



Wisconsin Incidents 1986-Present

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Wisconsin Pipeline Safety Seminar

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Public Service Commission of Wisconsin

Harrison Excavation Damage



January 23rd, 1996

- Telecommunications company contractor
- Boring alongside 2" PE (50psi) main
- Crew called utility after smelling gas
- Utility crew arrived and explosion occurred shortly after



Investigation and Cause

- No Fatalities
- Damage exceeded \$150,000
- Boring head accidentally veered into pipe, ripping through a 5 ft length
- 30" frost cap made the service to the home the path of least resistance
- Main was properly remarked the morning of the incident



Oconomowoc Excavation Damage



April 2nd, 2008

Overview



- Sewer contractor installing concrete catch basin and sewer piping
- Contractor exposed three separate mains in the road:
 - Marked 2" coated steel (yellow)
 - Marked 4" coated steel (yellow)
 - Unmarked 2" coated steel (black)
- Contractor assumed 2" black pipe was retired as they had cut out similar looking retired pipe earlier in the job
- While installing a catch basin, contractor used excavator to displace unmarked 2" black pipe and provide clearance
- Contractor contacted utility, reporting a gas leak
- Shortly after utility arrival, the nearby church exploded

Investigation and Cause



Displaced steel main (not located)



Compression coupling about 12' away from catch basin

Enforcement



1 hospitalization, over \$1 million of property loss

1. Failure to maintain maps and records in accordance with Wis. Admin. Code § 134.16.
2. Failure to maintain maps or records in accordance with 49 CFR § 192.491(a).
3. Failure to provide construction records, maps and operating history in accordance with 49 CFR § 192.605(b)(3).
4. Failure to properly locate facilities in accordance with 49 CFR § 192.614(c)(5).

Sun Prairie Excavation Damage



July 10th, 2018

Overview



Overview



- Telecommunications subcontractor boring
- Struck 2” PE while pulling back
- Subcontractor contacted utility
- Shortly after utility arrival, building next to struck pipe exploded



Investigation and Cause

- 1 Firefighter fatally injured
- 1 Utility employee seriously injured
- Over \$1 million of property loss
- Original subcontractor declined to perform HDD
- Contractor “piggy-backed” on other’s locate request
- Damaged main was not located
- Complaint filed by locator
- PSC Docket 9300-PLI-100
- Excavator was assessed maximum civil penalty of \$25,000



Takeaways from Excavation Damage



- Well known that third party damages are one of the highest risks to every system
- Damage prevention should always be an ongoing effort
- Community outreach
- Diggers hotline complaint panel

Rib Mountain Pipe Failure



October 16th, 1986

- Thursday 10/16/86 an explosion occurred in a single-family home in Rib Mountain, WI at 5:07pm
- Homeowner returned home from work to an odd odor
- Ignition of gas occurred after the owner decided to light a candle to eliminate the smell
- Fire Department was on the scene 10 minutes later and the utility was notified by 5:27pm of the explosion
- 1 fatality and 1 injury



Investigation and Cause



- Investigation discovered that the gas leak originated from the steel service riser to the home
- A compression fitting had been welded onto the end of the half inch service line
- This compression fitting was found to be oversized and never intended for use with plastic
- Pressure test of the house piping found no leaks





