

STATE OF NEW HAMPSHIRE  
BEFORE THE  
PUBLIC UTILITIES COMMISSION

LIBERTY UTILITIES (ENERGYNORTH NATURAL GAS) CORP.

Joint Petition to Approve Sale of New Hampshire Gas Corporation

Docket No. DG 14-155

SETTLEMENT AGREEMENT - ATTACHMENTS

Attachment Number	Description	Bates page number
1	Northeast Gas Association Regional Public Awareness and Education Program for Gas Distribution and Transmission Pipelines, Adopted by New Hampshire Gas Corporation, June 20, 2006, Revision 4 dated December 31, 2013	1
2	New Hampshire Gas Safety Manual, Adopted June 2005	94
3	New Hampshire Gas Corporation Operations & Maintenance Manual, Revision No. 12, Dated December 30, 2013	144
4	New Hampshire Gas Corporation Construction Standards and Methods, Revision January 2011	353
5	New Hampshire Gas Corporation Emergency Plan, Revision 11, December 2013	409
6	Northeast Gas Association Regional Public Operator Qualification Compliance Program, Adopted by New Hampshire Gas Corporation, Revision F, dated November 1, 2008	447



**Regional Public Awareness and Education  
Program for  
Gas Distribution and Transmission Pipelines**

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**Adopted By:**

**New Hampshire Gas  
Corporation**

***June 20, 2006***

*Northeast Gas Association Copyright 2005*

*Revised as of:*

*November 3, 2008*

*December 4, 2008 (Rev. 2)*

*November 28, 2012 (Rev.3)*

*December 31, 2013 (Rev. 4)*



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## 1.0 INTRODUCTION

The Department of Transportation's (DOT) Public Awareness final rule went into effect on June 20, 2005.

This Final Rule addresses pipeline efforts to improve public awareness of pipeline operations and safety issues through enhanced communications with:

- The public (including residents and places of congregation, such as businesses, schools, hospitals, prisons, and other places where people gather) in the pipeline vicinity and its associated rights-of-way and pipeline facilities;
- State and local emergency response and planning officials (*e.g.*, State and county emergency management agencies (EMAs) and local emergency planning committees (LEPCs) and first responder organizations;
- Local public officials and governing councils of affected municipalities and school districts; and
- Excavators.

The rule addresses the requirements of the Pipeline Safety Improvement Act (PSIA) of 2002 and incorporate by reference the guidelines provided in the American Petroleum Institute (API) Recommended Practice (RP) 1162, "Public Awareness Programs for Pipeline Operators."

On December 17, 2002, the President signed into law the Pipeline Safety Improvement Act of 2002. Section 5 mandates public education program activities by pipeline operators, the Secretary of Transportation, and appropriate State agencies. It requires owners or operators of a gas or hazardous liquid pipeline facility to carry out a continuing program to educate the public on:

- Use of a one-call notification system prior to excavation and other damage prevention activities;
- Possible hazards associated with unintended releases from the pipeline facility;
- Physical indications that such a release may have occurred;
- Steps that should be taken for public safety in the event of a pipeline release; and
- Procedures to report such an event.

This document contains a Regional Public Gas Pipeline Awareness and Education Program which has been adopted by members of the Northeast Gas Association (NGA)<sup>1</sup>. The Program satisfies the requirements of DOT 49 CFR Part 192 Sections 192.7 and 192.616 – Public Awareness; DOT 49 CFR Part 192.111M Subpart O – Pipeline Integrity Management (External Communications Requirement Only); and Title 16 NYCRR 255.616 for New York State members.

The Program is segregated into two main parts: A Model Program that NGA members adhere to; and a Customized Program that is specific to each member company. The Customized Program is contained in the Appendices.

## 1.1 COMPANY INFORMATION

<i>Name &amp; Address</i>	<i>Business Function</i>	<i>OPS System ID #</i>	<i>Web Site Address</i>	<i>OPS Public Awareness Contact E-mail</i>
New Hampshire Gas Corp 80 Pearl Street P.O. Box 438 Keene NH 03431	Distribution	31265	<u>None</u>	<a href="mailto:nhgas.stephenrokes@myfairpoint.net">nhgas.stephenrokes@myfairpoint.net</a>

<sup>1</sup> The Northeast Gas Association is the natural gas association for the local gas distribution companies in New England, New Jersey, and New York State that collectively serve 8.4 million customers. In addition to LDCs, NGA’s membership includes transmission companies, liquefied natural gas importers, and manufacturers.

## 2.0 GLOSSARY OF TERMS

**Annual** – Once each calendar year at intervals not to exceed 15 months.

**Baseline Public Awareness Program** – Refers to general program recommendations, set forth in Recommended Practice 1162 and B31.8S, section 10 (external communications).

**CFR** – Code of Federal Regulations

**Dig Safely** – Dig Safely is the nationally recognized campaign to enhance safety, environmental protection, and service reliability by reducing underground facility damage. This damage prevention education and awareness program is used by pipeline companies, one-call centers, and others throughout the country. Dig Safely was developed through the joint efforts of the Office of Pipeline Safety and various damage prevention stakeholder organizations. Dig Safely is now within the purview of the Common Ground Alliance (CGA), which can be reached at 703-818-3217 or for more information see [www.commongroundalliance.com](http://www.commongroundalliance.com).

**High Consequence Areas (HCA)** – A high consequence area is a location that is specially defined in pipeline safety regulations as an area where transmission pipeline releases could have greater consequences to health and safety or the environment. HCA apply only to transmission pipelines in accordance with DOT 49CFR192.903 regulations.

**Highly Volatile Liquid (HVL)** – A highly volatile liquid, as defined in pipeline safety regulations, is a hazardous liquid that will form a vapor cloud when released to the atmosphere and has a vapor pressure exceeding 276kPa (40 psig) at 37.8 degrees C (100 degrees F).

**Integrity Management Program (IMP)** – In accordance with DOT 49 CFR Part 192 Subpart O Section 911.

**IMP Summary** – An overview of an operator's IMP plan should include a description of the basic requirements and components of the plan and does not need to include a summary of the specific locations or schedule of activities undertaken. The overview may only be several pages long and its availability could be mailed upon request or made available on the operator's website.

**LDC** – Local Distribution Companies for natural gas.

**May** – The use of the verb “**may**” provides the operator with the option to incorporate the identified component of RP 1162 into its Public Awareness Program.

**NPMS** – National Pipeline Mapping System [www.npms.rspa.dot.gov](http://www.npms.rspa.dot.gov)

**One-Call Center** – The role of the One-Call Center is to receive notifications of proposed excavations, process the information, notify affected facility owners/operators, and identifying possible conflicts with nearby facilities.

**Operator** – All companies that operate pipelines within the scope of this Program.

**OPS** – Office of Pipeline Safety, part of the Research and Special Projects Administration (RSPA) of the US Department of Transportation. OPS develops and enforces safety and integrity regulations for pipelines and pipeline operations.

**Pipeline Right-of-Way (ROW)** – a defined strip of land on which an operator has the rights to construct, operate, and/or maintain a pipeline. A ROW may be owned outright by the operator or an easement may be acquired for specific use of the ROW. ROWs are typically associated with transmission pipeline facilities rather than LDC mains.

**Should** – The use of the verb “**should**” provides the operator with an expected Public Awareness Program component referenced in RP 1162 to be incorporated into the operator’s public awareness program.

**Supplemental Program** – Refers to providing additional or enhanced communications beyond the Baseline Program activities, if needed.

**SMYS** – Specified minimum yield strength

**Third-Party Damage** – Outside force damage that can occur during excavation activities to underground pipelines and other underground facilities.

**Transmission Pipeline Operator** – A company that operates gas transmission facilities as defined in accordance with DOT 49CFR Part 192.3.

## **3.0 PROGRAM ADMINISTRATION**

### **3.1 PROGRAM OBJECTIVES**

The overall goal of the Public Awareness Program is to enhance public, environmental and safety property protection through increased public awareness and knowledge.

- 3.1.1 Raise the awareness of the affected public, local public officials, emergency officials and excavators of the presence of pipelines in their community and understanding of the role of pipelines in transporting energy.
  - 3.1.1.1 Educate stakeholders that pipelines are safe but accidents can occur.
  - 3.1.1.2 Educate stakeholders that they play a significant role in pipeline safety regarding third party damage and right of way encroachment.
  - 3.1.1.3 Educate stakeholders about One-Call requirements, damage prevention requirements, and safe excavation practices.
  - 3.1.1.4 Educate stakeholders on steps they must take to prevent pipeline emergencies.
  - 3.1.1.5 Educate stakeholders how to recognize hazards associated with a pipeline emergency and how to protect themselves.
  - 3.1.1.6 Educate stakeholders on how to notify the pipeline operator in case of emergencies or regarding questions or concerns.
  - 3.1.1.7 Educate stakeholders how to safely respond to a pipeline emergency.
- 3.1.2 Provide a framework to manage the public awareness program and allow for ongoing assessment and any necessary enhancement or improvement.

## **3.2 MANAGEMENT COMMITMENT AND SUPPORT**

- 3.2.1 New Hampshire Gas Corporation has committed to the above stated objectives and will continually support those activities necessary to meet or exceed the requirements of DOT CFR Part 192 Sections 192.7 and 192.616 – Public Awareness and DOT CFR Part 192.111M Subpart O – Pipeline Integrity Management.
- 3.2.2 New Hampshire Gas Corporation has determined its public awareness programs are as important as its other safety programs.
- 3.2.3 Resources and funding to support the programs described in this outline commensurate to the herein described program objectives and scope as applied to New Hampshire Gas Corporation facilities will be available as evidence of management’s commitment. This amount will be revised depending upon the program evaluation and needs discussed later. Separate accounting for public awareness has been established internally and is documented in Appendix B.
- 3.2.4 New Hampshire Gas Corporation public awareness programs will raise the awareness of the affected public and key stakeholders of the presence of pipelines in their community and understanding of the role of pipelines in transporting energy. New Hampshire Gas Corporation believes a more informed public along pipeline routes will supplement its pipeline system and will contribute to reducing the potential for pipeline accidents.

## **3.3 ROLES AND RESPONSIBILITIES**

SEE APPENDIX B

### 3.4 PIPELINE ASSETS TO BE INCLUDED WITHIN THE PROGRAM

<i>Company Name</i>	<i>Business Function</i>	<i>Pipeline Mileage</i>
New Hampshire Gas Corporation	Distribution	Approx. 29 Miles

## 4.0 STAKEHOLDER AUDIENCES

- 4.1 There are four overall stakeholder audiences that this Plan addresses:
- 4.1.1 Affected Public
  - 4.1.2 Emergency Officials
  - 4.1.3 Local Public Officials
  - 4.1.4 Excavators
- 4.2 Method(s) used to identify audiences are listed in Table 1 below. Other methods are available and dependent on system requirements, demographics and geographic area.

**TABLE 1**

### AFFECTED PUBLIC

<i>Stakeholder Audience</i>	<i>Audience Definition</i>	<i>Audience Examples</i>	<i>Audience Identification Examples</i>
LDC Customers	People that are served by gas distribution facilities	<ul style="list-style-type: none"> <li>• LDC Customers</li> </ul>	<ul style="list-style-type: none"> <li>• Customer databases</li> </ul>
Residents along the local distribution system	People who live on or immediately adjacent to the distribution pipelines	<ul style="list-style-type: none"> <li>• LDC Customers</li> <li>• Non-customers living adjacent to the distribution pipelines</li> </ul>	<ul style="list-style-type: none"> <li>• Identify cities and towns that local distribution system is in.</li> <li>• Customer databases Franchise Area</li> </ul>
Gas transmission pipeline customers	Businesses or facilities that the pipeline operator provides gas directly to for end use purposes. This does not include LDC customers	<ul style="list-style-type: none"> <li>• NA</li> </ul>	<ul style="list-style-type: none"> <li>• NA</li> </ul>
Residents located adjacent to the transmission pipeline ROW	People who live adjacent to a natural gas and/or hazardous liquid transmission pipeline ROW	<ul style="list-style-type: none"> <li>• NA</li> </ul>	<ul style="list-style-type: none"> <li>• NA</li> </ul>
Places of congregation	Identified places where people assemble or work on a regular basis – on or along a transmission pipeline ROW, unrelated to habitation	<ul style="list-style-type: none"> <li>• NA</li> </ul>	<ul style="list-style-type: none"> <li>• NA</li> </ul>

### EMERGENCY OFFICIALS

Emergency Officials	Local, State, or Regional officials, agencies, and organizations with emergency response and/or public safety jurisdiction along the pipeline route.	<ul style="list-style-type: none"> <li>• Fire departments.</li> <li>• Police/sheriff departments</li> <li>• Local Emergency Planning Management Agencies (EMA)</li> <li>• Other emergency response organizations</li> <li>• Other public safety organizations</li> </ul>	<ul style="list-style-type: none"> <li>• Telephone Directory</li> <li>• Internet</li> <li>• Contact local or state officials</li> </ul>
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**LOCAL PUBLIC OFFICIALS**

Public Officials	Local, city, county, or state officials and/or their staffs having land use and street/road jurisdiction along the pipeline route.	<ul style="list-style-type: none"> <li>• Public Works Officials</li> <li>• City and county managers</li> <li>• Public and government officials</li> </ul>	<ul style="list-style-type: none"> <li>• Telephone Directory</li> <li>• Company Databases</li> <li>• Contact local or state officials</li> </ul>
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**EXCAVATORS**

Excavators/ Contractors/ Developers/ Misc. Construction-related Parties	Companies and local/state government agencies who are involved in any form of excavation activities.	<ul style="list-style-type: none"> <li>• Construction companies</li> <li>• Excavation equipment rental companies</li> <li>• Public works officials</li> <li>• Public street, road, and highway departments (maintenance and construction)</li> <li>• Timber companies</li> <li>• Fence building companies</li> <li>• Drain tiling companies</li> <li>• Landscapers</li> <li>• Well drillers</li> </ul>	<ul style="list-style-type: none"> <li>• Dig Safe</li> </ul>
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## 5.0 MESSAGE TYPE AND CONTENT FOR EACH AUDIENCE

5.1 Table 2 below provides a summary of the required messages conveyed to intended audiences of distribution and transmission operations.

**TABLE 2**

<i>MESSAGE TYPE</i>	<i>TRANSMISSION OPERATORS</i>				<i>DISTRIBUTION OPERATORS</i>			
	<i>Affected Public</i>	<i>Emergency Officials</i>	<i>Public Officials</i>	<i>Excavators</i>	<i>Affected Public</i>	<i>Emergency Officials</i>	<i>Public Officials</i>	<i>Excavators</i>
Pipeline purpose and reliability	X	X	X	X	X	X	X	X
Hazard Awareness and Prevention Measures	X	X	X	X	X	X	X	X
Damage prevention awareness	X			X	X			X
One call requirements	X		X	X	X			X
Leak recognition and response	X			X	X			X
Pipeline location information	X	X	X					
List of pipeline operators	X	X	X					
Emergency Preparedness		X	X			X	X	
Potential Hazards		X						
Additional information	X	X	X	X	Removed	Removed	Removed	Removed
How to obtain a Summary of Integrity Management Plans	X	X						
Summary of Integrity Management			X					
Continuing Liaison		X						
Coordination of Operator's Preparedness with Local Officials		X						
Distribution of Maps	Maps will not be distributed. The Operator may at times share facility information, when needed or by specific request of an official entity.							

Station Locations and Descriptions	Station Locations will not be distributed. The Operator may at times share facility information when needed, or by specific request of an official entity.
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## 5.2 Message Type Content

### **Pipeline Purpose and Reliability**

New Hampshire Gas Corporation operates approximately 29 miles of propane air gas pipelines in Keene New Hampshire.

These pipelines quietly, reliably, and efficiently deliver propane air throughout the service territory for household, commercial, and industrial use.

The gas industry works very closely with government and stays abreast of new security methods and technologies to ensure the highest levels of security. Individual gas utilities also evaluate their security procedures on a regular basis and continually enhance security programs as necessary and appropriate to meet their needs.

### **Hazard Awareness and Prevention Measures**

The United States gas transmission and distribution system has the best safety record of any type of transportation system in the country.

Like all forms of energy, however, it must be handled properly. Despite an excellent safety record, a gas leak caused by damage to a pipeline may pose a hazard and has the potential to ignite. We work diligently to ensure pipeline safety through a variety of measures including:

- One-call and Dig Safe programs
- Inspection programs
- Design and construction practices
- Workforce qualifications
- Public education programs
- Industry safety practices and government oversight
- Pipeline markers and facility mapping
- Leak surveys
- Patrol of critical facilities
- Pressure monitoring
- Odorization
- Liaison with city and municipal agencies
- Security measures

## Leak Recognition and Response

A gas leak is usually recognized by the smell, sight, or sound.

- SMELL – Propane air is colorless and odorless. Before it reaches you, we add a distinctive, pungent odor so that you'll recognize it quickly.
- SIGHT – You may see a white cloud, mist, fog, bubbles in standing water, or vegetation that appears to be dead or dying for no apparent reason.
- SOUND – You may hear an unusual noise like roaring, hissing or whistling

What should you do if you suspect a leak?

- MOVE to a safe environment
- CALL **911 or 1-603-352-1230**
- DO NOT strike a match, use telephones, switch on/off appliances, lights, or even a flashlight in the area where you smell gas. These items can produce sparks that might ignite the gas and cause an explosion. .

For Emergency personnel

- Emergency response officials should secure the site and take steps to eliminate ignition sources
- Evacuate the general public from vicinity of leak
- Contact New Hampshire Gas Corporation **1-603-352-1230**

For Excavators

- Stop work and evacuate the site to a safe distance
- Do not try to fix the pipe or slow the rate of leaking gas
- Don't do anything to cause a spark
- Call **911** if there is blowing gas
- Call New Hampshire Gas Corporation at **1-603-352-1230**
- Alert everyone on the premises
- Keep the public and traffic away
- Do not try to extinguish a gas burning fire unless there is a threat to life
- If you suspect or become aware of a dent, scratch, or coating damage to the pipeline, notify the company immediately at **1-603-352-1230**

### **Emergency Preparedness**

New Hampshire Gas Corporation shares contact information such as Gas Emergency Plans and Operations and Maintenance Procedures with the New Hampshire Department of Public Utilities Commission. Our Emergency Preparedness organization keeps the plans current and provides necessary training to state and/or local emergency management personnel.

New Hampshire Gas Corporation works closely and maintains a continuing relationship with emergency responders to prevent and prepare for emergencies.

### **Damage Prevention Awareness and One-Call Requirements**

The greatest risk to underground pipelines is accidental damage during excavation. To protect our natural gas pipelines and other underground facilities it is critical that people use the one call system prior to **any** excavation related activities on public and private property. The law requires that all excavators notify the local one call system at **1-888-344-7233** or **811** (72 hours before digging.) The one-call center will contact the owners of the underground facilities in the immediate area so that they can mark the location of their facilities prior to excavation. There is no charge to the public for this service. Excavators are required to take certain precautions when working in the immediate area of underground facilities. The one call center can provide the specific details of what is required. Failure to comply with this law can jeopardize public safety, result in costly damages and substantial fines.

Even if you cause what seems to be minor damage to the pipeline, notify the pipeline company immediately. A gouge, scrape, dent, or crease to the pipe or its coating may cause a future leak or failure. It is imperative that the pipeline owners inspect and repair any damage.

## New Hampshire Gas Pipeline Marker



Once the gas arrives, New Hampshire Gas Corporation distributes it through underground pipelines safely and reliably to its customers. These pipelines underneath the street are vital to the utility infrastructure. Because many of these distribution lines are not marked, it is critical that people use the one call system prior to any excavation. When excavation work is planned, the pipelines are identified with yellow paint markings, stakes or flags.

Utilizing Stakes & Paint



### **Picture of Mark Out Utilizing Stakes and Flags**



### **Availability of the NPMS**

Additional information on transmission pipelines in your area can be obtained from the National Pipeline Mapping System ([www.npms.rspa.dot.gov](http://www.npms.rspa.dot.gov)). The mapping system is called Pipeline Integrity Management Mapping System (PIMMA).

Federal, state, or local government officials or a pipeline operator are provided detail access. For access you must request a User Name and Password from the Office of Pipeline Safety.

### **Additional Information**

Additional information can be obtained through the following:

Common Ground Alliance

Dig Safe (Maine, New Hampshire, Massachusetts, Rhode Island, Vermont)

National Pipeline Mapping System

Northeast Gas Association

Office of Pipeline Safety

State Regulatory Agencies

Transportation Safety Institute

## 6.0 BASELINE DELIVERY FREQUENCY

6.1 Delivery frequencies are listed in Table 3 below.

## 7.0 BASELINE DELIVERY METHODS

7.1 Delivery methods for each audience are defined in Table 3 below.

7.2 Documentation of delivery methods are found in Appendix E.

**TABLE 3**

<i>Affected Public</i>	<i>Baseline Delivery Method and/or Media</i>	<i>Baseline Delivery Frequency</i>
LDC Customers	Bill stuffers	Twice annually
Residents along the local distribution system	1) Bill stuffers; or 2) Public Service Announcements	Annually
Transmission Customers	Targeted distribution of print material	Every 2 years
Residents adjacent to transmission pipeline ROW	1) Targeted distribution of print material; or 2) Public Service Announcements	Every 2 years
Places of Congregation adjacent to transmission pipeline ROW	Targeted distribution of print material	Every 2 years
<i>Emergency Officials</i>	<i>Baseline Delivery Method and/or Media</i>	<i>Baseline Delivery Frequency</i>
For Local Distribution Companies	1) Group meetings; or 2) Print material	Annually
For Transmission Pipeline Operators	1) Group meetings; or 2) Personal contact; or 3) Targeted distribution of print material; or 4) Telephone calls with targeted distribution of print material	Annually
<i>Public Officials</i>	<i>Baseline Delivery Method and/or Media</i>	<i>Baseline Delivery Frequency</i>
For Local D.C.	Targeted distribution of print material	Every three years.
<i>Excavators/Contractors</i>	<i>Baseline Delivery Method and/or Media</i>	<i>Baseline Delivery Frequency</i>
For Local D.C.	One-Call Center outreach	Annually

## **8.0 SUPPLEMENTAL PROGRAM ENHANCEMENTS**

Supplemental Program Enhancements are activities that go beyond coverage area, and/or Baseline Delivery Methods and/or Baseline Delivery Frequencies identified in Table 3.

- 8.1 The program evaluation process, Section 10.0, will consider supplemental program enhancements, if needed.
- 8.2 Supplemental program enhancements performed by the company appear in Appendix C. Don't think these are supplemental-don't go beyond baseline.

## **9.0 PROGRAM IMPLEMENTATION AND PROGRESS TRACKING**

A successful Public Awareness Program requires not only the identification of resources, identification of audience and appropriate message, but also a systematic execution of the program. Milestones should be set and progress measured to completion of the program. The program shall be implemented as follows:

- 9.1 Develop Required Program Administration Per Section 3.0
- 9.2 Conduct Program Activities Per Section 7.0
- 9.3 Collect Feedback Per Section 10.0
- 9.4 Update Program Periodically Per Section 11.0
- 9.5 Document Results In Appendix D.

## **10.0 PROGRAM EVALUATION**

Program evaluation consists of measuring program implementation and measuring program effectiveness.

### **10.1 Measuring Program Implementation**

- 10.1.1 An internal review will be conducted to determine whether the program has been developed to address the objectives, elements and schedule

specified in the program. It will also determine whether the responsible department(s) have been implementing and documenting the program as required.

10.1.2 The internal review will be conducted annually.

#### 10.2 Measuring Program Effectiveness

10.2.1 Effectiveness will be measured collaboratively through NGA. A baseline evaluation will be conducted with subsequent evaluations done at least every four years. NHG will also conduct its own evaluation.

10.2.2 Qualitative Research. CRPP proposes to conduct a series of focus groups throughout the eight NGA regions. These sessions will, as outlined in the NGA Request for Proposals, test general marketing materials which may minimally include: the messages and themes in website pages, radio, print, brochures, direct mail and inserts. The number and placement (locations) of these focus groups will be determined during a project initiation meeting. The fees for focus groups are presented in the “costs” section within this submission.

10.2.3 Evaluation. CRPP proposes to meet, in-person, with each of the participating NGA members to conduct the required process evaluation. The meeting, together with the collection of secondary data regarding each member’s Pipeline Safety Program will serve as the foundation for the evaluation.

10.2.4 Minimally the Program Evaluation component will comment on:

- ✓ Program effectiveness & efficacy;
- ✓ Program Progress (Process Evaluations focus on program design);
- ✓ Program goal and objective attainment;
- ✓ Process efficiency;
- ✓ Program record keeping.

10.2.5 Quantitative Research.

A. CRPP proposes to conduct 300 or 400 random, general population, surveys within each of the 31 NGA member territories (300 sample for small members and 400 sample for larger members). NHG will conduct a similar survey of a minimum 100 residents within Keene.

B. CRPP proposes to conduct 50 Excavator surveys and 50 Emergency/Public Official surveys within each of the 31 NGA member territories.

## **11.0 IMPLEMENTATION OF CONTINUOUS IMPROVEMENT**

- 11.1 Changes to the Public Awareness Plan may be initiated at any time as events dictate. However, at least once each calendar year, a Member Review Board shall meet to review changes in state and federal regulations, new technologies, best practices, and incidents; and consider appropriate updates to the Public Awareness Program. Recommendations from the Member Review Board will be distributed to the individual companies for comment by NGA. Company comments are evaluated by the member review board and a final revised Public Awareness Program document is produced.
- 11.2 To ensure the program accurately fulfills the intent of state and federal regulations, a determination will be made to modify the baseline program and/or add supplemental program enhancements based upon the program evaluation described in Section 10. Program revisions will be documented in Appendix A. Program changes may be made to areas such as:
- 11.2.1 Audience;
  - 11.2.2 Message type or content;
  - 11.2.3 Delivery frequency;
  - 11.2.4 Delivery method;
  - 11.2.5 Supplemental activities; or
  - 11.2.6 Program enhancements.
- 11.3 NGA is the central clearinghouse for communication of changes to the member companies. Program revisions approved by the Member Review Board will be disseminated to member companies by NGA.
- 11.4 The Public Awareness Program Change Document is sent to the designated key Public Awareness Program contact of each company. The designated key contact is responsible for communicating the information to the appropriate individuals within the company.

11.5 As part of a periodic review, future funding and internal and external resource requirements resulting from changes that are implemented will be identified in Appendix B.

# APPENDIX A

## PROGRAM REVISION

<u>Revision Number</u>	<u>Date Issued</u>	<u>Pages</u>	<u>Reviewed By</u>
1	November 3, 2008	2, 7, 23	Stephen Rokes
2	December 4, 2008	11, 12, 23	Stephen Rokes Appendix B, C and E
3	November 28, 2012		Stephen Rokes
4	December 31, 2013		Stephen Rokes

# APPENDIX B

## Management Statement

In the daily conduct of our business, the safety of both our employees and the public has always been, and will always be, our highest priority. This plan documents our longstanding commitment to safety as well as a variety of ongoing efforts to educate and inform the general public on the topic of Propane Air safety.

New Hampshire Gas Corporation welcomes this opportunity to work cooperatively with local, state and federal agencies toward greater public awareness of important energy topics such as Propane Air gas safety, Propane Air gas facilities, emergency response and damage prevention.

## Company Information

<u>RESPONSIBILITY</u>	<u>NAME</u>	<u>TITLE</u>
Program Director	Stephen Rokes	Manager
Program Administration	Christy Davis	Lead Analyst / Office Admin.
Corporate Communications	Michael Eastman	VP Gas Operations
Dig Safe	Ron Bausum	Dig Safe Coordinator

## Cost Accounting

The following Distribution Accounts have been set up for purposes of tracking costs associated with Public Awareness.

**Note:** There are items that are associated with Public Awareness but costed out separately because of their primary function. For instance mailing bill inserts. The costs are associated with mailing bills and not Public Awareness.

909.000 – Public Awareness



APPENDIX D

NGA REGIONAL BASELINE  
FINAL REPORT  
REGION TWO

*Prepared for:*



*June 2006*

## Statement of Confidentiality and Ownership

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All of the analyses, findings and recommendations contained within this report are the exclusive property of Northeast Gas Association.

As required by the Code of Ethics of the National Council on Public Polls and the United States Privacy Act of 1974, The Center for Research & Public Policy maintains the anonymity of respondents to surveys the firm conducts. No information will be released that might, in any way, reveal the identity of the respondent.

Moreover, no information regarding these findings will be released without the written consent of an authorized representative of Northeast Gas Association.

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# 1 INTRODUCTION

The Center for Research & Public Policy (CRPP) is pleased to present the results of a *Gas Pipeline Safety Survey* conducted within **Region Two (Maine, New Hampshire and Vermont)** on behalf of the Northeast Gas Association. The study included four comprehensive surveys of 400 residents, 25 Public Officials, 25 Emergency Management Service (EMS) Officials and 25 Excavators within **Region Two** towns served by **Bangor Gas Company, KeySpan Energy, Maine Natural Gas, New Hampshire Gas Corporation, Northern Utilities (Maine & New Hampshire) and Vermont Gas Systems, Inc.**

The survey was designed to provide resident, Public Official, EMS Official and Excavator input on gas pipeline safety, including overall gas pipeline awareness, perceptions, attitudes, knowledge, understanding, behavior and gas safety program awareness.

Interviews were conducted among all residents (customers and non-customers) within the towns served by **Bangor Gas Company, KeySpan Energy, Maine Natural Gas, New Hampshire Gas Corporation, Northern Utilities (Maine & New Hampshire) and Vermont Gas Systems, Inc.** CRPP, working together with NGA officials, designed the survey instruments to be used when calling respondents within each of eight regions.

The survey instruments employed in the *Gas Pipeline Safety Study* included the following areas of investigation:

- Overall awareness of natural gas pipelines;
- Perceptions of, and concerns over pipeline safety;
- Knowledge and understanding of pipeline leaks;
- Behavior in reaction to detected gas leaks;
- Awareness of the NGA natural gas pipeline safety campaign;
- Sources for information regarding pipeline safety; and
- Demographics.

Section II of this report discusses the Methodology used in the study, while Section III includes highlights based on an analysis of the findings. Section IV is a Summary of Findings for the telephone surveys - a narrative account of the data.

Section V is an Appendix to the report containing a crosstabulation table, copies of each survey instrument utilized and the composite aggregate data.

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## METHODOLOGY

Using a quantitative research design, CRPP completed 400 interviews among **Region Two (Maine, New Hampshire and Vermont)** residents. Residents were both customers and non-customers residing within the towns served by **Bangor Gas Company, KeySpan Energy, Maine Natural Gas, New Hampshire Gas Corporation, Northern Utilities (Maine & New Hampshire) and Vermont Gas Systems, Inc.** Public Officials included Mayors, Councilmen and Council Members. Emergency Management Service Officials included Police Chiefs, Ambulance Chiefs, Fire Chiefs, Fire or Police Commissioners, Local Emergency Officials and EMS Officials.

All telephone interviews were conducted June 5 – June 10, 2006. Residents were contacted between 5:00 p.m. and 9:00 p.m. weekdays and 10:00 a.m. and 4:00 p.m. on the weekends.

Survey input was provided by NGA officials.

Survey design at CRPP is a careful, deliberative process to ensure fair, objective and balanced surveys. Staff members, with years of survey design experience, edit out any bias. Further, all scales used by CRPP (either numeric, such as one through ten, or wording such as strongly agree, somewhat agree, somewhat disagree or strongly disagree) are balanced evenly. And, placement of questions is carefully accomplished so that order has minimal impact.

All population-based surveys conducted by CRPP are proportional to population contributions within states, towns, and known census tract, group blocks and blocks. This distribution ensures truly representative results without significant under or over representation of various geographic or demographic groups within a sampling frame.

CRPP utilized a “super random digit” sampling procedure for residential interviews, which derives a working telephone sample of both listed and unlisted telephone numbers. This method of sample selection eliminates any bias towards only listed telephone numbers. Additionally, this process allows randomization of numbers, which equalizes the probability of qualified respondents being included in the sampling frame.

Four survey instruments were used to elicit information from all respondents. Residents qualified for the survey if they confirmed they were heads of household, at least eighteen years of age and were current residents of the service territory included.

Training of telephone researchers and pre-test of the survey instrument occurred on June 5, 2006.

All facets of the study were completed by CRPP’s senior staff and researchers. These aspects include: survey design, pre-test, computer programming, fielding, coding, editing, data analysis, verification, validation and logic checks, analysis and report writing.

Completion rates are a critical aspect of any telephone survey research study. Because one group of people might be easier to reach than another group, it is important that concentrated

efforts are made to reach all groups to an equal degree. A high completion rate means that a high percentage of the respondents within the original sample were actually contacted, and the resulting sample is not biased toward one potential audience. CRPP maintained an **82%** completion rate on all calls made among residents. And, a high completion rate often times indicates an interest in the topic.

Statistically, a sample of 400 surveys represents a margin for error of +/- 5.0% at a 95% confidence level.

In theory, a sample of **Region Two** residents will differ no more than +/-5.0% than if all **Region Two** residents were contacted and included in the survey. That is, if random probability sampling procedures were reiterated over and over again, sample results may be expected to approximate the larger population values within plus or minus 5.0% -- 95 out of 100 times.

Readers of this report should note that any survey is analogous to a snapshot in time and results are only reflective of the time period in which the survey was undertaken. Should concerted public relations or information campaigns be undertaken during or shortly after the fielding of the survey, the results contained herein may be expected to change and should be, therefore, carefully interpreted and extrapolated.

Furthermore, it is important to note that all surveys contain some component of “sampling error.” Error that is attributed to systematic bias has been significantly reduced by utilizing strict random probability procedures. This sample was strictly random in that selection of each potential respondent was an independent event, based on known probabilities.

Each qualified household within **Region Two** had an equal chance for participating in the study. Statistical random error, however, can never be eliminated but may be significantly reduced by increasing sample size.

Throughout an eight week time frame, CRPP thoroughly surveyed eight regions for the Northeast Gas Association. The table below presents an overview of the regions.

Region	State(s)	Gas Utilities Represented
Region One	Connecticut	Connecticut Natural Gas Norwich Public Utilities Southern Connecticut Gas Yankee Gas
Region Two	Maine New Hampshire Vermont	Bangor Gas Company KeySpan Energy Maine Natural Gas New Hampshire Gas Corporation Northern Utilities, Inc. (Maine) Northern Utilities, Inc. (New Hampshire) Vermont Gas Systems, Inc.
Region Three	New York (Northeast)	National Grid New York State Electric & Gas St. Lawrence Gas
Region Four	New York (West)	Corning Natural Gas National Fuel New York State Electric & Gas
Region Five	New York (Southeast)	Central Hudson Gas & Electric Consolidated Edison KeySpan Energy Orange & Rockland New York State Electric & Gas
Region Six	Massachusetts Rhode Island (Northwest)	Bay State Gas Company Berkshire Gas Company City of Holyoke Gas & Electric Department KeySpan Energy NStar Gas Unitil/Fitchburg Gas & Electric Light Company Wakefield Municipal Gas & Light Westfield Gas & Electric Light Department
Region Seven	Massachusetts Rhode Island (Southeast)	Bay State Gas Company Blackstone Gas Company KeySpan Energy Middleboro Gas & Electric Department NStar Gas New England Gas Company
Region Eight	New Jersey	New Jersey Natural Gas Public Service Electric & Gas Company

## **GENERAL PUBLIC**

### **AWARENESS**

- The majority of respondents surveyed, 80.8%, reported to be either “very aware” (64.5%) or “somewhat aware” (16.3%) that natural gas pipelines run underground in many areas in and around their community.
- In addition, nearly three-quarters of respondents, 74.0%, indicated they were either “very familiar” (54.5%) or “somewhat familiar” (19.5%) with the smell of natural gas.
- Importantly, more than one-quarter of all respondents, 27.3%, reported to be “unsure” if they lived near or within half a mile of a natural gas pipeline.

### **PERCEPTIONS/ATTITUDES**

- Fewer than one-third of all respondents, 29.0%, suggested they “always” (11.5%) or “sometimes” (17.5%) wonder if precautions have been made to avoid accidental damage to area pipelines when construction crews, neighbors or others are digging in their community.
- Just over one-quarter of all respondents, 25.8%, reported to be either “very concerned” (8.8%) or “somewhat concerned” (17.0%) in 2006 about natural gas pipeline safety in their area.

### **KNOWLEDGE/UNDERSTANDING**

- When asked, in an open-ended format question, to report the way or ways in which they might detect a natural gas leak, residents reported the following:
  - Smell gas leak (68.6%)
  - Hear gas leak (8.1%)
  - See damaged gas pipe or line (5.5%)

### **BEHAVIOR**

- Additionally, if a natural gas leak was detected, the following depicts how respondents would report the leak:
  - Move to a safe area (34.0%)
  - Call local natural gas company or pipeline operator (33.5%)
  - Call 911 (33.5%)
  - Call police/fire/emergency services (17.5%)
- Small numbers of respondents report ever taking part in any of five different actions related to gas pipe safety such as “talked to family about natural gas

pipeline safety precautions” (7.8%), “forwarded natural gas pipeline safety information on to others” (3.5%), “came upon or encountered a damaged natural gas pipeline” (2.8%), “attempted to obtain natural gas pipeline safety information over the last year” (2.8%) or “called to report suspicious or unusual activity near a natural gas pipeline” (2.5%).

- In the event of a natural gas leak, just over two-thirds of all respondents, 69.3%, report “calling 911” would be the quickest way to secure help.
- In an effort to find the phone number for the local natural gas company using the internet or yellow pages to report a gas leak, respondents would look for or type in the following:
  - The company name of the local gas company (29.8%)
  - “Natural Gas” (20.5%)
  - Don’t know/unsure (14.8%)
  - “Gas Utility” (13.5%)
  - “Gas Company” (12.5%)
  - “Utilities” (6.0%)
  - Other (2.3%)
  - “Gas emergencies” (1.0%)

#### THE SAFETY CAMPAIGN

- Slightly more than one-quarter of all respondents, 25.8%, indicated having read, seen or heard something, in general, about natural gas pipeline safety over the last year.
- In addition, over one-quarter of all respondents, 28.8%, indicated they were either “very aware” (12.0%) or “somewhat aware” (16.8%) of the education efforts of their local gas company and Northeast Gas Association, while 57.0% were “not at all aware.”
- Those respondents reporting at least some awareness of the education efforts of their local gas company and Northeast Gas Association were asked to name one or more of the key education messages. The 3 most frequently recalled messages were as follows:
  - Dig safely or Dig Safe (58.2%)
  - Call before you dig (49.7%)
  - Don’t know (11.8%)
- Impressively, the clear majority of all respondents, 96.8%, noted that pipeline safety public education is either “very important” (72.0%) or “somewhat important” (24.8%).
- Over two-thirds of respondents were familiar with the terms or actions related to pipeline safety such as “Dig Safe” (67.5%), while under one-quarter of respondents (23.3%) were familiar with the term “One Call.”
- When asked to rate their local gas utility’s pipeline safety public education including its advertising and communication on several important

characteristics such as “providing specific instructions for gas emergencies,” “informative,” “increasing your knowledge about pipeline safety,” “attention grabbing” and “having memorable messages,” respondents provided an overall average positive rating of 23.6% in 2006. When those providing a “don’t know” response were removed from the data, the average positive rating increased to 55.2%.

**SOURCES FOR INFORMATION**

- Respondents reported their top preferred sources for seeing, hearing or receiving information about gas pipeline safety issues and precautions as:
  - TV news (29.3%)
  - Mailings/direct mail (25.5%)
  - TV advertising (25.3%)
  - Newspaper stories (20.5%)
  - Bill inserts (16.0%)
  - Newspaper advertising (9.5%)

**PUBLIC OFFICIALS/EMERGENCY MANAGEMENT SERVICE OFFICIALS**

**AWARENESS**

- When asked to rate their awareness of a number of facts or issues related to natural gas pipeline safety, Public and Emergency Management Officials reported the following:

VI. Awareness	<i>Public Officials</i>	<i>Emergency Officials</i>
Natural gas pipelines run underground in many areas in and around your community	88.0%	96.0
The precautions excavators should take to avoid damage to natural gas pipelines	84.0	96.0
The “One Call Line” to receive free markouts of buried natural gas pipelines/systems	64.0	88.0
Your own community’s Emergency Response Plan for gas pipeline breaks	56.0	80.0
<b><i>Average</i></b>	<b><i>73.0</i></b>	<b><i>90.0</i></b>

**PERCEPTIONS/ATTITUDES**

- Just under half of Public (48.0%) and over half of Emergency Management (56.0%) Officials suggest they either “always” or “sometimes” wonder if precautions have been made to avoid accidental damage to area pipelines when construction crews, neighbors or others are digging in their community.
- On their list of concerns, two-fifths of all Public (40.0%) and Emergency Management (40.0%) Officials report to be either “very concerned” or

“somewhat concerned” with natural gas pipeline safety in their area.

- Large majorities of both Public (88.0%) and Emergency Management (88.0%) Officials believe excavators and construction professionals are either “very concerned” or “somewhat concerned” with natural gas pipeline safety in their area.

**KNOWLEDGE/UNDERSTANDING**

- When asked, in an open-ended format question, to report the way or ways in which they might detect a natural gas leak, Public and Emergency Management Officials reported the following:

How might you detect a natural gas leak?	<i>Public Officials</i>	<i>Emergency Officials</i>
Correct: Smell gas leak	84.0%	80.0
Correct: See damaged gas pipe or line	12.0	16.0
Correct: Hear gas leak	8.0	12.0
Incorrect: See gas	---	---
Other	4.0	12.0
Don't know/unsure	12.0	4.0

- Additionally, if a natural gas leak was detected, the following depicts how respondents would report the leak:

If you did detect a natural gas leak, what would you do?	<i>Public Officials</i>	<i>Emergency Officials</i>
Call 911	56.0%	32.0
Call local natural gas company or pipeline operator	28.0	60.0
Call police/fire/emergency services	20.0	12.0
Move to a safe area	20.0	36.0
Don't know/unsure	---	4.0

- Interestingly, just under half of all Public (48.0%) and slightly more than three-quarters of all Emergency Management (76.0%) Officials report having the number handy to call a local gas company or pipeline operator with regard to a natural gas leak or pipe damage.
- When read a list of eleven different actions related to natural gas pipeline safety, less than half of all Public Officials reported ever taking part in any of the eleven actions being measured. Numbers for Emergency Management Officials were higher in each of the eleven areas measured.
- When asked how well prepared they felt their community was in four areas related to a natural gas leak, Public and Emergency Management Officials

reported the following:

How well prepared is your community? (very well & somewhat prepared)	<i>Public Officials</i>	<i>Emergency Officials</i>
Knowledge about inherent dangers	76.0%	92.0
Gas leak emergency training	76.0	84.0
Knowledge about leaks	72.0	92.0
Special equipment required	64.0	64.0

### THE SAFETY CAMPAIGN

- More than one-quarter of all Public (28.0%) and more than three-quarters of Emergency Management (80.0%) Officials indicated having read, seen or heard something, in general, about natural gas pipeline safety over the last year.
- In addition, more than one-third of all Public (40.0%) and just under three-quarters of Emergency Management (72.0%) Officials indicated they were either “very aware” or “somewhat aware” of the education efforts of their local gas company and Northeast Gas Association.
- Those respondents reporting at least some awareness of the education efforts of their local gas company and Northeast Gas Association were asked to name one or more of the key education messages. The most frequently recalled messages were as follows:

Messages recalled	<i>Public Officials</i>	<i>Emergency Officials</i>
Call before you dig	72.7%	55.6
Safety is priority number one	54.5	27.8
Dig safely or Dig Safe	27.3	44.4
Property owners should report suspicious activity	27.3	5.6
Wait for “markout”	9.1	22.2
Don’t know	9.1	22.2

- Impressively, all Public (100.0%) and Emergency Management (100.0%) Officials noted that the Pipeline Safety Public Education is either “very important” or “somewhat important.”
- All respondents were asked to rate their local gas utility’s pipeline safety public education including its advertising and communication on several important characteristics. The second column in each of the tables below presents the cumulative total of those providing a 1 – 4 rating (positive) on the ten-point scale. Readers should also note, the final column of each table below presents the results when those providing a “don’t know” response were removed from the data.

Public Safety Education characteristics ( <i>Public Officials</i> )	<i>Region Two w/ DKs</i>	<i>Region Two w/o DKs</i>
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Providing specific instructions for gas emergencies	44.0%	68.8
Informative	40.0	62.5
Increasing your knowledge about pipeline safety	40.0	62.5
Providing enough information	40.0	62.5
Attention grabbing	40.0	62.5
Having memorable messages	32.0	50.0
<b>Average</b>	<b>39.3</b>	<b>61.5</b>

<b>Public Safety Education characteristics (Emergency Management Officials)</b>	<b>Region Two w/ DKs</b>	<b>Region Two w/o DKs</b>
Providing specific instructions for gas emergencies	64.0%	76.2
Increasing your knowledge about pipeline safety	64.0	76.2
Informative	60.0	71.4
Attention grabbing	52.0	61.9
Having memorable messages	48.0	57.1
<b>Average</b>	<b>57.6</b>	<b>68.6</b>

### SOURCES FOR INFORMATION

- Respondents reported their top preferred sources for seeing, hearing or receiving information about gas pipeline safety issues and precautions as:

<b>Sources for pipeline safety information</b>	<b>Public Officials</b>	<b>Emergency Officials</b>
TV advertising	40.0%	28.0
Newspaper stories	24.0	4.0
Internet/web	24.0	8.0
Mailings/direct mail	20.0	40.0
TV news	16.0	16.0
Brochures	12.0	24.0
Radio news	12.0	4.0
Newspaper ads	8.0	16.0
Radio advertising	8.0	8.0
Bill inserts	8.0	8.0
None	8.0	---
Friends/neighbors/relatives	4.0	4.0
Newspaper inserts	4.0	4.0
Fairs and events	4.0	12.0
Government agency	---	4.0
Utility company	---	16.0
Other	---	4.0

### EXCAVATORS

### AWARENESS

- Importantly, all Excavators surveyed suggested they were either “very aware” or “somewhat aware” of precautions required when digging in general (100.0%) or digging near natural gas pipelines (100.0%).
- Low numbers of Excavators report receiving information or communication on natural gas pipeline safety from five different sources.

<i>Information or communication from...</i>	<i>Region Two (Yes)</i>
Local natural gas company or pipeline operator	40.0%
Your own construction industry groups or associations	28.0
The One Call Center	24.0
State or municipal emergency management officials	24.0
Northeast Gas Association or other gas industry associations	20.0

### JOB PREPARATIONS

- Just under two-thirds of Excavators surveyed, 64.0%, report “always” contacting the One Call Center regarding pipeline locations.
- While a large majority, 88.9%, did report providing pipeline safety information to operators, just over one-tenth of Excavators, 11.1%, said they do not provide pipeline safety information to the folks performing excavation work on their behalf.
- Among those respondents (36.0%) who report having other employee operators or subcontractors performing excavation work on their behalf, more than half, 55.6%, report providing pipeline safety training to these other operators.
- While more one-third of all Excavators, 36.0%, report other employee operators or subcontractors “always” contact the One Call Center regarding pipeline locations, a significant number, 32.0%, reported to be “unsure” and 24.0% report other employee operators or subcontractors “never” call.
- All Excavators were asked, on an annual basis, how frequently they run into a number of different situations. The yearly average for each of the situations is presented below:
  - Unexpectedly uncover a natural gas pipeline (0.7%)
  - Close calls with gas pipelines when digging (0.2%)
  - Damage natural gas pipelines (0.2%)

### PERCEPTIONS/ATTITUDES

- More than three-quarters of all respondents, 80.0%, suggested they “always” wonder if precautions have been made to avoid accidental damage to area pipelines when they or their excavation crews are digging.

### BEHAVIOR

- If a natural gas leak was detected, the following depicts how respondents would report the leak:

<i>If you did detect a natural gas leak, what would you do?</i>	<i>Excavators Region Two</i>
Call local natural gas company or pipeline operator	48.0%
Move to a safe area	20.0
Call 911	16.0
Other	16.0
Call police/fire/emergency officials	12.0

- When read a list of four different actions related to natural gas pipeline safety, less than 50.0% of all Excavators reported ever taking part in any of the four actions being measured.

### THE SAFETY CAMPAIGN

- While three-fifths of all respondents, 60.0%, indicated they were either “very aware” or “somewhat aware” of the education efforts of their local gas company and Northeast Gas Association, another 40.0% reported to be “somewhat unaware” or “not at all aware” of the efforts.
- Those Excavators reporting at least some awareness of the education efforts of their local gas company and Northeast Gas Association were asked to name one or more of the key education messages. The 3 most frequently recalled messages were as follows:
  - Call before you dig (58.8%)
  - Dig safely or Dig Safe (47.1%)
  - Wait for “markout” (23.5%)
- Impressively, a vast majority of Excavators, 96.0%, noted that the pipeline safety public education is “very important,” yet the remaining 4.0% of respondents believe it is “not it all important.”
- All respondents were asked to rate their local gas utility’s pipeline safety public education including its advertising and communication on several important characteristics. The second column in the table below presents the cumulative total of those providing a 1 – 4 rating (positive) on the ten-point scale. Readers should also note, the final column in the table below presents the results when those providing a “don’t know” response were removed from the data.

<b>Public Safety Education characteristics</b>	<i>Excavators w/ DKs</i>	<i>Excavators w/o DKs</i>
Increasing your knowledge about pipeline safety	56.0%	87.5
Providing specific instructions for gas emergencies	56.0	87.5
Having memorable messages	52.0	81.3
Informative	48.0	70.6
Attention grabbing	48.0	75.0
<b>Average</b>	<b>52.0</b>	<b>80.4</b>

## SOURCES FOR INFORMATION

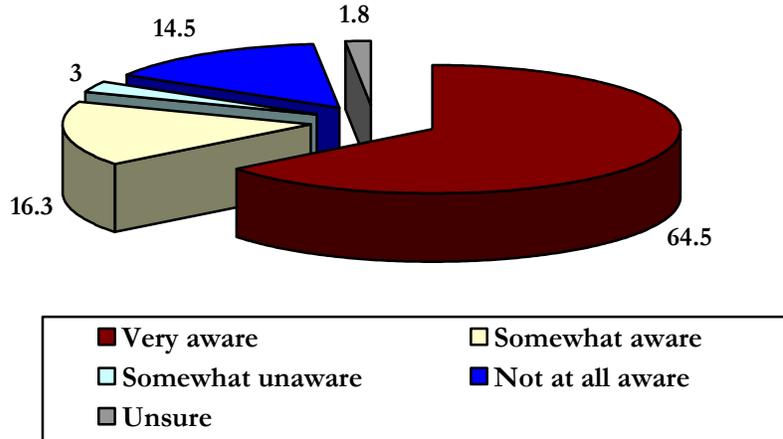
- Respondents reported their top preferred sources for seeing, hearing or receiving information about gas pipeline safety issues and precautions as:
  - Mailings/direct mail (48.0%)
  - Internet/web (28.0%)
  - Utility company (24.0%)
  - TV advertisements (20.0%)
  - TV news (12.0%)
  - Brochures (12.0%)

## GENERAL PUBLIC

Readers are reminded that the following section summarizes statistics collected from surveys conducted among 400 **Region Two (Maine, New Hampshire and Vermont)** residents.

### AWARENESS

A majority of residents (customers and non-customers) within NGA's **Region Two** service territory, 80.8%, suggested they were either "very aware" (64.5%) or "somewhat aware" (16.3%) that natural gas pipelines run underground in many areas in and around their community, including directly to the homes of natural gas customers. Others reported they were either "somewhat unaware" (3.0%), "not at all aware" (14.5%) or "unsure" (1.8%).



Nearly three-quarters of residents, 74.0%, indicated they were either "very familiar" (54.5%) or "somewhat familiar" (19.5%) with the smell of natural gas while the remaining respondents reported to be either "somewhat unfamiliar" (4.8%), "not at all familiar" (19.3%) or "unsure" (2.0%).

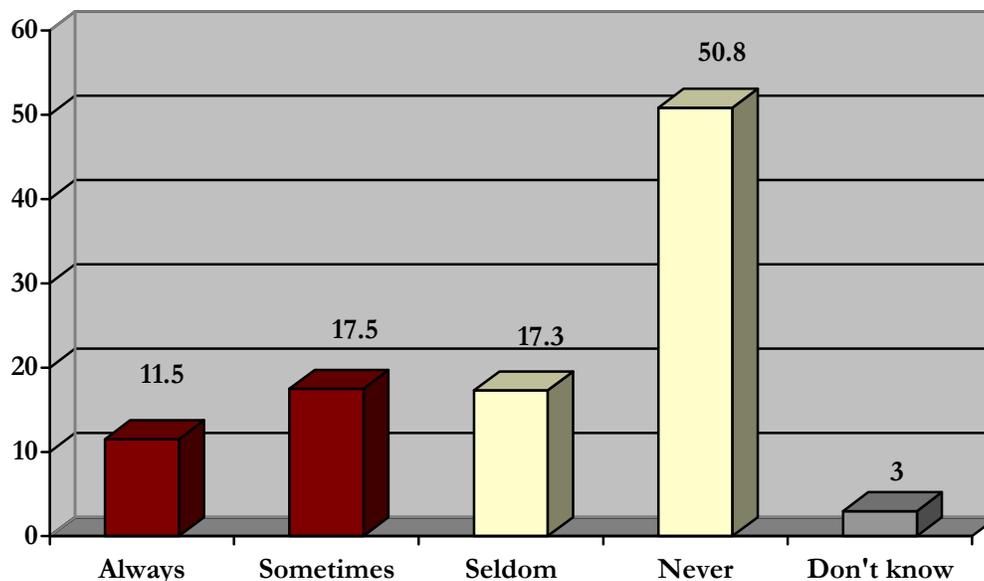
More than one-quarter of all respondents, 27.3%, reported to be "unsure" if they lived near or within half a mile of a natural gas pipeline. Nearly one-third, 32.8%, said they believed they did not live near or within half of a mile of a natural gas pipeline, and 40.0% believe they do.

### PERCEPTIONS/ATTITUDES

As presented in the chart below, fewer than one-third of all respondents, 29.0%, suggested they "always" (11.5%) or "sometimes" (17.5%) wonder if precautions have been made to avoid

accidental damage to area pipelines when construction crews, neighbors or others are digging in their community.

**How often do you wonder if precautions have been made to avoid accidental damage to area pipelines?**



Just over one-quarter of all resident respondents, 25.8%, reported to be either “very concerned” (8.8%) or “somewhat concerned” (17.0%) about natural gas pipeline safety in their area.

The table below presents detailed findings.

<b>How concerned about pipeline safety in your area?</b>	<b><i>Residents Region Two</i></b>
Very concerned	8.8%
Somewhat concerned	17.0
Somewhat unconcerned	11.3
Not at all concerned	62.5
Don't know/unsure	0.5
<b><i>Total concerned</i></b>	<b><i>25.8</i></b>
<b><i>Total unconcerned</i></b>	<b><i>73.8</i></b>

**KNOWLEDGE/UNDERSTANDING**

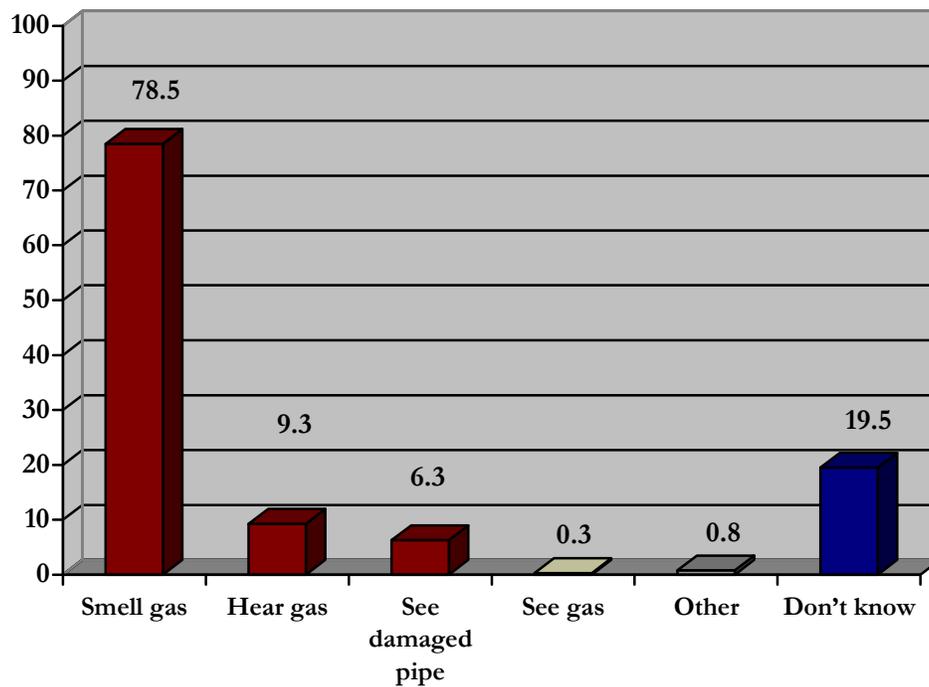
Researchers asked respondents, in an open-ended format question, how they might detect a

natural gas leak.

The following table presents the results as collected. Multiple responses were collected.

How might you detect a natural gas leak?	<i>Residents Region Two</i>
Correct: Smell gas leak	78.5%
Correct: Hear gas leak	9.3
Correct: See damaged gas pipe or line	6.3
Incorrect: See gas	0.3
Other	0.8
Don't know/unsure	19.5

How might you detect a natural gas leak?

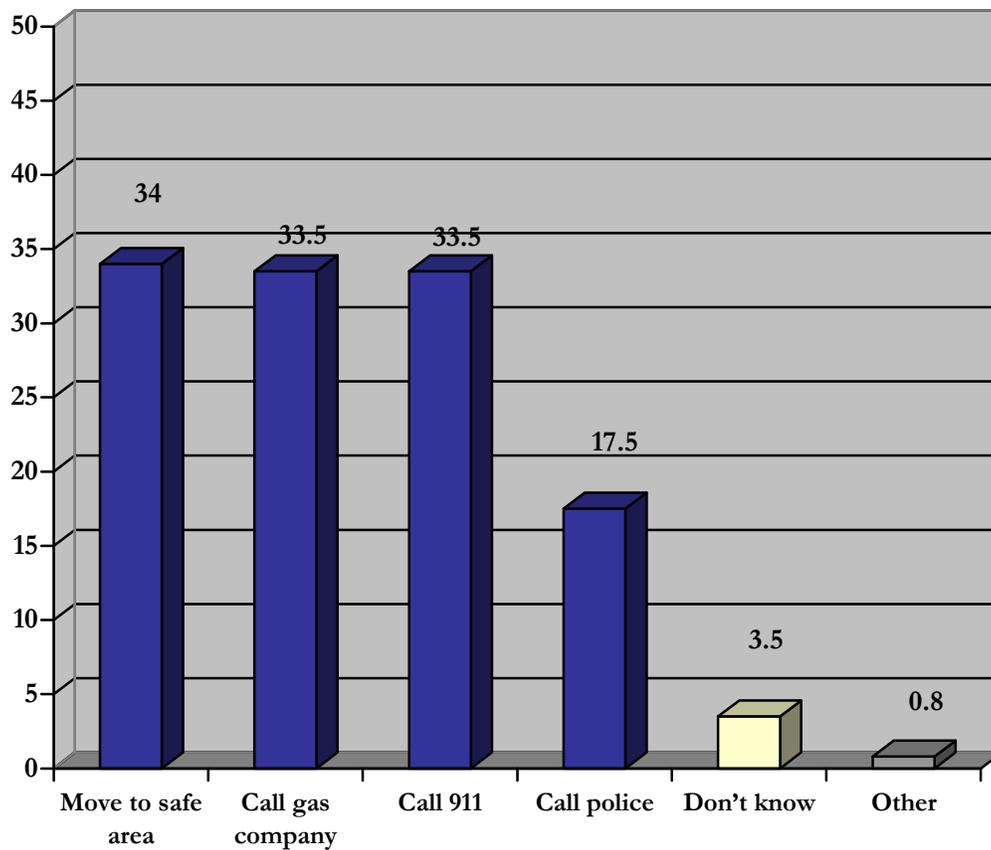


**BEHAVIOR**

If respondents detected a natural gas leak, the following table depicts the action they would take.

<b>If you did detect a natural gas leak, what would you do?</b>	<b><i>Residents Region Two</i></b>
Move to a safe area	34.0%
Call local natural gas company or pipeline operator	33.5
Call 911	33.5
Call police/fire/emergency services	17.5
Don't know/unsure	3.5
Other	0.8

**If you did detect a gas leak, what would you do?**



Researchers asked all respondents if they believed calling 911 or securing the number for and calling the local natural gas company would be the quickest way to get help in the event of a natural gas leak emergency.

As presented in the table below, just over two-thirds of all respondents, 69.3%, suggested it

would be quicker to call 911.

<b><i>In the event of a natural gas leak, which of the following would be the quickest way to secure help?</i></b>	<b><i>Residents Region Two</i></b>
Call 911	69.3%
Find the number for and call the local natural gas company	26.3
Don't know/unsure	4.5

In an effort to find the phone number for the local natural gas company using the internet or the yellow pages to report a gas leak, respondents would look for or type in the following:

Multiple responses were accepted.

