

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

ISSUED: September 15, 1976

Forwarded to:

Honorable William T. Coleman, Jr.
Secretary
Department of Transportation
Washington, D. C. 20590

} SAFETY RECOMMENDATION(S)

} P-76-43 through P-76-47

At 9:32 a.m. on January 10, 1976, gas which was leaking into the Pathfinder Hotel in Fremont, Nebraska, ignited. The gas was leaking from a 2-inch plastic pipe which had pulled out of its compression coupling; the gas seeped into the hotel because it had been capped above by frozen earth and a concrete road surface. The hotel exploded and fire ensued; the explosion and fire destroyed the hotel, damaged nearby buildings, and broke windows within a one-block radius. Thirty-nine persons were injured and 20 persons were killed. 1/

A 348-foot-long 2-inch plastic main was inserted in an existing 4-inch steel main on June 26, 1974, when the air temperature was 86°F and the minimum ground temperature was interpolated from engineering handbooks to be 60°F. At the time of the accident, the ground temperature was 36°F. This 24°F temperature change caused the pipe to contract. If the pipe had been unrestrained, it could have contracted up to 9½ inches the first year. However, the seven service lines attached to it and the restraints of the compression coupling allowed the plastic pipe to move only 1¼ inch within one of the couplings during the first winter after installation. During the second winter, the plastic pipe pulled completely out of this coupling, which was in front of the hotel, and caused the accident.

The gas company used a smooth metal stiffener inside the pipe instead of the proprietary serrated lock stiffener which was made by

1/ For more detailed information on this accident, read "Pipeline Accident Report -- Nebraska Natural Gas Company, Pathfinder Hotel Explosion and Fire, Fremont, Nebraska, January 10, 1976." NTSB-PAR-76-6.

the manufacturer of the compression coupling. The resulting combination produced a joint which was not as strong as the plastic pipe which was being joined. When the plastic pipe pulled out of the compression coupling, gas migrated into the hotel and ignited.

Because two of the three servicemen who were on call for the weekend were away from their telephones, there was an exceptionally long delay of 1 hour before the gas company could respond to the emergency.

Therefore, the National Transportation Safety Board recommends that the Department of Transportation:

Study the plastic-to-steel transition problems and take appropriate regulatory action to correct any unsafe practices. (P-76-43) (Class II, Priority Followup)

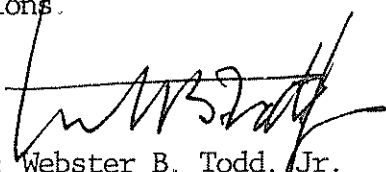
Revise 49 CFR 192.281(e)(2), "Mechanical Joints," to require that stiffeners be designed to be compatible with compression couplings so that pipes cannot pull out of the couplings. (P-76-44) (Class II, Priority Followup)

Determine if there are locations or circumstances where standard compression couplings are unsafe, and amend 49 CFR 192 accordingly to prohibit their use for such applications. (P-76-45) (Class II, Priority Followup)

Analyze the methods which operators use to receive and respond to emergency calls and, based upon this analysis, amend 49 CFR 192, "Operations," to specify minimum acceptable standards. (P-76-46) (Class II, Priority Followup)

Amend 49 CFR 192, "Operations," to require that operators record the receipt of emergency calls, the response to the calls, and the time of each significant action taken by the operator. (P-76-47) (Class II, Priority Followup)

TODD, Chairman, McADAMS, HOGUE, BURGESS, and HALEY, Members, concurred in the above recommendations.


By: Webster B. Todd, Jr.
Chairman