Connecticut Department of Energy and Environmental Protection

Connecticut Department of
ENERGY &
ENVIRONMENTAL
PROTECTION

Common Findings During Propane Facility Inspections

Kevin Dowling
Public Utilities Engineer
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Connecticut Department of Energy and Environmental Protection

Riser bury depth

Code Requirements:

NFPA 58 - 6.8.4.3

Assembled anodeless risers shall be used to terminate underground polyamide and polyethylene piping systems *above ground*.

NFPA 58 - 6.8.4.1

Polyethylene and polyamide pipe, tubing, and fittings shall be installed outdoors *underground only*.

What we see during inspections…

The following photos show polyethylene services

Riser bury depth

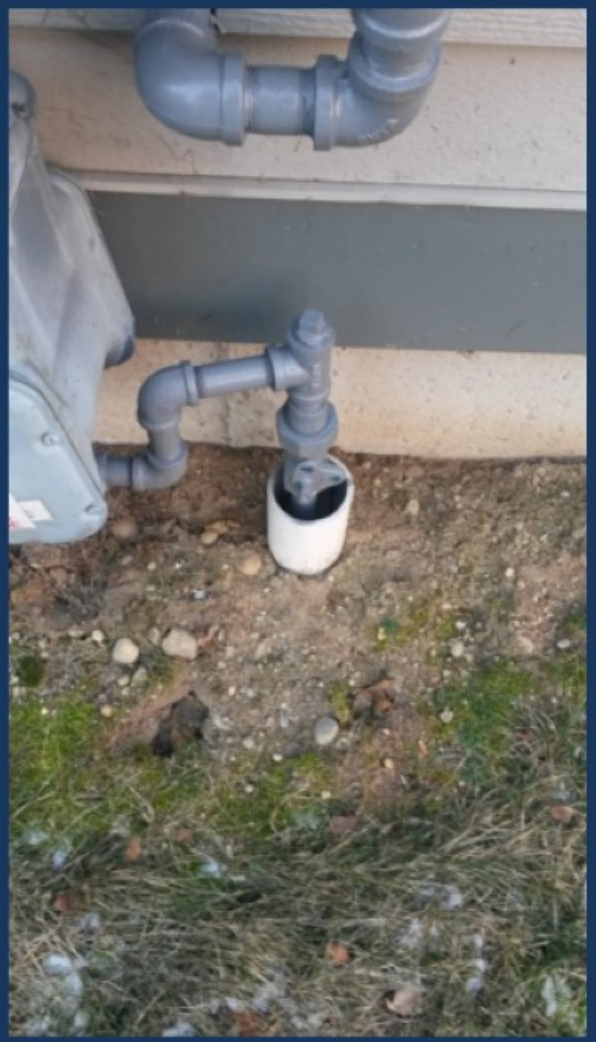
Riser bury depth

Riser bury depth

Plastic pipe in a regulator enclosure

Approaches to correct riser depth issues

Riser bury depth



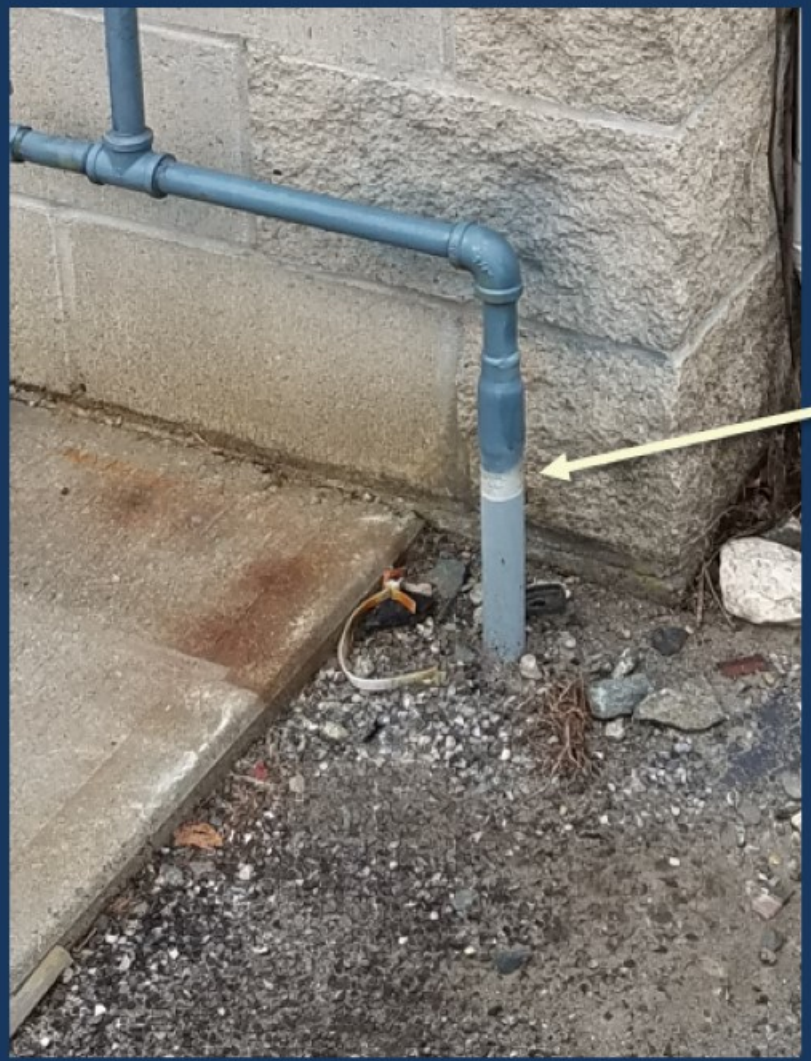
- All above ground steel piping must be inspected for atmospheric corrosion in accordance with 49 CFR 192.481
- This includes sleeved risers

