APPENDIX G

Industry Practices Questionnaire
Compilation of Responses

Introduction

The American Gas Foundation (AGF) is currently conducting a study to identify ways to enhance the safety of the Nation's natural gas distribution pipeline infrastructure, specifically gas mains and services. The purpose of the study is to examine the adequacy of current regulations and practices in maintaining the integrity of that infrastructure and to identify areas where improvements might be required. The desired result of the study is to provide a technically-based viewpoint as to current state of regulations, practices, technologies and processes that ensure the integrity of the Nation's natural gas distribution pipeline infrastructure.

As part of the study, the AGF contractor, through input from both the Distribution Integrity Steering Group (DISG) and the Distribution Infrastructure Government and Industry Team (DIGIT), developed an industry questionnaire that solicited operator input on various distribution infrastructure integrity issues. This questionnaire was distributed to a group of 36 operators (24 local distribution companies (LDCs) and 12 municipal gas operators (Municipals). The operators were identified through the joint effort of DISG and DIGIT. Subsequent to the initial email, two additional emails were delivered: the first, including Question 2.08a which was omitted in error from the questionnaire, and the second, clarifying that Questions 3.01 through 3.16 were soliciting information on current operator measures (practices and procedures) that exceed the minimum pipeline safety standards of 49 CFR 192.

23 (15 LDCs and 8 Municipals) of the 36 operators responded to the questionnaire. These operators serve a total of just under 17,000,000 customers, ranging from 3,000 to over 3,200,000 customers individually. The gas distribution infrastructure owned and operated by these 23 operators includes over 252,000 miles of distribution main and 16,000,000 services in 26 states. All five National Association of Pipeline Safety Representatives (NAPSR) regions are included in the service territories of the 23 operators who responded. More statistics regarding the 23 responders to the survey can be found in section 7 of the summary.

This document presents a summary of the responses from the questionnaire. The written narrative responses captured were, in essence, verbatim and only slightly modified for grammar purposes only. Also, references to state regulations that exceed the minimum pipeline safety standards of 49 CFR 192 are from the responses to the questionnaire, not as a result of a comprehensive review by the AGF contractor of state pipeline safety regulations.

Because operators may consider some of the data and information included in their response to the questionnaire to be business sensitive, the AGF contractor conducted the survey in the strictest of confidence and will maintain the anonymity of the responses. For this reason, Question 4.02 is being reported without any reference to states covered and Section 7 information was presented above in summary form.

This summary of responses is being distributed to the 23 respondents and members of both DISG and DIGIT. Until the results and findings of the survey are reported in the Final Report, all data and information is to be considered confidential and restricted to committee purposes only and should not be shared with anyone outside of those to whom this summary report was sent.

The questions in Part 1 (Questions 1.01 through 1.04) sought opinions and factual information from the operators as to the major differences between gas transmission pipelines and gas distribution infrastructure.

Question 1.01

The question solicits operator inputs as to the major differences between transmission pipelines and distribution infrastructure. The above table lists 4 such unique differences (type of system, type of materials, system pressures and failure mechanism).

Are there other differences that you believe should be emphasized in the report in differentiating between transmission pipelines and distribution infrastructure?

13 responders answered this question.

10 responders did not.

	Highly Significant	Medium Significance	Low Significance
Location	6	2	
Customer Connections	1	2	
Depth of Cover	1		
Jurisdictional Piping not Owned By Operator	1		
Public Awareness / Communication		1	
Type of Cathodic Protection		1	
Size & Number of Construction Projects	1		
O&M Manual / Practices		1	
Emergency Response	1		
Safety risk per mile of pipeline/main		1	
Type of Joining (weld, fusion, mechanical)		1	
Leak risk factor	1		
Use of line markers		1	
Flow Control	1		

Question 1.02
How would you rank the differences between transmission pipelines and distribution infrastructure in level of significance?

All 23 responders answered this question.

How would you rank the differences between transmission pipelines and distribution infrastructure in level of significance?			
	Highly Significant	Medium	Low Significance
Type of System	15	6	2
Type of Materials	18	4	1
System Pressures	22	1	0
Typical Failure Mechanism	16	6	1

Question 1.03

As a result of analysis of gas pipeline incident data, ASME B31.8S identifies 22 root causes. Each of these root causes is represented as a threat to pipeline integrity. One of the 21 causes is "other." ASME B31.8S groups the remaining 21 threats into 9 categories. Excluding the threat of stress corrosion cracking (not applicable to distribution infrastructure) and expanding the threats of external corrosion, manufacturing related defects, construction related defects and weather related, we are asking your input on the following 14 threats to distribution infrastructure.

Please indicate with an "X" to what level you believe the threat category is to distribution infrastructure integrity.

All 23 responders answered this question.

	Significant Threat	Medium Threat	Low / No Threat	Not Applicable
1a. External Corrosion coated & wrapped steel pipe	5	11	7	
1b. External Corrosion bare steel pipe	11	8	3	1
1c. External Corrosion graphitization of cast iron pipe	10	5	6	2
2. Internal Corrosion	2	3	18	
3a. Manufacturing Related Defects - steel pipe *(i.e., defective pipe, pipe seam, etc.)*	2	3	18	
3b. Manufacturing Related Defects - plastic pipe *(i.e., pin holing, early generation plastic, etc.)*	2	5	16	
4a. Construction Related Defects - steel pipe *(i.e., defective welds, stripped threads, installation error)*	2	9	12	
4a. Construction Related Defects - plastic pipe *(i.e., fusion, mechanical joints, installation error, backfill)*	3	10	10	
5. Equipment Malfunction *(i.e. gasket, o-ring, control/relief, valve seal, service riser)*	4	4	15	
6. Excavation / Mechanical Damage *(i.e., 1st, 2nd or 3rd party damage, vandalism, etc.)*	20	2	1	
7. Incorrect Operational Procedures and Operator Error	3	5	15	
8a. Outside Force and Weather Related - steel *(i.e., cold weather, earth movement, floods, electrical surge)*	3	8	12	
8b. Outside Force and Weather Related - cast iron *(i.e., cold weather, earth movement, floods, electrical surge)*	12	6	2	3
8c. Outside Force and Weather Related - plastic *(i.e., cold weather, earth movement, floods, electrical surge)*	3	3	17	

Question 1.04
In addition to the threat categories listed in Question 1.03, what additional threats do you feel are there to distribution infrastructure integrity?

Please indicate with an "X" to what level you believe the threat category is to distribution infrastructure integrity.

8 responders answered this question.
15 responders did not.

	Significant Threat	Medium Threat	Low Threat
192.477: Internal Corrosion … wet gas 192.507: Internal Corrosion … liquid in pipeline			1
192.507: Environmental 192.629: Environmental			1
192.611: Population density increase.		1	
Earthquake			1
3rd party damage		1	
Vandalism			1
Cast iron joint leaks / cracks	2		
Gas Migration	1		
Stray currents on cast iron and steel pipe		1	1
Outside force and weather related forces – exposed meter sets		1	

The questions in Part 2 solicited input from the operators as to the adequacy of current federal regulations in addressing the threats against Nation's gas distribution infrastructure. Included were questions related to state and/or local regulations the go beyond the minimum requirements of the federal regulations.

For each sub part of 49 CFR 192, the questionnaire solicited responses on the following three questions.

In the matrix below, please place an "X" under each of the threats that you feel the individual section addresses.
Note: A section could address any or all of the 16 threats

		External Corrosion C & W Pipe	External Corrosion Bare Steel Pipe	External Corrosion Cast Iron Pipe	Internal Corrosion	Manuf. Related Defects Steel Pipe	Manuf. Related Defects Plastic Pipe	Const. Related Defects Steel Pipe	Const. Related Defects Plastic Pipe	Equipment Malfunction	Excavation/Mechanical Damage	Incorrect Operations & Operator Error	Outside Force Steel Pipe	Outside Force Cast Iron Pipe	Outside Force Plastic Pipe	Additional Threat (1.04)	Additional Threat (1.04)

Of the sections in the above matrix that you checked as addressing distribution integrity which, if any, in your opinion are out dated or add little or no value to the integrity of the distribution infrastructure?

Does your state regulatory body require more stringent requirements for any of the sections in above matrix?
Note: If you operate in multiple states, please answer this question for each state separately. If you operate in more than 3 states, please respond for the 3 states in which you operate the most facilities.

49 CFR 192 defines minimum safety standards for gas piping systems. The following tables show the 23 respondents answers as to which threats to distribution infrastructure the current regulation addresses. Only those regulations that relate to distribution infrastructure integrity are included in the matrixes.

The following table consolidates the responses of the 23 responders by Subpart. An "X" designates that ten or more responders indicated that individual sections within the Subpart address the that specific threat to distribution infrastructure integrity. Total of responses by individual paragraphs in 49 CFR 192 can be found individually in the tables under 2.01a through 2.14a.

	Threat to Distribution Infrastructure													
	External Corrosion C & W Pipe	External Corrosion Bare Steel Pipe	External Corrosion Cast Iron Pipe	Internal Corrosion	Manuf. Related Defects Steel Pipe	Manuf. Related Defects Plastic Pipe	Const. Related Defects Steel Pipe	Const. Related Defects Plastic Pipe	Equipment Malfunction	Excavation/Mechanical Damage	Incorrect Operations & Operator Error	Outside Force Steel Pipe	Outside Force Cast Iron Pipe	Outside Force Plastic Pipe
Subpart A - General	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Subpart B – Materials	X	X	X	X	X	X	X					X	X	X
Subpart C - Pipe Design					X	X		X				X	X	X
Subpart D - Design of Pipeline Component					X	X	X	X	X	X	X	X	X	X
Subpart E - Welding of Steel in Pipelines							X				X			
Subpart F - Joining of Materials Other Than by Welding							X	X			X	X	X	X
Subpart G - General Construction Requirements for Transmission Lines & Mains					X	X	X	X		X	X	X	X	X
Subpart H - Customer Meters, Service Regulators, & Service Lines	X					X	X	X	X	X	X	X	X	X
Subpart I - Requirements for Corrosion Control	X	X	X	X			X				X			
Subpart J - Test Requirements					X	X	X	X			X			
Subpart K - Uprating	X	X		X	X	X	X	X	X	X	X			
Subpart L - Operations	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Subpart M - Maintenance	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Subpart N - Qualification of Pipeline Personnel	X	X	X	X			X	X	X	X	X	X	X	X

Sub Part A – General

Question 2.01 a

22 responders answered this question.

1 responder did not.

		Threat to Distribution Infrastructure													
		External Corrosion C & W Pipe	External Corrosion Bare Steel Pipe	External Corrosion Cast Iron Pipe	Internal Corrosion	Manuf. Related Defects Steel Pipe	Manuf. Related Defects Plastic Pipe	Const. Related Defects Steel Pipe	Const. Related Defects Plastic Pipe	Equipment Malfunction	Excavation/Mechanical Damage	Incorrect Operations & Operator Error	Outside Force Steel Pipe	Outside Force Cast Iron Pipe	Outside Force Plastic Pipe
192.5	Class locations	6	5	3	6	5	4	5	4	4	10	5	7	5	6
192.13	General	15	14	11	13	14	14	14	14	13	15	17	15	11	13
192.14	Conversion to service subject to this part	15	14	8	14	15	9	16	9	7	9	10	11	6	7
192.16	Customer notification	14	14	9	8	5	6	6	6	3	14	3	8	5	10

Question 2.01b

8 responders answered this question.

15 responders did not.

