NOV 15 1999

Honorable Kelley S. Coyner
Administrator
Research and Special Programs Administration
Washington, D.C. 20590

Dear Ms. Coyner:

The National Transportation Safety Board has received your March 17, 1999, letter responding to Safety Recommendations P-98-1 through -5, which were issued to the Research and Special Programs Administration (RSPA) on April 30, 1998, as a result of the Safety Board's Pipeline Special Investigation Report – *Brittle-like Cracking in Plastic Pipe for Gas Service*. The letter was not received by the Safety Board until July 28, 1999.

Safety Recommendation P-98-1 asked that RSPA notify pipeline system operators who have installed polyethylene gas piping extruded by Century Utility Products, Inc., from Union Carbide Corporation DHDA 2077 Tan resin of the piping's poor brittle crack resistance. The recommendation also asked RSPA to require that these operators develop a plan to closely monitor the performance of this piping and to identify and replace, in a timely manner, any of the piping that indicates poor performance based on such evaluation factors as installation, operating, and environmental conditions; piping failure characteristics; and leak history.

The Safety Board understands that following its 1997 request to the Office of Pipeline Safety (OPS) for information about OPS actions in regard to older piping, the OPS notified State pipeline safety program offices of several issues regarding Century pipe and solicited input on their experiences with this piping. Further, the Safety Board notes that RSPA issued an advisory bulletin in March 1999 to notify gas distribution pipeline operators and State pipeline safety program offices about the safety issues posed by Century pipe installations and actions that should be taken

However, the Board asked that RSPA "require," not "recommend," that operators develop a plan to closely monitor the performance of the piping and to replace any pipe that indicates poor performance. Accordingly, pending further information from RSPA on whether it will require the recommended action, Safety Recommendation P-98-1 has been classified "Open—Acceptable Response."

Safety Recommendation P-98-2 asked that RSPA determine the extent of the susceptibility to premature brittle-like cracking of older plastic piping (beyond that piping marketed by Century Utility Products, Inc.) that remains in use for gas service nationwide. The recommendation also urged RSPA to inform gas system operators of the findings and require

them to closely monitor the performance of the older plastic piping and to identify and replace, in a timely manner, any of the piping that indicates poor performance based on such evaluation factors as installation, operating, and environmental conditions; piping failure characteristics; and leak history.

The Safety Board notes that RSPA recognizes the Board's concern regarding the susceptibility to brittle-like cracking failures of plastic pipe systems installed prior to 1980 and that RSPA published an advisory bulletin in March 1999 that addresses the potential for premature brittle-like failures of older plastic pipe.

In addition, RSPA is evaluating various approaches to develop an understanding of the brittle-like cracking phenomenon and the susceptibility of older plastic pipe to brittle-like cracking failures, including random testing of field sample pipe. The Safety Board points out that RSPA's advisory bulletin, *Potential Failures Due to Brittle-like Cracking of Older Plastic Pipe in Natural Gas Distribution Systems*, recommends that pre-1982 plastic pipe installations be addressed. However, as indicated in the Safety Board's special investigation report, the Plastic Pipe Institute advised the industry that, effective January 1986, all materials not demonstrating validated performance to 100,000 hours would be dropped from its listing. The special investigation report also discussed brittle-like cracking that was found in a plastic pipe involved in the 1996 fatal propane gas explosion in San Juan, Puerto Rico. That pipe was manufactured in 1982 by E.I. du Pont de Nemours & Company, Inc., at its Pencador, Delaware, plant.

Accordingly, Safety Recommendation P-98-2 has been classified "Open—Acceptable Response" pending further information from RSPA on evaluating approaches to develop an understanding of the brittle-like cracking phenomenon and the susceptibility of older plastic pipe to brittle-like cracking failures, including random testing of field sample pipe, and pending information on whether RSPA intends to require operators to closely monitor the performance of the older plastic piping and to identify and replace, in a timely manner, any piping that indicates poor performance.

Safety Recommendation P-98-3 asked that RSPA immediately notify those States and territories with gas pipeline safety programs of the susceptibility to premature brittle-like cracking of much of the plastic piping manufactured from the 1960s through the early 1980s and of the actions that RSPA will require of gas system operators to monitor and replace piping that indicates unacceptable performance.

The Board understands that RSPA, in March 1999, issued an advisory on the potential for brittle-like cracking of older plastic piping to the gas distribution pipeline industry and the State pipeline safety program offices. The advisory recommended that all owners and operators of natural gas distribution systems identify all pre-1982 plastic pipe installations, analyze leak histories, and evaluate any conditions that may impose high stresses on the pipe. Moreover, RSPA believes that operators should take appropriate remedial action, including replacement, to mitigate any risks to public safety.

However, the Board asked that RSPA "require," not "recommend," that gas system operators monitor and replace piping that indicates unacceptable performance. Accordingly, pending further information from RSPA on whether it will require the recommended action, Safety Recommendation P-98-3 has been classified "Open—Acceptable Response."

Safety Recommendation P-98-4 urged RSPA, in cooperation with the manufacturers of products used in the transportation of gases or liquids regulated by the OPS, to develop a mechanism by which the OPS will receive copies of all safety-related notices, bulletins, and other communications regarding any defect, unintended deviation from design specification, or failure to meet expected performance of any piping or piping product that is now in use or that may be expected to be in use for the transport of hazardous material.

The Safety Board understands that RSPA has arranged for the Plastics Pipe Institute (PPI) to collect safety-related information from its member manufacturers and importers and to provide RSPA with information on any materials, design, or performance issues. In addition, RSPA is consulting with numerous pipeline industry trade associations and the national consensus standards committee to obtain information relevant to pipe design installation and defects that impact pipeline system safety. The industry groups include the American Gas Association's Plastic Materials Committee, the Gas Piping Technology Committee, the American Society for Testing and Materials F17 plastic pipe standards committee, the American Petroleum Institute SL steel line pipe committee, and others, whose membership comprises both pipeline operators and manufacturers of gas and hazardous liquid pipe and pipe fittings.

The Safety Board would appreciate receiving from RSPA copies of what RSPA has received so far as a result of its arrangements with the PPI and any of the other organizations listed. We also ask that RSPA provide the Safety Board with copies of all future safety-related notices, bulletins, and other communications RSPA has received on this issue. Pending receipt of RSPA's reply, Safety Recommendation P-98-4 has been classified "Open—Acceptable Response."

Safety Recommendation P-98-5 asked that RSPA revise the *Guidance Manual for Operators of Small Natural Gas Systems* to include more complete guidance for the proper installation of plastic service pipe connections to steel mains. The guidance should address pipe bending limits and should emphasize that protective sleeves, in order to be effective, must be of the proper length and inner diameter for the particular connection and must be positioned properly.

The Safety Board notes that the *Guidance Manual for Operators of Small Gas Systems* was last revised in August 1997 and that the next printing will include the Board's recommended guidance. Accordingly, pending publication of the revised manual, Safety Recommendation P-98-5 has been classified "Open—Acceptable Response." The Board would appreciate receiving a copy of the revised manual when it becomes available.

The Safety Board looks forward to updates on the implementation of Safety Recommendations P-98-1 through -5.

Sincerely,

ORIGINAL SIGNED BY
JIM HALL

Jim Hall
Chairman

cc: Mr. Robert Clarke, Safety and Health Team Leader
Office of Transportation Policy Development