

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

ISSUED: February 8, 1978

Forwarded to:

Mr. B. H. Cooksey, Jr.
President
Consolidated Gas Supply Corporation
445 W. Main Street
Clarksburg, West Virginia 26301

SAFETY RECOMMENDATION(S)

P-78-1 through P-78-8

At 4:30 a.m., e.d.t., on July 20, 1977, a 12-inch propane pipeline, owned by the Consolidated Gas Supply Corporation, ruptured near the town of Ruff Creek, Pennsylvania. The liquid, under 450-psig pressure, escaped from the pipeline, vaporized, and propane vapors settled like a fog over the bottom of a valley. 1/

About 6 a.m., two men in a pickup truck entered the propane cloud; the truck stalled and the propane gas ignited when an attempt was made to restart the truck. A flash fire, approximately 100 yards wide, followed a streambed located along the bottom of the valley and burned everything in its path for a distance of 1 mile. The flames were over 100 feet high at the point of the rupture and burned for 14 hours until the remaining propane liquid in the pipeline could be isolated in the pipeline by the use of valves and stopples.

As a result of this accident, the 2 persons in the truck were killed, the truck was destroyed, 57 head of cattle were killed, overhead power and telephone lines were destroyed, a hay storage shed containing 450 bales of hay was burned, 1,800 barrels of propane burned, and a meadow and wooded area 1 mile long by 100 yards wide was burned.

1/ For more detailed information about this accident, read "Pipeline Accident Report -- Consolidated Gas Supply Corporation, Propane Pipeline Rupture and Fire, Ruff Creek, Pennsylvania, July 20, 1977" (NTSB-PAR-78-1).

The Safety Board is concerned that there could be additional stress-corrosion cracks (SCC) in this pipeline especially at a field sagbend that is adjacent to the field overbend that failed in this accident. Gas pipelines are often tested for SCC by using the magnetic-particle-inspection method of nondestructive testing whenever a pipeline that contains SCC is exposed for maintenance purposes.

Stress-corrosion cracking has often occurred in the piping downstream of gas compressor stations with most SCC occurring within 10 miles of the station. Since this propane line was formerly a gas transmission pipeline and the rupture occurred within 6 1/2 miles of a former compressor station, this area within 10 miles of the former compressor station is suspect.

There is evidence that the stresses necessary to produce the SCC came from earth subsidence due to the collapse of underground coal mines which has taken place between Interstate Highways 70 and 79.

There were no written procedures for the normal or emergency operations of this propane pipeline as required by 49 CFR 195.402. If there had been, or if there had been a control center where all the pertinent pipeline operations data was collected, a leak might have been suspected and field personnel dispatched in the 1 1/2 hours between the time of the leak and the ignition of the propane vapors.

The training of the operating personnel at the Hastings Extraction Plant was not sufficient for them to determine whether the pressure drop of over 100 psig was due to a pipeline break or a pump vapor-lock. A meter on the inlet of the pipeline, or an electronic In/Out flow monitor, would have alerted them that additional liquids were entering the pipeline and that there must have been a pipeline rupture.

Therefore, the National Transportation Safety Board recommends that the Consolidated Gas Supply Corporation:

Inspect the field sagbend under the stream and adjacent to the overbend that failed and at any other known locations where the pipeline has undergone settlement of this type with the magnetic-particle-inspection or other suitable technique, for signs of stress-corrosion cracking. Replace the sagbend or other pipe if incipient cracking is present. (Class II, Priority Action) (P-78-1)

Test pipe for stress-corrosion cracking using a nondestructive testing method such as the magnetic-particle-inspection method or other suitable technique every time the pipeline is exposed for maintenance purposes. (Class II, Priority Action)(P-78-2)

Establish written procedures to insure the safe operation and maintenance of this pipeline system under normal and emergency conditions as required by Federal regulations. (Class II, Priority Action)(P-78-3)

Install a meter at the Hastings Extraction Plant on the inlet to the propane pipeline to determine how much liquid is entering the pipeline. (Class II, Priority Action)(P-78-4)

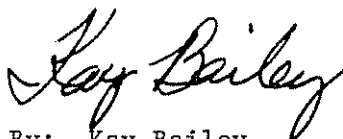
Investigate the feasibility of detecting pipeline leaks by the use of electronic In/Out flow monitors or other leak detection devices, and install one capable of detecting both small and large leaks. (Class III, Longer Term Action)(P-78-5)

Establish a control center for the liquid propane pipeline and telemeter all pressure, flow, and other pertinent data necessary for the safe operation of this pipeline to this central location. (Class III, Longer Term Action)(P-78-6)

Inspect on a random sample basis the segment of pipeline 10 miles downstream of the former Preston Compressor Station, including the area between Interstate Highways 70 and 79 where coal mines are prevalent, for other evidence of stress-corrosion cracking or increased-depth, general corrosion pitting. Increase cathodic protection or consider line replacement in areas where severe corrosion or stress-corrosion cracking is found. (Class II, Priority Action)(P-78-7)

Train pump station personnel on pump maintenance procedures and how to tell the difference between line pressure losses caused by leaks and by pumps being vapor locked. (Class II, Priority Action)(P-78-8)

McADAMS, HOGUE and KING, Members, concurred in the above recommendations. BAILEY, Acting Chairman, did not participate.



By: Kay Bailey
Acting Chairman