

Adopted: 6-11-91

Log P-299



National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: July 17, 1991

In reply refer to: P-91-11

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American Gas Association
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On March 13, 1990, the Texas Eastern Products Pipeline Company (TEPPCO) line P-41, an 8-inch-diameter liquid propane pipeline, ruptured within a pipeline casing beneath County Road 43 (CR 43) near the Village of North Blenheim, New York. Liquid propane gas escaped from the ends of the casing, vaporized, and formed a white, heavier-than-air gas cloud. The gas cloud flowed downhill along CR 43 until it entered North Blenheim and ignited. The fire quickly consumed the propane vapor and flashed back to the pipeline rupture. Two people were killed, seven persons injured, and more than \$4 million in property damage and other costs resulted.¹

The TEPPCO repair program did not incorporate several essential industry-recommended practices that: repairs be covered in the maintenance plan, they be performed under qualified supervision, they be performed by trained personnel, and all employees be briefed on the procedures to be followed for accomplishing the repairs. In deciding to implement a special program to correct longstanding deficiencies, the TEPPCO's management should have recognized that this program was different from routine maintenance work because the TEPPCO had not previously assigned such work to its employees. The TEPPCO then should have evaluated its procedures, supervision requirements, and the experience and training of its maintenance employees in light of the industry recommended practices.

¹For more detailed information, read Pipeline Accident Report--"Propane Pipeline Rupture and Fire, Texas Eastern Products Pipeline Company, North Blenheim, New York, March 13, 1990" (NTSB/PAR-91/01).

Had the TEPPCO recognized that the casing repair program was different from routine maintenance and evaluated the procedures, maintenance personnel would have been better directed and guided to correctly perform the required work. A review of the experience and training of employees revealed that many had not been trained on applicable procedures or did not possess the work experience needed for moving pressurized pipe for the purpose of eliminating casing electrical shorts. These deficiencies should have been recognized by the TEPPCO's management and corrected before the program was implemented. At a minimum, the TEPPCO management should require that work be closely supervised by a person knowledgeable of the procedures and the methods to successfully perform the work. Also, employees should be briefed on the procedures they are to perform.

The TEPPCO procedure No. 70 on repairs to pipelines included the Federal requirement for lowering the pressure in the line section to be moved, and in addition, it required that the line section be isolated before movement. However, it did not include the Federal requirement for protecting the public, by adequate warning to evacuate, from the hazards of moving highly volatile liquid (HVL) pipelines. Additionally, neither this procedure nor the Federal regulations contain guidance or criteria on the extent that a pipe of specific strength, grade, diameter, and wall thickness that contains hazardous products may be safely moved, nor do the procedure and regulations require that this information to be calculated before movement. Although the pipe did not fail during its movement, additional elevation by jacking probably would have caused a failure. Fortunately, the TEPPCO supervisor attained the clearance he needed between the pipe and its casing before the pipe failed. This was a fortuitous event rather than the result of a prudent judgment.

This accident shows that the stress limits can be easily exceeded during repairs. It underscores the need for operators to make site specific stress calculations relative to the pipe to determine how to move it safely. Because of the low fracture toughness of most pipe steel, pipes are most susceptible to failure at low ambient temperatures. Therefore, pipeline operators should determine before pipe movement, especially on HVL pipelines, the amount of pipe to be uncovered, the proper site for force application, and the maximum movement a pipe can safely withstand.

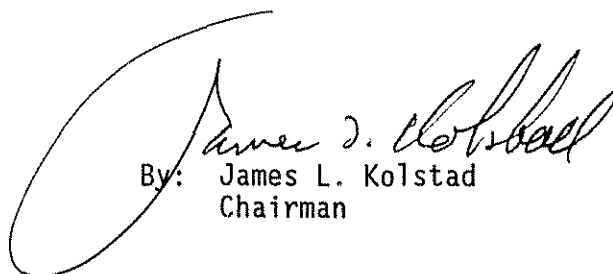
Therefore, the National Transportation Safety Board recommends that the American Gas Association, the American Petroleum Institute, and the Interstate Natural Gas Association of America:

Notify your members of the circumstances of this accident and urge them to develop explicit procedures on the support, movement, and other handling of pressurized pipelines and to develop training and testing programs to annually qualify employees to perform each responsibility assigned to them. (Class II, Priority Action) (P-91-11)

Also, the Safety Board issued Safety Recommendations P-91-1 through -4 and reiterated P-84-26 and P-87-2 and -22 to the Research and Special Programs Administration of the U.S. Department of Transportation and issued P-91-5 through -10 to the Texas Eastern Products Pipeline Company.

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 recommendation in this letter. Please refer to Safety Recommendation M-91-11 in your reply.

KOLSTAD, Chairman, COUGHLIN, Vice Chairman, LAUBER, BURNETT, and HART, Members, concurred in this recommendation.



By: James L. Kolstad
Chairman