FLOOR OF
KITCHEN/DINING
AREA

5

192.463



Investigation and Cause



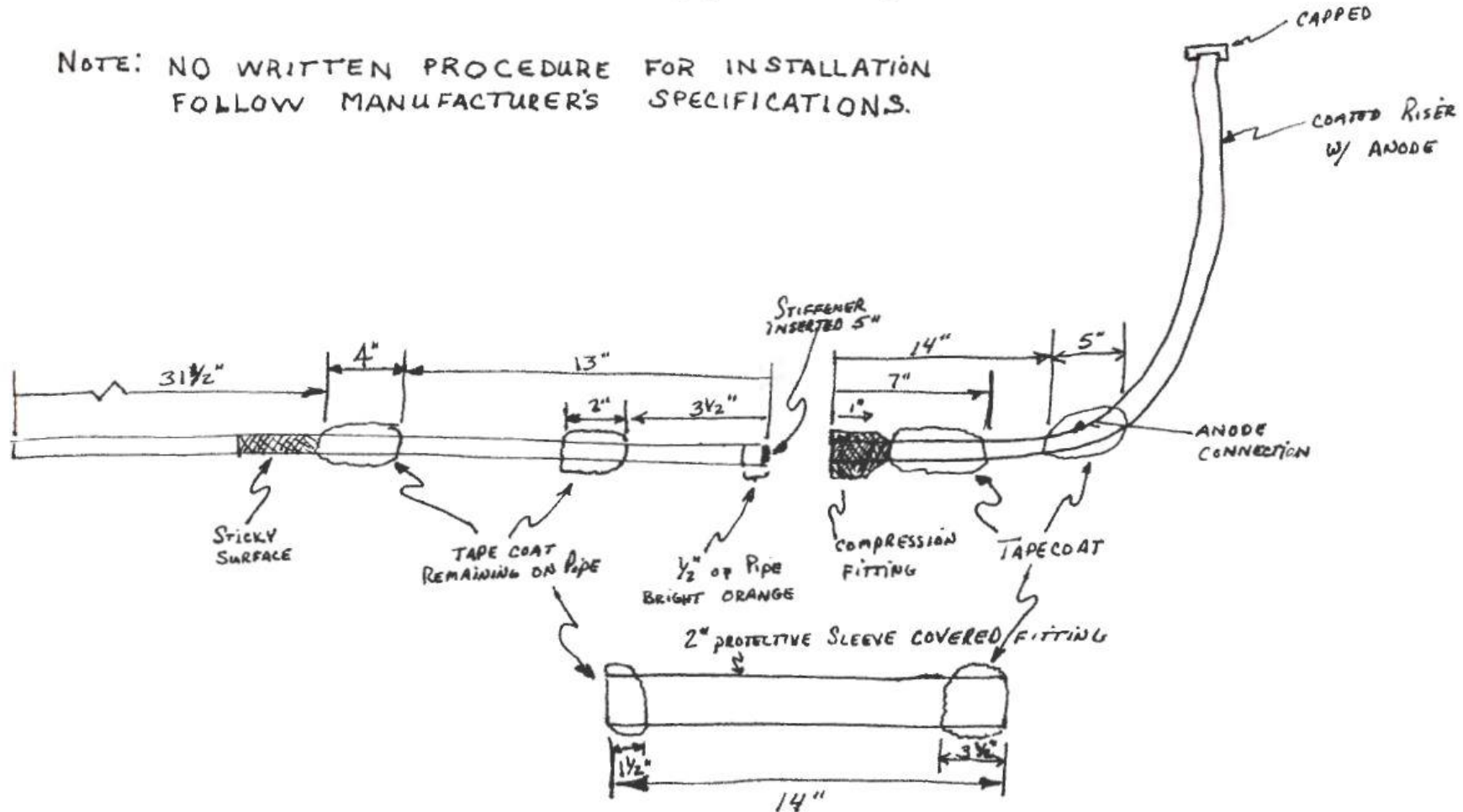
- Leak occurred when the service partially pulled out of the compression fitting
- Utility had no record of the failed fitting and said, “Like nothing we have ordered before.”
- Only 0.5in of service was left in the fitting, typical depth was 3in

