

West Reading, PA - Investigative Update

The NTSB's investigation into the natural gas-fueled explosion and fire that occurred at Building 2 of the R. M. Palmer Company (Palmer) in West Reading, Pennsylvania indicates that natural gas was leaking from a DuPont Aldyl A service tee that was installed in 1982. UGI exposed and retired the service line that was connected to this service tee in 2021 when they relocated the natural gas meter from the basement to the exterior of Building 2. After the service line was retired, the 1982 service tee remained connected to the natural gas system, pressurized at full system pressure. As part of the meter relocation project, UGI installed a new service tee (2021 service tee) and a new service line. In addition to the leak on the 1982 service tee, NTSB investigators identified a small leak on the 2021 service tee.

The 1982 service tee was less than 2-feet from subsurface infrastructures that ran between Palmer Buildings 1 and 2, including a steam pipeline, a condensate pipeline, and several heated chocolate pipelines. NTSB investigators observed general corrosion and a crack in the steam line when it was exposed on-scene.

Further examination of the 1982 service tee by the NTSB's Materials Laboratory revealed that the tower, which houses the tap, consisted of an outer shell and a Dupont Delrin® insert. The insert fractured in the transverse direction near its base.¹ The upper portion of the insert was not recovered. The outer shell had a longitudinal fracture that started near the top of the tower and extended toward the tower base. Fractographic examination indicated that the fracture in the tower started on its inner diameter surface.

The Pipeline and Hazardous Materials Safety Administration (PHMSA) added Aldyl A service tees with Delrin inserts to their list of pipe materials with "poor performance histories relative to brittle-like cracking" on September 6, 2007.² Additionally, industry guidance in ANSI/GPTC Z380.1, *The Guide for Gas Transmission, Distribution, and Gathering Pipeline Systems* discusses previous experience with DuPont polyethylene service tees with Delrin polyacetal inserts that were installed in the late 1960s to early 1980s.³

¹ DuPont uses the trade name Delrin for its polyacetal material.

² See: PHMSA Advisory Bulletin 07-01, *Updated Notification of the Susceptibility of Older Plastic Pipes to Premature Brittle-Like Cracking*.

³ American National Standards Institute/GPTC (Gas Piping Technology Committee). 2018. *Guide for Gas Transmission, Distribution, and Gathering Piping Systems*. ANSI/GPTC Z380.1-2018, Washington, DC: American National Standards Institute.