Riser bury depth

- Below ground steel pipe must be coated and cathodically protected
- Adding an anode to risers may protect the steel riser casing, but...
- All cathodically protected piping must be monitored to ensure protection meets the requirements of 49 CFR 192.463
- Cathodic protection readings must be documented

Riser bury depth

- The best way to prevent problems is to install risers at the correct depth
- Follow manufacturer recommended best practices to set riser height



Labelling and signage

Code requirements:

§192.707 Line markers for mains and transmission lines.

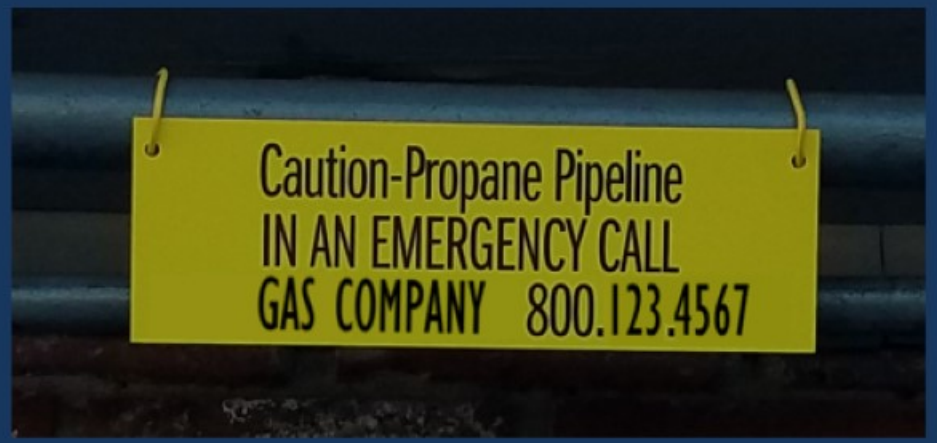
(c) Pipelines above ground. Line markers must be *placed* and *maintained* along each section of a *main* and transmission line that is located *above ground in an area accessible to the public.*

(d) Marker warning. The following must be written legibly on a background of sharply contrasting color on each line marker:

(1) The word "Warning," "Caution," or "Danger" followed by the words "Gas (or name of gas transported) Pipeline" all of which, except for markers in heavily developed urban areas, must be in letters at least 1 inch (25 millimeters) high with ¼ inch (6.4 millimeters) stroke.

(2) The name of the operator and telephone number (including area code) where the operator can be reached at all times.