Investigation and Cause

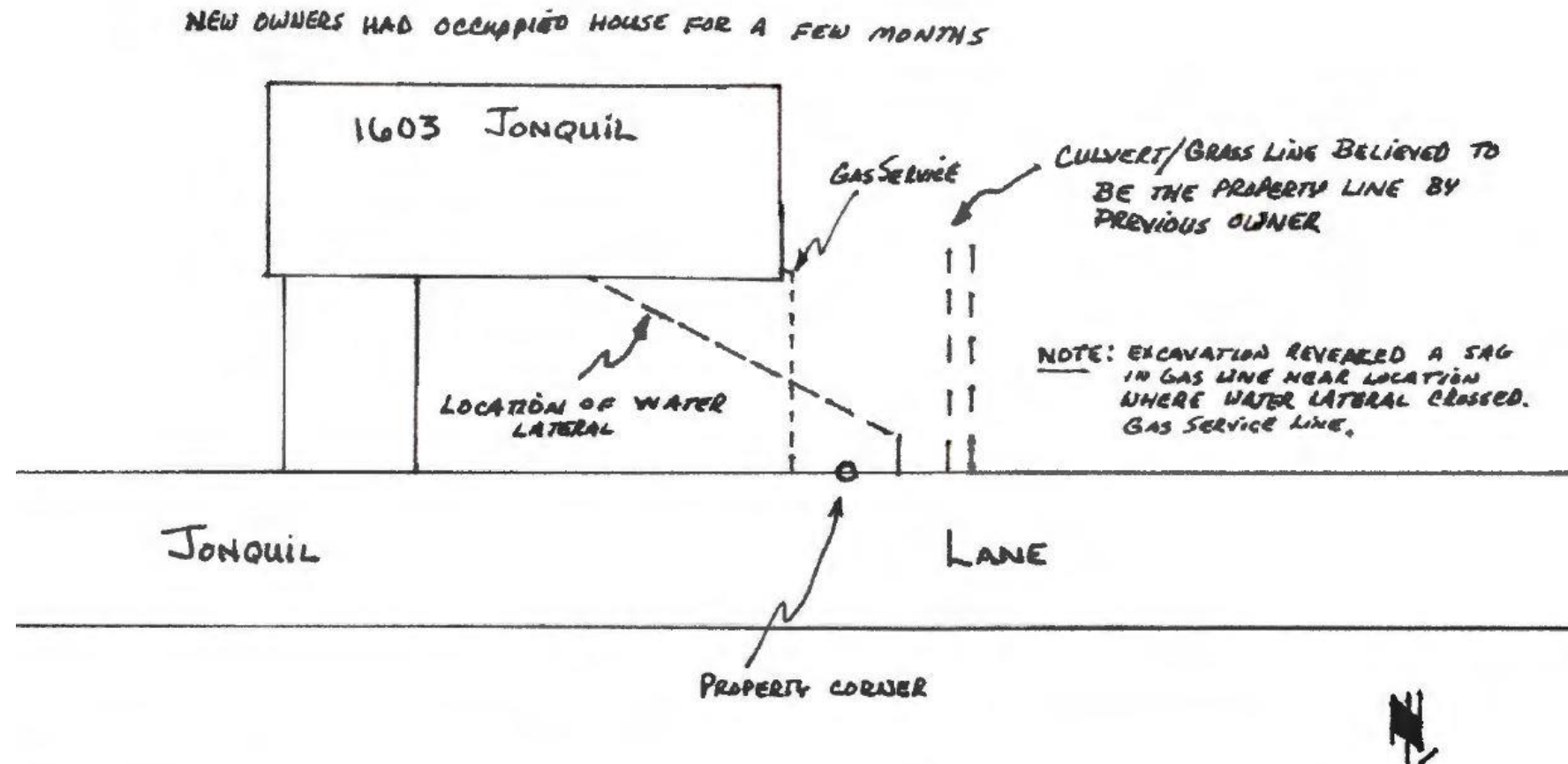
SKETCH OF RISER AND FITTING

VIEWED 10-29-86 (NOT TO SCALE)

NOTE: NO WRITTEN PROCEDURE FOR INSTALLATION
FOLLOW MANUFACTURER'S SPECIFICATIONS.



Investigation and Cause



- Hand excavation of the service line led to the discovery of a severe sag in the line near where it crossed the water lateral
- During construction of new sewer and water lines the previous year it is believed the service was altered

- Utility did not follow their emergency action plan after learning about the explosion
- On October 15th, the day before the incident, Utility filed updated procedures with the PSC that indicated who in the government to contact in case of emergency
- Utility began an investigation to find more risers of the type that had failed and would check for the failed fitting and replace
- 9000 service risers were inspected, 112 had Continental fittings, 2 of the make that failed

Nekoosa Pipe Failure



March 22nd, 1989

- At 8:35pm on March 22nd an explosion and fire occurred at a single-family home in Nekoosa
- The scene was made safe by 11:00pm
- By 2:00am March 23rd the utility had discovered the service line would not hold 10psi
- 1 fatality and 2 injuries



Investigation

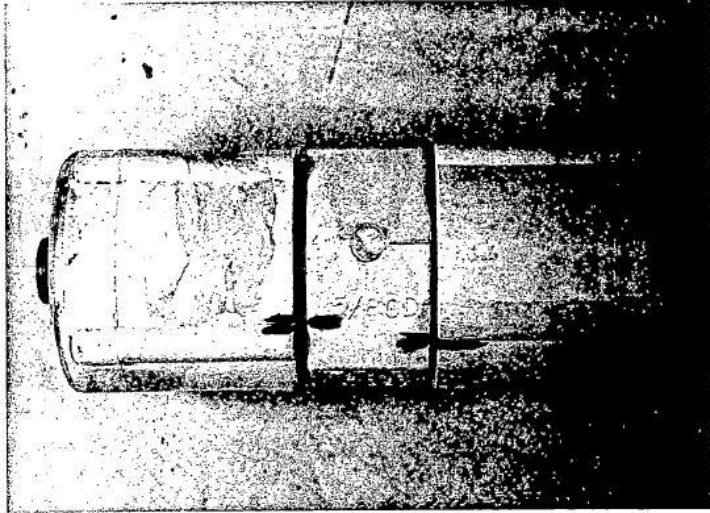


Figure 3. Markings on coupling showing initial position of nut.

