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**NATIONAL TRANSPORTATION SAFETY BOARD  
WASHINGTON, D.C.**

ISSUED: March 22, 1984

Forwarded to:  
Honorable Tony Knowles  
Mayor  
Municipality of Anchorage  
632 West 6th Avenue  
Anchorage, Alaska 99501

**SAFETY RECOMMENDATION(S)**  
P-84-5 and -6

On October 7, 1982, at 12:20 p.m. a.d.t., a contractor punctured the Enstar Natural Gas Company's (gas company) 5/8-inch diameter plastic gas service line to a house at 8520 East 17th Avenue in Anchorage, Alaska; the contractor had been augering holes for the installation of piling around the house. Natural gas escaping from the ruptured service line at 50 psig migrated underground, entered the house, accumulated, and ignited at 1:02 p.m.; the source of ignition was not determined. The resultant explosion and fire destroyed the house, but no one was injured. The Anchorage Fire Department was notified of the explosion and fire at 1:03 p.m., arrived at the site at 1:12 p.m., and extinguished the fire at 1:42 p.m.

On July 20, 1982, several months before this accident, an engineering company had requested the gas company to mark the location of its gas service line to the house on East 17th Avenue. The gas company marked the location by spraying a decomposable paint on the ground above the service line, and the engineering company then excavated close to the house foundation without striking the service line. However, a different contractor was engaged for the work on October 7, and this contractor had neither requested the gas company to locate its service line nor given the gas company advance notice of the excavation work.

Eight months later, on June 15, 1983, another accident occurred, this time involving the gas company's 12-inch-diameter, high-pressure gas pipeline. The line was struck and ruptured by a bulldozer which was grading a new section of road in Anchorage. Gas at 650 psig escaped from the ruptured pipe, blasting dirt, gravel, and rocks 200 to 300 feet in the air. One person was injured by the flying debris. Sixty to 70 residents were evacuated from their homes until gas company personnel closed valves on the ruptured pipeline. In this accident, the pipe location had been marked by the gas company before the contractor began work, but the pipeline depth had not been determined positively.

The gas company serves about 50,000 customers in the Anchorage area and receives about 1,100 requests from contractors each month to locate its gas lines. In spite of this extensive line location activity, natural gas pipelines in the Anchorage area were struck 410 times in the course of excavation operations in the 6-month period from January to June 1983, according to the gas company statistics.

The National Transportation Safety Board in its Special Study, "Prevention of Damage to Pipelines" (NTSB-PSS-73-1), discussed the damage prevention responsibilities of excavators, contractors, and pipeline operators and concluded that:

Pipeline accidents caused by excavation and construction activities, including blasting, can be prevented. . . . The operators of all underground systems must work together with local government officials, contractor associations, individual contractors, State officials, planners, and developers. . . . The assistance of the excavator and his machine operator in determining methods of and cooperation in avoiding damage should be enthusiastically sought. They should be educated as to the damage and loss of life which they can cause and should be given as much assistance as necessary to help them avoid hitting a pipeline (emphasis added).

Article 6.26 — "Utility Locate (sic) Requirement" of Anchorage's, "Municipal Standards Specifications" states:

Upon receipt of written notification from any of the public agencies or utilities listed in this paragraph that the contractor has caused damage to any facility, equipment or installation of the agency and the contractor failed to request a utility locate service from the said utility at least four (4) normal business hours prior to the damage, or if the locate service was properly requested, that the damage was not proximately caused by an error in the locate service, the Municipality of Anchorage will withhold from forthcoming or accrued contract payment, including advances, as agent of one of the respective agencies listed below who is authorized by the said agency to provide the locate service requested. The public agencies or utilities that may provide notice of facility damage under this paragraph are:

Alaska Gas & Service Company  
Alaska Pipeline Company  
Anchorage Sewer & Water Utility  
Anchorage Telephone Utility  
Central Alaska Utilities, Inc.  
Chugach Electric Association, Inc.  
Matanuska Electric Association  
Matanuska Telephone Utility  
Municipality of Anchorage/Department of  
Public Works  
Municipal Light & Power Utility

This ordinance, while establishing a mechanism for compensating a utility for excavation-caused damage, is not directed toward reducing hazards to public safety.