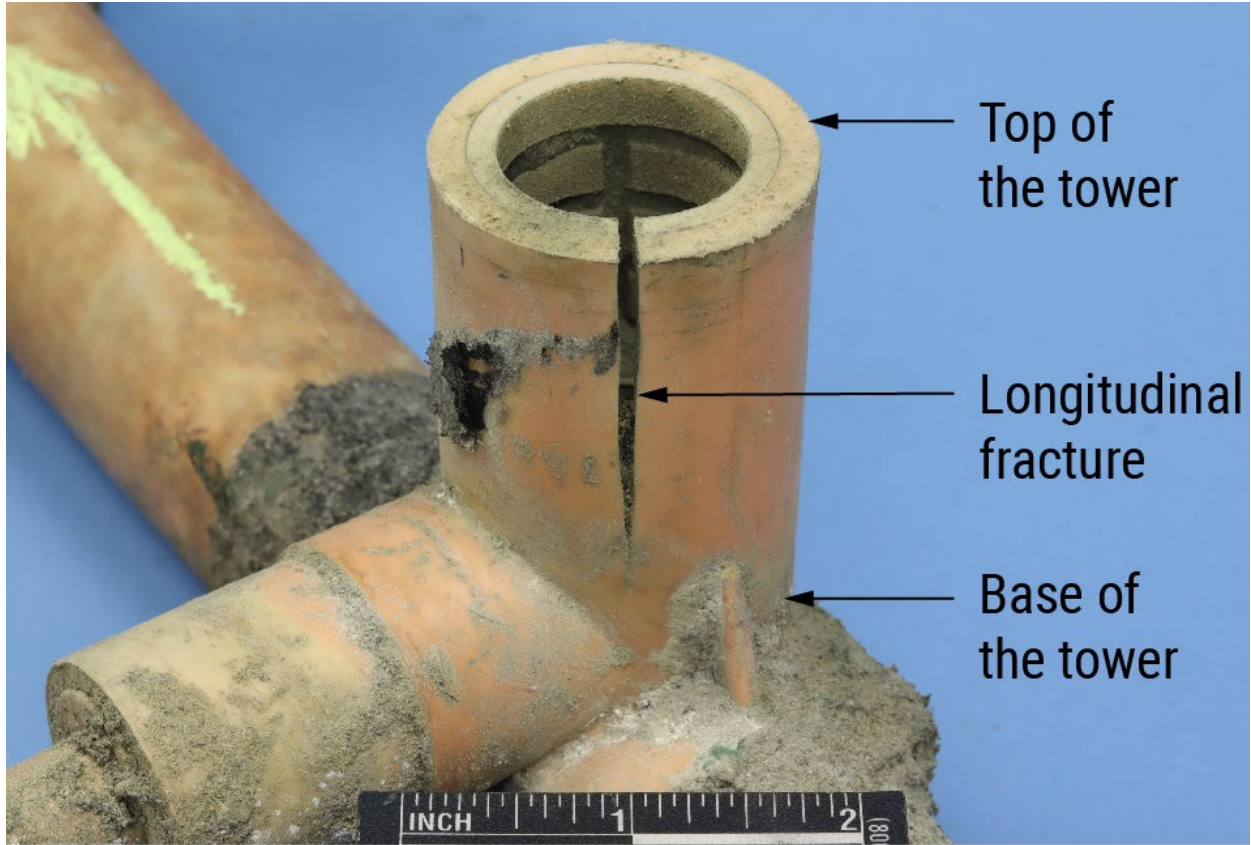


Figure 1. DuPont Aldyl A service tee installed in 1982 longitudinal facture along the tower, July 3, 2023.

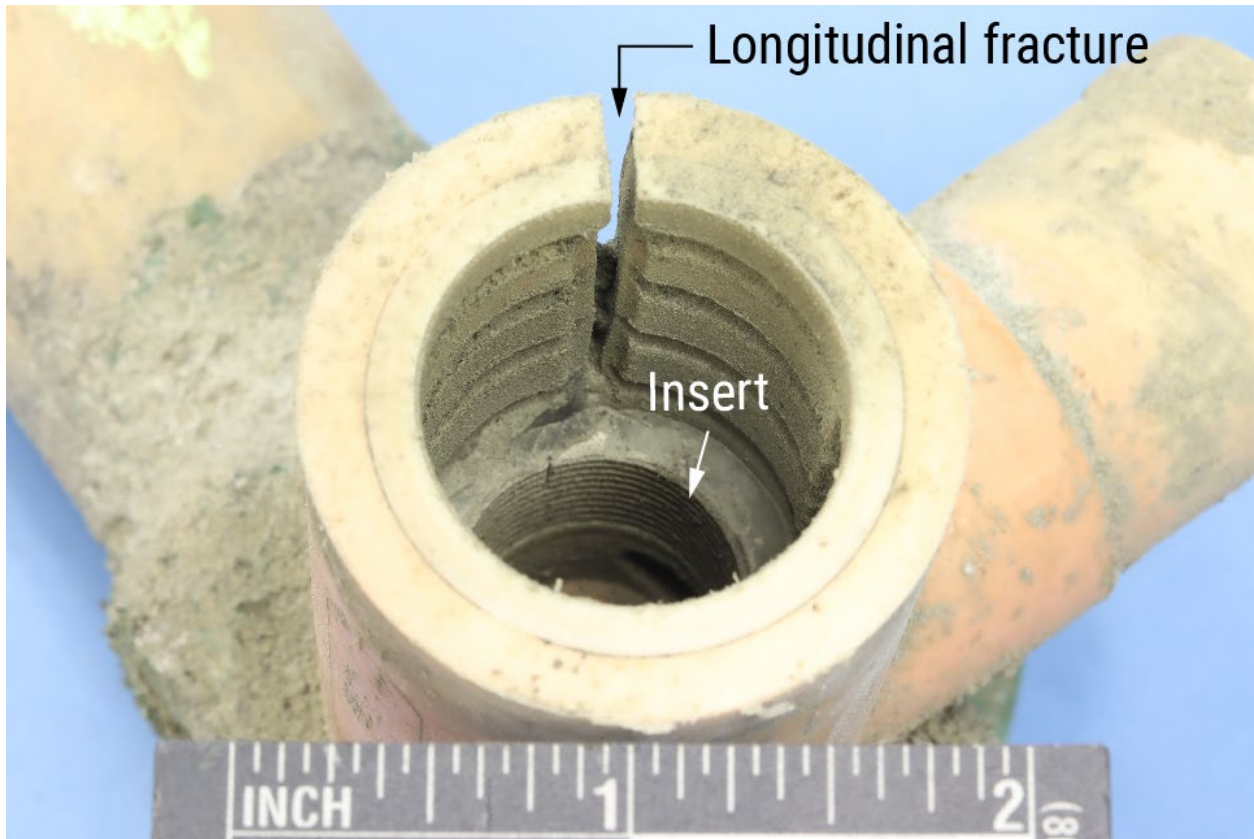


Figure 2. Remaining insert at the base of the 1982 DuPont Aldyl A service tee tower, July 3, 2023.