192.13	Regulations are ambiguous and do not provide proper guidance.
192.5	Does not have value regarding distribution integrity.
192.5	Does not impact distribution piping.
192.5	Class locations primarily make sense in transmission context.
192.5 & 192.14	These sections generally apply to transmission, not distribution piping.
192.16	This section generally applies to customer houselines, not operator's distribution infrastructure, unless the operator is required by the state to do so.
192.14	No explanation
192.3	Yes, actually 2 sections in Subpart "A" not listed above – Specifically the definition of distribution line. As noted in section 1, a distinguishing difference between a transmission line and distribution line should be the failure mechanism. Respectively, these are rupture versus leak. The definition of the two should be more appropriately reflect distinction.
192.11	This section establishes requirements based on ANSI/NFPA 58 and 59. Specific to distribution systems, , NFPA 58 is inappropriately too restrictive. OPS should allow much of its own code requirements for pressure and relief
192.14.	The company never converts existing pipelines previously used for other purposes in the distribution of natural gas.

Question 2.01c
4 responders answered this question.
19 responders did not.

MA	Section 192.5 (a)	Gas pipelines which are to be operated at pressures in excess of 200 psig shall not be installed within 40 feet of any building intended for human occupancy unless class 4 construction design criteria are met, or such other design criteria as the D.P.U. shall require.
	Section 192.5 (b)	For the purpose of 220 CMR 101.00, every gas piping system shall be designed, constructed, tested, operated, and maintained using a class 3 location as a minimum class location designation.
NJ	Section 192.5	Excavation damage.

NJ	Section 192.13	State Board of Public Utilities must approve certain changes to Company manuals and procedures.
WY	Section 192.16	Requires Company to monitor cathodic protection and leak survey certain (customer-owned) buried fuel lines.

Sub Part B – Materials

Question 2.02a
22 responders answered this question.
1 responder did not.

		Threat to Distribution Infrastructure													
		External Corrosion C & W Pipe	External Corrosion Bare Steel Pipe	External Corrosion Cast Iron Pipe	Internal Corrosion	Manuf. Related Defects Steel Pipe	Manuf. Related Defects Plastic Pipe	Const. Related Defects Steel Pipe	Const. Related Defects Plastic Pipe	Equipment Malfunction	Excavation/Mechanical Damage	Incorrect Operations & Operator Error	Outside Force Steel Pipe	Outside Force Cast Iron Pipe	Outside Force Plastic Pipe
192.53	General	13	11	10	15	16	15	8	6	6	4	5	12	10	12
192.55	Steel pipe	9	9	2	9	22	4	8	3	4	7	6	10	2	2
192.59	Plastic pipe	1	1	2	2	5	21	3	7	5	6	6	2	2	10
192.63	Marking of materials	3	3	3	2	12	11	4	5	2	3	8	3	3	3

Question 2.02b
2 responders answered this question.
21 responders did not.

192.53	Lack of clarity.
1963(b)	This subsection is outdated; field die-stamping is not a industry practice.

Question 2.02c
1 responder answered this question.
22 responders did not.

AZ	Section 192.59	ABS plastic pipe is specifically prohibited (ACC Code 14-5-202).
	Section 192.53	Aluminum pipe is specifically prohibited (ACC Code 14-5-202).

Sub Part C - Pipe Design

Question 2.03a

22 responders answered this question.

1 responder did not.

		Threat to Distribution Infrastructure													
		External Corrosion C & W Pipe	External Corrosion Bare Steel Pipe	External Corrosion Cast Iron Pipe	Internal Corrosion	Manuf. Related Defects Steel Pipe	Manuf. Related Defects Plastic Pipe	Const. Related Defects Steel Pipe	Const. Related Defects Plastic Pipe	Equipment Malfunction	Excavation/Mechanical Damage	Incorrect Operations & Operator Error	Outside Force Steel Pipe	Outside Force Cast Iron Pipe	Outside Force Plastic Pipe
192.103	General	4	3	2	3	8	7	8	5	2	9	5	17	11	16
192.105	Design formula for steel pipe	5	5	1	3	10	2	9	0	5	2	7	7	2	1
192.107	Yield strength (S) for steel pipe	4	4	2	2	11	2	7	0	2	1	6	6	1	1
192.109	Nominal wall thickness (t) for steel pipe	5	4	2	2	10	1	7	0	2	1	5	6	1	0
192.111	Design factor (F) for steel pipe	5	5	1	3	12	2	8	0	3	4	8	9	1	0
192.113	Longitudinal joint factor (E) for steel pipe	4	4	1	1	12	1	7	0	2	2	7	6	1	0
192.115	Temperature de-rating factor (T) for steel pipe	4	3	1	1	10	1	8	0	2	2	7	8	2	0
192.121	Design of plastic pipe	0	0	0	0	1	12	1	9	3	2	5	0	0	7
192.123	Design limitations for plastic pipe	0	0	0	0	1	12	1	10	3	2	5	0	0	7
192.125	Design of copper pipe	1	1	1	8	2	1	1	1	2	1	6	1	1	0

Question 2.03b

4 responders answered this question.

19 responders did not.

192.125 Copper not applicable to NFG system.

192.125	Copper is no longer used.
192.123	There now exists over 30 years experience in the use of plastics for the gas industry. It has proven to be a superior material for the distribution of gas. As such, it should not be limited by an arbitrarily established upper pressure limit. The upper pressure limit should be based on sound engineering values and principles which are currently established and available.
192.125	Obsolete because the company does not use copper pipe in any installation in the distribution system.

Question 2.03c
None of the responders answered this question.

Sub Part D - Design of Pipeline Components

Question 2.04a

22 responders answered this question.

1 responder did not.

		Threat to Distribution Infrastructure													
		External Corrosion C & W Pipe	External Corrosion Bare Steel Pipe	External Corrosion Cast Iron Pipe	Internal Corrosion	Manuf. Related Defects Steel Pipe	Manuf. Related Defects Plastic Pipe	Const. Related Defects Steel Pipe	Const. Related Defects Plastic Pipe	Equipment Malfunction	Excavation/Mechanical Damage	Incorrect Operations & Operator Error	Outside Force Steel Pipe	Outside Force Cast Iron Pipe	Outside Force Plastic Pipe
192.143	General requirements	4	3	3	3	10	8	7	6	9	3	8	10	6	9
192.144	Qualifying metallic components	4	3	2	3	16	2	7	2	7	1	6	4	1	1
192.145	Valves	2	2	2	2	11	9	5	3	13	1	10	3	3	3
192.147	Flanges and flange accessories	4	4	3	3	12	1	5	0	12	2	9	4	4	2
192.149	Standard fittings	4	3	3	2	14	1	5	0	12	2	9	5	3	1
192.151	Tapping	2	2	2	2	10	4	10	4	11	3	13	4	9	1
192.153	Components fabricated by welding	3	3	2	2	15	1	10	2	10	3	11	5	2	1
192.155	Welded branch connections	2	2	2	2	12	1	13	2	8	3	10	8	2	1
192.157	Extruded outlets	2	2	2	2	12	1	8	1	4	3	6	6	2	1
192.159	Flexibility	2	2	2	2	5	2	11	4	5	3	8	12	6	9
192.161	Supports and anchors	3	2	2	2	4	1	12	5	5	3	8	12	7	9
192.181	Distribution line valves	2	3	2	2	2	3	11	8	7	10	13	12	10	11
192.183	Vaults: Structural design requirements	2	1	0	0	1	0	5	2	7	4	6	13	9	7
192.185	Vaults: Accessibility	2	1	0	0	0	0	3	2	6	4	8	8	5	3
192.187	Vaults: Sealing, venting, and ventilation	1	0	0	0	0	0	4	2	6	2	9	5	3	3

		Threat to Distribution Infrastructure													
		External Corrosion C & W Pipe	External Corrosion Bare Steel Pipe	External Corrosion Cast Iron Pipe	Internal Corrosion	Manuf. Related Defects Steel Pipe	Manuf. Related Defects Plastic Pipe	Const. Related Defects Steel Pipe	Const. Related Defects Plastic Pipe	Equipment Malfunction	Excavation/Mechanical Damage	Incorrect Operations & Operator Error	Outside Force Steel Pipe	Outside Force Cast Iron Pipe	Outside Force Plastic Pipe
192.189	Vaults: Drainage and waterproofing	2	1	0	0	0	0	4	2	6	1	8	6	5	3
192.191	Design pressure of plastic fittings	0	0	0	0	2	15	1	7	4	1	7	1	0	3
192.193	Valve installation in plastic pipe.	0	0	0	0	0	6	1	10	5	4	12	1	0	12
192.195	Protection against accidental over-pressuring	0	0	0	0	1	3	2	2	12	2	16	2	1	1
192.197	Control of the pressure of gas delivered from high pressure distribution systems	2	1	1	1	2	4	4	4	14	1	17	2	1	1
192.199	Requirements for design of pressure relief and limiting devices	5	3	2	5	5	5	5	2	13	3	14	5	1	1
192.201	Required capacity of pressure relieving and limiting stations	2	1	1	1	2	3	3	2	10	2	18	2	1	1
192.203	Instrument, control, & sampling pipe and components	1	1	1	1	4	4	5	4	12	6	13	7	2	2

Question 2.04b

1 responder answered this question.

22 responders did not.

Section 192.201 For systems operating at or below 125 psig, where strength of steel piping and components is not an issue, there should be provisions here to allow the systems to operate at up to 10% over the established MAOP to ensure adequate gas flow and pressures under emergency conditions. Current code language is inflexible to accommodate winter emergency conditions when gas outages become a higher safety risk versus operating the system over the established MAOP.

Question 2.04c
4 responders answered this question.
19 responders did not.

KS	Section 192.199 (h)	Regarding unauthorized access, includes: 1. Bypass valves on regulators and reliefs; 2. shut off valves on control lines; 3. at town border stations, regulators or reliefs are required regardless of installation date
MO	Section 192.181	Requires spacing so affected area can be re-lit in 8 hours.
NY	Section 192.181	New York adds spacing requirements and adds requirements for station inlet and outlet valves.
PA	Section 192.201	Low pressure distribution systems are not allowed to operate over 14” W.C. or a pressure that could cause the unsafe operation of any connected and properly adjusted equipment, whichever is the lower of the two.

Sub Part E - Welding of Steel in Pipelines

Question 2.05a
All 23 responders answered this question.

		Threat to Distribution Infrastructure													
		External Corrosion C & W Pipe	External Corrosion Bare Steel Pipe	External Corrosion Cast Iron Pipe	Internal Corrosion	Manuf. Related Defects Steel Pipe	Manuf. Related Defects Plastic Pipe	Const. Related Defects Steel Pipe	Const. Related Defects Plastic Pipe	Equipment Malfunction	Excavation/Mechanical Damage	Incorrect Operations & Operator Error	Outside Force Steel Pipe	Outside Force Cast Iron Pipe	Outside Force Plastic Pipe
192.225	Welding - General	1	2	0	1	3	0	15	1	0	2	12	4	0	0
192.227	Qualification of welders	1	2	0	1	2	0	15	1	1	1	11	2	0	0
192.229	Limitations on welders	1	2	0	1	3	0	15	1	0	1	11	3	0	0
192.231	Protection from weather	0	1	0	0	3	0	19	1	0	1	11	5	0	0
192.233	Miter joints	0	1	0	0	1	0	16	1	1	1	8	3	0	0
192.235	Preparation for welding	1	2	0	2	2	0	20	1	1	2	11	4	0	0
192.241	Inspection and test of welds	1	1	0	1	3	0	19	1	0	1	12	3	0	0
192.243	Nondestructive testing	0	0	0	0	2	0	18	1	1	1	11	2	0	0
192.245	Repair or removal of defects	0	0	0	0	3	0	20	1	2	1	11	3	0	0

Question 2.05b
1 responder answered this question.
22 responders did not.

Section 192.233 Note: No explanation given

Question 2.05c

2 responders answered this question.