The Safety Board has found that the effectiveness of damage prevention efforts depends on many interrelated factors such as convenient notification systems, educational activities to advertise the systems, and efficient procedures for identifying and marking the location of underground facilities before excavation work begins. Moreover, based on its investigations, the Safety Board has concluded that the most efficient and convenient method for excavators to provide notice of proposed excavations is through the use of a one-call notification system. Such a system provides notification not only to pipeline operators, but also to operators of all other underground systems. In a one-call notification system, an excavator makes one telephone call to a center established voluntarily by utilities and other operators of underground facilities (including municipalities), and notifies the center of planned excavations. The center then alerts all participants in the notification system about the planned excavation, which allows them timely opportunity to mark the location of their lines near the work area. This early notification also provides the opportunity for operators of underground facilities to undertake any additional action which may be necessary to protect against excavation-caused damage. The one-call systems formed by operators of underground utilities now operate in 43 States and the District of Columbia, with a majority of these systems providing statewide coverage.

The Materials Transportation Bureau (MTB) of the U.S. Department of Transportation recently issued a rule directed at reducing the risks of excavation-caused damage to underground gas pipelines. Operators of underground gas pipelines are allowed to comply with the major aspects of the rule through participation in one-call notification systems because these "...programs have proven themselves cost effective..." Examples of the effectiveness of one-call notification systems cited by the MTB included a 38-percent reduction in excavation-caused damage to underground facilities during the first 2 years of operation of the Connecticut system, a 65-percent reduction in excavation damage during the first year of operation of the Tampa, Florida, system, and a consistent annual reduction in excavation damage since 1970 for the Rochester, New York, notification system -- one of the first one-call systems.

An Anchorage Area Utility Association now exists with a membership of seven electric, telephone, water, sewer, and cable utilities and an associate membership of four other utilities; however, the Enstar Natural Gas Company is not a member of this organization. In a letter to the Safety Board dated November 8, 1982, Enstar stated:

We do not belong to a one-call system. The local utility association has had several meetings concerning the one-call system, the utilities have not been able to agree on implementation to date. The primary stumbling blocks are as follows:

1. Utilities are required, by ordinance, to provide and locate within 4 working hours -- concern that the inherent delay in a one-call system might make this already difficult deadline even more difficult.
2. Some utilities are not convinced the expenditure can be justified. The local Utility Association already has an active call before you dig program.

The Safety Board believes that the rapidly increasing construction activity in the expanding Anchorage area requires a more effective underground utility damage prevention program than now is in place. The Safety Board believes that, while the Anchorage Area Utility Association is a start in the right direction, support is needed for developing an effective, single excavation notification and damage prevention program throughout the Anchorage area. Moreover, we believe that programs in the Anchorage area would provide impetus to a statewide one-call system, which the Safety Board has recommended the Governor of Alaska, promote and which the Safety Board urges you to support.

Therefore, the National Transportation Safety Board recommends that the Municipality of Anchorage:

Require contractors and other persons who perform excavation activities to notify, at least 48-hours in advance of beginning excavations, operators of nearby underground facilities either by contacting each operator or by providing notice to a one-call excavation notification system. (Class II, Priority Action) (P-84-5)

Encourage and assist operators of underground facilities in the Anchorage area to develop and implement a one-call excavation notification and damage prevention system. (Class II, Priority Action) (P-84-6)

BURNETT, Chairman, GOLDMAN, Vice Chairman, BURSLEY, ENGEN, and GROSE, Members, concurred in these recommendations.

By:   
Jim Burnett  
Chairman