U.S. Department of Transportation
Research and Special Programs Administration
400 Seventh Street. S.W.
Washington, D.C. 20590

JUL 31 1997

Mr. John C. Crary
State of New York Department of Public Service
Three Empire State Plaza
Albany, NY 12223-1350

Dear Mr. Crary:

We have considered your letter of March 7, 1997, notifying us that the Commission has granted consolidated Edison Company a waiver from complying with 49 CFR 192.321(a), in particular circumstances. The waiver permits plastic pipe encased in steel pipe to be installed above ground on bridges subject to certain safety conditions.

We have no objection to the waiver. The circumstances are comparable to those of previous waivers we have approved permitting the installation of plastic pipe above ground on bridges.

Sincerely,
Richard B. Fender
Associate Administrator for Pipeline Safety

STATE OF NEW YORK DEPARTMENT OF PUBLIC SERVICE
THREE EMPIRE STATE PLAZA
ALBANY, NY 12223-1350
Internet Address: http://www.dps.state.ny.us
PUBLIC SERVICE COMMISSION

March 7, 1997

Mr. Cesar DeLeon
Deputy Associate Administrator
DOT-Office of Pipeline Safety
400 Seventh St. SW
Washington, D.C. 20590

Re: Waiver of 16 NYCRR Part 255.321(a)

Dear Mr. DeLeon:

At a session of the New York State Public Service Commission held on January 15, 1997, the enclosed memorandum was considered and approved. The waived rule is equivalent to a provision of the federal regulations (49 CFR 192.321(a)). Therefore, we hereby provide written notice of the waiver, as required by §60118(d) of the Natural Gas Pipeline Safety Act, for your consideration and approval.

Unless we hear otherwise, we will assume the waiver becomes effective 60 days from the date of this letter. If there are no objections to the waiver, we would appreciate an affirmative response prior to 60 days, if possible.

By direction of the Commission,
John C. Crary Secretary

CASE 95-G-0932
Approved as
Recommended
and So Ordered
By the Commission

John C. Crary
Secretary

STATE OF NEW. YORK
DEPARTMENT OF PUBLIC SERVICE

January 2, 1997

TO: THE COMMISSION

FROM: GAS AND WATER DIVISION - SAFETY SECTION

SUBJECT: CASE 95-G-0932 - Petition of Consolidated Edison Company of New York, Inc. for a Waiver of the Requirements of 16 NYCRR Subdivision 255.321(a), requiring plastic pipe to be installed underground.

SUMMARY OF
RECOMMENDATION: Consolidated Edison Company of New York, Inc. be granted a waiver of the requirement of 16 NYCRR Subdivision 255.321(a), subject to the requirements and restrictions set forth herein.

Summary

By letter dated October 2, 1995, Consolidated Edison Company of New York, Inc. (Con Edison) petitioned for a waiver from compliance with the requirement of Title 16, State of New York Codes, Rules and Regulations (NYCRR), Part 255, Subdivision 321(a), that plastic pipe be installed underground. The federal pipeline safety code contains the exact same requirement (49 CFR Part 192.321(a)). Con Edison proposes to install high density polyethylene pipe across bridges by insertion into steel casing pipes. Con Edison proposes that its waiver apply to all bridge crossings in its territory.

Con Edison states that it has approximately 230 bridge crossings in its territory. The aging steel pipe on the bridges is subject to corrosion from road salt and the atmosphere. Insertion with plastic pipe will reduce the risk of corrosion leaks and the cost of periodic inspection, cleaning and painting

Existing Requirement

Subdivision 255.321(a) states that: 'Plastic pipe must be installed below ground."

OPS can support or deny this waiver if granted since, in effect, this is also a waiver of the federal code. There is a 60 day time limit, from the date of Commission action, in which OPS may respond. The waiver, if granted by the Commission, would go into effect if no reply is received within the sixty-day time limit.

Discussion

The safety concerns with regard to above ground plastic are the possibility of mechanical damage, ultraviolet deterioration due to exposure to sunlight, exposure to temperature extremes and thermally induced stresses.

Con Edison proposed that the waiver be conditioned on adherence to the following guidelines, which are consistent with recommendations in the ASME report.

1. The plastic pipe is installed with protection from mechanical damage, such as installation in a metallic casing;
2. The plastic pipe is installed so that the temperature does not exceed the limits specified in Section 255.123; and
3. The plastic pipe is protected from ultraviolet radiation.

The existing subdivision 255.123(b), from which a waiver is not requested, requires that:

Plastic pipe may not be used where operating temperatures of the pipe will be:

(1) below -20 degrees F; or
(2) in the case of thermoplastic pipe, above the temperature at which the long-term hydrostatic strength used in the design formula under section 255.121 is determined, except that

thermoplastic pipe manufactured before May 18, 1978, may be used at temperatures up to 100 degrees F; or

(3) in the case of reinforced thermosetting plastic pipe up to 150 degrees F.

Con Edison states that all bridge designs using plastic pipe will be reviewed by the Major Projects section of Central Gas Operations, which has the expertise to design any new or replacement bridge crossings.

It proposes to insert plastic pipe into existing steel pipelines at bridge crossings. Therefore the plastic pipe will be protected from direct contact with vehicles, machinery, etc. and from direct exposure to sunlight. Furthermore, most of the existing steel bridge crossings are located in a shaded space, within the fascia under the traveled roadway, where they are protected from high temperatures.

In addition, the gas flow in the pipeline can have a cooling effect relative to high ambient temperatures and a warming effect relative to low temperatures. Therefore, it is not anticipated that the pipeline will experience temperatures outside the range specified by subdivision 255.123(b).

Thermal stress is a concern with above ground plastic because expansion and contraction of the pipe will occur with temperature fluctuations. The magnitude of the thermal stress is proportional to the difference between the installation temperature and the temperature under consideration. The ASME report demonstrated that polyethylene pipe can tolerate the stresses induced by temperature change of 120 degrees Fahrenheit, the full range specified by subdivision 255.123(b). In order for the pipe to actually experience such a temperature swing, it would have had to be installed while the temperature was at one of the extremes, which is very unlikely. In addition, there are other factors that make the thermal stress analysis conservative, such as plastic's ability to experience stress relaxation,[1] thermal lag[2] and the aforementioned moderating effect of the gas flow within the pipe.

Con Edison states that the waiver would typically be applied whenever the State, City or other authority rehabilitates or replaces a bridge structure. Bridge rehabilitation usually results in the replacement or insertion of the existing gas main on the bridge. Con Edison anticipates one to four bridge projects annually. Other criteria for selecting bridge main replacements would be atmospheric corrosion activity and leak history. In addition, the waiver might be applied to new bridge crossings, where appropriate.

Con Edison's operating and maintenance procedures require an inspection of gas mains on bridges on a three year interval. Any plastic mains installed on bridges pursuant to the waiver would be inspected at the same, frequency.

Recommendation

Staff recommends granting Con Edison's request for a waiver of the requirement of 16 NYCRR subdivision 255.321(a), subject to the following conditions:

1. The plastic pipe is installed with protection from mechanical damage, such as installation in a metallic casing;
2. The plastic pipe is installed so that the temperature does not exceed the limits specified in Section 255.123; and
3. The plastic pipe is protected from ultraviolet radiation.

This memorandum has been reviewed by Steven Blow of the Office of General Counsel.

[1]The stress in an elastically-loaded system decreases or relaxes over time. The rate of relaxation increase with increasing temperature.

[2] The change in temperature of the plastic pipe does not immediately change with changes in ambient temperatures.