21 responders did not.

WA	Section 192.227	(b) Proposed rulemaking may eliminate welder qualification under Appendix C.
	Section 192.229	(d) Proposed rulemaking may eliminate welder qualification under Appendix C.
WY	Section 192.227	Notification to Wyoming PSC pipeline safety staff on identity of qualified welders.

Sub Part F - Joining of Materials Other Than by Welding

Question 2.06a

22 responders answered this question.

1 responder did not.

		Threat to Distribution Infrastructure													
		External Corrosion C & W Pipe	External Corrosion Bare Steel Pipe	External Corrosion Cast Iron Pipe	Internal Corrosion	Manuf. Related Defects Steel Pipe	Manuf. Related Defects Plastic Pipe	Const. Related Defects Steel Pipe	Const. Related Defects Plastic Pipe	Equipment Malfunction	Excavation/Mechanical Damage	Incorrect Operations & Operator Error	Outside Force Steel Pipe	Outside Force Cast Iron Pipe	Outside Force Plastic Pipe
192.273	General	1	1	2	1	5	5	10	13	5	4	12	11	12	14
192.275	Cast iron pipe	1	0	2	1	0	0	1	2	1	4	10	0	7	0
192.277	Ductile iron pipe	1	0	2	1	1	0	1	2	1	4	10	0	4	0
192.279	Copper pipe	1	0	0	0	0	0	1	2	1	3	8	0	2	0
192.281	Plastic pipe	0	0	0	0	1	4	2	19	3	5	11	0	1	4
192.283	Plastic pipe: qualifying joining procedures	0	0	0	0	1	6	2	16	3	5	12	0	0	6
192.285	Plastic pipe: qualifying persons to make joints	0	0	0	0	1	4	2	17	2	4	14	0	0	4
192.287	Plastic pipe: inspection of joints	0	0	0	0	1	3	2	17	1	4	14	0	0	5

Question 2.06b

5 responders answered this question.

18 responders did not.

192.281	Solvent cement or adhesive not used on PE pipe.
192.283	Solvent cement or adhesive not used on PE pipe.
192.277	Ductile iron is not used.
192.279	Copper regulations are of little value.

192.281 b / d	Not used
192.275	I don’t think anyone uses these materials in new installations
192.277	I don’t think anyone uses these materials in new installations
192.279	I don’t think anyone uses these materials in new installations
192.275	Not used in new construction.
192.279	Not used in new construction.

Question 2.06c
2 responders answered this question.
21 responders did not.

AZ	Section 192.281	Does not allow solvent weld for joining different materials unless the joining process is qualified.
IN	Section 192.273 (b)	Each joint made under this Subpart must be made by a person (or under the supervision of a person) qualified by experience and training, in accordance with written procedures that have been proven by test or experience to produce strong, gastight joints.

Sub Part G - General Construction Requirements for Transmission Lines & Mains

Question 2.07a

All 23 responders answered this question.

		Threat to Distribution Infrastructure													
		External Corrosion C & W Pipe	External Corrosion Bare Steel Pipe	External Corrosion Cast Iron Pipe	Internal Corrosion	Manuf. Related Defects Steel Pipe	Manuf. Related Defects Plastic Pipe	Const. Related Defects Steel Pipe	Const. Related Defects Plastic Pipe	Equipment Malfunction	Excavation/Mechanical Damage	Incorrect Operations & Operator Error	Outside Force Steel Pipe	Outside Force Cast Iron Pipe	Outside Force Plastic Pipe
192.303	Compliance with specifications or standards	6	3	2	4	6	5	13	13	3	6	10	8	4	6
192.305	Inspection: General	6	4	3	2	8	8	16	16	1	5	8	6	2	5
192.307	Inspection of materials	6	4	3	2	15	12	17	16	4	8	8	7	4	6
192.309	Repair of steel pipe	5	6	1	2	13	3	20	5	3	9	10	6	1	1
192.311	Repair of plastic pipe	0	0	0	0	2	12	4	18	4	11	10	0	0	8
192.313	Bends and elbows	4	3	2	1	5	0	18	5	5	6	10	3	1	2
192.315	Wrinkle bends in steel pipe	3	2	1	1	5	0	15	3	1	5	8	2	1	1
192.317	Protection from hazards	3	3	2	0	1	1	8	8	2	10	5	17	13	16
192.319	Installation of pipe in a ditch	5	2	2	0	1	0	17	14	1	13	8	12	9	11
192.321	Installation of plastic pipe	0	0	0	0	0	4	3	14	2	15	8	1	2	15
192.323	Casing	5	3	0	0	0	0	10	8	3	10	5	16	8	15
192.325	Underground clearance	5	4	2	0	0	0	12	12	2	15	7	11	6	13
192.327	Cover	2	1	0	0	0	0	7	7	1	18	5	16	11	16

Question 2.07b
1 responder answered this question.
22 responders did not.

	Section 192.315	Obsolete – no longer utilized.

Question 2.07c
2 responders answered this question.
21 responders did not.

AZ	Section 192.319	ACC Code 14-5-202 Subsection O requires that plastic pipe be buried with a minimum of 6-inches of "sandy-type" soil surrounding the pipe for bedding and shading, free of any rock or debris unless otherwise protected and approved by the ACC OPS.
	Section 192.325 (b)	ACC Code 14-5-202, Subsection G requires no less than 8 inches clearance, or appropriate sleeve, casing or shielding
KS	Section 192.307	Coated pipe must be checked for defects using an instrument calibrated to mfr's specifications.
	Section 192.311	Specifically, each imperfection or damage that would impair the serviceability of plastic pipe shall be removed.

Sub Part H - Customer Meters, Service Regulators, & Service Lines

Question 2.08a
All 23 responders answered this question.

		Threat to Distribution Infrastructure													
		External Corrosion C & W Pipe	External Corrosion Bare Steel Pipe	External Corrosion Cast Iron Pipe	Internal Corrosion	Manuf. Related Defects Steel Pipe	Manuf. Related Defects Plastic Pipe	Const. Related Defects Steel Pipe	Const. Related Defects Plastic Pipe	Equipment Malfunction	Excavation/Mechanical Damage	Incorrect Operations & Operator Error	Outside Force Steel Pipe	Outside Force Cast Iron Pipe	Outside Force Plastic Pipe
192.353	Customer meters and regulators: Location	11	8	2	1	3	0	5	2	8	12	7	10	1	2
192.355	Customer meters and regulators: Damage Protection	2	1	0	0	1	0	5	2	12	12	8	15	2	5
192.357	Customer meters and regulators: Installation	3	2	1	0	3	1	9	4	10	8	10	11	0	5
192.359	Customer meter installations: Operating pressure	0	0	0	0	3	0	3	1	11	3	9	0	0	0
192.361	Service lines: Installation	12	7	2	2	2	2	14	14	3	14	8	14	3	14
192.363	Service lines: Valve requirements	4	3	1	2	4	4	5	5	10	7	7	6	2	5
192.365	Service lines: Location of valves	2	2	1	1	2	2	4	4	9	7	8	7	3	6
192.367	Service lines: Requirements for connections to main piping	2	2	1	2	2	3	10	11	9	6	9	11	3	11
192.369	Service lines: Connections to cast / ductile iron mains	3	1	2	1	1	0	4	3	2	5	6	2	9	1
192.371	Service lines: Steel	5	5	0	3	8	0	8	0	2	8	6	6	0	0
192.373	Service lines: Cast iron and ductile iron	2	2	4	0	2	0	2	0	1	4	8	2	10	1
192.375	Service lines: Plastic	0	0	0	0	0	2	0	9	2	12	5	0	0	15
192.377	Service lines: Copper	1	0	0	1	0	0	0	0	0	9	2	0	0	0
192.379	New service lines not in use	2	2	1	1	1	1	3	3	4	7	13	3	1	4
192.381	Service lines: Excess flow valve performance standards	4	4	1	3	8	10	7	8	13	10	10	10	5	12

192.383	Excess flow valve customer notification	3	3	1	2	3	3	3	4	4	6	7	5	2	4

Question 2.08b
3 responders answered this question.
20 responders did not.

192.371	No impact on distribution integrity risks
192.377	Not used in distribution system
192.371	Adds little value.
192.373	Is out of date. No one installs cast iron services.
192.373	In general, cast iron or ductile iron are no longer installed.

Question 2.08c
3 responders answered this question.
20 responders did not.

AZ	Section 192.353	ACC Code 14-5-202 Subsection I requires that a gas regulator that might release gas in its operation be no closer than 3 feet to a source of ignition, opening into a building, air intake into a building or to any electrical source not intrinsically safe.
IN	Section 192.357 (e)	An operator may not initiate gas service for any customer (including for his own usage) without first ascertaining: (1) The meter and regulator installation are proper for their intended use and pressure tight at the operating pressure; (2) The piping from the meter to the customer's appliances is pressure tight at the operating pressure.
	Section 192.365 (b)	Each service line must have a shut-off valve in a readily accessible location that is outside of the building.
	Section 192.373 (a)	Cast or ductile iron pipe shall not be installed for service lines.
	Section 192.373 (b)	Delete Paragraph
	Section 192.373 (c)	Delete Paragraph
KY	Section 192.363	KY Code requires that certain locations in which a curb box exists be inspected annually, not to exceed 15 months, for accessibility.

Sub Part I - Requirements for Corrosion Control

Question 2.09a

All 23 responders answered this question.

		Threat to Distribution Infrastructure													
		External Corrosion C & W Pipe	External Corrosion Bare Steel Pipe	External Corrosion Cast Iron Pipe	Internal Corrosion	Manuf. Related Defects Steel Pipe	Manuf. Related Defects Plastic Pipe	Const. Related Defects Steel Pipe	Const. Related Defects Plastic Pipe	Equipment Malfunction	Excavation/Mechanical Damage	Incorrect Operations & Operator Error	Outside Force Steel Pipe	Outside Force Cast Iron Pipe	Outside Force Plastic Pipe
192.452	Applicability to converted pipelines	17	16	12	14	9	2	11	1	6	7	8	6	4	1
192.453	General	17	16	13	12	4	1	6	1	3	3	11	4	3	1
192.455	External corrosion control: Buried or submerged pipelines (after 07/31/1971)	20	17	9	2	4	0	8	0	2	1	7	5	3	0
192.457	External corrosion control: Buried or submerged pipelines (before 08/01/1971)	22	23	10	3	4	0	7	0	2	1	6	2	2	0
192.459	External corrosion control: Examination of buried pipeline when exposed.	20	21	13	1	4	1	6	1	2	3	9	4	3	0
192.461	External corrosion control: Protective coating	19	4	5	0	8	2	13	0	1	5	9	5	2	0
192.463	External corrosion control: Cathodic protection	21	18	8	0	3	0	7	0	5	2	12	4	2	0
192.465	External corrosion control: Monitoring	21	18	7	0	4	0	6	0	9	3	13	6	2	0
192.467	External corrosion control: Electrical isolation	20	17	10	0	2	0	9	0	6	3	12	4	2	0
192.469	External corrosion control: Test stations	20	16	8	1	2	0	9	0	3	3	11	3	2	0
192.471	External corrosion control: Test leads	20	16	8	1	2	0	9	0	4	3	11	4	2	0
192.473	External corrosion control: Interference currents	20	18	10	0	2	0	8	0	4	2	11	5	2	0
192.475	Internal corrosion control: General	4	4	4	19	3	0	4	0	0	1	10	3	2	0
192.477	Internal corrosion control: Monitoring	2	2	2	20	1	0	2	0	1	0	11	1	1	0
192.479	Atmospheric corrosion control: General	17	19	6	1	3	0	6	0	0	1	10	6	2	0

		Threat to Distribution Infrastructure													
		External Corrosion C & W Pipe	External Corrosion Bare Steel Pipe	External Corrosion Cast Iron Pipe	Internal Corrosion	Manuf. Related Defects Steel Pipe	Manuf. Related Defects Plastic Pipe	Const. Related Defects Steel Pipe	Const. Related Defects Plastic Pipe	Equipment Malfunction	Excavation/Mechanical Damage	Incorrect Operations & Operator Error	Outside Force Steel Pipe	Outside Force Cast Iron Pipe	Outside Force Plastic Pipe
192.481	Atmospheric corrosion control: Monitoring	18	20	5	0	3	0	6	0	1	1	11	7	2	0
192.483	Remedial measures: General	20	19	9	4	4	0	7	0	0	2	7	2	2	0
192.487	Remedial measures: Distribution lines other than cast iron or ductile iron lines	18	18	2	8	2	0	4	0	0	1	7	3	1	0
192.489	Remedial measures: Cast iron and ductile iron pipelines	5	4	17	3	1	1	3	1	1	1	9	1	1	1
192.491	Corrosion control records	18	16	14	12	3	1	5	1	5	4	10	5	3	1

Question 2.09b
1 responder answered this question.
22 responders did not.