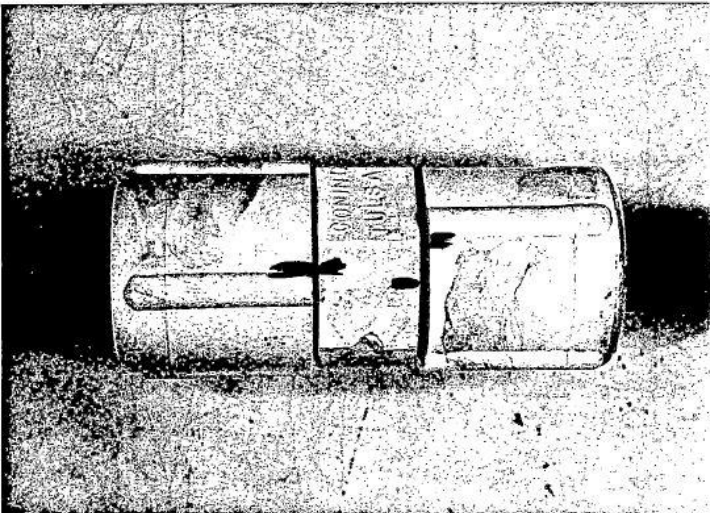


Figure 4. Position of marks after further tightening of nut.

- Portion of service pipe attached via coupling was removed
- Nuts on coupling not fully engaged
- Removed piping/coupling sent to laboratory for further analysis.



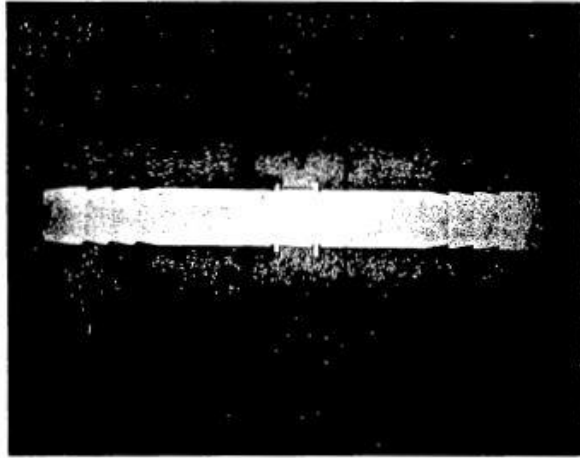


Figure 1. X-ray of pipe and coupling.

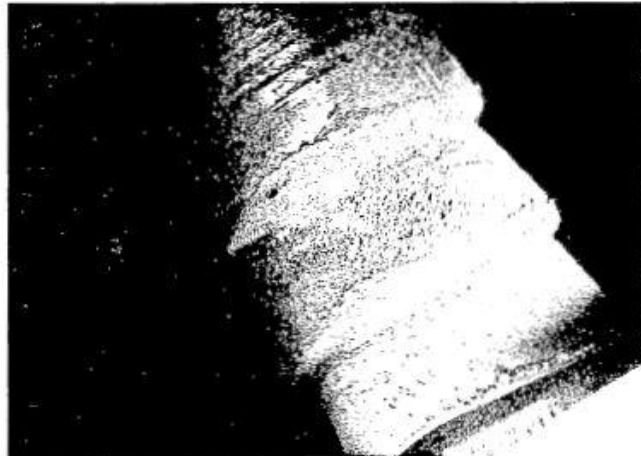


Figure 2. Erode spots on barbed stiffener.