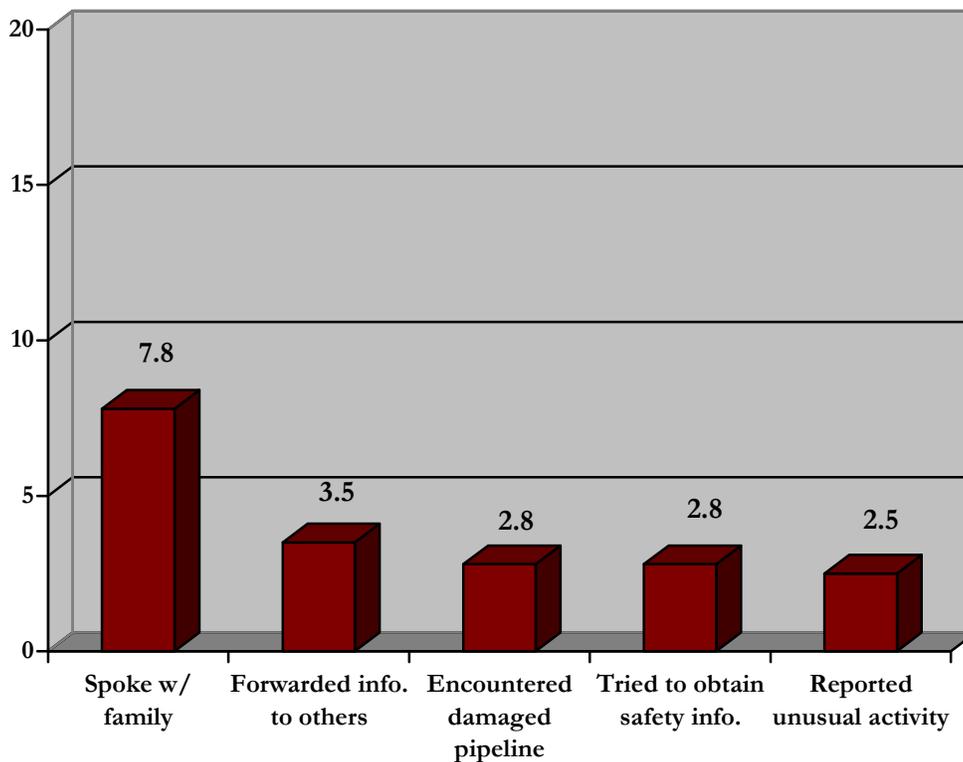
<b>Would look for or type in...</b>	<b><i>Residents Region Two</i></b>
(Local gas company) <i>specific name used</i>	29.8%
Natural gas	20.5
Don't know/unsure	14.8
Gas utility	13.5
Gas company	12.5
Utilities	6.0
Other	2.3
Gas emergencies	1.0

Researchers asked respondents if they had ever taken part in any of five different actions related to gas pipe safety.

The following table and chart presents the results collected for each action.

<b>Actions</b>	<b><i>Region Two (Yes)</i></b>
Talked to family about natural gas pipeline safety precautions	7.8%
Forwarded natural gas pipeline safety information on to others	3.5
Came upon or encountered a damaged natural gas pipeline	2.8
Attempted to obtain natural gas pipeline safety information over the last year	2.8
Called to report suspicious or unusual activity near a natural gas pipeline	2.5

**Action taken...**



**THE SAFETY CAMPAIGN**

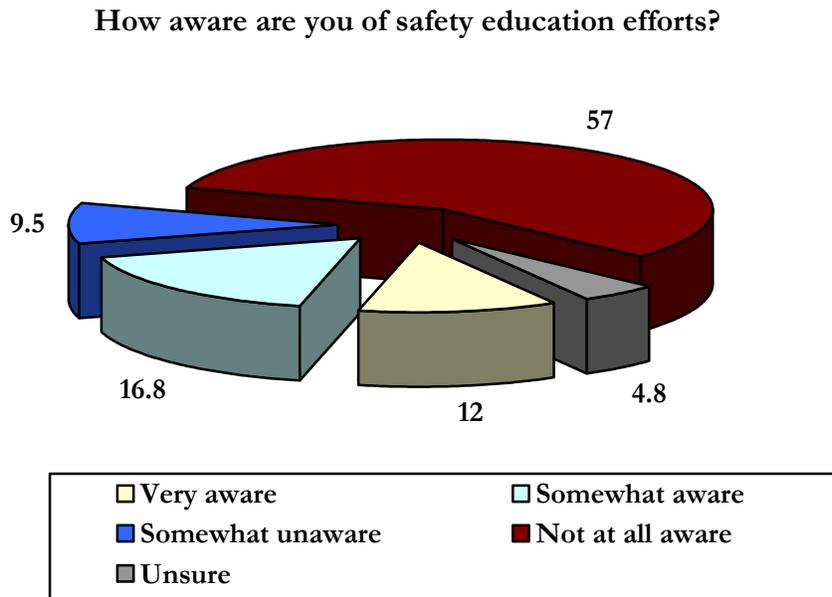
Slightly more than one-quarter of all respondents, 25.8%, indicated having read, seen or heard something, in general, about natural gas pipeline safety over the last year. Another 71.8% said

they had not and 2.5% were unsure.

Researchers read all respondents the following: *“(Local Gas Company) and the Northeast Gas Association have efforts underway to increase awareness of pipeline safety issues. Prior to my call today, how aware of these safety education efforts were you? Would you say...”*

While over one-quarter of all respondents, 28.8%, indicated they were either “very aware” (12.0%) or “somewhat aware” (16.8%), another 66.5% reported to be “somewhat unaware” (9.5%) or “not at all aware” (57.0%) of the education efforts of their local gas company and Northeast Gas Association.

The chart below also presents the results collected.



Those respondents (38.3%) reporting to be either “very aware,” “somewhat aware” or “somewhat unaware” of efforts made by the local gas utility and the Northeast Gas Association to increase awareness of pipeline safety issues were asked to name one or more of the key education messages.

Multiple responses were accepted. Each message recalled, along with frequency of mention, is presented in the table below.

<b>Messages recalled</b>	<b><i>Region Two</i></b>
Dig safely or Dig Safe	58.2%
Call before you dig	49.7
Don't know/unsure	11.8
If you smell rotten eggs, take precautions and call the gas leak hotline from a neighbor's home	11.1
Do not strike a match/turn lights on or off	10.5
It's illegal to dig on your property without markout	6.5
Move to a safe environment	4.6
Safety is priority number one	4.6
Markouts are done by (Local Gas Company) at no cost	3.3
Call the police if you see anyone damaging pipelines	2.6
Excavators cause damage by digging	2.0
Wait for "markout"	1.3
Remain in a safe area but nearby while waiting for help	1.3
Mercaptan, a special odorant is added to natural gas	1.3
Pipeline markers indicate pipe locations	1.3

A large majority of all respondents, 96.8%, noted that the pipeline safety public education is either "very important" (72.0%) or "somewhat important" (24.8%). Remaining respondents, 3.3%, reported pipeline safety public education is "somewhat unimportant" (0.5%), "not at all important" (1.0%) or "don't know" (1.8%).

All respondents were asked how familiar they were with the following terms or actions related to pipeline safety.

The table below presents each of the terms measured, as well as the cumulative total for those providing a "very familiar" or "somewhat familiar" response.

<b>VII. How familiar with the following terms?</b>	<b><i>Region Two Very &amp; Somewhat Familiar</i></b>
Dig Safe	67.5%
One Call	23.3

All respondents were asked to rate their local gas utility's pipeline safety public education including its advertising and communication on several important characteristics. Respondents were asked to use a scale of one to ten where one meant very good and ten meant very poor.

The second column in the table below presents the cumulative total of those providing a 1 - 4 rating (positive) on the ten-point scale. The final column of the table presents the results without "don't know" respondents.

<b>Public Safety Education characteristics</b>	<b><i>Region Two w/ DKs</i></b>	<b><i>Region Two w/o DKs</i></b>
Informative	27.0%	60.3
Providing specific instructions for gas emergencies	23.8	58.3
Increasing your knowledge about pipeline safety	23.5	56.0
Attention grabbing	22.5	51.4
Having memorable messages	21.3	50.0
<b><i>Average</i></b>	<b><i>23.6</i></b>	<b><i>55.2</i></b>

### **SOURCES FOR INFORMATION**

All respondents were asked to indicate their preference for seeing, hearing or receiving information about gas pipeline safety issues and precautions.

Multiple responses were accepted. Each preferred source for information, along with frequency of mention, is presented in the table below.

<b><i>Sources for Pipeline Safety Information</i></b>	<b><i>Region Two Preference</i></b>
TV news	29.3%
Mailings/direct mail	25.5
TV advertising	25.3
Newspaper stories	20.5
Bill inserts	16.0
Newspaper ads	9.5
Brochures	9.5
Internet/web	6.8
Radio news	5.8
Utility company	5.3
None/don't look for information	4.5
Radio advertising	4.0
Billboards	2.0
Friends/neighbors/relatives	1.0
Government agency	0.8
Newspaper inserts	0.5
Employer/school	0.3
Fairs and events	0.3
Other	0.3

### **DEMOGRAPHICS**

#### **Children under 18**

None.....	73.0%
One.....	12.5%
Two.....	7.0%
Three.....	2.8%
Four.....	1.3%
Five.....	0.8%
Refused.....	2.8%

**Own or Rent**

Own.....	84.3%
Rent.....	11.8%
Don't know.....	0.3%
Refused.....	3.8%

**Access to the internet at home, at work or both?**

Yes, at home.....	38.0%
Yes, at work.....	1.8%
Yes, both home and work.....	36.8%
No access.....	22.0%
Don't know/unsure.....	1.5%

**Age**

18 to 25.....	1.0%
26 to 35.....	5.8%
36 to 45.....	14.8%
46 to 55.....	23.0%
56 to 65.....	17.5%
66 to 75.....	19.8%
76 or older.....	10.8%
Refused.....	7.5%

**Utility**

KeySpan Energy.....	42.5%
Vermont Gas Systems, Inc. ....	25.5%
Northern Utilities, Inc. ....	29.0%
Bangor Gas Company.....	1.0%
Maine Natural Gas.....	2.0%

**Hispanic**

Yes.....	1.8%
No.....	93.3%
Don't know/unsure.....	0.0%

Refused..... 5.0%

**Race**

White ..... 91.3%  
African-American ..... 1.8%  
Aleutian, Eskimo or American Indian ..... 0.5%  
Other ..... 0.3%  
Refused..... 6.1%

**Education**

Eighth grade or less..... 2.0%  
Some high school ..... 2.3%  
High school graduate ..... 27.0%  
Some technical school..... 0.5%  
Technical school graduate..... 2.3%  
Some college..... 12.8%  
College graduate..... 34.0%  
Post graduate..... 10.3%  
Refused..... 9.0%

**Income**

Less than \$35,000 ..... 10.0%  
\$35,000 to less than \$65,000 ..... 13.8%  
\$65,000 to less than \$95,000 ..... 10.8%  
\$95,000 or more..... 10.8%  
Don't know/unsure ..... 2.5%  
Refused..... 52.3%

**Gender**

Male ..... 39.8%  
Female ..... 60.3%

**PUBLIC OFFICIALS/EMERGENCY MANAGEMENT**  
**SERVICE OFFICIALS**

Readers are reminded that the following section summarizes statistics from surveys conducted among 25 **Public** and 25 **Emergency Management Service Officials**.

**AWARENESS**

Researchers asked both **Public** and **Emergency Management Officials** if they were aware of a number of facts or issues related to natural gas pipeline safety.

The following table presents the cumulative totals for those reporting to be “very aware” or “somewhat aware” of each fact.

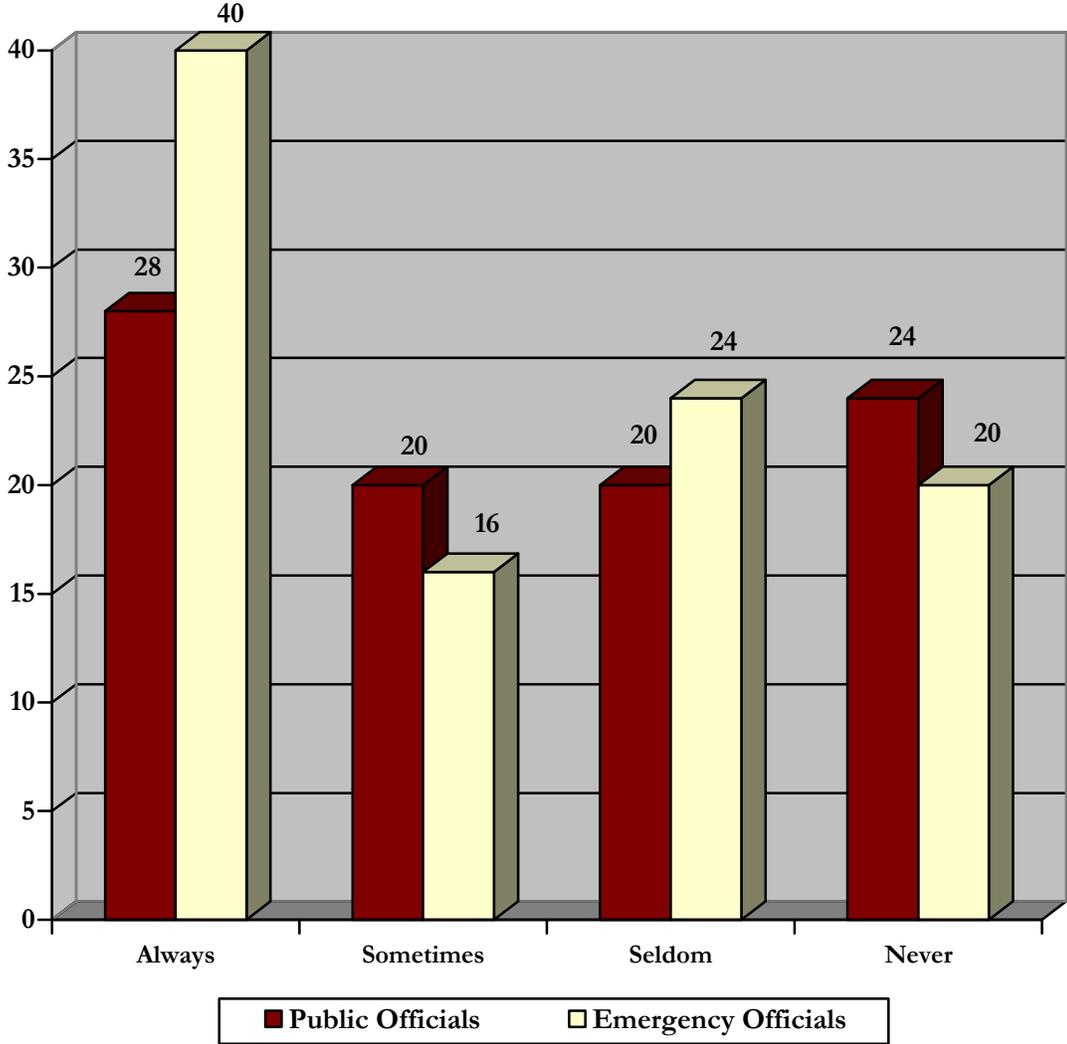
<b>Awareness</b>	<b><i>Public Officials</i></b>	<b><i>Emergency Officials</i></b>
Natural gas pipelines run underground in many areas in and around your community	88.0%	96.0
The precautions excavators should take to avoid damage to natural gas pipelines	84.0	96.0
The “One Call Line” to receive free markouts of buried natural gas pipelines/systems	64.0	88.0
Your own community’s Emergency Response Plan for gas pipeline breaks	56.0	80.0
<b><i>Average</i></b>	<b><i>73.0</i></b>	<b><i>90.0</i></b>

**PERCEPTIONS/ATTITUDES**

As presented in the chart below, just under half of **Public** (48.0%) and over half of

**Emergency Management (56.0%) Officials** suggest they either “always” or “sometimes” wonder if precautions have been made to avoid accidental damage to area pipelines when construction crews, neighbors or others are digging in their community.

**How often do you wonder if precautions have been made to avoid accidental damage to area pipelines?**



Additionally, on their list of concerns, both **Public** and **Emergency Management Officials** were asked how concerned they had been about natural gas pipeline safety in their area.

The table below presents detailed findings.

<b>How concerned about pipeline safety in your area?</b>	<b><i>Public Officials</i></b>	<b><i>Emergency Officials</i></b>
Very concerned	28.0%	12.0
Somewhat concerned	12.0	28.0
Somewhat unconcerned	24.0	32.0
Not at all concerned	28.0	28.0
Don't know/unsure	8.0	---
<b><i>Total concerned</i></b>	<b><i>40.0</i></b>	<b><i>40.0</i></b>
<b><i>Total unconcerned</i></b>	<b><i>52.0</i></b>	<b><i>60.0</i></b>

In a similar question, both **Public** and **Emergency Management Officials** were asked how concerned they believe excavators and construction professionals are about natural gas pipeline safety in their area.

The table below presents detailed findings.

<b>How concerned are excavators and construction professionals about pipeline safety in your area?</b>	<b><i>Public Officials</i></b>	<b><i>Emergency Officials</i></b>
Very concerned	72.0%	64.0
Somewhat concerned	16.0	24.0
Somewhat unconcerned	---	8.0
Not at all concerned	4.0	4.0
Don't know/unsure	8.0	---
<b><i>Total concerned</i></b>	<b><i>88.0</i></b>	<b><i>88.0</i></b>
<b><i>Total unconcerned</i></b>	<b><i>4.0</i></b>	<b><i>12.0</i></b>

### **KNOWLEDGE/UNDERSTANDING**

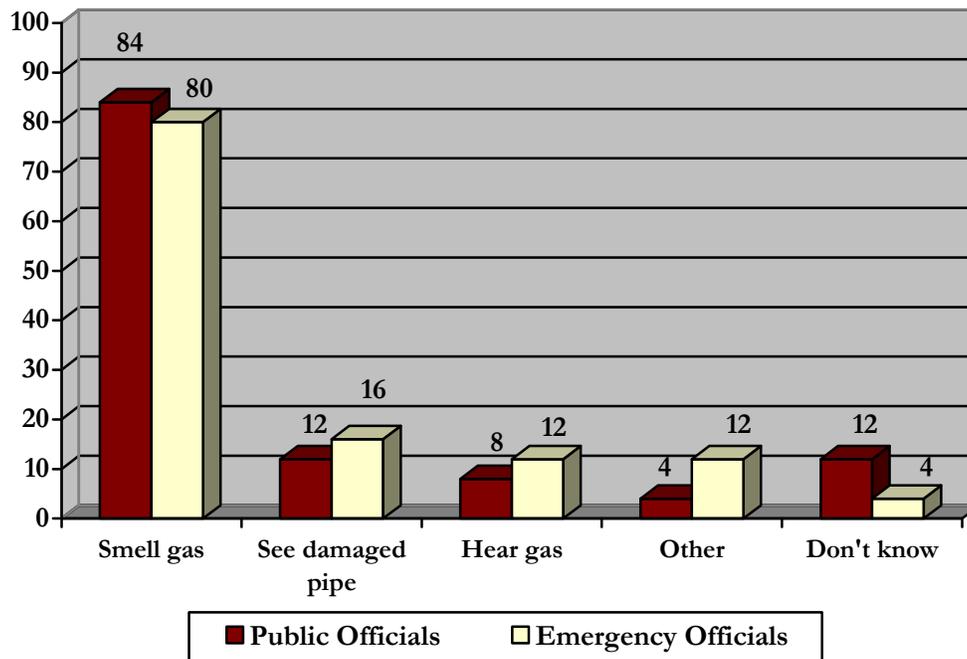
In an open-ended format question, researchers asked all officials, both **Public** and **Emergency**

**Management**, how they might detect a natural gas leak.

The following table presents the results as collected. Multiple responses were accepted.

How might you detect a natural gas leak?	<i>Public Officials</i>	<i>Emergency Officials</i>
Correct: Smell gas leak	84.0%	80.0
Correct: See damaged gas pipe or line	12.0	16.0
Correct: Hear gas leak	8.0	12.0
Incorrect: See gas	---	---
Other	4.0	12.0
Don't know/unsure	12.0	4.0

**How might you detect a natural gas leak?**

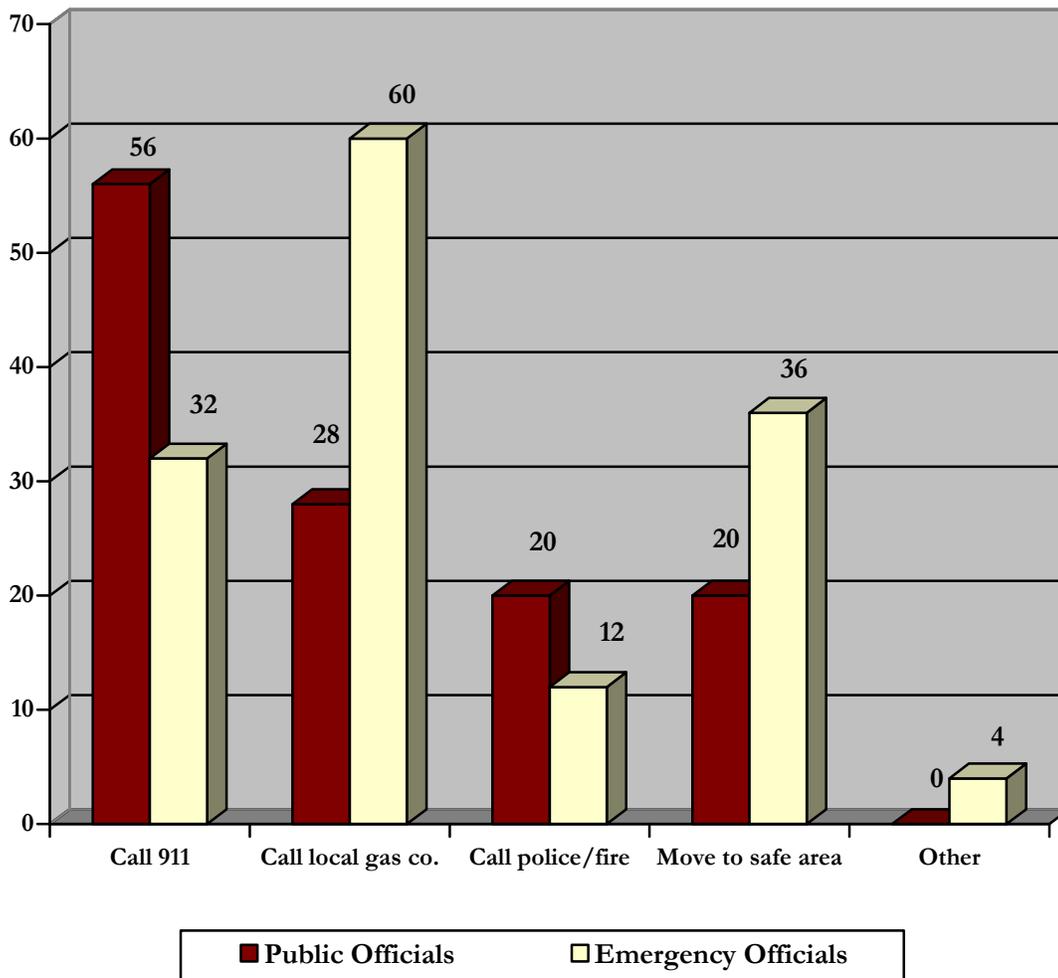


If a natural gas leak was detected, **Public** and **Emergency Management Officials** were asked to report what action they would take.

The table below presents the results as collected.

If you did detect a natural gas leak, what would you do?	<i>Public Officials</i>	<i>Emergency Officials</i>
Call 911	56.0%	32.0
Call local natural gas company or pipeline operator	28.0	60.0
Call police/fire/emergency services	20.0	12.0
Move to a safe area	20.0	36.0
Other	---	4.0

If you did smell a gas leak, what would you do?



Researchers asked all **Public** and **Emergency Management Officials** if they would have the number handy if they needed to reach the local natural gas company or pipeline operator with regard to natural gas leaks or pipeline damage.

The table below presents the results as collected.

<b>Would you have the number handy to call a local gas company or pipeline operator with regard to a natural gas leak or pipe damage?</b>	<b><i>Public Officials</i></b>	<b><i>Emergency Officials</i></b>
Yes	48.0%	76.0
No	52.0	20.0
Don't know/unsure	---	4.0

Researchers continued and asked all officials if they had ever taken or had been a part of eleven different types of actions. The percentages reported below represent those officials suggesting they had been a part in the action being measured.

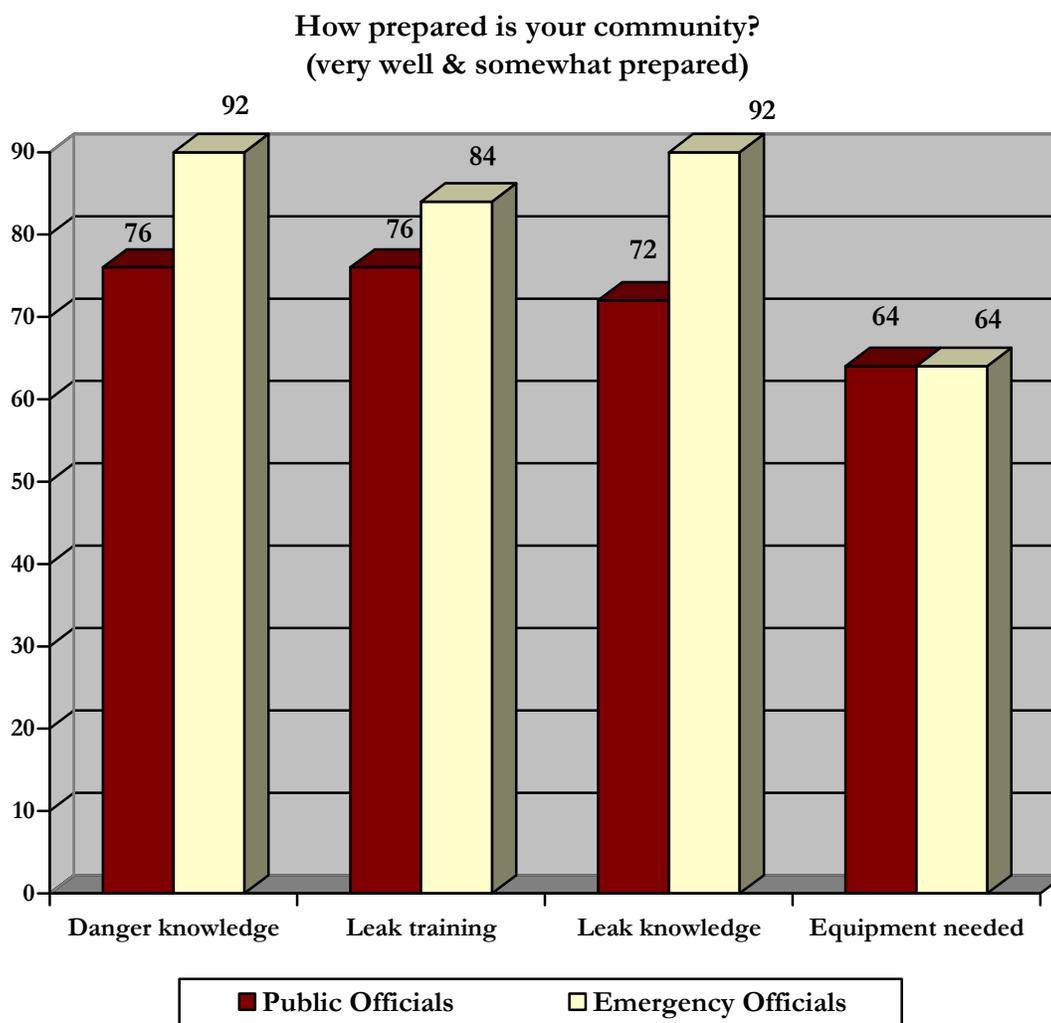
<b>Ever taken the following actions?</b>	<b><i>Public Officials (Yes)</i></b>	<b><i>Emergency Officials (Yes)</i></b>
Received natural gas pipeline safety information from <b>(Local Company)</b>	48.0%	84.0
Talked to residents/professionals about natural gas pipeline safety precautions	28.0	52.0
Received natural gas pipeline safety information from Northeast Gas Association	20.0	48.0
Received natural gas pipeline safety information from a source other than <b>(Local Company)</b>	20.0	40.0
Passed natural gas pipeline safety information on to residents	20.0	44.0
Attempted to obtain natural gas pipeline safety information to share with residents	16.0	28.0
Contacted <b>(Local Company)</b> related to a pipeline safety issue	12.0	56.0
Came upon or encountered a damaged natural gas pipeline	8.0	44.0
Responded to a natural gas pipeline break	8.0	60.0
Discovered suspicious or unusual activity near a natural gas pipeline	---	12.0
Attended a Utility or Industry pipeline safety training	*	68.0

\* Indicates a question was not asked of Public officials.

Researchers asked all **Public** and **Emergency Management Officials** how well prepared they felt their community was in four areas related to a natural gas leak. Researchers asked each respondent if their community was “very well prepared,” “somewhat prepared,” “somewhat unprepared” or “not at all prepared” for a natural gas leak in their community.

The following table presents the cumulative totals for those reporting either “very well prepared” or “somewhat prepared.”

How well prepared is your community? (very well & somewhat prepared)	<i>Public Officials</i>	<i>Emergency Officials</i>
Knowledge about inherent dangers	76.0%	92.0
Gas leak emergency training	76.0	84.0
Knowledge about leaks	72.0	92.0
Special equipment required	64.0	64.0



### THE SAFETY CAMPAIGN

Over one-quarter of all **Public** (28.0%) and more than three-quarters of **Emergency Management** (80.0%) **Officials** surveyed indicated having read, seen or heard something, in general, about natural gas pipeline safety over the last year.

Detailed findings may be found in the table below.

<b>Read, seen or heard any info about pipeline safety?</b>	<b><i>Public Officials</i></b>	<b><i>Emergency Officials</i></b>
Yes	28.0%	80.0
No	64.0	20.0
Don't know/unsure	8.0	---

Researchers read all officials the following: *“(Local Gas Company) and the Northeast Gas Association have efforts underway to increase awareness of pipeline safety issues. Prior to my call today, how aware of these safety education efforts were you? Would you say...”*

Detailed findings are presented in the table located below.

<b>How aware of safety education efforts?</b>	<b><i>Public Officials</i></b>	<b><i>Emergency Officials</i></b>
Very aware	20.0%	48.0
Somewhat aware	20.0	24.0
Somewhat unaware	4.0	---
Not at all aware	56.0	28.0
Don't know/unsure	---	---
<b><i>Total aware</i></b>	<b><i>40.0</i></b>	<b><i>72.0</i></b>
<b><i>Total unaware</i></b>	<b><i>60.0</i></b>	<b><i>28.0</i></b>

Those **Public** (44.0%) and **Emergency Management** (72.0%) **Officials** reporting to be either “very aware,” “somewhat aware” or “somewhat unaware” of efforts by the local gas utility and the Northeast Gas Association to increase awareness of pipeline safety issues were asked to name one or more of the key education messages.

Multiple responses were accepted by researchers and each message recalled, along with

frequency of mention, is presented in the table below.

<b>Messages recalled</b>	<b><i>Public Officials</i></b>	<b><i>Emergency Officials</i></b>
Call before you dig	72.7%	55.6
Safety is priority number one	54.5	27.8
Dig safely or Dig Safe	27.3	44.4
Property owners should report suspicious activity	27.3	5.6
Don't know/unsure	9.1	22.2
Excavators cause damage by digging	9.1	5.6
Call the police if you see anyone damaging pipelines	9.1	11.1
It's illegal to dig on your property without markout	9.1	5.6
Wait for "markout"	9.1	22.2
If you smell rotten eggs, take precautions and call the gas leak hotline from a neighbors home	9.1	11.1
Markouts are done by <b>(Local Company)</b> at no cost	9.1	---
Maintain access to gas meters	9.1	---
Pipeline markers indicate pipe locations	---	11.1

When asked, all **Public Officials**, 100.0%, noted that the pipeline safety public education is either "very important" (72.0%) or "somewhat important" (28.0%).

Additionally, all **Emergency Management Officials**, 100.0%, noted that the pipeline safety public education is either "very important" (84.0%) or "somewhat important" (16.0%).

All officials were asked by researchers how familiar they were with the following terms or actions related to pipeline safety.

The table below presents each of the terms measured as well as the cumulative total for those providing a "very familiar" or "somewhat familiar" response.

<b>How familiar with the following terms?</b>	<b><i>Public Officials</i></b>	<b><i>Emergency Officials</i></b>
Dig Safe	84.0%	100.0
One Call	48.0	84.0

All officials were asked to rate their local gas utility’s pipeline safety public education including its advertising and communication on several important characteristics. Respondents were asked to use a scale of one to ten where one meant very good and ten meant very poor.

The second column in each of the tables below presents the cumulative total of those providing a 1 - 4 rating (positive) on the ten-point scale. The final column of each table below presents the results without “don’t know” respondents.

<b>Public Safety Education characteristics (<i>Public Officials</i>)</b>	<b><i>Region Two w/ DKs</i></b>	<b><i>Region Two w/o DKs</i></b>
Providing specific instructions for gas emergencies	44.0%	68.8
Informative	40.0	62.5
Increasing your knowledge about pipeline safety	40.0	62.5
Providing enough information	40.0	62.5
Attention grabbing	40.0	62.5
Having memorable messages	32.0	50.0
<b><i>Average</i></b>	<b><i>39.3</i></b>	<b><i>61.5</i></b>

<b>Public Safety Education characteristics (<i>Emergency Management Officials</i>)</b>	<b><i>Region Two w/ DKs</i></b>	<b><i>Region Two w/o DKs</i></b>
Providing specific instructions for gas emergencies	64.0%	76.2
Increasing your knowledge about pipeline safety	64.0	76.2
Informative	60.0	71.4
Attention grabbing	52.0	61.9
Having memorable messages	48.0	57.1
<b><i>Average</i></b>	<b><i>57.6</i></b>	<b><i>68.6</i></b>

### **SOURCES FOR INFORMATION**

Finally, all officials were asked to indicate their preference for seeing, hearing or receiving information about gas pipeline safety issues and precautions.

Multiple responses were accepted by researchers and each preferred source for information,

along with frequency of mention, is presented in the table below.

<i>Sources for Pipeline Safety Information</i>	<i>Public Officials</i>	<i>Emergency Officials</i>
TV advertising	40.0%	28.0
Newspaper stories	24.0	4.0
Internet/web	24.0	8.0
Mailings/direct mail	20.0	40.0
TV news	16.0	16.0
Brochures	12.0	24.0
Radio news	12.0	4.0
Newspaper ads	8.0	16.0
Radio advertising	8.0	8.0
Bill inserts	8.0	8.0
None	8.0	---
Friends/neighbors/relatives	4.0	4.0
Newspaper inserts	4.0	4.0
Fairs and events	4.0	12.0
Government agency	---	4.0
Utility company	---	16.0
Other	---	4.0

## DEMOGRAPHICS

### Utility (Public Officials)

Vermont Gas Systems .....	20.0%
Northern Utilities, Inc. ....	28.0%

Bangor Gas Company.....	4.0%
Maine Natural Gas .....	4.0%
KeySpan Energy .....	44.0%

**Utility (Emergency Management Officials)**

Vermont Gas Systems .....	20.0%
Northern Utilities, Inc. ....	28.0%
Bangor Gas Company.....	4.0%
Maine Natural Gas .....	4.0%
KeySpan Energy .....	44.0%

**Official within (Emergency Management Officials)**

Fire, Police, Sheriff Departments.....	72.0%
Local Emergency Planning .....	4.0%
Emergency Management Service Officials .....	8.0%
Engineering Department.....	8.0%
Governing Councils .....	8.0%

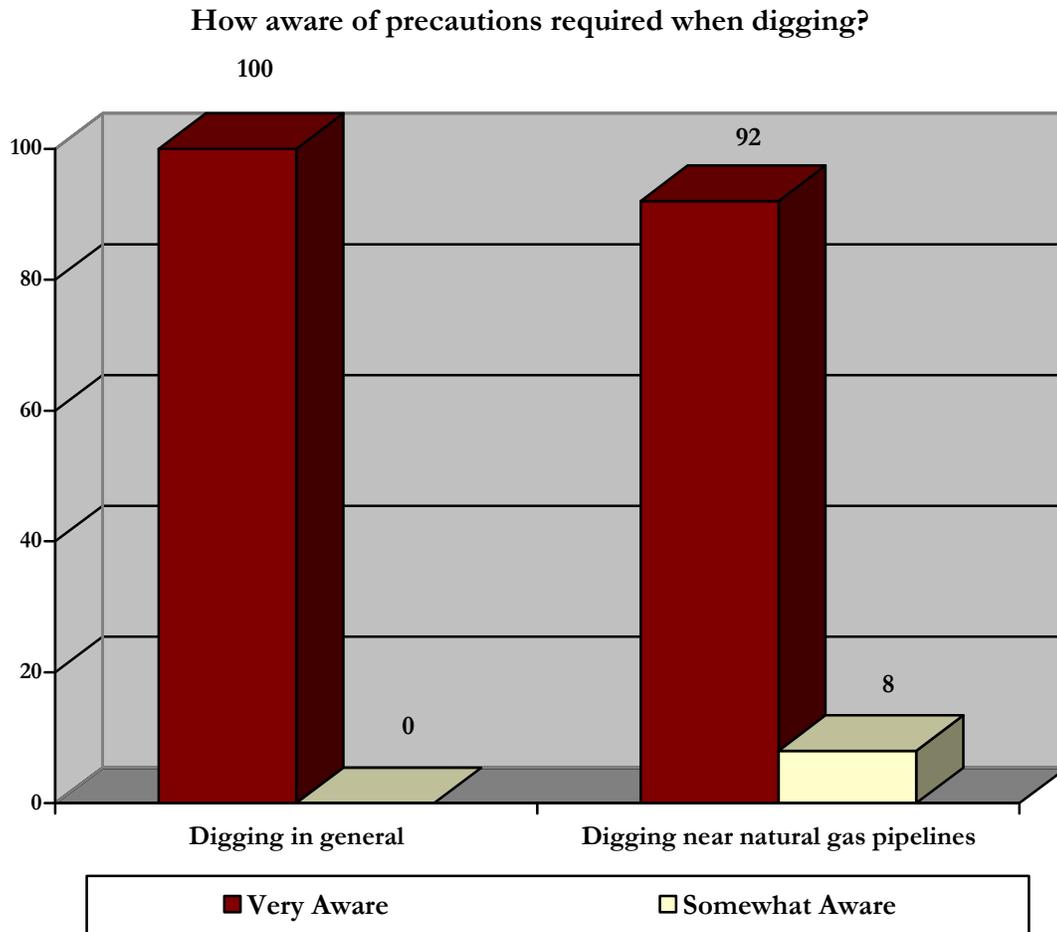
**EXCAVATORS**

Readers are reminded that the following section summarizes statistics collected from surveys conducted among 25 **Excavators**.

## AWARENESS

All **Excavator** respondents surveyed suggested they were “very aware” (100.0%) of precautions required when digging in general.

A vast majority of respondents reported to be “very aware” (92.0%) while the remaining respondents reported to be “somewhat aware” (8.0%) of precautions required when digging near natural gas pipelines.

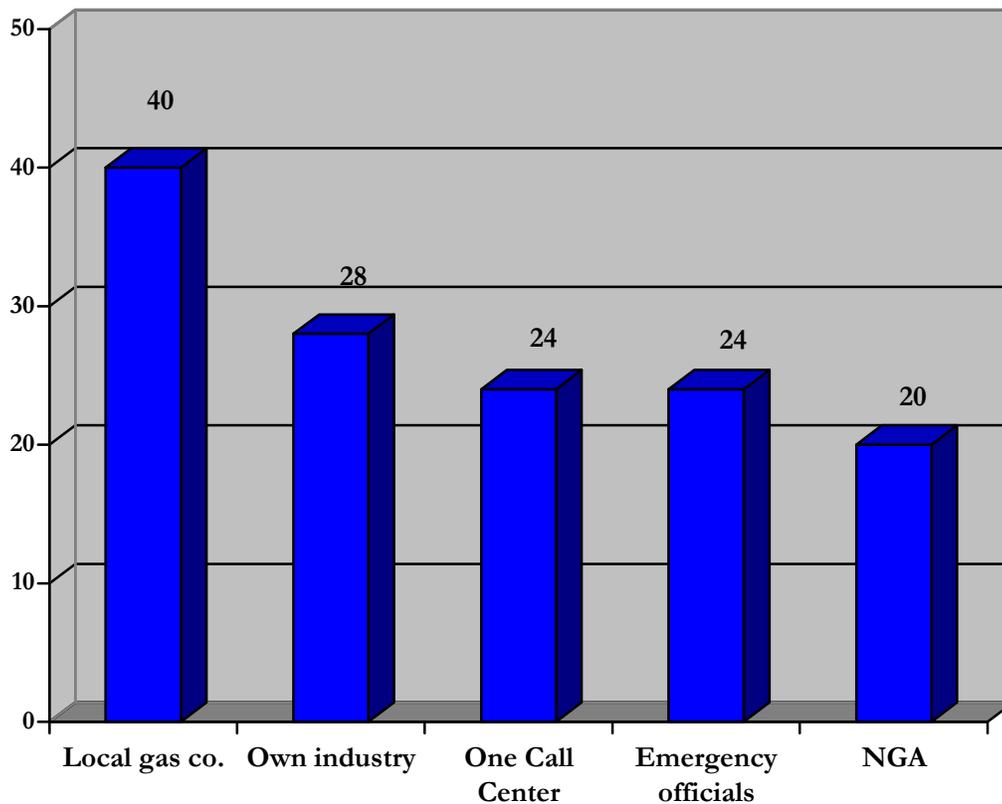


**Excavators** were asked if, over the last twelve months, they had received any information or communication on natural gas pipeline safety from five different sources.

The following table presents the source and the percent for each.

<i>Information or communication from...</i>	<i>Region Two (Yes)</i>
Local natural gas company or pipeline operator	40.0%
Your own construction industry groups or associations	28.0
The One Call Center	24.0
State or municipal emergency management officials	24.0
Northeast Gas Association or other gas industry associations	20.0

**Have you received information or communication from...  
(YES)**



### **JOB PREPARATIONS**

All **Excavators** were asked to indicate approximately how many excavation jobs or projects they have started over the last twelve months. The average, overall, was 24.1%.

The table below presents the results as collected.

<i>How many excavation jobs or projects started over last twelve months?</i>	<i>Excavators Region Two</i>
5 or fewer	16.0%
6 to10	20.0
11 to 15	12.0
16 to 20	12.0
21 to 25	4.0
26 to 30	4.0
31 to 35	---
36 or more	20.0
Don't know/unsure	12.0

**Excavators** were asked to report how frequently they contact the One Call Center regarding pipeline locations.

When asked how frequently they call the One Call Center regarding pipeline locations, the majority of respondents, 76.0%, reported “always” (64.0%) or “most of the time” (12.0%), while the remaining respondents, 24.0%, reported “seldom” (4.0%), “never” (16.0%), or “unsure” (4.0%) of the number of times they have called.

The respondents who (16.0% or 5 respondent) “never” called the One Call Center reported the reason for not calling more often was because they were unaware the One Call Center existed (20.0%) or because they contacted Dig Safe rather than the One Call Center (80.0%).

All respondents were asked, besides themselves, if they had other employee operators or other subcontractors performing excavation work.

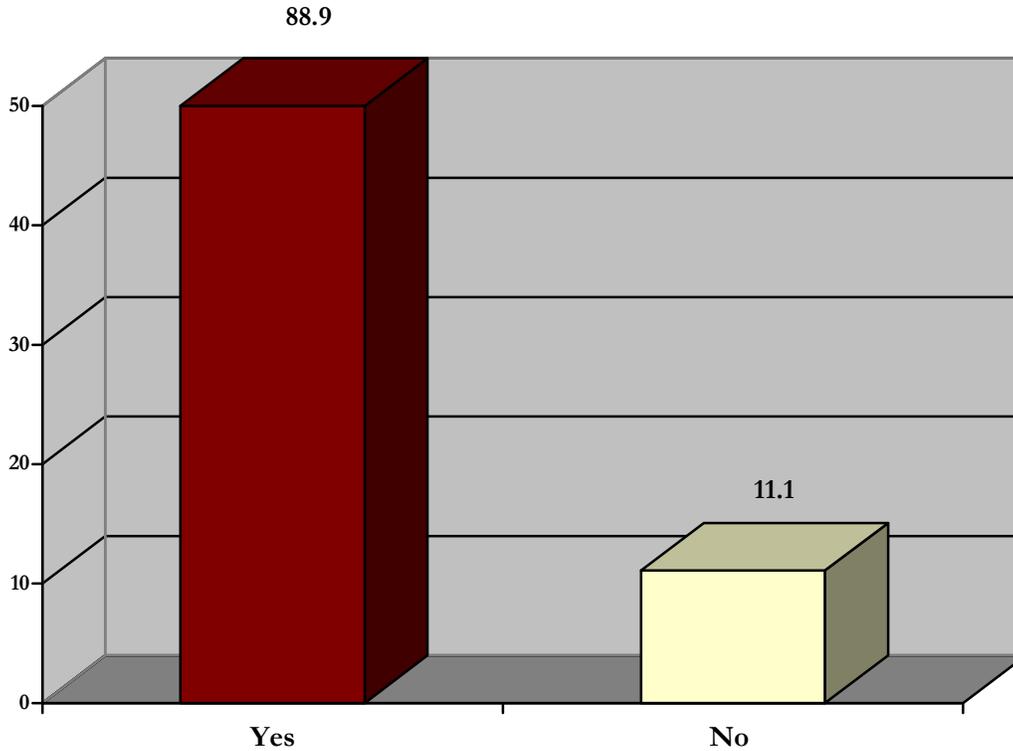
More than one-third, 36.0%, did report having others performing excavation work, while 64.0% reported to researchers they did not.

<i>Besides yourself, do you have other operators or subcontractors performing excavation work?</i>	<i>Excavators Region One</i>
Yes	36.0%
No	64.0

Those respondents (36.0%) who report having other employee operators or subcontractors performing excavation work were asked if they provide natural gas pipeline safety information to these other operators.

While more than three-quarters, 88.9%, did report providing pipeline safety information to operators, another 11.1% said they do not provide pipeline safety information to the people performing excavation work on their behalf.

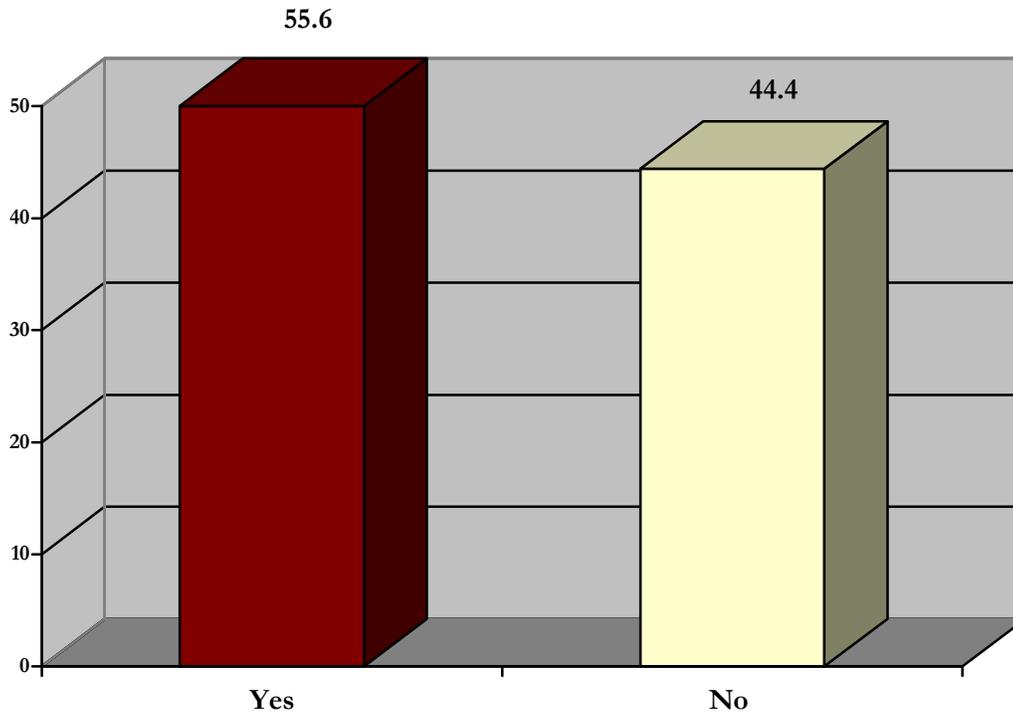
**Do you provide pipeline safety information to operators performing excavation on your behalf?**



Those respondents (36.0%) who report having other employee operators or subcontractors performing excavation work were also asked if they provide natural gas pipeline safety training to these other operators.

The chart below presents the results as collected.

**Do you provide pipeline safety training to operators performing excavation on your behalf?**



All **Excavators** were asked to report the frequency in which other employee operators or subcontractors contact the One Call Center regarding pipeline locations.

The table below presents detailed findings.

<i>How frequently do other employee operators or subcontractors contact the One Call Center?</i>	<i>Excavators Region Two</i>
Always	36.0%
Most of the time	4.0
Seldom	4.0
Never	24.0
Don't know/unsure	32.0

Those (24.0% or 7 respondents) reporting employee operators or subcontractors “never” contact the One Call Center regarding pipeline locations were asked to report the reason why.

<i>Why don't other employee operators or subcontractors contact the One Call Center?</i>	<i>Region Two N=7</i>
Owner contacts the Center for them	57.1%

All **Excavators** were asked, on an annual basis, how frequently they run into a number of different situations.

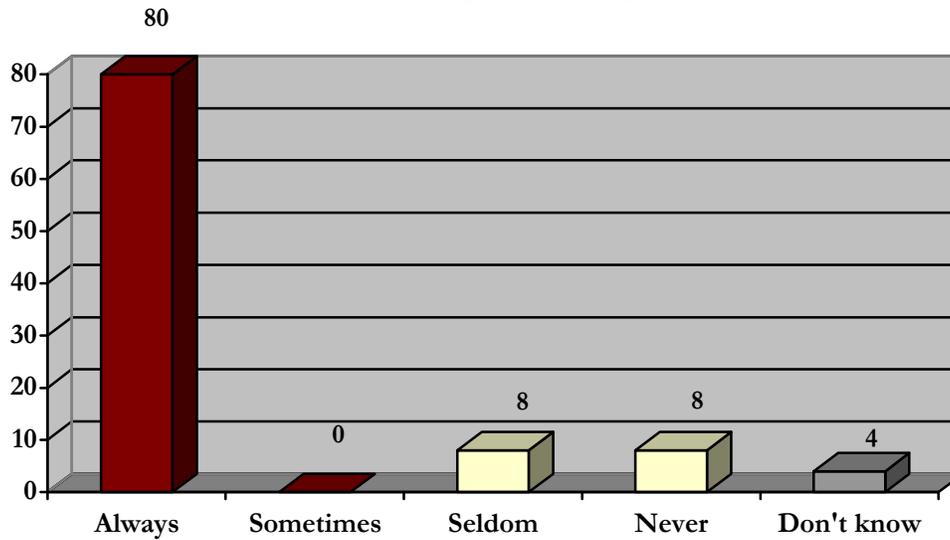
The following table presents the types of situations and the number of times each year they see each.

<i>How often, each year, do you run into these situations?</i>	<i>Unexpectedly uncover a natural gas pipeline</i> <i>(N=25)</i>	<i>Close calls with gas pipelines when digging</i> <i>(N=25)</i>	<i>Damage natural gas pipelines</i> <i>(N=25)</i>
0 times each year	68.0%	68.0	64.0
1 time each year	4.0	12.0	12.0
2 times each year	4.0	---	---
3 times each year	---	---	---
4 or more times each year	4.0	---	---
Don't know/unsure	20.0	20.0	24.0
<i>Average instances</i> <i>(with don't know responses removed)</i>	<i>0.7</i>	<i>0.2</i>	<i>0.2</i>

### PERCEPTIONS/ATTITUDES

As presented in the chart below, more than three-quarters of all respondents, 80.0%, suggested they “always” wonder if precautions have been made to avoid accidental damage to area pipelines when they or their excavation crews are digging.

How often do you wonder if precautions have been made to avoid accidental damage to area pipelines?



When asked about their list of concerns, over three-quarters of all **Excavators** surveyed, 84.0%, reported to be either “very concerned” (76.0%) or “somewhat concerned” (8.0%) about natural gas pipeline safety.

The table below also presents detailed findings.

How concerned about pipeline safety?	<i>Excavators Region Two</i>
Very concerned	76.0%
Somewhat concerned	8.0
Somewhat unconcerned	8.0
Not at all concerned	8.0
Don't know/unsure	---
<b><i>Total concerned</i></b>	<b><i>84.0</i></b>
<b><i>Total unconcerned</i></b>	<b><i>16.0</i></b>

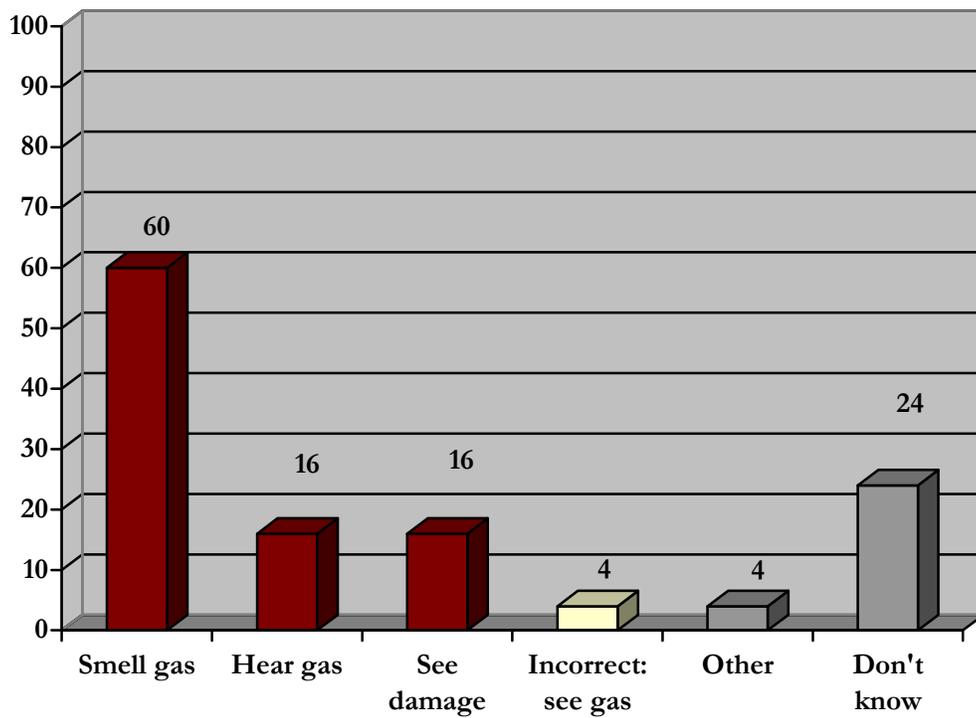
**KNOWLEDGE/UNDERSTANDING**

Researchers asked **Excavators**, in an open-ended format question, how they might detect a natural gas leak.

The following table presents the results as collected.

How might you detect a natural gas leak?	<i>Excavators Region Two</i>
Correct: Smell gas leak	60.0%
Correct: Hear gas leak	16.0
Correct: See damaged gas pipe or line	16.0
Incorrect: See gas	4.0
Other	4.0
Don't know/unsure	24.0

How might you detect a natural gas leak?



**BEHAVIOR**

If respondents detected a natural gas leak, the following table depicts what they report would be the action taken.

(Readers should note multiple responses were accepted from respondents.)

<b>If you did detect a natural gas leak, what would you do?</b>	<b><i>Excavators Region Two</i></b>
Call local natural gas company or pipeline operator	48.0%
Move to a safe area	20.0
Call 911	16.0
Other	16.0
Call police/fire/emergency services	12.0
Don't know	8.0

Researchers asked all **Excavators** if they had ever taken, or had been a part of the actions presented in the following table.

<b>Ever taken the following actions?</b>	<b><i>Excavators (Yes)</i></b>
Talked to employees about natural gas pipeline safety precautions	48.0%
Attempted to obtain natural gas pipeline safety information over the last year	28.0
Passed natural gas pipeline safety information on to others besides employees	20.0
Called to report suspicious or unusual activity near a natural gas pipeline	12.0

### **THE SAFETY CAMPAIGN**

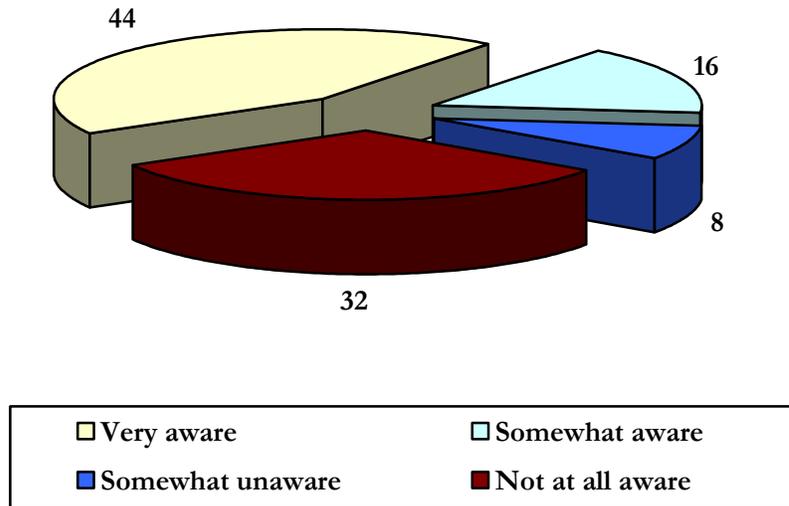
Researchers read respondents the following: *“(Local Gas Company) and the Northeast Gas Association have efforts underway to increase awareness of pipeline safety issues. Prior to my call today, how aware of these safety education efforts were you? Would you say...”*

While three-fifths of all respondents, 60.0%, indicated they were either “very aware” (44.0%) or “somewhat aware” (16.0%), another 40.0% reported to be “somewhat unaware” (8.0%) or “not

at all aware” (32.0%) of the education efforts of the local gas company and Northeast Gas Association.

The chart below also presents the results collected.

### How aware of safety education efforts?



Those respondents (68.0%) reporting to be either “very aware,” “somewhat aware” or “somewhat unaware” of efforts by the local gas utility and the Northeast Gas Association to increase awareness of pipeline safety issues were asked to name one or more of the key education messages.

Multiple responses were accepted by researchers and each message recalled, along with frequency of mention, is presented in the table below.

<b>Messages recalled</b>	<b><i>Excavators Region Two</i></b>
Call before you dig	58.8%
Dig safely or Dig Safe	47.1
Wait for “markout”	23.5
Safety is priority number one	17.6
Call the police if you see anyone damaging pipelines	17.6
Don’t know/unsure	17.6
It’s illegal to dig on your property without markout	11.8
Property owners should report suspicious activity	11.8
Excavators cause damage by digging	11.8
Move to a safe environment	5.9
If you smell rotten eggs, take precautions and call the gas leak hotline from a neighbor’s home	5.9
Pipeline markouts indicate pipe locations	5.9

While a vast majority of respondents surveyed, 96.0%, reported believing that pipeline safety public education is “very important,” another 4.0% report believing it is “not at all important.”

All respondents were asked by researchers (prior to the call) how familiar they were with the following terms or actions related to pipeline safety.

The table below presents each of the terms measured as well as the cumulative total for those providing a “very familiar” or “somewhat familiar” response.

<b>How familiar with the following terms?</b>	<b><i>Region Two Very &amp; Somewhat Familiar</i></b>
Dig Safe	100.0%
One Call	68.0

All respondents were asked to rate their local gas utility’s pipeline safety public education including its advertising and communication on several important characteristics. Respondents were asked to use a scale of one to ten where one meant very good and ten meant very poor.

The second column in the table below presents the cumulative total of those providing a 1 - 4 rating (positive) on the ten-point scale. Readers should note the final column of the table below presents the results when those providing a “don’t know” response have been removed from the data.

<b>Public Safety Education characteristics</b>	<b><i>Excavators w/ DKs</i></b>	<b><i>Excavators w/o DKs</i></b>
Increasing your knowledge about pipeline safety	56.0%	87.5
Providing specific instructions for gas emergencies	56.0	87.5
Having memorable messages	52.0	81.3
Informative	48.0	70.6
Attention grabbing	48.0	75.0
<b><i>Average</i></b>	<b><i>52.0</i></b>	<b><i>80.4</i></b>

### SOURCES FOR INFORMATION

All respondents were asked to indicate their preference for seeing, hearing or receiving information about gas pipeline safety issues and precautions.

Multiple responses were accepted by researchers, and each preferred source for information, along with frequency of mention, is presented in the table below.

<b><i>Sources for Pipeline Safety Information</i></b>	<b><i>Excavators Preference</i></b>
Mailings/direct mail	48.0%
Internet/web	28.0
Utility company	24.0
TV advertising	20.0
TV news	12.0
Brochures	12.0
Bill inserts	8.0
Radio advertising	8.0
Government agencies	8.0
Newspaper ads	4.0
Newspaper stories	4.0
Co-workers	4.0

### DEMOGRAPHICS

#### **How many employees at your company?**

5 or fewer.....	56.0%
6 to less than 10 .....	12.0%
11 to less than 15 .....	12.0%
16 or more .....	16.0%

Refused.....4.0%

**Utility (Excavators)**

KeySpan Energy .....44.0%

Northern Utilities, Inc. ....28.0%

Vermont Gas Systems .....20.0%

Bangor Gas Company.....4.0%

Maine Natural Gas .....4.0%

**5**  
**APPENDIX**

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**INTERPRETATION OF AGGREGATE RESULTS**

The computer processed data for this survey is presented in the following frequency

distributions. It is important to note that the wordings of the variable labels and value labels in the computer-processed data are largely abbreviated descriptions of the Questionnaire items and available response categories.

The frequency distributions include the category or response for the question items. Responses deemed not appropriate for classification have been grouped together under the “Other” code.

The “NA” category label refers to “No Answer” or “Not Applicable”. This code is also used to classify ambiguous responses. In addition, the “DK/RF” category includes those respondents who did not know their answer to a question or declined to answer it. In many of the tables, a group of responses may be tagged as “Missing” – occasionally, certain individual’s responses may not be required to specific questions and thus are excluded. Although when this category of response is used, the computations of percentages are presented in two (2) ways in the frequency distributions: 1) with their inclusion (as a proportion of the total sample), and 2) their exclusion (as a proportion of a sample sub-group).

