



AGF & DIGIT

Presented by

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for

**National Association of
Pipeline Safety
Representatives (NAPSR)**

April 2008



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Initial Study Effort

Safety Performance and Integrity of the Natural Gas Distribution Infrastructure

- Sponsor: American Gas Foundation (AGF)
- Report issued **January 2005**
- Project overseen by Distribution Infrastructure Government-Industry Team (DIGIT)

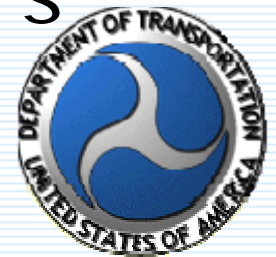


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DIGIT

- ❑ AGF (regulated, privately-owned distribution operators)
- ❑ American Public Gas Association (APGA) (municipally-owned gas operators)
- ❑ U.S. Department of Transportation's Office of Pipeline Safety (OPS) (safety regulators)



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DIGIT

- National Association of Pipeline Safety Representatives (NAPSR)
(State regulators who oversee pipeline safety)
- National Association of Regulatory Utility Commissioners (NARUC)
(staff representing State Commissioners who regulate gas operators)



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Purpose

1. a detailed analysis of the natural gas distribution industry's safety performance;
2. an overview of current regulations and industry practices that address threats to the natural gas distribution infrastructure;



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Purpose

3. a description of the unique characteristics that differentiate natural gas transmission pipelines from distribution pipelines; and
4. identification of industry and government initiatives that are currently in-place to ensure continual improvement in regulation and practices affecting distribution integrity



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Basic Information

- Characteristics of transmission lines and distribution lines are **significantly different**
 - Material
 - Stress level
 - Rupture vs. leak
 - Operating pressure
 - Joining method



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Basic Information

- Leak survey method
 - With/without gas detector
- Nature of the system
 - Point-to-point over long distances vs. dense, integrated network
- Rural vs. urban - Population density
 - 78% of transmission lines in Class 1 – lowest population density areas
 - Almost all distribution lines are located in areas adjacent to businesses and residences



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Basic Information

- Vintage
- Environment
 - Soils
 - Topography
 - Weather
 - Agricultural activity



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Main Data Source

- Data analysis period used was **1990-2002**
- Statistics on incidents derived from **Federal incident database**
(required filings – 49 CFR 191)
- **National data** can be subjected to **statistical analysis** for trends
- Trends are up or down - “Flat” trends are “indeterminate”



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Data Limitation

- ❑ Subsets of data (by State, by cause, etc.) often cannot be subjected to statistical analysis because of sparsity of data (too few incidents)
- ❑ Some data incorrectly classified
- ❑ Some data is incomplete preventing full identification of some important issues



Data Importance

- Analysis of incidents that are considered **Serious Incident** – those that involve Fatalities or Injury - may be more significant than analysis of all incidents
- However, a **smaller data base** means that **analysis** may be more **limited**



Significant Findings

- Regarding **Serious Distribution** Incidents for 1990 through 2002, the report states that there is:
 - “a statistically determined **decreasing trend**, with a decrease of approximately 40%”¹
- Approximately **27%** of all distribution serious incidents were categorized as “**Other**” and “**No Data**”

¹ p. 8-1



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Significant Findings

- **Outside force** damage comprises:
 - 1st and 2nd party damage (operator and/or operator's agent)
 - 3rd party damage (damage by independent excavators)
 - Earth movement (e.g. landslide/washout, subsidence, frost heave, earthquake, etc.)
 - Lightning and fire; and
 - Other



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Significant Findings

- Damage by outside force showed a “statistically determined decreasing trend, with a decrease of approximately 50%”¹
- Damage by outside force was the leading cause of Distribution Serious Incidents accounting for 47% of the serious incidents

¹ p. 8-1



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Significant Findings

- The predominant component of outside force damage was 3rd party damage which accounted for nearly 35% of the total serious incidents
- However, 65% of the total serious incidents was due to causes other than 3rd party damage (vehicle damage, fire first, other, natural forces and operator error)



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Significant Findings

- Distribution and transmission total incidents per mile of pipe are approximately equal as of 2002
- Serious Incidents per mile of pipe for the period 1990-2002 are approximately the same for distribution and transmission systems
- There are 5-6 times as much distribution pipe as transmission line



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Significant Findings

□ The causes of Distribution Serious Incidents are:

- Outside force 46.6%
- Other 26.6%
- Construction/operator error 9.8%
- Accidentally by operator 9.8%
- Corrosion 6.5%
- No data 0.7%
- Total 100.0%



Significant Findings

- The material involved in Distribution Serious Incidents & total inventory:
 - Polyethylene plastic . 37.3% ... 45.7%¹
 - Steel 34.4% ... 50.2%
 - Cast iron 23.9% ... 3.8%²
 - Miscellaneous 4.3% ... 0.3%
 - Total 99.9% ... 100.0%

¹ includes all plastic

² includes cast and wrought iron



Industry Practices

- A survey was performed on 36 operators
- Of the 36, 23 responded
- Some of the operators did not answer certain questions



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Industry Practices

- Based on the survey:
 - Operators use **additional preventive and mitigative measures** that exceed the requirements of the federal regulations
 - Over 80% of the operators in the survey use some form of **risk ranking**
 - Over 60% of the operators in the survey have planned **replacement** programs for **cast iron**



Industry Practices

- Almost 80% of the operators in the survey have planned replacement programs for bare steel
- None of the survey operators reported any gaps between the specific threats to distribution integrity management and industry practices



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NAPSR Position

- “the AGF Study, in the majority, has resulted in a **balanced report** with supported conclusions while addressing the concerns of safety regulators”



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NAPSR Position

- "NAPSR believes that the gap analysis in the AGF report considers only whether existing regulations or practices address all threats applicable to distribution pipeline systems, not whether these are sufficient or broadly applied throughout the industry



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NAPSR Position

- "The report concludes regulations and *practices* do *exist* that address all applicable threats. This conclusion is *useful, but not sufficient.*"



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NAPSR Position

- "NAPSR concludes that, while the resulting study is a useful first step, there is a *need for additional work*."
- Subsequently, an expanded investigation was performed. The result of was the Integrity Management for Gas Distribution Report of *Phase 1* Investigations.



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Availability of Study

- The AGF DIGIT Safety Performance and Integrity of the Natural Gas Distribution Infrastructure report is a ***part of the Docket***
- It can be found at:
<http://www.cycla.com/opsiswc/docs/s8/p0069/AGFStudy.pdf>



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