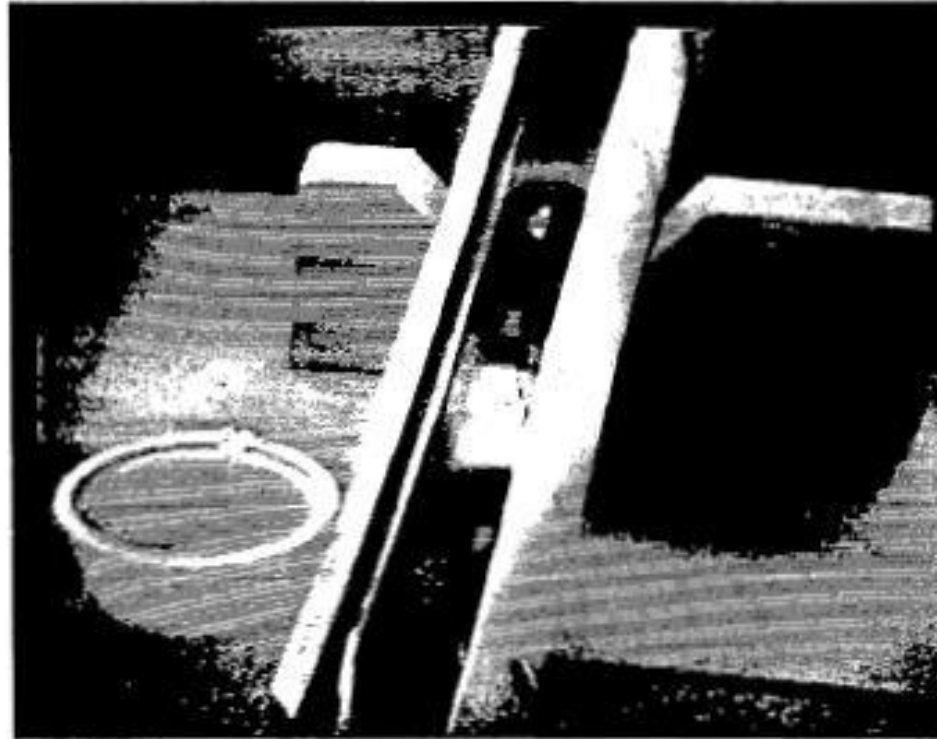


Figure 5. Pipe coupling assembly for pressure test.



PICTURES OF COUPLING AFTER REMOVAL

- Excellent communication to public officials
- Completed a main and service leak survey of the town
- Repaired any leaks found during the survey
- Reported daily updates on leak survey findings
- Sent letters to customers with a connector style fitting on their service line

Two Rivers Pipe Failure



December 27th, 1989



- Explosion occurred at a single-family home at approximately 9:00am
- Regulator had been replaced 3 times within the days prior to the explosion
- Pressure problems with gas appliances within the home
- 3 injuries, including 2 utility employees

Investigation



- Explosion occurred when utility employee lit a match to start gas range
- No leaks found within the home prior to ignition

- Bar-holes found high concentrations of gas in soil
- 2in main in street had a circumferential crack



- Importance of continued Public Awareness actions
- Proper training on emergency procedure's
- Continued DIMP efforts to eliminate older parts of system's



- July 18, 1990
- Three stores metered from single basement
- No pressure in goldsmith's natural gas fired torch
- Two explosions in basement
- No injuries and estimated \$20,000 damage

Investigation and Cause

- Plugged torch nozzle
- Pressurized oxygen backfed to gas meter
- Gas meter exploded
- Spark in electrical fuse box ignited gas

49 CFR §192.355(a)

Protection from vacuum or back pressure. If the customer's equipment might create either a vacuum or a back pressure, a device must be installed to protect the system.

Wisconsin Admin. Code PSC § 135.355(aw)

Install a check valve or equivalent if any of the following apply:

- (1) The utilization equipment might induce a back-pressure.
- (2) The gas utilization equipment is connected to a source of oxygen or compressed air.
- (3) Liquefied petroleum gas or other supplementary gas is used as standby and might flow back into the meter. A three-way valve installed to admit the standby supply and at the same time shut off the regular supply, can be substituted for a check valve if desired.