Section 192.481 The three year evaluation frequency for atmospheric corrosion of inside service piping and meter sets is excessive. The code should provide more flexibility here so operators may concentrate their efforts on high priority threats.

Question 2.09c
6 responders answered this question.
17 responders did not.

KS Section 192.453 Unprotected steel service or yard lines with active corrosion will be cathodically protected and monitored annually or replaced. In lieu of conducting electrical surveys, annual flame ionization leak surveys may be used on unprotected service or yard lines. Initiate a preventative maintenance program for replacement of service and yard lines, to be used in conjunction with the annual leak survey. If corrosion leaks in a defined area equals 25% or more of the total service and yard lines in the area, all service and yard lines in that area will be replaced within 18 months. For cities with 2000 or less population, perform flame ionization leak surveys every six months and replace all unprotected steel yard lines in a defined area that exhibit active corrosion.

	Section 192.457	Operator may not conduct electrical surveys where pipe is under wall to wall pavement, where pipe is in a common trench with other utilities, in areas with stray current, or where pipe is under pavement more than two feet away from an unpaved area. In areas where electrical survey is impractical, flame ionization leak surveys will be conducted at least every three years and a repair/replacement program will be established based on the number leaks in a defined area.
	Section 192.465 (d)	Operator shall begin corrective measures within 30 days, or more promptly if necessary. Also included are the above mentioned issues in Section 457.
MO	Section 192.465	10% monitoring rate has been changed to 20%.
NJ	Section 192.457	If more than 20% of the services in a definable area is found to be leaking; all remaining unprotected services in the definable area must be replaced or protected.
TX	Section 192.457 (d)	Positive action must be taken to mitigate and control
	Section 192.465 (a)	Test points selected must be representative
	Section 192.465 (f)	Positive action must be taken to mitigate and control
	Section 192.475 (a)	Definition of "Corrosive Gas"
	Section 192.479 (3) (c)	Definition of "atmospheric corrosion"
WA	Section 192.465 (d)	State regulations require correction of insufficient cathodic protection within 90 days of discovery.
WY	Section 192.463	Requires c.p. / c.p. monitoring of certain, buried (customer-owned) fuel lines; not clear about who's resp. for cost of installing / maintaining c.p.

Sub Part J - Test Requirements

Question 2.10a

All 23 responders answered this question.

		Threat to Distribution Infrastructure													
		External Corrosion C & W Pipe	External Corrosion Bare Steel Pipe	External Corrosion Cast Iron Pipe	Internal Corrosion	Manuf. Related Defects Steel Pipe	Manuf. Related Defects Plastic Pipe	Const. Related Defects Steel Pipe	Const. Related Defects Plastic Pipe	Equipment Malfunction	Excavation/Mechanical Damage	Incorrect Operations & Operator Error	Outside Force Steel Pipe	Outside Force Cast Iron Pipe	Outside Force Plastic Pipe
192.503	General requirements	6	6	3	6	19	19	21	20	4	8	11	4	3	4
192.507	Test requirements for pipelines to operate at a hoop stress less than 30 percent of SMYS and at or above 100 p.s.i. (689 kPa) gauge	5	4	2	4	19	7	21	8	4	9	10	4	2	1
192.509	Test requirements for pipelines to operate below 100 p.s.i. (689 kPa) gauge	5	4	3	4	18	10	20	11	5	9	10	4	3	1
192.511	Test requirements for service lines	4	5	2	4	18	12	20	13	5	9	11	4	3	1
192.513	Test requirements for plastic pipelines	1	1	1	1	4	18	4	22	5	8	11	1	1	5
192.515	Environmental protection and safety requirements	2	2	2	1	6	5	5	5	3	3	11	1	1	1
192.517	Records	3	3	2	3	6	6	8	8	2	3	11	1	1	1

Question 2.10b

None of the responders answered this question.

Question 2.10c

5 responders answered this question.

18 responders did not.

IN	Section 192.503 (a)	No person may operate a new segment of pipeline, or return to service a segment of pipeline that has been relocated, replaced, or has been abandoned previously, until
	Section 192.503 (e)	No testing, by a medium other than natural gas under this Subpart, may be done against a valve on a transmission line, distribution main or auxiliary apparatus, that is connected by the valve to a source of gas, unless a positive suitable means has been provided to prevent the leakage or admission of the testing medium into the transmission line, distribution main or auxiliary apparatus.
	Section 192.509 (b)	Each main other than steel or plastic that is to be operated at less than one p.s.i.g. must be tested to at least 10 p.s.i.g., and each main to be operated at or above one p.s.i.g. must be tested to 150 per cent of the maximum operating pressure or at least 90 p.s.i.g., whichever is greater.
	Section 192.509 (c)	Each steel main that is to be operated at less than 100 p.s.i.g. must be tested to 150 per cent of the maximum operating pressure or at least 90 p.s.i.g., whichever is greater.
	Section 192.511 (b)	Each segment of a service line (other than plastic) stressed under 20 per cent SMYS must be tested at 150 per cent of the maximum operating pressure or at least to 90 p.s.i.g., whichever is greater. The test procedure used must ensure discovery of all potentially hazardous leaks in the segment being tested.
	Section 192.511 (c)	Each segment of a service line (other than plastic) stressed to 20 per cent or more of SMYS must be tested in accordance with Section 192.505 or 192.507, whichever is applicable, of this Subpart.
KS	Section 192.517	Please list additional actions required. Additionally: (h) test date; (I) description of facilities being tested.
MO	Section 192.517	Requires records on pressure tests of service lines.
NY	Section 192.507	Testing requirements in NYS are more stringent then federal requirements.
	Section 192.511	Testing requirements in NYS are more stringent then federal requirements.

Sub Part K – Uprating

Question 2.11a
All 23 responders answered this question.

		Threat to Distribution Infrastructure													
		External Corrosion C & W Pipe	External Corrosion Bare Steel Pipe	External Corrosion Cast Iron Pipe	Internal Corrosion	Manuf. Related Defects Steel Pipe	Manuf. Related Defects Plastic Pipe	Const. Related Defects Steel Pipe	Const. Related Defects Plastic Pipe	Equipment Malfunction	Excavation/Mechanical Damage	Incorrect Operations & Operator Error	Outside Force Steel Pipe	Outside Force Cast Iron Pipe	Outside Force Plastic Pipe
192.553	General requirements	12	12	8	12	13	13	14	14	9	10	16	8	7	8
192.557	Uprating: Steel pipelines to a pressure that will produce a hoop stress less than 30 percent of SMYS; plastic, cast iron, and ductile iron pipelines.	12	12	9	12	14	14	18	17	10	10	16	9	8	9

Question 2.11b
1 responder answered this question.
22 responders did not.

Section 192.553 The additional requirements to meet provisions under 192.619 are inappropriate for pipelines operating under 20% SMYS. This uprating subpart should be a stand alone requirement for such pipelines. Consideration of 192.621 provisions appear appropriate. At issue is the additional pressure test requirements under 192.619.

Question 2.11c
4 responders answered this question.
19 responders did not.

IN Section 192.553 (e) Service regulators supplying gas from transmission lines or distribution mains that are being uprated under this Subpart shall meet the requirements of Section 192.197.

	Section 192.557 (b) (5)	Isolate by physical separation all mains between the segment of pipeline in which the pressure is to be increased from any adjacent segment that will continue to be operated at the lower pressure, except such mains that are required to supply through a pressure regulator, (with approved overpressure protection designed in accordance with Section 192.195), the adjacent segment that will continue to be operated at the lower pressure;
KS	Section 192.553 (a) (1)	Leak survey shall be conducted within eight hours of stabilization in the incremental pressure increase.
MO	Section 192.557	Requires uprating pressure to equal the equivalent new test pressure.

Sub Part L – Operations

Question 2.12a

All 23 responders answered this question.

		Threat to Distribution Infrastructure													
		External Corrosion C & W Pipe	External Corrosion Bare Steel Pipe	External Corrosion Cast Iron Pipe	Internal Corrosion	Manuf. Related Defects Steel Pipe	Manuf. Related Defects Plastic Pipe	Const. Related Defects Steel Pipe	Const. Related Defects Plastic Pipe	Equipment Malfunction	Excavation/Mechanical Damage	Incorrect Operations & Operator Error	Outside Force Steel Pipe	Outside Force Cast Iron Pipe	Outside Force Plastic Pipe
192.601	Scope	4	4	3	3	3	3	3	3	3	4	10	5	4	5
192.603	General provisions	6	7	6	6	6	6	6	6	7	7	15	7	6	7
192.605	Procedural manual for O&M and emergencies	17	18	14	15	13	13	14	14	18	18	23	15	12	15
192.609	Change in class location: Required study	3	4	1	2	5	3	5	3	2	4	9	4	1	2
192.611	Change in class location: Confirmation or revision of maximum allowable operating pressure	4	4	3	4	7	5	7	5	4	6	10	5	3	3
192.613	Continuing surveillance	15	16	12	13	10	10	10	10	15	18	18	16	13	16
192.614	Damage prevention program	4	2	3	2	2	2	2	2	3	21	13	8	6	8
192.615	Emergency plans	8	8	7	8	9	9	9	9	15	16	19	13	10	12
192.616	Public education	3	4	2	3	3	3	3	3	8	18	12	11	9	10
192.617	Investigation of failures	12	12	11	11	12	12	12	12	13	12	14	11	9	11
192.619	Maximum allowable operating pressure: Steel or plastic pipelines	8	9	2	8	10	11	12	12	9	3	17	7	3	7
192.621	Maximum allowable operating pressure: High-pressure distribution systems	9	10	5	8	7	8	10	10	11	3	17	7	4	6
192.623	Maximum and minimum allowable operating pressure; Low-pressure distribution systems	3	4	1	3	3	4	5	5	11	1	17	4	2	3
192.625	Odorization of gas	6	6	5	8	6	6	6	6	14	10	18	9	7	9
192.627	Tapping pipelines under pressure	0	1	0	0	0	0	5	6	4	0	17	1	0	1

192.629	Purging of pipelines	0	1	0	0	0	0	1	2	2	0	17	1	0	1

Question 2.12b
5 responders answered this question.
18 responders did not.

192.613	This section is vague and does not really say anything substantive and is interpreted differently by everyone.
192.609	Participating utility classifies entire distribution system as class 4 location, therefore not impacted by regulation.
192.609	Class locations make sense primarily in transmission context.
192.611	Ditto.
192.605 (b) (9)	Deals with worker safety and is more appropriately addressed by OSHA regulations.
192.613	This section is vague and does not really say anything substantive and is interpreted differently by everyone.