Labelling and signage



Identifying mains

- A distribution pipeline that supplies more than one service line

Identifying service lines

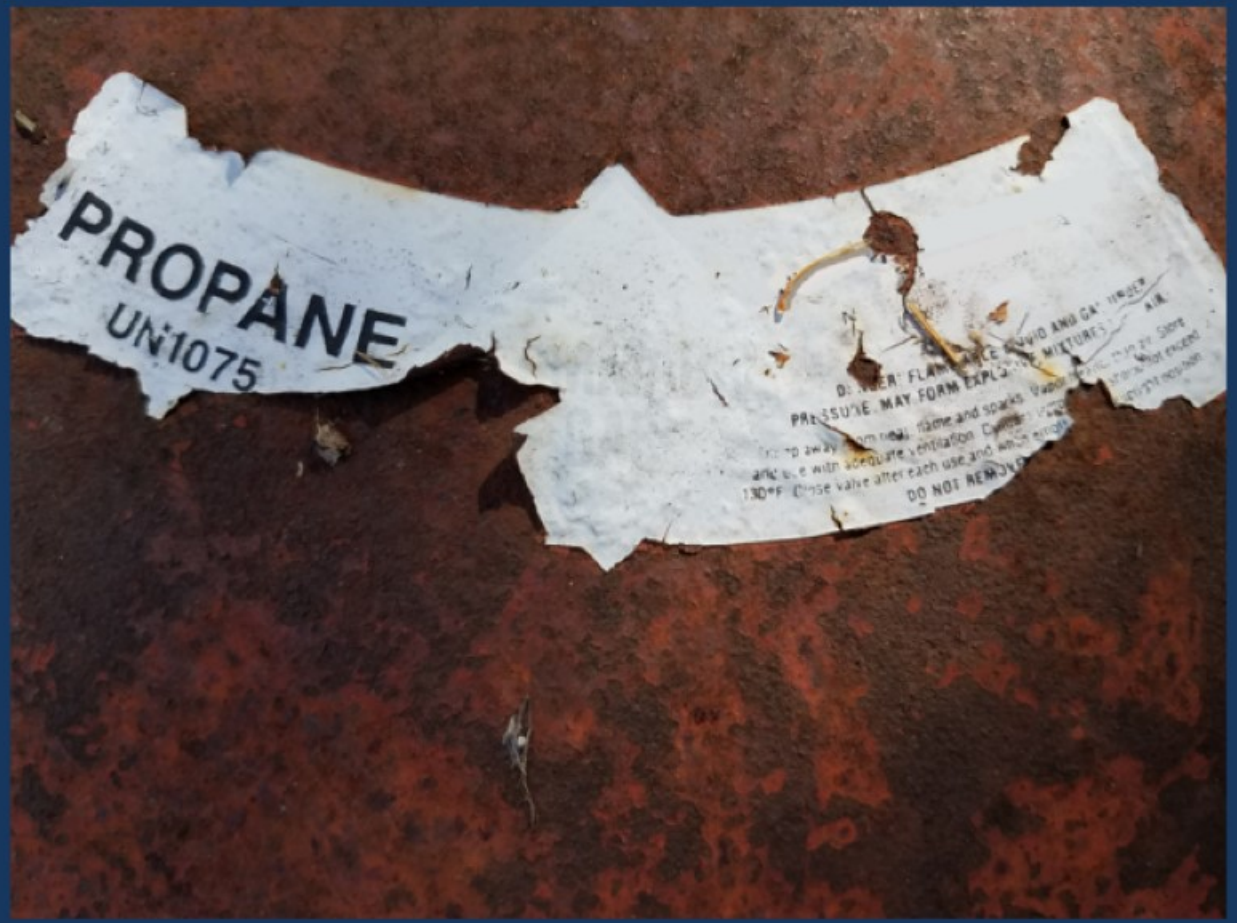
A distribution pipeline that:

- Supplies one customer, or;
- Supplies two adjacent or adjoining customers, or;
- Supplies a meter header or manifold.

Labelling and signage

- Operator name and emergency contact information should be posted on the system
- Stickers eventually fade/become illegible
- Old stickers from other operators are misleading and should be removed or covered

Labelling and signage



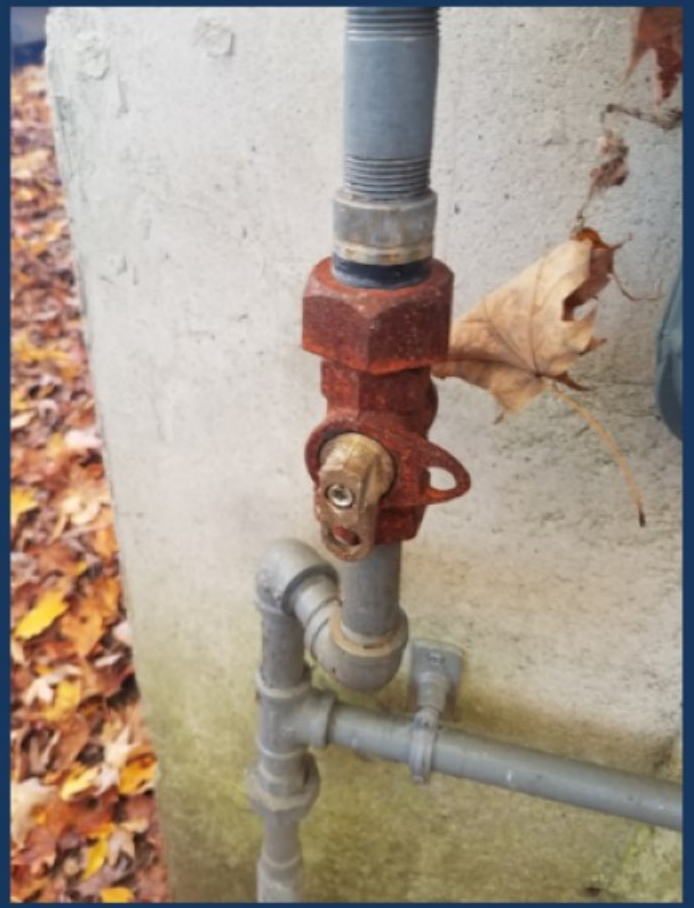
Who would you call to report a gas odor?

