Piedmont
Natural Gas
Company

Post Office Box 33068
Charlotte, North Carolina 28233

December 18, 2001

Mr. David Waddell
Executive Secretary
Tennessee Regulatory Authority
460 James Robertson Parkway
Nashville, Tennessee 37243-0505

01-01133

Dear Mr. Waddell:

Enclosed for filing are 14 copies of a petition by Nashville Gas, a division of Piedmont Natural Gas, for request of a waiver of certain statutes to permit the use of new technologies in plastic piping in its service territory. Due to the volume of the materials, four copies of a study prepared by Nicor Technologies for the Gas Research Institute in support of the requested waiver are enclosed. Also enclosed is a check in the amount of $25.00 for payment of the required filing fee.

I am enclosing an additional copy of the Petition that I would appreciate your stamping "filed" and returning in the enclosed envelope.

As always, if you, the Directors or the Staff have questions about the enclosed information, please do not hesitate to contact me.

Sincerely,

Bill R. Morris

Bill R. Morris
Director-Rates

Enclosure

Before The
Tennessee Regulatory Authority

Nashville, Tennessee

In the Matter of :	)	
	)	
Application of Nashville Gas Company, a Division of Piedmont Natural Gas Company, Inc. for a waiver of Sections 192.121 and 192.123(a) of Part 192 of U.S.C. Title 49 to permit the use of polyamide resin (also known as Nylon 11, PA 11, or Rilsan™) as a piping material to distribute natural gas at operating pressures up to 200 psig as limited by its approved Plastic Pipe Hydrostatic Design Basis design factor of 0.40 and the use of the design formula contained within Section 192.121.	)	**Petition**
	)	

Docket No. _____

1. Piedmont is incorporated under the laws of the State of North Carolina and is engaged in the business of transporting, distributing and selling gas in the States of Tennessee, North Carolina and South Carolina. Piedmont's principal office and place of business is located at 1915 Rexford Road, Charlotte, North Carolina.

2. Piedmont conducts its natural gas distribution business in the State of Tennessee through its operating division, Nashville Gas. Nashville Gas' natural gas distribution business is subject to regulation and supervision by the Commission pursuant to Chapter 4 of Title 65 of the Tennessee Code Annotated.

3. Nashville Gas has its principal offices at 665 Mainstream Drive, Nashville, Tennessee, and it is engaged in the business of furnishing natural gas to customers located in Davidson County and portions of the adjoining counties of Cheatham, Dickson, Robertson, Rutherford, Sumner, Trousdale, Williamson and Wilson and in certain incorporated towns and cities located therein.

4. It is respectfully requested that any notice or other communications with respect to this Petition be sent to:

John L. Clark Jr.
Vice President – Tennessee Operations
Nashville Gas Company
665 Mainstream Dr
Nashville, TN 37228

5. Nashville Gas operates and maintains over 2659 miles of distribution mains, which operate between 0.25 to 450 psig using pipe diameters between 1 to 14 inches. These mains meet the requirements in Part 192 of U.S.C. Title 49. In this application, Nashville Gas proposes the installation of up to fifteen (15) miles of PA11 piping within Petitioner's service territory, subject to the approval of the proposed test sites by the Authority.

6. Nashville Gas requests the Authority to grant a waiver from both sections 192.121 and 192.123(a) to allow the use of SDR 11 Polyamide11 (PA11) piping systems within it's distribution system in order to provide gas service in a more cost efficient manner. More specifically, Nashville Gas requests the Authority to grant a waiver of subparts192.121 and 192.123(a) to allow a maximum design pressure greater than 100 psig. Specifically, Petitioner requests a maximum design pressure up to 200 psig for the proposed PA11 SDR11 piping system as limited by its PPI HDB rating of 2500 psi and using a design factor of 0.40 in the formula contained within §192.121. The following discourse sets forth the reasons why subparts192.121 and 192.123(a) should be waived by the Authority and approved by the Office of Pipeline Safety (OPS), and what measures Petitioner shall use to ensure that gas pipeline safety will not be compromised

7. Petitioner proposes that the design factor of 0.32 in the formula in subsection 192.121 be increased to 0.40. The design factor is used to account for nominal variations in material and manufacturing quality, as well as to compensate for other stresses in the pipe which are unrelated to internal pressure, such as earth loading, subsidence, compression fittings, and temperature changes. The design factor of 0.32 was adopted from the United States of America Standards (USAS) code (now American Society of Mechanical Engineers Code B31.8). The design factor in B31.8 and Part 192.121 were initially published over 25 years ago and have been unchanged since that time. Currently manufactured plastic pipes, particularly PA11 pipes, which have been approved by the American Society for Testing and Materials (ASTM), are manufactured with very little variation in material and manufacturing quality. In addition, stresses in pipes, other than internal pressures, have been found to have a more limited effect than previously thought. A final draft of the petition to increase the design factor to 0.40 has been conditionally approved by the OPS. Final comments are being addressed by the American Gas Association Plastic Materials Committee (AGA-PMC) that support the increase in the design factor for polyethylene gas piping materials, which have a HDB rating that is 50% less than the PA11 material. This proposed revision clearly shows the basis for the increase of the 0.32 design factor and a justification for the change.