Question 2.12c
5 responders answered this question.
18 responders did not.

IN	Section 192.603 (c)	Each operator shall maintain a system of records of its physical plant. These shall include records and maps of its active physical plant in use, and be in such form as to facilitate the operation and maintenance of the plant in a safe manner. Such records shall be kept updated at intervals not exceeding 12 months.
	Section 192.613 (c)	All records and procedures pertaining to the conditions listed in Paragraphs (a) and (b) and the action taken shall be kept in the file of the operating company.
	Section 192.615 (e)	Establish liaison with appropriate communication officials, such as newspaper, radio and television, for assistance in keeping the public informed during emergencies.
	Section 192.615 (f)	Each operator shall carry a listing in the current telephone directory of each community which it serves or within which it operates whereby a responsible employee or agent of the operator may be reached on a 24-hour basis. The listing shall be under the name of the operator with a designation for hours other than regular business hours.

KS	Section 192.603	Operator must have regulator and relief valve test, maintenance, and capacity calculations for town border stations, and must ensure that all work completed by a contractor complies with this part.
	Section 192.617	Operator must investigate each accident or failure.
	Section 192.625	Operator must conduct monthly odorometer tests at selected points in the system.
MO	Section 192.614	Missouri has more prescriptive requirements.
	Section 192.616	Missouri has more prescriptive requirements.
NJ	Section 192.625	State Board of Public Utilities requires testing every 30 days.

Sub Part M – Maintenance

Question 2.13a

All 23 responders answered this question.

		Threat to Distribution Infrastructure													
		External Corrosion C & W Pipe	External Corrosion Bare Steel Pipe	External Corrosion Cast Iron Pipe	Internal Corrosion	Manuf. Related Defects Steel Pipe	Manuf. Related Defects Plastic Pipe	Const. Related Defects Steel Pipe	Const. Related Defects Plastic Pipe	Equipment Malfunction	Excavation/Mechanical Damage	Incorrect Operations & Operator Error	Outside Force Steel Pipe	Outside Force Cast Iron Pipe	Outside Force Plastic Pipe
192.703	General	11	11	10	10	11	11	11	11	12	13	18	11	10	11
192.721	Distribution systems: Patrolling	8	9	7	6	8	8	8	8	10	17	12	16	14	16
192.723	Distribution systems: Leakage surveys	13	14	11	12	10	10	10	10	12	15	16	12	12	12
192.725	Test requirements for reinstating service lines	9	10	7	9	12	12	13	13	10	10	14	8	7	8
192.727	Abandonment or deactivation of facilities	3	4	2	3	2	2	5	5	4	7	14	7	5	7
192.739	Pressure limiting and regulating stations: Inspection and testing	2	4	2	1	2	2	3	2	21	3	19	4	2	2
192.741	Pressure limiting and regulating stations: Telemetering or recording gauges	1	2	1	0	0	0	0	0	19	2	21	1	1	1
192.743	Pressure limiting and regulating stations: Testing of relief devices	1	2	1	0	1	1	2	1	20	3	17	0	0	0
192.747	Valve maintenance: Distribution systems	3	4	3	3	5	4	4	3	19	6	13	4	4	4
192.749	Vault maintenance	5	4	3	2	2	1	2	1	15	4	13	5	4	1
192.751	Prevention of accidental ignition	0	1	0	0	0	0	0	0	6	3	19	0	0	0
192.753	Caulked bell and spigot joints	0	0	2	0	0	0	0	0	5	2	9	1	5	1
192.755	Protecting cast-iron pipelines	0	0	2	0	0	0	1	1	1	12	7	4	17	3

Question 2.13b
3 responders answered this question.
20 responders did not.

Section 192.723	The requirement for date-specific leak survey of gas piping inside of residential premises adds little value to distribution system integrity. Because the gas is odorized, virtually all leaks are reported by occupants.
Section 192.725	this section should include some definitive language regarding the repair of broken service lines. Does this section apply to the section of a service line that is out of service for a short time during a repair.
Section 192.741	adds no apparent value.

Question 2.13c
7 responders answered this question.
16 responders did not.

IN	Section 192.723 (b) (1)	A gas detector survey shall be conducted in (1) business districts; (2) areas of high occupancy buildings such as schools, churches, hospitals, apartment buildings, office buildings, commercial buildings; (3) built-up residential areas where continuous pavement exists, and (4) in such other areas as the Commission may direct, at intervals not exceeding one year. The surveys in business districts and areas of high occupancy buildings, (1) and (2), shall be made at least to the meter outlet. Tests shall include tests of the atmosphere in utility manholes, at cracks in the pavement and sidewalks and other locations providing an opportunity for finding gas leakage.
	Section 192.723 (b) (2)	Leakage surveys of the distribution system outside of the areas as listed in (b-1) must be made as frequently as necessary but at intervals not exceeding five years. A vegetation type survey shall not be used as a single means of leakage control.
	Section 192.723 (c)	All leaks reported, regardless of the origin of the reports shall be recorded on suitable report forms. These report forms should provide space for all pertinent information. Each leak reported shall be accounted for, and when repairs are completed the report shall be so noted and filed in a systematic manner.
	Section 192.723 (c) (1)	All leaks reported shall be investigated promptly and classified in a manner whereby gas leakage that is hazardous to life and/or property shall receive immediate attention for repairs.
	Section 192.723 (c) (2)	Leak indications where repairs are not completed shall be rechecked on subsequent surveys.
	Section 192.723 (d)	Records shall be made covering these surveys, inspections and repairs made. These records, along with any other routine or unusual inspections and repairs, shall be kept in the file of operating company.
	No referenced section	Inspection and Maintenance Plan

		(a) Each operator shall: (1) Have a written Plan covering the inspection and maintenance procedures to be used by the operator to assure the safe operation of its pipeline facilities. The Plan shall include, by sections, the inspection and maintenance procedures of all such pipeline facilities. This Plan, when filed, becomes in effect a regulation for the particular operator who filed it. (2) File two copies of the Plan with the Pipeline Safety Division of the Commission; both copies of which are to be signed by an official of the operator. (3) Keep records necessary to administer the Plan effectively. (4) Revise the Plan as experience dictates and as exposure of the facilities and changes in operating conditions might warrant. (5) File with the Pipeline Safety Division of the Commission all subsequent revisions of the Plan not later than 20 days after the effective date of such changes.
KS	Section 192.703	Leak detection equipment must be calibrated monthly; pipe that becomes unsafe must be replaced/repaired within five days. Gas leaks must be classified within two hours. Class 1, 2, & 3 leaks are defined in detail.
	Section 192.721	Defines patrolling intervals for highway & RR crossings, and for Class 1, 2, 3, & 4 locations.
	Section 192.723	Service lines to be surveyed once every three years. Unprotected service and yard lines annually.
MA	Section 192.755	MA (220 CMR 113) requires Operators to identify cast iron candidates for replacement based upon certain “selection criteria”.
ME	Section 192.755	Maine requires a cast iron winter patrol survey in mid-winter but only after a reasonable frost penetration has occurred and a leak survey must be conducted on all cast iron mains following frost-out in spring.
MO	Section 192.747	Requires partial operation of valves.
	Section 192.755	More prescriptive requirements.
NY	Section 192.755	New York has added requirements for mandatory replacement of cast iron that is undermined by a width of 36” or more for any reason
	Section 192.725	New York requires all service lines taken out of service to be tested above federal code requirements.
	Section 192.721	New York requires that mains operated at pressures of 125 psi and above in Class 3 and 4 locations must be patrolled and leak surveyed as Transmission.
	Section 192.723	New York requires that mains operated at pressures of 125 psi and above in Class 3 and 4 locations must be patrolled and leak surveyed as Transmission.
NJ	Section 192.723	If more than 20% of the services in a definable area are found to be leaking; all remaining unprotected services in the definable area must be replaced or protected.
PA	Section 192.727	Utilities must consider abandonment of metallic, non-cathodically protected services if inactive longer than three months and there is no prospect for future use of service. This review shall be conducted annually.

Sub Part N - Qualification of Pipeline Personnel

Question 2.14a
22 responders answered this question.
1 responder did not.

		Threat to Distribution Infrastructure													
		External Corrosion C & W Pipe	External Corrosion Bare Steel Pipe	External Corrosion Cast Iron Pipe	Internal Corrosion	Manuf. Related Defects Steel Pipe	Manuf. Related Defects Plastic Pipe	Const. Related Defects Steel Pipe	Const. Related Defects Plastic Pipe	Equipment Malfunction	Excavation/Mechanical Damage	Incorrect Operations & Operator Error	Outside Force Steel Pipe	Outside Force Cast Iron Pipe	Outside Force Plastic Pipe
192.805	Qualification Program	13	14	13	13	9	8	14	14	15	15	21	14	13	14

Question 2.14b
None of the responders answered this question.

Question 2.14c
1 responder answered this question.
22 responders did not.

MO Section 192.805 Requires a 3-year re-qualification interval.

Part 3 asked questions related to current prevention and mitigation (P&M) measures that operators incorporate into design or operational practices to address these threats (Questions 3.01 through 3.14). The questions asked for measure (practices and procedures) that they employ that exceed the minimum pipeline standards of the federal regulations. The operator's decision process for "out coding the code" was also requested.

Note: After discussion with the DISG Leadership Team subsequent to the initial emailing of the questionnaire the focus of this section changed. In the original emailing, responders were asked for measures that met or excedding current code requirements. After discussion with DISG and in a separate email, the focus of this section was changed to identify measures that operators use that ***exceed*** *current federal safety regulations.*

The following gives a breakdown of the spread of answers between the 23 responders

5 responders did not exceed the code for any of the 14 threats

7 responders indicated that they exceeded the code for 1 to 5 of 14 threats

7 responders indicated that they exceeded the code for 6 to 10 of 14 threats

4 responders indicated that they exceeded the code for 11 to 14 of 14 threats

Question 3.01

What preventive and mitigative (P&M) measures (programs and/or practices) do you currently have in place to protect your distribution infrastructure against the threat of external corrosion of coated & wrapped steel pipe?

Does this measure follow a formal, written process? Yes ____ No ____

Do you have performance measures to monitor the effectiveness of this program/practice? Yes ____ No ____

Does implementation of this differ within your distribution system? (i.e., materials, location, etc.) ? Yes ____ No ____

10 responders answered this question.

13 responders did not.

Measure	Formal, Written Process		Performance Measures		Different Implementation	
	Yes	No	Yes	No	Yes	No
Take CP reads on all pipe exposed by our crews	X			X	X	
Increased percentage of short section reads from 10% to 12-1/2%	X		X		X	
We exceed federal requirements only for those coated pipelines installed before August 1, 1971.	X			X		X
We exceed the requirements by requiring the consideration of re-evaluating those cathodic protection systems that have historically been monitored between –0.850V and 0.900V.	X		X		X	
We check readings twice a year compared to once a year – 15 months	X		X			X
Note condition of pipe uncovered	X		X			X
If a pipe section is replaced readings are checked when finished	X		X			X
Close interval survey of newly installed or remediated pipe	X		X			X
Monitoring of program performance by NACE trained personnel	X		X			X
Risk ranking model	X			X		X
Cathodic protection surveys are conducted in excess of minimum requirements	X		X			X
Winter surveys (general and HCA) and quarterly bridge main inspections	X		X		X	
Damage prevention. Free repairs on cathodic protection damage	X		X		X	
Jeep all new coated & wrapped steel pipeline prior to backfill	X			X	X	
Coating mill QC inspections	X			X	X	
Operations Manual, Corrosion Control Quality Control Program Procedure	X		X			X
Installation of leak site anodes	X		X			X
Replacement of leaking services versus repair		X		X	X	
CP of pre-1971 Steel Pipe not Experiencing Active Corrosion	X		X			X
Use of 100 millivolt Depolarization criteria	X		X			X
Remotely monitoring the operation of a rectifier allows an operator to know the status at anytime, and not just at the 2-month inspection interval		X		X		X

Measure	Formal, Written Process		Performance Measures		Different Implementation	
	Yes	No	Yes	No	Yes	No
"Jeeping" is performed on all new steel pipelines coatings before being installed. In addition, most maintenance coating jobs are also "jeeped" before backfilling	X		X			X
Install a 40-mil coat of Lilly 20-40 coating on top of the regular fusion-bond epoxy coating for all directional bores.		X	X			X
Power Crete J or a heavy-duty shrink sleeve is applied on all weld joints for directional bores.		X		X		X
Cathodic protection is applied to steel pipelines immediately after completion of construction.	X			X		X

Question 3.02

What preventive and mitigative (P&M) measures (programs and/or practices) do you currently have in place to protect your distribution infrastructure against the threat of external corrosion of bare steel pipe?

