Gas Piping Technology Committee (GPTC)

Leak Classification Guidance Material

PHMSA Pipeline Leak Detection, Leak Repair and Methane Emission Reductions - Public Meeting

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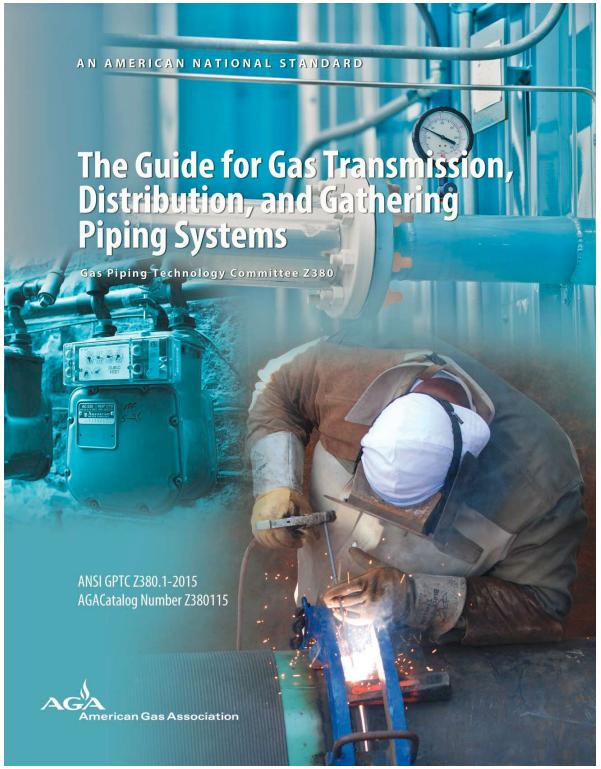
GPTC DP/ER Chair

GAS PIPING technology committee

Who is GPTC?

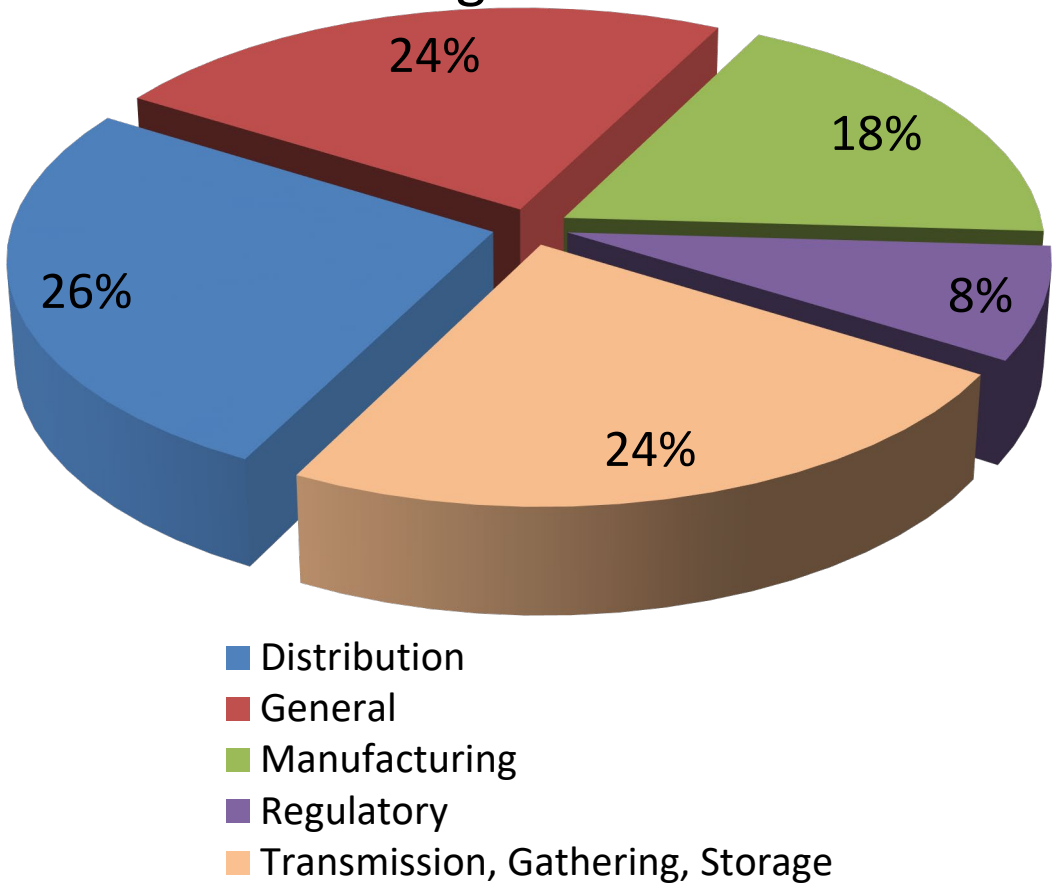
- American National Standards Institute (ANSI) accredited committee
  - ANSI Z380, Gas Piping Technology Committee
    - Consensus process
    - Technically based
    - Independent
    - Members represent their profession
  - Guide is designated as ANSI Z380.1