Protecting the system and the public

Potential Threats

- Corrosion
- Vehicle damage
- Environmental factors
- Human factors

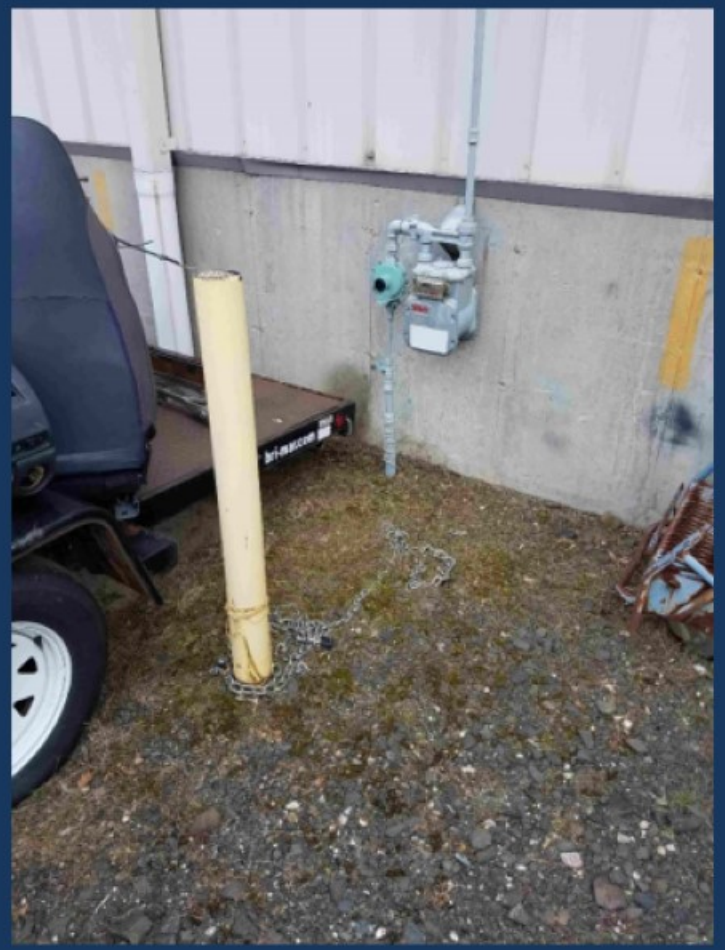
Protecting the system (from corrosion)



