

# NATIONAL TRANSPORTATION SAFETY BOARD WASHINGTON, D.C.

ISSUED: September 24, 1981

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 Forwarded to:  
 Honorable Howard J. Dugoff  
 Administrator  
 Research and Special Programs Administration  
 U.S. Department of Transportation  
 Washington, D.C. 20590  
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SAFETY RECOMMENDATION(S)  
P-81-38 and -39

The National Transportation Safety Board has conducted a study of excess flow valves designed for use in gas distribution systems. <sup>1/</sup> These devices, intended to stop the flow of gas to a customer in the event of a major leak in the gas service, have been the subject of considerable controversy in recent years.

In order to gain an insight into the potential impact of excess flow valves on gas distribution safety, the Safety Board obtained technical data from several manufacturers and used these to develop criteria under which excess flow valves may be expected to perform their intended function. These criteria were used to screen a 2-year sample of Materials Transportation Bureau (MTB) leak reports. It was found that excess flow valves could potentially have been activated in 23 percent of the reported distribution leaks in 1978 and 1979. These leaks accounted for 8 percent of the fatal accidents, 20 percent of accidents causing personal injury, 17 percent of the explosions, and 22 percent of the accidents in which gas ignited.

The Safety Board interviewed 46 gas distribution companies in order to obtain their views of and experiences with excess flow valves. Most of these companies could envision a series of circumstances in which an excess flow valve by activating under normal no-leak conditions (false closure) could increase the risk to public safety. The most commonly cited causes of false closures are: the use of an excess flow valve not properly sized for the service, rapid purging, and rapid opening of the service valve. Many companies reported that these problems diminished in frequency as personnel became familiar with the operating characteristics of excess flow valves, and as a result, some companies modified their existing procedures. Other causes of false closures, which may not be remedied as easily, are accumulations of various contaminants within the devices and unanticipated increases in service demand flow of gas. The reported experiences of the gas operators who have more than 150,000 excess flow valves installed show that while false closures do occur, they have not led to accidents in which gas ignited, exploded, or caused personal injury.

<sup>1/</sup> For more detailed information, read Special Study--"Pipeline Excess Flow Valves" (NTSB-PSS-81-1).

Excess flow valves appear to operate reliably when the service is damaged. More than 88 incidents occur annually in which an excess flow valve activates. Nearly all of these leaks are caused by excavation equipment damage. Only one case was reported to the Safety Board in which an excess flow valve may have failed to be activated by a major service leak. In this case, the gas operator speculated that an excess flow valve may not have been installed on the damaged service.

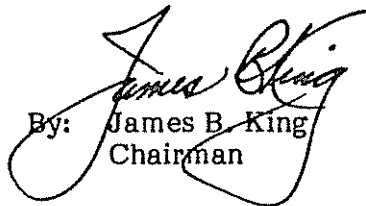
Service design features (such as outside meters) which are widely believed to provide protection against excavation damage do not completely protect against leaks downstream of the service-main connection. Accidents caused by such leaks may be prevented or reduced in severity by excess flow valves. Sixty-five percent of the companies surveyed for this study believe that excess flow valves offer potential safety benefits for single-family residential services.

As a result of this special study, the National Transportation Safety Board recommends that the Materials Transportation Bureau of the Research and Special Programs Administration, U.S. Department of Transportation:

Initiate rulemaking to require the installation of excess flow valves on all new and renewed single-family, residential high pressure services which have operating conditions compatible with the rated performance parameters of at least one model of commercially available excess flow valve. (Class II, Priority Action) (P-81-38)

Using the findings of the Gas Research Institute concerning additional locations where effective use can be made of excess flow valves to prevent various types of accidents, extend the requirements for the use of excess flow valves. (Class III, Longer Term Action) (P-81-39)

KING, Chairman, GOLDMAN, and BURSLEY, Members, concurred in these recommendations. DRIVER, Vice Chairman, and McADAMS, Member, did not participate.

  
By: James B. King  
Chairman