Each frequency distribution includes the absolute observed occurrence of each response (i.e. the total number of cases in each category). Immediately adjacent to the right of the column of absolute frequencies is the column of relative frequencies. These are the percentages of cases falling in each category response, including those cases designated as missing data. To the right of the relative frequency column is the adjusted frequency distribution column that contains the relative frequencies based on the legitimate (i.e. non-missing) cases. That is, the total base for the adjusted frequency distribution excludes the missing data. For many Questionnaire items, the relative frequencies and the adjusted frequencies will be nearly the same. However, some items that elicit a sizable number of missing data will produce quite substantial percentage differences between the two columns of frequencies. The meticulous analyst will cautiously consider both distributions.

The last column of data within the frequency distribution is the cumulative frequency distribution (Cum Freq.). This column is simply an adjusted frequency distribution of the sum of all previous categories of response and the current category of response. Its primary usefulness is to gauge some ordered or ranked meaning.

***NORTHEAST GAS ASSOCIATION – RESIDENTIAL (REGION 2)***  
***CROSSTABULATION CHART***

Core Questions	Composite	Gas Customer (Yes)	Gas Customer (No)	Live near pipeline (Yes)	Live near pipeline (No)	No Children	Children
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1. Prior to call, aware natural gas pipelines run underground in many areas (very/somewhat aware)	80.8	88.5	75.7	95.6	71.0	81.5	78.4
2. How familiar with smell of natural gas (very/somewhat familiar)	74.0	82.2	68.6	86.3	71.8	73.3	76.3
4. When digging in your community, how frequently do you wonder if precautions have been made (always/sometimes)	29.0	38.2	22.6	27.5	26.7	28.1	35.1
5. Prior to call, how concerned about natural gas pipeline safety (very/somewhat concerned)	25.8	32.5	20.9	18.8	26.7	28.1	21.6
6. How you might detect a gas leak (correct: smell, hear, see damaged pipe/line)	82.2	87.6	78.2	90.8	79.5	81.0	85.4
11. Attempted to obtain pipeline safety info over the last year (yes)	2.8	5.1	1.3	5.0	1.5	3.1	2.1
14. Talked to family about pipeline safety precautions (yes)	7.8	11.5	5.4	11.3	8.4	8.6	6.2
15. Over last year, read, seen or heard any info (yes)	25.8	33.1	20.9	32.5	19.1	27.1	23.7
16. Prior to call, aware of these safety education efforts (very/somewhat aware)	28.8	37.6	23.0	30.0	27.5	28.4	30.9
18. How important you believe Pipeline Safety Public Education is (very/somewhat important)	96.8	96.2	97.5	96.3	97.7	96.6	97.9
19. How familiar – “Dig Safe” (very/somewhat familiar)	67.5	72.0	65.3	71.3	61.1	66.4	73.2
20. How familiar – “One Call” (very/somewhat familiar)	23.3	33.8	16.7	29.4	19.8	22.3	25.8

***NORTHEAST GAS ASSOCIATION – RESIDENTIAL (REGION 2)  
CROSSTABULATION CHART***

Core Questions	Composite	Own	Rent	Internet (Yes)	Internet (No)	Less than 35	35 to less than 65	65 and older
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1. Prior to call, aware natural gas pipelines run underground in many areas (very/somewhat aware)	80.8	81.6	78.7	83.0	73.9	74.1	84.6	77.0
2. How familiar with smell of natural gas (very/somewhat familiar)	74.0	73.0	80.9	76.5	64.8	77.8	77.4	69.7
4. When digging in your community, how frequently do you wonder if precautions have been made (always/sometimes)	29.0	27.3	44.7	29.4	28.4	25.9	28.1	35.2
5. Prior to call, how concerned about natural gas pipeline safety (very/somewhat concerned)	25.8	24.3	40.4	24.5	30.7	22.2	22.6	36.1
6. How you might detect a gas leak (correct: smell, hear, see damaged pipe/line)	82.2	81.9	83.0	83.4	76.4	88.2	81.0	82.6
11. Attempted to obtain pipeline safety info over the last year (yes)	2.8	2.7	4.3	2.6	3.4	7.4	1.4	4.1
14. Talked to family about pipeline safety precautions (yes)	7.8	8.3	4.3	8.5	5.7	3.7	7.7	9.0
15. Over last year, read, seen or heard any info (yes)	25.8	24.3	38.3	26.5	25.0	25.9	22.2	32.8
16. Prior to call, aware of these safety education efforts (very/somewhat aware)	28.8	27.6	36.2	30.1	23.9	18.5	25.8	35.2
18. How important you believe Pipeline Safety Public Education is (very/somewhat important)	96.8	96.4	100.0	97.4	95.5	100.0	98.2	95.1
19. How familiar – “Dig Safe” (very/somewhat familiar)	67.5	68.5	61.7	71.6	52.3	55.6	72.9	62.3
20. How familiar – “One Call” (very/somewhat familiar)	23.3	22.8	25.5	24.8	17.0	7.4	24.4	23.8

***NORTHEAST GAS ASSOCIATION – RESIDENTIAL (REGION 2)***  
***CROSSTABULATION CHART***

<b>Core Questions</b>	<b>Composite</b>	<b>Hispanic</b>	<b>White</b>	<b>African-American</b>	<b>Other</b>	<b>High School</b>	<b>College</b>	<b>Post</b>
1. Prior to call, aware natural gas pipelines run underground in many areas (very/somewhat aware)	80.8	42.9	81.3	85.7	100.0	79.2	81.8	85.4
2. How familiar with smell of natural gas (very/somewhat familiar)	74.0	100.0	73.8	85.7	100.0	69.6	78.8	63.4
4. When digging in your community, how frequently do you wonder if precautions have been made (always/sometimes)	29.0	28.6	29.2	57.1	33.3	35.2	27.8	29.3
5. Prior to call, how concerned about natural gas pipeline safety (very/somewhat concerned)	25.8	42.9	25.3	71.4	33.3	35.2	25.8	9.8
6. How you might detect a gas leak (correct: smell, hear, see damaged pipe/line)	82.2	88.9	82.3	81.9	100.0	79.8	86.0	71.1
11. Attempted to obtain pipeline safety info over the last year (yes)	2.8	14.3	2.5	14.3	--	4.0	2.0	2.4
14. Talked to family about pipeline safety precautions (yes)	7.8	14.3	8.1	14.3	--	7.2	8.1	12.2
15. Over last year, read, seen or heard any info (yes)	25.8	14.3	27.6	28.6	--	26.4	23.7	39.0
16. Prior to call, aware of these safety education efforts (very/somewhat aware)	28.8	28.6	29.5	42.9	--	27.2	26.8	39.0
18. How important you believe Pipeline Safety Public Education is (very/somewhat important)	96.8	100.0	96.9	85.7	100.0	95.2	98.0	95.1
19. How familiar – “Dig Safe” (very/somewhat familiar)	67.5	71.4	68.0	57.1	66.7	63.2	67.7	85.4
20. How familiar – “One Call” (very/somewhat familiar)	23.3	28.6	22.6	28.6	--	21.6	22.2	29.3

***NORTHEAST GAS ASSOCIATION – RESIDENTIAL (REGION 2)***  
***CROSSTABULATION CHART***

Core Questions	Composite	Male	Female
1. Prior to call, aware natural gas pipelines run underground in many areas (very/somewhat aware)	80.8	86.8	76.8
2. How familiar with smell of natural gas (very/somewhat familiar)	74.0	83.6	67.6
4. When digging in your community, how frequently do you wonder if precautions have been made (always/sometimes)	29.0	25.8	31.1
5. Prior to call, how concerned about natural gas pipeline safety (very/somewhat concerned)	25.8	17.6	31.1
6. How you might detect a gas leak (correct: smell, hear, see damaged pipe/line)	82.2	86.0	79.4
11. Attempted to obtain pipeline safety info over the last year (yes)	2.8	3.1	2.5
14. Talked to family about pipeline safety precautions (yes)	7.8	7.5	7.9
15. Over last year, read, seen or heard any info (yes)	25.8	34.0	20.3
16. Prior to call, aware of these safety education efforts (very/somewhat aware)	28.8	28.3	29.0
18. How important you believe Pipeline Safety Public Education is (very/somewhat important)	96.8	95.0	97.9
19. How familiar – “Dig Safe” (very/somewhat familiar)	67.5	69.8	66.0
20. How familiar – “One Call” (very/somewhat familiar)	23.3	28.3	19.9

## APPENDIX E

### Identification and Message Content Documentation

Copies of materials used as well as verification they have been disseminated as per requirements of this program will be included in Appendix E.

## APPENDIX E

### Identification and Message Content Documentation

<b>Material</b>	<b>How To Identify</b>	<b>Specific Locations</b>
Public Service Announcements	Newspapers distributed in towns served by LDC and adjacent to them	Keene Sentinel Monadnock Shopper News
Public Service Announcements	Radio stations aired in towns served by LDC and adjacent to them	WKBK WZBK WINQ WKNE WKNH WYRY
Public Service Announcement	Televisions Stations throughout the Northeast	NA
Carbon Monoxide Brochure	Customer Database	NA
Welcome Brochure	New Residents served by LDC	NA
Telephone Directory	Listings in Directory	NA
Fire Departments	Service Area Municipalities	Service Area Municipalities
Public Schools	Schools in town served by LDC	NA
Letter to Contractors	Local Contractors	NA

Identification and Message Content Documentation (continued)

Material	How To Identify	Specific Locations
Bill Message	Customer Database	NA
Brochure	Municipal Association City/Town Websites Cheshire County Directories	Mayor City or County Manager DPW Director / Superintendents NH Highway District Directors
Brochure	Telephone Directories Municipal Association City/Town Websites	Local Municipal Association Sheriffs Fire Chiefs State Police Barracks Commanders Civil Defense Emergency Management Directors Regional Emergency Planning Representatives

## **Regional Radio Ads**

### **Gas Odors – Access**

**If you smell gas, leave the building immediately and call your natural gas utility or 911. Gas company personnel will come to investigate the odor. Be sure to stay nearby so that you can let them in to conduct their inspection. If you are not at the reported location, your natural gas utility is required to contact your local fire department to gain entry. An important message from your natural gas utility and the Northeast Gas Association.**

**Word Count: 77**

### **Pipeline Integrity**

**Natural gas companies are committed to the safe operation of their underground pipeline systems. To keep them operating safely and soundly, they have extensive monitoring and inspection programs utilizing state of the art technology to detect and prevent damage and corrosion. For more information on these integrity management programs, visit the website of your natural gas utility company or of the Northeast Gas Association at [www.northeastgas.org](http://www.northeastgas.org).**

**Word Count: 66**

### **Emergency Planning**

**The natural gas underground pipeline system has an outstanding safety record and that's no accident. Your natural gas utility works with state and local emergency management agencies in providing training for emergency responders to ensure your safety. An important message from your natural gas utility and the Northeast Gas Association.**

**Word Count: 50**

### **Gas Odor - Safety**

**Natural Gas leaks are rare, but if one should occur, your nose will know it! If you ever think you smell gas, indoors or out, move to a safe environment, and call your natural gas utility or 911 immediately. Do not strike a match, use a telephone, or switch lights on or off – this includes flashlights too. Keep the emergency number for your natural gas utility handy. An important message from your natural gas utility and the Northeast Gas Association.**

**Word Count: 81**

### **Gas Odor – Recognizing a Leak**

**A natural gas leak can be recognized by smell, sight, or sound. Normally you will smell its distinctive pungent odor, similar to rotten eggs. Outdoors, you may also see a cloud of mist, dust, or bubbles in standing water. You may also hear an unusual noise like roaring, hissing or whistling. If you suspect a leak call your natural gas utility or 911 immediately, stay away from the leak, and keep others away until help arrives. An important message from your natural gas utility and the Northeast Gas Association.**

**Word Count: 89**

#### **Dig-Safely – Call Before You Dig**

**To protect natural gas pipelines and other underground facilities from accidental damage, the law requires that all excavators notify the local one call system before digging, to have underground facilities in the area marked prior to excavation. There is no charge to the public for this service. Call before you dig, it's the law and it could save your life. An important message from your natural gas utility and the Northeast Gas Association.**

**Word Count: 73**

#### **Dig-Safely – What to do if you hit the pipe.**

**If you, or a hired excavator plans to dig, the law requires you to contact the One-Call Center first. While digging, if you become aware of damage to a gas line, stop work, move to a safe distance and call the natural gas utility. If you suspect a leak, also call 911. Do not try to repair the damage or extinguish any fire and keep everyone at a safe distance. An important message from your natural gas utility and the Northeast Gas Association.**

**Word Count: 83**

#### **Right of Way - Pipeline Markers**

**Underground natural gas pipelines crisscross the nation, supplying many of our energy needs. The general location of some underground pipelines is identified by above ground markers that include the pipeline operators name and emergency contact information. If you see someone digging near a pipeline marker, contact your local natural gas utility immediately. An important message from your natural gas utility and the Northeast Gas Association.**

**Word Count: 65**

#### **Right of Way – Encroachment**

**Underground natural gas pipelines crisscross the nation, supplying many of our energy needs. Many pipelines are located along exclusive “rights-of-way” intended to protect them from construction related damage. If your property is near one of these rights-of-way, don't dig or build on it without permission from the utility. If you see construction along a right-of-way, contact your natural gas utility immediately. An important message from your natural gas utility and the Northeast Gas Association.**

**Word Count: 75**

#### **Pipeline Purpose**

**Natural Gas pipelines reliably and efficiently deliver natural gas throughout the country for a variety of uses. Natural gas is the most popular home heating fuel in America and its pipeline delivery system is among the safest and most secure methods of transporting energy. Additional information on underground pipelines, operating in your area, can be obtained from the National Pipeline Mapping System. An important message from your natural gas utility and the Northeast Gas Association.**

**Word Count: 76**

**Pipeline Safety**

**Natural gas safety is no accident. The underground natural gas delivery network in the United States is among the safest energy delivery systems in the country.**

**Your natural gas utility works hard to ensure the safety of its underground pipeline system through a variety of measures including one-call programs, inspections, patrols, workforce qualifications, pipeline markers, and security measures. Your gas utilities are working hard to keep you safe and comfortable. An important message from your natural gas utility and the Northeast Gas Association.**

**Word Count: 85**

# APPENDIX I

## PUBLIC AWARENESS FINAL RULE

### DEPARTMENT OF TRANSPORTATION

#### Pipeline and Hazardous Materials Safety Administration

49 CFR Parts 192 and 195 [Docket No. RSPA-03-15852; Amdt. Nos. 192-100, 195-84]  
RIN 2137-AD96

#### Pipeline Safety: Pipeline Operator Public Awareness Program

**AGENCY:** Pipeline and Hazardous Materials Safety Administration (PHMSA), U.S. Department of Transportation (DOT).

**SUMMARY:** This Final Rule amends the requirements for pipeline operators to develop and implement public awareness (also known as public education) programs. The changes are part of PHMSA's Office of Pipeline Safety's (OPS) broad pipeline communications initiative to promote pipeline safety. Promoting pipeline safety requires enhanced communications (by pipeline operators) with the public to increase public awareness of pipeline operations and safety issues. The amendments for developing and implementing public awareness programs address the requirements of the Pipeline Safety Improvement Act (PSIA) of 2002 and incorporate by reference the guidelines provided in the American Petroleum Institute (API) Recommended practice (RP) 1162, "Public Awareness Programs for Pipeline Operators."

**DATES:** *Effective Date:* This final rule takes effect on June 20, 2005. The incorporation by reference of API RP 1162 in this Final Rule was approved by Director of the Federal Register as of June 20, 2005.

#### FOR FURTHER INFORMATION CONTACT:

Blaine Keener by phone at 202.366.0970, by mail at 400 7th St., SW., Room 2103, Washington, DC 20590, or by e-mail at [blaine.keener@dot.gov](mailto:blaine.keener@dot.gov).

In consideration of the foregoing, PHMSA amends parts 192 and 195 of Title 49 of the Code of Federal Regulations as follows:

#### **PART 192—TRANSPORTATION OF NATURAL AND OTHER GAS BY PIPELINE: MINIMUM FEDERAL SAFETY STANDARDS**

\_ 1. The authority citation for Part 192 continues to read as follows:

**Authority:** 49 U.S.C. 5103, 60102, 60104, 60108, 60109, 60110, 60113, 60116, and 60118; and 49 CFR 1.53.

\_ 2. Section 192.7 is amended in the table in paragraph (c)(2) by adding a new item B.(5) to read as follows:

#### **§ 192.7 Incorporation by reference.**

(c) \* \* \*

(2) \* \* \*

Source and name of referenced material 49 CFR reference

\* \* \* \* \*

B. \* \* \*

(5) API Recommended Practice 1162 "Public Awareness Programs for Pipeline

\_ 3. Section 192.616 is revised to read as follows:

**§ 192.616 Public awareness.**

(a) Each pipeline operator must develop and implement a written continuing public education program that follows the guidance provided in the American Petroleum Institute’s (API) Recommended Practice (RP) 1162 (IBR, see § 192.7).

(b) The operator’s program must follow the general program recommendations of API RP 1162 and assess the unique attributes and characteristics of the operator’s pipeline and facilities.

(c) The operator must follow the general program recommendations, including baseline and supplemental requirements of API RP 1162, unless the operator provides justification in its program or procedural manual as to why compliance with all or certain provisions of the recommended practice is not practicable and not necessary for safety.

(d) The operator’s program must specifically include provisions to educate the public, appropriate government organizations, and persons engaged in excavation related activities on:

- (1) Use of a one-call notification system prior to excavation and other damage prevention activities;
- (2) Possible hazards associated with unintended releases from a gas pipeline facility;
- (3) Physical indications that such a release may have occurred;
- (4) Steps that should be taken for public safety in the event of a gas pipeline release; and
- (5) Procedures for reporting such an event.

(e) The program must include activities to advise affected municipalities, school districts, businesses, and residents of pipeline facility locations.

(f) The program and the media used must be as comprehensive as necessary to reach all areas in which the operator transports gas.

(g) The program must be conducted in English and in other languages commonly understood by a significant number and concentration of the non-English speaking population in the operator’s area.

(h) Operators in existence on June 20, 2005, must have completed their written programs no later than June 20, 2006. As an exception, operators of small propane distribution systems having less than 25 customers and master meter operators having less than 25 customers must have completed development and documentation of their programs no later than June 20, 2007. Upon request, operators must submit their completed programs to PHMSA or, in the case of an intrastate pipeline facility operator, the appropriate State agency.

(i) The operator’s program documentation and evaluation results must be available for periodic review by appropriate regulatory agencies.

## **PART I - GENERAL RULES**

### **Section 1**

#### **APPLICATION AND RESPONSIBILITY**

##### **111. Application of Safety Rules**

- a. Knowledge - Each employee shall read and be familiar with those Safety Rules applying to their duties. Safety rules are important and each employee is required to follow them. Employees may be periodically examined on their knowledge of the rules.
- b. Interpretation - If an employee is called upon to perform work which they consider hazardous, without proper protection, they shall bring the matter to the attention of their supervisor.
- c. Emergencies - These rules represent minimum requirements and are only intended to cover average conditions. Since it is impractical to cover all conditions and emergencies, the earnest cooperation of all employees with their supervisors is required in meeting conditions not provided for in these rules.

##### **112. Employee's Responsibility for Safety**

- a. Ability - Before proceeding with a job, the employees shall satisfy themselves that they can perform the work without injury. If they are assigned work they are unable to perform, they shall call this to the attention of their supervisor.
- b. Understanding - Before starting a job, each employee shall understand the work to be done, their part in it, and the safety rules that apply.

##### **113. Work Connected Injuries**

- a. Employees are instructed to report any on-the-job injury to Assistant General Manager or Business Manager promptly.
- b. First Aid kits with instructional material are available in all company vehicles and in all appropriate locations. These should be utilized for minor injuries.

- c. In the event of an accident, which requires treatment beyond first aid, the employee may go to Keene Clinic Occupational Health, 580 Court Street Keene NH. or the nearest emergency room facility.
- d. In the event of a serious accident, obviously requiring hospitalization, call 911 or contact dispatch who will notify 911.

#### **114. Supervisor's Responsibility for Safety**

All management personnel are responsible for being sure that safe practices are followed, including the utilization of personal protective equipment.

#### **115. Substance Abuse Policy**

The Drug-Free Workplace Act of 1988 requires contractors to certify to The Federal Agency in which they receive a federal contract that they will maintain a drug-free workplace. In order for the company to assure a drug-free workplace, we are required to adhere to the following:

It is unlawful to manufacture, distribute, dispense, possess, or use a controlled substance in the workplace. Employee violations may result in referral to the Employee Assistance Program, and/or disciplinary action, up to and including discharge.

As a condition of employment, the employee will abide by the terms of the law, including the obligation to notify the employer no later than five days after any criminal drug statute conviction occurring in the workplace. The company will notify the federal agency providing the contract within ten days after receiving notification of the conviction.

All employees receive a copy of the Drug & Alcohol Abuse Policies, and shall become familiar with their contents due to the importance of the subject, as well as the policy's affect on conditions of employment.

Please refer to your Assistant General Manager or Business Manager if you have any questions regarding this area.

## **PART I**

## Section 2

### GENERAL PRECAUTIONS

#### 121. Protecting the Public

- a. All reports of gas leaks shall be given prompt attention.
- b. When an employee needs special artificial light while working on customer's premises, they shall use an appropriate flash light, electric lantern, or suitable extension cord. A flame light shall not be used.
- c. The public shall be kept away from locations where work activity presents hazards.
- d. Bell holes, trenches and obstructions shall be protected by suitable guards or covers and, where exposed to traffic, marked with danger signs during the day and lighted at night with flashers or other approved devices, so located as to be visible to traffic and the public.
- e. Employees shall not begin to work in an area without first setting up all necessary barricades, signs, and markers required to adequately protect the area.
- f. Company personnel shall request police details as necessary for safety when working in areas in or near traveled ways, as traffic flow or local ordinance requires.
- g. When necessary to leave materials, equipment or other obstructions on a roadway overnight, the following precautions shall be taken:
  1. They shall not be left adjacent to fire hydrants, or directly in front of entrances to parks, playgrounds, churches, houses, schools, or other places of public assembly.
  2. They shall be locked, blocked, or otherwise secured so that unauthorized persons cannot start, move or operate them.
  3. They shall be adequately protected by approved warning devices.
- h. Trucks, air compressors, trailers and other equipment shall be so placed as to present the least impediment or hazard to traffic,

consistent with a safe working area for the employees. If possible, trucks or equipment shall be placed between the workers and on-coming traffic.

- i. When chiseling, chipping, breaking pavement, concrete, or welding is done in locations where others are exposed to eye hazards, proper steps will be taken to protect workers and pedestrians from injury. Pedestrians, **particularly children**, shall be warned to not watch welding operations.
- j. If gas is to be cut off from any section of a main or service, every customer affected will be informed of the interruption. If the customer is not available, appropriate action shall be taken.
- k. Before service to customers is resumed, notice shall be given to all customers affected that the gas service is to be restored. If access is not available, the gas supply will remain shut off.

#### **122. Reporting Hazardous Conditions**

It is the duty of every employee to immediately report any hazardous condition to the employee's supervisor. Supervisors are responsible for taking action to correct any hazardous condition.

#### **123. Risk Evaluation**

- a. Before commencing any work that may be hazardous, care shall be taken to establish a safe procedure. Where more than one employee is engaged in performing the same job, all employees concerned shall understand procedures to be followed. Under no circumstances shall safety be compromised. (See foreword.)
- b. Employees shall be careful to always place themselves in a safe and secure position. The care exercised by others shall not be relied upon for protection.

#### **124. Entering Hazardous Areas**

- a. Only authorized personnel shall enter restricted areas such as, but not limited to, gas plant or regulator station.
- b. Entering a Trench or Area Containing Gas, Dust or Smoke.

If an employee must enter or work in a gas, dust, or smoke filled excavation or area, an approved breathing device and safety harness with retrievable rope shall be worn. Also, a second

employee shall be in a safe position ready to retrieve the first employee if it were to become necessary.

#### **125. Guards**

- a. No guard shall be removed from a machine while it is in operation.
- b. Machines and power tools shall not be operated with guards removed.

#### **126. Lock Out/Tag Out**

- a. This Lock Out/ Tag Out procedure covers the servicing and maintenance of machines and equipment in which the unexpected energization or start up of the machine or equipment, or the release of stored energy could cause injury to an employee . The procedure does not apply to machines and/or equipment that are plug or cord connected to a power source, and the plug or cord could be disconnected.
- b. Employees in the work area will be notified that a machine and/or piece of equipment is either locked out or tagged out.
- c. If practical, equipment or machines will be locked out when servicing.
- d. When not practical to lock out equipment or machine when servicing, a tag "DANGER – DO NOT START" will be affixed to the equipment controls.
- e. Employees will be advised when a machine and/or equipment has been returned to service

#### **127. Accident Prevention Signs**

- a. Accident prevention signs and tags are to raise awareness that failure to designate hazardous areas may result in accidental injury to employees or the general public.
- b. The three types of accident prevention signs are :
  - 1. "DANGER" – posted to warn of specific dangers in the workplace.
  - 2. "CAUTION" – warns against potential hazards or unsafe practices.
  - 3. "SAFETY INSTRUCTOR" – used for general instructions

## **PART I**

### **Section 2a**

#### **128. Housekeeping**

- a. One of the best ways to prevent accidents and increase efficiency of work is to maintain a neat, orderly work place. Employees are frequently injured by tripping or stumbling over, stepping on, or bumping into tools, materials and other objects left lying around, or by carelessly placed objects falling from above. This also applies to compartments of vehicles.
- b. Walks, aisles, stairways, fire escapes and all other passageways shall be kept clear of all obstructions. All areas, which require artificial illumination, shall be properly lighted.
- c. Tools and materials shall not be placed where they may cause tripping or stumbling hazards, or where they may fall and strike anyone below.
- d. Puddles of oil or water that create a slipping hazard must be cleaned up promptly.
- e. Nails in boards, such as those involved with scaffolds, forms and packing boxes, constitute a hazard and shall be removed. The boards shall be carefully stacked or stored.
- f. Dirty or oily waste rags shall be deposited in approved metal containers provided for that purpose and be properly disposed of as soon as practical to avoid a fire hazard.
- g. Vehicular equipment shall be kept as neat and clean as the work being performed will permit. Tools and materials shall not be carried or stored where they may cause accidents.

#### **129. Building Access**

- a. Handrails are provided on stairways for your safety. A caught heel or misplaced foot is usually the basic cause for falls on stairs. Use the handrail and do not run when using stairways.
- b. The chains that provide fall protection at the New Hampshire Gas Corporation shop inside loading dock are to be returned to the closed position after dock access is no longer required.

- c. Pedestrian walkways are to remain clear at all times.
- d. Running on stairs or in company buildings is prohibited.

**PART I**

**Section 3**

**PERSONAL PROTECTIVE EQUIPMENT**

**131. Personal Protection Equipment (PPE)**

- a. New Hampshire Gas Corporation completed a Personal Protective Equipment Hazard Assessment (PPEHA) and identified employee work related hazards. The PPEHA identifies major job tasks where either personal protective equipment is required for the task or recommended. The PPEHA is available in all operation departments by contacting your supervisor.
- b. Employees will be trained in the use of PPE.
- c. Personal Protective Equipment shall be properly maintained and inspected prior to each use.
- d. The company will provide Personal Protective Equipment for employees at no cost.
- e. Employees shall take reasonable care of company property
- f. Employees will advise their immediate supervisor if PPE is broken or needs maintenance.

**132. Respiratory Protection**

- a. A Respiratory Protection Program has been established to protect company workers from occupational respiratory injury caused by oxygen deficient atmospheres, harmful dust fumes, sprays, mists, fogs, smokes, vapors, or gases.
- b. Respiratory Protection Equipment shall be used in accordance with this program only when engineering control measures are not feasible or while they are being instituted.
- c. For the specifics of the Company Respiratory Protection Program, consult your immediate supervisor.

**133. Fall Protection and Life Lines**

- a. While working where there is danger of falling into water, or from a height of 6' or more, (Note: This does not include ladders) an employee shall wear an approved full body harness with line attached.

## **PART I**

### **Section 4**

#### **HAND AND POWER TOOLS**

##### **141. Use of Tools**

- a. Tools shall be used only for the purpose for which they are designed.
- b. Hammers with metal handles, screwdrivers or knives with the metal continuing through to end or sides of handles, shall not be used on or near energized electrical equipment.
- c. Metal measuring tapes, tapes having metal strands woven into the fabric, brassbound rules, metal scales and gauges, wire or metal bound hose or rope with wire core, shall not be used when working on or near energized electrical circuits or equipment.
- d. Chisels, drills, punches, ground rods and pipes shall be held with suitable hold or tongs (not with the hands) while being struck with a sledge by another employee.
- e. Shims shall never be used to make a wrench fit.
- f. Wrench extensions used to increase leverage should be avoided whenever possible. Extensions shall never be used on aluminum wrenches. Caution shall be exercised when they are used.
- g. When using a draw knife, an employee shall not brace the work with his knee, or other parts of his body.
- h. Before making adjustments or changing air tools, the air shall be shut off at the air supply valve head of the hose. The hose shall be discharged at the tool before breaking connection.
- i. Practical jokes with compressed air are strictly forbidden. Compressed air entering or blown against the body may result in serious injury or death.
- j. Compressed air shall not be used to clean clothing while being worn, nor used to blow dust or dirt out of the hair. Compressed air used for cleaning equipment should not be above 35 psi at shut-off on nozzle.

- k. When using a screwdriver or other tool, an employee shall place himself in such a position that they will avoid injury if the tool should slip.

#### **142. Care of Tools**

- a. All company tools, shall be of an approved type, maintained in good working condition, and be subject to inspection at any time. A supervisor has the responsibility to condemn tools.
- b. Tools with sharp edges such as box cutters and knives shall be stored and handled in a manner that will not cause injury or damage. They shall not be carried in clothing pockets without a sheve or suitable tool holder.
- c. When shock tools, such as chisels, punches or drills become mushroomed or cracked, they shall be repaired or replaced before further use.
- d. When faces of hammers, sledges, or similar tools become chipped or rounded, they shall be repaired or replaced.
- e. Wood handles that are loose, cracked or splintered shall be replaced. Taping or lashing them with wire is not permitted.
- f. All cutting tools, such as saws, wood chisels, draw knives or axes, shall be kept in suitable guards unless special compartments are provided for their storage.

#### **143. General**

- a. All files, rasps, and other hand tools, which have a sharp tong, shall not be used without approved handles.
- b. Tools, except those normally carried on belts, that must be raised or lowered from one elevation to another, shall be placed in approved tool buckets, or firmly attached to a harness.
- c. Tools shall not be thrown from place to place or person to person under any circumstances.
- d. Tools shall not be left lying around where they may cause tripping or stumbling hazards.
- e. Tools shall never be placed in unsecured or elevated places that could pose a fall hazard to an employee.

- f. When working on or above open grating, a canvas or other suitable covering shall be used to cover the grating in order to prevent tools or parts from dropping to a lower level, or the danger area shall be barricaded or guarded.
- g. The insulation on power tools with electrical cords shall not be depended upon to protect users from shock, unless it is double insulated, or is equipped with a G.F.I. (Ground Fault Interrupter) device.
- h. Prior to use, Electric tools, cords, receptacles, etc. shall be inspected for damage. Any electrical devices found to be damaged shall be immediately removed from service.
- i. Hand and portable tools found to be defective will be removed from service and brought to the attention of the employee's supervisor for repair or replacement.
- j. Employees shall not remove any guards on any hand and/or portable power tools.

## PART I

### Section 5

#### PORTABLE LADDERS AND SCAFFOLDS

##### 151. Straight Ladders

- a. The employee shall place the base of a straight or extension ladder approximately  $\frac{1}{4}$  of the working length of the ladder from the vertical axis.
- b. An employee shall not work or stand on either of the two top rungs of a ladder.
- c. Short ladders shall not be spliced together.
- d. A ladder shall never be placed against a moveable object. Ladder feet shall be placed on a substantial base.
- e. Ladders shall not be used as scaffold platforms.
- f. Ladders must extend three feet above the point of support.
- g. The maximum load capacity for ladders shall not be exceeded.
- h. Employees must face the ladder when ascending or descending.
- i. Employees must use two hands when ascending or descending a ladder.
- j. Straight ladders will be inspected prior to use.

##### 152. Step Ladders

- a. Employees shall not work from the top step of a ladder. (This rule does not apply to safety platform ladders.)
- b. Step ladder legs shall be fully spread when ladder is in use.
- c. Step ladders shall not be used as straight ladders.

##### 153. Scaffolds

- a. Scaffolding shall only be assembled by a competent person.

#### **154. General**

- a. An employee shall not use a ladder that has broken, loose, cracked rungs, or side rails or braces.
- b. Boxes, crates or chairs shall not be used to stand on at any time.
- c. Only one employee shall work from a ladder at one time. If the work requires two employees, a second ladder shall be used.
- d. Ladders shall be inspected prior to each work shift use and immediately repaired or replaced when found to be in a defective condition.
- e. If a ladder is to be placed where the opening of a door may displace it, the door shall be locked or otherwise guarded.
- f. Ladders shall not be used near energized equipment or power lines. There shall be at least 3 feet of safe work clearance for guarded equipment and 4 feet for unguarded distance.
- g. Ladders shall not be painted. They shall be treated only with a transparent non-conducting material.
- h. Only approved ladders shall be used by employees.
- i. "Bungee" cords shall not be used as a device for securing ladders to vehicles.

#### **155. Roof Installations**

- a. Customers are to provide access to roofs as per the National Fuel Gas Code.
- b. Where parapet or handrails are provided they shall be used.
- c. Where unsafe conditions exist, notify supervisor.

**PART I**  
**Section 6**  
**HANDLING MATERIALS**

**161. By Hand**

- a. An employee shall obtain assistance in lifting heavy objects or use power equipment if available.
- b. When two or more persons are carrying one object, each employee, if possible, shall face the direction in which the object is being carried.
- c. Employees shall wear proper gloves and shoes when handling construction materials. Where applicable, head protection shall also be worn.
- d. Employees shall not walk under or ride on top of a load of pipes.
- e. Load binders shall be used at both front and rear bolsters to secure pipe loads.
- f. When loading various sizes of pipe, the larger pipe sizes shall be loaded first.
- g. When lowering heavy pipe down skids, the skids shall be secured to the truck.
- h. When lowering pipe by slings or down skids, employees shall always stand on the opposite side of the pipe from the direction that the pipe is moving.
- i. When using rollers to move heavy equipment, the rollers shall extend beyond the skids or the equipment base.
- j. Carrying small diameter pipe inside larger pipe is prohibited.

NOTE: Avoid strains from lifting objects by being sure of footing, bending the knees and keeping the back almost perpendicular. When ready to lift, straighten the legs slowly, thus making the strain come on the stronger muscles of the body.

## 162. By Mechanical Means

- a. Cranes shall be operated only by authorized persons. Operators shall wear head protection when operating a crane.
- b. One employee shall give all signals to the operator of a crane. The operator, however, shall obey the stop signal given by anyone. All assisting with operations shall wear head protection.
- c. No employee shall be under a suspended load, inside the angle of a winch line, nor shall he stand or work near a cable, chain or rope under tension unless the nature of his work requires it.
- d. Wire rope loops shall be made by proper splicing or mechanical clamping of the tail section.
- e. Winch lines, ropes or wires shall not be guided by hand when standing within reach of the drum or sheave.
- f. No employee shall ride on a cable, chain, sling or other hoisting attachment or on material being moved by means of a crane or derrick.
- g. When mobile hoists, cranes, booms, or similar lifting devices are used near energized lines or equipment, all persons shall remain in the clear until the lifting device is in a safe position. **Work will not be performed closer than ten feet from the energized line or equipment** and an observer will be positioned to see that the safe distance is maintained.
- h. When lifting a load, operators shall never leave the controls of a crane while load is suspended.
- i. Trucks, on which derricks or booms are erected above traveling height, shall not be moved except under the immediate direction of a designated employee, who shall give his undivided attention to the movement.
- j. Before moving a load, employees shall determine that cables, chains, slings, or other attachments are properly applied; that the load is properly balanced and free from entanglements; and that no one is in danger of injury from movement of the load or line.
- k. Crane loads must not exceed the rated capacity of the crane.

- l. Cranes shall be inspected prior to each use, and monthly, as part of a formal documented maintenance program.
- m. While operating a crane, safe working clearance distance for energized equipment and/or power lines shall be followed.

**163. Pipe Handling**

- a. Extreme caution shall be observed at all times while working with, or in the vicinity of pipe handling equipment. Gloves and head protection are to be worn at all times.
- b. When lifting or moving coated or wrapped pipes (4" or larger) one of the following only shall be used:
  - 1. Approved positive locking type pipe clamp or tongs.
  - 2. Cable or web slings
  - 3. Modification of the above is at the discretion of the supervisor.
- c. At no time shall employees stand or work directly beneath a section of pipe, which is being moved.

**PART I**

**Section 7**

**COMPRESSED GASES AND WELDING**

**171. Handling Cylinders**

- a. Smoking is prohibited when in the vicinity of or when handling cylinders.
- b. Employees shall use care in handling all high-pressure cylinders. They shall not be dropped or jarred. Hydraulic tailgates or other approved methods shall be used in lowering cylinders from trucks.
- c. Cylinders shall not be rolled in a horizontal position and shall not be carried by valves or caps.

**172. Storage of Cylinders**

- a. Cylinders shall not be placed or stored where sparks from welding or cutting operations can reach them.
- b. Cylinders containing acetylene or oxygen shall not be stored in a general storeroom. They shall be stored, separated by a minimum of 20 feet, or a one-hour rated enclosure, in a well ventilated, fire proof area.

**173. Handling and Storage - General**

- a. Cylinders shall not be allowed to come in contact with energized conductors or ground wires from electrical equipment.
- b. The valves of compressed gas cylinders shall be opened slowly and only with the special wrench provided.
- c. Employees shall never tamper with the safety relief devices in valves or cylinders.
- d. Employees shall never force connections that do not fit.
- e. Do not use oil or grease for lubricating valves, gauge connections or other parts of an oxygen system.

- f. Regulators, pressure gauges and hoses, provided for use with a particular gas, shall not be used on cylinders containing different gases.
- g. All hoses shall be inspected prior to use.
- h. All cylinder valves shall be closed when the cylinders are empty.
- i. A leaking cylinder or valve shall not be used and will be immediately reported to the employee's supervisor.
- j. A flame shall not be used to detect flammable gas leaks.
- k. The recessed top of cylinders shall not be used as a place for tools.

#### **174. Welding and Cutting - General**

- a. Welding on pipeline facilities may only be performed by welders possessing certification papers from a qualified testing laboratory. Certification papers shall be reviewed and maintained on file by the Engineering Department. The certification papers must document the following:
  - 1. That the welder has qualified in accordance with section 3 of API 1104 or section IX of the ASME Boiler and Pressure Vessel Code.
  - 2. That the qualification was performed in accordance with the welding procedure MGUP-1.
  - 3. That in the preceding 6 calendar months, the welder has welded utilizing the specified welding process.
  - 4. That in the preceding 6 calendar months, the welder has had one weld tested and found acceptable under section 3 or 6 of API 1104.
  - 5. If the welder is to weld on compressor station pipe and components, the qualification is based on destructive testing.
- b. Persons performing or assisting with or observing welding and cutting operations shall wear all necessary personal protective devices.
- c. Compressed gases shall be used only by experienced and properly instructed persons.

- d. When welding or cutting in elevated positions, precautions shall be taken to prevent sparks or hot metal from falling on people or flammable material below.
- e. Matches or lighters shall not be carried by welders or their helpers when engaged in welding or cutting operations.
- f. When welding or cutting operations are being performed on a pressurized gas line, a person with a fire extinguisher must be present. No welding shall be done on any container unless it has been properly purged and listed as safe by qualified personnel.
- g. Adequate ventilation or approved respiratory equipment shall be used while welding in confined spaces or while brazing, cutting or welding zinc, brass, galvanized or lead coated material.
- h. Whenever there is danger of escaping gas, the welder's helper or other designated workman shall remain at the end of the open excavation with a fire extinguisher, prepared to assist in case of emergency.

#### **175. Thermite Welding**

- a. Connection of test wires to steel pipe or structures must be of a nature as to maintain mechanical strength and electrical continuity. In no case, except fittings, will mechanical connection method be acceptable. The only acceptable method is the thermite connection.
- b. Only trained personnel should use the Thermite Procedure.
- c. Thermite welds should never be used on the following:
  - 1. All Anode-less Prefab Risers
  - 2. 5/8" Steel Tubing
  - 3. All Copper Tubing
- d. Thermite weld charges shall be ignited only by means of a flint gun. When igniting the flint the operator shall hold the mold firmly to the pipe using gloves, safety glasses and adequate clothing.

### **176. Electric Welding**

- a. No electrical welding machine, either AC or DC shall be operated until the machine is properly grounded.
- b. To protect eyes, face and body during electrical welding and cutting, the operator shall wear an approved helmet, proper protective gloves and clothing. Other employees shall not observe electrical welding operations unless they use approved eye protection. Where applicable, a combination hard hat/welding shield shall be worn.
- c. Proper eye protection shall be worn to guard against flying particles of scale, when the helmet is raised.
- d. A shield shall be placed around welding operations where there is danger to the public or other employees. Pedestrians, particularly children, shall be warned not to watch welding operations.

### **177. Gas Welding**

- a. Suitable eye protection, gloves, and clothing shall be worn during welding or cutting operations, or while cleaning scale from welds.
- b. Matches shall not be used to light a torch; a torch shall not be relighted on hot work. A friction lighter or stationary pilot light shall be used.
- c. Welding hoses shall not be repaired with tape.
- d. Employees shall never splice a welding hose.
- e. When welding equipment is not in use, the cylinder valves shall be closed.

**PART 1**

**Section 8**

**FIRE PREVENTION**

**181. Housekeeping**

**Good housekeeping shall be maintained at all work locations and in all vehicles.**

- a. Combustible materials, such as oil-soaked rags, waste and shavings, shall be kept in approved metal containers with self-closing lids. Containers shall be emptied as soon as possible.
- b. Waste shall be kept in metal or metal-lined bins with self-closing covers.
- c. No matches shall be left in clothes placed in lockers. Rubbish and unused clothing shall not be allowed to accumulate in lockers.
- d. Paper and other combustible materials shall not be allowed to accumulate. Weeds or other rank vegetation shall not be permitted to grow in or around the neighborhood of gas plants, compressor stations, regulator stations, pipe storage yards and commercial meter sets.
- e. Flammable liquids and aerosols shall not be used for cleaning purposes unless approved methods from manufacturer are employed for their safe use.
- f. In any building, except one provided for their storage, flammable liquids, such as gasoline, benzene, naphtha, and lacquer thinner, shall be limited to five gallons, and stored in U.L. approved and properly labeled containers. Additionally, containers shall be housed in flammable liquid storage cabinets.
- g. Rule 181.f does not apply to kerosene and cleaning agents of the "Stoddard" solvent class, but not more than one gallon of such liquids shall be kept in any open container. The container shall be provided with a proper cover, and be kept securely covered except when in actual use.
- h. All solvents shall be kept in approved properly labeled containers. Gasoline, benzene, alcohol, lacquer thinner, and other solvents of

this class shall be handled and dispensed only in U.L. approved properly labeled red safety cans.

- i. When pouring or pumping gasoline or other similar flammable liquids from one container to another, metallic contact shall be maintained between the pouring and receiving containers.
- j. Employees shall not smoke near flammable liquids, gases or explosives.
- k. Containers will only be refilled with the same kind of material and will be properly labeled.

#### **182. Fire Protection**

- a. Fire extinguishers shall be located in the most accessible places, and a cross section of employees shall be familiar with and know how to operate each piece of equipment.
- b. All fire extinguishers shall be inspected monthly by department employees and annually by fire extinguisher vendor. Written records will be kept of the inspection.
- c. Fire extinguishers requiring maintenance that are assigned to vehicles shall be reported to the employees supervisor.
- d. Fires are divided into three general classes. These classes and the type or types of extinguishers designed for use on each are:

Class "A" - Fires in ordinary combustible materials such as wood, paper and rags where the quenching or cooling effects of water, or solution containing large percentages of water, is of first importance. Use Soda- Acid, Foam, Water, Pressurized Water or Anti-Freeze type of extinguisher, and All Purpose dry chemical.

Class "B"- Fires in flammable liquids and greases, where a blanketing effect is essential, use Dry Chemical, Carbon Dioxide, or Foam type extinguisher.

Class "C"- Fires in electrical equipment where the use of a non-conducting extinguishing agent is of first importance. Use Dry Chemical or Carbon Dioxide type extinguishers. DO NOT USE SODA ACID, FOAM, PRESSURIZED WATER, ANTI-FREEZE OR WATER TYPE EXTINGUISHERS ON CLASS "C" FIRES.

“Water Mist” Class – Fires in electronic equipment. Extinguishers for the protection of delicate electronic equipment.

**Note:** Electrical equipment should be de-energized as soon as possible to prevent re-ignition.

- e. Employees shall not enter confined spaces after using CO2 extinguishers until the area has been thoroughly ventilated and the oxygen level is determined to be safe.
- f. Fire doors shall be regularly inspected for the condition of fusible links, magnetic hold-open devices, and for obstructions which could keep the door from closing.

**Note:** See National Fire Protection Association pamphlet #10 Portable Fire Extinguishers, for testing and inspection procedures.

## **PART I**

### **Section 9**

#### **OFFICE AND CLERICAL WORK**

##### **190. General**

- a. Desk drawers, cabinet doors, binder bin doors, slides and files shall not be left standing open while unattended.
- b. Broken glass or other sharp-edge objects shall not be placed in wastebaskets, unless properly protected.
- c. Approved type ladders or other safe supports shall be used to reach material on high shelves, or at other similar locations.
- d. Cracks or breaks in the electrical cord to a power- driven machine shall be reported promptly.
- e. Machines shall never be adjusted or cleaned except when unplugged.
- f. Aisles and walkways shall be kept free of tripping hazards.
- g. Exposed moving parts of power-driven office machines shall be covered with suitable guards, where possible injury to the operator or other personnel may result.
- h. Serious injury may be caused by overloading cabinets. Opening of overloaded upper drawers, particularly more than one at a time may tip over the cabinet. Heavy materials should not be placed on top of filing cabinets.
- i. When closing drawers of desk and files, care should be taken to see that hands are held against the face of the drawer to avoid fingers being caught.
- j. Safety-razor blades should not be used for cutting paper, sharpening pencils or other cutting operations unless secured in a holder into which the blade may be drawn out of sight when not in use. Do not keep razor blades or other sharp instruments loose in desk drawers.
- k. Be alert for closed doors opening unexpectedly. Open all doors with caution.

- I. While walking, watch constantly for and remove tripping hazards on the floor, such as paper clips, rubber bands, pencils, etc.
- m. Running on stairs or in company buildings is prohibited.

**PART I**

**Section 10**

**OPERATIONS**

**195. Explosion Hazards**

- a. Each employee is cautioned to be particularly careful when undertaking work in an enclosure of any kind, which might contain a hazardous atmosphere.

It is essential and necessary that each employee and anyone accompanying him make certain that, in the event conditions similar to the above might exist, every precaution be taken to prevent an explosion.

- b. Keep all exposed flames away; do not smoke in or near such confined space.
- c. The following ignition sources shall never be intentionally exposed to a gas-air atmosphere:

Flames:

- 1. Open flames, lanterns, torches, etc.
- 2. Matches and cigarette lighters
- 3. Burning materials

Sparks and Arcs:

- 1. Static electricity
- 2. Electrical shorts
- 3. Lighting
- 4. Switches
- 5. Sparks from impact tools
- 6. Electrically operated tool

Heated Materials:

- 1. Glowing metals, cinders and filaments
- 2. Electric lights.

**196. Atmospheres that are Immediately Dangerous to Life or Health (IDLH)**

Employees shall not enter vaults, regulator pits or similar confined areas which monitoring has identified as oxygen deficient or otherwise immediately dangerous to life and health without being properly protected. Please refer to the company policy on respiratory protection.

## **PART II – LP PLANT OPERATIONS**

### **Section 1**

#### **211. General**

- a. Transports will not be positioned any closer than 25 feet from storage tanks.
- b. When transport is in position wheels will be chocked.
- c. A connected truck transport shall never be left unattended.
- d. All transports shall be visually checked for leaks or other signs of bad conditions before making any connection. The appearance of a white cloud or frost formation around a storage tank usually indicates the presence of a leak.
- e. Before unloading operations begin, the truck transport shall be electrically bonded to the unloading rack and to the receiving tank.
- f. A check shall be made for open flames; rubbish fires and any other source of ignition in the vicinity before connections are made to the truck transport.
- g. Storage tank shall be gauged to determine that sufficient space is available to receive the shipment to prevent over-filling of tanks.
- h. During the unloading operations the operator shall check receiving tank gauges and pressures at regular intervals to prevent over-filling or over-pressuring of receiving tanks.
- i. Non-sparking tools shall be used when making connections between truck transports and storage tanks.
- j. When unloading operations are complete, a final check shall be made to see that all hoses are disconnected and valves are not leaking.

#### **212. Methanol Procedure**

- a. Methanol shall be stored in a proper storage area.
- b. Containers shall be approved for methanol.

- c. No smoking or open flames are permitted when working with or near methanol.
- d. Drums and containers shall be grounded and bonded.

## **PART II**

### **Section 1a**

#### **GAS PLANT RULES**

##### **214. General Gas Plant Operations**

- a. Open flames or smoking shall not be permitted in the vicinity of engine rooms, meter rooms, valve or regulator rooms, or other locations where there is danger of gas being ignited.
- b. Portable electric tools shall not be used in locations where there is a danger of gas being ignited.
- c. Electric light bulbs shall not be removed from or installed in any circuit inside of a building where there is a possibility of an explosion unless the power has been turned off.
- d. Only approved extension cords and safety lights shall be used.
- e. All flywheels, governors and moving parts on engines, motors, etc., shall be properly guarded.
- f. Extreme caution shall be observed at all times when working near pipe lines, boilers, or any other equipment or material, having high temperatures, which could cause severe burns.
- g. Personnel shall never ride in moving buckets and/or on backhoe steps, etc.
- h. Employees shall never enter potentially dangerous environments without the use of a full body harness with attached lifeline having the free end of the lifeline secured outside and attended by a second employee. Before entering spaces, atmosphere therein shall be tested and continually monitored to assure that the area is not an atmosphere deemed immediately dangerous to Life or Health (IDLH).

## **PART II**

### **Section 2**

#### **METER SHOP**

##### **221. General**

- a. Safety glasses and goggles or shield shall be worn during grinding and chipping operations.
- b. Employees shall use only approved, self-closing containers for waste and oily rags.
- c. Meters shall not be lifted or moved by picking up meter by horns or caps.
- d. Avoid strains from lifting objects by being sure of footing, bending the knees and keeping the back almost perpendicular. When ready to lift, straighten the legs slowly, thus making the strain come on the stronger muscles of the body. Employees shall obtain assistance in lifting larger type meters, or use hand trucks.
- e. When refurbishing meter spuds & ferrules follow company procedures.

##### **222. Storing Meters**

- a. Aisles and storage areas shall be kept clear and meters stacked in proper manner in designated areas.
- b. Meters shall be stacked in a manner to prevent their accidental upset. Height of the stacks shall be determined by size and weight of the meters.
- c. Walkways shall be uncluttered and marked, so that moving and storage operations are not hampered.
- d. Protruding nails shall be removed on all shipping materials.
- f. Material on hand trucks shall be loaded so that a low center of gravity is maintained.

**223. Painting**

- a. Painter shall use designated respirator when conducting spray-painting operations.
- b. All paints and liquids used in the painting of meters, regulators, etc. shall be stored in flammable storage cabinets at the completion of their use.
- c. All painting shall be done within the confines of the designated paint area.

**224. Hazardous Materials and Waste Handling**

- a. Any meter(s) suspected to contain oils shall be tested using established procedures.

## **PART II**

### **Section 3**

#### **OPERATION OF MOTOR VEHICLES AND OTHER MOBILE EQUIPMENT**

##### **231. General**

- a. Only those employees specifically authorized and who possess a valid license shall operate company owned motor vehicles.
- b. Drivers shall know and obey all state and local motor vehicle laws that apply to them.
- c. The taking on of 'riders' in any company vehicle is prohibited unless permission has been granted, excepting passenger vehicles, company employees, or personnel under contract with the Company.
- d. Employees shall not permit anyone to ride on the running boards, fenders or any part of any motorized equipment except on the seats or inside the body walls. Passengers shall not stand in moving vehicles.
- e. Employees shall not ride on loose material or equipment carried on trucks.
- f. Employees shall not ride on trailers.
- g. All employees shall stay clear of pressurized oil or air, which is escaping from a ruptured line or fitting. No attempt shall be made by an employee to stop or slow such a leak by using his hands, feet or other parts of his body. The pump, compressor or engine shall be stopped as soon as the leak is detected.
- h. Gasoline tanks on vehicles shall not be filled to the top, if the vehicle is to be stored in a warm garage. Overflowing tanks shall be drained to a safe level immediately.
- i. When transferring gasoline from one ungrounded metal container to another, a metallic ground contact shall be maintained between the two containers to prevent ignition of fumes from static electricity.

- j. Mobile radios in trucks and cars shall not be operated while the fuel tank of the vehicle is being filled.
- k. All ignition systems shall be turned off, and no smoking is permitted while refueling.

**232. Inspection**

- a. Windshields and windows shall be kept clear of anything that may obstruct the driver's vision.
- b. Brakes shall be tested by the driver at the start of each day the vehicle is used. Driver shall report any defects, which may have developed during the day. If brakes are not working safely, they shall be adjusted or repaired before the vehicle is put in operation.
- c. Lights and other signaling devices shall be inspected at the start of each day the vehicle is used. If found defective, they shall be repaired before vehicle is placed in operation. No motor vehicle shall be operated at night, unless equipped with properly working headlights, tail lights, and other necessary safety devices as required by law.

**233. Operation**

- a. The operator of a motor vehicle shall clearly signal their intention of turning, passing or stopping.
- b. Upon a signal from a vehicle approaching from the rear, the driver of a company vehicle shall yield the right of way to the overtaking vehicle.
- c. Drivers shall be prepared to stop, and the right of way shall be yielded in all instances where necessary, to avoid an accident.
- d. Drivers following other vehicles shall stay a safe distance behind, so that they can stop in the clear distance ahead.
- e. Drivers shall keep a sharp lookout for children, especially in school zones, or where they are playing and be prepared for an immediate stop.
- f. Trucks or trailers stopped on any public roadway shall be protected by red flags, proper warning lights or reflectors in accordance with legal requirements.

- g. Vehicles shall not be parked on bridges or culverts, except when necessary for work.
- h. Before backing a vehicle, the driver shall definitely determine that the space they need is clear, and they shall back slowly, keeping a constant lookout during the entire time they are backing. When backing trucks and another employee is available, they shall be so stationed that they can warn the driver of approaching danger and assist them in maneuvering the vehicle.
- i. When entering or leaving any building or enclosure, or to or from an alley or street where vision is obstructed, a complete stop shall be made, and the driver shall proceed with caution.
- j. Trucks on which booms are erected above traveling height shall not be moved except under the immediate direction of a designated employee, who shall give their undivided attention to the movement.
- k. Load limits of booms and other hoisting equipment shall not be exceeded.
- l. When proceeding down grade, the clutch shall not be disengaged. Trucks, particularly if heavily loaded, shall be in low or second gear on steep grades.
- m. When parked on an incline, drivers shall be sure that the brakes are properly applied, the vehicle is in gear where possible, and the wheels are at an angle against the curb. This applies whether the vehicle is facing up or down grade.
- n. Truck wheels on DOT vehicles shall be chocked at all times when parked.
- o. Where work requires that a truck be parked on traveled portion of the street or highway or immediately adjacent thereto, warning signs or red flags by day, and flares or lights by night, shall be placed ahead and behind the vehicle on the traffic side, in accordance with traffic regulations.
- p. Trailers, while being towed, shall be securely coupled to the truck, and also joined by auxiliary chains or cables. Safety chains shall be of sufficient strength and so attached as to safely control the load in case the coupling device fails.

- q. Equipment shall be kept in good operating condition and driven in a safe, courteous manner. The public's attitude toward the Company is influenced greatly by the appearance of the automobiles and trucks, and the manner in which they are driven.
- r. Every possible precaution must be taken, because accidents, are oftentimes the result of carelessness on the part of pedestrians or other drivers.
- s. In all cases, the pedestrian has the right-of-way on crosswalks. Courtesy, in this respect, is of importance to safety and good public relations.
- t. Most traffic accidents can be prevented by faithful observance of four things.
  - 1. Control Speeds - Don't drive too fast for conditions. A few minutes saved at the cost of an accident is no bargain.
  - 2. Avoid distractions - Each employee should give their undivided attention to the job of driving and keep their eyes on the road.
  - 3. Drive Defensively - Don't insist on the right of way. Try to anticipate the intention of other drivers and pedestrians.
  - 4. While driving, cell phones shall be operated in accordance with state laws.
- u. Employees should leave or enter parked vehicles on the curbside wherever possible. Extreme care should be used if doors are opened on roadside to see that no other vehicles are near.
- v. A traffic cone or triangle is to be placed at the rear of parked vehicles (all vehicles larger than passenger cars). In addition to marking the vehicle that is exposed to traffic, this practice affords the vehicle operator opportunity to visually check the rear of the vehicle for persons or objects prior to operation.
- w. Vehicle bodies should be kept clean as possible at all times. Any vehicles used to convey individuals shall at no time have small equipment, fittings, tools, rubbish, etc. lying loosely on the body floor, crew compartment or within the cab.

#### **234. Loading and Hauling**

- a. Materials and equipment shall be loaded so they will not cause a hazard by shifting. Heavy equipment and materials shall be securely fastened.
- b. Red flags during the day, and red lights at night shall be attached to equipment or material that extends more than four (4) feet beyond the back of the vehicle. Red flags or approved clearance lights shall be attached to loads extending more than two (2) feet beyond the front of the vehicle.

#### **235. Accidents**

- a. Drivers of company vehicles shall always stop and give their names and addresses, and the company's name and address, when they are involved in an accident. They shall also secure the names, addresses and license number of others involved in the accident, as well as the name and addresses of all available witnesses or others who have knowledge of the accident. This may be achieved by immediately completing and submitting a company motor vehicle accident report (Available from Support Services Supervisor) and notifying Dispatch. Dispatch will call 911 for medical and law enforcement assistance.
- b. Drivers or other employees shall not determine or admit liability of the company, when an accident occurs.
- c. Drivers or other employees may assist injured persons insofar as they are able.

#### **236. Fork-Lift Equipment**

Only company licensed operators are authorized to operate fork-lift equipment.

When operating fork-lift equipment, employee shall:

- a. Face in the direction of travel. For better vision when carrying bulky loads, truck shall be backed in the direction of travel.
- b. Stop at all blind intersections and corners and sound horn.

- c. Descend ramps slowly. When carrying a load, truck shall be backed down to prevent a shift in the center of gravity and spilling of the load.
- d. Place forks on floor, remove key and shut off fuel supply when truck is parked. Operator shall always drive truck with empty forks in the lowest travel position. They shall not attempt to move any obstacle or object by ramming it with the forks.
- e. Inspect all bridge timbers or plates, to make certain that they are adequate to support the weight of the truck and its loads, and that they are secured before driving them.
- f. Keep arms and legs within lines of the truck.
- g. Never attempt to lift a person without an approved and properly secured safety cage.

#### **237. Power Equipment**

- a. When operating power equipment, employee shall use extra caution to prevent flying objects from striking themselves, other employees or members of the public. Pick up loose objects when this is practical and clear the area of other people when possible.
- b. Keep hands and feet from under the machine and out of discharge chute while engine is running.
- c. Stop engine (or motor) and disconnect spark plug wire(s) on power equipment before adjusting, repairing or replacing equipment.
- d. Engines shall be allowed to cool off before the unit is refueled.

**PART III**  
**NATURAL GAS DISTRIBUTION**  
**Section 1**  
**FIELD REPAIR AND MAINTENANCE**

**311. Mains and Services**

- a. A fire extinguisher shall always be readily accessible at the job location.
- b. Before cutting or disconnecting cast iron or steel mains they shall be effectively jumpered across the proposed opening with an approved jumper cable.
- c. Static electricity shall be drained from plastic pipe before cutting or disconnecting the pipe. The approved operating and maintenance procedure shall be followed.

**312. Purging and Blowing**

- a. Employees shall use extreme caution while purging services in buildings or confined places.
- b. Blowing and purging operations shall be done during daylight hours whenever possible.
- c. An approved method for control of flow shall be used for purging or blowing operations. (See Section 13.3 Purging Methods, in Construction Standards)
- d. Employees shall take precautions to see that purging or blowing operations do not endanger people or property.

**313. Air Tests**

- a. All new gas services and distribution mains shall be air tested.
- b. All gas services, regardless of age or condition, shall be tested when repaired or before connecting to a new main.
- c. Soap tests will be performed only when air tests cannot be performed.

### **315. Excavations**

- a. Massachusetts State Law mandates that safety procedures include notifying Dig Safe in advance of every excavation:
- b. General Requirements
  - 1. Employees shall not enter an excavation over 4 feet deep unless an approved ladder is in place within 25 feet of the area where the employee will be working.
  - 2. Only standard or approved ladders shall be used. Ladders will be routinely inspected for defects. Employees encountering conditions requiring additional personnel for the safe use of a ladder shall request additional help from the appropriate supervisor.
  - 3. In no event shall an employee work in an excavation over 5 feet deep unless the appropriate shoring is installed. Where unstable soil exists, or where vibration from a highway, railroad, or heavy equipment could cause the bank of the excavation to slide or cave in, shoring shall be installed regardless of the depth of the excavation.
  - 4. Spoil from an excavation shall be laid back a minimum of 2 feet from the edge of the excavation, and sloped away from the excavation.
  - 5. An employee shall never enter any excavation that is tunneled (unsupported earth above) unless it is properly supported against cave in. The excavation must be made from the surface down, with the proper slope shoring provided as required.
- c. Trenching by Machine
  - 1. The machine shall never be oiled, greased or fueled while the motor is running. The fuel tank shall be filled from approved safety type cans or pumps.
  - 2. Operators shall keep workmen and bystanders a safe distance from the machine while it is in operation.
  - 3. An employee shall not attempt to clear the buckets or discharge chute while trenching machine is in operation.