Does this measure follow a formal, written process? Yes ____ No ____

Do you have performance measures to monitor the effectiveness of this program/practice? Yes ____ No ____

Does implementation of this differ within your distribution system? (i.e., materials, location, etc.) ? Yes ____ No ____

10 responders answered this question.

7 responders did not.

6 responders indicated that this does not apply to their system.

Measure	Formal, Written Process		Performance Measures		Different Implementation	
	Yes	No	Yes	No	Yes	No
Take CP reads on all pipe exposed by our crews	X			X	X	
Bare Pipe Mitigation Program	X		X		X	
Monitoring of program performance by NACE trained personnel	X		X			X
Replacement of bare steel - not required by code, only monitoring or add CP		X		X		X
Replacement Program		X		X		X
Hot Spot Protect Bare Steel		X		X		X
Leak investigation program - Block check and inside house checks	X			X		X
If more than 20% of the services in a definable area are found to be leaking; all remaining unprotected services in the definable area must be replaced or protected	X			X		X
Replacement process identifies and removes mains from service which have a higher probability of leaking	X			X		X
Operations Manual, Corrosion Control Quality Control Program Procedure	X		X			X
Bare steel piping is leak surveyed three times more often than is required in code	X		X			X
Installation of leak site anodes	X		X			X
CP Bare Steel Pipe not Experiencing Active Corrosion	X		X			X
Use of 100 millivolt Depolarization Criteria	X		X			X
Remote Rectifier Program		X		X		X
Bare Steel Replacement Program, a systematic replacement of the bare steel piping. Program developed in cooperation with the state PUC.	X		X			X

Question 3.03

What preventive and mitigative (P&M) measures (programs and/or practices) do you currently have in place to protect your distribution infrastructure against the threat of external corrosion (graphitization) of cast iron pipe?

Does this measure follow a formal, written process? Yes ____ No ____

Do you have performance measures to monitor the effectiveness of this program/practice? Yes ____ No ____

Does implementation of this differ within your distribution system? (i.e., materials, location, etc.) ? Yes ____ No ____

8 responders answered this question.

9 responders did not.

6 responders indicated that this does not apply to their system.

Measure	Formal, Written Process		Performance Measures		Different Implementation	
	Yes	No	Yes	No	Yes	No
Maintain a Safety Related Conditions Report	X			X		X
Risk ranking model and pipe replacement program of approximately 40 miles annually	X			X		X
Alkaline coupons and visual inspection	X			X		X
Anaerobic joint seal on all exposed joints – even if the joint is not leaking	X			X		X
Replacement Program	X		X			X
Cast iron main replacement program	X		X		X	
Cast Iron piping is surveyed a minimum of six times more often than is required in code. Each year the CI system is surveyed independently during the winter months and again later in the year along with other piping materials	X		X			X
High priority cast iron replacement program	X		X			X
The company has completed a proactive project to systematically replace all the cast iron piping in the distribution system.	X		X			X

Question 3.04

What preventive and mitigative (P&M) measures (programs and/or practices) do you currently have in place to protect your distribution infrastructure against the threat of internal corrosion?

Does this measure follow a formal, written process?	Yes ____ No ____
Do you have performance measures to monitor the effectiveness of this program/practice?	Yes ____ No ____
Does implementation of this differ within your distribution system? (i.e., materials, location, etc.) ?	Yes ____ No ____

9 responders answered this question.

13 responders did not.

1 responder indicated that this does not apply to their system.

Measure	Formal, Written Process		Performance Measures		Different Implementation	
	Yes	No	Yes	No	Yes	No
Monitoring of coupons and inside of pipe	X			X		X
Check quality of gas for corrosive agent	X			X		X
Observation of pipe removed to note internal corrosion	X		X			X
Monitor gas analysis and no internal corrosion indicated	X		X			X
Gas quality sampling and moisture content analysis	X			X		X
Gas analysis with a chromatograph	X			X		X
Inspect alkaline coupons for internal corrosion	X			X		X
Monitor gas quality for sulphur and water	X			X		X
Operations Manual, Corrosion Control Quality Control Program Procedure	X		X			X
Analyze liquids removed from system	X			X		X
Removal of liquids at Gate Stations preventing liquids from entering distribution network		X		X	X	
Monitor gas when purchased and transported for characteristics that would cause corrosion	X		X			X

Question 3.05

What preventive and mitigative (P&M) measures (programs and/or practices) do you currently have in place to protect your distribution infrastructure against the threat of manufacturing related defects in steel pipe?

Does this measure follow a formal, written process? Yes ____ No ____

Do you have performance measures to monitor the effectiveness of this program/practice? Yes ____ No ____

Does implementation of this differ within your distribution system? (i.e., materials, location, etc.) ? Yes ____ No ____

8 responders answered this question.

15 responders did not.

Measure	Formal, Written Process		Performance Measures		Different Implementation	
	Yes	No	Yes	No	Yes	No
Jeep coated steel pipe prior to installation	X			X	X	
Standards Committee evaluate materials		X		X		X
3rd Party QA Inspection at Pipe Mill	X		X			X
QA on incoming products at the warehouse	X			X		X
Steel pipe is visually inspected prior to coating	X			X		X
Conduct QC inspections at pipe mill	X			X	X	
Track defective material incidents		X		X		X
Company / contract inspection of mill run line pipe	X		X		X	
Heat numbers tracked	X		X		X	
Operations Manual, Material Investigation Program Procedure	X		X			X

Question 3.06

What preventive and mitigative (P&M) measures (programs and/or practices) do you currently have in place to protect your distribution infrastructure against the threat of manufacturing related defects in plastic pipe?

Does this measure follow a formal, written process? Yes ____ No ____

Do you have performance measures to monitor the effectiveness of this program/practice? Yes ____ No ____

Does implementation of this differ within your distribution system? (i.e., materials, location, etc.) ? Yes ____ No ____

8 responders answered this question.

15 responders did not.

Measure	Formal, Written Process		Performance Measures		Different Implementation	
	Yes	No	Yes	No	Yes	No
Inspect materials as checked out		X		X		X
Standards Committee evaluate materials		X		X		X
Inspection of fitting & pipe	X			X		X
Pipe is laboratory tested when replaced		X		X		X
QA on incoming products at the warehouse	X			X		X
Manufacturer required to verify material compliance	X			X		X
Participate in the Plastic Pipe Data Collection process thru AGA	X			X		X
Testing to higher pressure (100 psig) – post construction	X			X		X
Operations Manual, Quality Assurance Program; Pipe and Material Quality Assurance	X		X			X
Operations manual, material investigation program procedure	X		X			X
The Company conducts site visits to manufacturer's facilities.		X		X		X

Question 3.07

What preventive and mitigative (P&M) measures (programs and/or practices) do you currently have in place to protect your distribution infrastructure against the threat of construction related defects in steel pipe?

Does this measure follow a formal, written process? Yes ____ No ____

Do you have performance measures to monitor the effectiveness of this program/practice? Yes ____ No ____

Does implementation of this differ within your distribution system? (i.e., materials, location, etc.) ? Yes ____ No ____

10 responders answered this question.

13 responders did not.

Measure	Formal, Written Process		Performance Measures		Different Implementation	
	Yes	No	Yes	No	Yes	No
Jeep coated steel pipe prior to installation	X			X	X	
Locate & be present when exposing steel mains		X		X		X
Inspector on site	X			X		X
Minimum test pressure is greater than required	X			X		X
Supervisory audits of construction activities	X		X			X
Jeep all new coated & wrapped steel pipeline prior to backfill	X			X	X	
X-ray 5% of welds	X			X		X
Require select backfill	X			X		X
Certified welding inspectors (NWIS)	X			X		X
100% radiographic on HP feeder lines	X			X		X
Operations Manual, Material Investigation Procedure	X		X			X
Inspection and Auditing programs		X	X			X
The company conducts systematic post-construction quality assurance inspections by excavating the service tee connection at the main.	X		X			X

Question 3.08

What preventive and mitigative (P&M) measures (programs and/or practices) do you currently have in place to protect your distribution infrastructure against the threat of construction related defects in plastic pipe?

Does this measure follow a formal, written process? Yes ____ No ____

Do you have performance measures to monitor the effectiveness of this program/practice? Yes ____ No ____

Does implementation of this differ within your distribution system? (i.e., materials, location, etc.) ? Yes ____ No ____

10 responders answered this question.

13 responders did not.

Measure	Formal, Written Process		Performance Measures		Different Implementation	
	Yes	No	Yes	No	Yes	No
Inspector on site	X			X		X
Destructively test plastic fuses at random	X			X		X
Minimum test pressure is greater than required	X			X		X
Random testing of fusion joints. Voluntary program that is also the basis of fuser requalification.	X			X		X
All plastic installations tested at 90 lbs	X		X			X
Ultrasonic inspection of 5% of fuses	X			X		X
Detailed standards for field storage and handling	X			X		X
Require select backfill	X			X		X
Testing to higher pressure (100 psig) – post construction	X			X		X
Plastic fusion qualification (annual)	X			X		X
Operations Manual, Material Investigation Procedure	X		X			X
Inspection and Auditing programs		X	X			X
The company conducts systematic post-construction quality assurance inspections by excavating the service tee connection at the main.	X		X			X
The company participates in an industry user group forum which promotes the sharing of current polyethylene pipe manufacturing and installation problems and practices.		X		X		X

Question 3.09

What preventive and mitigative (P&M) measures (programs and/or practices) do you currently have in place to protect your distribution infrastructure against the threat of equipment malfunction?

Does this measure follow a formal, written process?	Yes ____	No ____
Do you have performance measures to monitor the effectiveness of this program/practice?	Yes ____	No ____
Does implementation of this differ within your distribution system? (i.e., materials, location, etc.) ?	Yes ____	No ____

6 responders answered this question.

16 responders did not.

1 responder indicated that this does not apply to their system.

Measure	Formal, Written Process		Performance Measures		Different Implementation	
	Yes	No	Yes	No	Yes	No
Inspect transmission/distribution regulating stations monthly	X		X			X
Verify gas scope calibration monthly	X		X			X
Maintain 4" & 6" non-critical steel valves biennially	X		X		X	
Remote pressure monitoring	X		X			X
SCADA remote monitoring		X		X		X
Five year internal inspection of all pressure regulation devices		X	X			X
Inspections performed 12 times per year for regulators,	X			X		X
Inspections performed annual for critical and non-critical valves	X			X		X
Inspections performed twice per year for buried-type valves	X			X		X
Annual fusion equipment certification	X			X		X
Operations manual, material investigation procedure	X		X			X
As part of the new equipment acceptance process, the company conducts selected field pilot testing.		X		X		X

Question 3.10
What preventive and mitigative (P&M) measures (programs and/or practices) do you currently have in place to protect your distribution infrastructure against the threat of excavation / mechanical damage?
Does this measure follow a formal, written process? Yes ____ No ____
Do you have performance measures to monitor the effectiveness of this program/practice? Yes ____ No ____
Does implementation of this differ within your distribution system? (i.e., materials, location, etc.) ? Yes ____ No ____

10 responders answered this question.