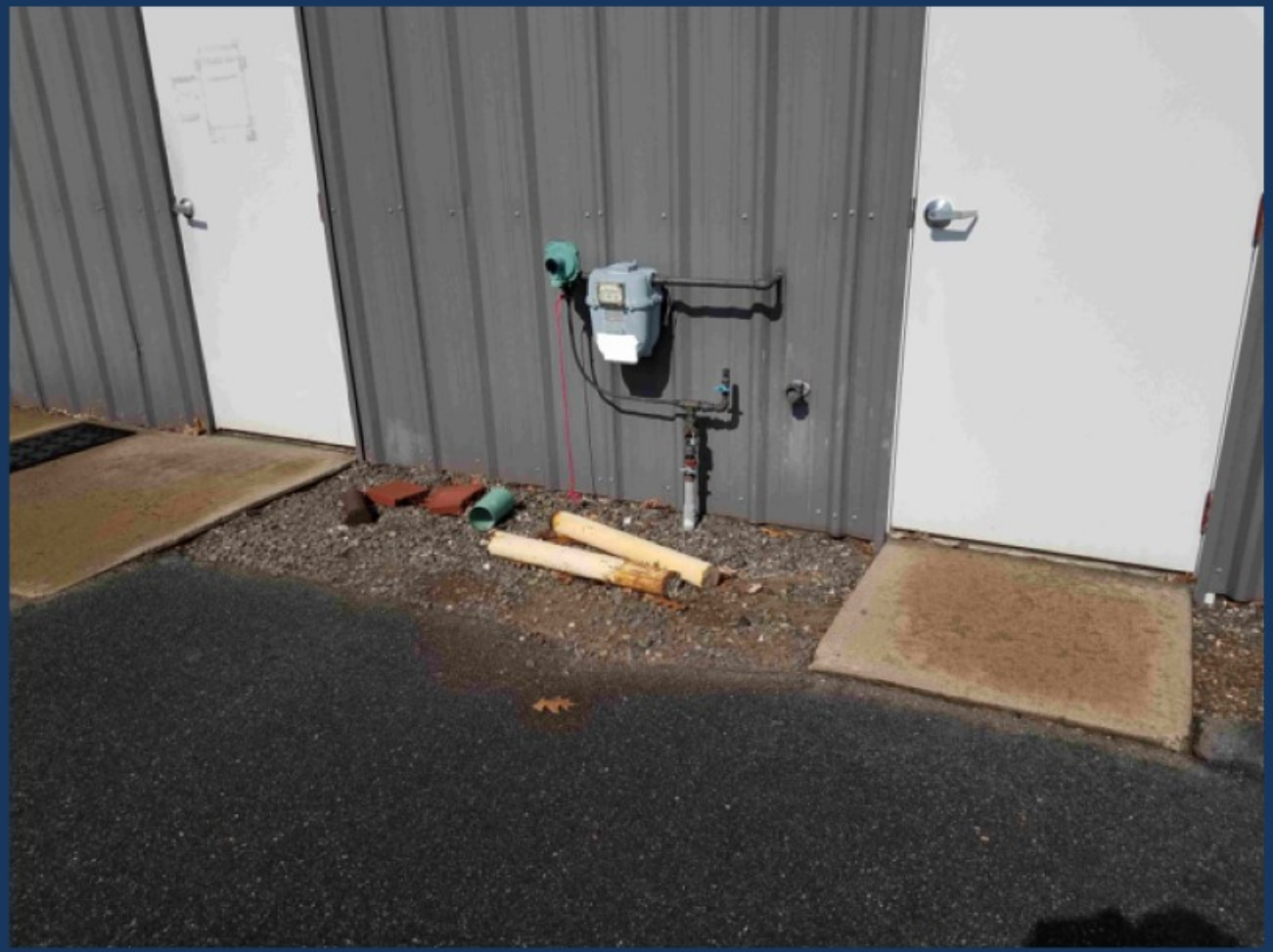
Protecting the system (from corrosion)

An above ground container settling

Protecting the system (from vehicles)



Protecting the system (from vehicles)



Protecting the system (from vehicles)

Protecting the system (from environmental factors)

Can you spot the threat?

Protecting the system (from environmental factors)

This below ground container is installed in a steep embankment

Protecting the system (from environmental factors)

15” – 11” = 4” of cover

NFPA 58 – 6.6.6.1
(A) Containers installed in areas with no vehicle traffic shall be installed **at least 6 in.** (15 cm) below grade.

Protecting the system (from environmental factors)

Protecting the system (from environmental factors)

This is the enclosure for a below ground container… inside is solid ice

How would the system be shut down in an emergency?

Is the pressure regulator going to continue operating effectively?

Pressure relief?

Protecting the system (from environmental factors)

This photo was captured during an inspection on a windy day.

The two containers are manifolded together using steel pipe and two short copper pigtails.

Protecting the system (from environmental factors)

Protecting the system (from human factors)

Protecting the system (from human factors)

Protecting the system (from human factors)

Preparing for unexpected situations

- The system should be designed and maintained to minimize risk
- Consider emergency response during system design
- Operate the system within its design limits

Preparing for unexpected situations

This is an actuated liquid withdrawal valve inside a container enclosure

The way the enclosure is positioned makes access difficult

Preparing for unexpected situations

Preparing for unexpected situations

Preparing for unexpected situations

Preparing for unexpected situations

Questions?