8. Petitioner proposes that the upper pressure limits in subsection 192.123(a) be raised to 200 psig for SDR11 PA11 piping systems. PA11 has been approved under ASTM D2513-96a with a Hydrostatic Design Basis (HDB) rating of 2500 psi. The HDB rating for PA11 was established after long and exhaustive tests conducted under the auspices of the Plastic Pipe Institute (PPI) and the American Society for Testing and Materials (ASTM). Additionally, third party testing and evaluations of the PA11 material by the Gas Technology Institute (formerly Gas Research Institute) corroborates the material's strength, integrity, and performance. Most importantly however, is the continued safe operability of two separate installations of PA11 piping systems operating over 150 psig, as outlined in the attached Technical Reference Summary. These installations include one installation that is operating at 160 psig in the public right-of-way within the Nicor Gas distribution network under an approved waiver from the Illinois Commerce Commission (ICC Docket No: 98-0494). The public right-of-way installation has been in service for over one year and has validated the ability of PA11 piping systems to operate safely at pressures greater than 150 psig as limited by its long term performance properties. The second installation on private property has been in service for over three years at an operating pressure of 150 psig and has not experienced any problems. Characterization of the short-term and long-term mechanical properties have shown no deleterious effects of exposure to in-service conditions after approximately three years and six months of being under pressure at 150 psig.

9. The basis for both these waivers has been studied for several years and adequate tests have been conducted to verify that these waivers are justified. The supporting documents and the supplemental information with their respective attachments show the adequacy of these alternative standards. The alternative standards will not compromise pipeline safety. These waivers will assure that the regulations are kept current with advancing pipeline technology in conformance with the continuing goals of the Regulatory Reinvention Initiative conducted by the OPS in 1995-1997.

10. Petitioner proposes to use PA11 in accordance with Petitioner approved installation and quality assurance procedures developed specifically for PA11. The following records will be maintained regarding the use of these pipes: type of material, location, length, pressure, pipe size, wall thickness, environmental conditions, and class location. At the end of both a 12-month and 24-month time periods, Petitioner will remove certain cross-sections of pipe for testing and evaluation of the aging characteristics of the PA11 pipe material. The testing and evaluation will be performed by the Gas Technology Institute. Petitioner will provide the results of the testing and evaluation to the Authority and OPS and assist the Authority and OPS in revising these regulations in accordance with the information gained from the use of PA11 pipe.

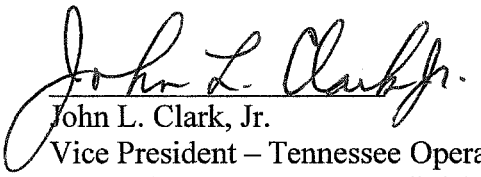
11. In order to assure adequate safety of the application of these waivers, Petitioner proposes to pressure test the newly installed pipe at 200 percent of the maximum operating pressure which is in excess of the requirements set forth in subsection 192.513. Also, Petitioner shall conform to all other related requirements stated in subsections 192.191, 192.281, 192.285, and 192.287. Petitioner shall also maintain appropriate signage and line markers per approved Petitioner's procedures. In addition, Petitioner proposes to conduct a leak survey of the installed PA11 pipe twice the first year and then on an annual basis, for five years, which are beyond the

requirements in subpart 192.723. At that time, normal survey intervals will begin, based on subsection 192.723, subject to the approval of the Authority.

Wherefore, based upon the foregoing, Petitioner respectfully requests the Authority to promptly grant a waiver of Sections 192.121 and 192.123(a) of Part 192 of U.S.C. Title 49 to permit the use of polyamide resin (also known as Nylon 11, PA 11, or Rilsan™) as a piping material to distribute natural gas at operating pressures up to 200 psig as limited by its approved Plastic Pipe Hydrostatic Design Basis design factor of 0.40 and the use of the design formula contained within Section 192.121.

Respectfully submitted this the 6th day of December 2001.

NASHVILLE GAS COMPANY, a division of PIEDMONT NATURAL GAS COMPANY



John L. Clark, Jr.
Vice President – Tennessee Operations
Nashville Gas Company, a division
of Piedmont Natural Gas Company
665 Mainstream Drive
Nashville, Tennessee 37228