13 responders did not.

Measure	Formal, Written Process		Performance Measures		Different Implementation	
	Yes	No	Yes	No	Yes	No
Leak survey 1 year after completion areas where sewer & certain other construction projects occurred	X		X			X
Installation of warning tape above all mains & double over larger than 4" due to width of ditch	X			X	X	
Stand by during construction around large-diameter mains		X		X	X	
Request or perform pot-holing during parallel bores between 5 – 10' from main every 50'	X			X		X
Participate with public works coordinating council to plan public improvement projects to prevent conflicts	X			X		X
Employees monitor for construction near our facilities without locates		X		X		X
Excavation around critical facilities has gas crews standing by	X			X		X
Member of Damage Prevention committee	X			X		X
Install excess flow valves on every new or renewed service up to 1300 CF	X			X		X
Watch and protect program for critical facilities	X			X		X
Mail reminders to excavators who have damaged our facilities during the past Month	X		X			X
Revisits to excavation sites by inspectors. Watchman required on 35 psi or greater	X		X			X
Coordinated main replacement with city/state projects	X			X	X	
Investigates water department failures of water mains and sewers	X			X		X
Install warning tape above facility during backfilling	X			X		X
Sponsor contractor awareness breakfasts, lunch, dinners		X		X	X	
Member of Common Ground Alliance		X		X		X
Non-incident voluntary reporting of damage	X			X	X	
Damage Cause Prevention Database to track incidents	X		X			X
Repeat One-Call Offender Process with Local State Commissions	X		X			X
The company was a strong force and principle charter member of a statewide utility notification system.	X		X			X

Measure	Formal, Written Process		Performance Measures		Different Implementation	
	Yes	No	Yes	No	Yes	No
Company personnel perform standby inspections at construction sites adjacent to significant company facilities.	X		X			

Question 3.11

What preventive and mitigative (P&M) measures (programs and/or practices) do you currently have in place to protect your distribution infrastructure against the threat of incorrect operations / operator error?

Does this measure follow a formal, written process?	Yes ____ No ____
Do you have performance measures to monitor the effectiveness of this program/practice?	Yes ____ No ____
Does implementation of this differ within your distribution system? (i.e., materials, location, etc.) ?	Yes ____ No ____

10 responders answered this question.

13 responders did not.

Measure	Formal, Written Process		Performance Measures		Different Implementation	
	Yes	No	Yes	No	Yes	No
Baseline testing of candidates to insure ability to learn	X		X			X
Review cp reads for erroneous (high or low) reads for re-read		X	X			X
Purchase on octagon-shaped 2# customer regulator to insure proper delivery pressure	X		X		X	
Repaired leak re-checks on cast-iron system or other repairs at fitter's discretion	X		X		X	
Audible SCADA alarms for high/low distribution pressure	X		X			X
Coordinated site visits by training personnel meet with crews in the field to evaluate work activities	X		X			X
All incorrect operations/errors investigated	X		X			X
All valve & regulator operations has to be approved by gas dispatcher	X		X			X
Supervisor quality control QAQC	X		X			X
Operator qualification program includes training and new construction	X		X			X
Annual refresher training for all Gas Operations employees	X			X		X
Quality Assurance Program	X		X			X
All distribution department employees are required to attend annual review of leak investigations and incidents	X			X		X
More stringent random drug testing pool schedule	X		X			X
Annual training for distribution operating employees and contractors	X			X		X
Operations Manual; various sections including Quality Assurance Program	X			X		X
Inspection and Auditing programs		X	X			X
Annual emergency response training with supplemental follow-up programs as deemed appropriate	X		X			X

Question 3.12

What preventive and mitigative (P&M) measures (programs and/or practices) do you currently have in place to protect your distribution infrastructure against the threat of weather related damage to cast iron pipe?

Does this measure follow a formal, written process?	Yes ____	No ____
Do you have performance measures to monitor the effectiveness of this program/practice?	Yes ____	No ____
Does implementation of this differ within your distribution system? (i.e., materials, location, etc.) ?	Yes ____	No ____

9 responders answered this question.

9 responders did not.

5 responders indicated that this does not apply to their system.

Measure	Formal, Written Process		Performance Measures		Different Implementation	
	Yes	No	Yes	No	Yes	No
Annual leak survey of cast iron system	X		X		X	
Supplemental Leak Surveys		X		X	X	
Cast Iron Patrols during winter	X			X		X
Bridge supports installed as required to prevent undermining of pipe during construction		X		X		X
Leak survey at every field service call during the winter	X			X		X
Above grade external regulator vents at vaults	X			X		X
Frost surveys	X		X			X
Annual written winter operations plan	X		X			X
Optical methane detector survey of predominant cast iron areas	X		X		X	
Conduct winter patrol leakage survey	X			X	X	
Mono-ethylene glycol injection	X			X		X
Frost Patrol Leak Survey Program	X		X			X
The company has removed all cast iron pipe from its distribution system.	X		X			X

Question 3.13

What preventive and mitigative (P&M) measures (programs and/or practices) do you currently have in place to protect your distribution infrastructure against the threat of weather related damage to plastic pipe?

Does this measure follow a formal, written process?	Yes ____	No ____
Do you have performance measures to monitor the effectiveness of this program/practice?	Yes ____	No ____
Does implementation of this differ within your distribution system? (i.e., materials, location, etc.) ?	Yes ____	No ____

8 responders answered this question.

15 responders did not.

Measure	Formal, Written Process		Performance Measures		Different Implementation	
	Yes	No	Yes	No	Yes	No
Installation of plastic "Warning Tape"	X			X	X	
Patrol of mains where movement or external loading could cause failure	X			X		X
Leak survey at every field service call during the winter	X			X		X
Minimize storage time for PE pipe	X			X		X
Maximum allowed exposure to sun (pipe)	X			X		X
Locate wire 2 to 6" away from pipe	X			X		X
In some cases more frequent patrolling and/or leak surveys are instituted	X			X		X
Tracer Wire Separation	X			X	X	
Geo Hazard Program, an aggressive, systematic, and comprehensive identification, assessment, and mitigation of geo-hazard threats to plastic distribution pipe.	X		X			X

Question 3.14

What preventive and mitigative (P&M) measures (programs and/or practices) do you currently have in place to protect your distribution infrastructure against the threat of weather related damage to steel pipe?

Does this measure follow a formal, written process? Yes ____ No ____

Do you have performance measures to monitor the effectiveness of this program/practice? Yes ____ No ____

Does implementation of this differ within your distribution system? (i.e., materials, location, etc.) ? Yes ____ No ____

4 responders answered this question.

19 responders did not.

Measure	Formal, Written Process		Performance Measures		Different Implementation	
	Yes	No	Yes	No	Yes	No
Patrol of mains where movement or external loading could cause failure	X			X		X
Leak survey at every field service call during the winter	X			X		X
Water level monitoring in vaults	X			X		X
Extra depth and abrasion resistant coatings at water crossings		X		X		X
Operations Manual	X		X			X
Geo Hazard Program, an aggressive, systematic, and comprehensive identification, assessment, and mitigation of geo-hazard threats to steel distribution pipe.	X		X			X

In Part 4 (Questions 4.01 through 4.05) operators were asked to describe, more on a macro basis, their current distribution infrastructure integrity-related programs. Responses were requested regarding use of risk-ranking models, participation in one-call systems and damage prevention originations.

Question 4.01 Do you use risk ranking in evaluating your distribution infrastructure?	
Is the process formal or informal?	Formal ____ Informal ____
Is the process written?	Yes ____ No ____

19 responders answered this question.
4 responders did not.

The following is a summary of the 19 responders

Formal	Informal	Written	Unwritten
X		X	
X		X	
	X	X	
X		X	
	X		X
X		X	
X		X	
X		X	
X		X	
X		X	
X		X	
X		X	
X		X	
X		X	
X		X	
X		X	
X		X	
X		X	
X		X	
X		X	

Question 4.02

In regards to one-call systems,

Note: If you operate in multiple states, please answer this question for each state separately. If you operate in more than 3 states, please respond for the 3 states in which you operate the most facilities.

When did your state initiate its one-call system?	Year _____
Have you seen a noticeable decline in "hits" since the inception of the one-call system?	Yes ____ No ____
Does your state mandate participation in the one call system?	Yes ____ No ____
Does your state exempt anyone from participation	Yes ____ No ____
Does your state mandate reporting of excavation damage?	Yes ____ No ____
Does your state's one-call regulation/legislation include penalties against excavators?	Yes ____ No ____

22 responders answered this question.

1 responder did not.

The 29 responses below are accounted for some of the 22 responders operating in multiple states

Inception Year	Reduction in "Hits"		State Mandated Participation		Participation Exemptions		Reporting Mandate		Penalties/Fines Levied	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
1988	X		X		X			X	X	
1983			X		X			X	X	
2001	X		X		X		X		X	
NA			X		X			X	X	
1974	X		X		X		X		X	
1982	X		X			X		X		X
1990	X		X			X		X	X	
1994	X		X		X		X		X	
1972	X		X		X		X		X	
1982	X		X		X			X	X	
1990	X		X			X		X	X	
1986	X		X		X			X		X
1991	X			X	X			X		X
1975	X		X			X	X		X	
1987/1991			X		X		X		X	
1980s	X		X			X	X		X	
1974/1994		X	X			X	X		X	
1970	X		X			X	X		X	
1972	X			X	X			X		X
1989	X		X			X		X	X	

Inception Year	Reduction in "Hits"		State Mandated Participation		Participation Exemptions		Reporting Mandate		Penalties/Fines Levied	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
1983	X		X		X		X		X	
1972	X		X		X			X	X	
1976		X	X		X			X	X	
1974	X		X		X			X	X	
Early '80s	X		X			X		X	X	
Late '90s		X	X		X			X	X	
1974	X		X			X		X	X	
1996	X			X	X			X		X
2002	X		X		X			X	X	

Question 4.03

In regards to damage prevention (DP) councils/organizations,

Does your company participate in local, regional and national DP councils/organizations

List the organizations

22 responders answered this question.

1 responder did not.

The 22 responders listed a total of 43 (an average of almost 2 per responder) local, state, regional and national damage prevention councils/organizations. The most cited organization was the Common Ground Alliance, cited by 13 of the 22 responders.

Question 4.04
Questions 3.01 through 3.09, looked at measures currently in place that address each individual threat category related to distribution infrastructure.

On a more macro basis, please list the top 5 major processes you have in place that you feel are the most effective for identifying, addressing and mitigating the consequences of threats to distribution infrastructure.

18 responders answered this question.
5 responders did not.

The most cited processes in place that have a positive effect on distribution infrastructure integrity are:

Process	Number of responders
Cathodic Protection Systems	10
Leak Surveys	10
Operator Qualification Programs	8
Replacement Programs	7
One Call Systems	4

Question 4.05a

Do you have a planned program for replacement for the following types of systems

Cast / Ductile Iron, Bare Steel , Plastic or Copper

Is the program formal or informal?	Formal ____ Informal ____
Is the program written?	Yes ____ No ____
Has the program been presented to your state agency?	Yes ____ No ____
Is there a time frame for completion of this program?	Yes ____ No ____
If yes, please indicate time frame _____	

All 23 responders answered this question.

