

PI-82-0109

November 3, 1982

Mr. Tom Reifschneider
Peoples Engineering
Supervisor of Standards
Peoples Natural Gas Company
25 Main Place
Council Bluffs, IA 51501

Dear Mr. Reifschneider:

This responds to your letter of October 12, 1982, regarding the use of an encapsulation method to repair leaks in PVC fittings. You asked whether the method would qualify as a "patching saddle" under §192.311.

The enclosed copy of a letter dated February 27, 1981, to Keith Chen Discusses the meaning of "patching saddle." Based on that discussion, it appears that the encapsulation method does not qualify as a "patching saddle" in its ordinary sense.

We presume that your primary use of the method would be to repair existing pipelines in place. In this case, §192.311 would not apply since it only governs the construction of new transmission lines and mains or existing ones that are being relocated, replaced, or otherwise changed (see §§192.13 and 192.301). The only restrictions under Part 192 on use of the encapsulation method for repairing an existing plastic pipeline are the provisions in §192.703(b), which essentially require that the repair method used result in a safe pipeline.

Sincerely,

Original signed by

Richard L. Beam

Associate Director for

Pipeline Safety Regulation

Materials Transportation Bureau

February 27, 1981

Mr. Keith A. Chen, P.E.
Director - Research
Wisconsin Gas Company
£26 Last Wisconsin Avenue
Milwaukee, Wisconsin 53202

Dear Mr. Chen:

Your letter to this office of February 6, 1981, concerns the use of full encirclement stainless steel band clamps for permanent repair of damaged plastic pipe. We agree with your interpretation that Subpart G of 49 CFR Part 192 (and, thus, §192.311) is only applicable during the construction of a transmission line or main. However, as further discussed below, even if the band clamp were considered a "patching saddle," as intended by §192.311 (which it is not), its use to permanently repair plastic pipe either during construction or after operation may be prohibited under §192.703(b).

In regard to the term "patching saddle" as used in §192.311, these words were added to the final rule as a result of comments to the proposed rule stating that defective plastic pipe should be permitted to be repaired. These comments clearly had in mind the use of a saddle made of material similar to that of the pipe being repaired that would be joined to the pipe by fusion, solvent cement, adhesion, or similar methods. Typical comments that prompted the Office of Pipeline Safety to permit use of a "patching saddle" were

"We feel that patching of a plastic vain should be allowed. Should be no difference between a patch over a gouge or the installation of a service tee." (Iowa Public Service Company)

"The use of solvent weld half-soles on polyvinyl chloride pipe has proven to be a safe, economical method of repair for scratches, gouges, and grooves on mains in service. (Central Telephone and Utilities Corporation)

Thus, a band clamp is inconsistent with the meaning intended by "patching saddle."

Another reason why "patching saddle" does not mean a band clamp is that when §192.311 was issued, §192.281(e)(2) was also issued, requiring a rigid internal tubular stiffener to be used in conjunction with each compression type mechanical coupling. This requirement recognizes the compressive forces of the sealing gasket used in a compression coupling and the fact that plastic materials under constant stress will tend to cold flow. A full encirclement stainless steel hand clamp, like a compression coupling, subjects the plastic pipe to compressive stress but does not provide internal support for the pipe that may be needed to prevent cold flow of the plastic.

Because of the question of cold flow of plastic pipe, we believe that the safety of a permanent repair by use of a band clamp is questionable under some conditions, depending on the stiffness of the elastic pipe involved. Where unsafe conditions would result, §192.703(b) would forbid use of the band clamp as a repair method.

In your letter, you state that "Wisconsin Gas conducted tests on tile, stainless steel clamp, used as a patching saddle which determined that the performance met the required safety and serviceability tests of the code." We would appreciate your sending us these data and any other data available on the problem of cold flow of plastic pipe under continuous gasket as discussed above.

Sincerely,
MELVIN A. JUDAH
Melvin A. Judah
Acting Associate Director for
Pipeline Safety Regulation
Materials Transportation Bureau

Peoples Natural Gas Company
25 Main Place
Council Bluffs, Iowa 51501

October 12, 1982

Mr. Richard Beam
Assistant Director
Office of Pipeline Safety Regulations
Material Transportation Bureau
Department of Transportation
Washington, DC 20590

Dear Mr. Beam:

Peoples Natural Gas Company, Division of InterNorth, Inc., operates 1,800 miles of Polyvinyl Chloride (PVC) pipeline distribution systems. Presently, leak areas are replaced with transitions from PVC plastic to Polyethylene plastic rather than being repaired. Replacement methods of repair are costly because they require that a large area be dug to work within.

We are presently considering a repair method which is very similar to the AVON Series Four procedure used to repair leaking cast iron systems as an alternative to replacement of pipeline. A reusable mold would be fitted around the leaking PVC fitting and injected with a two-part epoxy mixture and a heat-absorbing material to prevent the PVC from overheating. With this encapsulation method, only a small area would be needed to work within, thus substantially reducing our repair expenses.

Enclosed for your information, are several hand sketches which I drew demonstrating the encapsulation method. In addition, I have enclosed two photographs of a portion of pipeline which had to be replaced in Arlington, Iowa. The intersection, parking, and yard had to be dug up in order to install stopping units before two leaking 1 1/2" tees could be replaced. Utilizing the encapsulation method, the intersection would be kept in service except for a bell hole which would be needed to clean the leaking joints and to place the mold around the pipe.

Section 192.311, Repair of Plastic Pipe, states: "Each imperfection or damage that would impair the serviceability of plastic pipe must be repaired by a patching saddle or removed." We are interested in knowing whether this PVC encapsulation method is the equivalent of patching saddle.

Your prompt response will be greatly appreciated.

Very truly yours,
Tom Reifschneider
PEOPLES ENGINEERING
Supervisor of Standards