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Subject:  
Plastic Piping, Mechanical Coupling

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Research and Special Programs Administration, Washington, DC 20590

## PIPELINE SAFETY ADVISORY BULLETIN

Advisory Bulletin: ADB-86-02 Date: 02/26/86

To: All Gas Distribution Operators

Subject: Plastic Piping, Mechanical Coupling

### Purpose:

Inform natural gas pipeline operators to review procedures for using mechanical couplings; ensure coupling designing, procedures, and personnel qualifications meet 49 CFR Part 192. This bulletin was prepared in response to NTSB's Recommendation P-85-31 that resulted from the NTSB Pipeline Accident Report, National Fuel Gas Company, Natural Gas Explosion and Fire, Sharpsville, Pennsylvania (NTSB/PAR-85/02).

### Advisory:

The Office of Pipeline Safety (OPS) is aware of a number of incidents where plastic piping in natural gas service has pulled out of mechanical couplings. These failures have been attributed to temperature related contraction of the plastic pipe and the inadequate restraining capabilities of the mechanical coupling. The National Transportation Safety Board (NTSB) has recently issued a report (NTSB Pipeline Accident Report, National Fuel Gas Co., Natural Gas Explosion and Fire, Sharpsville, PA--NTSB/PAR-85/02) on an accident in Sharpsville, PA, detailing the events contributing to one such incident. The factors involved in the Sharpsville incident are similar to those of several other incidents reported to OPS. As pointed out in the NTSB report, the cyclic effects of temperature related contraction/expansion on plastic pipe in an improperly designed mechanical joint can be cumulative and lead to a failure even after several years of satisfactory service.

### Background:

Included in the recommendations made by NTSB in the Sharpsville report was one to the Research and Special Programs Administration of the US Department of Transportation to:

Issue an advisory bulletin to alert gas distribution pipeline operators who use plastic pipe and couplings to establish that the forces anticipated to act upon the installation are within the design limitations specified by the manufacturer (Class II, Priority Action, P-85-31)

Compliance with the present Federal pipeline safety regulations will result in the pipeline operators providing a joint design and installation that adequately provides for the forces anticipated for the specific installation and will minimize the possibility of the occurrence of a coupling failure. However, to emphasize the importance of compliance with the regulations relative to coupling qualification and joining procedures which were amended in 1979, OPS recommends that:

Each operator of natural gas pipelines review their present procedures for using mechanical couplings on plastic pipe to insure that the design of the coupling used, and the qualifications of the person(s) doing the joining meet the requirements of the Federal pipeline safety regulations contained in CFR Part 192 and in particular Sections 192.273(b), 192.281(e), 192.283(b), 192.285, and 192.287.

OPS further recognizes from analyses of past accident investigations that the type of couplings and joining procedures used by some operators prior to adoption of the current regulations may have been inadequate to assure continued safe operation of those couplings. Therefore, OPS also recommends that:

Each operators evaluate the procedures used for each type of coupling connection previously installed considering the present known factors affecting the coupling safety and take action as appropriate.

In evaluating your earlier installations, particular attention should be paid to the pull out force limitations specified by the coupling manufacturer, the manufacturer's recommended use for the coupling such as plastic to plastic, steel to steel, water or gas service, etc., the expected annual range of ground temperatures at the specific location, the coefficient of expansion/contraction of and a comparison of the actual installation procedures with the present requirements of the regulations.

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