4. All underground cables and pipelines shall be located and staked or marked, when possible. When digging near such facilities, hand excavation shall be used to prevent damage.
  5. When a front end-loader is being loaded by hand, the machine operator shall keep their hands and feet free of all controls except brakes.
  6. Trenching machines, which are parked, or operating on streets or highways shall be protected by proper warning devices.
  7. Employees other than operator shall not stand with hands or feet resting on a machine while it is running.
  8. Ditching machines shall not be used on slopes or inclines without first preparing the right-of-way to prevent over-turning.
  9. When it is necessary to leave excavating equipment unattended, the blade, bucket or scoop shall be lowered to the ground and the ignition system locked.
- d. Trenching by Hand
1. Employees shall not work under pipe, which is supported on skids over a trench.
  2. Where soil or other conditions are such that there is any danger of a cave-in, the sidewalls of the excavation shall be adequately shored. If shoring materials are not available, the sides of the trench or bell hole shall be sloped, to insure a safe working condition. Check local codes for any additional requirements.
  3. Pressure on air tools shall be released before the equipment is left unattended.
  4. All connections to air tools shall be made secure before turning on air pressure.
  5. Compressed air at the tool shall not be turned on until the tool is under the control of the operator.
  6. Extreme caution shall be used when working with tools close to underground electrical installations.

### **316. Pumping Drips**

- a. Open flames shall be kept away from drips while they are being pumped.
- b. When transferring drip fluid to a tank or container, metallic contact shall be maintained.
- c. When oils are encountered during drip pumping operations, stop pumping and refer to Appendix A of this document.

### **317. Tie-In Operations**

- a. When tapping or bagging a main in a trench, one person shall remain outside the ditch to assist in case of gas ignition. An approved type fire extinguisher shall be present at all times.
- b. Bags and stoppers shall be examined before using and, if found defective, shall not be used.
- c. Tapping machines shall not be used in tunnels, manholes, or other places that cannot be well ventilated, unless adequate safeguards are used.

### **318. Installing and Maintaining Live Gas Lines**

- a. All employees engaged in tapping, drilling, bagging, joint repair, making connections, and other similar operations on live gas line shall work with extreme caution when there is a possibility of gas escaping during the operation.
- b. Screens shall be placed around welding operations when required, or other means shall be provided to protect the eyes of those working in the immediate vicinity.
- c. All employees involved with the process of chipping, removing of cold tar pipe coating, or in pipe cleaning shall be properly protected with an approved type of eye protection.
- d. Employees shall never use bare hands or fingers to clean or remove loose metal from threads or from the inside of the pipe. Employees engaged in the process of lining up pipe and making connections shall be careful not to have hands, fingers, toes, etc., between or under the pipe being installed. All employees engaged in the process of pipe coating or covering shall be properly protected with approved eye protection and gloves.

- e. Gas pressure blow-downs on high pressure pipelines shall be done in such a manner that the stream of gas released cannot contact overhead electric utility lines. Refer to Construction Standards / Purging.
- f. When pipelines are to be pressure tested at 100 p.s.i.g. or less only approved methods of capping pipe shall be used. When pressure in excess of 100 p.s.i.g. is to be used in testing, only welded caps shall be used.

### **319. Gas - Underground and Above Ground**

- a. These instructions apply to work in all manholes (gas, steam, electric, telephones, etc.), regulator stations and other confined areas.
- b. No employee shall enter a manhole, regulator station, or other confined area which has an oxygen-deficient atmosphere or contains carbon monoxide without the use of a breathing apparatus and suitable life line.
- c. When wearing a breathing apparatus, life lines shall be secured outside and suitably manned.
- d. If the presence of gas is indicated in any manhole or regulator station, the leak or leaks shall be repaired prior to proceeding with work.
- e. A portable blower shall be used where work is being performed in a manhole or in an unventilated regulator station where inadequate oxygen or excess gas exists. Should the blower stop for any reason, tests shall be made and negative test results obtained before employees shall re-enter the manhole or regulator station.
- f. The use of open flames, welding or electrical equipment, etc. is not permitted in manholes or regulator stations, unless proper precautions have been taken to assure that an explosive mixture cannot occur therein.
- g. No more employees shall be permitted in a manhole than are absolutely necessary to perform the work, except for training purposes. Manholes shall be kept free from scrap and rubbish at all times, and at the conclusion of work must be cleaned out.

**PART III**  
**CUSTOMER SERVICES**

**Section 2**

**321. General Safety Principles**

- a. Employees shall announce their presence and state their business when entering the customer's premises.
- b. Only appropriate safety solvents shall be used for cleaning purposes.
- c. An appropriate flashlight in good working order shall always be available for use on customer's premises.
- d. A thorough check shall be made of the appliance being serviced to determine if there are any unsafe conditions. An appliance considered hazardous shall be made inoperable. (See Red/Yellow Tag Policy.)
- e. Follow Company procedures concerning safety checks when servicing appliances.
- f. If carbon monoxide is suspected, an approved indicating apparatus shall be used to determine if it is present.

**322. Leak Detection on the Customer's Premises**

- a. When testing for gas leaks a combustible gas leak detector or other approved methods shall be used.
- b. Open flames shall not be used in testing for leaks.
- c. When the gas mixture in a building is unsafe, the occupants shall be asked to leave. The gas service shall be shut-off. All open flames shall be extinguished. Ventilate or evacuate in accordance with the procedure taught in the company gas leak detection course. Electric switches shall not be operated, and, if necessary, the electric service shall be discontinued outside the building by electric company. If, in the judgment of the Service Tech, additional assistance is necessary, the dispatcher shall be notified as soon as possible.

- d. If the source of an odor cannot be determined and the company employee finds no gas leak, but combustible readings exist, a supervisor shall be notified.
- e. After a leak has been repaired a further check shall be made to determine if there are other leaks.

### **323. Installation and Services**

- a. Meters - Setting, Removing and Turning on and off
  - 1. When setting a meter or executing a "turn-on" order refer to the Berkshire Gas Company set, unlock and turn on policy, as well as the following precautions:
    - a. A "turn -on" order shall not be executed where there are no operable appliances connected.
    - b. All open lines shall be capped or plugged.
    - c. A leak test shall be made by observing the meter test hand while the gas is on and all appliances are turned off.
    - d. If the installation is unsafe to operate, follow the Berkshire Gas Company Red/Yellow Tag Procedure.
  - 2. The location of the gas shut-off valve shall be determined before working on appliances or piping, so that gas can be readily shut off in case of an emergency.
  - 3. When welding is necessary in areas where gas may accumulate, the space shall be adequately ventilated and the area checked with an approved combustible gas indicator before such work is started.
  - 4. When service is restored, all lines shall be purged, all appliances checked and all pilot lights relighted.
  - 5. If buildings have been burned, torn down or razed, the service shall be plugged at the curb stop or retired at the main.
- b. Thawing Services
  - 1. An open flame shall not be used to melt frozen service pipes or fuel lines in buildings.

### **PART III**

#### **Section 2a**

#### **GENERAL RULES - CUSTOMER SERVICE**

##### **324. Work on Customer's Premises**

- a. Good judgment and accepted practices shall be observed at all times while an employee is on a customer's premises. Only approved equipment and material shall be used. Many hazardous conditions, due often to poor house-keeping, exist in customer's cellars. Extreme care to protect against falls and bumps shall be taken. Employees shall report to their supervisor any condition so hazardous as to require corrective action. They shall always be alert for any evidence of a gas leak. All gas leaks discovered inside the customer's premises are potentially dangerous and shall be given immediate attention. If not equipped to immediately repair the leak, notify Dispatch and take interim precautions, to make the leak safe.
- b. Employees shall not enter houses posted for contagious diseases, except in extreme emergencies.
- c. Under no circumstances shall employees use an open flame to locate leaks. Ventilate or evacuate in accordance with procedure taught in the company gas leak detection course. Extreme caution shall be observed in preventing any possibility of an explosion in such atmosphere.
- d. Employees shall never remove plugs, fittings, piping, equipment, etc. on the supply side of a meter if said gas supply is high pressure or intermediate pressure without first shutting off the curb stop in order that the gas supply to the plug, fitting, pipeline equipment, etc. which is to be worked on has been completely shut off. However, if the service is equipped with a needle type valve or lubricated plug valve, the gas supply may be shut off at this valve rather than at the curb stop. Employees working on low-pressure services on the supply side of the meter shall observe extreme care in removing plugs, fittings, piping, etc. in order to prevent combustible or toxic mixtures from collecting in working area.
- e. When service of any type is performed on automatic gas water heaters, the position of the thermostat temperature control knob shall be observed. If it becomes necessary to move this knob for any reason, the knob shall be returned to the original position on

completion of the call. This position shall be noted on the service order. If it is necessary to move this knob from its original position, note the original and final positions.

- f. Gas piping shall not be used as a means of establishing an electrical ground, and when such grounds are found, they should be reported immediately. (see Inside Leak Survey Procedure.)

### **326. Meters**

- a. Care must be taken when transporting meters. They shall be securely fastened in an upright position. The inlet and outlet connections for all meters shall be properly capped or plugged prior to and during transit.
- b. Employees shall report immediately meters that are exposed to damage or loss. Tag meter and return to meter shop.
- c. Meter nuts, piping or fittings, which have been disturbed during work, shall, after replacing meter packings, be tested for gas leakage with an approved solution, which has a high surface tension.
- d. After checking for leaks, if no leak is found, check meter to be sure test hand is recording properly.
- e. The purging of large meter installations shall be accomplished by connecting a hose line to either the outlet of the meter, or the piping just ahead of the appliance, and by discharging the purge gas out of doors. Under no circumstances shall a line or meter be purged into the combustion chamber of an appliance.

**PART III**  
**DISTRIBUTION**  
**Section 3**  
**REGULATOR STATIONS**

**331. Operating Precautions**

- a. Before any work proceeds at regulator stations which will involve or is likely to involve escaping gas, care shall be taken to insure adequate ventilation; and the procedures outlined previously with respect to escaping gas shall be followed.
- b. Smoking, open flames or other sources of ignition are not permitted in regulator stations, except as indicated during approved welding procedures.
- c. The use of electric tools is covered by the same restrictions as for welding in regulator stations.
- d. Valves shall be operated by authorized personnel only.

**332. Locks at Stations**

Valves on unfenced or unhoued stations shall be kept locked, or the valve handles removed at all times when unattended.

**APPENDIX A**  
**HANDLING HAZARDOUS MATERIALS**  
**IN PIPELINE**

When handling liquids from pipeline; take precautions to avoid spills or spraying.

Utilize proper protective clothing when handling liquids.

Have samples of liquids or solids analyzed to determine content of material.

# NEW HAMPSHIRE GAS CORPORATION

## OPERATIONS & MAINTENANCE MANUAL

<b>Revision Number</b>	<b>Date Issued</b>	<b>Pages</b>	<b>Reviewed By</b>
0	February 5, 1999	Original Issue	Mark A. Cole
1	January 14, 2000	Complete Re-Issue	Mark A. Cole
2	March 24, 2001	Complete Re-issue	David A. Jacques
3	June 20, 2002	41-44-60-67-75-MO-SWO	David A. Jacques
4	June 9, 2003	37-40, 40-46, 71, 75, 78&79 NHG-1 & 16, SWO, MEGA	David A. Jacques
5	May 31, 2005	Complete Re-issue	David A. Jacques
6	February 10, 2007	TOC, 1.10, 1.14, 1.15, 1.21 1.28, 1.48, 1.60, 1.71, Forms	David A Jacques
7	December 31, 2008	TOC, 1.12, 1.14, 1.15, 1.29, 1.30, 1.42, 1.43, 1.60, 1.61, 1.62	Stephen Rokes
8	December 31, 2009	Reviewed, No Revisions	Stephen Rokes
9	December 31, 2010	Reviewed, No Revisions	Stephen Rokes
10	December 31, 2011	Reviewed, No Revisions	Stephen Rokes
11	December 31, 2012	TOC, 1.22	Stephen Rokes
12	December 30, 2013	TOC, 1.10, 1.11, 1.28, 1.29, 1.48, 1.50	Stephen Rokes

<b>Revision Number</b>	<b>Date Issued</b>	<b>Pages</b>	<b>Reviewed By</b>

NEW HAMPSHIRE GAS CORPORATION  
OPERATIONS & MAINTENANCE MANUAL  
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## **1.00 INTRODUCTION**

The objective of this section is to meet state and federal requirements concerning the operation and maintenance of a gas distribution system. Information pertinent to code requirements, operating procedures, and maintenance procedures are found in this section. The manual is written in performance language such that employees will have a specific set of procedures to follow for each of the activities encountered during normal operations and maintenance. Certain activities are mandated by state or federal code. These will be noted as such by the appropriate code reference number printed in boldface type. Federal code numbers will be recognized by a 192 series number and state code will be recognized by a 500 or B31.8 series number. It is important to note that actual company procedures may vary as new methods are developed and incorporated into the plan, however, those procedures delineated as code requirements are not subject to variation unless the applicable code has been revised or amended.

An important consideration in reviewing the procedures outlined by this plan is that strict adherence to the procedures is mandated by federal code. 192.13 (c) clearly states that each operator shall maintain, modify as appropriate, and follow the plans, procedures, and programs that it are required to establish under part 192. It is essential that all company personnel follow the procedures herein to their entirety.

## **1.01 FEDERAL CODE REQUIREMENTS: O&M PLAN**

Code of Federal Regulations, Title 49 Part 192.603 states:

Each operator shall establish a written operating and maintenance plan meeting the requirements of this part (Subpart L-Operations) and keep records necessary to administer the plan.

192.605 Essentials of operating and maintenance plan states:

Each operator shall include the following in its operating and maintenance plan:

- a. Instructions for employees covering operating and maintenance procedures during normal operations and repairs.
- b. Items required to be included by provisions of Subpart M (Maintenance) of this part.
- c. Specific programs relating to facilities presenting the greatest hazard to public safety either in an emergency or because of extraordinary construction or maintenance requirements.
- d. A program for conversion procedures, if conversion of a low pressure distribution system to a higher pressure is contemplated.
- e. Provisions for periodic inspections to ensure that operating pressures are appropriate for the class location.
- f. Instructions enabling personnel who perform operation and maintenance activities to recognize conditions that potentially may be safety related that are subject to reporting requirements of 191.23.

## **1.02 STATE CODE REQUIREMENTS: O&M PLAN**

State of New Hampshire Public Utilities Commission, New Hampshire Code of Administrative Rules, Chapter 500 Rules for Gas Service makes reference to operating and maintenance plans as follows: 506.02 (q)(1) Operating and Maintenance procedures. Each utility shall operate and maintain its system in accordance with its Operating and Maintenance Plan and shall have on file, subject to commission inspection at all times, a written operating and maintenance plan pursuant to 49 C.F.R. 192.603 which shall include the criteria set forth in 49 C.F.R. 192.605.

Each operating company having gas transmission or distribution facilities within the scope of this Code shall:

- a. Have a written plan covering operating and maintenance procedures in accordance with the purpose of this code;
- b. Have written emergency plans covering facility failure or other emergencies (See the Emergency Plan);
- c. Operate, inspect, and maintain its facilities in conformance with these plans;
- d. Review and update these plans at intervals not exceeding 15 months, but at least once each calendar year;
- e. Provide training for employees in procedures established for their operating and maintenance function. The training shall be comprehensive and shall be designed to prepare employees for services in their area of responsibility;
- f. Keep records to administer the plans and training properly.

## 1.10 LEAK INVESTIGATION

The objective of this section is to outline procedures for receiving, classifying, and investigating gas leaks and foreign odor complaints. The information contained herein shall be considered the minimum response procedures in dealing with escaping gas or foreign odor complaints.

- (a) Beginning March 1, 2005 and on a quarterly basis thereafter, each utility shall report to the commission the amount of time taken to arrive at locations of reports of gas odors.
- (b) Per Puc 504.07(a) Emergency Response, for any utility that serves a single municipality or serves fewer than 2,500 customers, emergency response shall be limited to within 30 minutes.

(1) For any response time in excess of 30 minutes, the utility shall report the amount of time it took to arrive at the location of the report of gas odor, the location of the report of gas odor, and a detailed explanation for its failure to respond to the location within 30 minutes and preventive measures taken to limit potential future exceedances.

## 1.11 RECEIVING EMERGENCY CALLS

All calls reporting escaping gas or foreign odor have the potential of becoming an emergency but may not necessarily require enactment of the Emergency Plan. The deciding factor is largely the degree of personnel and equipment necessary to effectively control the situation. It is possible to have escaping gas, which is concentrated in one area and can be controlled safely by company personnel. This type of situation, although technically an emergency, does not qualify for enactment of the Emergency Plan based on the criteria set forth in Section 3.2 of the Emergency Plan - Situations Requiring Emergency Notification. It is important that personnel involved in dispatching and investigating gas leaks differentiate between the two situations. Excerpts of the Emergency Plan are reprinted in this section to aid in the decision making process.

During normal working hours, calls are received at the main office at **80 Pearl Street**, Keene, New Hampshire. Two lines are open to the "public": 352-1230 and 352-2418. Gas odor reports may be initiated by customers, civil authorities, general public, or company personnel. One company representative is designated as the dispatcher at all times.

During off-hours, calls are received by the Keene Answering Service located at 232 Winchester St., Keene, New Hampshire. The **NH Gas** office forwards calls from 352-1230 to 358-3639 after the Answering Service. The dispatcher at the answering service records the information and dispatches service personnel to the scene.

In the event we can not gain access to 352-1230 to activate or deactivate call forwarding, Verizon can activate call forwarding to any number we choose.

## 1.12 RESPONDING TO EMERGENCIES WITH FIRE DEPARTMENT

Upon notification of an incident involving gas in which a fire department has been dispatched, the following actions will occur:

1. The first NHGC employee to arrive on the scene will:
  - a. Communicate arrival to other company personnel. Turn on and calibrate Electronic Combustible Gas Indicator (ECGI) in a gas free atmosphere according to the operating instructions found in Appendix A. If no ECGI is on hand request one to be delivered to the site.
  - b. Establish contact with the Fire Department's "incident commander".
  - c. Communicate to "incident commander" the nature of gas odor or leak and the potential means of eliminating the source of gas.
  - d. Await instructions from Fire Department Personnel.
  - e. Carry out any actions requested by the Fire Department.
2. The second NHGC employee arriving on the scene will:
  - a. Locate truck away from incident in a visible location.
  - b. Establish a command post and radio the location of the command post.
  - c. Await instructions from the first responder or Key Personnel.
3. Additional NHGC personnel should respond to the command post and wait for instructions.

## 1.13 LEAK INVESTIGATION INSTRUCTIONS TO DISPATCHER

In the event that a call is received reporting a gas odor or foreign odor the dispatcher will:

1. Obtain accurate information as to the location of the emergency. Include street name, number, intersecting street if any, color of building, and any other reference marks which may aid personnel in responding expediently.
2. Obtain the name of caller, phone number, and their location if they are not in the immediate vicinity of the emergency location.
3. Obtain needed information for an accurate description of the nature of the emergency. Examples: gas odor, fire, explosion, lack of pressure, high flames, etc.
4. In the event a gas odor is reported inside by the caller clearly state the following:
  - a. **DO NOT LIGHT MATCHES, AND EXTINGUISH OPEN FLAMES;**
  - b. **DO NOT OPERATE ANY ELECTRICAL SWITCHES;**
  - c. **IF ODOR IS VERY STRONG OR BLOWING GAS IS HEARD, EVACUATE THE PREMISES.**
5. Dispatch appropriate personnel immediately.
6. Keep an accurate record of all communication related to the emergency.
7. When all the initial information has been received and recorded and personnel dispatched to the scene, the person receiving the call will evaluate the data and determine whether the situation requires immediate Emergency Notification Procedures.

**Criteria for Emergency Notification is listed below:**

  - a. **Reported explosion involving situations other than a single appliance.**
  - b. **Several calls in the same general location involving gas odor in buildings or in atmosphere.**
  - c. **Several calls in the same general location reporting interruption of gas supply or pilot outage.**
  - d. **Report of damage to company facilities designated as integral to the Central Distribution System.**
  - e. **Major civil disobedience situation reported by Municipal authorities.**
  - f. **Natural disaster affecting city of Keene.**
  - g. **Service personnel requesting Emergency Notification Procedures.**
8. In the event that the situation meets any of the above criteria the dispatcher will:
  - a. Contact the personnel listed in **Appendix V** of the **Emergency Plan** by any means and indicate that an emergency situation exists and give a brief description of the situation.

## 1.14 LEAK INVESTIGATION INSTRUCTIONS TO EMPLOYEES

Investigation of foreign odor or escaping gas complaints is one of the most important operations of this company. Specific procedures are outlined in this section based on a variety of situations which may be encountered. Some general considerations are:

1. It is the responsibility of the first employee to arrive on the scene to take every corrective action necessary to **protect life and property from danger** (in that order).
2. All foreign or gas odors should be considered as potential emergencies and given first priority.
3. Never use open lights or matches in investigating complaints.

Upon dispatch to investigate a foreign odor complaint or smell of gas, the following will be considered the minimum response by company personnel:

- Follow guidelines in the **“Emergency Response Protocol”** found in **Appendix C**

### A. Upon arriving at the location where a foreign or gas odor has been **reported inside a building**:

- Turn on and calibrate Electronic Combustible Gas Indicator (ECGI) in a gas free atmosphere according to the operating instructions found in Appendix A.
- Enter the premises and ascertain from the caller the location in the building where the odor is most prevalent.

#### 1. If the response is at a particular **appliance**, proceed as follows:

- a. Check the appliance and connections and initiate repairs where applicable according to company policies.
- b. If no apparent leakage is present, take ECGI readings in all rooms and the basement.
- c. If a gas odor is present or there are positive ECGI readings in the basement, proceed to **Section 1.14(A)2** of this part.
- d. If there is a gas odor or positive ECGI readings on any floor other than the basement and the source cannot be located at any appliance, conduct a house piping test as outlined in **Section 1.14(C)2a**.
- e. **Also**, if gas is found in the atmosphere at or above **10% LEL** (on the ECGI), CALMLY vacate everyone from the premises and call the Fire Department.
- f. If there is no odor or positive readings anywhere in the house, try to locate the source of any other foreign odors.
- g. Record the time of response and all activities conducted on Form NHG-1 (See Section 1.70 - Records and Reporting Procedures).

#### 2. If the response is a general odor in the **basement**, proceed as follows:

- a. Do not operate any electrical switches and use an explosion proof flashlight.

- b. Upon entering the basement, if gas is found in the atmosphere at or above **10% LEL** (on the ECGI), CALMLY vacate everyone from the premises and call the Fire Department.
- c. Also, request additional company personnel.
- d. If gas is found in the atmosphere **below 10% LEL** attempt to ventilate. Proceed to the gas service entrance (if available), water or sewer entrances, and the foundation wall that borders the gas main or service.
- e. Probe all foundation walls at available locations (gas, water, sewer entrances, cracks in wall) to see if readings are found that would indicate migrating gas from an underground pipe failure. If readings are higher than the atmosphere readings, contact the street department and proceed to **Section 1.14(B)4**. If it is determined that the gas service pipe is leaking in the foundation wall, proceed to **Section 1.14(C)1**. If readings taken at the foundation wall are negative and it is evident the problem is at an appliance or in the house piping, proceed to **Section 1.14(C)2**.

B. Upon arriving at the location where a foreign or gas odor has been **reported in the atmosphere outside:**

**THE FOLLOWING STEPS SHALL BE COMPLETED**

- Turn on and calibrate Electronic Combustible Gas Indicator (ECGI) in a gas free atmosphere according to the operating instructions found in Appendix A.
  - Attempt to locate the person responsible for initiating the complaint (if there is an indication that the person is in the area) and inquire as to the exact location of the odor.
1. Observe the area and note the general location of the gas main and services that may be involved. Take ECGI samples in all available underground openings, i.e., manholes, storm, sewer, telephone, electric, valve boxes and cracks in the road. (**Note:** Never enter any manhole alone or without the permission of the appropriate utility).
  2. Take ECGI samples in punch bar holes at house foundations in the immediate vicinity of the reported complaint and both sides of the street, at the curb. (**Note:** Before using a punch bar, look for indications of underground facilities in the area, such as gas, telephone, or electric. If any exist, use judgment in avoiding them.)
  3. If ECGI readings are negative at all locations, fill out Form NHG-1 (See Section 1.70 and Appendix B).
  4. If ECGI readings are **positive, contact the Street Dept.** and proceed as follows:
    - a. Continue to take ECGI samples until the area affected is defined.
    - b. In the event that positive readings are discovered at or near the foundation of any building, attempt to gain entrance into the buildings and proceed as directed by **Section 1.14(A)2** of this section. If access cannot be gained and access is deemed necessary, contact the Fire department.

- c. Leaks are to be classified by Qualified company personnel responding to the location in accordance with definitions and criteria for classifying leaks found in **Appendix C**.
- d. In the event that positive ECGI readings are found at a location and it is evident that a gasoline odor is prevalent, take ECGI samples at all locations with the charcoal filter attached as outlined on page 8 of Appendix A of this section. If ECGI readings are still positive with the filter attached, continue as described above. If the ECGI readings are now negative, fill out Form NHG-1 (See Section 1.70). Include results of charcoal filter test, and submit form to the Distribution Manager.

C. Leaks at the **service entrance or interior piping**.

1. **Service Entrance**

Common sources of interior piping leaks are those on the service entrance at the point where the pipe enters through the foundation wall. These situations may be temporarily made safe by the following procedure:

- a. Ventilate the basement until ECGI samples are negative.
- b. Extinguish all sources of ignition by shutting off service valve and switches to electrical appliances.
- c. Call for additional personnel and describe the situation.
- d. When additional personnel arrives break down meter riser piping until it is possible to insert an expansion plug. (**Note:** Never break down meter riser without the assistance of at least one other company representative present.)
- e. Insert the expansion plug and use soap test to insure reliability of plug.
- f. Cap service entrance.
- g. Close sources of ventilation and take ECGI samples at the foundation wall until it is evident that gas is not entering the basement by any means. In the event gas is entering, proceed with ventilation procedures.
- h. This type of repair is a temporary repair. Company personnel should make permanent field repair as soon as possible.

2. **Interior Piping**

The following are procedures for investigating, locating, and repairing gas leaks on interior piping:

- a. If there is no odor and ECGI readings are negative and all appliance checks have revealed no leakage, proceed with a meter registration test as follows:
  - With all pilots shut off and the test dial of the meter (lowest requesting dial) marked, observe the dial as follows:

Meter Test Dial Size	Observe Dial For:
1/2 ft. dial	3 minutes
01 ft. dial	5 minutes
02 ft. dial	5 minutes
05 ft. dial	10 minutes

10 ft. dial

15 minutes

- If the dial does not move it is assumed there is no escaping gas.
  - If the dial moves proceed to **Section 1.14(C)2b.**
- b. If there is an odor in the home but no positive ECGI readings, attempt to locate the source of escaping gas by checking all appliances and exposed piping (including meter and service) with soap, ECGI meter, or FI meter.
- c. If a leak is located on the company piping side (up to outlet of meter), make necessary repairs. (**Note:** Never break down the service riser before the first gas valve without at least one other company representative present.) If it is necessary to change the meter, remove meter and place a warning label on it identifying the problem. Install new meter according to meter installation procedures outlined in Section 1.21-1.22 and fill out meter order according to Section 1.70 and Appendix B
- d. If the leak is found at the customers piping or appliance, turn off the service valve and contact the office (day) or consult customer list (night).
- e. If the customer status is positive, consult with the customer if possible and make necessary repairs.
- f. If the customer status is negative, lock the meter according to procedures of Section 1.23, and place a warning notice on the meter and explain your actions.
- g. If the leak is not found at exposed piping or appliances and it is evident that there are pipes which are not exposed to inspection, conduct a meter registration test according to Section 1.14(C)2a. If the dial does not move, continue to check other items for source of odor. If the dial moves, lock the meter and proceed according to Section 1.14(C)2 d, e and f.

## 1.15 LEAKAGE SURVEYS

The procedures outlined in this section are designed to aid compliance with federal and state laws pertaining to leak surveillance and patrolling of facilities. Listed in this section are various types of surveys, their law reference, and the procedures for accomplishing each task.

- A. Annual gas leakage survey: distribution mains – A gas detector survey must be conducted including tests of atmosphere in gas, electric, telephone, sewer, and water system manholes, at cracks in pavement and sidewalks, and at other locations providing an opportunity for finding gas leaks on an annual basis. (PUC 508.04 (c))(DOT 192.723)

This survey will be conducted by company personnel or an outside consultant with the assistance of company personnel. The survey will be conducted as follows:

1. A CGI or electronic CGI meter will be used.
2. The designated Business Districts will be surveyed annually (see Map NHG-BD).
3. All Cast Iron, Wrought Iron and Coated Steel, regardless of location, will be surveyed annually.
4. All PE main, outside of the Business Districts, will be surveyed on a 3 year rotating basis to coincide with the Services Survey.
5. All Services will be leak surveyed on a 3 year rotating basis. For this reason the entire Distribution System has been divided into three sections, Sector A, B and C.
6. Punchbar holes, manholes, catch basins, storm drains and other available openings will be sampled.
7. Initial leak classification on all positive samples will be made according to the definitions of Section 1.16 and the criteria contained in the American Gas Association “GPTC Guide for Gas Transmission and Distribution Piping Systems 1990-1991”, 1990 Edition, Volume One, Guide Material Appendix G-11, Tables 3a, 3b, and 3c.
8. A company representative will evaluate the initial classification based on a review of the field data. The company reserves the right to reclassify the leak based on the field data.
9. All Class I and II leaks will be repaired according to the guidelines of Section 1.17.

- B. Winter patrol leakage survey: all cast iron mains – A gas detector survey must be conducted on a regular basis during frost conditions. This type of survey is usually conducted with a mobile flame ionization unit, and the main objective is to detect Class I and Class II leaks (PUC 508.04 (d)).

This survey will be conducted by a company representative or outside consultant or both. The survey will be conducted as follows:

1. A flame ionization unit will be used.
2. The entire Cast Iron distribution system will be surveyed.
3. All positive samples will be classified according to the definitions of Section 1.16 and the criteria established by AGA “GPTC Guide for Piping Systems”, Tables 3a, 3b, and 3c.
4. All Class I and II leaks will be investigated by company personnel as soon as possible to verify the classification.
5. All Class I and Class II leaks will be repaired according to the guidelines of Section 1.17.

6. Scheduling of the survey will be conducted on a regular basis during frost conditions based on the following data:
    - a. Evaluation of leaks reported during the months of January and February.
    - b. Communication with City of Keene Department of Public Works regarding water leaks and frost conditions.
    - c. Evaluation of prevailing and forecasted weather conditions.
- C. Annual building survey. A gas detector survey of buildings used for public assembly, including schools, churches, hospitals, theaters, municipal buildings, and downtown areas will be conducted each year during the period March 1 to December 1. This survey will test areas around service entrances, inside the foundation wall, at conduit or cable entrances below grade and at cracks or breaks in the foundation wall where gas seepage might enter the basement. Tests for inspection will be made on exposed piping from the service entrance to outlet side of the meter (PUC 508.04 (g)).

The survey will be conducted by a company representative or outside consultant and will be conducted as follows:

1. All buildings adjacent to the distribution system which meet the criteria established above will be surveyed.
  2. The survey will be conducted with a flame ionization unit.
  3. The representative conducting the survey will keep a record of all locations surveyed.
  4. A record will be kept of any person refusing to allow admission for the purposes of conducting the survey. A written signature on Form NHG-2 (Appendix B) will be obtained from the person refusing admission.
  5. All positive readings obtained will be further investigated by company personnel as soon as possible.
  6. The survey representative should note any potential defective condition observed, regardless of negative readings, that deal with gas facilities and report same to the company personnel.
- D. Special Surveys, Patrolling: Mains in places or on structures where anticipated physical movement or external loading could cause failure or leakage shall be inspected at least 4 times each calendar year at intervals not exceeding 4 ½ months (PUC 508.04 (f))(DOT 192.b 4.5 months).

The surveys listed below will be conducted by a company representative or consultant at least three times a calendar year.

1. Inspect all bridge locations where gas facilities are attached or pass beneath a waterway as follows:
  - a. Inspect the bridge abutments for signs of disrepair or damage by earth movement.
  - b. On all locations where pipe is visible or in a visible casing, conduct a Flame Ionization (FI) or CGI survey in the atmosphere as close to the pipe as possible.
  - c. Inspect all visible pipe attached or adjacent to bridge locations for atmospheric corrosion (See Section 1.46).
  - d. Fill out Form NHG-3 (Appendix B)
  - e. Suspected failure or anticipated failure should be evaluated as soon as possible by company personnel for appropriate action.

2. Inspect areas where significant cave-ins have been reported or observed. Such cave-ins may have resulted from natural earth movement or serious water leaks.
  - a. Inspect the location with a CGI meter in punchbar holes for positive leak indications.
  - b. If pipe is exposed for any reason, fill out Form NHG-4 (Appendix B).
  - c. Fill Out Form NHG-1 (Appendix B).
  - d. Suspected damage to facilities should be evaluated as soon as possible by company personal for appropriate action.
  - e. The Distribution Supervisor or his/her designee will decide for what duration of time this survey is necessary.
  
3. Inspect areas where major construction activity has occurred which could affect the compaction of soil under or adjacent to the pipeline. Such locations may have resulted from the installation or repair of water, sewer, or other underground facilities (See Section 1.50).
  - a. Visually inspect the area for signs of earth movement as a result of improper backfill techniques.
  - b. If visible signs of earth movement are evident, conduct a mobile or walking FI or CGI survey of the area.
  - c. Fill out Form NHG-11 (Appendix B).
  - d. Unusual occurrences should be evaluated as soon as possible by company personnel for appropriate action.
  - e. The Distribution Supervisor or his/her designee will decide for what duration of time this survey is necessary.

Leak Re-evaluation: PUC 508.04 (n)(1)(2)(3) states:

(n) A utility shall conduct a follow-up inspection as follows:

(1) The adequacy of leak repairs shall be checked before backfilling;

(2) The perimeter of the leak area shall be checked with a combustible gas indicator (CGI) or equivalent gas detection equipment; and

(3) Where there is residual gas in the ground after the repair of a Class I leak, the utility shall conduct a follow-up inspection as soon as practical after allowing the soil atmosphere to vent and stabilize, but in no case later than one month following the repair.

Fill out Form NHG-11 (Appendix B) to verify this inspection.

## 1.16 LEAK CLASSIFICATION

The objective of assigning a grade or class to a leak is to aid Distribution and Dispatching personnel in determining the sequence of response and amount of equipment and personnel necessary to effectively control a leak situation. Leak classes are defined in this section based on state law. Guidelines and action criteria for assigning leak grades are found in Appendix C.

Leak class will be assigned by a consultant or qualified company personnel. This company reserves the right to reclassify a leak based on examination of additional field data.

Upon notification of a gas leak, a company representative will investigate available data and assign the leak a classification based on the following:

1. Based on the evaluation of the location and/or magnitude of a leak, one of the following leak classes shall be assigned, thereby establishing the leak repair priority (PUC 508.04 (1)).
  - a. Class I: a leak that represents an existing or probable hazard to persons or property and requires immediate repair within 24 hours or continuous action until the conditions are no longer hazardous.
  - b. Class II: a leak that is recognized as being non-hazardous at the time of detection, but requires scheduled repair within (6) six months or before the end of the calendar year based on probable future hazard.
  - c. Class III: a leak that is non-hazardous at the time of detection and can be reasonably expected to remain non-hazardous.

## 1.17 LEAK REPAIR UNDERGROUND FACILITIES INSTRUCTIONS TO EMPLOYEES

The objective of this section is to establish procedures for locating and repairing leaks resulting from damage to underground facilities.

Attention all personnel: Before excavating at any location refer to Section 1.50 - Damage Prevention Program.

Attention all personnel: Upon arriving at a location where a third party has excavated and exposed a gas service, proceed as follows:

1. Clear the immediate area of non-company personnel and issue warning about sources of ignition.
  2. Examine the service line; if it is suspected that the service has pulled from the house and gas could be entering the house, ask the operator to use his equipment and immediately pull the service line until gas is escaping into the atmosphere.
  3. Take steps necessary to stem the flow of escaping gas with permagum or other available means.
  4. Gain entrance to the resident's basement and follow procedures outlined in Section 1.14(A)2.
  5. Request qualified assistance to repair the damaged facility.
- A. Protection of Work Area: When it becomes necessary to investigate and/or repair an underground leak where traffic is a factor, the following guidelines should be used to provide adequate protection of the work area and safety to the public.
1. (DOT 192.751) Take steps to minimize the danger of accidental ignition of gas in any structure or area where the presence of gas constitutes a hazard of fire or explosion, including the following:
    - a. When a hazardous amount of gas is being vented into open air, each potential source of ignition must be removed from the area, and a fire extinguisher must be provided.
    - b. Gas or electric welding or cutting may not be performed on pipe or on pipe components that contain a combustible mixture of gas and air in the area of work.
    - c. Post warning signs where appropriate.
  2. Assess traffic conditions and determine where such items as barricades, cones, and flow arrows should be placed to allow a safe and reasonable flow of traffic.
  3. If it becomes necessary to block one lane entirely, notify Keene Fire Department Watch Desk of this condition, at 603- 357-9861.
  4. Decide the necessity of using flaggers to control the traffic flow.

5. Excavation equipment and accessory equipment may be placed in a manner which will screen the work area to protect employees at the site.
- B. Employee Safety: When working in a gaseous atmosphere, the following employee safety factors should be considered:
1. Do not allow any open lights near the work area.
  2. There must be at least two company employees at the scene before any employee enters an excavation where gas is escaping or residual gas is located. Emergency rescue equipment shall be made available whenever unsafe accumulations of gas are present.
  3. Company personnel should be familiar with the Safety Data Sheet on propane found in Appendix D.
  4. Propane is heavier than air; therefore, lack of oxygen in an excavation can be an important factor. Personnel should use breathing apparatus whenever there is a chance of oxygen deprivation.
  5. Whenever repair work involves squeeze-off of plastic pipe where gas flow is present, the static electrical charge should be removed by placing wetted tape or cloth from pipe to ground as far as practical away from the repair area or use static discharge kit from street truck.
- C. Pinpointing: Pinpointing is a systematic process of tracing a detected gas leak to its source. Use of the following procedures as appropriate should prevent unnecessary excavation, which is more time-consuming than pinpointing a leak. The following procedures should be reviewed and utilized when an underground leak is discovered and must be repaired (Class I and Class II defined in Section 1.16):
1. Determine the migration of gas by establishing the outer boundaries of the indications. This will define the area in which the leak will normally be located. These tests should be made with a CGI without expending excessive effort providing sample points. (Note: Before using punchbar, it is necessary to contact Dig Safe and request a dig safe permit as outlined in Section 1.50.)
  2. Locate by measurements or electrical locating device, all gas lines to narrow the area of search giving particular attention to the location of valves, fittings tees, and stubs. Connections have a relatively high probability of leakage. Caution should be exercised to prevent damage to other underground structures during barring or excavating.
  3. Identify foreign facilities in the area of search, look for evidence of recent construction activities which could have contributed to the leakage. Gas may also migrate and vent along a trench provided for other facilities.
  4. Place evenly spaced air drilled and punch barred test holes over suspected leaking gas line and trace the gas to its source by identifying the test holes with the highest readings. All air drilled and punch barred test holes should be of equal depth and

diameter. All CGI readings should be taken at equal depths. Only the highest sustained readings should be utilized.

5. High readings are found frequently in more than one adjacent test hole and additional techniques are necessary to determine which reading is closest to the probable source. Many of the test hole readings will normally decline over a period of time, but it may be desirable to dissipate gas from the underground locations to hasten this process. Evaluation methods should be used with caution to avoid the distorting of the venting patterns. If venting procedures have been applied, a CGI meter can be used to see which holes recover to high readings more rapidly.
6. Additional techniques besides CGI samples can include an assessment of odor, feel of gas flow over sensitive skin surface, or observation of venting gas by sunlight refraction.
7. When all techniques have been applied, determine the most probable location, excavate to the pipe, and continue investigation by using soap solution to check suspected areas of damage or failure.
8. If the problem is readily evident, repair according to procedures outlined in Section 1.17.
9. If the problem is not readily evident, barhole in both directions at ends of ditch and determine which direction has the highest concentration of gas and continue excavating until problem is found.

D. Repair Methods General Considerations: The following guidelines and considerations should be addressed when it becomes necessary to repair damage to underground distribution facilities:

1. Excavate to damaged facility and temporarily stem the flow of escaping gas with permagum, tape or other method.
2. Identify pipe material, size, and extent of damage.
3. If it is evident that in order to make repairs it will be necessary to take the line out of service, proceed as follows (Note: Installing a temporary by-pass is not considered taking a line out of service.):
  - a. If taking the line out of service is likely to effect the pressure to a given area, inform the General Manager or his designee of the intent of action.
  - b. If taking the line out of service will interrupt the gas supply to customers, review procedures outlined in Section 1.20 - Interruption of Service.
4. Identify which method of repair is necessary and proceed accordingly. Acceptable methods and repair components are listed in the next part.
5. Soap test all connections and components to insure a tight seal.
6. Backfill and tamp around pipe to insure a good pipe bed.

7. Take location measurements and fill out appropriate forms as outlined in Section 1.70.
- E. Main Repair Methods: Listed in this part are acceptable methods of repairing damage to underground main facilities. The method to be used is dependent on the nature and extent of damage, the size and material requiring repair, the number of customers the facility serves, and other factors. Specific instructions for the installation of various types of repair components are found in Appendix F.
1. Leak Clamps: Leak clamps are used to repair localized damage on cast iron, steel or wrought iron mains. Attention must be given to the outside diameter (OD) of the pipe in selecting the appropriate OD range of the repair clamp.
  2. Plastic Leak Clamps: Plastic leak clamps are used for pinholes in plastic pipe where it is determined that the puncture does not sufficiently weaken the integrity of the pipe. If a full encirclement sleeve is used, the joining line between the halves of the sleeve shall be as far as possible from the defect, but no closer than 1/2 inch. Suitable precautions shall be taken to assure a proper fit at the longitudinal seam.
  3. Porous Weld Clamps: Porous weld clamps are used when gas is escaping through a small imperfection on a weld where the structural integrity of the weld is not suspect. In cases where the weld is suspect, it becomes necessary to cut out the weld and replace a section of pipe.
  4. Bell Joint Clamps: Bell joint clamps are used where the sealant caulking of a bell and spigot joint is porous or cracked.
  5. Bell Pack Sleeves: Bell pack split sleeves are used where there is a crack at a cast iron bell and spigot joint and it has been determined that is not practical to cut out and replace a section of pipe.
  6. Split Sleeves: Split sleeves are used to repair circumferential cracks on cast iron main where the deflection of the pipe ends makes it impractical to use a leak clamp.
  7. Line Caps: Line caps may be used in situations where it is more expedient to discontinue a portion of main in order to discontinue the leak source.
  8. Section Replacement: In some situations involving damage to underground facilities, it becomes necessary to cut out a section of pipe and replace it with new pipe. Listed here are considerations and procedures for accomplishing this task:
    - a. General considerations:
      - Replacement pipe will be steel or plastic.
      - If steel pipe is used, it will be installed according to the corrosion control practices outlined in Section 1.40.
      - All components will be installed according to manufacturer's instructions.

- b. Repair of cast iron, steel, or wrought iron mains with interconnecting gas flow: In situations where damage to facilities necessitates replacing a section of pipe, and interconnecting mains will allow gas to flow from both directions such that there will be minimal effect on pressure and no interruption of service proceed as follows:
- On 2 inch mains, the damaged section may be cut out and live pipe ends temporarily sealed. With the new section prepared and the tie-in fittings in place, remove seals and install new section. Soap test all fittings.
  - On 3 inch and larger mains it will be necessary to tap the main and install Goodman stoppers or inflatable bags to stem the gas flow before cutting out section (Note 1: 192.627 states that each tap made on a pipeline under pressure must be performed by a crew qualified to make hot taps). (Note 2: 192.151 states that where a threaded tap is made in a cast iron pipe, the diameter of the tapped hole may not be more than 25 percent of the nominal diameter of the pipe unless the pipe is reinforced, except that a 1 1/4 inch tap may be made in a 4-inch cast iron pipe without reinforcement.)
  - Once the flow of gas has been controlled in both directions, cut out the damaged section and install new section with appropriate tie-in fittings. Soap test all fittings.
- c. Repair of cast iron, steel, or wrought iron mains with gas flow in one direction only. In situations where damage to facilities warrants replacing a section of pipe and gas flow is in one direction only proceed as follows:
- Determine the number of customers to which service will be interrupted. If it is determined that the number of customers is minimal and can be effectively shut-off and turned on in a reasonable period of time, inform the General Manager or his designee of the intent and refer to procedures listed in Section 1.20 - Interruption of Service.
  - If it is determined that the number of customers interrupted will be excessive, install a temporary by-pass before cutting out damaged section. The size of the by-pass will be determined by the load and time of year repairs are occurring.
- d. Section Replacement Plastic Pipe: In the event that a section of plastic pipe is damaged and a section must be removed:
- The static electrical charge must be removed from the pipe by an acceptable method before squeeze-off measures are applied.
  - Replacement pipe will be of the same material and specifications and may be heat fused by qualified personnel or joined by approved mechanical couplings.

e. Insertion: In some instances it may be feasible to repair damage to underground main facilities by insertion of plastic pipe in the existing main. This procedure may only be used where it is determined that the reduction of pipe size will not adversely affect the pressure delivered to the remaining distribution system.

- The procedure for insertion is similar to replacing a section. Review Section 1.17(E)8 to determine which condition of gas flow exists and proceed accordingly.
- Once gas flow has been controlled at beginning and end excavations, cut out large enough sections to allow working room.
- Seal leading end of plastic pipe with nose cone or other method and insert through old pipe until the pipe extends to both ends of work area.
- Mechanical centering devices must be applied to both ends of the old pipe to insure that the plastic pipe will not chafe on the old pipe when expansion and contraction occurs.
- Make tie-in connections with appropriate transition fittings.

F. Service Repair Methods: Listed in this part are acceptable methods of repair to underground service facilities. The method to be utilized is dependent on the customer status, the extent of damage, and size and material to be repaired.

1. General Procedures: The following are general procedures to be used when it becomes necessary to repair a damaged service line:

a. If the service line is leaking at the service entrance at the foundation wall, insert a safety plug in the service to stem the flow of gas (Note: At least two company representatives must be present to open a service line) and proceed with the appropriate repair method.

b. Check the customer status, this will help determine what options of repair methods are available. Customer status is defined as follows:

Active:	Customer currently using gas.
Active Potential:	Meter locked, use intended.
Inactive:	No meter, no intended use.

c. In situations where escaping gas from a service line leak is entering a basement and cannot be controlled with a safety plug, venting procedures are not adequate, and there is no line valve, it may become necessary to temporarily retire the service at the curb in order to expediently control the situation. If the customer status is Active or Active Potential, appropriate repairs will begin as soon as possible. If the customer status is inactive and it is evident from CGI readings that the source of escaping gas has been stopped, schedule the stub to be retired at the main.

- d. In situations where the customer status is Active, it is necessary to shut off the meter before making repairs and apply turn-on procedures after making repairs (See Section 1.22).
2. Replacement Section: Replacing a section of service line is a method used in situations where the damage to the line is localized, the integrity of the remaining line is not in question, and the customer status is Active or Active Potential. The following are accepted procedures for accomplishing this task:
    - a. Steel or Wrought Iron Service Lines: Cut out the damaged section and replace with new pipe and tie-in fittings. Refer to Section 1.43 for appropriate corrosion control practices.
    - b. Plastic Service Lines: Close line valve. Cut out the damaged section. Replace with new plastic of the same size and material specification by heat fusing by qualified personnel or connecting with mechanical couplings.
  3. Insertion: Insertion is a repair method used when the integrity of the entire service line is suspect and when the customer status is Active or Active Potential. It is accomplished by inserting a new plastic line of a slightly smaller diameter through the old service line. When using the insertion method the following procedures shall be used:
    - Enter the residence and shut off the meter gas valve.
    - Excavate to the main service tap, cut out a section of pipe, and remove old service tap from main and stem gas flow.
    - Break down service riser piping in basement and remove basement tee.
    - Ream or file both ends of service pipe to remove sharp edges.
    - Plug leading end with nose cone and insert through old service line until pipe is in basement (DOT 192.321(f) states that plastic pipe that is being encased must be inserted into the casing pipe in a manner that will protect the plastic. The leading end of the plastic must be closed before insertion).
    - DOT 192.725 states that each service line temporarily disconnected from the main must be tested from the point of disconnection to the service line valve in the same manner as a new service before reconnecting.
    - Install new service main tap and approved transition fittings and connect plastic pipe at main.
    - Install new transition basement tee and reconnect service riser piping.
    - Turn on gas at service tap and soap test all connections.
    - Care must be exercised to be sure that the portion of plastic pipe that extends from the conduit pipe to the transition fitting at the main is protected from shearing by a bridging sleeve or well compacted backfill.

- Backfill hole, take measurements, and fill out appropriate forms according to Section 1.70.
  - Apply turn-on procedures according to Section 1.22.
4. Retirement of Service: Service Retirement is a method of repair used when the customer status is Inactive and there is no intended use of gas. When this method is used the following procedures apply:
- Except as outlined in 1.17(F)1c all services will be retired at the main.
  - Wherever practical the retirement will consist of removing the tapping tee and plugging the main using the original threads with a plug.
- G. Investigation of Failures: DOT 192.617 states that each operator shall establish procedures for analyzing accidents and failures, including the selection of samples of the failed facility or equipment for laboratory examination, where appropriate, for the purpose of determining the causes of the failure and minimizing the possibility of a recurrence.

It is the responsibility of company personnel in the course of repair, to examine the failed facility to assess the cause of failure. If the cause of failure is readily apparent, it will be so noted on the appropriate form (See Section 1.70). If the cause of failure is not readily apparent, he will obtain a sample of the failed facility and submit it to the General Manager or his designee for further inspection.

## 1.20 INTERRUPTION OF SERVICE

The objective of this section is to aid company personnel in dealing with situations where gas service has or will be interrupted. The procedures outlined should be followed when a planned interruption or unplanned interruption of service interruption has occurred (Review PUC 504.04 Interruption of Service).

A. **Planned Interruption of Service:** A planned interruption of service usually occurs as a result of maintenance procedures applied to a distribution facility. It is assumed that advanced knowledge exists that it is necessary to temporarily interrupt the gas supply to a predetermined list of customers. In the event this situation exists, the following guidelines should be followed:

1. The number of customers affected should be limited to as few as practical.
2. Secure a complete list of customers in the area to be affected.
3. Attempt to notify each customer at least one day in advance of the interruption explaining the nature and estimated duration. Make arrangements to shut off each meter and provisions for gaining access for turn-on when service is restored.
4. When the system is repressurized, restore service to all customers according to turn-on procedures in Section 1.22.
5. Fill out appropriate forms as outlined in Section 1.70 with particular attention to the following (PUC 509.12) (ref. E-23):
  - a. Date of interruption
  - b. Time from-to-elapsed
  - c. Location
  - d. Number of customers
  - e. Cause of interruption

B. **Unplanned Interruption of Service:** An unplanned interruption of service usually occurs as a result of damage to facilities or a low pressure condition where the number of customers affected is minimal (in situations where a large number of customers are affected see Section 1.20(C)). Review the following guidelines should an unplanned interruption of service occur:

1. Review the Emergency Plan for criteria, which would classify the situation as an emergency thus initiating the procedures of the plan.
2. Secure all current meter information to assess the location of all active accounts in the area of interruption.
3. In the event that part of the distribution system has been depressurized and remains so, do not repressurize the system until access has been gained and meters turned off to all customers affected.
4. In the event that interruption has occurred as a result of a momentary drop in pressure, attempt to contact all customers in the affected area and gain entrance to inspect for pilot outage.
5. Review procedures of Section 1.13 for all locations where access cannot be obtained.
6. When access to all customers is obtained and the system is repressurized, follow turn-on procedures as outlined in Section 1.22.
7. Fill out appropriate forms as outlined in Section 1.70 paying particular attention to the following (PUC 509.12) (ref. E-23):
  - a. Date of interruption

- b. Time from-to-elapsed
- c. Location
- d. Number of customers
- e. Cause of interruption

C. Interruption of Service Emergency Condition: In situations where service is interrupted to a large number of customers for any reason, it is necessary to take additional steps other than those listed previously. The following guidelines should be considered in the event of such a situation:

- 1. Review Emergency Plan, Section 6.0 - Emergency Procedures.
- 2. Assess the number of customers affected and determine if any or all of the following procedures should be initiated:
  - a. Isolating all or part of the system by closing valves or excavating to take a supply line out of service. This determination is based on the number of customers affected and estimated time necessary to insure the safety of the public (Review Section 1.30).
  - b. Requesting additional assistance from other gas companies or contractors (Review Emergency Plan, Appendix VI).
  - c. Applying emergency entrance procedures to locations where it is suspected that the interruption has created an unsafe condition and entrance cannot be gained. If this condition exists:
    - Attempt to locate friends or relatives that may be able to gain entrance to the location.
    - In situations where no form of requested access is achieved, secure the services of Police and Fire personnel and physically gain access (Note: Record all property damage occurring from this action on appropriate forms).

## 1.21 METERS

### 1. General Information

New Hampshire Gas Corporation, unless otherwise authorized by the Public Utilities Commission, shall provide and install at its own expense and shall continue to own, maintain, and operate all equipment necessary for the regulation of gas to its customers. Where additional meters are furnished by this company to be used for the convenience of the customer, a charge for such meters may be made in accordance with existing retail rates (PUC 505.01 (a)(b)).

### 2. Inspection of Meters

All meters shall be inspected for measurement accuracy before being installed on a customer's premises and in addition, worn or damaged parts shall be replaced (PUC 505.02 (b)).

### 3. Test and Calibration of Meters

Test and Calibration of Meters PUC 505.03 (a)(b)(c)(d)(e)(f)(g)(h)states:

(a) Each utility shall test all meters for accuracy at both check flow and open flow, as found, prior to adjustment or repair, except for meters removed from service specifically for known leakage, damage, tampering, or non-registration, and meters that have been selected for retirement.

(b) Each utility shall monitor those meters which have been removed from service specifically for known leakage, damage or non-registration on an annual basis to identify problems with certain meter types or manufacture.

(c) Each utility shall calculate meter accuracy by adding open flow accuracy and check flow accuracy, and dividing the sum by two.

(d) Each utility shall maintain records for each group of meters and shall include in such records the meter accuracy rates for each group for the previous calendar year.

(e) The established meter groups shall be tested under this part as identified in Table 5.5.1 as follows.

Table 5.5.1 Established Meter Groups

Group	Type	Capacity
A	Diaphragm	0to 500 cubic feet per hour
B	Diaphragm	Greater than 500CFH
C	Rotary	All
D	Turbine	All
E	Ultrasonic	All

(f) Utilities shall divide the meter accuracy data into 3 accuracy categories, each expressed as a percentage of the total number in a group, as follows:

- (1) Slow meters;
- (2) Those meters with an accuracy rate of plus or minus 2 percent; and
- (3) Fast meters.

(g) When calculating the accuracy categories for (f) (1) through (3) above, the utility shall round the result up to the next whole number.

(h) When a remote meter read device is utilized, the utility shall verify the accuracy of the remote read device whenever the meter is removed from service.

#### 4. Test Schedule of Meters

Test Schedule of Meters PUC 505.04 (a)(b)(c)(d)(e)(f)(g)(h) states:

(a) Utilities shall not be required to test meters with a purchase year which indicates an age of 10 years or less provided that the meters belong to a group identified in Puc 505.03(e) demonstrating an accuracy rate of 96 percent or better, and the utility has the manufacturer's proof test on file.

(b) Each utility shall, on an annual basis, calculate an accuracy rate for each group of meters identified in Table 5.5.1 of Puc 505.03(e) by calculating the percentage of slow, fast and accurate meters in the group for purposes of determining the number of meters to be brought in for testing in the subsequent year.

(c) Each utility shall, on an annual basis beginning March 1, 2005, examine the previous year's tested meter accuracy data for each group of meters identified in Table 5.5.1 of Puc 505.03(e) to determine the sampling plan for the current year.

(d) Each utility shall use accuracy data derived in the previous years testing for the establishment of the minimum quantity of meters to be tested per group for the current year.

(e) The applicable accuracy rate shall determine the minimum number of meters to be tested according to table 5.5.2. ( see Puc 500 rule 505.4 )

(f) For any group of meters with accuracy rates of 95% or less, the utility shall randomly select the meters to be tested as follows:

(1) The utility shall select 80% of those meters for testing from the group of meters that have operated for the longest time without being tested; and

(2) The utility shall select 20% of those meters for testing from the group of meters removed from service for non-use or load change.

(g) For any group of meters with accuracy rates of 87% or less, the utility shall attempt to determine the defect responsible for the failure and, if the utility can not identify the defect, or, if the defect is due to manufacturer, the entire group of meters shall be removed from service.

(h) Utilities shall conduct tests of rotary and turbine meters either in the field or in an approved meter shop.

## 5. Customer Request Test

Customer Request Test PUC 505.05 states:

(a) When a customer requests a meter test, a utility shall follow the following procedures:

- (1) The utility shall test the accuracy of the customer's meter within 15 days from the time the request is made;
- (2) If the meter has been tested at no charge during the preceding 6 months, a utility may require the deposit of a fee in an amount as specified in the utility's current tariff for such a test;
- (3) If on testing the meter is found to be in error by more than 2%, the deposit shall be promptly refunded;
- (4) If the meter is not found to be in error by as much as 2%, the utility may retain the amount deposited for the test;
- (5) A customer may be represented in person or by an agent when the utility conducts the test of the customer's meter; and
- (6) The utility shall provide to the customer within 30 days after completion of the test a report giving:
  - a. The name of the customer requesting the test;
  - b. The date of the request;
  - c. The location, the type, make, size, the serial number of the meter;
  - d. The date tested; and
  - e. The result of the test.

(b) When a customer makes written application to the commission for testing of a meter, the following shall occur:

- (1) The commission staff shall arrange to have the meter tested in staff's presence, as soon as practicable; and
- (2) The utility, when notified of a customer application for a meter test as herein provided, shall not knowingly remove, interfere with, or adjust the meter to be tested without the written consent of the customer and approval of the commission pursuant to Puc 201.05.

(c) Reports of periodic tests of meters shall be submitted to the commission on a Form E-7, pursuant to Puc 509.09, once a year. Reports of requests for tests shall be submitted to the commission on Form E-24, pursuant to Puc 509.13, once a month.

(d) The utility shall retain a complete record of the last test made on a meter.

## 1.22 METER TURN-ON PROCEDURES

The material in this part outlines the procedures to be used by personnel when installing, replacing, and turning on meters at locations where there is an existing gas service which has been previously used.

1. General procedures before setting or turning on meter.
  - Inspect the condition of the service riser and arrange for repairs to any riser where the integrity is suspect.
  - Inspect the customer piping to insure that the meter will not be the sole supporting apparatus.
  - Inspect gas connected equipment to insure that it has been properly installed and meets the equipment guidelines of this company.
  - When installing or setting a new meter, use only meters that have been inspected for measurement accuracy (PUC 505.02 (1))(See Section 1.21).
  - Inspect condition of meter washers or flange gaskets. Replace if integrity is in question.
  - If customer service is supplied by the High Pressure Line, inspect the regulator for proper installation and condition.

2. Turn on Procedures

- After applying the preceding procedures, set the meter, or if it is already in place note the position of the hand on the lowest registering meter dial (test dial). With all appliances and pilots shut off, turn on the main gas valve and observe the test dial for the prescribed period noted below. If no movement occurs, it is assumed that the house piping is secure.

Meter Test Dial Size	Observe test dial for at least
1/4 ft. dial	3 minutes
1/2 ft. dial	5 minutes
1 ft. dial	5 minutes
2 ft. dial	10 minutes
5 ft. dial	15 minutes
10 ft. dial	15 minutes

- If no movement of test dial has occurred, light all appliances and fill out appropriate forms (See Section 1.170).

## 1.23 METER TURN-OFF PROCEDURES

1. Locking a meter: When it becomes necessary to temporarily lock a customer's meter, the following procedures should be followed:
  - If the meter is tin, proceed to Item 2 of this section - Removing a Meter.
  - If the meter is aluminum:
    - Shut off the main service valve.
    - Insert a meter plug on the inlet side of the meter at the meter swivel.
    - Fill out appropriate forms as outlined in Section 1.70.
2. Removing a meter: When it becomes necessary to remove a meter, the following procedures should be followed:
  - Turn off the main service valve.
  - Remove the meter and meter swivels and plug both inlet and outlet piping.
  - If the service is an outside meter set and has an aboveground locking valve, install a company lock.
  - If the service has an underground service valve, shut off the valve.
  - Fill out appropriate forms as outlined in Section 1.70.
  - PUC 506.02(i) states:

Within 2 years of a meter being continuously locked or removed, the utility shall disconnect from the main and abandon all gas service lines with the exception of cathodically protected or plastic gas service lines which shall be disconnected from the main and abandoned within 10 years of the meter being continuously locked or removed.

## 1.24 ABANDONMENT OF FACILITIES

When underground facilities are abandoned in place or become inactive (inactive is defined as not maintained), the following procedures should be followed (The procedures herein are based on PUC 192.727 a-d):

### A. Mains

1. Disconnect pipeline from all sources or supplies of gas.
2. Purge according to Section 1.25.
3. Permanently seal all openings.
4. Fill out appropriate forms according to Section 1.70.