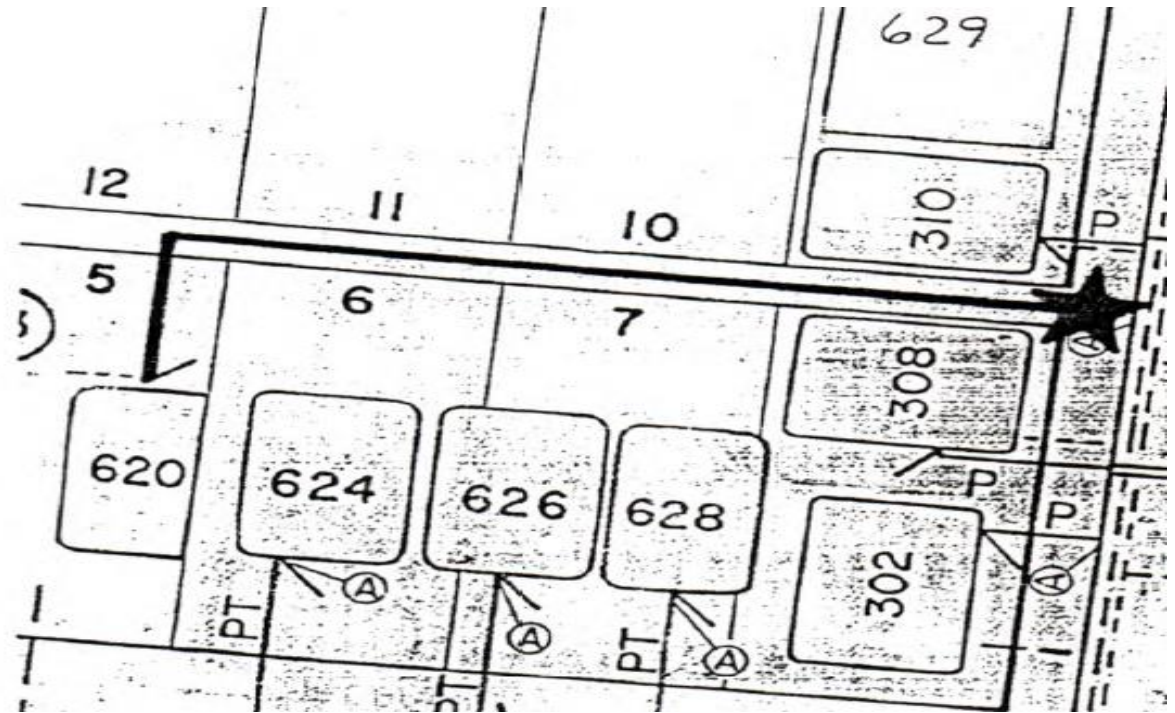
Wausau – Unmarked Service



July 24, 1996

Overview

- Construction contractor hooked steel gas service
- 1 ¼" service squeezed off after operator notification
- Explosion at vacant home next to damaged pipe
- No injuries and estimated \$100,000 damage



Investigation and Cause

- Pipe separated from compression fitting
- Service not located or marked on contractor drawings
- Time between damage and operator notification
- Operator did not check entire area for leak



Stephensville – Bird Feeder Incident



February 3, 2001

- Post driver severed 5/8" service line
- Additional personnel requested for excavation assistance
- Home explosion with residents inside
- One fatality and estimated \$185,000 damage



Investigation and Cause

- Resident did not call Digger's Hotline
- No communication of damaged line's proximity to house
- Operator failed to follow emergency plan



49 CFR § 192.615

(a) Each *operator* shall establish written procedures to minimize the hazard resulting from a *gas pipeline* emergency. At a minimum, the procedures must provide for the following:

(3) Prompt and effective response to a notice of each type of emergency, including the following:

(i) Gas detected inside or near a *building*.

(ii) Fire located near or directly involving a pipeline facility.

(iii) Explosion occurring near or directly involving a *pipeline facility*.

(iv) Natural disaster.

(4) The availability of personnel, equipment, tools, and materials, as needed at the scene of an emergency.

(5) Actions directed toward protecting people first and then property.

(b) Each operator shall:

(1) Furnish its supervisors who are responsible for emergency action a copy of that portion of the latest edition of the emergency procedures established under paragraph (a) of this section as necessary for compliance with those procedures.

(2) Train the appropriate operating personnel to assure that they are knowledgeable of the emergency procedures and verify that the training is effective.

(3) Review employee activities to determine whether the procedures were effectively followed in each emergency.

PSC Contact Information

- **Phone:**
 - General Inquiries: 1-888-816-3831
 - Consumer Affairs: 1-800-225-7729
- **Web Site:** <https://psc.wi.gov/Pages/Home.aspx>
- **Facebook:** <http://www.facebook.com/PSCWisconsin>
- **Twitter:** <http://twitter.com/PSCWisconsin>
- **Address:** 4822 Madison Yards Way
Madison, WI 53705-9100
- **Email:** PSCRECS@wisconsin.gov

Questions?