

Log P-26 Oct 1976

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

FOR RELEASE: 6:30 A.M., E.D.T., JANUARY 23, 1976

(202) 426-8787

ISSUED: January 23, 1976

Forwarded to:

Mr. N. P. Chesnutt
President
Southern Union Gas Company
1507 Pacific Avenue
Dallas, Texas 75201

SAFETY RECOMMENDATION(S)

P-76-1

About 3:45 a.m. on March 15, 1974, the Southern Union Gas Company's 12-inch natural gas transmission pipeline ruptured in a desert near Farmington, New Mexico. Natural gas at almost 500 psig pressure escaped, ignited, and burned several hundred feet high. An 8-foot section of the 12-inch pipeline had blown out, digging a crater 40 feet long, 17 feet wide, and 10 feet deep. Three persons driving down a road adjacent to the pipeline died and the earth within a 300-foot diameter was charred. At 5 a.m., the valves on both sides of the break were closed, isolating the failed section within 8.9 miles.

The longitudinal flash weld of the A. O. Smith pipe, manufactured in 1948, showed severe crevice corrosion in the fusion line. Metallurgical examination showed that the brittle fracture initiated along the longitudinal seam on the bottom of the pipe and propagated in both directions from the origin area along the weld. The corrosion in the flash weld reduced the overall strength of the pipe by reducing the wall thickness; this resulted in higher-than-normal stresses in the weld line until the failure occurred.

This uncoated pipeline had been under hot-spot protection since 1965. Although it had experienced many corrosion leaks, there had never been a rupture of this type in the past. The pressure at the time of failure was below the maximum allowable operating pressure of 565 psig.

After the accident, as part of an uprating process, the pipeline was tested to pressures of 660 psig and up. These tests would have located any other flash welds that had been weakened by crevice corrosion to such an extent that failure was imminent. Since none were found, and the line

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PAR-75-3

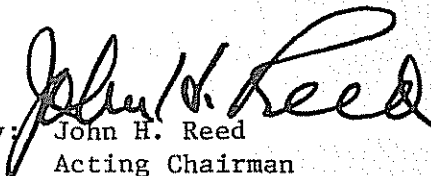
will only be operated to a maximum pressure of 565 psig, it appears that no other severely weakened flash welds existed at the time of the tests, but since crevice corrosion could continue, despite cathodic protection efforts, failures could result in the future.

Experimental work has been conducted by several firms to develop an internal inspection tool which could detect longitudinal weld defects. While this tool has been perfected for most longitudinal seam defects, the excess metal left in the weld area in A. O. Smith flash weld pipe is so great that it has a tendency to mask out any signal which would indicate a defect. Additional testing and refinements have now resulted in a tool which may be able to detect the type of defect which resulted in the flash weld failure.

Therefore, the National Transportation Safety Board recommends that the Southern Union Gas Company:

Work with developmental manufacturing firms to determine if an internal inspection tool could be utilized to detect defective flash welds in its Farmington-Albuquerque pipeline system. If a tool is found effective, it should be used in areas where crevice corrosion could be expected. (Recommendation P-76-2) (Class II, Priority Followup)

REED, Acting Chairman, McADAMS, THAYER, BURGESS, and HALEY, Members, concurred in the above recommendation.


By: John H. Reed
Acting Chairman

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