Members to advise their gas customers of the safety benefits of excess flow valves when installed in gas service lines and offer their customers the opportunity to purchase and have installed at cost an excess flow valve when installing new, renewing, or replacing gas service lines. (Class I, Urgent Action) (P-90-6)

Also, the Safety Board issued safety recommendations to the Kansas Power and Light Gas Service Company and the Research and Special Programs Administration.

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 Recommendation P-90-6 in your reply.

KOLSTAD, Chairman, COUGHLIN, Acting Vice Chairman, and BURNETT, Member, concurred in these recommendations. LAUBER, Member, did not participate.



By: James L. Kolstad  
Chairman