Common Field Findings – JLP Facilities

2021 NEPSR
Virtual Pipeline Safety Seminar

Nathan Dore and Sean Watson

OFFICE OF THE
Maine Public Utilities Commission
STATE OF MAINE

2020 Fieldwork Emphasis

- NFPA 58 Common Issues
- Corrosion
- Personnel Training and Qualifications

Below Grade Coatings

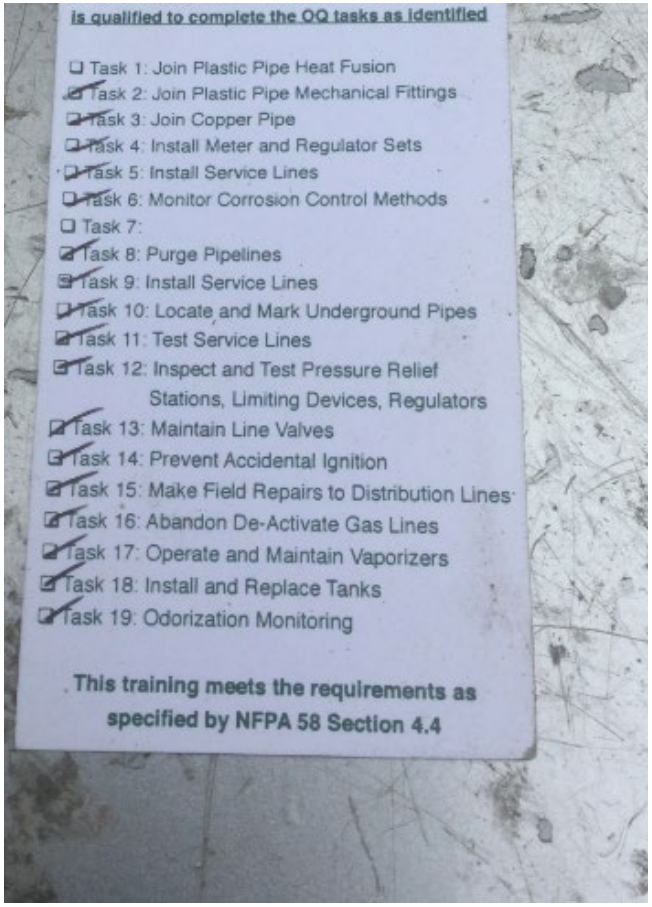
Atmospheric Protection

Corrosion Testing

Investigate Issues / Follow Up

Container Investigations

Personnel Qualifications



is qualified to complete the OQ tasks as identified

- ☐ Task 1: Join Plastic Pipe Heat Fusion
- ☑ Task 2: Join Plastic Pipe Mechanical Fittings
- ☑ Task 3: Join Copper Pipe
- ☑ Task 4: Install Meter and Regulator Sets
- ☑ Task 5: Install Service Lines
- ☑ Task 6: Monitor Corrosion Control Methods
- ☐ Task 7:
- ☑ Task 8: Purge Pipelines
- ☑ Task 9: Install Service Lines
- ☑ Task 10: Locate and Mark Underground Pipes
- ☑ Task 11: Test Service Lines
- ☑ Task 12: Inspect and Test Pressure Relief Stations, Limiting Devices, Regulators
- ☑ Task 13: Maintain Line Valves
- ☑ Task 14: Prevent Accidental Ignition
- ☑ Task 15: Make Field Repairs to Distribution Lines
- ☑ Task 16: Abandon De-Activate Gas Lines
- ☑ Task 17: Operate and Maintain Vaporizers
- ☑ Task 18: Install and Replace Tanks
- ☑ Task 19: Odorization Monitoring

This training meets the requirements as specified by NFPA 58 Section 4.4

Vermont Common Field Issues

Matt Hecklinger
Gas Engineer
Vermont

2004 NFPA 58 & CFR 49 Part 192

VERMONT **Department of Public Service**

Vermont Propane Field Issues Overview

1. No means to locate belowground Plastic Pipe
2. Anodeless risers buried too deep
3. Relief device not pointed vertically downward
4. Reliefs 5’ from ignition source
5. Reliefs 3’ from building openings
6. Vehicular protection (Summer and Winter conditions)
7. Overhead protection from falling snow/ice

No Means to Locate Belowground Plastic Pipe

NFPA 58 6.8.4.6 An electrically continuous corrosion-resistant tracer wire (minimum AWG 14) or tape shall be buried with the polyamide or polyethylene pipe to facilitate locating the pipe.

(A) One end of the tracer wire shall be brought aboveground at a building wall or riser.

(B) The tracer wire or tape shall not be in direct contact with the polyamide or polyethylene pipe.

Example of Means to Locate

Tracer wire coming up an out of the ground to easily identify below ground Plastic Pipe

If your system does not have tracer wire, How does the Company plan to locate the line in the event of a Dig Safe being called in?

- Snake the line and create a detailed map taking ties from fixed objects such as buildings
- Mark the location of the line after snaking
- Locating marker balls that can be installed after snaking to locate the line
- Include a procedure to strength Pressure test lines after dig safe construction is complete to ensure belowground line was not damaged.

Anodeless Riser Buried Depth

Anodeless Riser Bury Depth

NFPA 58 6.8.4.3 Assembled anodeless risers shall be used to terminate underground polyamide and polyethylene piping systems above ground.

- Look for Manufactures demarcated red line for the Maximum Bury Depth
- Tracer Wire, Caution Tape, and the correct buried depth, this checks all the boxes.


VIAL

Relief Pointed Downward

NFPA 58 6.7.4.8(7) The discharge outlet shall be designed, installed, or protected from blockage so it will not be affected by the elements (freezing rain, sleet, snow, ice, mud, or debris) or insects.