Who is GPTC?

- Gas Industry
  - Distribution
  - Manufacturers
  - Transmission
  - Storage
  - Gathering
- Gas Industry Regulators
  - Federal and state
- NTSB
- General Interest

Approx. 100 members; 40 Main Body voting members



GPTC History

- The Gas Piping Technology Committee
  - Formed late 1960s
  - First "Guide" published same year as regulations, 1970
  - AGA became secretariat in 1990
  - Provides "Guidance" to operators for compliance with DOT regulations, CFR 49 Parts 191 & 192
  - Often referenced, it is not enforceable
  - Some States have adopted all or portions of the GPTC Guide into their regulations, which they enforce.

"Guide for Gas Transmission, Distribution, and Gathering Piping Systems"

How is Guidance Created?

- The Guide is under continuous review in response to:
  - Rulemaking
  - NTSB reports
  - Member or public request
  - PHMSA/NAPSR request
- Task group creates ad hoc group to write draft guidance (TR's). 100± in progress.
- Includes 4 TR's in response to NTSB recommendations assigned to GPTC

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Who uses the Guide?

- Federal & State regulators
- Transmission (pipeline, gathering and storage) operators
- Distribution (local gas utility, propane) operators
- Gathering line operators
- Municipalities and Master Meter operators
- Many gas operators, both large and small, incorporate sections of the Guide in their O&M manuals.

DIMP Appendix G-192-8

6.2 *Leak Management Program.*

(a) Leak management is an important risk management technique used by natural gas distribution operators to maintain the integrity of their distribution systems. Operators consider many factors specific to their geographical location and their specific distribution system to evaluate the severity of the leaks and determine the appropriate actions to mitigate the risk associated with the leaks. The operator may also utilize industry-recognized guidelines or develop and implement an operator-specific, or state-specific, leak management program.

(b) Although some elements of leak management have evolved with improvements in technology and the development of operation and maintenance codes and standards, distribution operators have used the same basic elements since the early days of the industry.

(c) An effective leak management program has the following basic elements.

Locate the leaks in the distribution system;

Evaluate the actual or potential hazards associated with these leaks;

Act appropriately to mitigate these hazards;

Keep records; and

Self-assess to determine if additional actions are necessary to keep people and property safe.

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How to Use the Guide

GUIDE MATERIAL APPENDIX G-192-11

(See guide material under §§192.3, 192.503, 192.557, 192.615, 192.703, 192.706, 192.723, and 192.941)

GAS LEAKAGE CONTROL GUIDELINES FOR NATURAL GAS SYSTEMS (METHANE)

(See Guide Material Appendix G-192-11A for petroleum gas systems)

CONTENTS

23 pages of guidance including:

- Definitions
- Leakage detection
- Leak investigation & Classification
- Pinpointing
- Available methane detection technologies
- Records & Self Audits

Leak Classification and Action Criteria, Grade 1

- **Grade 1 Leak**
  - A leak that represents an existing or probable hazard to persons or property, and requires immediate repair or continuous action until the conditions are no longer hazardous. See §192.703(c).
- **Action criteria**
  - Requires prompt action* to protect life and property, and continuous action until the conditions are no longer hazardous.

Action Criteria, Grade 1

*The prompt action in some instances may require one or more of the following.

- Implementation of emergency plan (§192.615).
- Evacuating premises.
- Blocking off an area.
- Rerouting traffic.
- Eliminating sources of ignition.
- Venting the area by removing manhole covers, barholing, installing vent holes, or other means.
- Stopping the flow of gas by closing valves or other means.
- Notifying police and fire departments.