### B. Service lines abandoned at main

1. Disconnect service at main and permanently plug main tap.
2. Permanently seal service pipe at street end.
3. Remove service riser and cap service line at entrance.
4. Fill out appropriate forms as outlined in Section 1.70.

### C. Service lines abandoned at curb

1. Shut off curb valve (where applicable) or cut out section and cap live end.
2. Permanently seal inactive end.
3. Remove service riser piping and cap pipe at service entrance.
4. Schedule for retirement at main when practical.

### D. Inactive service lines abandoned in place

All gas service pipes not falling within the category of those requiring a curb shut-off shall have a stopper inserted at a suitable distance outside the cellar wall whenever service has been discontinued for a period in excess of 12 consecutive months.

1. Remove service riser piping and install an expansion plug in the service line at its entrance (Note: Two company representatives must be present to open a pressurized service line).
2. If the service line has a curb shut-off, close the valve.
3. Fill out appropriate forms as outlined in Section 1.70.

## 1.25 PURGING OF PIPELINE FACILITIES

### A. General

When a pipeline is being purged of air by gas, or gas by air, the gas or air must be released into one end of the line in a moderately rapid and continuous flow. If gas cannot be supplied in sufficient quantity to prevent the formation of a hazardous mixture of gas and air, a slug of inert gas must be released into the line before the gas or air (DOT 192.629 a, b).

All pipeline purging shall comply with the requirements for purging pipelines established by the "Purging Principles and Practice", 1990 edition, of the American Gas Association (PUC 506.02 h).

Review Record Keeping Procedures as outlined in Section 1.70.

### B. Safety Precautions

1. Do not allow smoking or any kind of ignition source at the inlet or outlet of the pipe being purged. (Note: Ignition sources are not prohibited when purging house piping or appliances.)
2. Have a fire extinguisher readily available at the outlet of the pipe being purged. (Note: When purging air from new or replacement sections of air with gas in areas relatively near the plant, the plant operator should be consulted to assess the possible impact of sudden pressure changes.)
3. Soap test all connections that are disconnected and then reconnected as a result of purging procedures.

### C. Purging out of service (gas to air) pipelines under 6 inches in diameter and under 500 ft. in length.

1. No purging required if before sealing pipe end the readings taken in the pipe end with a CGI meter indicate a nonflammable mixture.

### D. Purging out of service (gas to air) pipelines 4 inches in diameter and larger and over 500 ft. in length.

#### OPTION A

1. Physically disconnect pipeline from all gas sources.
2. Attach an outlet riser to one end of pipeline. (Note: Outlet riser should be of sufficient height above grade to effectively disperse contents of pipe in a safe manner.)
3. Attach a compressor hose to inlet end of pipeline and introduce air at or below original pressure into the pipeline for a period of five minutes. Discontinue pressure for a period of approximately 5 minutes. Repeat this operation 2 more times.

4. Check both ends of pipe with a CGI meter. If LEL readings are below 2%, suspend purging operation and seal both pipe ends. If CGI readings exceed 2%, continue purging procedures until readings drop below 2%.

#### OPTION B

1. At one end, "A", install, as tight as possible, an air operated purger (venture tube) supplied by NH Gas.
  2. At opposite end, "B", open gas line to allow air to be sucked in by purger.
  3. After approximately 15 minutes remove purger and check end "A" with CGI Meter. The number of time this is required depends on the length of main. When readings are below 2% suspend purging and seal both pipe ends.
- E. Purging into service pipelines (air to gas) 4 inches and less in diameter and less than 1,000 ft. in length.
1. Attach a riser in the aforementioned manner to the tie-in point or end of the section to be purged.
  2. Open the inlet valve in a manner such that a rapid and continuous flow of gas will enter the pipeline.
  3. When the odor at the outlet indicates a significant presence of gas, check the outlet flow with a CGI meter. If the reading is 20% or over, the line will be considered purged. If the reading is less than 20%, continue to purge until the reading exceeds 20%.
  4. Make the tie-in connection (if applicable).
  5. If the line is new and is not connected to another source of gas, enter each residence and follow service-purging procedures outlined in this section. (Note: When purging new or replacement sections of air with gas in areas relatively near the plant, the plant operator should be consulted to assess the possible impact of sudden pressure changes.)
- F. Purging into service pipelines 4 inches in diameter and larger, and over 1,000 ft. in length.
1. Calculate the volume content of the pipeline to be purged.
  2. Determine which medium of inert gas will be used to purge the pipeline. (Note: The most common media are Carbon Dioxide (CO<sub>2</sub>) or Nitrogen (N<sub>2</sub>) for this purpose.)
  3. Determine the amount of inert gas necessary to completely fill the pipeline and displace all air.
  4. Inject the chosen medium into the pipeline at a continuous rate until it is determined that all air has been effectively removed and close the inlet and outlet.

5. Introduce a rapid and continuous flow of gas to the inlet of the pipe and monitor with a CGI meter until the reading is 20% or greater.
  6. When the outlet flow is 20% or greater as monitored with a CGI meter, the pipeline will be considered purged. (Note: When purging new or replacement sections of inert gas with gas in areas relatively near the plant, the plant operator should be consulted to assess the possible impact of sudden pressure changes.)
- G. Purging services (air to gas) outside service riser.
1. Insure that purge point is in an area devoid of any ignition sources.
  2. Open valve and introduce gas in a rapid and continuous flow until an appreciable odor of gas is present.
  3. Connect meter and interior piping and proceed with house piping purge procedures as outlined in this section.
- H. Purging services (air to gas) inside service entrance 2 inches and smaller.
1. Extinguish all ignition sources in basement area.
  2. Insure that adequate ventilation is present in the basement by opening bulkheads or windows.
  3. Loosen meter connection slightly and turn on service valve until an appreciable presence of gas is noted at the meter connection and close service valve.
  4. Proceed to house piping purging procedures.
- I. Purging services (air to gas) inside service entrance over 2 inches in diameter.
1. With service valve closed connect a hose or rigid pipe to the meter inlet connection such that the outlet end is open to the exterior atmosphere.
  2. Turn on service valve until an appreciable odor of gas is evident in the outlet flow.
  3. Close service valve, reconnect meter and proceed to house piping purging procedures.
- J. Purging house lines:
1. Insure that each appliance is shut off at the appliance valve.
  2. If the appliance has pilots, open the gas valve, manually open the safety valve while holding and ignite source at the pilot. Continue this procedure until pilot is lit and air is bled.
  3. If the appliance has electronic ignition, loosen the drip cap or union and bleed line until the odor of gas is present; reconnect piping and soap test joints.
  4. Wait until the gas odor dissipates.
  5. Cycle appliance until unit ignites and proper flame characteristics are observed.

## 1.26 CAST IRON PIPE MAINTENANCE

### A. Exposed Bell Joints

Each cast iron caulked and spigot joint that is subjected to pressure of less than 25 pounds and is exposed for any reason must be sealed by a means other than caulking (DOT 192.753b).

Whenever a cast iron bell joint is exposed for any reason, the following procedures should be followed:

1. Soap-test the joint for indications of leakage.
2. Examine the pipe for signs of graphitization (See Section 1.70 and Form NHG-4 in Appendix B).
3.
  - a. When the mechanical integrity is in question install an approved bell joint clamp according to the manufacturer's instructions.
  - b. When the joint is in good condition seal the joint with anaerobic sealant.
4. Compact the backfill material around the pipe to insure a solid bed for pipe and bell joint.

### B. Cast Iron Pipeline Protection

When an operator has knowledge that the support for a segment of a buried cast iron pipeline is disturbed (DOT 192.755 a, b):

1. That segment of the pipeline must be protected, as necessary, against damage during the disturbance by:
  - a. Vibrations from heavy construction equipment, trains, trucks, buses, or blasting;
  - b. Impact forces by vehicles;
  - c. Earth movement;
  - d. Apparent future excavations near the pipeline;
  - e. Other foreseeable outside forces which may subject that segment of the pipeline to bending stress.
2. As soon as feasible, appropriate steps must be taken to provide permanent protection for the disturbed segment from damage that might result from external loads.

The procedures for protecting cast iron pipelines necessitated by the preceding codes will be based on the nature and extent of suspected or actual disturbance to the support material associated with each application. It is impractical to outline individual procedures for each circumstance. The following guidelines should be addressed in evaluating the action to be taken:

1. The General Manager or his designee is responsible for making the assessment and specifying action to be taken.
2. The following items should be addressed in making the assessment:
  - a. Length of disturbed support material;
  - b. Depth of disturbed material over and under the main;
  - c. Size and condition of the pipeline;
  - d. Estimation of impact of equipment and vehicles anticipated to be operating over or near the main;
  - e. Estimate of future construction activity along the pipeline.

3. The following procedures should be considered in determining the appropriate action to be taken:
  - a. Requiring contractors making deep long excavations adjacent to pipelines to install shoring to protect the supporting material from being disturbed.
  - b. Requiring blocking under sections of main that will be unsupported during excavation (Note: Blocking must be removed before final backfilling operation).
  - c. Determine the type of backfill material and compaction specifications necessary to insure proper support of pipe.
  - d. Determine the need for installation of bell clamps before or after disturbance of support material.
  - e. Examine the possibilities of temporarily taking the line out of service during certain operations.
  - f. Examine the possibilities of installing a new line in place of a line where the practicality of protecting the line adequately is questionable.
  - g. Examine the possibility of abandoning the line in circumstances where it is not considered an integral part of the system.

C. Cast Iron Pipe Corrosion Inspection

Refer to Section 1.47 - Remedial Measures and Section 1.70 Records and Reporting Procedures and Form NHG-4 Appendix B for instructions relating to cast iron pipe corrosion control.

## 1.27 LINE MARKERS

### A. Buried Distribution Lines

Line markers must be placed and maintained as close as practical over each buried distribution main at each crossing of a highway, street, or railroad. A line marker must also be placed wherever necessary to identify the location of the main to reduce the possibility of damage or interference. Line markers are not required for buried mains in Class III or IV locations where it can be shown to be impractical or where you participate in a damage prevention program (DOT 192.707 a, b).

New Hampshire Gas Corporation considers itself exempt from the requirements of installation of line markers over its buried distribution facilities for the following reasons:

1. The entire distribution system is located in Class III and Class IV locations according to definitions outlined in DOT 192.5, and it would be impractical to place line markers that would effectively denote the locations of the pipelines.
2. New Hampshire Gas Corporation is a member of the "DIG SAFE" damage prevention program which is a one call system (See Section 1.50).

### B. Above Ground Distribution Lines

Line markers must be placed and maintained along each section of a main that is located above ground in an area accessible to the public (DOT 192-707 c).

The following procedures will be considered mandatory for any section of main that is located above ground and is accessible to the public:

1. A line marker, as prescribed herein, will be placed and maintained at each end and at intervals of not more than 100 ft. for pipelines in excess of 100 ft. in a location that is readily visible to the public.
2. The line marker must meet the following criteria:
  - a. The word "Warning," "Caution," or "Danger" followed by the words "Gas Pipeline" must be written on the sign. Letters must be at least one inch high with one quarter inch stroke.
  - b. Letters must be written legibly on a background of sharply contrasting color.
  - c. New Hampshire Gas Corporation, (603)352-1230 must be written on the sign.

## 1.28 PRESSURE REQUIREMENTS AND RECORDING DEVICES

The pressure at the outlet of any customer's service meter shall never be less than four inches of water column or greater than 13.8 inches of water column, except by written agreement with the customer (PUC 504.03 a).

Each utility shall maintain in continuous operation a sufficient number of pressure recording devices to monitor the pressure in its distribution system (PUC 504.03 b).

### A. Propane Air Plant Pressure Recording Devices

The Keene Gas Corporation propane/air production plant at 207 Emerald Street is equipped with pressure recording devices which record all phases of production and send-out pressures. These recording charts are inspected daily by NH Gas personnel to ascertain that the plant is operating properly. Should any abnormalities or deviations from normal operating pressures be noted, a plant operator shall be notified immediately. The plant operator shall determine whether or not a pressure problem does exist; and if so, determine the cause of the problem and effectuate immediate repairs or adjustments to correct any malfunction.

### B. Distribution System Pressure Recording Devices

New Hampshire Gas Corporation operates and maintains pressure recording devices at the following locations:

1. Marlboro St. at Avalon Place
2. Church St. at South Lincoln St.
3. **Monadnock Market Place, between Olive Garden and Chili's**
4. 72 Pine Avenue
5. 562 Washington St.

The following procedures will be followed in order to maintain these devices:

1. Install a new weekly chart at a period not exceeding 8 days.
2. Change battery when necessary.
3. Conduct an accuracy test on each device at 12 month intervals in the following manner:
  - a. Connect a pressure gauge or manometer to the test orifice and compare reading with recording device.
  - b. Adjust recording device to coincide with the test instrument.
  - c. Fill out appropriate forms as outlined in Section 1.70 and Form NHG-5 (Appendix B).
  - d. Report any malfunction of a device or any unusual pressure readings to appropriate personnel.

## 1.29 ODORIZATION

### A. Specifications of Odorant

All combustible gases transported or distributed by pipeline shall have a distinctive odor of sufficient intensity so that a concentration of one percent of the gas in air is readily perceptible to the normal or average olfactory sense of a person coming from fresh, uncontaminated air into a closed room containing one part of the gas in 99 parts air. Whenever necessary to maintain this level of intensity, a suitable odorant shall be added in accordance with the following specifications per PUC 506.02(m):

- (1) The odorant shall be harmless to humans, non-toxic, and shall be non-corrosive to steel, iron, brass, and plastic or any other material used by the utility in handling gas;
- (2) The odorant shall not be soluble in water to an extent greater than 2.5 parts by weight of the odorant to 100 parts by weight of water;
- (3) The products of combustion from the odorant shall be non-toxic to a person breathing air containing these products of combustion and shall not be corrosive or harmful to material which normally would be exposed to such products;
- (4) Equipment for introduction of the odorant into the gas shall be so designed and so built as to avoid wide variation in the level of odor in the gas; and
- (5) The equipment and facilities for handling the odorant shall be located where the escape of odorant would not be a nuisance.

### B. Verification of Odorant

The odorant used in this distribution system is Mercaptan and is injected into the LP gas transports by the suppliers at their loading facilities. The amount of odorant injected in pounds is recorded on the bills of lading. Records indicate that no less than 1.0 lbs. of Mercaptan is added to transports with capacities of 9,000-10,000 gallons. According to "The Guidance Manual for Operators of Small Gas Systems", U.S. Department of Transportation, 1985 revised edition, a ratio of 1.0 pounds per 10,000 gallons of liquid LP-gas has been recognized as an effective odorant. Bills of lading are kept on file with Keene **Propane** Corporation and with copies provided to New Hampshire Gas.

The following procedures will be followed by the **NHGC** personnel in order to verify that the odorant has been injected into transport loads and by NHGC personnel to verify its presence in sufficient quantities throughout the distribution system:

1. Personnel responsible for unloading transports will inspect the bill of lading for evidence that mercaptan has been injected and the amount injected.
2. Personnel responsible for unloading will conduct a sniff-test at a convenient orifice at the transport to verify the presence of odorant.
3. Personnel responsible for changing charts at pressure recording devices will conduct a test using a quantitative odorant measuring device such as a Bacharach Odorimeter (Portable Gas Odorant Tester) at the outlet orifice **monthly** to verify that the odorant is readily detectable at one-fifth the lower explosive limit (**0.4%** of propane) and complete appropriate forms as outlined in Section 1.70 and Form KG-6 (Appendix B). Such

personnel shall have demonstrated the ability to detect and identify the odor of Mercaptan. (DOT 192.625(a)(f)).

4. Personnel conducting meter turn-on procedures will make a sniff-test at a convenient location to verify presence of odorant and record the result on the meter order (See Section 1.70).
5. In the event that the presence of odorant is not detected while conducting any of the aforementioned tests, the **Manager** or Plant Operator will be notified immediately.
  1. **If low levels are detected and odorant needs to be added...**
  2. **Mercaptan will be added by injecting into the 60,000 gallon storage tank thru an injection point located near the Liquid Pumps and circulated into the tank by means of the pumps.**

### 1.30 KEY VALVES

Each valve, the use of which may be necessary for the safe operation of a distribution system, must be checked and serviced at intervals not exceeding 15 months, but at least once each calendar year (DOT 192.747).

#### A. Key Valve Locations

The two KEY VALVE locations, necessary for the safe operation of the distribution system, are located as follows:

1. High Line Valve: The closing of which will stop the flow of gas to all customers and pipelines served by the high pressure distribution system. Located at grade level at south end of the small steel building housing the new Jet Room at the GAS PLANT.
2. Low Line Valve: The closing of which will stop the flow of gas to all customers and pipelines associated with the low pressure distribution system. Two valves located at the GAS PLANT regulator (governor) house in the inlet piping to regulators and at grade level at the south end of the small steel building housing the new Jet Room.

(Note: The determination of designating these locations is based on a 1992 study of the distribution system involving age of the system, condition and accessibility of valves, response time, and other factors.)

#### B. Key Valve Maintenance

The following procedures will be conducted on all key valves at intervals not exceeding 15 months but at least once each calendar year:

1. Inspect the valve for proper marking, accessibility, leakage, or tampering.
2. Partially operate the valve using the appropriate method for the valve to insure that it operates freely without excessive force.
3. Lubricate plug type valves according to manufacturer's instructions.
4. Plug valves that do not respond to lubrication may be flushed with "Valvetex" or other appropriate penetrant.
5. Fill out appropriate forms as outlined in Section 1.70 and Form KG-7 (Appendix B) and submit to the Distribution Department.

#### C. Key Valve Emergency Procedures

The decision to close any key valves will be made only in extreme emergency situations and will be made only by the Director of Emergency Operations (Review the Emergency Plan for criteria defining an emergency situation).

Whenever a key valve has been closed to control an emergency situation, steps must be taken to insure that the flow of gas has stopped completely and the situation is in fact controlled before the valve is opened (Review Section 1.20).

Attention all NH Gas Corporation personnel: When instructed by the NHGC Director of Emergency Operations to close a key valve, proceed as follows:

1. Proceed to the location of the "Key Valve" and locate the identification marker to insure that it is in fact the valve requested.
2. When so instructed, close the valve with the appropriate apparatus until a positive stop is made.
3. Notify appropriate personnel that the valve is closed.
4. Stand-by an open line of communication until given further instructions.

Blank

### **1.31 PRESSURE LIMITING AND REGULATOR STATIONS: INSPECTION AND TESTING**

Each pressure limiting station, relief device (except rupture discs), and pressure regulating station and its equipment must be subjected at intervals not exceeding 15 months, but at least once each calendar year, to inspections and tests to determine that it is:

- a. In good mechanical condition;
- b. Adequate from the standpoint of capacity and reliability of operation for the service in which it is employed;
- c. Set to function at the correct pressure;
- d. Properly installed and protected from dirt, liquids, or other conditions that might prevent proper operation.

All regulators that control distribution pressure for this system (except service line regulators) will be inspected at intervals not exceeding 15 months but at least once each calendar year according to the following procedures:

1. Inspect and record the following information on the appropriate form as outlined in Section 1.70 and Form NHG-8 (Appendix B).
  - a. Location, date, and name of inspector;
  - b. Make, type, size and orifice size of regulator;
  - c. Inlet and outlet pressure rating;
  - d. Monitoring regulator or relief setting;
  - e. M.A.O.P. of the system to which it is connected;
  - f. Capacity at inlet and outlet pressure;
  - g. General condition of the station in regards to atmospheric corrosion, support piping, protection from hazard;
  - h. Lock-up pressure where applicable;
  - i. Any observed unusual conditions;
  - j. Any corrections made to facility.

## 1.32 PRESSURE LIMITING AND REGULATOR STATIONS: TESTING OF RELIEF DEVICES

The distribution system pressure relief valve located at the gas plant will be inspected and tested by Keene Gas personnel at intervals not exceeding 15 months, but at least once in a calendar year according to the following procedures (Note: For a code reference review DOT 192.743):

1. Inspect and record the following information on Form NHG-9 (Appendix B):
  - a. Location, date, and name of inspector;
  - b. Make, type, size, and orifice size of relief valve;
  - c. Pressure setting and capacity;
  - d. Connection pipe size and vent size;
  - e. General condition of valve, gauges, support piping;
  - f. Protection from hazards and tampering;
  - g. Conduct a pressure test according to the manufacturer's instructions (Appendix E) and record the pressure at which the valve opened;
  - h. Any unusual observations;
  - i. Any adjustments or repairs made.

(If the relieving device is of insufficient capacity, a new or additional device must be installed to provide the additional capacity required (DOT 192.743 c)).

## 1.40 CORROSION CONTROL

This section covers corrosion control procedures which directly relate to Operating and Maintenance procedures only.

The procedures outlined in this section will be written in performance language. Reference to state and federal law will be inserted where appropriate and delineated by **Boldface Type** with the applicable reference numbers.

## 1.41 PERSONNEL

All corrosion control procedures, design, and inspections must be carried out by, or under the direction of, a person qualified by experience or training in pipeline corrosion methods (**DOT 192.453**).

## 1.42 ELECTRICAL ISOLATION

All pipeline components which are to be cathodically protected must be isolated from all unprotected metallic structures with which it comes in contact (**DOT 192.467 a-f**).

The procedures outlined in this section for the various applications must be followed to insure effective electrical isolation and adequate corrosion control practices.

### A. Replacing sections of existing cathodically protected pipeline facilities:

1. Review procedures outlined in Section 1.17.
2. Install non-insulating type tie-in fittings according to manufacturer's instructions at both ends.
3. Test continuity of pipe at both ends of repair with an appropriate test instrument (**DOT 192.467 d**).
4. Install additional anodes and test stations where necessary.

### B. Replacing sections of pipelines not under cathodic protection.

1. Review procedures outlined in Section 1.17.
2. Install insulating type tie-in fittings according to manufacturer's instructions at both ends of the replacement section.
3. Test adequacy of insulating fittings with an appropriate test instrument (**DOT 192.467 d**).
4. Install anodes and sufficient test stations to determine the adequacy of cathodic protection (**DOT 192.469**).

### C. Meter Sets

An insulating union or insulating meter swivel shall be installed before the meter on any service risers, which are directly attached to a cathodically protected service or main at a location as close as practical to the point where the service protrudes above grade or into a basement.

### **1.43 PREPARATION OF REPLACEMENT SECTIONS OF STEEL PIPE AND FITTINGS**

The following procedures should be followed to insure adequate corrosion control practices relating to replacement repair sections of steel pipe, and fittings:

A. Factory coated replacement repair pipe

1. Inspect the pipe for defects (holidays).
2. Cut out cleanly any sections of coating where pipe is exposed or where wrinkling or separation of coating has occurred.
3. Clean any exposed pipe surface where rust has formed.
4. Apply an approved primer to the cleaned surface and allow to dry.
5. Using an approved tape, wrap the entire circumference of the pipe at the damaged area until it is completely covered with two layers.

B. Bare pipe

1. Insure that pipe is clean, dry and free of rust. Clean any areas that need attention.
2. Apply coating of approved primer over the entire surface of pipe and allow to dry according to manufacturer's instructions.
3. Using an approved tape, wrap the entire pipe until a double layer covers the primer.

C. Fittings

1. Factory coated fittings will be inspected for coating defects and repaired by applying mastic to the defective areas.
2. Uncoated fittings will be coated by applying mastic to the entire surface of the fitting or using an approved tape.

(Note: Any fittings that will not be cathodically protected due to the impracticality of the situation should not be coated.)

## 1.44 MONITORING

### A. Criteria

A pipeline will be considered cathodically protected when a negative (cathodic) voltage of at least 0.85 volts is read between the structure and a saturated copper-copper half cell contacting the electrolyte (**DOT 192 Appendix D**).

### B. Test Schedule (**DOT 192.465**)

1. Distribution Mains in excess of 100 ft. will be tested at least once each year, but with intervals not exceeding 15 months.
2. Mains less than 100 ft. and separately protected service lines will be tested on a sampling basis. At least 10 percent of these protected structures must be surveyed each calendar year, with a different 10 percent checked each subsequent year, so that the entire system is tested in each 10 year period.
3. Facilities protected by rectifier or other impressed current power sources will be inspected six times each calendar year, but with intervals not exceeding 2 1/2 months to insure it is operating.

### C. Procedures for testing facilities protected by anodes

1. Locate the test station leads (where applicable) or portion of pipeline where access can be gained.
2. Clean the surface where test lead will connect to insure adequate electrical transference.
3. Locate a section of natural earth as remotely removed from the test source as practical (Note: If location of anodes is known, avoid testing near anodes).
4. Connect test instrument according to manufacturer's instructions and take readings.
5. Record results on Form NHG-10 (Appendix B).

### D. Remedial measures will be taken to correct any deficiencies indicated by the monitoring.

## 1.45 EXAMINATION OF BURIED PIPELINES

Whenever a buried pipeline is exposed and knowledge of exposure exists, the exposed portion of the pipeline will be examined for evidence of external corrosion if the pipe is bare or if the coating is deteriorated. If external corrosion is found, remedial action will be taken (**DOT 192.459**).

The examination will take place according to the following procedures:

1. Clean dirt and other debris away from the entire exposed pipeline section.
2. Inspect and record the following known information on Form NHG-4 (Appendix B):
  - a. Location, date and name of inspector;
  - b. Line designation, size and material;
  - c. Type and condition of coating;
  - d. External condition and/or internal condition (Note: On sections of cast iron, the pipe should be examined for graphitization, see Section 1.48);
  - e. Noted cathodic protection applications;
  - f. Measurements to exposed section;
  - g. Soil and moisture conditions;
  - h. Any conditions noted that could endanger the integrity of the pipeline;
  - i. Any repairs conducted on the pipeline.
3. Soap test any portion of the pipeline for leaks where the integrity of that section is in question.

## **1.46 ATMOSPHERIC CORROSION CONTROL**

### **A. General**

All pipelines that are exposed to atmospheric corrosion must be cleaned and either coated or jacketed with a material suitable for the prevention of atmospheric corrosion (**DOT 192.479**).

### **B. Pipe Preparation Procedures**

The following procedures must be followed when installing new pipe or where the coating on existing pipe is no longer effective in preventing atmospheric corrosion:

1. Clean pipe surface with sand paper, wire brush, or power wheel, until metal surface is free of dirt, rust, or other foreign matter.
2. Coat the pipe with an approved paint, or coating substance until all the pipe is covered.
3. An approved jacket may be used on pipe where painting is impractical.
4. On areas of existing pipe where atmospheric corrosion is localized, only those areas that need attention shall be cleaned and coated.

### **C. Monitoring**

All pipelines exposed to atmospheric corrosion will be inspected at intervals not exceeding 3 years. Remedial action will be taken on any pipeline where there is evidence that it is not effectively protected against atmospheric corrosion (**DOT 192.481**).

Inspect and record the following known information on Form NHG-12 (Appendix B):

1. Location, date, and name of inspector
2. Designation of line, and size
3. Areas of corrosion if any
4. Corrective measures taken, type of coating used.
5. Additional information considered pertinent

## **1.47 REMEDIAL MEASURES**

### **A. General**

Each segment of metallic pipe that replaces pipe because of external corrosion must have a properly prepared surface, provided with an external protective coating, and cathodically protected (**DOT 192.487**).

## 1.48 CAST IRON PIPELINE POLICY

### A. General

New Hampshire Gas Corporation's distribution system consists of approximately 28 miles of pipelines. There are approximately 3.25 miles of eight-inch cast iron, 2 miles of six-inch cast iron, 11 miles of four-inch cast iron, and ½ mile of three-inch cast iron. There is no known two-inch cast iron pipe in the distribution system. The remainder of the system consists of wrought iron, coated steel, and polyethylene pipe.

All cast iron pipe in the system is operating at an MAOP of 13.8 inches of water column.

There is currently no plan for the systematic replacement of all cast iron pipe in the system.

### B. Maintaining Cast Iron Integrity

The following criteria shall be used to monitor the overall integrity of the distribution system and will result in the safe management and replacement of cast iron that may be defective, as well as identifying any other problem areas which may develop:

1. A leak map of the system shall be maintained for the most recent previous five years indicating the location of failures of cast iron piping. The map shall also denote the year of occurrence of failure, cause of failure, and size of pipe. This visual presentation will indicate any incipient problem areas and will assist in determining whether the failures are a result of environmental conditions or are due to defects in pipe material.
2. A continuing and systematic evaluation of the system shall be maintained in order to identify sections of pipeline that may no longer be required to maintain the integrity of the system. Particular attention shall be given to sections of pipeline fed from only one end which have no active services connected to them and therefore may be discontinued and abandoned in place. Also considered in this evaluation shall be any sections of pipeline which may be inserted with polyethylene piping of a smaller diameter but with a delivery capacity sufficient to satisfy customer demand in that area.
3. A graphitized cast iron pipe is one in which the iron has been converted to graphite with the pipe seemingly left intact. Evidence of this form of corrosion is shown by the ability to shave away with a knife blade the soft material which has replaced the cast iron. If graphitization is detected to the extent that failure of the pipe has resulted, or may result, additional pipe shall be exposed to determine the extent to which graphitization has occurred. Graphitized pipe may be repaired with a clamp or a sleeve only if the entire area of localized graphitization will be covered by the clamp or sleeve, which must extend into an area of sound, non-graphitized pipe. Where repair of graphitized pipe is not feasible the section of pipe must be replaced.

Where records indicate that failures due to graphitization have occurred or are occurring in a concentrated geographical area, replacement or insertion with polyethylene pipe, where feasible, must be considered.

## 1.48 CAST IRON PIPELINE POLICY (continued)

4. Any activity, such as construction, demolition, heavy equipment operation, blasting, and particularly any subsurface activity, such as major street reconstruction or storm drain, sewer, or water main replacement, where any segment of cast iron pipe is exposed, undermined, or in any way disturbed, shall be evaluated to determine what effect such activity will have on the integrity of such cast iron pipe. **Also to include a pre and post leak survey prior to blasting or excavation as described above.**

Any cast iron pipe exposed and undermined by an excavation thirty-six inches or greater in width, not conducted by New Hampshire Gas personnel or under their supervision, or not back-filled and compacted to the requirements of New Hampshire Gas, shall be replaced. The length of pipe to be replaced shall be equal to the length of pipe exposed plus any pipe which lies within a forty-five degree angle of repose as measured from the bottom of the excavation. If an excavation is made parallel to a cast iron pipe and said excavation is not adequately shored to protect the gas main and surrounding earth from movement, the cast iron pipe shall be replaced if more than half the pipe diameter lies within the angle of repose for the soil conditions encountered, as measured from the bottom of the excavation at the side nearest the main.

5. Realignment of cast iron pipe should not be attempted unless the entire length of pipe is exposed and not anchored at either end. Due to the mechanical properties of cast iron pipe, uneven stresses caused by an attempt at realignment may result in failure by a circumferential break. Any repairs to pipe which result in or are caused by misalignment should be effected with the pipe remaining in its misaligned position, utilizing band-clamps or split-sleeves designed to accommodate said misalignment. If it is not possible to repair misaligned cast iron pipe without forcing it into alignment, the pipe shall be replaced.
6. Due to the concern regarding failures of small diameter cast iron pipe, the replacement of three inch cast iron pipe in New Hampshire Gas Corporation's distribution system shall be of the highest consideration. Whenever three inch cast iron gas main is exposed, or proposed to be exposed, disturbed, or in any way accessible for any reason whatever, such as road construction, paving, sewer, water, drain, or sidewalk construction, every effort shall be made to cooperate with the agency performing the excavation in order to facilitate the replacement of said pipe.

### C. Distribution lines other than cast iron

Replace all sections of distribution line where corrosion is general along the line and the remaining wall thickness is less than required for the maximum allowable wall thickness, or less than 30 percent of the nominal wall thickness (**DOT 192.487 a**).

Replace or repair each segment of distribution line where localized corrosion pitting is to a degree where leakage might result (**DOT 192.487 b**).

### D. Distribution lines cast iron

Replace each segment of cast iron on which graphitization is found generally along the line to a degree where a fracture or any leakage might result (**DOT 192.489 a**).

Replace or repair any section of cast iron where localized graphitization is found to a degree where leakage might result (**DOT 192.489 b**).

#### **1.49 CORROSION RECORDS**

Record and maintain for the life of the pipeline the following records associated with corrosion control (**DOT 192 491**).

1. Maps or cards showing location of cathodically protected piping and facilities.
2. Records of each test, survey, or inspection of facilities associated with corrosion control.

## 1.50 DAMAGE PREVENTION PROGRAM

Each operator of a buried pipeline shall have a written program to prevent damage to prevent damage to that pipeline by excavation activities. Excavation activities are defined as: excavating, blasting, boring, tunneling, backfilling, and the removal of aboveground structures by either mechanical means and other earth moving operations (DOT 192.614) (PUC 506.04)(PUC 800s).

The procedures of this section will be followed in order to comply with the proceeding information:

1. Retain membership in a one call system which will provide the following services:
  - a. Keep files of the identity of persons who normally engage in excavation activities in the area of which the pipeline is located.
  - b. Provide for the notification of the public in the vicinity of the pipeline, and actual notification of the persons identified in part (a) proceeding, of the programs existence, purpose, and how to learn the location of underground pipelines before excavation activities are begun.
  - c. Provide a means of receiving and recording notification of planned excavation activities by means of a single toll-free telephone number available on a state-wide basis which is prominently displayed in each telephone directory.
  - d. Provide a central location to receive, transmit, and record messages, and to acknowledge calls within 20 seconds.
  - e. The center will be manned at a minimum, 10 hours each day 5 days each week, excluding weekends and legal holidays provided that emergency service is available 24 hours a day seven days a week.
  - f. The system will be capable during manned hours of transmitting messages within 2 minutes of an incoming call.
  - g. Institute procedures to receive and resolve complaints of excavators, utilities, and the general public.
2. Notify persons who give notice of the intent of excavate of whether there are buried pipelines in the area of excavation and, if so, the type of temporary markings provided and how to identify the markings. **Positive response statement and Emergency Notifications**
3. Provide for temporary markings in the area of excavation activity before, as far as practical, the activity begins in one of the following ways:
  - a. For major projects where site plans are used, marking to scale the location of any buried facilities;
  - b. For small projects where pavement exists, marking line locations with paint, with arrows indicating direction of travel and the letter G or the word GAS;
  - c. Where paint is impractical, the placement of stakes or yellow flags over the line denoted in same manner as GAS lines.
  - d. **Marking newly installed facilities**
4. Inspect areas where suspicion of damage to facilities has occurred as a result of excavation activities at frequently as necessary during and after the activities to insure the integrity of the pipeline (See Section 1.14).

5. Report of the State of New Hampshire Public Utilities Commission on a monthly basis any damages resulting from third party or contractor activities (See Section 1.70 and Form E-26 Appendix B).
6. Supply literature about the program to any party requesting the same.
7. Investigate all complaints by excavators or the general public.
8. Before excavating for its own purposes, proceed as follows:
  - a. Call the "Dig Safe" toll free number and provide the following information and record the ticket number provided on the "Dig Safe" form (See Section 1.70 and Appendix B).
    1. Name of company;
    2. State, city and location of excavation;
    3. Intersecting streets near location if applicable;
    4. Name of caller;
    5. Type and extent of work;
    6. Start date and time;
    7. Company phone number and time office closes;
    8. If excavation is an emergency, specify that it is an emergency.
  - b. Notify the Keene Department of Public Works of intention to excavate and provide the "Dig Safe" ticket number and the information listed in Part 8 (a) of this section. Fill out any forms requested also.

## **1.60 UPRATING**

Each operator shall include in its operating and maintenance plan a program if conversion of a low pressure distribution system to a higher pressure is contemplated (DOT 192.605d).

New Hampshire Gas Corporation's high line (previously 2PSI) has been Uprated to a Maximum Allowable Operating Pressure (MAOP) of Five Pounds per Square Inch (5PSI). The Uprate was completed on. The Uprate Plan is on file in the office at 32 Central Square.

In the event that conditions change to the extent that conversion is considered, a conversion plan will be written according to the requirements of DOT Subpart K-Uprating Sections 192.551-192.557.

## 1.61 STORAGE AND SHELF LIFE OF PIPE

All Pipe, regardless of its location, will be stored per the procedures as outlined in NHG Construction Standards manual sections 35.02 and 35.03.

### A. Polyethylene Pipe and Fittings

As required by CFR, Part 192, **NO** polyethylene pipe, fittings or parts shall be installed beyond two (2) years from the date of manufacture imprinted on the material. However, if the material is stored indoors within thirty (30) days of receipt, all materials will have a shelf life in accordance with the manufacture's recommendations.

It is NHGC policy to store all polyethylene pipe and tubing of two inch diameter (2") and smaller, and all fittings or parts indoors. Upon the annual physical inventory, any material exceeding the manufactures recommended life would be removed from inventory and properly discarded or labeled "**Not Suitable for Gas Distribution Use**".

Some larger diameter pipe, such as, four inch (4"), six inch (6") and eight inch (8") may be stored indoors and will be clearly labeled with an expiration date, so that it can be distinguished from pipe with a two (2) year life. If it exceeds its usable life, it will be discarded or labeled "**Not Suitable for Gas Distribution Use**".

### B. Steel Pipe, Coated and Uncoated

At this time, there is no time limitations on steel pipe stored indoors or outdoors, but the proper storage requirements outlined in NHGC Construction Standards, 35.02, must be followed.

## 1.62 JOINING OF PIPE

### A. Mechanical Methods

Only devices that meet the specifications of CFR, Part 192 shall be used for the joining or repair of gas pipeline.

These mechanical joining/repair fittings shall be installed in accordance with the manufacturers' instructions only by personnel who have demonstrated the ability to comprehend and comply with the manufacturers' installation instructions.

Complete installation instructions are packaged with most commonly used fittings. Installation instruction manuals for those devices not supplied with individual instructions are kept at the New Hampshire Gas Corporation service/street department shop location.

### B. Joining of Plastic Pipe by Heat Fusion

New Hampshire Gas Corporation may use Polyethylene High Density & Medium Density pipe and tubing in its distribution system.

No person shall make a fusion joint in distribution piping unless that person has been qualified under a procedure, which includes: appropriate training in that procedure; the making of a

specimen joint according to that procedure which is visually examined and found to have the same appearance

## **1.62 JOINING OF PIPE**

as a joint or photographs of a joint that is acceptable under that procedure, or examined by ultrasonic inspection and found not to contain flaws that would cause failure, or cut into at least three straps, each of which is visually examined and found not to contain voids or discontinuities, and deformed by bending, and if failure occurs, it must not initiate in the joint area.

A person must be requalified if during any twelve month period, that person does not make any joints under that procedure, or has three joints or three percent of the joints made that are found unacceptable by testing.

New Hampshire Gas Corporation uses the general procedures provided by the Northeast Gas Association, Plastic Pipe Joining Qualification Program 2008, or newer, if available to qualify company personnel in all methods of joining polyethylene pipe and fittings.

## **1.63 JOINING OF STEEL PIPE BY WELDING**

Any person performing any welding on steel pipe shall be qualified to the applicable weld procedure contained in Appendix E. All test results for the qualification of the weld procedure and welders shall be maintained on file and kept current by New Hampshire Gas Corporation.

Each welder shall be qualified to API 1104 or ASME and requalify thereafter each calendar year or within the last 15 calendar months.

Within the preceding 6 months of performing the weld, the welder shall have performed a weld utilizing the welding process to be employed and shall have had one weld tested and found acceptable under Section 3.6 of API Standard 1104.

The surfaces of the pipe shall be prepared as required for the type of weld to be performed and must be clean and free of any material detrimental to the weld. The pipe sections shall be properly aligned prior to initiation of the weld and maintained until the weld is completed.

Each weld shall be visually inspected by qualified personnel to assure the weld has been performed to the specified welding procedure and to API 1104.

## **1.70 RECORDS AND REPORTING PROCEDURES**

The objective of this section is to outline record keeping and reporting procedures pertinent to operating and maintaining a gas distribution system. A sample of each form referred to in this section can be found in Appendix B - Forms.

### **1.71 RECORDS OF PIPELINE FACILITIES**

The following records of pipeline facilities will be kept on file and in a readily accessible location: Including abandoned facilities after February 1, 2005.

1. System Maps: Showing size, type, and location of all mains and valves (PUC 507.03 (a)(b)(c)).
2. Service Record Card: Containing all known pertinent information about the service.
3. Test Station Record Card: Containing location and information concerning corrosion control test stations.
4. Main Valve Card: Containing location and other pertinent information on all main valves.
5. Meter History Card: Containing the identification number, date of purchase, name of manufacturer, serial number, type, rating, name and address of each customer on whose premises the meter has been in service, with the date of installation and removal, and dates tested (PUC 507.04 (a)).

### **1.72 DISTRIBUTION FACILITIES INSPECTION RECORDS**

The information contained in this section outlines the record keeping procedures associated with tests and inspections of distribution facilities.

1. Leak Investigation Form NHG-1: To be completed when any leak investigation of distribution facilities is made.
2. Refusal of Entry Form NHG-2: To be completed when any customer or person at any time refuses entry on or into the premises for the completion of duties.
3. Piping Inspection Form NHG-3: To be completed at intervals not exceeding three months on all bridge crossings and aboveground pipelines where anticipated physical movement could occur.
4. Main and Service Line Inspection Form NHG-4: To be completed whenever a distribution pipe is exposed for any reason.
5. Pressure Recording Chart Inspection Form NHG-5: To be completed at 12 month intervals on all pressure recording devices.
6. Odorization Test Form NHG-6: To be completed when "sniff tests" are conducted at pressure recording devices.
7. Key Valve Inspection Form NHG-7: To be completed at intervals not exceeding 15 months but at least once each calendar year for all key valves.
8. Regulator Inspection Form NHG-8: To be completed at intervals not exceeding 15 months but at least once each calendar year at all regulator stations.
9. Pressure Relief Valve Inspection Form NHG-9: To be completed at intervals not exceeding 15 months but at least once each calendar year.
10. Pipe-to-Soil (P/S) Potential Form G-10: To be completed whenever a pipe-to-soil test is taken on a protected pipeline facility.
11. Leak Survey Form NHG-11: To be filled out whenever leak surveys or leak follow ups are completed.

## **1.72 DISTRIBUTION FACILITIES INSPECTION RECORDS (continued)**

12. Atmospheric Corrosion Inspection Form NHG-12: To be completed whenever pipeline facilities are inspected for atmospheric corrosion.
13. Pipeline Pressure Test Form NHG-13: To be completed whenever a pipeline is pressure tested for integrity or for placement into service.
14. Underground Leak Repair Form NHG-14: To be completed anytime an underground leak is repaired.
15. Incident Notification Report Form NHG-15: To be completed per Section 1.81(1) Incident Investigation.

## 1.73 REPORTS TO PUBLIC UTILITIES COMMISSION

The information in this section relates to the necessary reporting requirements mandated by the State of New Hampshire Public Utilities Commission. The reports should be sent to:

State of New Hampshire Public Utilities Commission  
Attn: Mr. Randy Knepper  
21 S. Fruit Street, Suite 10  
Concord, NH 03301-2429

The following reports will be filed monthly to the Commission:

1. PUC 509.13 Form E-24 Report of Gas Meter Complaint Test.  
The report shall include:
  - a. Customer's name and address;
  - b. Meter Mfr.; Mfr.'s number; company number, type, size;
  - c. Percent registration - fast, slow;
  - d. Period, refund, and collect.
  
2. PUC 509.12 Form E-23 Report of Interruption of Service.  
The report shall include:
  - a. Date, time from-to-elapsed;
  - b. Location;
  - c. Number of customers;
  - d. Cause of interruption.
  
3. PUC 509.10 Form E-8 Report of Pressure Complaints.  
The report shall include:
  - a. Name of complainant and location;
  - b. Date of test;
  - c. Average pressure;
  - d. Pressure recorded (in. w.c.) showing minimum;
  - e. Time of day, maximum, time of day;
  - f. Total minutes, below allowable minimum and above allowable maximum.
  
4. PUC 509.08 Form E-6 Heating Value and Purity Report.  
The report shall include:
  - a. Monthly average of BTU and daily breakdown;
  - b. Information on hydrogen sulphide and sulphur;
  
5. PUC 509.15 Status of Leak Report.  
The report should include:
  - a. Status of leaks at beginning of month;
  - b. Number of leaks discovered during month;
  - c. Number of leaks repaired during month;
  - d. Number of leaks remaining at end of month.

### **1.73 REPORTS TO PUBLIC UTILITIES COMMISSION (continued)**

6. PUC 807.01 Form E-26 Third Party Damage Report.  
The report should include all pertinent information concerning damage to pipeline facilities by third parties.

The following reports shall be filed annually:

1. PUC 509.09 Form E-7 Annual Report of Gas Meter Tests.  
The report shall include:
  - a. Name of company and year;
  - b. Number of meters test--showing 10 year test period (250 cu. ft. or less); 4 year test period (over 250 cu. ft.) each showing low flow test; maximum flow test differential within one percent or exceeding one percent --- with the percent accuracy;
  - c. Total meters in service at end of year and total meters tested during year.
2. PUC 509.16 Annual Peak Shaving Fuel Storage Capability.  
The report will filed by October 1 and will include:
  - a. Projected design-week send-outs;
  - b. Production capabilities;
  - c. Storage requirements of utility gas.

### **1.74 REPORTS TO DEPARTMENT OF TRANSPORTATION**

The following report shall be filed no later than March 15 and addressed as follows:

Information Resources Manager  
Office of Pipeline Safety, DPS-3.3  
Research and Special Programs Administration  
400 7th Street, S.W.  
Washington, D.C. 20590

Form F 7100.1-1 Annual Report for Gas Distribution System  
(see Appendix B for instructions and copy)

## 1.75 WORK AND METER ORDERS

The information in this section outlines record keeping procedures used in the normal day to day activities associated with customer service and distribution ( maintenance and new construction ). The following forms should be filled out upon completion of task:

1. Work Order Form:

This form is used when a repair to customers' equipment is done or on a repair to interior piping. They should include the following:

- a. Name, location, and date of work
- b. Nature of request
- c. Defects found
- d. Service performed
- e. Materials used
- g. Personal and man-hours

2. Street Work Order Form:

This form is primarily used on installation of equipment and piping or the repair of Distribution System. They should include the following:

- a. Name, location, and date of work
- b. Interruption of service and time
- c. Special instructions or notations
- d. Notation - repair, retire, new
- e. Notation – main, service, meter set
- f. Materials used
- g. Personnel and man-hours

3. Meter Order Forms:

Meter order forms are used for all work involving customer service meters. They should include:

- a. Name, location, and date of order
- b. Folio number
- c. Type of work performed
- d. Company number, mfg. number, and size of meter
- e. Meter location
- f. List equipment used
- g. Check List TC / Clocked Meter / Soap Test / Tamper Seals
- h. Personnel and man-hour

## 1.80 REPORTING SAFETY-RELATED CONDITIONS

New requirements: DOT 191.23 established by Amendment 191-6, 53 CFR 24949

July 1, 1988 requires all operators to file a Safety-Related Condition Report with the Office of Pipeline Safety and NH Public Utilities Commission:

Information Resources Manager  
Office of Pipeline Safety  
Research and Special Programs Administration  
U.S. Dept. of Transportation  
Room 8417, 400 Seventh St. SW  
Washington, DC 20590

**and**

Mr. Randy Knepper  
Gas Safety Engineer  
Public Utilities Commission  
21 S. Fruit Street, Suite 10  
Concord, NH 03301-2429

The report is required for certain conditions which exist or may affect pipelines or LNG facilities. The conditions listed herein are pertinent to the operations of New Hampshire Gas Corporation.

1. Paragraph (a)2: A report is required when the serviceability or structural integrity of pipeline is in question as a result of unintended movement or abnormal loading by environmental causes. Examples are not limited to but include earthquakes, landslides, and floods (see exclusion).
2. Paragraph (a)5: A report is required when a malfunction or operating error causes the pressure of a pipeline to rise above the maximum allowable operating pressure plus the build-up allowed for operation of pressure limiting or control devices (see exclusion).
3. Paragraph (a)6: A report is required for a leak on a pipeline that constitutes an emergency. An emergency is defined as a pipeline failure that requires extraordinary procedures, equipment, and supplies to be employed urgently to protect the public from existing or potential hazards (see exclusion).
4. Paragraph (a)8: A report is required for a safety-related condition that could lead to an imminent hazard and causes (either directly or indirectly by remedial action of the operator) a 20 percent or more reduction in operating pressure or shutdown of a pipeline (see exclusion).

**EXCLUSION:** A report is not required on the above-listed conditions if the situation is corrected by repair or replacement in accordance with applicable safety standards, or is an incident or results in one, before the deadline for filing the safety related condition report.

Filing Requirements 191.25: The report must be filed (received by the Secretary) in writing within 5 working days (not including Saturday, Sunday, or Federal Holidays) after the day a representative of the operator first determines that the condition exists but not later than 10 working days after the day a representative discovers the condition.

## 1.81 INCIDENT INVESTIGATION

All incidents shall initially be investigated by a New Hampshire Gas Corporation employee. The object of this investigation is to determine the cause of the incident, actions taken by company personnel, and what procedures, if any, should be modified to prevent or react differently to any reoccurrence. Listed in this section are guidelines to follow in the investigation.

1. Assemble all records related to the date, times, and actions of all company personnel, civil authorities, and the public involved in the incident. See Form NHG-15.
2. Photograph, where possible, damage to all company facilities and property damage and label as to date, time and location.
3. Make a list of all damaged company facilities and property damage and give a copy to the Administrative Coordinator.
4. Inspect for any evidence which might indicate that company or private property was tampered with and note same.
5. The person/persons making investigation should make themselves known to authorities at the scene and explain the nature of their investigation as being a requirement of State and Federal Law.
6. In the event the Department of Transportation or the Public Utilities Commission has been notified of an accident or failure, no pipe, fittings, facilities or equipment owned by the company which may have been involved in an accident or failure shall be removed without the written authorization of a member of the Engineering Staff of the NHPUC. Any request for permission to remove the pipe, fittings, facilities or equipment should indicate the purpose of the removal. If any pipe, fittings, facilities, or equipment is removed out of necessity to correct the emergency condition, it will be labeled, identified, and stored in a location until all parties concerned are finished with examination.
7. All information obtained as a result of this investigation shall be communicated only to the Director of Emergency Operations and released to other parties only by his/her consent or court order.
8. Whenever broken or damaged pipes, fittings, meters, or other materials are removed and held for evidence in possible future investigation in which the company may be involved, it is important that all fractured metal surfaces be preserved in their original condition at the time of the incident. Tampering with the fractured area shall not be permitted. If the specimens are needed to determine the basic metallurgical structure of the material, they may be removed from the area adjacent to but not including the fractured surface. All the material thus described are to be stored in containers plainly labeled and placed in the storeroom for safekeeping.

## 1.82 EPA Guidelines (MEGA RULE – PCB's)

### When abandoning pipe greater than 4" dia.

1. Drain all free flowing liquids from pip within 72 hours of last transmission. Prior to abandoning, test all drips and low points for liquids. Collect and test liquids. Send to Carrie Berard immediately.
2. Determine the length of pipe that is going to be abandoned. After final transmission or if no liquids are found then wipe sample pipe. The minimum number of wipes is at all ends of the pipe sections. Cap and seal all ends (foam sealant can be used).
3. Document abandoned pipe on mapping records. When sample results come in add information to maps.
4. If PCB concentrations are 500 PPM or above ( $>100 \text{ ug}/100\text{cm}^2$ ) then the line must be cleaned or grouted  $\frac{1}{2}$  full.

### When removing pipe greater than 4" dia.

1. Drain all free flowing liquids from pip within 72 hours of last transmission. Prior to abandoning, test all drips and low points for liquids. Collect and test liquids. Send to Carrie Berard immediately.
2. Do not remove any segment of pipe longer than 40 feet length (Coal tar pipe must be cut in 20ft lengths). Determine the length of pipe that is going to be removed.
  - (a) When removing length of pipe that have multiple segment less than 3 miles take a total of 7 samples.  
Sample the first and last segments of pipe.  
Assign unique sequential numbers to each segment of pipe. Divide the total number of segments by six. Rounding off the quotient. This number is the interval between the segments you must sample.  
Example: 1000 ft of pipe  
 $1000 \text{ ft} / 40 \text{ ft (longest length of pipe)} = 25 \text{ segments}$   
 $25 \text{ segments} / 6 = 4.166 = 4 \text{ (every 4 segments)}$   
segment #1 + 4 more segments = sample segment #5  
segment #5 + 4 more segments = sample segment #9 etc.  
The segment that would be sampled are 1, 5, 9, 13, 17, 21, 25 respectively
  - (b) When removing length of pipe having segments more than 3 miles then take a sample every  $\frac{1}{2}$  mile taking seven samples.
3. Prior to removing pipe from the ground or lifting the pipe from its location, mark the top side of the pipe, the segment number and ends.
4. Removal location with drawings containing street names and/or landmarks. Seal ends with caps, ploy, and duck tape.
5. Stack pipe at service center for disposal. Keep pipe off the ground and place labeled side upright.

## **1.82 EPA Guidelines (MEGA RULE – PCB's) (continued)**

### Abandonment of pipe 4" dia. or Less

Drain all free flowing liquids from pip within 72 hours of last transmission. Prior to abandoning, test all drips and low points for liquids. Collect and test liquids. Send to Carrie Berard immediately.

Cap and seal all ends (foam sealant can be used).

Place on one call system.

### Removal of pipe 4" dia. or Less

Drain all free flowing liquids from pip within 72 hours of last transmission. Prior to abandoning, test all drips and low points for liquids. Collect and test liquids. Send to Carrie Berard immediately.

Treated as PCB contaminated material 50 – 499 PPM. Stockpile for disposal. If there is liquid to determined actual PCB concentration then the liquid will classify the pipe for proper disposal.

### Wipe Sampling Instructions

Determine the location of the wipe sample.

Label jars.

Label on the top of the pipe where you sampled (spray paint).

Use nitrile gloves to protect your hands from the hexane chemical.

Place clean steel template inside the pipe. The wipe sample must be taken on the bottom of the gas pipe. On heat cut pipe, place the template inside the pipe approximately 1" from the cut edge.

Take the hexane soaked wipe out of the sample jar.

Firmly hold the template down with one hand. With the other hand begin wiping inside the template. Hold the wipe as flat as possible. Begin moving the wipe back and forth to cover the entire open area of the template.

Place the wipe inside the jar and close lid tightly.

Clean off sampling template before next sample.

Fill out hydrocarbon sheet. Include number of samples and documented locations of where the samples were taken.

Mail samples immediately to Carrie Berard.

Note:  $<10 \text{ ug}/100 \text{ cm}^2 = <50 \text{ ppm}$ .  $<100 \text{ ug}/100 \text{ cm}^2 = <500 \text{ ppm}$ .

NEW HAMPSHIRE GAS CORPORATION  
OPERATIONS & MAINTENANCE MANUAL

APPENDIX A

Instructions for use of a Combustable Gas Indicator

# **SENSIT®GOLD CGI**

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## **INSTRUCTION MANUAL**

For use with Combustible Gases  
and optionally available  
Oxygen and Toxic Gases

*219-759-1142  
Ext 282*



Read and understand  
instructions before use.

For more information contact:  
**J And N Enterprises, Inc.**  
**P.O. Box 183**  
**Wheeler, IN 46393**  
**Phone: (219) 759-1142**  
**Fax: (219) 759-1835**  
**Order Line: (800) 820-6199**  
**[www.jandnent.com](http://www.jandnent.com)**



## GENERAL DESCRIPTION

The **Sensit®Gold CGI** is designed to detect combustible gases, oxygen content and toxic gases when so equipped with the available sensors. Each model of the **Sensit®Gold CGI** provides specific detection features based on available sensor options. Each **Sensit®Gold CGI** can be re-configured or upgraded by the manufacturer for an additional charge should your sensing requirements change. Consult J And N Enterprises, Inc. for a listing of new sensors available for use with the **Sensit®Gold CGI**.

### SENSING FEATURES

<b>SENSIT® GOLD CGI INSTRUMENTS</b>	<b>LEL ALARMS</b>	<b>LEL/%GAS DISPLAY</b>	<b>LEAK DETECTION</b>	<b>CARBON MONOXIDE</b>	<b>OXYGEN</b>	<b>HYDROGEN SULFIDE</b>
MODEL CGI EX	●	●	●			
MODEL CGI EX-CO	●	●	●	●		
MODEL CGI EX <i>Plus</i>	●	●	●		●	
MODEL CGI EX/CO/TOX	●	●	●	●		●
MODEL CGI EX-CO <i>Plus</i>	●	●	●	●	●	
MODEL CGI EX-TOX	●	●	●			●
MODEL CGI EX-TOX <i>Plus</i>	●	●	●		●	●
MODEL CGI 4 GAS	●	●	●	●	●	●

All **Sensit®Gold CGI** instruments incorporate an advanced low power semiconductor sensor to measure combustible gases in LEL (Lower Explosive Limit) range and an advanced thermoconductivity based sensor to measure combustible gases in the percent volume range. The user may select either methane or propane gas readings from a user menu depending on the sensing requirements. An automatically backlit display shows all gas concentrations being measured. LEDs located on the front of the instrument indicate preset visual warnings of increased gas concentration.

All gases are continuously sampled with the use of an internal pump.

(Continued on page 3)

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## **GENERAL DESCRIPTION** *continued from page 2*

Audible and visual alarms warn the operator of hazardous conditions being sensed. The preset alarms are indicated by a red flashing LED, display indicator and alarm sound. The combustible gas alarm is preset from 50% LEL (2.5% methane or 1.1% propane) to 17% methane (12% propane). The carbon monoxide (CO) alarm is preset at 35ppm. The oxygen (O<sub>2</sub>) alarms are preset at below 19.5% and above 23.5%. The hydrogen sulfide (H<sub>2</sub>S) alarm is preset at 10ppm.

The **Sensit®Gold CGI** instruments are designed to meet US, Canadian and European intrinsic safety requirements for Class 1, Division 1, Groups C and D hazardous environments.

## **SPECIFICATIONS**

### **SENSOR SPECIFICATIONS**

<b>TYPE</b>	<b>RESOLUTION</b>	<b>RANGE</b>	<b>ACCURACY</b>
Leak	N/A	0-50,000ppm	N/A
LEL	0.1%*	0-50%	±10%
%GAS	0.1%*	2.5-100%	±5%
O <sub>2</sub>	0.1%	0-25%	±0.2% or 2%**
CO	1ppm	0-2000ppm	±5ppm or 5%**
H <sub>2</sub> S	1ppm	0-100ppm	±2ppm or 5%**

\* % gas only display has 0.01% resolution in LEL range

\*\* Whichever is greater

### **PRODUCT SPECIFICATIONS**

Size: 11.5" x 3" x 2.32" (292 x 76 x 69 mm)

Weight: 1.2 lbs.

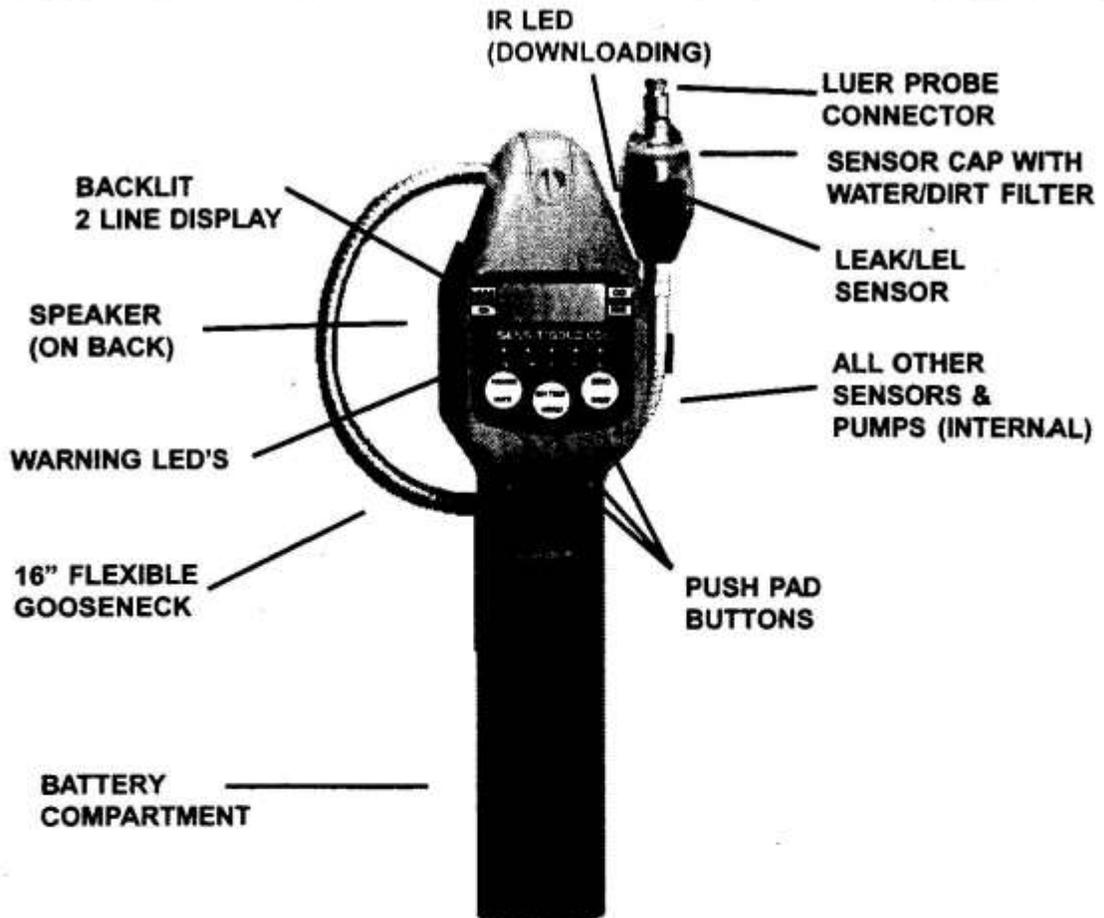
Operational Temp: 0 to 120° F

Storage Temp: -20° to 132° F

Battery Life: Alkaline: approximately 16 hrs. continuous

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## PRODUCT FEATURES



**Sensit®Gold CGI** instruments are constructed of durable Cyclopol plastic to withstand the rigors of field use.

Incorporated in the hand grip area is the **battery compartment**. All **Sensit®Gold** Series instruments require 3 "C" type alkaline or rechargeable batteries. *Duracell MN 1400* batteries provide approximately 16 hours of continuous use. A **tick adjust knob**, when so equipped, is located on the right side of the instrument to activate the audible tick sound that helps in locating the source of a gas leak. This tick is generated by using specialized circuitry in combination with the LEL sensor located at the end of the gooseneck assembly.