Cast / Ductile Iron

15 responders have a planned replacement program
2 responders do not have a planned replacement program
6 responders said this is NA to their system

No	N/A	Formal		Written		Presented To State		Projected Complete
		Yes	No	Yes	No	Yes	No	
		X		X		X		
		X		X		X		2009
X								
			X		X		X	
X								
	X							
		X			X	X		
		X		X		X		
			X		X		X	
	X							
		X		X			X	2050
		X		X		X		
		X		X		X		
		X		X		X		
		X		X		X		
			X		X	X		
	X							
	X							
			X		X		X	
		X		X		X		
			X		X		X	
	X							
	X							

Bare Steel
17 responders have a planned replacement program
4 responders do not have a planned replacement program
2 responders said this is NA to their system

No	N/A	Formal		Written		Presented To State		Projected Complete
		Yes	No	Yes	No	Yes	No	
		X		X		X		
		X		X		X		2009
X								
X								
X								
		X		X			X	
		X		X		X		
		X		X		X		
			X		X		X	
			X		X		X	
		X		X		X		2050
		X		X			X	
	X							
		X		X		X		
		X		X			X	
			X		X	X		
	X							
X								
			X		X		X	
		X		X			X	
			X		X		X	
		X		X		X		
		X		X		X		2020

Plastic
4 responders have a planned replacement program
14 responders do not have a planned replacement program
5 responders said this is NA to their system

No	N/A	Formal		Written		Presented To State		Projected Complete
		Yes	No	Yes	No	Yes	No	
			X		X		X	
		X		X		X		
		X		X			X	
X								
X								
	X							
			X		X		X	
X								
X								
	X							
X								
X								
X								

X								
X								
X								
	X							
X								
	X							
	X							
X								
X								
X								

Copper
1 responder have a planned replacement program
10 responders do not have a planned replacement program
12 responders said this is NA to their system

No	N/A	Formal		Written		Presented To State		Projected Complete
		Yes	No	Yes	No	Yes	No	
	X							
	X							
X								
X								
X								
	X							
			X		X		X	
X								
X								
	X							
	X							
	X							
X								
X								
X								
	X							
	X							
	X							
	X							
	X							
X								
X								
	X							

Question 4.05b

Do you have planned programs for other types of systems besides those listed above?

Type of System? _____

Is the program formal or informal? Formal ____ Informal ____

Is the program written? Yes ____ No ____

Has the program been presented to your state agency? Yes ____ No ____

Is there a time frame for completion of this program? Yes ____ No ____

If yes, please indicate time frame _____

9 responders answered this question.

14 responders did not.

	Formal		Written		Presented To State		Compl. Date
Regulator stations	X		X			X	
Meters containing mercury	X		X		X		
System (pressure) upgrade		X		X		X	
Pressure regulators / reliefs		X		X		X	
Remote pressure telemetering		X		X		X	
Bare steel services	X		X		X		
Anode-type service risers		X		X		X	
Mercury service regulators	X			X		X	
LP distribution systems		X		X		X	

Questions 5.01 through 5.03 in Part 5 solicited operator's processes for identifying, evaluating and implementing new measures for enhancing the distribution integrity infrastructure.

Question 5.01
Do you have processes or practices in place to *identify* new practices and emerging technologies?
Please provide examples of your processes or practices? Are your processes or practices formal or informal? Formal ____ Informal ____ Are your processes or practices written? Yes ____ No ____

19 responders answered this question.
4 responders did not.

Examples of how new practices and emerging technologies are identified included:

1. Participation in
    a. Industry R&D groups (i.e., GTI, NYSEARCH, etc.)
    b. Industry organizations (i.e., AGA, MEA, NEGA, etc.)
    c. Consensus standards committees (i.e., ASME, NACE, ASTM, NFPA, etc.)
2. Attendance at industry seminars and trade shows
3. Networking with suppliers
4. Reading trade magazines and seminar papers
5. Holding subject matter experts accountable to stay current

Question 5.02 Do you have processes or practices in place to *evaluate* new practices and emerging technologies?
Please provide examples of your processes or practices? Are your processes or practices formal or informal? Formal ____ Informal ____ Are your processes or practices written? Yes ____ No ____

17 responders answered this question.
6 responders did not.

Evaluation practices vary widely. However, most programs designate a department, committee or individual responsible for the evaluation. Most of the programs identified include some sort of in-house testing (laboratory and field installations) and "shared learnings" with other operators.

Question 5.03 Do you have a process in place to *integrate/implement* new practices and emerging technologies?
Please provide examples of your processes or practices? Are your processes or practices formal or informal? Formal ____ Informal ____ Are your processes or practices written? Yes ____ No ____

16 responders answered this question.
7 responders did not.

Integration/implementation practices include modifications to company's policies, practices and procedures and the Operator Qualification Program, if applicable.

Question 6.01 of Part 6 asked if there are any other areas of concern that the respondent would like the AGF study to cover.

Question 6.01
Given the purpose of this questionnaire is to review the state of current regulations, practices and processes in place that enhance distribution infrastructure integrity, are there any other issues or questions that you feel are important and need to be emphasized?

13 responders answered this question.
10 responders did not.

The responses from the 13 responders included the following additional issues or concerns:

1. Lack of penalties for persons who damage pipe without notification to state one-call systems
2. Upon conversion from a manufactured/natural gas mixture to a straight natural gas system we have experienced the drying of gasket material resulting in leaks in mechanical fittings utilizing rubber gaskets.
3. Relocation of existing facilities and the increasing complexity of the underground infrastructure in urban settings.
4. LDC Operators have a very valuable resource in the Gas Piping Technology Committee (GPTC). The primary purpose of the GPTC Guide for Gas Transmission and Distribution Piping Systems (Guide) is to provide assistance to the operator in complying with the intent of the Code of Federal Regulations in the performance requirements contained in the Transportation of Natural and Other Gas by Pipelines, Title 49 Subchapter D-Pipeline Safety: Part 191- Annual Reports, Incident Reports, and Safety-related Condition Reports; and Part 192-Minimum Federal Safety Standards. This is an ANSI approved Committee.
   Committee Members represent various constituencies such as Industry, DOT (OPS & TSI), State Regulators, Manufactures and the Public.
5. In recent years there has been a concerted effort to enhance pipeline safety with the development of leading practices as well as issuing new regulations. Examples include the establishment of the Common Ground Alliance (practices) and Operator Qualification (regulation). Sufficient time should go by before new regulations are developed so that a proper evaluation can be made to determine if these efforts are making an impact.
6. Minimum security design standards for SCADA systems
7. To fully depict the difference between the type of failure encountered in a low pressure system versus that of a high pressure system, as well as, the potential damage that may result from failure.
8. The requirement for date-specific leak survey of gas piping inside of residential premises adds little value to distribution system integrity. Because the gas is odorized, virtually all leaks are reported by occupants.
9. Has anyone looked at a possible first step in distribution integrity where systems would be developed to track precursors to failures that are identified by the operators? This information could then be used to implement new programs to address trends (e.g. report on number of third party hits, report on cause of failures that did not result in injury or property damage).
10. There is little distinction throughout existing regulations of low pressure system operators and the related risk factors.
11. Industry currently works very closely with OPS to identify areas where improvements can be made; i.e. GPTC, ASTM, Common Ground Alliance, B31.8, etc. This cooperative approach is more beneficial then more prescriptive rulemaking.
12. This cooperative approach (as addressed in Concern #11) is also applied at a State level between operators and regulators for concerns unique to their operating area.
13. DOT statistics support industry's position that the transportation of natural gas by pipeline is the safest mode.

14. Broad-based funding mechanism for industry R&D, preferable to government driven, exclusively government funded research. Ensure that all utilities / customer groups are contributing to funding safety R&D that is driven by industry priorities and participation.
15. The survey concentrated on the pipeline safety aspects of distribution infrastructure. State regulatory agencies have numerous rules with regards to quality of service for customers. A distribution integrity program, if patterned on the Pipeline Integrity Rule, would have major implications with regards to maintaining service to customers. It would not be practical to remove mains from service at periodic intervals, even in terms of years, to perform integrity work without interrupting service to large numbers of end-use customers.
16. The very nature of Part 192, that being Pipeline Safety Rules, implies that the entire set of regulations is implicitly directed at assuring the safety of distribution infrastructure an on-going basis. Safety and integrity are seen to be one in the same as we certainly construct, operate and maintain our system with the safety of customers, the general public and employees with SAFETY being the utmost consideration.
17. Highlighting the differences between transmission and distribution infrastructure is not only important, but vital in discussion regarding distribution integrity going forward. Stacking the likelihood and consequences to the failure of a 36", high pressure transmission line with the likelihood and consequences of a 4" intermediate pressure plastic main is an unfair comparison and, in our judgment, cannot be supported from a technical perspective.
18. Regulatory agencies should not loose sight of the tremendous guidance provided to operators through organizations such as the Gas Piping Technology Committee (GPTC), ASME, AGA, PPI and ASTM to list a few. These organizations provide excellent guidance documents that supplement the code enhancing the effective integrity and operation of the nation's gas pipeline systems.
19. You didn't address 192.707 – pipeline markers. This is a very integral part of distribution systems as well as transmission pipelines. The code specifically requires markers in designated areas, and this also relates to Section 192.616 which will soon become a behemoth regulation via RP-1162 to be incorporated by reference. Section 192.707 addresses a number of issues which most certainly were designed to protect the integrity of a gas distribution system.

Part 7 solicited operator statistics that will be used to demonstrate the range of operators that responded to the survey.

Question 7.01
In order to demonstrate the range of operators who have responded to this questionnaire, please complete the following statistics as they apply to your company.

All 23 responders answered this question.

The following represents statistics of the 23 responders taken as a group.

Number of states represented	**26**	
Number of residential customers	15,567,367	92.0%
Number of commercial customers	1,324,943	7.8%
Number of industrial customers	40,221	0.2%
Total Customers	**16,932,531**	**100.0%**

0 – 10,000 customers	5
10,000 – 300,000	3
3000,000 – 1,000,000	10
> 1,000,000	5
	23

	AGA (15)	APGA (8)
Smallest	270,000	3,100
Largest	3,209,000	515,000

			2002 Distribution Total	% of 2002 Distribution Total
Mileage of unprotected bare steel	25,380	10.1%	61,654	41.2%
Mileage of protected bare steel	1,311	0.5%	16,455	7.9%
Mileage of unprotected coated steel	7,939	3.1%	15,835	50.1%
Mileage of protected coated steel	85,258	33.8%	458,505	18.6%
Mileage of plastic	114,526	45.5%	509,826	22.5%
Mileage of cast / wrought iron	16,636	6.6%	42,025	39.6%
Mileage of ductile iron	497	0.2%	1,705	29.1%
Mileage of copper	2	0.0%	45	4.4%
Mileage of other	616	0.2%	1,356	45.4%
Total Mileage of Main	**252,165**	**100.0%**	**1,107,406**	**22.8%**
Number of unprotected bare steel	2,222,944	14.8%	4,205,068	52.3%
Number of protected bare steel	42,834	0.3%	976,416	4.4%
Number of unprotected coated steel	362,593	2.3%	474,613	76.4%
Number of protected coated steel	2,544,298	16.9%	17,108,853	14.9%
Number of plastic	9,472,941	63.1%	34,487,405	27.5%
Number of cast / wrought iron	3,993	0.0%	77,895	5.1%
Number of ductile iron	411	0.0%	465	88.4%
Number of copper	149,370	1.0%	1,364,545	10.9%
Number of other	242,382	1.6%	963,487	25.2%
Total Number of Service Lines	**15,041,766**	**100.0%**	**59,658,747**	**25.2%**