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Examples, Grade 1

- Any leak which, in the judgment of operating personnel at the scene, is regarded as an immediate hazard.
- Escaping gas that has ignited.
- Any indication of gas which has migrated into or under a building, or into a tunnel.
- Any reading at the outside wall of a building, or where gas would likely migrate to an outside wall of a building.
- Any reading of 80% LEL, or greater, in a confined space.
- Any reading of 80% LEL, or greater in small substructures (other than gas associated substructures) from which gas would likely migrate to the outside wall of a building.
- Any leak that can be seen, heard, or felt, and which is in a location that may endanger the general public or property.

Leak Classification, Grade 2

- **Grade 2 Leak**
  - **A leak that is recognized as being non-hazardous at the time of detection, but justifies scheduled repair based on probable future hazard.**

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Action Criteria, Grade 2

- Leaks should be repaired or cleared within one calendar year, but no later than 15 months from the date the leak was reported. In determining the repair priority, criteria such as the following should be considered.
  - Amount and migration of gas.
  - Proximity of gas to buildings and subsurface structures.
  - Extent of pavement.
  - Soil type, and soil conditions, such as frost cap, moisture and natural venting.

Action Criteria, Grade 2

- Grade 2 leaks should be reevaluated at least once every six months until cleared. The frequency of reevaluation should be determined by the location and magnitude of the leakage condition.

Action Criteria, Grade 2

- Grade 2 leaks may vary greatly in degree of potential hazard. Some Grade 2 leaks, when evaluated by the above criteria, may justify scheduled repair within the next 5 working days. Others will justify repair within 30 days. During the working day on which the leak is discovered, these situations should be brought to the attention of the individual responsible for scheduling leak repair.

- On the other hand, many Grade 2 leaks, because of their location and magnitude, can be scheduled for repair on a normal routine basis with periodic reinspection as necessary.

Examples, Grade 2

- ***A. Leaks Requiring Action Ahead of Ground Freezing or Other Adverse Changes in Venting Conditions.***
  - **Any leak which, under frozen or other adverse soil conditions, would likely migrate to the outside wall of a building.**

Examples, Grade 2

B. Leaks Requiring Action Within Six Months

- Any reading of 40% LEL, or greater, under a sidewalk in a wall-to-wall paved area that does not qualify as a Grade 1 leak.
- Any reading of 100% LEL, or greater, under a street in a wall-to-wall paved area that has significant gas migration and does not qualify as a Grade 1 leak.
- Any reading less than 80% LEL in small substructures (other than gas associated substructures) from which gas would likely migrate creating a probable future hazard.
- Any reading between 20% LEL and 80% LEL in a confined space.
- Any reading on a pipeline operating at 30% SMYS, or greater, in a class 3 or 4 location, which does not qualify as a Grade 1 leak.
- Any reading of 80% LEL, or greater, in gas associated substructures.
- Any leak which, in the judgment of operating personnel at the scene, is of sufficient magnitude to justify scheduled repair.

Leakage Classification and Action Criteria, Grade 3

- **Grade 3 Leak**
  - A leak that is non-hazardous at the time of detection and can be reasonably expected to remain non-hazardous.
- **Action criteria**
  - These leaks should be reevaluated during the next scheduled survey, or within 15 months of the date reported, whichever occurs first, until the leak is regraded or no longer results in a reading.

Examples, Grade 3

- ***Leaks Requiring Reevaluation at Periodic Intervals***
  - **Any reading of less than 80% LEL in small gas associated substructures.**
  - **Any reading under a street in areas without wall-to-wall paving where it is unlikely the gas could migrate to the outside wall of a building.**
  - **Any reading of less than 20% LEL in a confined space.**

Thank You

- GPTC would like to thank the PHMSA Team and in particular John Gale and Chris McLaren for the opportunity to share our Guide Material on Leak Classification and Action criteria and on operator's Leak Management Program.

GPTC Contact

- Guide and committee information available at https://www.aga.org/events-community/committees/ansi-asc-gptc-z380---gas-piping-technology/

ANSI GPTC Z380.1-2018

AGA CATALOG NUMBER Z380118

- Contact Betsy Tansey, GPTC Secretary (GPTC@aga.org), Secretary, with any questions or to join.