(Continued on page 5)

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## **PRODUCT FEATURES** *continued from page 4*

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The tick can be easily heard with the speaker located in the back of the instrument.

An **infrared LED** is located on the right side to allow the **Sensit®Gold CGI** instruments to download calibration data and readings the operator has elected to save to the instrument's on-board memory.

A **flexible gooseneck** is used to assist in locating the source of gas leaks and remote sampling. A water/dirt trap is located at the end with a convenient luer style connector to attach sampling and probe accessories.

A **two line display** continuously updates the operator of all available gas concentrations and alarms simultaneously as well as indicates internal functions such as air flow and battery power. Below the display is a series of LEDs that are preset to indicate combustible gas concentrations. The red LED on the right side will flash during any alarm condition.

There are **3 operational button pads** on the front of all **Sensit®Gold CGI** instruments.

- **LEFT BUTTON:** Operates **power** and **mute** features.
- **CENTER BUTTON:** Operates a Bar Hole (BH) Test mode to assist in pinpointing underground leakage and operates a **user menu** to calibrate, download and set the clock.
- **RIGHT BUTTON:** Activates the **save** feature and performs a manual **zeroing** of the sensors.

Pressing any button will produce a click sound.

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## **SENSOR TYPES AND PUMPS**

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### **Combustible Gas Sensor**

All **Sensit®Gold CGI** instruments incorporate a highly sensitive semiconductor type sensor. The function and accuracy of the sensor are monitored and controlled by specialized circuitry and a microprocessor. This sensor is capable of measuring concentrations as low as 10ppm of methane (natural) gas up to 100% LEL. Concentrations above 50% LEL, 1.1% propane or 2.5% methane by volume are measured with a state-of-the-art thermoconductivity sensor (TC). This sensor is capable of measuring high concentrations of gas quickly and accurately. All readings are automatically switched between the scales of LEL and % volume.

### **Electrochemical Sensors (optional)**

All **Sensit®Gold CGI** instruments when equipped with the following optional sensors, microprocessor and associated circuitry will measure oxygen levels from 0-25%; measure carbon monoxide (CO) levels from 0-2000ppm; measure hydrogen sulfide (H<sub>2</sub>S) levels from 0-100ppm. All gases are displayed simultaneously on the display.

### **The Pump**

The **Sensit®Gold CGI** instruments are equipped with a powerful and efficient rotary vane pump. A water/dirt filter at the end of the gooseneck protects the pump from foreign material. An additional internal filter protects the pump from damaging debris if the primary filter is missing or damaged. There are audible and visual indicators that will show a blocked or improperly operating pump.

## **BATTERY INSTALLATION/REPLACEMENT**

Battery replacement is necessary when the display reads **BAT LOW**, an audible alarm sounds and the green ready LED flashes. When **BAT LOW** is displayed, the instrument has approximately 30 minutes of useful operation time prior to shut off.

**CAUTION: Always change batteries in an environment free of combustible gases.**

Remove the battery sleeve cover by depressing the locking tab on the front of the handle (yellow) with a coin or flat object and pulling the handle away from the top or display area of the instrument.

Place 3 approved batteries into the battery holder. For best results hold the battery compartment so that it lays in your right hand. With your left hand install the battery that goes toward the front first. The battery that is in contact with the rear spring second and finally insert the third battery in the center by forcing the second battery such that the spring compresses and allows the batteries to go into place. If you do not use your right hand to hold the bottom of the battery compartment the batteries can come out.

Observe the polarity markings on the inside of the battery holder. Improper installation will cause the instrument not to operate. Replace the battery sleeve and allow the locking tab to snap into position.

Check to be sure the handle is secure to the instrument body by gently pulling the handle away. The handle will remain firmly in place if a proper connection is made.

## **OPERATION AND USE**

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1. Push the POWER button to initiate operation. A beep will be heard during any button activation.

**CAUTION:** Always start any **Sensit®Gold CGI** in a gas free environment to insure a proper zero.

2. If the display fails to illuminate or "BAT LOW" is shown on the display, replace the batteries. There is room in the carrying case to keep an extra set of alkaline batteries.

3. Upon successful start-up, the pump will start and the display will illuminate. The instrument will then display:

- a. Product name and number version
- b. System check for proper battery and pump operation
- c. Date and Time
- d. Serial Number
- e. Display "CAL PAST DUE" and the sensor type when calibration is overdue. The warm-up process will resume after the alert.
- f. Warm-up countdown for 10 seconds
- g. Display "AUTOZERO" indicating the zeroing of all sensors
- h. Any sensor that is completely inoperable during start up will be indicated by "FAIL" on the display in the location where readings would normally be located. The GREEN READY LIGHT will not illuminate indicating the instrument requires service.  
The warm-up process is not halted by such an event.
- i. Display all available readings while displaying an "X" for sensors not installed.

*(Continued on page 9)*

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## **OPERATION AND USE** *continued from page 8*

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4. The display will indicate LEL readings (when so equipped) by displaying an "L" next to the percent symbol. All LEL readings have a resolution of 0.1% LEL or 50ppm methane. When the gas concentration exceeds the LEL range the display will no longer show the "L" indicating LEL readings. The display will display a percent symbol (%) and indicate the type of gas the instrument is calibrated to by displaying an "N" for natural gas or "P" for propane gas. If the instrument has been configured to read percent gas readings only, the percent symbol and the "N" or "P" will remain on the display at all times. The display resolution in the range of 0-2.5% gas will be 0.01%. All readings greater than 2.5% gas will have a resolution of 0.1%.

5. It may be necessary to manually ZERO the instrument based on company practices and environmental conditions. If LEL levels are preset, zeroing will not be possible.

6. Prior to use, test the integrity of the sensor cap and tubing. Use your finger to block the inlet of the sensor cap for 4-5 seconds. The display will read FLOW BLOCKED if all seals are intact. If this does not occur change the sensor cap and "O" rings. A spare sensor cap and "O" rings are shipped with each product. During pump flow block, a beep will occur every 2 seconds until the pump restarts and adequate flow is present.

7. When testing areas with elevated temperatures such as appliance vents or flues always attach the optional hot air probe assembly. Attach the probe by twisting the connector of the probe onto the matching adapter at the end of the sensor cap.

*(continued on page 10)*

## **OPERATION AND USE** *continued from page 9*

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These connections need only be finger tight. It is necessary to use a particle filter and desiccant when performing flue testing. The use of an unapproved probe assembly may void the warranty.

**CAUTION: Do not handle the steel portion of any hot air probe after use as burns may occur!**

**8.** When testing remote areas with dirt, water or debris it may be necessary to clean or replace the sensor cap from time to time. Additional filters may be added into any sampling assemblies or bar hole probes as long as they will allow a pump flow block to show on the display. If this does not occur there is leakage and improper readings may result.

**9.** When testing high areas or overhead lines the use of the optional extension adapter will allow a broom handle or painters stick to extend the instrument to the area where sensing must be accomplished. This slides onto the battery sleeve and is held in place by the locking nut assembly. If the display cannot be seen or the tick rate heard the use of the Bar Hole Test feature will show any peak readings.

**10.** When testing areas, the appropriate sensors will cause the display to update when a gas is encountered. Additionally, if a combustible gas is encountered a series of LEDs on the front of the instrument will illuminate when the preset concentrations are reached. If any alarm condition exists for any sensor, based on their preset alarm points, the red (HAZ 3) LED will flash and

*(continued on page 11)*

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## **OPERATION AND USE** *continued from page 10*

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the alarm will sound. Additionally, the reading for the gas exceeding the alarm set point will also flash.

The preset alarm points are:

a. Combustible gas -

Methane 50% LEL - 17% volume Methane

Propane 50% LEL - 12% volume Propane

i. Green LED/Ready = 0-4.9% LEL Methane\*\*

ii. Amber LED/Low = 5-9.9% LEL Methane\*\*

iii. Red LED/Haz1 = 10.0-24.9% LEL Methane\*\*

iv. Red LED/Haz2 = 25.0-49.9% LEL Methane\*\*

v. Red LED/Haz3 = 50.0% LEL - 17% volume Methane

b. Oxygen - below 19.5% and above 23.5%

c. Carbon Monoxide - 35ppm per utility industry standards

d. Hydrogen Sulfide - 10ppm and above per Federal OSHA guidelines

\*\* Not calibrated for Propane values. Consult manufacturer for equivalent values.

**Caution: These instruments have cross sensitivities to a variety of gases. J And N is continuing to create a cross sensitivity chart based on methane calibrations for the combustible sensor. Other sensors have limited cross sensitivity properties though they do exist. Be sure to contact J And N for the latest information.**

11. To disable the audible alarm press and release the left button (MUTE). To enable the alarm press it again. During an alarm the gas that has exceeded the preset alarm point will flash on the display and the HAZ3 LED will flash indicating a potentially unsafe condition. When combustible gas readings

## **OPERATION AND USE** *continue from page 11*

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exceed the alarm range, all LEDs (except green and red HAZ3) will turn off.

**12.** To assist in locating the source of small combustible gas leaks or surveying areas outdoors or indoors, rotate the thumbwheel located on the right side of the instrument until a steady ticking sound is heard. Note: There is no warm-up for this feature as it uses the LEL sensor that is already operating. Move the sensor head toward the area suspected of leakage. As the sensor head moves closer to a leak source the tick will increase. When the tick becomes a steady tone rotate the thumbwheel in a clockwise direction while keeping the sensor head in the same position. This will slow down the tick and allow the operator to find a higher concentration using the same procedure. If the tick goes away you have moved away from the leak or there is no more gas present. The leakage rate may be less than the rate the pump is drawing the sample. For best results always use the leak detector prior to using any liquid leak detection fluids as the sensor will detect their presence.

**13.** To assist in accurately pinpointing underground gas leaks see the BH TEST (Bar Hole Test) portion of this manual located in the menu operations section.

**14.** At any time the operator may save the readings on the display by pressing the SAVE button on the right. This will save all readings for download at a later time. The memory will hold a maximum of 16 events. It is factory set at 6.

*(continued on page 13)*

## **OPERATION AND USE** *continue from page 12*

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The most recent save is first during download.

**15.** If the instrument encounters a gas it is not calibrated to, it may read "NSR" followed by a number. If the instrument is calibrated for natural gas "NSR" likely indicates a heavy gas ( i.e.: heavier than air, such as gasoline, propane, carbon dioxide, etc.). If the instrument is calibrated for propane, "NSR" likely indicates gas lighter than air such as hydrogen, helium, methane or natural gas.

**16.** Following Federal, State, Municipal and/or Company procedures move to the areas where gas readings are suspected or must be tested. Use necessary accessories to draw samples from areas not accessible with the instrument itself, such as confined spaces or flue gases. During sampling the respective readings may change. Audible and visual alarms will activate when the preset limits are reached.

**17.** When being used in dark areas an automatic backlight will illuminate the display.

**18.** To turn instrument off, push and hold the power button for 5-6 seconds until "POWER DOWN" appears on the display. It is not necessary to clear the sensors of gas readings prior to shut off.

## **BAR HOLE TEST**

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To assist pinpointing the location of underground leaks the Bar Hole Test feature may be used. This feature will draw a timed sample (45 seconds) and display sustained and peak readings.

To perform the Bar Hole Test:

1. To access the Barhole feature from the working display press the BH TEST button. Pressing the button for more than 5 seconds will access the user menu. Only press the button for 1-2 seconds.
2. To go back to the working display at any time press the left button.
3. Prepare the tubing and probe assembly by attaching to the luer fitting at the end of the sensor cap. Test for an airtight seal by blocking the inlet and observing a pump flow block indication on the display.
  4. Press the center button. The pump will stop and the display will show "BAR HOLE TEST, START". Insert the probe assembly into the area to be tested.
  5. Press the center button again. The pump will start as indicated by "BH PUMP ON" followed by the timer showing the number of seconds remaining in the test.
  6. At the end of the test, the pump will turn off as indicated by "BH PUMP OFF". The sustained concentration is indicated by the "%ON" while the peak or accumulated concentration is indicated by "%PK". Both of these readings will remain on the screen until the ZERO button is held and the gas is cleared from the probe assembly. Both readings are presented as % gas by volume.

*(continued on page 15)*

## **BAR HOLE TEST** *continued from page 14*

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7. To test the next area press and hold the ZERO button until all readings are at 0%. With the ZERO button still held down, place the probe assembly (attached to the instrument) into the next hole to be tested. Release the ZERO button and the timer will restart.
8. Pressing the left button at any time will take you back to the working display.
9. A gas reading from a gas other than what the instrument is calibrated to will be indicated by an "NSR" reading. To locate a leak of this type go to the GAS TYPE selection in the menu and change to the other gas listed. Heavy hydrocarbons are best located using the "PROPANE" selection. Methane is best located using the "NATURAL" selection. A hydrocarbon filter may be necessary when both natural gas and a heavy hydrocarbon such as gasoline or propane are present.

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## **CALIBRATION CHECK**

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To verify the accuracy of any **Sensit®Gold CGI**, it must be exposed to a known concentration of test gas that will test any sensor combination included in your particular model. Any sensor that does not meet the specifications listed in this manual may require calibration or repair. A calibration check does not update the calibration due date. Full calibration is required to update these times.

A calibration past due message will illuminate during warm-up if calibration has not been performed per your company specific interval. Anytime it is suspected the **Sensit®Gold CGI** is not working properly, check calibration.

## **MENU**

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The **Sensit®Gold CGI** has several user adjustable features. These include setting the time and date, performing calibration, adjusting the automatic shut off time, selecting gas type, viewing the last calibration dates and printing the session, calibration logs and barhole test log.

To access the menu, press and hold the MENU button until the ticking sound stops and a beep is heard (5 seconds). PRINT MENU will be displayed on the screen. Using the right button it is possible to scroll through the menu options. Pressing the left button at this time will return the instrument to the working (gas reading) display. The center button accesses the menu option.

### **PRINT MENU**

From the working display access the menu by pressing and holding the menu button until the top line of the display reads USER MENU. The bottom line will read PRINT MENU. Press the center button to access the PRINT MENU options. Use the right button to select the CAL LOG, SESSION LOG or the last (6) BARHOLE TEST LOG. At this time prepare the printer or PC interface. Aim the IR LED on the right side of the instrument to the IR receptor on the printer or interface. Position the instrument 6-12" from the IR receptor and press the center button. Downloading will begin immediately. When the display no longer reads PRINTING use the right button at this time to scroll to another PRINT MENU function as indicated by the top line reading PRINT MENU. Pressing the left button will reenter the USER MENU. Use the right button at this time to scroll to another menu function as indicated by the top line reading USER MENU.

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## **MENU** *continued from page 16*

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Pressing the left button will return the instrument to the working (gas readings) display.

### **CALIBRATION**

This is the next menu selection. See the calibration section of the manual for complete instructions.

### **GAS TYPE**

From the working display access the menu by pressing and holding the menu button until the top line of the display reads USER MENU. Press and release the right button until the bottom line displays GAS TYPE. Press the center button. Use the right button to select natural gas (NAT) or the center button to select propane (PRO) as the calibrated gas readings. After selecting, press and release the left button to save the adjustment. Use the right button at this time to scroll to another menu function as indicated by the top line reading USER MENU. Pressing the left button will return the instrument to the working (gas readings) display.

### **POWER OFF**

From the working display access the menu by pressing and holding the menu button until the top line of the display reads USER MENU. Press and release the right button until the bottom line displays POWER OFF. Press the center button. Use the right button to increase the number of minutes of run time and the center button to reduce them. Setting the timer to 0 will cause the unit to always remain on. After adjusting the number press and release the left button to save the adjustment. Use the right button at this time to scroll to another menu function as indicated by the top line reading USER MENU. Pressing the

## **MENU** *continued from page 17*

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left button will return the instrument to the working (gas readings) display.

### **SET CLOCK**

From the working display access the menu by pressing and holding the menu button until the top line of the display reads USER MENU. Press and release the right button until the bottom line displays SET CLOCK. Press the center button. The day will flash upon entering the SET CLOCK option. The right button advances to the next item and the center button changes the flashing item. All settings are based on US time and date settings using a 24 hour clock. After adjusting all items press and release the left button to save the adjustment. Use the right button at this time to scroll to another menu function as indicated by the top line reading USER MENU. Pressing the left button will return the instrument to the working (gas readings) display.

### **SHOW CAL LOG**

From the working display access the menu by pressing and holding the menu button until the top line of the display reads USER MENU. Press and release the right button until the bottom line displays SHOW CAL LOG. Press the center button. At this time one of the gases and the last calibration date will be displayed. Use the right button to review all other calibration dates and their respective gases. After review of the last available gas the instrument will automatically return to the user menu as indicated by the top line reading USER MENU. Pressing the left button will return the instrument to the working (gas readings) display.

## **CALIBRATION**

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Calibration is the process of setting the readings of the instrument to equal the value of certified calibration gases. Prior to calibration allow the instrument to operate for 5 minutes in a room environment free of combustible, CO and H<sub>2</sub>S gases. Manually zero the instrument prior to beginning the calibration process.

**CAUTION:** Using calibration kits other than recommended by J And N may cause inaccurate readings. Repairs are required if any sensor fails to calibrate. Consult J And N for details.

**NOTE:** When calibrating, the numbers shown on the display represent the numbers seen by the microprocessor and should not be confused with actual gas readings.

### **STEP 1**

From the working display access the menu by pressing and holding the menu button until the top line of the display reads **USER MENU**. Press and release the right button until the bottom line displays **CALIBRATION**. Press the center button. The top line will now read **CALIBRATION**.

Use the right button to view the CO 100ppm, H<sub>2</sub>S 25 PPM, LEL 50%, METHANE 100%, PROPANE 100% and PROPANE 1.1% calibration options. If the instrument cannot calibrate properly to the calibration gas applied BAD CAL will appear after 2 minutes. Calibration readings update on the display every 5 seconds.

### **CARBON MONOXIDE (CO) CALIBRATION (CO - 100PPM)**

Perform STEP 1 first. To calibrate CO, push the center button when the top line reads CALIBRATION and the bottom line reads CO 100 PPM. Immediately apply 100 ppm CO (balance air). When the reading is satisfactory, the display will read DATA

SAVED indicating calibration is complete. The date for CAL PAST DUE is automatically reset at this point. Press the right button to advance to another gas to be calibrated as indicated by the top line of the display reading CALIBRATION and the bottom line reading another gas. Pressing the left button will return the instrument to the working (gas readings) display. Remove the gas.

**HYDROGEN SULFIDE (H<sub>2</sub>S) CALIBRATION (H<sub>2</sub>S-25 PPM)**

Perform STEP 1 first. To calibrate H<sub>2</sub>S, push the center button when the top line reads CALIBRATION and the bottom line reads H<sub>2</sub>S 25 PPM. Immediately apply 25ppm H<sub>2</sub>S (balance air). When the reading is satisfactory, the display will read DATA SAVED indicating calibration is complete. The date for CAL PAST DUE is automatically reset at this point. Press the right button to advance to another gas to be calibrated as indicated by the top line of the display reading CALIBRATION and the bottom line reading another gas. Pressing the left button will return the instrument to the working (gas readings) display. Remove the gas.

**COMBUSTIBLE GAS CALIBRATION (LEL - 50.0%)**

Perform STEP 1 first. To calibrate LEL, push the center button when the top line reads CALIBRATION and the bottom line reads LEL 50%. Immediately apply 50% LEL methane (balance air). When the reading is satisfactory, the display will read DATA SAVED indicating calibration is complete. The date for CAL PAST DUE is automatically reset at this point. Press the right button to advance to another gas to be calibrated as indicated by the top line of the display reading CALIBRATION and the bottom

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line reading another gas. Pressing the left button will return the instrument to the working (gas readings) display. Remove the gas.

**COMBUSTIBLE GAS CALIBRATION (METHANE 100%)**

Perform STEP 1 first. To calibrate METHANE, push the center button when the top line reads CALIBRATION and the bottom line reads METHANE 100%. Immediately apply 100% methane or 100% natural gas (from gas line). When the reading is satisfactory, the display will read DATA SAVED indicating calibration is complete. The date for CAL PAST DUE is automatically reset at this point. Press the right button to advance to another gas to be calibrated as indicated by the top line of the display reading CALIBRATION and the bottom line reading another gas. Pressing the left button will return the instrument to the working (gas readings) display. Remove the gas.

**COMBUSTIBLE GAS CALIBRATION (PROPANE 100%)**

Perform STEP 1 first. To calibrate PROPANE 100%, push the center button when the top line reads CALIBRATION and the bottom line reads PROPANE 100%. Immediately apply 100% propane. When the reading is satisfactory, the display will read DATA SAVED indicating calibration is complete. The date for CAL PAST DUE is automatically reset at this point.

Press the right button to advance to another gas to be calibrated as indicated by the top line of the display reading CALIBRATION and the bottom line reading another gas. Pressing the left button will return the instrument to the working (gas readings) display. Remove the gas.

**COMBUSTIBLE GAS CALIBRATION (PROPANE 1.1%)**

Perform STEP 1 first. To calibrate PROPANE 1.1%, push the center button when the top line reads CALIBRATION and the bottom line reads PROPANE 1.1%. Immediately apply 1.1% propane (balance air). When the reading is satisfactory, the display will read DATA SAVED indicating calibration is complete. The date for CAL PAST DUE is automatically reset at this point. Press the right button to advance to another gas to be calibrated as indicated by the top line of the display reading CALIBRATION and the bottom line reading another gas. Pressing the left button will return the instrument to the working (gas readings) display. Remove the gas.

**OXYGEN (O2) CALIBRATION**

There is no menu option to select oxygen (O2) calibration. Calibration for this sensor is automatically performed at start up by the electronics. Calibration is also performed during any manual zeroing. Calibration can be verified using 100% nitrogen. The readings should be less than 0.4%.

**NOTE:** Improper calibration is indicated by "Bad Cal" when save is attempted. Calibration will be based on the last successful calibration. Recalibration is recommended. The calibration due date will not be updated until successful calibration has occurred. Any instrument that does not calibrate requires service. Contact J And N for details.

## **WARRANTY**

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Your **SENSIT®GOLD CGI** is warranted to be free from defects in materials and workmanship for a period of two years after purchase (excluding calibration and batteries). The % gas sensor (TC) is warranted for 5 years. If within the warranty period, your instrument should become inoperative from such defects, the unit will be repaired or replaced at our option. This warranty covers normal use and does not cover damage which occurs in shipment or failure which results from alteration, tampering, accident, misuse, abuse, neglect or improper maintenance. Proof of purchase may be required before warranty is rendered. Units out of warranty will be repaired for a service charge. Internal repair or maintenance must be completed by a J And N authorized technician. Violation will void warranty. Units must be returned postpaid, insured and to the attention of the Service Dept. for warranty or repair.

This warranty gives you specific legal rights and you may have other rights which vary from state to state.

**SHIPPING ADDRESS**  
**J And N Enterprises, Inc.**  
**648 W 300 N**  
**Valparaiso, IN 46385**

**Phone: (219) 759-1142**  
**Fax: (219) 759-1835**  
**Order Line: (800) 820-6199**  
**info@jandnent.com**



6/02 V2

\*PACKING SLIP\*

INVOICE NUMBER: 0079126-IN  
INVOICE DATE: 10/14/02

T AND N ENTERPRISES, INC.  
P.O. BOX 183  
WHEELER IN 46393-0183

ORDER NUMBER: S79126  
ORDER DATE: 10/14/02  
CUSTOMER NO: 00-NEKN001

(219) 759-1142

FEIN:35-1481013

SOLD TO:  
NEW HAMPSHIRE GAS  
ACCOUNTS PAYABLE  
P.O. BOX 438  
Keene

NH 03431

SHIP TO:  
NEW HAMPSHIRE GAS  
32 CENTRAL SQUARE  
Keene NH 03431

ATTN: DAVID JACQUES

CUSTOMER P.O.	SHIP VIA	F.O.B	TERMS				
	UPS	VALPARAISO IN	NET 15				
DESCRIPTION	ORDERED	UNIT	SHPD	BO	QTY SHPD	PACKED BY	
SG0550CGI-E 00001 SENSIT GOLD CGI EX/CO+ SERIAL NUM: J01860	1	EACH	1	0	<u>1</u>	<u>mt</u>	
CG70550-E C 02 CAL KIT SMALL 2.5/100PPM	1	EACH	1	0	<u>1</u>	<u>mt</u>	

# SENSIT GOLD CGI

Name New Hampshire Gas

J And N's Quality Statement is:

"To meet and exceed customer expectations by delivering defect free products and services on time"  
 In an effort to meet your needs this instrument has been set up to your individual requirements and completely tested prior to shipment. If we can be of further assistance please contact us at (219) 759-1142.  
 Thank you for your selection of a J And N product!

**SENSIT GOLD CGI INSTRUMENT**

PART #: SG0550CGI-E

- EX (A) LEL     
  EX-CO (B) LEL-CO     
  EXplus (C) LEL-O2     
  EX-TOX (D) LEL-H2S     
  EX-COplus (E) LEL-CO-O2  
 EX-CO TOX (F) LEL-CO-H2S     
  EX-TOXplus (G) LEL-O2-H2S     
  4GAS (H) LEL-CO-O2-H2S

OPTION REQUEST	PROCEDURE FOR INSTRUMENT	TECHNICIAN COMPLETED
Std	CGI Combustible Gas Monitor	
Std	2 Piece Polycarbonate Probe Assembly #ASGCGI0120	
	<input checked="" type="checkbox"/> LEL Display      Gas Type - <input type="checkbox"/> NATURAL GAS <input checked="" type="checkbox"/> PROPANE	
	Time Zone: <input checked="" type="checkbox"/> Eastern <input type="checkbox"/> Central <input type="checkbox"/> Mountain <input type="checkbox"/> Pacific <input type="checkbox"/> Other: _____	
	Calibration Set To - Days: <input checked="" type="checkbox"/> 30 <input type="checkbox"/> 45 <input type="checkbox"/> 60 <input type="checkbox"/> 90 <input type="checkbox"/> 120 <input type="checkbox"/> 365    Other: _____	
	Saved Gas Sessions Print Option : <input checked="" type="checkbox"/> Standard 7 Days <input type="checkbox"/> Other: _____ (1-15 days)	
	PROBES Specify Item #: _____ Description: _____	
	<input type="checkbox"/> PRINTER # ASG0500-P <input type="checkbox"/> PC INTERFACE # ASG0500-JE	
	HYDROCARBON FILTER KIT (includes 6 filters) AKT30128	
	OTHER OPTIONS	
<b>CALIBRATION KIT Specify:</b> <ul style="list-style-type: none"> <li><input type="checkbox"/> CSG0510-A EX Calibration Kit</li> <li><input type="checkbox"/> CSG0520-B EX/CO Calibration Kit</li> <li><input type="checkbox"/> CSG0530-C EX PLUS Calibration Kit</li> <li><input type="checkbox"/> CSG0540-D EX/TOX Calibration Kit</li> <li><input checked="" type="checkbox"/> CSG0550-E EX/CO PLUS Calibration Kit</li> <li><input type="checkbox"/> CSG0560-F EX/CO TOX Calibration Kit</li> <li><input type="checkbox"/> CSG0570-G EX/TOX PLUS Calibration Kit</li> <li><input type="checkbox"/> CSG0580-H 4 GAS Calibration Kit</li> <li><input type="checkbox"/> C0139-100 CH4 100% Calibration Gas</li> </ul>		
RECHECK CALIBRATION AND TEST TO ALL GASES INSPECTED BY: <u>SA</u>		

STANDARD SHIP KIT includes: Extra Sensor Cap, Wrist Strap, Alkaline Batteries, 2 Piece Polycarbonate Probe Assembly and Instruction Manual



J And N Enterprises, Inc.  
 (219) 759-1142 • Fax (219) 759-1835  
 www.jandnent.com

DATE 10/14/02

INSTRUMENT SERIAL# 1860

SENSIT CGI  
ver 6.50  
Serial # 1860

CAL LOG OXY

04 OCT 2002 14:12  
04 OCT 2002 08:39  
04 OCT 2002 08:25  
04 OCT 2002 08:17  
04 OCT 2002 08:04

CAL LOG CO

04 OCT 2002 14:15  
04 OCT 2002 08:30  
04 OCT 2002 08:21  
DATA N/A  
DATA N/A

CAL LOG LEL

04 OCT 2002 14:15  
04 OCT 2002 08:28  
04 OCT 2002 08:26  
04 OCT 2002 08:20  
04 OCT 2002 08:19

CAL LOG METHANE

04 OCT 2002 08:31  
04 OCT 2002 08:21  
DATA N/A  
DATA N/A  
DATA N/A

CAL LOG PROPANE

04 OCT 2002 08:32  
04 OCT 2002 08:23  
DATA N/A  
DATA N/A  
DATA N/A

### DESCRIPTION OF OPERATION

The ONMARK Combustible Gas Indicator is a dual-scale instrument capable of detecting the presence of combustible gases. It is a "hot wire" type of indicator with a catalytic 0-5% and a thermal 0-100% range. For each range, there is one filament in a sealed chamber which is used as a reference and one filament in an active chamber through which the sample is passed. The measurement circuit is a Wheatstone Bridge using the filaments as one-half of the bridge.

The filaments for the 100% (thermal) scale are electrically heated to  $150^{\circ}\text{C}$  -  $205^{\circ}\text{C}$  ( $300^{\circ}\text{F}$  -  $400^{\circ}\text{F}$ ). When a combustible gas is passed through the chamber, the thermal conductivity of the gas cools the active filament and changes its electrical resistance. This unbalances the bridge circuit and causes the meter to give a reading proportional to the percentage of gas in the air.

The 5% (catalytic) filaments are heated to  $650^{\circ}\text{C}$  -  $705^{\circ}\text{C}$  ( $1200^{\circ}\text{F}$  -  $1300^{\circ}\text{F}$ ). This burning increases the temperature of the active filament and unbalances the bridge to give a meter reading proportional to the percentage of gas in the air. Any upscale reading on the 5% scale is proof of the presence of a combustible gas. If a sample with a concentration above the upper explosive limit is drawn into the instrument while it is set on the 5% range, the meter will deflect upscale and then rapidly move downscale, usually to below zero. This happens because the gas has stopped burning due to its high concentration and is cooling the 5% filaments. The reading must then be taken on the 100% scale.

The unit is calibrated at the factory with 2.5% and 100% methane.

### INITIAL INSPECTION OF THE UNIT

When a new unit is received from the factory, an operational check should be made before the unit is put into use to assure that the unit has not been damaged in shipment.

1.) Install eight (8) carbon-zinc or alkaline "D" size batteries in the compartment inside the bottom cover. Be sure to observe the proper polarity as shown on the label in the cover.

2.) Check for an air leak by installing a dead-end fitting on the input fitting or by placing your finger tightly over the input fitting and squeezing the aspirator bulb. The bulb should be able to be compressed and should remain collapsed when released until the input fitting is no longer blocked.

3.) Turn the unit on to the "LAMP" position and be sure that the meter is lit.

4.) Return the power switch to the "ON" position to conserve the batteries.

5.) Turn the range switch to the "V" (voltage) position and adjust the needle to the green center scale mark on the meter by using the "VOLTAGE ADJ." knob.

6.) Turn the range switch to the "5%" scale and adjust the needle to zero by using the "ZERO ADJ." knob.

7.) Turn the range switch to the "100%" scale. The needle should be within one division of zero.

8.) Introduce a 100% gas sample and aspirate it through the unit. Aspirate until the reading stabilizes and continue aspirating while taking the reading. The reading should be within one division of 100%.

SURVEYS & ANALYSIS, INC.

9.) Clear the unit of gas by aspirating in clean air until the needle returns to zero.

10.) Turn the range switch to the "5%" scale and be sure the needle returns to zero.

11.) Introduce a 2.5% gas sample and aspirate until the reading stabilizes. The reading should be 2.5 - 2.7 while aspirating.

12.) Clear the unit of gas by aspirating in clean air until the needle returns to zero.

13.) Check the hinges, latches, etc. for physical damage.

14.) The unit is now ready for field use.

NOTE: Remove the batteries if the unit is to be stored for an extended period of time.

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## OPERATING INSTRUCTIONS

A basic set of instructions for the operation of the indicator is located inside of the top cover and can be read while operating the unit.

When the unit is first received, an initial inspection should be done according to the instructions in the "INITIAL INSPECTION" section.

The unit should be tested before each day's use to insure correct calibration.

1.) Connect the probe to the unit by snapping together the probe hose fitting and the sample-in fitting which is located on the left side of the front panel. The fittings should snap together. To remove the probe, push the outside collar of the probe fitting toward the front panel and the fittings should snap apart.

2.) Turn the unit to "ON" with the power switch, located on the upper left corner of the front panel. The unit may be operated with or without the meter lamp lit. However, use of the lamp will shorten the life of the batteries.

(STEPS 3, 4, AND 5 MUST BE DONE IN GAS-FREE AIR.)

3.) Squeeze the aspirator bulb at least 10 times to assure that the unit is clear of gas.

4.) Turn the range switch to the "V" (voltage) position and, by turning the "VOLTAGE ADJ." knob on the front panel, set the needle to the green center scale mark.

5.) Turn the range switch to the "5%" position and turn the "ZERO ADJ." knob to set the needle to zero.

6.) The indicator is now set to measure gas concentrations up to 5% by

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aspirating the sample through the unit. Aspirate until the reading stabilizes and continue aspirating while taking the reading.

7.) If the reading goes above "5" or below "0," the measurement must be made on the "100%" scale. Follow the same procedure for using the "100%" rather than to "5%."

WARNING: AN OFF-SCALE READING ON THE 5% SCALE (EITHER UP-SCALE OR DOWN-SCALE) MAY INDICATE A HAZARDOUS CONCENTRATION OF GAS. THE OPERATOR MUST WATCH THE METER CLOSELY WHEN TAKING A READING ON THE 5% SCALE.

8.) After making any measurement with the unit, it must be purged of gas by aspirating it at least 10 times in clean air.

9.) Turn the power switch to "OFF" to conserve the batteries, disconnect the probe, and close the top cover to protect the unit. Closing and latching the top cover will automatically turn the unit off.

10.) Remove the batteries if the unit will not be used for an extended period of time.

CAUTIONS:

1.) If a liquid or a large amount of dirt is drawn into the instrument, it should be cleaned and recalibrated at the earliest opportunity.

2.) Condensation may occur and cause an erroneous reading if a warm sample is drawn into a cold instrument. If possible, the instrument should be at the same temperature as the sample to be tested.

3.) If a large amount of gasoline vapor is drawn into the unit, a deposit may form on the filaments and affect the calibration. The unit

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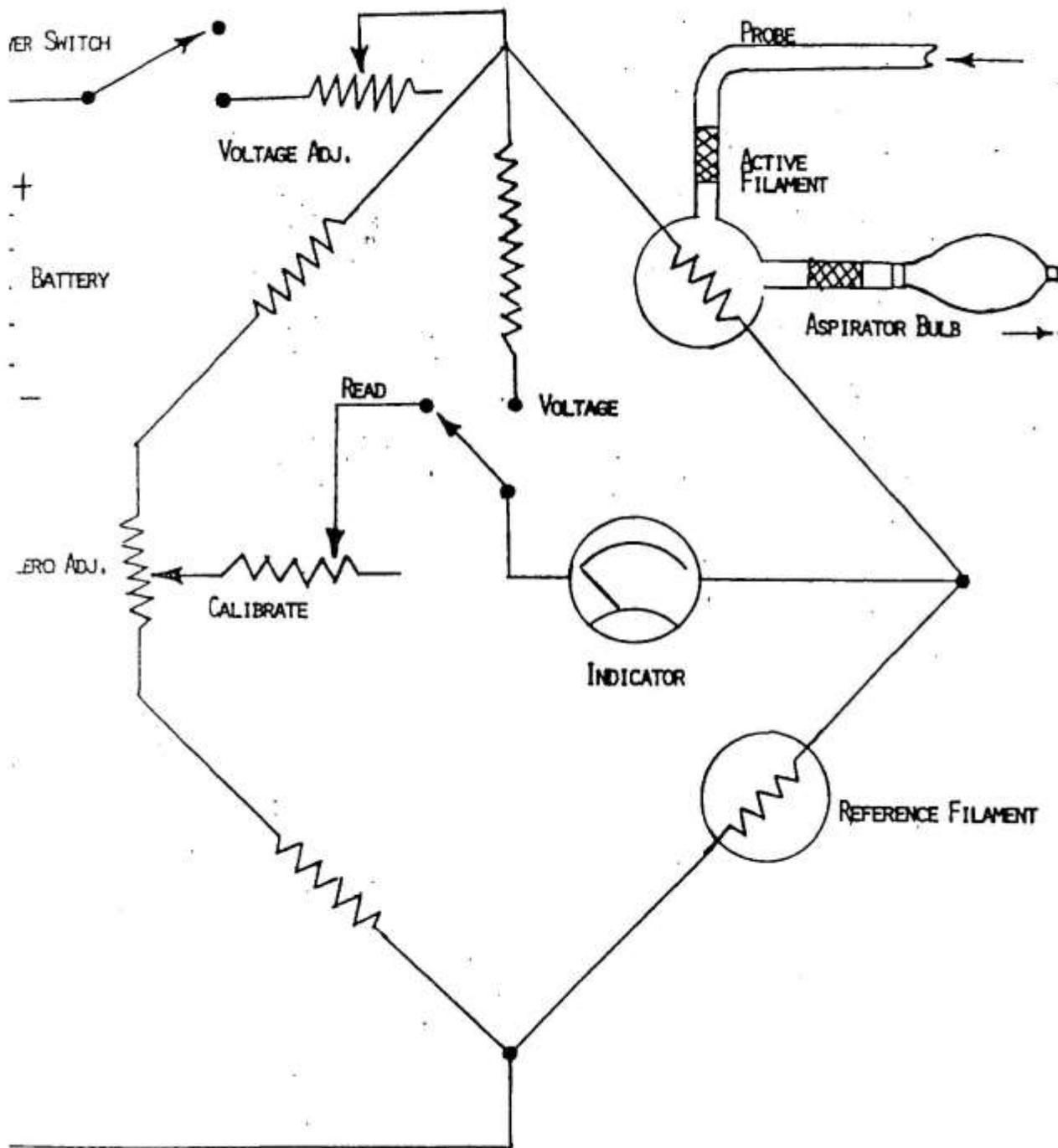
should be tested as soon as possible if it is suspected that this has happened.

USE OF THE CHARCOAL FILTER:

The charcoal filter may be used to determine if a reading is being caused by a condensable hydrocarbon such as gasoline or by a light gas such as natural. The filter will prevent the condensable hydrocarbons from reaching the indicator and giving a reading. To attach the filter, snap it onto the input fitting and then snap the probe hose fitting onto the filter. The procedure is as follows:

- 1.) Take a reading without the filter and note it.
- 2.) Take a reading with the filter in place. If the reading stays the same, it was caused by a light gas such as natural. If the reading is now zero, it was caused entirely by a condensable hydrocarbon. If there is a reading, but it is less than the reading from step one, there is a combination of gases and the new reading indicates the percentage of the lighter gases present.

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COMBUSTIBLE GAS INDICATOR (C.G.I.)

### CATALYST

0-5% CATALYTIC OR L.E.L. RANGE. CATALYST (CATALYZER) A MATERIAL THAT BRINGS ABOUT A CHEMICAL REACTION WITHOUT BEING CHANGED ITSELF IN THE PROCESS.

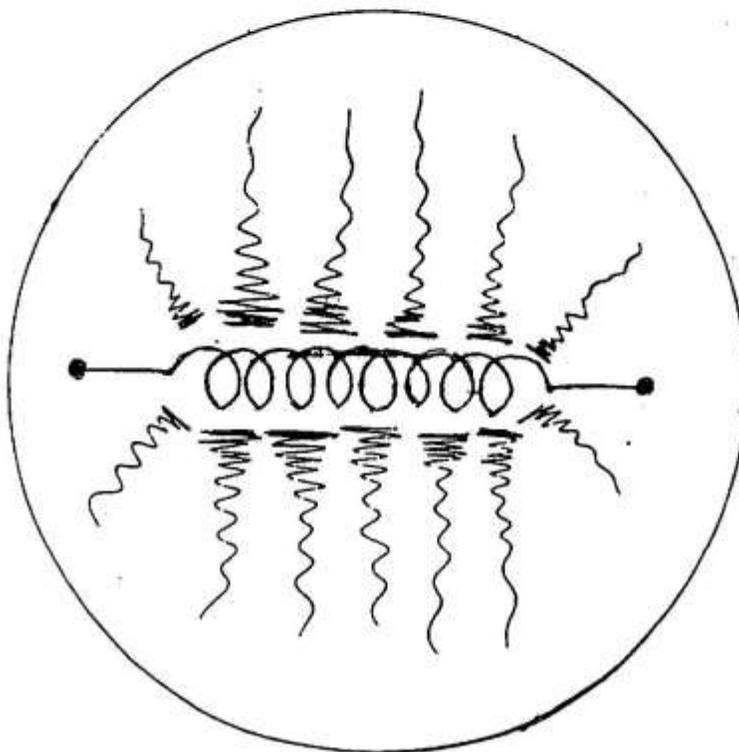
CATALYTIC COMBUSTION - IS THE BURNING OF THE COMBUSTIBLE GAS OR VAPOR IN AIR ON A CATALYTIC FILAMENT.

A CATALYST IS A SUBSTANCE WHICH ACCELERATES A CHEMICAL REACTION (THE BURNING) WITHOUT ENTERING INTO THE REACTION. THERE ARE A NUMBER OF VARIOUS CATALYSTS.

MOST MANUFACTURERS OF COMBUSTIBLE GAS INDICATORS USE A PLATINUM WIRE FILAMENT PRIMARILY BECAUSE IT IS A GOOD CATALYST AND PLATINUM WIRE HAS A HIGH TEMPERATURE COEFFICIENT OF RESISTANCE. IN OTHER WORDS, THE RESISTANCE OF THE WIRE CHANGES MATERIALLY, AT DIFFERENT TEMPERATURES, THUS WHEN SUCH A FILAMENT IS SET UP IN A BRIDGE CIRCUIT, IT SERVES AS THE BASIC OPERATING COMPONENT OF A COMBUSTIBLE GAS INDICATOR.

### WHEATSTONE BRIDGE CIRCUIT

THE NAME "WHEATSTONE" COMES FROM ITS INVENTOR MR. WHEATSTONE. THE WHEATSTONE BRIDGE CIRCUIT WAS PRIMARILY DESIGNED FOR MEASURING RESISTANCE AND ACTUALLY, WHEN USED IN CATALYTIC TYPE INSTRUMENT, IT IS THE CHANGE IN RESISTANCE TO THE ACTIVE FILAMENT, CAUSED BY THE BURNING OF THE GAS OR VAPOR SAMPLE WHICH CAUSES A CURRENT TO FLOW THROUGH THE METER.



NEW HAMPSHIRE GAS CORPORATION  
OPERATIONS & MAINTENANCE MANUAL

APPENDIX B

Sample Forms

NH Gas Corporation  
Form NHG-1  
**Gas Odor Investigation Form**

**Date:** \_\_\_\_\_

**Time of Call:** \_\_\_\_\_ AM / PM

**Name of Caller:** \_\_\_\_\_

**Location:** \_\_\_\_\_

**Complaint:** \_\_\_\_\_

**Type of Investigation:** FI \_\_\_\_ ECGI \_\_\_\_ CGI \_\_\_\_ Soap \_\_\_\_ Meter Dial Test \_\_\_\_

**CGI Test Inside at:**

	<b>POS.</b>	<b>NEG.</b>
Gas Service	[ ]	[ ]
Water Service	[ ]	[ ]
Sewer Service	[ ]	[ ]
Appliance	[ ]	[ ]
Drain	[ ]	[ ]
Foundation	[ ]	[ ]
Other (specify)	[ ]	[ ]

**CGI Test Outside at:**

	<b>POS.</b>	<b>NEG.</b>
Gas Service	[ ]	[ ]
Foundation	[ ]	[ ]
Manhole	[ ]	[ ]
Drain	[ ]	[ ]
Gate Box	[ ]	[ ]
Crack	[ ]	[ ]
Other (specify)	[ ]	[ ]

Was Leak repaired inside? Yes \_\_\_\_ No \_\_\_\_ If yes, describe repair: \_\_\_\_\_

If Odor cause was other than Gas, describe: \_\_\_\_\_

**Service Department Investigation**

**Date:** \_\_\_\_\_ **Time:** \_\_\_\_\_ **Serviceman:** \_\_\_\_\_

Was Street Department requested? Yes \_\_\_\_ No \_\_\_\_

**Street Department Investigation**

**Date:** \_\_\_\_\_ **Time:** \_\_\_\_\_ **Foreman:** \_\_\_\_\_

Sketch/Notes :

**New Hampshire Gas Corporation**  
Form NHG-2

LOCATION: \_\_\_\_\_ DATE: \_\_\_\_\_

REASON FOR REQUESTING ENTRANCE: \_\_\_\_\_

\_\_\_\_\_

REASON FOR REFUSAL: \_\_\_\_\_

\_\_\_\_\_

PROPERTY OWNER: \_\_\_\_\_

PERSON REFUSING ENTRY: \_\_\_\_\_

\_\_\_\_\_  
Signature of person refusing entry

\_\_\_\_\_  
Signature of NH Gas employee

Remarks:

**NEW HAMPSHIRE GAS CORPORATION  
PIPING INSPECTION  
Form NHG-3**

DATE OF INSPECTION: \_\_\_\_\_

FOLLOW-UP MAINTENANCE COMPLETED: \_\_\_\_\_

LOCATION: \_\_\_\_\_

MAP NUMBER: \_\_\_\_\_

CANAL CROSSING \_\_\_\_\_ BRIDGE ATTACHMENT \_\_\_\_\_

OTHER: \_\_\_\_\_

Good	___	Existing paint or coating satisfactory	___
Bad	___	Piping needs painting or re-coating	___
Poor	___	Existing piping needs replacing	___

CONDITION OF CASING OR SLEEVES AT ABUTMENTS:  
\_\_\_\_\_

REMARKS:  
\_\_\_\_\_

CONDITION OF HANGERS OR SUPPORTS:  
\_\_\_\_\_

CONDITION OF INSERT, EXPANSION CASE, BRACKET OR HANGER:  
\_\_\_\_\_

CONDITION OF PIPE CLEVIS AND SUPPORTING ROD:  
\_\_\_\_\_

CONDITION OF ROLLER(S) OR FIXED SUPPORTS:  
\_\_\_\_\_

REMARKS:  
\_\_\_\_\_

INSPECTED BY: \_\_\_\_\_  
MAINTENANCE AUTHORIZED BY: \_\_\_\_\_

---

**FOLLOW-UP  
PIPING MAINTENANCE FORM**

MAP NO. \_\_\_\_\_

LOCATION: \_\_\_\_\_

GIVE DESCRIPTION OF WORK TO BE PERFORMED:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

DATE COMPLETED: \_\_\_\_\_ COMPLETED BY: \_\_\_\_\_

# New Hampshire Gas Corporation

Form NHG - 4

## Exposed Main and Service Line Report

This form is to be completed each time a Distribution Main or Service Line is exposed for any reason  
If you are not POSITIVE leave answer blank.

Date \_\_\_\_\_

1. Location : \_\_\_\_\_
2. Name of Inspector : \_\_\_\_\_
3. Line : Main \_\_\_\_\_ Service \_\_\_\_\_ Size \_\_\_\_\_ MAOP \_\_\_\_\_ Age \_\_\_\_\_ Years
4. Material : Cast Iron \_\_\_\_\_ Wrought Iron \_\_\_\_\_ Steel \_\_\_\_\_ PE \_\_\_\_\_ Other \_\_\_\_\_
5. Cathodic Protection : No \_\_\_\_\_ Yes \_\_\_\_\_ Anodes \_\_\_\_\_ Other \_\_\_\_\_
6. Coating : No \_\_\_\_\_ Yes \_\_\_\_\_ Type \_\_\_\_\_ Other \_\_\_\_\_
7. External Condition Cracked \_\_\_\_\_ Surface Rust \_\_\_\_\_ Deep Corrosion \_\_\_\_\_  
Smooth \_\_\_\_\_ Pitted \_\_\_\_\_ Pit Depth \_\_\_\_\_ Wall Thickness \_\_\_\_\_  
Evidence of Graphitization \_\_\_\_\_ Other \_\_\_\_\_  
General Condition of Pipe : Good \_\_\_\_\_ Marginal \_\_\_\_\_ Bad \_\_\_\_\_
8. Internal Condition : Smooth \_\_\_\_\_ Pitted \_\_\_\_\_ Pit Depth \_\_\_\_\_ Other \_\_\_\_\_
9. Right of Way Concrete \_\_\_\_\_ Asphalt \_\_\_\_\_ Dirt \_\_\_\_\_ Grass \_\_\_\_\_ Gravel \_\_\_\_\_
10. Structures Endangering Pipeline : \_\_\_\_\_
11. Soil : Sand \_\_\_\_\_ Clay \_\_\_\_\_ Loam \_\_\_\_\_ Cinders \_\_\_\_\_ Refuse \_\_\_\_\_ Gravel \_\_\_\_\_  
Packing : Loose \_\_\_\_\_ Medium \_\_\_\_\_ Hard \_\_\_\_\_  
Moisture Content : Dry \_\_\_\_\_ Damp \_\_\_\_\_ Wet \_\_\_\_\_
12. Anodes Installed No \_\_\_\_\_ Yes \_\_\_\_\_ Number \_\_\_\_\_ Size \_\_\_\_\_
13. Comments : \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Revised 1/13/01

**NEW HAMPSHIRE GAS CORPORATION  
PRESSURE RECORDING DEVICE  
TEST AND INSPECTION  
FORM NHG-5**

LOCATION: \_\_\_\_\_ DATE: \_\_\_\_\_

RECORDING GAUGE: MAKE \_\_\_\_\_ MODEL \_\_\_\_\_

TEST INSTRUMENT: \_\_\_\_\_

DEVICE READING: \_\_\_\_\_ in. w.c.

TEST INSTRUMENT READING: \_\_\_\_\_ in. w.c.

VARIATION: \_\_\_\_\_ ADJUSTED READING: \_\_\_\_\_

GENERAL CONDITION OF DEVICE

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

BATTERY CHECK: \_\_\_\_\_

INK SUPPLY: \_\_\_\_\_

CONDITION OF STYLUS: \_\_\_\_\_

REMARKS: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

TESTED BY: \_\_\_\_\_

**NEW HAMPSHIRE GAS CORPORATION**  
**"SNIFF TEST" and/or "ODOROMETER TEST"**  
**Form NHG-6**

LOCATION:	<u><b>WASHINGTON ST.</b></u>	Observed by:	_____
DATE: _____	TIME: _____		
ODOR LEVEL: Nil	_____	Reading _____	Glass _____
Barely Detectable	_____	<u>X .725</u>	Metal _____
Readily Detectable	_____		
Strong	_____	% _____	
LIST OTHER ODORS PRESENT: _____			

LOCATION:	<u><b>CHURCH ST.</b></u>	Observed by:	_____
DATE: _____	TIME: _____		
ODOR LEVEL: Nil	_____	Reading _____	Glass _____
Barely Detectable	_____	<u>X .725</u>	Metal _____
Readily Detectable	_____		
Strong	_____	% _____	
LIST OTHER ODORS PRESENT: _____			

LOCATION:	<u><b>MARLBORO ST.</b></u>	Observed by:	_____
DATE: _____	TIME: _____		
ODOR LEVEL: Nil	_____	Reading _____	Glass _____
Barely Detectable	_____	<u>X .725</u>	Metal _____
Readily Detectable	_____	-	
Strong	_____	% _____	
LIST OTHER ODORS PRESENT: _____			

LOCATION:	<u><b>CHESHIRE HOMES</b></u>	Observed by:	_____
DATE: _____	TIME: _____		
ODOR LEVEL: Nil	_____	Reading _____	Glass _____
Barely Detectable	_____	<u>X .725</u>	Metal _____
Readily Detectable	_____		
Strong	_____	% _____	
LIST OTHER ODORS PRESENT: _____			

LOCATION:	<u><b>PINE AVE.</b></u>	Observed by:	_____
DATE: _____	TIME: _____		
ODOR LEVEL: Nil	_____	Reading _____	Glass _____
Barely Detectable	_____	<u>X .725</u>	Metal _____
Readily Detectable	_____		
Strong	_____	% _____	
LIST OTHER ODORS PRESENT: _____			

New Hampshire Gas Corporation  
Form NHG-7  
Key Valve Inspection

VALVE INSPECTION REPORT

OWNER \_\_\_\_\_ DATE \_\_\_\_\_

LOCATION \_\_\_\_\_

MAKE \_\_\_\_\_

TYPE \_\_\_\_\_

SIZE \_\_\_\_\_

PRESSURE RATING \_\_\_\_\_

**CONDITION OF:**

VALVE \_\_\_\_\_

VALVE BOX \_\_\_\_\_

PIPE CONNECTIONS \_\_\_\_\_

GENERAL AREA \_\_\_\_\_

LUBRICATED \_\_\_\_\_ YES \_\_\_\_\_ NO \_\_\_\_\_

**REPAIRS REQUIRED** \_\_\_\_\_

\_\_\_\_\_

**REPAIRS MADE** \_\_\_\_\_

\_\_\_\_\_

**REMARKS** \_\_\_\_\_

\_\_\_\_\_

**INSPECTOR** \_\_\_\_\_

Revised 3/22/01

New Hampshire Gas Corporation  
Form NHG-8

REGULATOR INSPECTION REPORT

OWNER New Hampshire Gas Corp. DATE \_\_\_\_\_

LOCATION \_\_\_\_\_

MAKE \_\_\_\_\_ TYPE \_\_\_\_\_

SIZE \_\_\_\_\_ PRESSURE RATING \_\_\_\_\_

ORFICE SIZE \_\_\_\_\_

CAPACITY OF INLET AND OUTLET \_\_\_\_\_

MAOP OF SYSTEM TO WHICH IT IS CONNECTED \_\_\_\_\_ 2PSI \_\_\_\_\_

OPERATING  
PRESSURE \_\_\_\_\_

LOCK UP PRESSURE \_\_\_\_\_

MONITORING OR RELIEF SETTING \_\_\_\_\_

WAS THE REGULATOR STROKED ( FULL OPEN ) YES \_\_\_\_\_ NO \_\_\_\_\_

GENERAL CONDITION OF STATION

ATMOSPHERIC CORROSION: YES \_\_\_\_\_ NO \_\_\_\_\_

SUPPORT PIPING: YES \_\_\_\_\_ NO \_\_\_\_\_

STATION GUARDS: YES \_\_\_\_\_ NO \_\_\_\_\_

AREA CLEAN OF WEEDS AND GRASS: YES \_\_\_\_\_ NO \_\_\_\_\_

CORRECTIONS MADE \_\_\_\_\_

REMARKS \_\_\_\_\_

\_\_\_\_\_

INSPECTOR \_\_\_\_\_

**New Hampshire Gas Corporation**  
**RELIEF VALVE INSPECTION REPORT**  
Form-NHG-9

OWNER **New Hampshire Gas Corporation**

DATE \_\_\_\_\_

LOCATION \_\_\_\_\_

MAKE \_\_\_\_\_

TYPE \_\_\_\_\_

SIZE \_\_\_\_\_ Orifice size \_\_\_\_\_

TYPE OF LOADINGS:

SPRING \_\_\_\_\_ PILOT \_\_\_\_\_ OTHER \_\_\_\_\_

RANGE \_\_\_\_\_

PRESSURE SETTING \_\_\_\_\_

CONNECTION PIPE SIZE \_\_\_\_\_

VENT STACK SIZE \_\_\_\_\_

CAPACITY \_\_\_\_\_

CONDITION OF:

RELIEF VALVE \_\_\_\_\_

RECORDING GAUGE \_\_\_\_\_

SUPPORT PIPING \_\_\_\_\_

STATION GUARD \_\_\_\_\_

GENERAL AREA \_\_\_\_\_

REPAIRS REQUIRED \_\_\_\_\_

REPAIRS MADE \_\_\_\_\_

REMARKS:

\_\_\_\_\_

INSPECTOR \_\_\_\_\_  
(Signed)

New Hampshire Gas Corporation  
Form NHG - 10

TYPE 4" XTC

PIPE TO SOIL PERIODIC INSPECTION CARD

MAIN \_\_\_\_\_  
SERVICE \_\_\_\_\_

ADDRESS 360 WINCHESTER ST @ PIZZA UNO

\_\_\_\_\_IN\_\_\_\_\_OUT

DATE INSTALLED \_\_\_\_\_ NUMBER OF METERS \_\_\_\_\_

Date	By	Notes	Date	By	Notes	Date	By	Notes
11/23/1993		4-17#						
4/7/1994	JD	0.85						
8/8/1995	JD	1.1						
7/31/1996	JD	0.9						
5/9/1997	JD	1.2						
6/1/1998	JD	1						
9/7/1999	JD	1.2						
4/17/2000	JD	0.9						

# NH Gas Corporation

Form NHG-11

## Leak Survey Report

**Leak Status:** New \_\_\_\_\_ Old \_\_\_\_\_ Follow-up \_\_\_\_\_ (Orig. date detected)

\_\_\_\_\_

**Date:** \_\_\_\_\_

**Page #** \_\_\_\_\_

**Leak Class**

1 2 3

**Leak Location:** \_\_\_\_\_

**Est. # of Leaks**

\_\_\_\_\_

**Type of Survey:** Bar Hole \_\_\_\_\_ Winter Patrol (FI Unit) \_\_\_\_\_ Building Survey (FI Unit) \_\_\_\_\_

**Combustible Gas Indicator (CGI) Test Readings:** 5% Scale \_\_\_\_\_ 100% Scale

\_\_\_\_\_

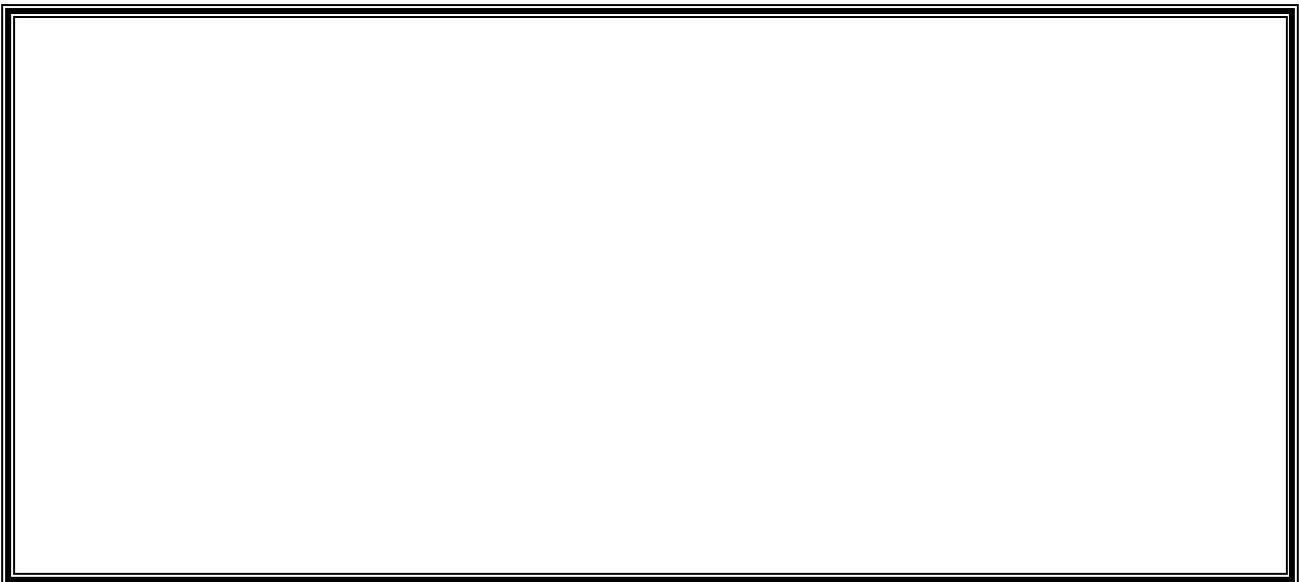
**Leak appears to be at:** Main \_\_\_\_\_ Service \_\_\_\_\_ Other \_\_\_\_\_

**Surface Covering:** Old \_\_\_\_\_ New \_\_\_\_\_  
Asphalt \_\_\_\_\_ Brick \_\_\_\_\_ Concrete \_\_\_\_\_ Dirt \_\_\_\_\_ Macadam \_\_\_\_\_

Other \_\_\_\_\_

**Location:** Public Way \_\_\_\_\_ Public Property \_\_\_\_\_ Private Property \_\_\_\_\_ Easement \_\_\_\_\_

Sketch



\_\_\_\_\_  
Representative

\_\_\_\_\_  
Company

# New Hampshire Gas Corporation

Form- NHG-12

## ATMOSPHERIC CORROSION CONTROL INSPECTION

This form to be completed when above ground piping is inspected for corrosion from atmospheric conditions or corrosive conditions that cannot be controlled by cathodic protection.

Inspect all exposed piping every three years for atmospheric corrosion. 192.479, 192.481, 192.491

Date: \_\_\_\_\_

1. Location: \_\_\_\_\_

2. Name of Inspector : \_\_\_\_\_

3. Designation of Line: Trans. \_\_\_\_\_ Dist. \_\_\_\_\_ Service \_\_\_\_\_

4. Line Size: \_\_\_\_\_

5. Area of Inspection: Pipe. \_\_\_\_\_ Meter set \_\_\_\_\_ Fitting \_\_\_\_\_

Regulator \_\_\_\_\_ Support \_\_\_\_\_ Vent \_\_\_\_\_

Other \_\_\_\_\_

6. General condition Good \_\_\_\_\_ Marginal \_\_\_\_\_ Bad \_\_\_\_\_

7. Corrective measures taken: Painted \_\_\_\_\_ Coated \_\_\_\_\_ Other \_\_\_\_\_

Type of paint or coating used: \_\_\_\_\_

8. Comments:

---

---

---

NH Gas Corporation  
Form NHG-13

Pipeline Test Report

This form must be completed for each section of newly installed Pipe or Service Line and on each Service Line that is disconnected from the Main for any reason. Also section of lines replaced should indicate replacement locations. Sketch location on back of this sheet for mapping purposes. Use actual measurements and adequate reference points.