- Company added a 90-degree fitting to point the regulator vent downward.
- Install a screen to prevent bugs from entering and clogging relief vent

Relief Device Orientation

- Regulator will not drain water and condensate
- Freeze and damage the Regulator
- Clog relief vent and prevent proper operation

Relief Outlet Pointed Downward

Ensure the Relief piping and outlet does not restrict the relief opening

Relief Vent 5 feet from Ignition Source

NFPA 58 6.7.4.6

The point of discharge shall also be located not less than 5 ft (1.5 m) in any direction away from any source of ignition, openings into direct-vent (sealed combustion system) appliances, or mechanical ventilation air intakes.

5 feet from Ignition Source

Although Propane sinks, an ignition source can not be above the relief vent, unlike the requirement for an opening to a building.

- 5 feet in <u>all directions</u>
- Imagine a 360-degree sphere surrounding the relief vent.

5 feet from Vaporizers

Both Relief vents needed to be piped away from Vaporizer exhaust

- 627 Regulator was piped
- Second stage regulator on Vaporizer

Example of A Job Well Done

Relief Vent 3 Feet From Building Opening (Horizontally)

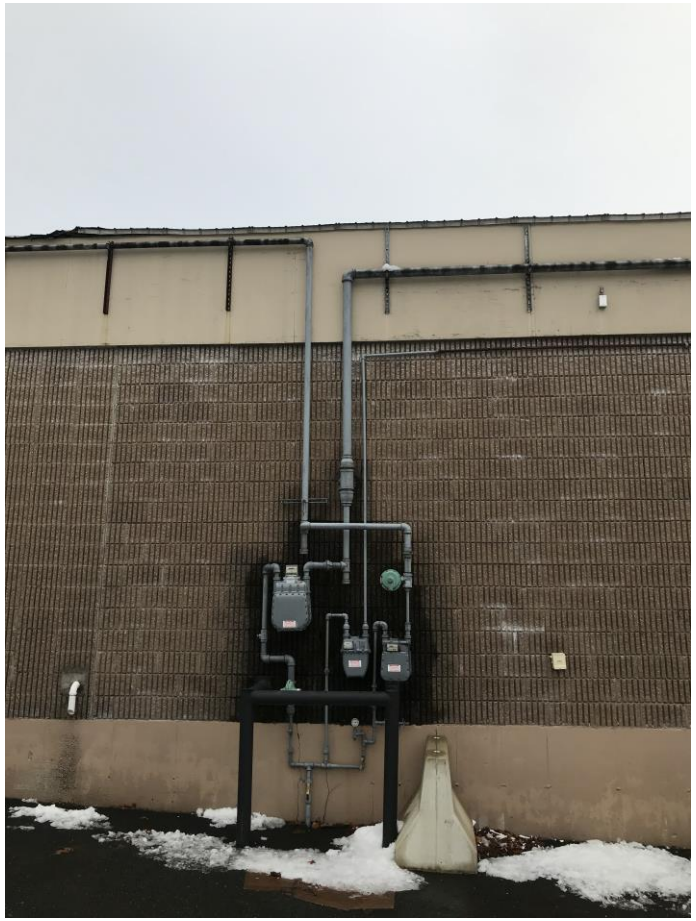
NFPA 58 6.7.4.5 The point of discharge from the required pressure relief device on regulating equipment installed outside of buildings in fixed piping systems shall be located not less than **3 ft (1 m) horizontally** away from any building opening below the level of such discharge, and not beneath any building unless this space is well ventilated to the outside and is not enclosed for more than 50 percent of its perimeter.

Relief Vent 3 Feet From Building Opening (Horizontally)

Compliant Regulator Relief Vent

- Example of a second stage regulator relief being piped 3 feet away from a door.

Protection from Falling Snow & Ice



NFPA 58 6.7.4.4 All regulators for outdoor installations shall be designed, installed, or protected so their operation will not be affected by the elements (freezing rain, sleet, snow, ice, mud, or debris).

- Look for slanted roofs, not required on flat roofs where there is not a risk of falling ice and snow

Before and After

Protection from Falling Snow & Ice

Vehicular Protection at the Tanks (10 Feet)

NFPA 58 6.6.6.1 ASME container assemblies listed for underground installation, including interchangeable aboveground-underground container assemblies, shall be installed underground in accordance with 6.6.6.1(A) through 6.6.6.1(L).

> **(D)** Where containers are installed underground within **10 ft** (3 m) of where vehicular traffic can be expected, protection against vehicular damage shall be provided for the fitting housing, housing cover, tank connections, and piping.

Example of a job well done!

Vehicle Protection of Above Ground Tanks

NFPA 58 6.6.1.2 LP-Gas containers or systems of which they are a part shall be protected from damage from vehicles.

