

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

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Forwarded to:

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Director
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Washington, D.C. 20590

SAFETY RECOMMENDATION(S)

P-78-58 through 63

The National Transportation Safety Board has completed a special study, titled "Safe Service Life for Liquid Petroleum Pipelines" (NTSB-PSS-78-1), which the Board undertook to determine the feasibility of developing a safe service life model. The study included an analysis of the DOT Form 7000-1 "Pipeline Carrier Accident Report" data that is permanently filed at the Office of Pipeline Safety Operations (OPSO). These accident reports have been collected on a regular basis since 1968.

During the examination of this accident data, the Safety Board was unable to determine the existence of any OPSO accident data analysis plan beyond that of providing cumulative accident totals by various categories for the annual OPSO report. The lack of a plan that strives to provide more insight than yearly cumulative accident totals, combined with the fact that mileages for various categories of existing pipelines are not requested, makes more sophisticated data analyses impossible to complete.

Therefore, the Safety Board was only able to extend the OPSO cumulative accident totals from a series of 1-year periods to a 9-year span. This extension served to more clearly illustrate the accident trends in the liquid pipeline industry and showed the apparent effectiveness of the corrosion-prevention programs that require cathodic protection, coated pipe, and electronic inspections. These preventive measures have apparently caused corrosion accidents to drop from a reported high of 229 in 1968 to 50 accidents in 1976. This significant decline has currently placed corrosion-caused accidents as the second leading cause of accidents, behind pipeline ruptures due to externally operated equipment.

Also, the OPSO data showed that the reported ground cover over pipelines at rupture sites in the six leading States was less than 24 inches in 51 percent of the accidents. The industry standard now calls for at least 30 inches of ground cover. Unfortunately, pipeline mileage data by depth of ground cover are not available so that it was impossible to determine whether greater depth would be effective in reducing the frequency of these ruptures.

An investigation into the accuracy and completeness of the accident reporting on the DOT Forms 7000-1 indicated some accident investigators do not understand how to correctly complete the 7000-1 forms nor do they always provide the requested data. The accuracy problem was illustrated through selections of either incorrect or redundant "origin of liquid or vapor release" entries that pertained to the accident causes "defective pipe" and "defective welds." The Safety Board concludes that clearer and more concise instructions and definitions would be effective in obtaining accurate data. The completeness problem was shown by the lack of responses in data fields such as "Grade of Pipe," "Pressure Test Duration," "Maximum Test Pressure," "Year of Pressure Test," and "Time Between Corrosion Tests."

The Federal government currently does not have an automated capability for systematically maintaining a surveillance of the 125,000 miles of interstate liquid petroleum pipelines. The purpose of such a surveillance should be to provide guidance relating to situations where the pipelines may be deteriorated and for safety purposes should operate at a reduced pressure, transport a less hazardous product, or cease operation until upgraded or replaced. A computerized system could be implemented to compute leak rates-per-mile of pipe for each pipeline carrier as well as to perform basic statistical tests to determine which carriers have leak rates that vary significantly from a nationwide rate. Additional computations could be performed to determine risk levels to persons and properties near the pipelines in question.

The great losses arising from liquid propane gas (LPG) accidents clearly shows the need for more definitive regulation. The Safety Board has been calling for more stringent controls of LPG pipelines since 1971. No action had been taken by the DOT until August 1978 when two Notices of Proposed Rulemaking (NPRM) to strengthen Federal regulations dealing with LPG pipelines were issued. DOT indicates that additional NPRM's covering other areas also will be issued in 1978. The Safety Board believes that solution of the LPG problem should dominate regulation of liquid pipelines and strongly urges DOT to expedite completion of its LPG rulemaking.

Therefore, the National Transportation Safety Board recommends that the Office of Pipeline Safety Operations:

Publish a plan that describes how the OPSO will use accident report data to formulate safety regulations and to develop a safe service life model for pipelines. (Class II, Priority Action) (P-78-58)

Redesign the Liquid Pipeline Accident Report System to include data similar to that collected in the Natural Gas Accident Reporting System. (Class III, Longer Term Action) (P-78-59)

Provide clear instructions and definitions to insure the accuracy and consistency of the data recorded on the liquid pipeline accident report forms. (Class III, Longer Term Action) (P-78-60)

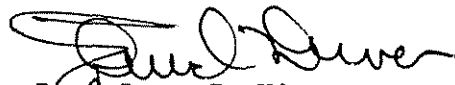
Computerize the redesigned Liquid Pipeline Accident Report System. Include the capability to:

- a. compute the historical accident/leak rate-per-mile of pipe for each carrier as well as the nationwide rate;
- b. make periodic comparisons of each carrier's accident/leak rate against the nationwide accident/leak rate;
- c. compute and plot selective accident/leak rates based on pipeline parameters such as age, specified yield strength, depth of cover, product transported, etc;
- d. selectively retrieve and summarize accident/leak data pertaining to any given accident or classification of accidents;
- e. produce summarized reports reflecting the above-listed information. (Class III, Longer Term Action) (P-78-61)

Conduct audits of the completed liquid pipeline accident reports to insure that mandatory data is provided. (Class III, Longer Term Action) (P-78-62)

Expedite completion of the rulemaking to strengthen the Federal regulations concerning LPG pipelines. (Class II, Priority Action) (P-78-63)

KING, Chairman, DRIVER, Vice Chairman, McADAMS and HOGUE, Members, concurred in the above recommendations.


By: James B. King
Chairman