**DATE:** \_\_\_\_\_

**TYPE OF PIPE:** \_\_\_\_\_ **SIZE OF PIPE:** \_\_\_\_\_

**LENGTH OF PIPE:** \_\_\_\_\_

**LOCATION OF LINE:** \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

**TEST RESULTS**

**TESTING DEVICE:** Pressure Gauge \_\_\_\_\_ Other \_\_\_\_\_

**TESTED WITH:** Nitrogen \_\_\_\_\_ Air \_\_\_\_\_ Natural Gas \_\_\_\_\_ Water \_\_\_\_\_ Other \_\_\_\_\_

**TEST TIME:** Start \_\_\_\_\_ Stop \_\_\_\_\_

**TEST PRESSURE:** Start \_\_\_\_\_ Stop \_\_\_\_\_

**LINE LOSS:** \_\_\_\_\_

**REASON FOR LOSS:** \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

**ACTION TAKEN/NOTES:** \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

By \_\_\_\_\_

**NEW HAMPSHIRE GAS CORPORATION**  
**UNDERGROUND LEAK REPAIR REPORT**  
Form NHG-14

LOCATION: \_\_\_\_\_

DATE: \_\_\_\_\_ COMPLETED BY: \_\_\_\_\_

REPORTED BY: \_\_\_\_\_

CLASSIFICATION:                    III \_\_\_\_\_    II \_\_\_\_\_    I \_\_\_\_\_

LINE DESIGNATION:                Main \_\_\_\_\_ Service \_\_\_\_\_ Other \_\_\_\_\_

COMPONENT WHICH FAILED: \_\_\_\_\_

MATERIAL SPECIFICATION: \_\_\_\_\_

CAUSE: \_\_\_\_\_

TYPE OF REPAIR: \_\_\_\_\_

PRESSURE: \_\_\_\_\_

TYPE OF SOIL: \_\_\_\_\_

MOISTURE: \_\_\_\_\_

COMMENTS:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**NEW HAMPSHIRE GAS CORPORATION  
GAS OPERATIONS Form NHG-15  
INCIDENT NOTIFICATION REPORT**

**Incident Date:** \_\_\_\_\_ **Division:** \_\_\_\_\_

**Incident Location:**  Main  
 Service  
 NH Gas Facility (Name) \_\_\_\_\_  
 Other (Explain) \_\_\_\_\_

Address: \_\_\_\_\_  
Town/City: \_\_\_\_\_

**Event Reported by:**  
Name: \_\_\_\_\_ Time Received: \_\_\_\_\_  
Dept./Org. \_\_\_\_\_ Time Dispatched: \_\_\_\_\_  
Phone # \_\_\_\_\_ Time Arrived: \_\_\_\_\_  
Time Made Safe: \_\_\_\_\_

**Event Category:**  Natural Disaster  Supply Interruption  
 Fire/Explosion  Facility Case # \_\_\_\_\_  
 Carbon Monoxide  Other \_\_\_\_\_  
 Gas Leak

**Notifications:**  
PUC notified  Yes  No  Not Applicable  
DOT notified  Yes  No  
DOT Report Number \_\_\_\_\_

PUC Person Contacted: \_\_\_\_\_ Time: \_\_\_\_\_  
DOT Person Contacted: \_\_\_\_\_ Time: \_\_\_\_\_

**Responders on Scene:**  
 Not Applicable  NH Gas Corporation  
 Fireman  Media  
 Police  PUC Representative

**Services Interrupted:**  Not Applicable  Distribution  
 Transmission  Critical Facility Name  
#of Services Interrupted: \_\_\_\_\_ #of Apartments/Buidings \_\_\_\_\_

**Evacuation:**  None  
 Public - # of Buildings \_\_\_\_\_ #of People Evacuated \_\_\_\_\_

**Injuries:**  None  NH Gas  
 Public Description: \_\_\_\_\_

**Damages:**  None  More than \$50,000  
 Public  Less than \$50,000  
 Actual Description: \_\_\_\_\_  
 NH Gas

Description of Incident: \_\_\_\_\_

Results of Investigation: \_\_\_\_\_

Prepared by: \_\_\_\_\_ Title: \_\_\_\_\_ Phone#: \_\_\_\_\_ Approval Signature: \_\_\_\_\_

**Emergency Classification:**  None  Class A Time classified: \_\_\_\_\_  
 Public  Class B  
 Actual  Class C Classified by: \_\_\_\_\_

Date: \_\_\_\_\_ Time: \_\_\_\_\_ Division: \_\_\_\_\_ Sample No: \_\_\_\_\_  
 Barrel No.: \_\_\_\_\_ Barrel No.: \_\_\_\_\_ Barrel No.: \_\_\_\_\_ Other Container No.: \_\_\_\_\_  
 (Corp. assigns ID #)  
 CA: \_\_\_\_\_ CC: \_\_\_\_\_ CL: \_\_\_\_\_ Accounting: \_\_\_\_\_ WO#: \_\_\_\_\_  
 Sampled By: \_\_\_\_\_ Title of person performing task: \_\_\_\_\_  
 Length of time to perform task (minutes): \_\_\_\_\_ Supervisor: \_\_\_\_\_  
 Type of Equipment or Facility (e.g. meter, regulator, pipe, drip, separator): \_\_\_\_\_  
 Equipment, Main, or Facility No.: \_\_\_\_\_  
 Location or Address of the Equipment or Facility: \_\_\_\_\_  
 Sample Point Location: \_\_\_\_\_  
 Sample Method (drained equip., wipe, gas, etc.): \_\_\_\_\_  
 Volume of Liquid or Solids Removed or Discovered: \_\_\_\_\_  
 Description of Sample: \_\_\_\_\_

Pipe Pressure: LP = 0-12" w.c., MP = >12"-60 psig, HP = 61-124 psig, TP = >124 psig Pipe Material: *Please circle all that apply.*

Pipe Diameter: _____ Pressure: _____ Pipe Material: Cast iron, Steel, MDPE, HDPE Length of pipe abandoned: _____ Length of pipe removed: _____ Number of pipe segments: _____ Sealed both ends: <input type="checkbox"/> Yes <input type="checkbox"/> No Foamed injected: <input type="checkbox"/> Yes <input type="checkbox"/> No Decontaminated: <input type="checkbox"/> Yes <input type="checkbox"/> No	Pipe Diameter: _____ Pressure: _____ Pipe Material: Cast iron, Steel, MDPE, HDPE Length of pipe abandoned: _____ Length of pipe removed: _____ Number of pipe segments: _____ Sealed both ends: <input type="checkbox"/> Yes <input type="checkbox"/> No Foamed injected: <input type="checkbox"/> Yes <input type="checkbox"/> No Decontaminated: <input type="checkbox"/> Yes <input type="checkbox"/> No	Pipe Diameter: _____ Pressure: _____ Pipe Material: Cast iron, Steel, MDPE, HDPE Length of pipe abandoned: _____ Length of pipe removed: _____ Number of pipe segments: _____ Sealed both ends: <input type="checkbox"/> Yes <input type="checkbox"/> No Foamed injected: <input type="checkbox"/> Yes <input type="checkbox"/> No Decontaminated: <input type="checkbox"/> Yes <input type="checkbox"/> No
---	---	---

Additional Information: \_\_\_\_\_

**METERS AND REGULATORS**

Meter No. or Serial No.: \_\_\_\_\_ Model or Type: \_\_\_\_\_  
 Years in Service: \_\_\_\_\_  
 Is Meter and Regulator drained:  Yes  No (Affix appropriate labels, give to storeroom for disposal, and contact Geneva Gas Meter Lab).

Attach a copy of map depicting sample location from Gas Operations Map Book. Once results have been received, Corporate Gas will send this sheet and the map from the Gas Operations Map Book to Engineering Services to be mapped. Do not sketch map! (For abandonment and removal jobs, please include landmarks and sample points.)

**SAMPLE RESULTS** (Do not write below this line. Corporate Gas use only.)

PCB _____ $\mu\text{g}/100\text{cm}^2$ , ppm	Non-PCB, PCB Contaminated, PCB Material	Date _____	Rechecked	Date _____	Result _____ $\mu\text{g}/100\text{cm}^2$ , ppm
Flash _____ Deg F	Non-flammable, Flammable	Date _____	Result _____ Deg F	Date _____	Result _____ Deg F
Benzene _____ ppm	Non-Hazardous Waste, Hazardous Waste	Date _____	Result _____ ppm	Date _____	Result _____ ppm
Toluene _____ ppm	<i>Nothing dictates this, however, use Benzene limit.</i>				
Source Determination: _____					
Location Taken: _____					

**MAP CODE: MNT, MCL, MHCL, M10, M100, M50, M500**

Send sample and Hydrocarbon Report to Corp. Gas Operations/KGO, Michele Marble.

Rev# 1/03

INSTRUCTIONS FOR PREPARING GAS HYDROCARBON SAMPLE COLLECTION REPORT

**Date:** Enter Date when sample was taken.

**Time:** Enter Time when sample was taken.

**Division:** Enter District where sample was taken.

**Sample No.:** Do not enter anything here. Gas Corporate will assign Sample ID number.

**Barrel No.:** Enter Barrel number assigned by Stores. If there is more than one barrel, please assign the lowest barrel number to the first barrel filled.

**Barrel No.:** Enter second Barrel number assigned by Stores. This barrel will be the second barrel filled.

**Barrel No.:** Enter third Barrel number assigned by Stores. This barrel will be the third barrel filled. If more barrels are needed, please submit another sample and Gas Hydrocarbon Sample Collection Report.

**Other Container No.:** If container is not a barrel, please record ID number of different container, e.g., Pail.

**CA:** Cost Area of division sample was taken in: 11, 12, 15, 23, 24, 32, 41, 42, 43, 44, 52, 53, 81.

**CC:** Cost Center of division sample was taken in: 27, 31, 32, 33, 34, 35, 36, 37, 38, 39, 94, 95, 97.

**CL:** Enter Class associated to accounting assigned: 0 – Cost of Removal/Salvaging/MBJO and 2 - Gas.

**Accounting:** Enter Accounting assigned to performing task.

**WO#:** Enter Work Order number assigned to performing task. Please make sure number reflects correct year.

**Sampled By:** Enter name of person sample was taken by. If possible, indicate others present.

**Title of person performing task:** Trainee, 2<sup>nd</sup> Class Fitter, 1<sup>st</sup> Class Fitter, Supervisor, Other.

**Length of time to perform task:** Enter the amount of time involved with taking a sample (labor/minutes).

**Supervisor:** Enter name of supervisor that the person taking sample directly reports to.

**Indicate Type of Equipment or Facility:** meter, regulator, pipe, drip, separator.

**Number of Equipment, Main or Facility:** Enter number of equipment, main or facility.

**Location or Address of the Equipment or Facility:** Indicate street address of the equipment or facility.

**Sample Point Location:** Specify where sample was taken, e.g., bottom of pipe.

**Indicate the Volume of Liquid or Solids Removed or Discovered.** Please use proper units: oz., pint, gallon.

**Description of Sample:** Describe the sample taken, e.g., color, odor.

**Indicate Pipe Diameter (inches):** ½, ¾, 1, 2, 3, 4, 6, 8, 10, 12, 16, 20.

**Indicate Pipe Pressure:** LP = 0-12" w.c., MP = >12"-60 psig, HP = 61-124 psig, TP = >124 psig.

**Circle type of Pipe Material:** Cast iron, Steel, MDPE, HDPE.

**Enter Length of Pipe Abandoned (feet).**

**Enter Length of Pipe Removed (feet).**

**Enter Number of Pipe Segments.**

**Check box Yes or No if Sealed both ends of pipe.**

**Check box Yes or No if pipe was Foam injected.**

**Check box Yes or No if pipe was Decontaminated.**

**Repeat the last 9 steps above, if necessary, in the next two blocks to the right.**

**Provide Additional Information if necessary.**

**For Meters and Regulators, record the Meter No. or Serial No.**

**Record the Model or Type of Meter or Regulator.**

**Check box Yes or No if the Meter or Regulator has been drained.**

**Provide to Corporate Gas, a copy of the map from the Gas Operations Map Book depicting sample location.**

# NHGas

## WORK ORDER

DATE:	TIME:	PREPARED BY:	REQUESTED BY:
NAME:		PHONE:	
STREET:		LOCATION:	
NATURE OF THE CALL:			
EQUIPMENT INFORMATION:			
DEFECTS FOUND:			
TECHNICIANS COMMENTS:			

### EQUIPMENT USED: (SEE BACK FOR ADDITIONAL INFORMATION IF NEEDED)

QTY	PART NUMBER	DESCRIPTION

DATE: / /	DATE: / /	TOTAL TIME:
START TIME: AM [ ] PM [ ]	START TIME: AM [ ] PM [ ]	CHARGE
STOP TIME: AM [ ] PM [ ]	STOP TIME: AM [ ] PM [ ]	NO CHARGE

TECHNICIAN SIGNATURE: \_\_\_\_\_

rev 4/11/05



**NEW HAMPSHIRE GAS CORPORATION  
METER ORDER**

Office only:



NAME: \_\_\_\_\_ FOLIO#: \_\_\_\_\_

ADDRESS: \_\_\_\_\_ ACCOUNT#: \_\_\_\_\_

\_\_\_\_\_ CWIP #: \_\_\_\_\_

NOTES: \_\_\_\_\_ PC: Yes No  
(Circle One)

SET:	COMPANY #	MANUFACTURERS #	SIZE	READ
UNLOCK:				
READ-IN:				
REMOVE:				
LOCK:				
READ OUT:				

APPLIANCES USED:

METER LOCATION:

- ROOFTOP PKG.
- COM. KITCH. EQ
- PARLOR/INSERT
- DRYER
- RANGE
- WATER HEATER
- SPACE HEATER
- RANGE/HEATER
- FURNACE
- BOILER
- SMIFF TEST
- T.C.
- CLOCK METER
- SOAP TEST
- SEALS INTACT

OUTSIDE  
DESCRIPTION: \_\_\_\_\_

INSIDE  
DESCRIPTION: \_\_\_\_\_

DATE COMPLETED: \_\_\_\_\_

WORK DONE BY: \_\_\_\_\_

CLOCK METER: \_\_\_\_\_

START \_\_\_\_\_ AM or PM

FINISH \_\_\_\_\_ AM or PM

CHANGE? \_\_\_\_\_

rev. 11/29/2004

STATE OF NEW HAMPSHIRE  
PUBLIC UTILITIES COMMISSION, CONCORD, N.H.

HEATING VALVE AND PURITY REPORT

of the New Hampshire Gas Corporation For the Month of:

Average for the month: #DIV/0! B.T.U.

Date	Time	B.T.U. per Cu. Ft.	Hydrogen Sulphide*	Sulphur**	Remarks
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
31					

Avg. #DIV/0!

\*If determined

\*\*Grains Total per 100 C. F.

Signed by: Stephen J. Rokes

Date: \_\_\_\_\_ Title: Construction Coordinator

STATE OF NEW HAMPSHIRE  
PUBLIC UTILITIES COMMISSION, CONCORD, N.H.

REPORT OF PRESSURE COMPLAINTS

Company: New Hampshire Gas Corporation For the Month of: \_\_\_\_\_

Name of Complainant	Location	Date of Test	Average Pressure (1)	Pressure Recorded (Inches of Water)		Total Minutes					
				Minimum	Maximum	Time of Day	Time of Day	Below Allow. Minimum (2)	Above Allow. Maximum (3)		

(1) Average of at least 24 consecutive hourly readings.  
 (2) Allowable minimum = 0.4H + 0.3 inches of water.  
 (H = hundreds of BTU per cubic ft.)  
 (3) Allowable maximum = 12 inches of water.  
 NOTE: Use reverse side for explanation of proposed remedy.

Signed by: \_\_\_\_\_  
 Stephen J. Rokcs  
 Title: Construction Coordinator  
 Date: 1/0/1900





# NEW HAMPSHIRE PUBLIC UTILITIES COMMISSION

## REPORT OF PROBABLE VIOLATION OF UNDERGROUND UTILITY REGULATIONS AND/OR DAMAGE TO UNDERGROUND FACILITIES

**NEGATIVE REPORT**    Month: January-00    Year: 0    No probable violation of underground utility regulations or damage to underground facilities occurred since the date this company last filed a report as required by Puc 803.02.

INCIDENT DATE: (mo/day/yr) \_\_\_\_\_ TIME: \_\_\_\_\_ a.m. \_\_\_\_\_ p.m.

REPORT DATE: (mo/day/yr) \_\_\_\_\_

LOCATION OF VIOLATION / DAMAGE:    GPS COORDINATES:    Long: \_\_\_\_\_    Lat: \_\_\_\_\_

Address: \_\_\_\_\_ PUBLIC WAY \_\_\_\_\_ RIGHT OF WAY \_\_\_\_\_

City: \_\_\_\_\_

State: \_\_\_\_\_ Zip Code: \_\_\_\_\_ EASEMENT \_\_\_\_\_ PRIVATE PROPERTY \_\_\_\_\_

PERSON REPORTING: (FACILITY OPERATOR, EXCAVATOR OR ANY OTHER PARTY)

Name: <u>Stephen J. Rokes</u>	Home No.:	603	446-3726	
Company: (if applicable) <u>New Hampshire Gas Corporation</u>	Work No.:	603	352-1230	
Address: <u>32 Central Square, P.O. Box 438</u>	Fax No.:	603	352-3172	
City: <u>Keene</u>	Cell No.:	603	209-2582	
State: <u>NH</u> Zip Code: <u>03431</u>	Pager No.:	603	616-2118	

EXCAVATOR / FACILITY OPERATOR:

Name: _____	Home No.:			
Company: (if applicable) _____	Work No.:			
Address: _____	Fax No.:			
City: _____	Cell No.:			
State: _____ Zip Code: _____	Pager No.:			

DOING WORK FOR:

Name: _____	Work No.:			
Company: (if applicable) _____	Cell No.:			

FACILITY DAMAGED: include type, size, material, pressure / voltage or Safety Concern:

\_\_\_\_\_

ESTIMATE OF DAMAGE:    Excavator Billed for Damage?    YES     NO

PERSONAL INJURY: \_\_\_\_\_

DESCRIPTION OF INCIDENT:

\_\_\_\_\_

TYPE OF MARKING: \_\_\_\_\_

OTHER PERTINENT INFORMATION: (photos, diagrams, sketch, etc.)

\_\_\_\_\_

**PLEASE CHECK ONE OR MORE OF THE FOLLOWING:**

- |   |  |
|---|--|
| <ul style="list-style-type: none"> <li><input type="checkbox"/> 1. Notification completed, DIG-SAFE NUMBER: _____</li> <li><input type="checkbox"/> 2. Notification completed, marked, markings not maintained</li> <li><input type="checkbox"/> 3. Notification completed, location was not marked</li> <li><input type="checkbox"/> 4. Notification completed, marked, damage occurred</li> <li><input type="checkbox"/> 5. Excavating outside the pre-marked area</li> <li><input type="checkbox"/> 6. Excavation classified as EMERGENCY SITUATION</li> <li><input type="checkbox"/> 7. Excavator failed to observe 18-in. tolerance zone</li> <li><input type="checkbox"/> 8. Excavator failed to notify nonmember facility operator</li> <li><input type="checkbox"/> 9. Excavating on an expired ticket</li> </ul> | <ul style="list-style-type: none"> <li><input type="checkbox"/> 10. Procedures for notification not followed DIG-SAFE NOT NOTIFIED</li> <li><input type="checkbox"/> 11. Failure to notify of damage</li> <li><input type="checkbox"/> 12. Pre-marked    YES <input type="checkbox"/>    NO <input type="checkbox"/></li> <li><input type="checkbox"/> 13. Operator's markings were incorrect due to: <ul style="list-style-type: none"> <li><input type="checkbox"/> a. LOCATOR ERROR</li> <li><input type="checkbox"/> b. INCORRECT RECORD</li> <li><input type="checkbox"/> c. NO RECORD</li> </ul> </li> <li><input type="checkbox"/> 14. Facility operator failed to mark in a timely manner</li> <li><input type="checkbox"/> 15. OTHER</li> </ul> |
|---|--|

Signature: \_\_\_\_\_ Title: Construction Coordinator

\* Reviewed by signing authority listed (if submitted electronically)    Yes     No

Note: Please provide explanation to items above where necessary.    FORM-E26    Revised 12/2003

**MONTHLY LEAK REPORT**

**COMPANY:** New Hampshire Gas Corporation

**MONTH:** Jan-00

	STATUS OF LEAKS		
	CLASS I	CLASS II	CLASS III
Number of Leaks at Beginning of Month	0	0	0
Number of Leaks Reported During the Month	0	0	0
Number of Leaks Repaired During the Month	0	0	0
Total Leaks Remaining at End of the Month	0	0	0

**COMPANY OFFICIAL:** \_\_\_\_\_  
Stephen J. Rokes

**TITLE:** Construction Coordinator

**DATE SUBMITTED:** 1/0/1900

### Cathodic Protection Test Point Record

Location	Segment No.	Street	Location / Description of Segment			
	Test Point No.	Test Point Location (also see map below)				
General	Facility	Pressure	Material	Coating	Year Installed	Right of Way
	<input type="checkbox"/> Main <input type="checkbox"/> Service	<input type="checkbox"/> Low <input type="checkbox"/> High	Type (s) _____ Size (s) _____	Factory _____ Field App _____		<input type="checkbox"/> Public <input type="checkbox"/> Private
Conditions	Cathodic Protection Information					
	Coating	Soil	Test Point located at...	Insulation Data Material		Initial Protection Installed
	<input type="checkbox"/> Good <input type="checkbox"/> Damaged <input type="checkbox"/> Repaired	<input type="checkbox"/> Sand <input type="checkbox"/> Gravel <input type="checkbox"/> Clay <input type="checkbox"/> Stony	<input type="checkbox"/> Test Station <input type="checkbox"/> Insulating Joint <input type="checkbox"/> Insulating Flange <input type="checkbox"/> Other (see notes below)	Downstream Pipe _____ Upstream Pipe _____ Type of Fitting _____	No. of Anode(s) _____ Size of Anode(s) _____ Date _____	

Notes / Comments \_\_\_\_\_

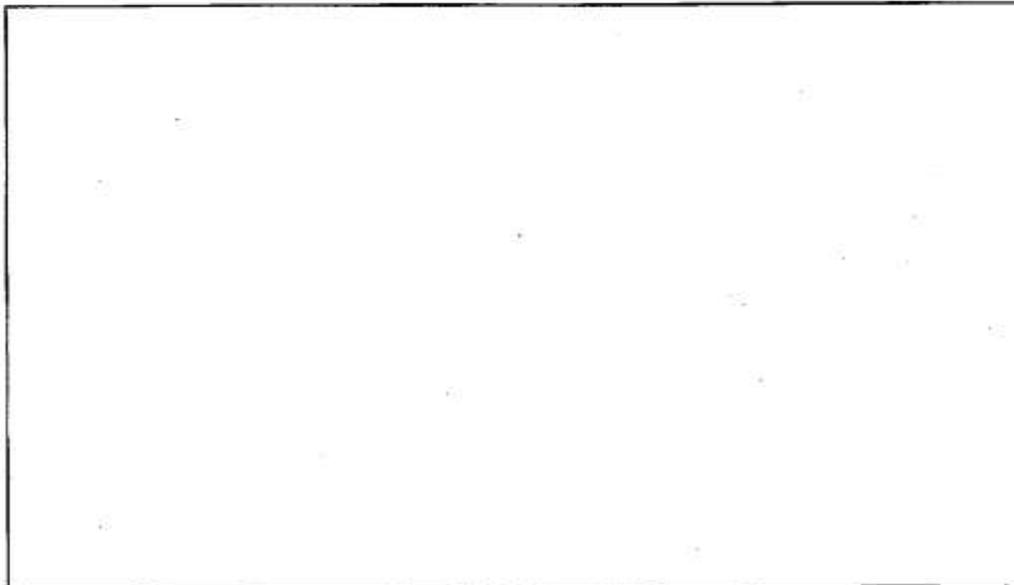
\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Wire Configuration...	No. of Wires _____	No. of Wires _____	No. of Wires _____
	Color _____	Color _____	Color _____
	Description _____	Description _____	Description _____



Sketch





STATE OF NEW HAMPSHIRE  
PUBLIC UTILITIES COMMISSION, CONCORD, N.H.

ANNUAL REPORT OF GAS METER TESTS

of the \_\_\_\_\_ Company Year ending \_\_\_\_\_ 19\_\_

Percent Accuracy	NUMBER OF METERS TESTED			
	10-Year Test Period (250 Cu. Ft. or Less)		4-year Test Period (Over 250 Cu. Ft.)	
	LOW FLOW TEST		LOW FLOW TEST	
	Maximum Flow Test Differential		Maximum Flow Test Differential	
	Within 1%	Exceeds 1%	Within 1%	Exceeds 1%
Non-Register				
Less than 90%				
90 - 96.9%				
97 - 97.9%				
98 - 98.9%				
99 - 99.9%				
100 - 101%				
101.1 - 102%				
102.1 - 103%				
103.1 - 110%				
Over 110%				
Totals				

Above tabulation included all tests except new meters.

	250 Cu. Ft. or Less	Over 250 Cu. Ft.
Meters in Service (year end)		
Meters Tested During Year		
Date _____ 19__	Signed by _____ Title _____	



**GAS SERVICE, INC.**

SERVICE RECORD CARD

(SKETCH ON BACK OF CARD)

ADDRESS: \_\_\_\_\_ COMPLETED WORK ORDER NO.: \_\_\_\_\_

NAME: \_\_\_\_\_ DATE INSTALLED: \_\_\_\_\_

SIZE: \_\_\_\_\_ IN, LENGTH: \_\_\_\_\_ FT. IN \_\_\_\_\_ IN MAIN, MATERIAL \_\_\_\_\_ MAIN

SERVICE TAP: \_\_\_\_\_ IN, TOP OR SIDE \_\_\_\_\_ INTO \_\_\_\_\_ DIA. \_\_\_\_\_

COVER: \_\_\_\_\_ FT. IN, CONNECTION: \_\_\_\_\_ AT MAIN  
THREAD-SADDLE-WELD

LOCATION: \_\_\_\_\_ FT. IN \_\_\_\_\_ OF \_\_\_\_\_ HOUSE LINE  
\_\_\_\_\_ FT. IN \_\_\_\_\_ OF \_\_\_\_\_ LINE

VALVE: MAKE \_\_\_\_\_ STYLE NO.: \_\_\_\_\_ TYPE: \_\_\_\_\_ PRESS. RATING: \_\_\_\_\_

LUBRICATING: \_\_\_\_\_ YES \_\_\_\_\_ NO, NO. OF METERS SERVED \_\_\_\_\_

SUPPLIES: \_\_\_\_\_ COMMERCIAL \_\_\_\_\_ INDUSTRIAL \_\_\_\_\_ DESCRIBE \_\_\_\_\_ OTHER PUBLIC BLDG.

LOCATION: \_\_\_\_\_ FT. IN \_\_\_\_\_ OF \_\_\_\_\_ LINE

UNDER C.P.: \_\_\_\_\_ NO \_\_\_\_\_ YES (LOC. OF ANODE: \_\_\_\_\_ FT. IN \_\_\_\_\_ OF \_\_\_\_\_ LINE

INSULATING FITTING: \_\_\_\_\_ NO \_\_\_\_\_ YES (AT \_\_\_\_\_), BRANCH: \_\_\_\_\_ NO \_\_\_\_\_ YES (TO \_\_\_\_\_)

FORM 905

**NEW HAMPSHIRE GAS CORPORATION  
PEAK STORAGE SHAVING CAPABILITIES**

New Hampshire Public Utilities Commission  
21S. Fruit Street, Suite 10  
Concord, New Hampshire 03301-2429

ATTN: Mr. Chester Kokoszka and Mr. David Burnell

In anticipation of the upcoming winter heating season, the following updated status of our company's peak-shaving capabilities is submitted.

- |        |   |  |        |    |
|--------|---|--|--------|----|
| 1.)    | Maximum projected design week demand.                                 | <u>8,540 MCF</u>   |        |    |
| 2.)    | Amount to be furnished by natural gas pipeline.                       | <u>NA</u>  |        |    |
| 3.)    | Balance from peak-shaving.  | <u>NA</u>  |        |    |
| 4.)    | Equivalent gallons LNG and/or LPG to satisfy requirements of item #3. | <table border="1"> <tr> <td style="background-color: black; color: white;">69,066</td> <td style="background-color: black; color: white;">NA</td> </tr> </table> | 69,066 | NA |
| 69,066 | NA  |  |        |    |
| 5.)    | Total facilities committed to service on December 1.                  |  |        |    |

	LPG (Gallons)	LNG (Gallons)
a. Permanent:	<u>80,889</u>	<u>NA</u>
b. Railroad Tankers:	<u>NA</u>	<u>NA</u>
c. Truck Tankers	<u>31,500</u>	<u>NA</u>
d. Off Site Storage	<u>27,403</u>	<u>NA</u>
<b>TOTAL</b>	<u>108,292</u>	<u>NA</u>

- |     |  |  |     |    |   |  |
|-----|--|--|-----|----|---|--|
| 6.) | Does facility meet storage requirements.                                       | <table border="1"> <tr> <td align="center">YES</td> <td align="center">NO</td> </tr> <tr> <td align="center">X</td> <td></td> </tr> </table> | YES | NO | X |  |
| YES | NO   |  |     |    |   |  |
| X   |  |  |     |    |   |  |
| 7.) | Comments relative to suppliers delivery capabilities during the coming winter. |  |     |    |   |  |

We have three transport loads at Berkshire Gas.

We have on file a letter of commitment from Northern Gas transportation.

We will immediately advise you of any unexpected circumstances surrounding our peak-shaving capabilities.

Company: Keene Gas Corporation

Name: \_\_\_\_\_

Title: Plant Operator

Date: \_\_\_\_\_

NOTICE: This report is required by 49 CFR Part 191. Failure to report may result in a civil penalty not to exceed \$100,000 for each violation. Form Approved for each day the violation continues up to a maximum of \$1,000,000 as provided in 49 USC 60122. OMB No. 2137-0522



U.S. Department of Transportation  
Research and Special Programs  
Administration

**ANNUAL REPORT FOR CALENDAR YEAR 20\_\_**  
**GAS DISTRIBUTION SYSTEM**

INITIAL REPORT   
SUPPLEMENTAL REPORT

---

**PART A - OPERATOR INFORMATION**

1. NAME OF OPERATOR \_\_\_\_\_

2. LOCATION OF OFFICE WHERE ADDITIONAL INFORMATION MAY BE OBTAINED

Number and Street \_\_\_\_\_

City and County \_\_\_\_\_

State and Zip Code \_\_\_\_\_

5. STATE IN WHICH SYSTEM OPERATES: / / (provide a **separate** report for each state in which system operates)

**DOT USE ONLY**

3. OPERATOR'S 5 DIGIT IDENTIFICATION NUMBER  
(When Known) / / / / /

4. HEADQUARTERS NAME & ADDRESS, IF DIFFERENT

Number and Street \_\_\_\_\_

City and County \_\_\_\_\_

State and Zip Code \_\_\_\_\_

---

**PART B - SYSTEM DESCRIPTION** Report miles of main and number of services in system at end of year.

1. GENERAL

	STEEL				PLASTIC	CAST/ WROUGHT IRON	DUCTILE IRON	COPPER	OTHER	OTHER
	UNPROTECTED		CATHODICALLY PROTECTED							
	BARE	COATED	BARE	COATED						
MILES OF MAIN										
NO. OF SERVICES										

2. MILES OF MAINS IN SYSTEM AT END OF YEAR

MATERIAL	UNKNOWN	2" OR LESS	OVER 2" THRU 4"	OVER 4" THRU 8"	OVER 8" THRU 12"	OVER 12"
STEEL						
DUCTILE IRON						
COPPER						
CAST/WROUGHT IRON						
PLASTIC						
1. PVC						
2. PE						
3. ABS						
OTHER						
OTHER						
SYSTEM TOTALS						

3. NUMBER OF SERVICES IN SYSTEM AT END OF YEAR AVERAGE SERVICE LENGTH \_\_\_\_\_ FEET

MATERIAL	UNKNOWN	1" OR LESS	OVER 1" THRU 2"	OVER 2" THRU 4"	OVER 4" THRU 8"	OVER 8"
STEEL						
DUCTILE IRON						
COPPER						
CAST/WROUGHT IRON						
PLASTIC						
1. PVC						
2. PE						
3. ABS						
OTHER						
OTHER						
SYSTEM TOTALS						

Form RSPA F 7100.1-1 (03-05)

*Reproduction of this form is permitted.*



NEW HAMPSHIRE GAS CORPORATION  
OPERATIONS & MAINTENANCE MANUAL

APPENDIX C

Leak Classification Information

**ASME GUIDE FOR GAS TRANSMISSION AND  
DISTRIBUTION PIPING SYSTEMS  
GUIDE MATERIAL APPENDIX G-11 – 1976**

**LEAK CLASSIFICATION AND ACTION CRITERIA – GRADE 1**

GRADE	DEFINITION	ACTION CRITERIA	EXAMPLES
1	A leak that represents an existing or probable hazard to persons or property, and requires immediate repair or continuous action until the conditions are no longer hazardous.	Requires prompt action* to protect life and property, and continuous action until the conditions are no longer hazardous.  *The prompt action in some instances may require one or more of the following: a. Implementation of company emergency plan (192.615). b. Evacuating premises. c. Blocking off an area. d. Rerouting traffic. e. Eliminating sources of ignition. f. Venting the area. g. Stopping the flow of gas by closing valves or other means. h. Notifying police and fire departments.	<ol style="list-style-type: none"> <li>Any leak which, in the judgment of operating personnel at the scene, is regarded as an immediate hazard.</li> <li>Escaping gas that has ignited.</li> <li>Any indication of gas which has migrated into or under a building, or into a tunnel.</li> <li>Any reading at the outside wall of a building, or where gas would likely migrate to an outside wall of a building.</li> <li>Any reading of 80% LEL, or greater, in a confined space.</li> <li>Any reading of 80% LEL, or greater in small substructures (other than gas associated substructures) from which gas would likely migrate to the outside wall of a building.</li> <li>Any leak that can be seen, heard, or felt, and which is in a location that may endanger the general public or property.</li> </ol>

**LEAK CLASSIFICATION AND ACTION CRITERIA – GRADE 2**

GRADE	DEFINITION	ACTION CRITERIA	EXAMPLES
2	A leak that is recognized as being non-hazardous at the time of detection, but justifies scheduled repair based on probable future hazard.	Leaks should be repaired or cleared within one calendar year, but no later than 18 months from the date the leak was reported. In determining the repair priority, criteria such as the following should be considered: a. Amount and migration of gas. b. Proximity of gas to buildings and sub-surface structures. c. Extent of pavement. d. Soil type, and soil conditions (such as frost cap, moisture and natural venting).  Grade 2 leaks should be reevaluated at least once every six months until cleared. The frequency of reevaluation should be determined by the location and magnitude of the leakage condition.  Grade 2 leaks may vary greatly in degree of potential hazard. Some Grade 2 leaks, when evaluated by the above criteria, may justify scheduled repair within the next 5 working days. Others will justify repair within 30 days. During the working day on which the leak is discovered, these situations should be brought to the attention of the individual responsible for scheduling leak repair.  On the other hand, many Grade 2 leaks, because of their location and magnitude, can be scheduled for repair on a normal routine basis with periodic reinspection as necessary.	<p><b>A. Leaks Requiring Action Ahead of Ground Freezing or Other Adverse Changes in Venting Conditions</b></p> <p>Any leak which, under frozen or other adverse soil conditions, would likely migrate to the outside wall of a building.</p> <p><b>B. Leaks Requiring Action Within Six Months</b></p> <ol style="list-style-type: none"> <li>Any reading of 40% LEL, or greater, under a sidewalk in a wall-to-wall paved area that does not qualify as a Grade 1 leak.</li> <li>Any reading of 100% LEL, or greater, under a street in a wall-to-wall paved area that has significant gas migration and does not qualify as a Grade 1 leak.</li> <li>Any reading less than 80% LEL in small substructures (other than gas associated substructures) from which gas would likely migrate creating a probable future hazard.</li> <li>Any reading between 20% LEL and 80% LEL in a confined space.</li> <li>Any reading on a pipeline operating at 30 percent SMYS, or greater, in a class 3 or 4 location, which does not qualify as a Grade 1 leak.</li> <li>Any reading of 80% LEL, or greater, in gas associated substructures.</li> <li>Any leak which, in the judgment of operating personnel at the scene, is of sufficient magnitude to justify scheduled repair.</li> </ol>

**LEAK CLASSIFICATION AND ACTION CRITERIA – GRADE 3**

GRADE	DEFINITION	ACTION CRITERIA	EXAMPLES
3	A leak that is non-hazardous at the time of detection and can be reasonably expected to remain non-hazardous.	These leaks should be reevaluated during the next scheduled survey, or within 18 months of the date reported, whichever occurs first, until the leak is regraded or no longer results in a reading.	<p><b>Leaks Requiring Reevaluation at Periodic Intervals</b></p> <ol style="list-style-type: none"> <li>Any reading of less than 80% LEL in small gas associated substructures.</li> <li>Any reading under a street in areas without wall-to-wall paving where it is unlikely the gas could migrate to the outside wall of a building.</li> <li>Any reading of less than 20% LEL in a confined space.</li> </ol>

NEW HAMPSHIRE GAS CORPORATION  
OPERATIONS & MAINTENANCE MANUAL

APPENDIX D

Material Safety Data Sheet

# HASTINGS EXTRACTION PLANT EMERGENCY PLAN

## MATERIAL SAFETY DATA SHEET

Product name: Propane

### Section I SUPPLIER INFORMATION

Common Name: LP Gas  
Chemical Name: Liquefied Propane Gas  
Formula/CAS: C<sub>3</sub>H<sub>8</sub>

Supplier: Consolidated Gas Transmission Corp. Phone (304) 623-8760  
PO Box 2450 Emergency Phone: (304) 623-8760  
445 West Main Street CHEMTRAC: 1-800-424-9300  
Clarksburg, WV 26302-2450

### Section II INGREDIENT INFORMATION

Propane C <sub>3</sub> H <sub>8</sub>	% by volume >65	CAS no: 00074-98-6	PEL-OSHA: N/A	TLV-ACGIH 1000 ppm **
Propylene C <sub>3</sub> H <sub>6</sub>	% by volume 0-35%	CAS no: 00115-07-1	PEL-OSHA: N/A	TLV-ACGIH
Ethane C <sub>2</sub> H <sub>6</sub>	% by volume <5%	CAS no: 00074-84-0	PEL-OSHA: N/A	TLV-ACGIH
C <sub>4</sub> + Hydrocarbons	% by volume <1.5%	CAS no:	PEL OSHA: N/A	TLV-ACGIH

#### Ingredient Hazard Statement

\*\* Current OSHA standard for Propane and LPG mixtures. ACGIH labels ethane, propane, and butane as simple asphyxiants (control at 18 vol% minimum oxygen.)

### Section III PHYSICAL/CHEMICAL CHARACTERISTICS

Boiling Point:	Propane @ 1 ATM. -43.7° C	Vapor Density:	1.80 (Air=1)
Specific Gravity:	0.508 @ -42.3° (Water =1)	Evaporation Rate:	
Melting Point:	N/A	Solubility/Water:	Slightly soluble
Vapor Pressure:	208 PSI at 100° F		

#### Appearance and Odor

A colorless gas at room temperature and 1 ATM pressure. It can be liquefied by lowering the temperature, increasing the pressure or both. It can have an odor like "natural gas", but pure propane is odorless and requires the addition of odorant.

### Section IV FIRE AND EXPLOSION HAZARD DATA

Flash Point: -156° F  
Autoignition: 874° F  
LEL: >2 %  
UEL: 10 %

#### NFPA Hazard Classification

Flammable: 4 Health: Reactivity: Special:

#### Extinguishing Media

If feasible, stop the flow of gas. Use water to cool fire-exposed tanks, surroundings and to protect personnel. If gas flow cannot be stopped, reduce the intensity of the fire by directing water spray, dry powder or carbon dioxide at the flame. Do not completely extinguish the flame unless gas flow is shut off.

#### Unusual Fire and Explosion Hazards

Propane is a dangerous fire and explosion hazard when mixed with air. Vapors may migrate for considerable distances before reaching an ignition source at which time the fire would flash back to the source of the release.

#### Special Fire Fighting Procedures

Those putting out fire must use self-contained breathing apparatus and protective equipment. Continue cooling containers with water until well after fire has been extinguished.

**Section V Reactivity Data**

**Propane**

**Stability:** Stable when stored as a liquid in steel tanks under its own pressure.

**Incompatibility:** Avoid oxidizing agents

**Miscellaneous:** Propane burns with a luminous, smoky flame; and it can produce carbon monoxide when oxidized with a deficiency of oxygen. One volume of propane requires about twenty five volumes of air for complete combustion.

**Hazardous Decomposition or By-Products:**

**Polymerization:** No

**Section VI Health Hazard Data**

**Routes of Entry**

**Inhalation:** Yes  
**Skin:** Yes  
**Ingestion:** No  
**Eyes:** Yes

**Additional Information**

The material is an asphyxiant (and it may have anesthetic properties at very high concentrations). If it is present in sufficient concentrations to reduce the oxygen level below 18% in inhaled air, symptoms such as rapid respiration, mental dullness, lack of coordination, poor judgment, nausea, and unconsciousness may result. (Oxygen deficiency may occur without warning in areas where this gas may displace air).

**First Aid:**

**Inhalation:** Remove victim to fresh air. Restore and/or support breathing. Prompt mouth to mouth resuscitation may be indicated. Administer oxygen if exposure was serious or if oxygen deficiency symptoms persist. Get medical help. (Caution: would be rescuers need to be concerned with their own safety in oxygen deficient areas. Use self contained or air supplied breathing apparatus in such atmospheres.)

**Liquid contact:** Contact with liquefied gas can produce frostbite. Promptly flush affected area with tepid water. If freezing burns have occurred apply a bulky, dry sterile bandage to protect the area and get medical help.

**Cardiotoxicity:** None established

**Section VII Precautions for Safe Handling and Use**

**DOT Classification:** UN 1075 (LPG) UN 1978 (Propane) UN 1965 (Hydrocarbon Gas Liquefied); Label 3: Flammable Gas.

**Steps To Be Taken If Material Is Released Or Spilled**

Personnel involved in leak stoppage should use self contained breathing equipment and should have protection against direct contact with liquid hydrocarbon. Ventilate closed spaces before entering them.

Evacuate area, eliminate sources of ignition. Supply maximum air ventilation (explosion-proof equipment) to keep concentration well below lower flammability limit. Stop leak or remove leaking cylinder or tank. Place cylinder or tank in remote place and allow gas to slowly bleed off to atmosphere or place in pit and ignite escaping gas.

**Waste Disposal Method**

Incinerate waste gas by laying a pipeline to a furnace and burning with caution in accordance with federal, state, and local regulations.

**Precautions To Be Taken In Handling and Storage**

Store and use propane cylinders and tanks well-ventilated areas, away from heat, sunlight, and sources of ignition. No smoking in areas of storage or use. Electrically bond and ground all lines and equipment used with propane. Keep away from oxidizing agents and from cylinders or oxygen or chlorine. Follow standard procedures for handling cylinders and tanks of flammable compressed gas. Provide protection against damaging cylinders and tanks. See NFPA # 58 and # 59 for handling and storage of LPG.

**Other Precautions**

Provide adequate explosion-proof ventilation where this material is used to meet TLV requirements and to keep concentration in air below 25% of LEL. Provide special ventilation in sumps and confined areas. Self contained respirators should be available for non-routine

# HASTINGS EXTRACTION PLANT EMERGENCY PLAN

Propane

and emergency use. Electrical services and equipment should be explosion-proof where propane is used. Where contact with liquid propane is possible, use protective clothing, gloves, and face shield. Monitoring methods for LPG-NIOSH # 593 and for propane -NIOSH # 587.

## Section VIII Control Measures

### Respiratory Protection

Use Self-Contained or Air-Supplied breathing apparatus only.

### Ventilation

Local exhaust, special exhaust, and mechanical exhaust must be Explosion-Proof.

### Other Protection

Gloves and face shield

PROPANE WITH ODORANT  
 Flammable Gas  
 DOT I.D. No. 1978  
 UN 1075

Issued 12/1/85

# MATERIAL SAFETY DATA SHEET

New Hampshire Gas Corporation  
 32 Central Square  
 P.O. Box 438  
 Keene, NH 03431

## SECTION I

CHEMICAL NAME AND SYNONYMS Liquefied Petroleum Gas, Propane	Jersey 08846	TRADE NAME AND SYNONYMS LP-gas, LPG
CHEMICAL FAMILY Hydrocarbon	FORMULA C <sub>3</sub> H <sub>8</sub>	

## SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS		%	TLV (Units)	ALLOYS AND METALLIC COATINGS		%	TLV (Units)	
PIGMENTS	N/A			BASE METAL	N/A			
CATALYST	N/A			ALLOYS	N/A			
VEHICLE	N/A			METALLIC COATINGS	N/A			
SOLVENTS	N/A			FILLER METAL PLUS COATING OR CORE FLUX	N/A			
ADDITIVES	N/A			OTHERS				
OTHERS								
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES							%	TLV (Units)
Propane (as specified by ASTM D-2163-77) with small amounts of ethane, propylene, iso butane and normal butane								
Ethyl-mercaptan (added as malodorant) approximately 1 lb. per 10,000 gallons of liquid propane (ANSI/NFPA #58-1982)								

## SECTION III - PHYSICAL DATA (Approximate or typical values)

BOILING POINT (°F.) @ 14.7 psia	-44	SPECIFIC GRAVITY (H <sub>2</sub> O=1)	0.504
VAPOR PRESSURE psig, @ 100°F	208 maximum	PERCENT VOLATILE BY VOLUME (%)	100%
VAPOR DENSITY (AIR=1) @ 60°F	1.52	EVAPORATION RATE (— = 1) Gas at normal ambient conditions.	None
SOLUBILITY IN WATER (slightly)	< 0.1%		
APPEARANCE AND ODOR	Colorless gas; a malodorant added for detection		

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	
EXTINGUISHING MEDIA Water spray; Class A-B-C or Class BC fire extinguishers	LeL	Uel
SPECIAL FIRE FIGHTING PROCEDURES Stop flow of gas; Use water to keep fire exposed containers and piping cool. Use water spray to disperse unignited gas. Evacuate area.	2-15	9-50
UNUSUAL FIRE AND EXPLOSION HAZARDS If ignition has occurred, and no water is available, tank or piping metal may fail from overheating. Approach containers from sides, not from ends.		

PAGE (1)

(Continued on reverse side)

SECTION V - HEALTH HAZARD DATA	
THRESHOLD LIMIT VALUE	1,000 ppm (840 mg/M <sup>3</sup> ) per 8 hour day; IDLH 20,000 ppm.
EFFECTS OF OVEREXPOSURE	Simple asphyxiant. High concentrations may lead to symptoms ranging from dizziness to respiratory arrest. Vapor may cause moderate eye irritation.
EMERGENCY AND FIRST AID PROCEDURES	
Eye Contact	- If liquid gets into eyes - contact a physician immediately. Skin Contact - Liquid contact with skin should be treated as frostbite. Inhalation - If overcome by vapor, remove victim to fresh air, apply artificial respiration if breathing has stopped.

SECTION VI - REACTIVITY DATA			
STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	
INCOMPATIBILITY (Materials to avoid)			
Strong oxidizers			
HAZARDOUS DECOMPOSITION PRODUCTS			
Carbon monoxide from incomplete combustion			
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
Shut off gas supply. Shut off sources of ignition. Ventilate the area. Disperse propane with water spray. Contact between skin and this gas in liquid form can cause freezing of tissue.	
WASTE DISPOSAL METHOD	
Controlled burning.	

SECTION VIII - SPECIAL PROTECTION INFORMATION			
RESPIRATORY PROTECTION (Specify type) Self Contained Breathing Apparatus or other fresh air source in confined space, if needed.			
VENTILATION	LOCAL EXHAUST	SPECIAL	Explosion Proof
	MECHANICAL (General)		
PROTECTIVE GLOVES	Resistant to liquid propane	OTHER	Keep sources of ignition away while ventilating.
OTHER PROTECTIVE EQUIPMENT	Use a combustible gas meter for detection	EYE PROTECTION	Safety glasses or face shield recommended

SECTION IX - SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING	
Keep container away from heat sources. Containers should be stored with the relief valve in the vapor space. Containers should not be dropped. Protect container and valves from damage.	
OTHER PRECAUTIONS	
Install protective caps on D.O.T. cylinders for being transported. "Flammable Gas" label required on D.O.T. cylinders.	



USA and WORLDWIDE

October 30, 1998

# Material Safety Data Sheet

## SCENTINEL® A

PHILLIPS CHEMICAL COMPANY  
A Division of Phillips Petroleum Company  
Bartlesville, Oklahoma 74004

PHONE NUMBERS  
Emergency: (918) 661-8118  
Technical Services: (918) 661-9091  
For Additional MSDSs: (918) 661-7297

### A. Product Identification

Synonyms: Ethanethiol, Gas odorant  
Chemical Name: Ethanethiol  
Chemical Family: Mercaptan  
Chemical Formula: C<sub>2</sub>H<sub>6</sub>S  
CAS Reg. No.: 75-08-1  
Product No.: SC0106

Product and/or Components Entered on EPA's TSCA Inventory: YES

This product is in U.S. commerce, and is listed in the Toxic Substances Control Act (TSCA) Inventory of Chemicals; hence, it may be subject to applicable TSCA provisions and restrictions.

### B. Components

Ingredients	CAS Number	% By Wt.	OSHA PEL	ACGIH TLV
Ethyl mercaptan	75-08-1	> 99	10 ppm(c)	0.5 ppm
Related mercaptans and sulfides	Various	< 1	NE	NE

See Section F, Recommended Exposure Limits.

(c) Denotes ceiling limit

NA - Not Applicable NE - Not Established

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### **C. Personal Protection Information**

**Ventilation:** Use adequate ventilation to control exposure below recommended levels.

**Respiratory Protection:** For concentrations exceeding the recommended exposure level, use NIOSH approved air purifying respirator. In case of spill or leak resulting in unknown concentration, use NIOSH approved supplied air respirator.

**Eye Protection:** Use safety glasses with side shields. For splash protection use chemical goggles and face shield.

**Skin Protection:** Rubber, neoprene or vinyl gloves if liquid splashes could occur. Use protective garments to prevent excessive skin contact.

**NOTE:** Personal protection information shown in Section C is based upon general information as to normal uses and conditions. Where special or unusual uses or conditions exist, it is suggested that the expert assistance of an industrial hygienist or other qualified professional be sought.

### **D. Handling and Storage Precautions**

Do not swallow, may be aspirated into lungs. Avoid contact with eyes, skin or clothing. Avoid breathing vapors and mist. Wear protective equipment and/or garments described in Section C if exposure conditions warrant. Wash thoroughly after handling. Launder contaminated clothing before reuse. Use with adequate ventilation.

Keep away from heat, sparks, and flame. Store in well-ventilated area. Store in tightly closed containers. Bond and ground during liquid transfer.

### **E. Reactivity Data**

**Stability:** Stable  
**Conditions to Avoid:** Not Established  
**Incompatibility (Materials to Avoid):** Oxygen and strong oxidizing materials  
**Hazardous Polymerization:** Will Not Occur  
**Conditions to Avoid:** Not Established  
**Hazardous Decomposition Products:** Sulfur and carbon oxides released when exposed to high temperatures or when burned.

### **F. Health Hazard Data**

#### **Recommended Exposure Limits:**

Based on odor, the Company recommends a permissible exposure level (8-hr. TWA) of 1 ppm for Ethyl Mercaptan.

See Section B.

**Acute Effects of Overexposure:**

- Eye:** Vapor may cause mild irritation to the eyes.
- Skin:** Liquid may cause mild irritation.
- Inhalation:** Vapor may cause headache, nausea, weakness, fatigue and slight irritation to mucous membranes. The four hour inhalation LC50, rat, for Ethyl mercaptan = 4420 ppm.
- Ingestion:** May cause nausea, slight mucous membrane irritation and headache. Large doses could cause unconsciousness. If swallowed, may be aspirated resulting in inflammation and possible fluid accumulation in the lungs. The oral LD50, rat, for Ethyl mercaptan = 682 mg/kg.

**Subchronic and-Chronic Effects of Overexposure:**

No known applicable information.

**Other Health Effects:**

A Toxicity Study Summary for Ethyl mercaptan is available upon request.

**Health Hazard Categories:**

	Animal	Human		Animal	Human
Known Carcinogen	---	---	Toxic	---	---
Suspect Carcinogen	---	---	Corrosive	---	---
Mutagen	---	---	Irritant	---	---
Teratogen	---	---	Target Organ Toxin	X	X
Allergic Sensitizer	---	---	Specify - Lung-Aspiration Hazard		
Highly Toxic	---	---			

**First Aid and Emergency Procedures:**

- Eye:** Flush eyes with running water for at least fifteen minutes. If irritation or adverse symptoms develop, seek medical attention.
  - Skin:** Wash skin with soap and water for at least fifteen minutes. If irritation or adverse symptoms develop, seek medical attention.
  - Inhalation:** Remove from exposure. If breathing is difficult, give oxygen. If breathing ceases, administer artificial respiration followed by oxygen. Seek immediate medical attention.
  - Ingestion:** Do not induce vomiting. Seek immediate medical attention.
- Note to Physician:** Gastric lavage using a cuffed endotracheal tube may be performed at your discretion.

## G. Physical Data

Appearance: Colorless liquid  
Odor: Repulsive  
Boiling Point: 95F (35C)  
Vapor Pressure: 16.2 psia (838 mm Hg) @ 100F (37.8C)  
Vapor Density (Air = 1): 2.1  
Solubility in Water: Slight  
Specific Gravity (H<sub>2</sub>O = 1): 0.845 @ 60/60F (15.6/15.6C)  
Percent Volatile by Volume: 100  
Evaporation Rate (Ethyl Ether = 1): <1  
Viscosity: 0.293 Centipoises @ 68F (20C)

## H. Fire and Explosion Data

Flash Point (Method Used): -55F (-48C)(Estimated)  
Flammable Limits (X by Volume in Air): LEL - 2.8  
UEL - 18

Fire Extinguishing Media: Dry chemical, foam, carbon dioxide (CO<sub>2</sub>)

Special Fire Fighting Procedures: Evacuate area of all unnecessary personnel. Shut off source, if possible. Use NIOSH approved self-contained breathing apparatus and other protective equipment and/or garments as described in Section C if exposure conditions warrant. Use water fog or spray to cool exposed equipment and containers. Do not spray water directly on fire - product will float and could be reignited on surface of water.

Fire and Explosion Hazards: Sulfur and carbon oxides released when burned. Highly flammable vapors which are heavier than air may accumulate in low area and/or spread along ground away from handling site. Flashback along vapor trail may occur.

## I. Spill, Leak and Disposal Procedures

### Precautions Required if Material is Released or Spilled:

Evacuate area of all unnecessary personnel. Wear protective garments and/or equipment described in Section C if exposure conditions warrant. Shut off source, if possible and contain spill. Protect from ignition. Keep out of water sources and sewers. Recover as much bulk liquid as possible, by pumping into suitable containers, taking precautions to prevent sparks or other ignition sources (such as, proper bonding and grounding of containers and transfer equipment). If absorbent is used, promptly place in sealed containers to control odors.

Spill residues and contaminated soil may be deodorized using dilute (5X) aqueous solutions of bleach (sodium hypochlorite). Do not use concentrated or dry bleach. Do not attempt to neutralize or deodorize bulk liquid mercaptan. Concentrated bleach will cause heating and possible ignition. Attempts to neutralize bulk liquid mercaptan with bleach solutions will be ineffective and only serve to increase the amount of liquid to dispose.

Waste Disposal (Insure Conformity with all Applicable Disposal Regulations):  
Incinerate in permitted unit or place in other permitted waste disposal facility.

## J. DOT Transportation

Shipping Name: Ethyl Mercaptan  
Hazard Class: 3 (Flammable Liquid)  
ID Number: UN 2363  
Packing Group: I  
Marking: Ethyl Mercaptan, UN 2363, Marine Pollutant\*\*  
Label: Flammable Liquid  
Placard: Flammable/2363  
Hazardous Substance/EQ: Not Applicable  
Shipping Description: Ethyl Mercaptan, 3 (Flammable Liquid), UN 2363, PG I, Marine Pollutant\*\*  
Packaging References: 49 CFR 173.201, 173.243

\*\* Marine pollutant shipping paper notation required for all bulk domestic shipments and for non-bulk shipments by water. Marine pollutant mark required for bulk and non-bulk shipments by water only.

## K. RCRA Classification - Unadulterated Product as a Waste

Ignitable (D001)

Prior to disposal, consult your Environmental contact to determine if TCLP (Toxicity Characteristic Leaching Procedure, EPA Test Method 1311) is required. Reference 40 CFR Part 261.

## L. Protection Required for Work on Contaminated Equipment

Contact immediate supervisor for specific instructions before work is initiated. Wear protective equipment and/or garments described in Section C if exposure conditions warrant.

## M. Hazard Classification

This product meets the following hazard definition(s) as defined by the Occupational Safety and Health Hazard Communication Standard (29 CFR Section 1910.1200):

<input type="checkbox"/> Combustible Liquid	<input type="checkbox"/> Flammable Aerosol	<input type="checkbox"/> Oxidizer
<input type="checkbox"/> Compressed Gas	<input type="checkbox"/> Explosive	<input type="checkbox"/> Pyrophoric
<input type="checkbox"/> Flammable Gas	<input checked="" type="checkbox"/> Health Hazard (Section F)	<input type="checkbox"/> Unstable
<input checked="" type="checkbox"/> Flammable Liquid	<input type="checkbox"/> Organic Peroxide	<input type="checkbox"/> Water Reactive
<input type="checkbox"/> Flammable Solid		

Based on information presently available, this product does not meet any of the hazard definitions of 29 CFR Section 1910.1200.

## N. Additional Comments

### NSA 313

As of the preparation date, this product did not contain a chemical or chemicals subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

### NFPA 704 Hazard Codes - - - - - Signals

Health	: 2	Least	- 0
Flammability	: 4	Slight	- 1
Reactivity	: 0	Moderate	- 2
Special Haz.	: -	High	- 3
		Extreme	- 4

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NEW HAMPSHIRE GAS CORPORATION  
OPERATIONS & MAINTENANCE MANUAL

APPENDIX E

Weld Procedure



Welding Procedure Specification No. 95-D-18

Reference Procedure Qualification Record No. 95-D-18

1. Scope:	Branch Connection	11. Direction of Welding:	Downhill
2. Process:	SMAW	12. Number of Passes:	(2) Minimum
3. Material:	API 5L Group B; >X42 to <X65	13. Time Lapse between passes:	See note 5
4. Diameter:	ALL	14. Type of Line-up Clamp:	N/A
5. Wall Thickness:	ALL	15. Removal of Line-up Clamp:	N/A
6. Joint Design:	Bevel Groove; 30° - 40° incl. angle	16. Cleaning:	Power tools or hand tools
7. Filler Metal:	Root: API Group 1 (E6010) Fill: API Group 1 (E7010)	17. Preheating:	See note 6
8. Electrical Char.:	DCEP	18. Shielding Gas & Flow rate:	N/A
9. Number of welders:	(1)	19. Shielding Flux:	N/A
10. Position:	Fixed	20.	

**NOTES:**

1. Root Pass, Hot Pass, and remaining passes: electrode size 3/32" through 3/16" selection depends on pipe diameter.
2. For every .125" of wall thickness less than that of the test pipe, one complete filler pass will be eliminated.
3. For every .125" of wall thickness greater than that of the test pipe, one complete filler pass will be added.
4. Add stripper passes if needed from 2-5 o'clock to complete a uniform cap pass.
5. Not to exceed 5 minutes between Root and Hot Pass. Remaining passes as soon as possible.
6. **Preheating:** As required by company and prevailing weather conditions: If the base metal temperature is below 50°F, preheat the base metal to at least 100 °F and maintain this minimum temperature during welding. If the metal is damp, apply heat until the moisture has been evaporated completely.