This Code reference covers all segments of the system (Catch All)

Vehicle Protection During the Winter

Consider Plowing and winter snow removal when determining if your system requires Vehicular Protection.

- Will snow be plowed within 10 feet ?
- Plow Trucks push snow well beyond the edge of the pavement
- These conditions can be identified during Patrols, and while filling Tanks during the winter months

Vehicle Protection during the Winter

- Tank Dome was over Ten feet from the pavement.
- After Measuring, it was discovered that plowing was being done within the ten-foot threshold.
- The Department then requested that vehicular protection be installed.

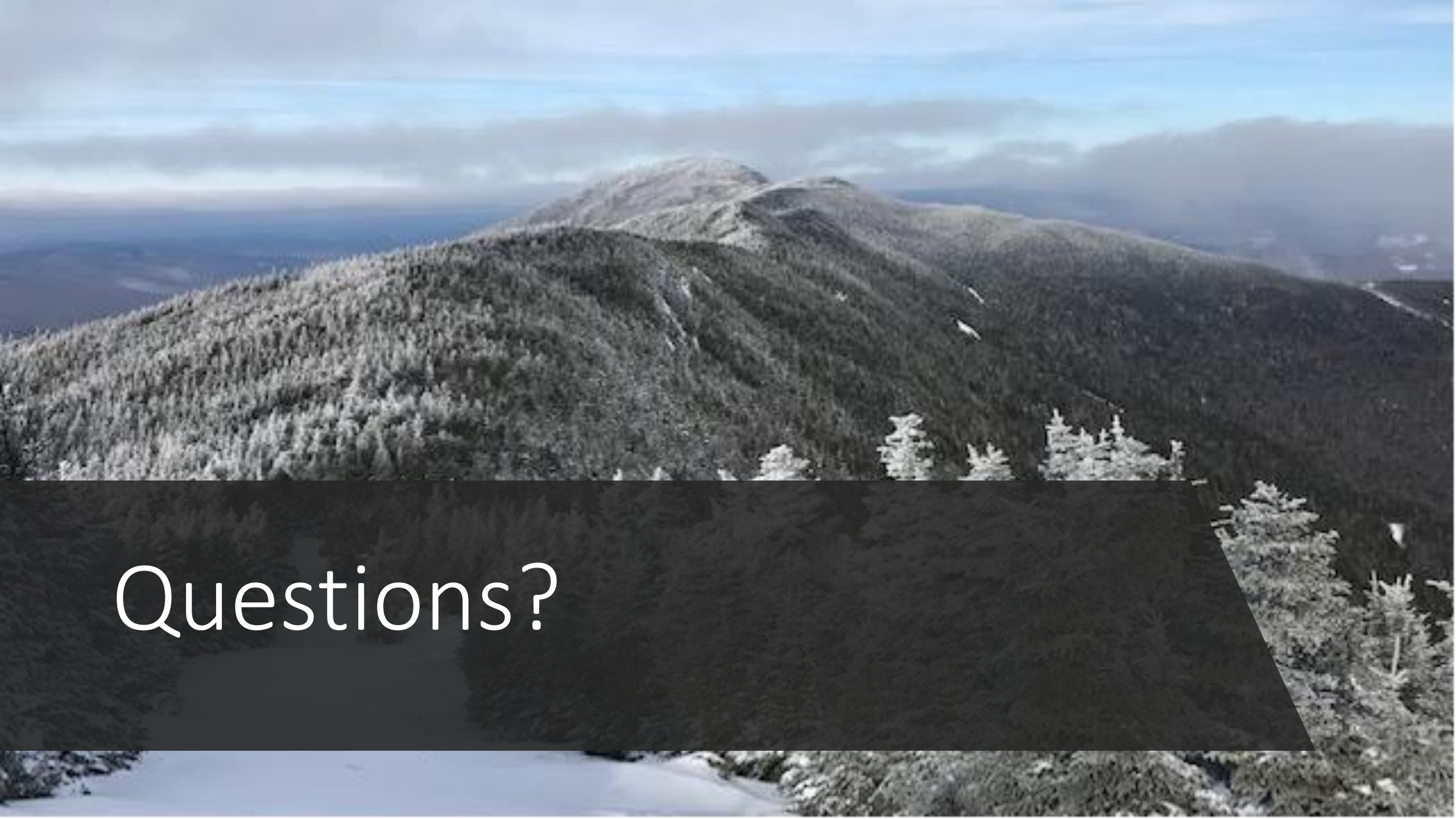
Vehicle Protection of Piping at Building

NFPA 58 6.8.3.10 Aboveground piping shall be supported and protected against physical damage by vehicles.

- Chain link fence is not adequate vehicle protection

Piping Protected at the Building

Examples of what we like to see when we show up to inspect your Company's system


Questions?