WELDING DATA				
Bead Number	Electrode Size	Voltage	Amperage	Speed of Travel
1. Root Pass	See note 1	20 - 40	60 - 225	2 - 14 IPM
2. Hot Pass	See note 1	20 - 40	60 - 225	2 - 14 IPM
3. Filler & Cover Passes	See note 1	20 - 40	60 - 225	2 - 14 IPM

Approved for use:

*6/22/95*  
Date

Welding Supervisor:

*Frank W. Reise*

File: WPS-DN.wp

Rev. 5/22/95

# COUPON TEST REPORT

PAR-95-D-18  
95-C

CUSTOMER NYSEG DATE 2-2-95 TEST NUMBER 12"X12" T  
 CONTRACTOR NYSEG LOCATION ELMIRA STATE N.Y.  
 WELDER W.D. KLUE MARK \_\_\_\_\_ INSPECTOR \_\_\_\_\_  
 WELDING TIME \_\_\_\_\_ TIME OF DAY \_\_\_\_\_ MEAN TEMP \_\_\_\_\_ WEATHER CONDITIONS \_\_\_\_\_  
 WELD POSITION: - Roll  Fixed  Other  - Describe \_\_\_\_\_  
 WIND BREAK USED \_\_\_\_\_ WELDING MACHINE - TYPE HOBART & SIZE 300  
 VOLTAGE \_\_\_\_\_ AMPERAGE \_\_\_\_\_  
 FILLER METAL 6010-7010 Group 1 REINFORCEMENT SIZE 1/16"  
 PIPE TYPE API-5L X-60 PIPE GRADE X 60  
 WALL THICKNESS .281 OUTSIDE DIAMETER 12.750

COUPON STENCILED	1	2	3	4	5	6	7
SIZE OF ELECTRODE	1/8	1/8	5/32	5/32	5/32		
ORIGINAL SPECIMEN DIMENSIONS							
ORIGINAL SPECIMEN AREA							
MAXIMUM LOAD							
TENSILE STRENGTH PER SQUARE INCH OF PLATE AREA							
FRACTURE LOCATION							

<input checked="" type="checkbox"/> PROCEDURE	<input checked="" type="checkbox"/> QUALIFYING TEST	<input checked="" type="checkbox"/> QUALIFIED
<input type="checkbox"/> WELDER	<input type="checkbox"/> LINE TEST	<input type="checkbox"/> DISQUALIFIED

MAXIMUM TENSILE \_\_\_\_\_ MINIMUM TENSILE \_\_\_\_\_ AVERAGE TENSILE \_\_\_\_\_

**REMARKS ON TENSILE TEST:**

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_

**REMARKS ON BEND TEST:**

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_

**REMARKS ON NICK-BREAK TEST:**

1. ACCEPTABLE
2. ACCEPTABLE
3. ACCEPTABLE
4. ACCEPTABLE

TEST MADE AT ELMIRA N.Y. DATE 1-22-95

TESTED BY CONSOLIDATED N.D.E. SUPERVISED BY B. HECT



Welding Procedure Specification No. 95-D-14

Reference Procedure Qualification Record No. 95-D-14

1. Scope:	Open Butt Weld	11. Direction of Welding:	Downhill
2. Process:	SMAW	12. Number of Passes:	(2) Minimum
3. Material:	API 5L Group B; >X42 to <X65	13. Time Lapse between passes:	See note 5
4. Diameter:	2.375" to 12.750"	14. Type of Line-up Clamp:	Either Internal - when required by company External - Line pipe, Tie-ins & fab. as needed
5. Wall Thickness:	0.188" - 0.750"	15. Removal of Line-up Clamp:	Either Internal - After 100% of completion of root weld External - After 50% of completion of root weld
6. Joint Design:	V-Bevel; 60° - 70° incl. angle	16. Cleaning:	Power tools or hand tools
7. Filler Metal:	API Group 1 (E6010, E7010)	17. Preheating:	See note 6
8. Electrical Char.:	DCEP	18. Shielding Gas & Flow rate:	N/A
9. Number of welders:	(1)	19. Shielding Flux:	N/A
10. Position:	Fixed	20.	

**NOTES:**

1. Root Pass, Hot Pass, and remaining passes: electrode size 3/32" through 3/16" selection depends on pipe diameter.
2. For every .125" of wall thickness less than that of the test pipe, one complete filler pass will be eliminated.
3. For every .125" of wall thickness greater than that of the test pipe, one complete filler pass will be added.
4. Add stripper passes if needed from 2-5 o'clock to complete a uniform cap pass.
5. Not to exceed 5 minutes between Root and Hot Pass. Remaining passes as soon as possible.
6. Preheating: As required by company and prevailing weather conditions: If the base metal temperature is below 50°F, preheat the base metal to at least 100 °F and maintain this minimum temperature during welding. If the metal is damp, apply heat until the moisture has been evaporated completely.

WELDING DATA				
Bead Number	Electrode Size	Voltage	Amperage	Speed of Travel
1. Root Pass	See note 1	20 - 40	60 - 225	2 - 14 IPM
2. Hot Pass	See note 1	20 - 40	60 - 225	2 - 14 IPM
3. Filler & Cover Passes	See note 1	20 - 40	60 - 225	2 - 14 IPM

Approved for use:

6/22/25  
Date

Welding Supervisor:

*Janet Pierce*

# COUPON TEST REPORT

PDR-95-D-14  
95-A

CUSTOMER NYSEG DATE 2-2-95 TEST NUMBER 12" Butt.  
 CONTRACTOR NYSEG LOCATION Elmira STATE N.Y.  
 WELDER W.D. KLUE MARK \_\_\_\_\_ INSPECTOR \_\_\_\_\_  
 WELDING TIME \_\_\_\_\_ TIME OF DAY \_\_\_\_\_ MEAN TEMP \_\_\_\_\_ WEATHER CONDITIONS \_\_\_\_\_  
 WELD POSITION: - Roll  Fixed  Other  - Describe 15°  
 WIND BREAK USED \_\_\_\_\_ WELDING MACHINE - TYPE HOBART & SIZE 300  
 VOLTAGE \_\_\_\_\_ AMPERAGE \_\_\_\_\_  
 FILLER METAL E6010 - E7010 Group 1 REINFORCEMENT SIZE 1/16"  
 PIPE TYPE API-5L x 60 PIPE GRADE X 60  
 WALL THICKNESS .281 OUTSIDE DIAMETER 12.750

COUPON STENCILED	1	2	3	4	5	6	7
SIZE OF ELECTRODE	1/8	1/8	5/32	5/32			
ORIGINAL SPECIMEN DIMENSIONS	.272 1.018	.275 1.090					
ORIGINAL SPECIMEN AREA	.2768	.2997					
MAXIMUM LOAD	27,000	28,000					
TENSILE STRENGTH PER SQUARE INCH OF PLATE AREA	97,543	93,426					
RACTURE LOCATION	P/m	P/m					

<input checked="" type="checkbox"/> PROCEDURE	<input checked="" type="checkbox"/> QUALIFYING TEST	<input checked="" type="checkbox"/> QUALIFIED
<input type="checkbox"/> WELDER	<input type="checkbox"/> LINE TEST	<input type="checkbox"/> DISQUALIFIED

MAXIMUM TENSILE 97,543 MINIMUM TENSILE 93,426 AVERAGE TENSILE 95,484

**REMARKS ON TENSILE TEST:**

1. ACCEPTABLE
2. ACCEPTABLE
3. \_\_\_\_\_
4. \_\_\_\_\_

**REMARKS ON BEND TEST:**

1. R1 - ACCEPTABLE
2. R2 - ACCEPTABLE
3. F1 - ACCEPTABLE
4. F2 - ACCEPTABLE

**REMARKS ON NICK-BREAK TEST:**

1. ACCEPTABLE
2. ACCEPTABLE
3. \_\_\_\_\_
4. \_\_\_\_\_

TEST MADE AT Elmira N.Y. DATE 1-26-95

TESTED BY CONSOLIDATED N.Y.R. SUPERVISED BY B. HART

NEW HAMPSHIRE GAS CORPORATION  
OPERATIONS & MAINTENANCE MANUAL

APPENDIX F

Product Installation Instructions  
Separate Manual Located at  
32 Central Square  
Keene, NH 03431

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# PERMABOND GASEAL<sup>®</sup> TRAINING MANUAL

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*\*This is a general informational training manual of the Permabond GASEAL<sup>®</sup> Sealant system and is only to be used as a supplemental training aid. For more detailed product and sealing information, consult your Permabond Utility Sales Specialist.*

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NON-Warranty: the information given and the recommendations made herein are based on our research and are believed to be accurate but no guarantee of their accuracy is made. In every case, we urge that purchasers before using any product in full scale production make their own tests to determine to their own satisfaction whether the product is of acceptable quality and is suitable for their particular purpose under their own operating conditions.

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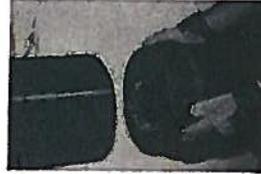
# INSTALLATION INSTRUCTIONS

## Class III-U Maxi-Grip™

### \* 8" Cast-Iron Only\*



1. Clean cast-iron pipe end at least 6" back, removing dirt, scale, and oil.



8. Slide Insulator onto CAST-IRON pipe with YELLOW MARK FACING Stainless Jaw Band and Locking Plate.



2. Clean plastic pipe end at least 6" back, removing dirt and oil. Pipe ends must be cut square and be free of longitudinal grooves.



9. Remove spacer ring from inside of coupling.



3. Insert properly sized metallic stiffener at least 7" long into plastic pipe end.



10. Soap gaskets...



4. Mark each pipe 5" back from end. An additional 12" markback from each end will aid in inspection of the finished joint.



11. ...and both pipes.



5. Remove outer nuts, and set aside Locking Plate, Stainless Jaw Band, and Insulator.



12. Stab coupling entirely onto IPS pipe.



6. Slide locking plate onto CAST-IRON pipe with letter "A" facing IPS pipe.



13. Hold spacer ring between pipes and slide coupling back over Cast-Iron pipe.



7. Slide Stainless Jaw Band onto CAST-IRON pipe with YELLOW MARK FACING LOCKING PLATE.

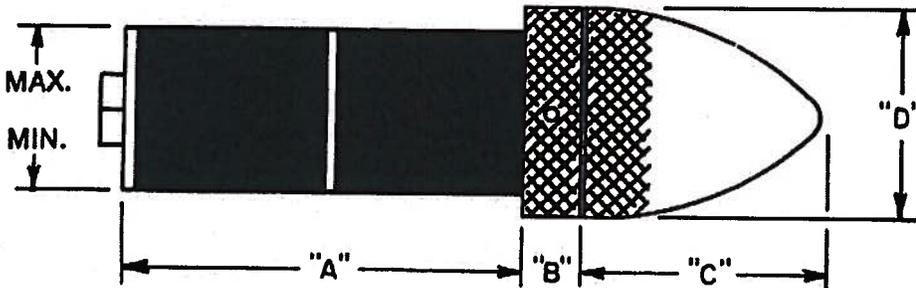
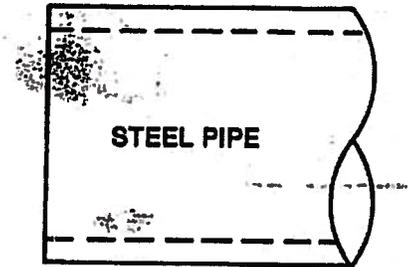
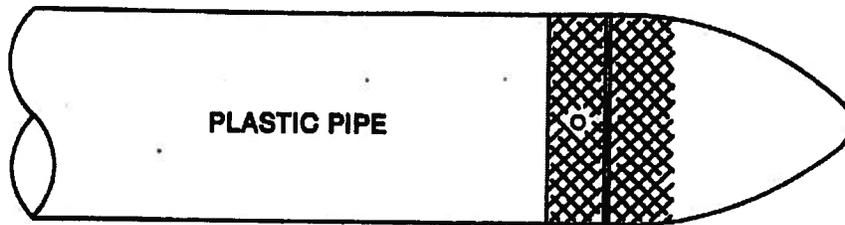


14. Align IPS end of coupling with 5" mark on IPS pipe.

CONTINUED ON OTHER SIDE

## X-Pander Nose Cones

### For Insertion of Plastic Pipe in Old Service Pipe or Auger Holes



#### Operating Instructions

Insert rubber plug "A" into plastic pipe, hold collar "B" and turn cone "C" clockwise to tighten. Reverse to loosen.

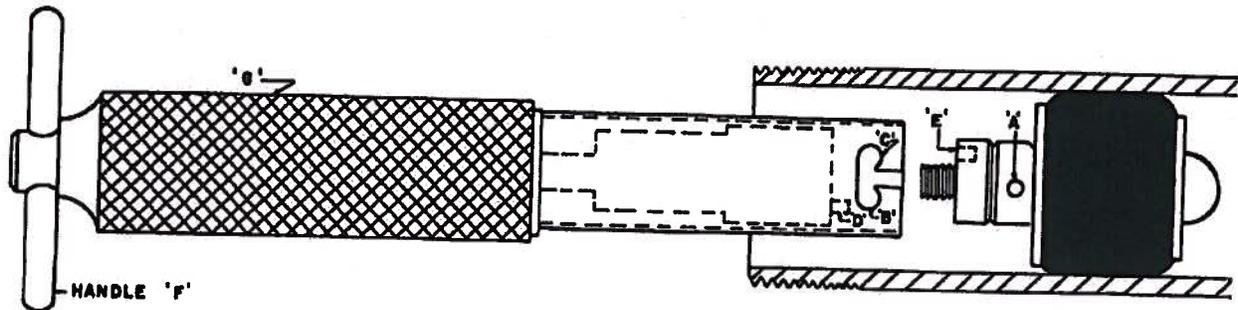
Unit needs to be only hand tight to hold.

Collar "B" and cone "C" made of hard aluminum. Cone "C" has steel helicoil thread insert.

IRON PIPE SIZE	"A"	"B"	"C"	"D"	MAX.	MIN.	PART NO	PRICE EA
1/2"	1"	3/8"	1 1/4"	7/8"	3/4"	19/32"	P-.875	\$ 5.88
3/4"	2 1/8"	3/8"	1 5/16"	1 1/8"	15/16"	25/32"	P-.75	6.55
1"	2 1/8"	3/8"	1 1/2"	1 5/16"	1 5/32"	1"	P-1.3125	9.85
1 1/4"	2 1/8"	1/2"	2"	1 11/16"	1 7/16"	1 1/4"	P-1.25	17.90
1 1/2"	2 3/16"	5/8"	2 1/4"	1 29/32"	1 3/4"	1 7/16"	R19062	18.60
2"	2 3/16"	3/4"	2 1/2"	2 3/8"	2 1/8"	1 13/16"	P-2.375	27.05
COPPER TUBE SIZE								
1/2" (5/8" O.D.)	1"	3/8"	1 1/4"	5/8"	1/2"	13/32"	P-.625	5.50
1" (1 1/8" O.D.)	2 1/8"	3/8"	1 5/16"	1 1/8"	1"	29/32"	P-1.125	6.60

Keep threads on bolt and in nose cone clean and greased. Also, the smooth face between "B" & "C". The unit will operate much easier if kept clean.

# Instructions for Operating the X-PANDER PIPE LINE SAFETY PLUG & WRENCH



Wrenches are universal - any wrench will fit all sizes of plugs.

To install the X-PANDER plug in a pipe or fitting, first take the plug and slip it onto the end of the wrench engaging pin "A" into the slot at the end of the wrench and turn the pin "A" into notch "B". This will hold the plug onto the end of the wrench. Then turn the wrench handle "F" clockwise with one hand while holding the wrench at "G" with the other until pin "D" on the wrench drops into the hole "E" in the X-PANDER plug nut. Now the plug is ready for expansion. The plug may now be inserted into a fitting or pipe. By holding the wrench at "G" and turning the handle "F" clockwise, the plug will be expanded.

To remove the wrench from the plug after the plug is expanded, just push in on the wrench and turn the wrench clockwise enough to let pin "A" out of notch "B" and out the slot at the end of the wrench.

To remove the plug from a pipe or fitting, put wrench into pipe and slip notch in end of wrench over pin "A" and turn wrench right engaging pin "A" into notch at "C". Now, by holding the wrench at "G" with one hand and turning the wrench handle "F" counter clockwise, the plug will be contracted. When the plug is contracted enough, the plug and wrench will slip out of the pipe or fitting.

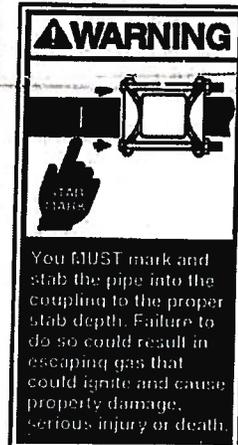
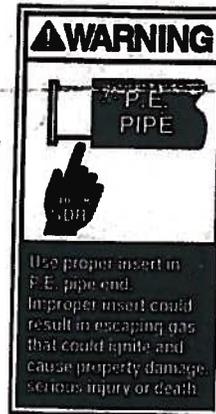
In expanding the plug, don't use any extra leverage on the wrench handle "F" as it is not necessary to tighten the plug any tighter than the ordinary man can pull on handle "F". Any extra leverage would tend to damage the wrench or the plug.

# DRESSER®

## INSTALLATION INSTRUCTIONS Style 711 Long Body Couplings PE to PE, PE to Steel & Steel to Steel

For use on polyethylene pipe listed in ASTM D2513

- Clean steel pipe ends removing oil, dirt, loose scale, and rust; gasket should seat on bare metal. Polyethylene pipe must be free of dirt, longitudinal scratches, grooves and burrs.
- On all P.E. pipe ends, the recommended insert stiffener must be installed. Before inserting in pipe end, each insert should be checked to ensure that the SDR indicated on the branding corresponds to the SDR of pipe being used.
- Install the proper insert in each P.E. pipe end.
- For insertion: Polyethylene pipe 6" and smaller should be marked 4" from pipe end; 8" polyethylene pipe should be marked 5" from pipe end. Steel pipe 6" and smaller, mark pipe for a minimum pipe entrance of 3-1/2"; for 8" steel pipe, mark pipe for a minimum pipe entrance of 4-1/2"; for 12" steel and polyethylene pipe, mark pipe for a minimum pipe entrance of 6".
- Check the inside of the coupling to assure that gaskets and grip rings are free of dirt or foreign matter.
- After gaskets are clean, apply soap water to gaskets and pipe ends (anti-freeze should be added in freezing weather).
- Without disassembling, stab coupling to mark on pipe.
- Stab other pipe to mark located on pipe end.
- Tighten nuts uniformly until all bolts have a uniform tightness to the torque recommended.



### WARNING

Never reuse this coupling for making a joint in accordance with D.O.T. Title 49 Part 192 Subpart F, Paragraphs 192.273(b), 192.283(b), & 192.285 unless grip ring, backup ring, gasket, bolts, nuts, and followers have been replaced OR the installer has determined these components have not been damaged in any way, are in new condition, and an applicable joining procedure is used.

When used for test purposes only, the installer shall determine conformance with Part 192 Subpart J, Paragraph 192.515(a).

Coupling Size	Torque
1-1/4"	35 ft. lbs. minimum
2" - 12"	80 ft. lbs. minimum

- Should field coating be desired, do not box coat with hot enamel coating.

### PRODUCT RATINGS FOR COUPLING WITH SAME PIPE DIAMETER ON BOTH ENDS

PIPE SIZE		Max. Sealing Pressure (See note 3)	Max. Steel Pipe Pullout Resistance	Polyethylene* Pipe Pullout Resistance Up To The Max. Wall Listed in Table Meets Or Exceeds The Requirements Specified in D.O.T. 192.283(b) (See Note 1 & 2)	
Nom.	O.D.			Type 2306/2406	Type 3406/3408
1-1/4"	1.660	150 P.S.I.	2,500 pounds	SDR 10	SDR 9.3
2"	2.375	150 P.S.I.	6,300 pounds	SDR 9.3	SDR 9.3
3"	3.500	300 P.S.I.	13,000 pounds	SDR 9.3	SDR 9.3
4"	4.500	300 P.S.I.	14,000 pounds	SDR 9.3	SDR 9.3
6"	6.625	300 P.S.I.	22,000 pounds	SDR 11	SDR 11
8"	8.625	150 P.S.I.	37,300 pounds	SDR 11	SDR 11
12"	12.750	150 P.S.I.	50,800 pounds	SDR 13.5	SDR 11

Note 1 - For wall thickness greater than SDR listed, contact DMD Division for recommendation.

Note 2 - Pullout resistance is based on using reinforcing pipe inserts that conform to Dresser specifications.

Note 3 - Unless noted on body.

Note 4 - For reducing sizes, the rating for the smallest diameter end applies. All sizes of reducing couplings are rated to 150 psig max.

\* Polyethylene pipe listed in ASTM D-2513.



DMD-ROOTS Division  
Dresser Equipment Group, Inc.  
41 Fisher Avenue, Bradford, PA 16701

Rev. 12/89  
0001-0824-899

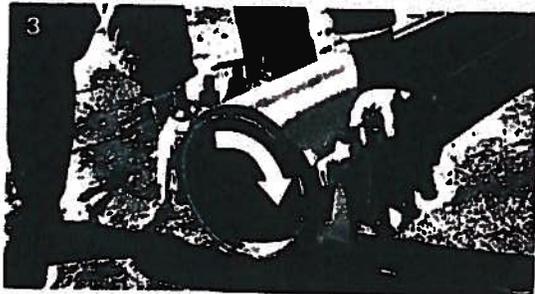
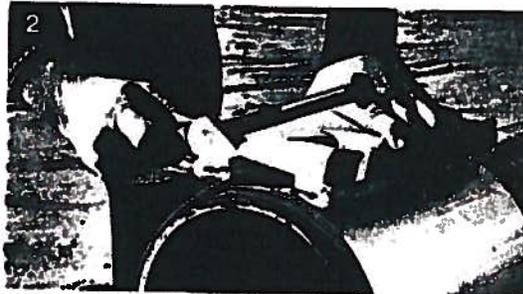
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# THE FASTEST, EASIEST WAY TO MAKE PERMANENT REPAIR OF STEEL, FIBERGLASS, PVC, POLYETHYLENE, POLYBUTYLENE, CAST IRON AND A-C PIPE

## Installation Check List

- Check O.D. of pipe and clamp to be used.
- Thoroughly clean off pipe on either side of break and make sure pipe surface is clean.
- Make sure no foreign material is sticking in the gasket, pipe or stud bolt areas prior to final assembly and tightening.
- Use a spacer or metal bridge between pipe ends if the gap is greater than 1/2".
- Pressure test for leakage prior to back filling.
- Lubricating pipe and clamp gasket with a soapy water solution reduces friction and provides for easier assembly.
- If the pipe is well lubricated complete circle clamps can be assembled loosely next to the break and slid over it.
- Place a reference mark on the pipe. After completing the installation, this can be checked to insure the clamp has been properly positioned over the leak.
- Drilling a small hole at the end of the split in the pipe can relieve stresses and prevent it from spreading.
- Spraying water will be minimized if the water level is allowed to rise over the pipe.
- Keeping the water flowing will reduce the possibility of foreign matter or contaminants entering the pipeline.
- The width of the clamp should provide 3" of clamp on solid pipe on both sides of the break if the diameter is 12" or less — and 4" on larger diameter pipe.

## Four Easy Steps Provide Positive, Permanent Repair



1. Clean pipe at break and wrap clamp around pipe. Clamp is easily opened by lifting bolts from slotted lugs. Installing Multi-Panel clamp is greatly simplified by unique design with captive bolt lug which keeps clamp in one piece during assembly.
2. Fit lug fingers together, tucking in gasket flap. Drop bolt heads into slotted lug to close clamp.

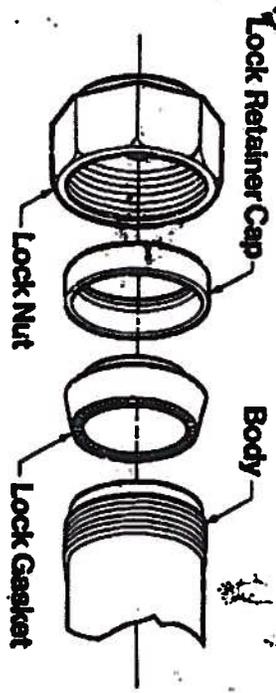
3. Rotate the clamp approximately 1/4 turn in direction of the arrow to smooth out the gasket flap.
4. Tighten bolts until leak is stopped, or to about 35 foot-pounds of torque. Patented Check-O-Seal gasket seals and holds with approximately 1/3 less bolt torque than competitive clamps.

# DRESSER® STYLE 499 TRANSITION COUPLING

## INSTALLATION INSTRUCTIONS

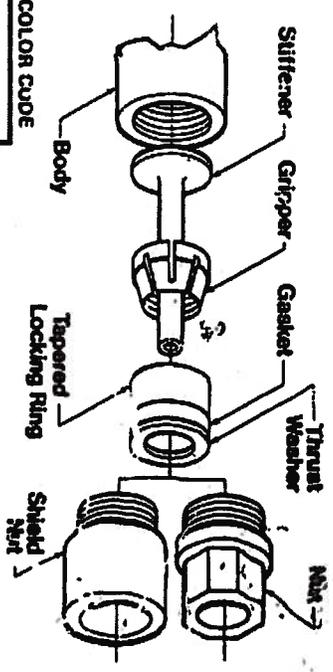
### STEEL PIPE END: (LARGER END OF COUPLING)

1. Pipe end to be free of dirt, grease, grooves, or imperfections that will affect the seal.
2. Stab pipe end a minimum of 1½" past end of nut.
3. Tighten nut while holding body a minimum of 100 pounds pull (in a 14" wrench for ¾", 18" wrench for 1" and 1½", and 24" wrench for 1½" and 2").



### PLASTIC PIPE END: (SMALLER END OF COUPLING)

1. Tubing to be free of longitudinal scratches, cut square and deburred. At higher temperature a slight chamfer approximately 1/16" x 45° on the end of tubing will facilitate insertion into the fitting.
2. When necessary to disassemble compression end(s), reassemble in exact sequence as illustrated.
3. Make sure nut flange is approximately ¼" from body contact.
4. Mark tubing from end 2¼" for 5/8" O.D. thru 1-1/8" O.D. and 3¼" for larger sizes. For shield nut, mark 5/8" O.D.-4 1/8", 7/8" and 1-1/8" O.D.-4-1/4" and 1-3/8" O.D.-4¾".
5. Check stiffener color to assure proper stiffener (See Color Code).
6. Stab tubing into fitting until it contacts the stiffener flange.
7. Tighten nut until flange contacts body. (Do not over-tighten.)



Tubing Wall (Any Dia.)	Color
.082	Red
.077	Blue
.090	Steel Finish
.089/101/103	Gold
.121	Black

**DMD** DRESSER MANUFACTURING DIVISION  
 DRESSER INDUSTRIES INC.  
 Bradford, Pennsylvania 16701

0001-0310-999 Rev. 1/87

# DRESSER®

## INSTALLATION INSTRUCTIONS

### Style 90 Couplings and Fittings For use on Steel Pipe

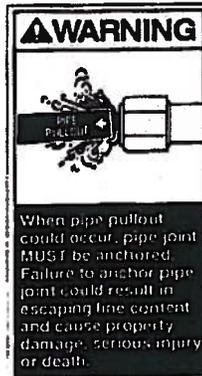
1. Clean pipe surface for a distance of four inches from the pipe ends (for 10" bodies - seven inches).
2. Loosen nuts about one-quarter turn and make sure gasket is loose.
3. Apply soap-water to gaskets (ethylene glycol may be added in freezing weather).
4. Stab pipe ends into coupling or fitting. Center coupling over joint.
5. Tighten each nut independently while holding coupling body from rotating. See table for wrench size and required pull.

Nominal Steel Pipe Size (I.D.)	Recommended Wrench Size
3/8"	10"
1/2"	14"
3/4"	14"
1"	18"
1-1/4"	18"
1-1/2"	24"
2"	24"

*In each case a pull of about 75 pounds should be applied to the end of the wrench.*

**Pressure Rating: 150 PSI unless noted on body**  
**Temperature Rating: 212°F. (100°C.)**

*For other pressure or temperature ratings contact  
DMD Division, Dresser Industries, Inc..*



**DMD DIVISION, DRESSER INDUSTRIES, INC.**  
41 FISHER AVENUE  
BRADFORD, PENNSYLVANIA 16701

0001-0490-999  
Rev. 4/95



# INSTALLATION INSTRUCTIONS

## FOR

### STYLES 38, 40, 56, 62 68, 69, 71, 72, 76, 89, 128

- (1) CLEAN ALL DIRT, RUST, OIL OR LOOSE SCALE FROM PIPE END. CHECK SURFACES WHERE GASKET CONTACTS THE PIPE TO INSURE THERE ARE NO IMPERFECTIONS SUCH AS GOUGES OR GROOVES THAT WILL IMPAIR THE PERFORMANCE OF THE GASKET SEAL.
- (2) FOR COUPLINGS, MEASURE BACK ON EACH PIPE END ONE-HALF OF THE MIDDLE RING LENGTH PLUS TWO INCHES AND PLACE A CHALK MARK. THESE MARKS ARE USED FOR CENTERING THE COUPLING OVER THE JOINT TO BE COUPLED. FOR ELLS, TEES, CROSS BRANCHES, ETC., THIS DOES NOT APPLY.
- (3) SLIDE FOLLOWER(S) OVER PIPE END(S).
- (4) WIPE GASKET(S) CLEAN AND LUBRICATE THE GASKET(S), PIPE O.D.(S), AND MIDDLE RING FLARE(S) WITH SOAPY WATER OR A NON-PETROLEUM BASE LUBRICANT. (ETHYLENE GLYCOL MAY BE ADDED TO SOAPY WATER IN FREEZING WEATHER).
- (5) SLIDE GASKET(S) OVER PIPE END(S) AND ASSEMBLE MIDDLE RING ON ONE PIPE END.
- (6) STAB OTHER PIPE END INTO MIDDLE RING AND CENTER COUPLING BETWEEN CHALK MARKS. PIPE END MUST BE PAST THE END OF GASKET A MINIMUM OF ONE INCH AFTER DEFLECTION HAS OCCURRED.
- (7) INSERT BOLTS FOR DOWNSTROKE TIGHTENING WHERE APPLICABLE. BOLTS ON OPPOSITE SIDES OF PIPE WILL BE IN OPPOSITE DIRECTIONS.
- (8) TIGHTEN BOLTS ON OPPOSITE SIDES, DRAWING UP THE FOLLOWERS EVENLY. UNTIL ALL BOLTS HAVE BEEN TIGHTENED TO THE RECOMMENDED TORQUE. CHECK TORQUE ON BOLTS PRIOR TO BACKFILLING.
- (9) RECOMMENDED TORQUE:
  - 3/8" & 1/2" BOLTS.....35 FOOT POUNDS
  - 5/8" BOLTS .....75 FOOT POUNDS
  - 3/4" BOLTS .....90 FOOT POUNDS

(10) RECOMMENDED LAYING DEFLECTION PER COUPLING.

PIPE SIZE	MIDDLE RING LENGTH		
	5"	7"	10"
1/2" THRU 2" O.D.	6°	6°	--
ABOVE 2" THRU 14" O.D.	4°	4°	4°
ABOVE 14" THRU 30" O.D.	2°	4°	4°
ABOVE 30" THRU 37" O.D.	1-1/2°	3°	3-1/2°
ABOVE 37" THRU 42" O.D.	--	2-1/2°	3-1/2°
ABOVE 42" THRU 54" O.D.	--	2°	3°
ABOVE 54" THRU 66" O.D.	--	--	2-1/2°
ABOVE 66" THRU 72" O.D.	--	--	2°

NOTE: FOR PRODUCTS USING ONE GASKET, REDUCE ABOVE VALUES IN HALF

## SEE REVERSE SIDE FOR PRODUCT WARNING.

PART NO. 0001-0419-999

772 REV. 193

# ASSEMBLY INSTRUCTIONS

The Perfection SERVI - SERT® FITTING  
U.S. PAT. NO. 4,712,813; CANADIAN PAT. NO 1,297,922  
BRITISH PAT. NO. 2,198,496; OTHER PATENTS PENDING

The Perfection SERVI-SERT® Fitting is an ideal termination for your polyethylene (PE) service line. It must always be used with a device threaded into the inlet, i.e., nipple, riser casing or reducer bushing. The basic connection procedure is always the same.

1. Disconnect the Servi-Sert® fitting from the inlet device supplied.
2. Push the PE service line thru the threaded steel nipple and / or bushing or riser casing as required for your installation.
3. Square cut end of PE service line, wipe clean with dry cloth. Inspect the last several inches of tubing for damage. If any, cut again to remove damaged area.
4. Chamfer the square cut end of the PE service line.

5. Determine the stab depth required by checking the length of hex on the Servi-Sert® fitting body. Mark the stab depth on the PE service line with a soft marking utensil (grease pencil, etc.)

6. Insure O-Ring is seated inside the body.

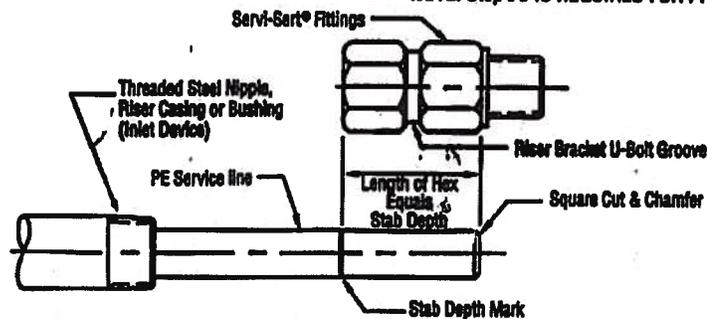
7. Stab the Servi-Sert® fitting onto the PE service line until the PE service line bottoms out in the fitting. The mark on the PE service line should be within 1/8" (3mm) from the end of the fitting.

NOTE: DO NOT TWIST FITTING UNTIL FULLY STABBED.

8. Reconnect the Servi-Sert® fitting to the inlet device hand tight plus one-quarter to one-half turn with a wrench. (No thread sealant is required for this joint).

9. Leak test per Standard Gas Company policy.

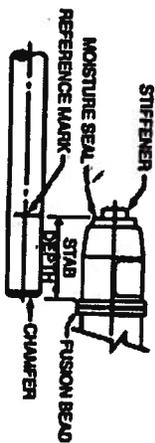
NOTE: Step #8 IS REQUIRED FOR PROPER FITTING FUNCTION.



# ASSEMBLY INSTRUCTIONS

## The Perfection PERMASERT® Non-Corrosive Mechanical Coupling

1. Cut off the tubing so that the end is square.
2. Wipe the tubing with a dry, clean cloth.
3. Inspect the tubing for surface defects.  
**IF EXCESSIVE SCRATCHES OR GOUGES ARE VISIBLE,  
CUT OFF THE DEFECTIVE AREA AND REPEAT THE FIRST  
THREE STEPS.**
4. Using a chamfer tool, chamfer the end of the tube.  
**The stab depth is the distance from the fusion bead to the end  
of the coupling body as shown.**
5. Use a soft marking utensil (felt tip, crayon, or grease pencil) to mark the tube at the proper distance from the chamfered end. This is called the stab depth.



6. Stab tubing into coupling until it bottoms.  
The reference mark will be:  
Within 1/8" on 1/2" CTS and 1" CTS sizes.  
Within 1/4" on all other sizes through 1-1/4" CTS.  
Approximately 3/8" on 1-1/4" IPS and 2" IPS sizes.
7. Pressure test the finished joint according to your standard operating procedure.  
The reference mark can move outward up to an additional 3/8" during pressure testing.

# INSTALLATION INSTRUCTIONS

(1/2", 3/4", & 1" CTS & IPS and 1 1/4" CTS Handley Valves)

## COMPRESSION ENDS

100 PSIG GAS SERVICE — QUALIFIED PER ANSI B16.40

(This valve is for use on polyethylene pipe only.)



1. Verify that stiffener is correct for wall thickness or SDR of pipe used.
2. Loosen compression nut. (Disassembly Not Recommended. However, If Necessary See Reverse Side.)
3. Cut pipe end square. Clean, and Check to make sure it is free of scratches. Chamfering of pipe ends is recommended.
4. Measure and mark with crayon required stab depth on pipe end.
5. Stab pipe into valve.
6. Tighten nut until white tab is sheared and stop turning when positive stop on nut is engaged. If positive stop is damaged due to over tightening, be sure compression threads have not been stripped.
7. Verify that stab depth mark (see 4 above) is visible but within 1/4 inch of the nut.
8. Check for leaks. **SEE REVERSE SIDE FOR WARNING**

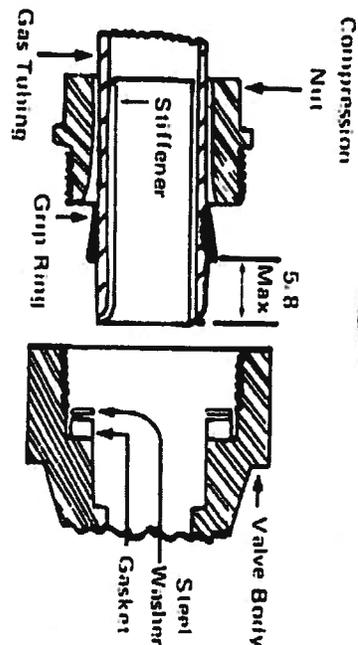
(If valve has different ends, Permasert™ or Universal, see other tag for additional instructions.)



**HANDLEY INDUSTRIES, INC.**

2101 Brooklyn Road • Jackson, Michigan 49203

Telephone (Area 517) 787-8821



### REASSEMBLY INSTRUCTIONS

IN TIGHT WORKING CONDITIONS, IT MAY BE NECESSARY TO DISASSEMBLE VALVE ENDS TO INSERT THE TUBING WITHOUT BUCKLING. THE COMPRESSION END COMPONENTS MUST BE KEPT CLEAN AND BE REASSEMBLED BY A TRAINED TECHNICIAN TO INSURE PROPER LOCKING AND SEALING. THE GRIP RING MUST BE POSITIONED 5/8 INCH OR LESS FROM THE END OF THE TUBING SO THAT TIGHTENING OF THE NUT WILL NOT PREMATURELY SEAT THE GRIP RING WHEN READY TO REASSEMBLE. SEE ABOVE DIAGRAM FOR PROPER LOCATION OF PARTS.

### WARNING

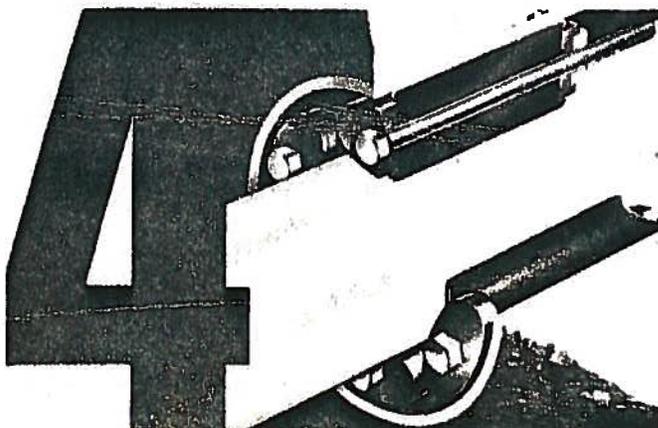
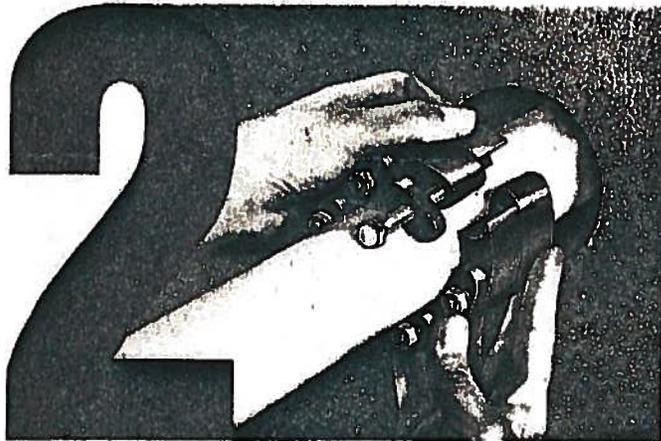
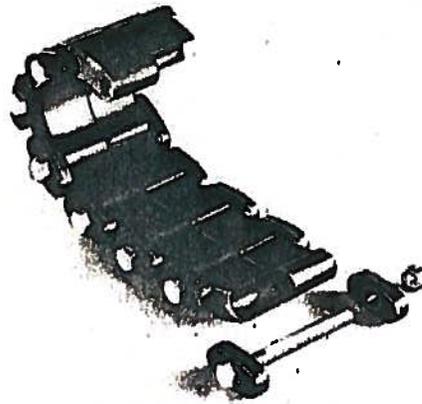
IF DAMAGED, THE VALVE CAN BE RETURNED TO THE FACTORY FOR REPAIR. DISASSEMBLY AND REASSEMBLY OF VALVE BODIES AND VALVE ENDS SHOULD BE PERFORMED ONLY BY THE MANUFACTURER BECAUSE ALL THREADS THAT CAN BE ACCIDENTALLY LOOSENED ARE CEMENTED AND SUCH WORK SHOULD BE DONE IN A DIRT-FREE ENVIRONMENT USING PROPER TOOLS. PARTS AND LUBRICANT BY PERSONS SPECIFICALLY TRAINED AND EXPERIENCED BEFORE INSTALLING VALVE ON EXISTING LINES. SHUT OFF FLOW OF GAS. RELIEVE PRESSURE AND PURGE THE LINE OF COMBUSTIBLE GAS. INSTALLATION OF GAS VALVE SHOULD BE PERFORMED ONLY BY PERSONS SPECIFICALLY TRAINED AND EXPERIENCED IN PERFORMING SUCH FUNCTIONS.



SEE REVERSE SIDE FOR INSTALLATION INSTRUCTIONS

Form A1395-1

# 1



## How to permanently seal pipes that pass through walls and floors ...FAST!

**1.** Use LINK-SEAL. Solid rubber links interconnected by bolts. Adapts to diameters up to 84 inches.

**2.** Wrap LINK-SEAL around pipe and connect first and last links.

**3.** Tighten bolts to expand rubber forming true hydrostatic, homogenous seal. Provides sound and shock absorption.

**4.** Seal I.P.S., C.I., API, copper, plastic pipes, etc., that pass through walls, floors, ceilings, roofs, etc. with LINK-SEAL.

Write for **FREE CATALOG**

STOCKING DISTRIBUTORS

**BMS**

**617-436-7720**

PO BOX 480

STOUGHTON, MA 02072



**THUNDERLINE CORPORATION**

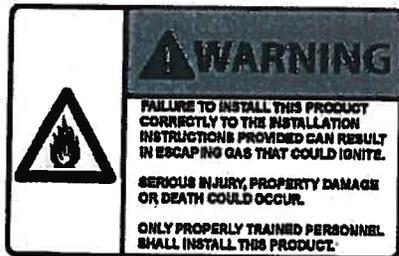
5495 Treadwell Road  
Wayne, Michigan 48184  
(313) 728-2400

## Installation Instructions

Elster Perfection Permalock® Tee  
U.S. PATENT NOS. 5425395

1. Remove TEE ASSEMBLY and DEPTH TUBE from the bag (check tee for TOWER and SADDLE O-RINGS). NOTE: A blue colored depth tube is required for 1 1/4 IPS main installation, and a white colored depth tube is required for 2-4 IPS main installation. If you do not have the proper color depth tube, **DO NOT** install the fitting.
2. Clean surface of main where TEE is to be installed. Avoid areas that are gouged or damaged. **LUBRICATE SADDLE O-RING AND MAIN SURFACE WITH LEAK TEST SOAP SOLUTION OR SILICONE GREASE.**
3. Bolt TEE onto PE main and tighten until the corners touch using a crossover tightening pattern. The bolts should be flush with the bottom of the base. Do not tighten further (a gap between the flanges in the locating pin area is acceptable).
4. Connect service to the TEE TOWER outlet.
5. Test tee/service assembly in accordance with your company's standard leak test procedures.
6. Place DEPTH TUBE on top of the CUTTER ASSEMBLY. Thread CUTTER ASSEMBLY downward using a 5/16" hex wrench. Continue threading the CUTTER ASSEMBLY downward until it bottoms in the tower. The DEPTH TUBE is a visual guide and will be approximately flush with the top of the Tee Tower when the cutter is engaged.
7. Thread CUTTER upward (counterclockwise) until top of CUTTER is flush with the top of the TOWER. This will gasify the service (Discard the DEPTH TUBE at this point).
8. Install CAP on the tower, hand-tighten to CAP STOP.

Note: Qualification training materials are available from the Gas Sales Department of Elster Perfection.



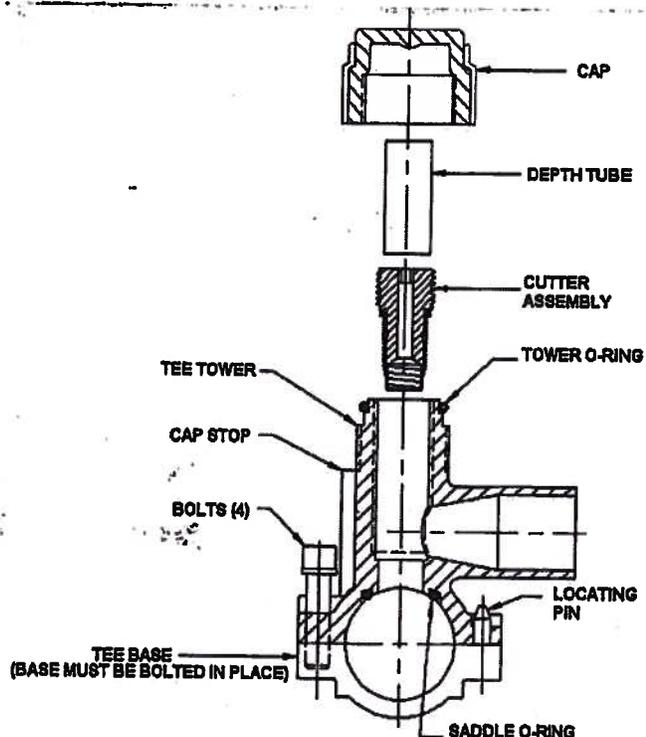
**elster**  
Perfection

[www.elster-perfection.com](http://www.elster-perfection.com)

T +1 800 544 6344

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Information contained herein is subject to change without notice. Product specifications may change. Contact your Elster Perfection representative for the most current product information. Printed in the United States.



## Installation Instructions

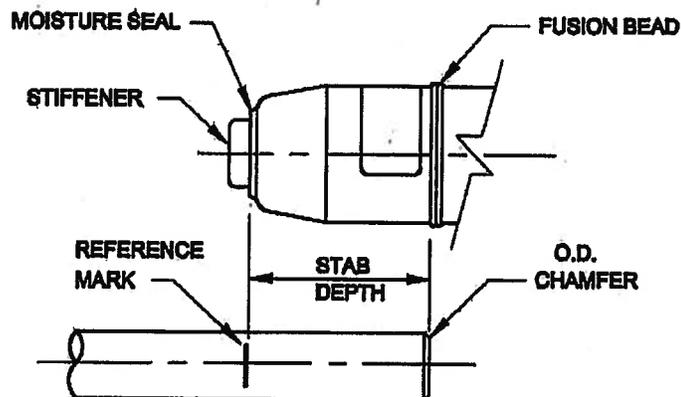
### Elster Perfection Permasert® Non-Corrosive Mechanical Coupling

1. Cut the tubing so that the end is square.
2. Wipe the tubing with a dry, clean cloth.
3. Inspect the tubing for surface defects.

**IF EXCESSIVE SCRATCHES OR GOUGES ARE VISIBLE, CUT OFF THE DEFECTIVE AREA AND REPEAT THE FIRST THREE STEPS.**

4. Using a Perfection chamfer tool, chamfer the outer diameter (O.D.) of the tube.
5. Use a soft marking utensil (felt tip pen, crayon or grease pencil) to mark the tube at the proper distance from the chamfered end. This is called the stab depth.

The stab depth is the distance from the fusion bead to the end of the coupling body as shown.



6. Stab the tube into coupling until it bottoms. The reference mark will be:
  - Within 1/8" of moisture seal on 1/2" CTS through 1" CTS sizes
  - Within 1/4" on 1" IPS and 1-1/4" CTS
  - Approximately 3/8" on 1 1/2" CTS through 2" IPS sizes
7. Pressure test the finished joint according to your standard operating procedure. The reference mark can move outward up to an additional 3/8" during pressure testing.

Istr. 056(A)

**125LWN / 175LWN  
JOMAR BRASS BALL VALVE  
INSTALLATION GUIDE**

(CGA 3.16- Lever Operated Non-Lubricated Gas Shut-Off Valves 3371-10;  
ANSI/ASME B16.33 VALVES (GAS)-Manually Operated Metallic for Use-in Piping  
Systems-Certified to U.S. Standards 3371-94)

**NATURAL, MANUFACTURED, MIXED AND LIQUEFIED PETROLEUM GASES  
PROPANE GAS AND LP GAS AIR MIXTURES**

Max pressure : 125 psig  
Temp range: -20 °F to 150 °F



**Location** - Sufficient space must be allowed to accommodate the valve and permit the handle to be operated 90° without interference. The valve should be installed so that it is not in contact with the ground or directly buried.

**Installation** - Methods that maintain the interior cleanliness of the piping system should be used. Thread sealant (liquid joint compound or Teflon Tape) should be used. Engage valve threads with pipe threads and turn valve clockwise. Valve should be tightened with a wrench so that it is securely fastened to the pipe and leak free.

**Maintenance** - No maintenance or relubrication required.

**WARNING**

\*Excessive torque used to fasten the valve to the fitting pipe could damage the valve and compromise the performance.

\*Do not install valves in locations where the service designation could be exceeded.

## INSTALLATION INSTRUCTIONS

### POSI-LOCK® Basement Tee

#### SERVICE HEAD RENEWAL TEE FOR POLYETHYLENE GAS TUBING

COMPLETE INSTRUCTIONS ARE ALSO AVAILABLE ON EACH INDIVIDUAL POSI-LOCK® PACKAGING BAG

- The POSI-LOCK® Basement Tee is factory assembled, quality control inspected and pressure tested to approximately 100 PSI. **DO NOT DISASSEMBLE!**
- The Basement Tee is assembled as a unit. **DO NOT INTERCHANGE** the nut or the body with another basement tee.
- Each POSI-LOCK® Basement Tee is complete with Insert stiffener.
- **DO NOT** apply pipe dope to the internal machine threads of the POSI-LOCK® Service Head Tee.
- The service can be renewed by installing the basement end first or the street end first.

#### COLOR CODED BOX LABELS DENOTE POLYETHYLENE WALL THICKNESS

FOR USE WITH POLYETHYLENE TUBING HAVING  
**.082" WALL**

**GREEN LABEL**

FOR USE WITH POLYETHYLENE TUBING HAVING  
**.090" WALL**

**BLUE LABEL**

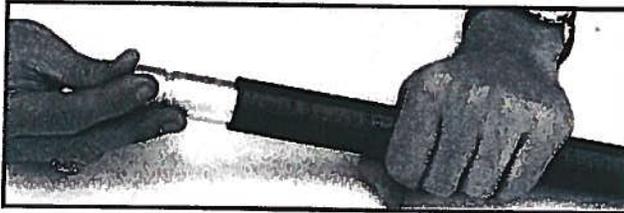
FOR USE WITH POLYETHYLENE TUBING HAVING  
**.102" WALL**

**YELLOW LABEL**

FOR USE WITH POLYETHYLENE TUBING HAVING  
**.121" WALL**

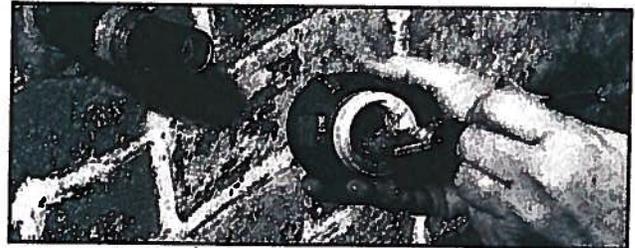
**RED LABEL**

#### INSTALLATION PROCEDURE - BASEMENT END OF SERVICE INSTALLED FIRST



- 1** Square cut polyethylene tubing. Remove the color coded insert stiffener from fitting and push it all the way into the polyethylene tubing.

Stiffener Color	GREEN	PLAIN or BLUE	YELLOW	RED
USE WITH (Wall Tubing)	0.082"	0.090"	0.102"	0.121"



- 2** Plastic tubing should protrude from steel pipe about 3" to 6". APPLY SOAP SOLUTION OR LEAK TEST SOLUTION to inside of basement tee and outside of polyethylene tubing. This lubricates the gasket and permits full insertion of tubing into fitting. **THIS IS IMPORTANT!**



- 3** Stab plastic tubing into the POSI-LOCK® Basement Tee until it bottoms. You can hear it and feel it. Visually check by looking into open end of the tee.



- 4** Thread basement tee onto existing steel service. Tighten nut firmly with wrench allowing fitting body to rotate freely. The yellow line on the nut should face in the direction of the meter set when tightened.



- 5** Tighten tee body until body and nut meet while holding the nut secure with locking wrench. The fitting cannot be over tightened because of the engineered mechanical stop.



- 6** When the fitting is properly tightened, check that the yellow line on the nut and the yellow line on the body are together and positioned in the direction of the meter set. **The yellow lines must meet.**

# Electrofusion Installation Procedure Manual



**It is important to read and understand all instructions before attempting a fusion. Permanent field installations should be done only by operators who have been properly trained and certified as qualified. Should you have any questions or need installation training, please contact**

**Central Plastics Company at 1-800-654-3872  
or  
Your Local Central Plastics Representative.**

**The following procedures were written to assist trained field personnel in the use of the Central Plastics Electrofusion system and Central Electrofusion Fittings. While technical data and advice contained herein is based upon tests and information believed to be reliable, user should not rely upon it absolutely for specific applications. All data is given and accepted at user's risk and confirmation of its validity and stability in particular cases should be obtained independently. Central Plastics makes no guarantee of results and assumes no obligation or liability in connection with its advice. The integrity of the piping system is the ultimate responsibility of the installer. This publication is not to be taken as a license to operate under, or recommendation to infringe any patents.**

REV 5/03rp

New HAMPSHIRE GAS CORPORATION  
OPERATIONS & MAINTENANCE MANUAL

APPENDIX G

Tool and Equipment Instructions  
Separate Manual Located at  
32 Central Square  
Keene, NH 03431

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NH Gas Corp.  
Service  
Manuals

1	3M 7500 Series Respiratory Mask
2	Battery Charger
3	Porter Cable Reciprocating Saw
4	DeWalt Rotary Hammer
5	Fluke 79/26 Series III Multi-meter
6	Craftsman Digitork
7	Sensit Gold CGI
8	Onmark Combustible Gas Indicator
9	Tif Combustible Gas Detectors
10	Bacharach Odorometer
11	Ridgid 300 Power Drive & Components
12	DeWalt Heavy Duty Chop Saw
13	Marson "Big Daddy" Riveter
14	Supco Laser Infrared Thermometer
15	Bacharach Fyrite Gas Analyzer
16	Bacharach Dioxor II, Monoxor II&H, Nonoxor II
17	MIP-1100 Steel Strap Sealer
18	MIP-1300 Steel Strap Tensioner
19	Sandy Jet Pressure Blaster
20	DeWalt Circular Saws
21	DeWalt Drills
22	DeWalt Heavy Duty Small Angle Grinder
23	DeWalt VS Reciprocating Saw
24	EM150/EM200 Electronic Manometer
25	Zoeller Pump
26	Little Giant Potent Pump
27	WESCO Pallet Truck
28	Bacharach Fyrite Pro
29	
30	
31	

## USE INSTRUCTIONS AND LIMITATIONS

### Important

Before use the wearer must read and understand these *User Instructions*. Keep these *User Instructions* for reference. This product contains no components made from natural rubber latex.

### Use For

Respiratory protection from certain airborne contaminants according to NIOSH approval, OSHA limitations, in Canada CSA standard Z94.4 requirements, other applicable regulations and 3M instructions.

### Do Not Use For

Concentrations of contaminants which are immediately dangerous to life or health, are unknown or when concentration exceeds 10 times the permissible exposure limit (PEL) in air purifying mode, 50 times PEL, in supplied air mode or according to specific OSHA standards or applicable government regulations, whichever is lower.

### Use Instructions

1. Failure to follow all instructions and limitations on the use of this respirator and/or failure to wear this respirator during all times of exposure can reduce respirator effectiveness and may result in sickness or death.
2. Before occupational use of this respirator a written respiratory protection program must be implemented meeting all the requirements of OSHA 29 CFR 1910.134 such as medical evaluation training and fit testing and applicable OSHA substance specific standards. In Canada, CSA standard Z94.4 requirements must be met.
3. The airborne contaminants which can be dangerous to your health include those that are so small you cannot see them.
4. Leave contaminated area immediately and contact supervisor if you smell or taste contaminants or if dizziness, irritation, or other distress occurs.
5. Store respirator away from contaminated areas when not in use.
6. Dispose of used product in accordance with applicable regulations.

### Use Limitations

1. This respirator does not supply oxygen when used in air-purifying mode. Do not use in atmospheres containing less than 19.5% oxygen.
2. Do not use when concentrations of contaminants are immediately dangerous to life and health, are unknown or when concentrations exceed 10 times the permissible exposure limit (PEL) when used in air-purifying mode, or according to specific OSHA standards or applicable government regulations, whichever is lower. When used as a straight, Type C, continuous flow supplied air respirator, the Assigned Protection Factor is 50 times the PEL or TLV guidelines for half facepiece respirators.
3. Do not alter, abuse or misuse this respirator.
4. Do not use with beards or other facial hair or other conditions that prevent a good seal between the face and the gasket of the respirator.

### Time Use Limitations

1. If respirator becomes damaged, leave contaminated area immediately and repair or replace the respirator.
2. Replace filters in accordance with the filter Time Use Limitation.
3. Replace cartridges in accordance with an established change schedule or earlier if smell, taste or irritation from contaminants is detected.

### NIOSH Cautions and Limitations

The following restrictions may apply. See NIOSH approval label.

- A- Not for use in atmospheres containing less than 19.5 percent oxygen.
- B- Not for use in atmospheres immediately dangerous to life or health.
- C- Do not exceed maximum use concentrations established by regulatory standards.
- D- All-line respirators can be used only when the respirators are supplied with respirable air meeting the requirements of CGA G-7.1 Grade D or higher quality.
- E- Use only the pressure ranges and hose lengths specified in the User's Instructions.
- F- If airflow is cut off, switch to filter and/or cartridge or canister and immediately exit to clean air.
- H- Follow established cartridge and canister change schedules or observe ESL to ensure that cartridge and canisters are replaced before breakthrough occurs.

- J- Failure to properly use and maintain the product could result in injury or death.
- K- The Occupational Safety and Health Administration regulations require gas-proof goggles to be worn with this respirator when used against irritants.
- L- Follow the manufacturer's User's Instructions for changing cartridges, canister and/or filters.
- M- All approved respirators shall be adjusted, fitted, used, and maintained in accordance with MSHA, OSHA, and other applicable regulations.
- N- Never substitute, modify, add, or omit parts. Use only exact replacement parts in the configuration as specified by the manufacturer.
- O- Refer to User's Instructions, and/or maintenance manuals for information on use and maintenance of these respirators.
- P- NIOSH does not evaluate respirators for use as surgical masks.
- S- Special or critical User's Instructions and/or specific use limitations apply. Refer to User's Instruction before donning.

### S - Special or Critical User Instructions

3M<sup>®</sup> Mercury Vapor Cartridges (6003 and 6052S) are equipped with passive 3M<sup>®</sup> End of Service Life Indicator (ESLI). The color change indicator must be readily visible when wearing the respirator without manipulation. If you cannot readily see the ESLI, do not use. Mercury vapor cartridges must be discarded when the ESLI changes color or within 30 days of opening packaging, or when ESLI becomes dirty or damaged, or when odors of vapors or gases become noticeable, whichever occurs first. Mercury vapor has no odor.

## LIST OF PRODUCTS

### 3M<sup>®</sup> 7500 Series Half Facepiece and Parts

#### Facepieces

Facepieces do not include cartridges, filters or retainers.

Number	Product Name
7501/37081	Half Facepiece, (Small)
7502/37082	Half Facepiece, (Medium)
7503/37083	Half Facepiece, (Large)

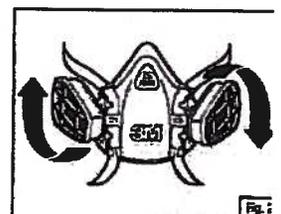
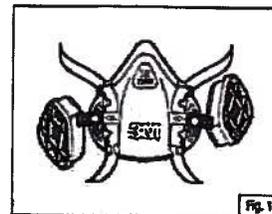
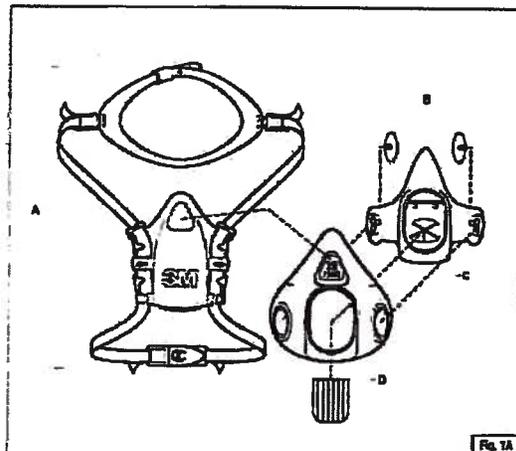
#### Replacement Parts (Fig. 1A)

A 7501	Head Harness Assembly
B 7502	Inhalation Valves
C 7506	Cartridge/Filter Holder
D 7503	Exhalation Valve

#### Accessories

504 *107065	Respirator Clearing Wipe
601	Quantitative Fit Test Adapter
6680	Bayonet Cap

**CAUTION:** Failure to properly dispose of spent cartridges, filters, or respirators contaminated by hazardous materials can result in environmental harm. Handling, transportation and disposal of spent cartridges, filters, or respirators must comply with all applicable federal, state, and local laws and regulations.



# IMPORTANT: READ AND SAVE THIS SAFETY AND INSTRUCTION MANUAL. KEEP IT WITH OR NEAR CHARGER AT ALL TIMES.

## 1. IMPORTANT SAFETY INSTRUCTIONS

### WARNING - RISK OF EXPLOSIVE GASES

- 1.1 **WORKING IN THE VICINITY OF A LEAD ACID BATTERY IS DANGEROUS. BATTERIES GENERATE EXPLOSIVE GASES DURING NORMAL BATTERY OPERATION, EITHER CHARGING OR DISCHARGING. FOR THIS REASON, IT IS OF UTMOST IMPORTANCE THAT EACH TIME BEFORE USING YOUR CHARGER, YOU REREAD THIS MANUAL AND MAKE CERTAIN YOU FULLY UNDERSTAND IT AND FOLLOW THE SAFETY AND OPERATING INSTRUCTIONS EXACTLY.**
- 1.2 To reduce risk of battery explosion, follow these safety instructions and those published by the battery manufacturer and the manufacturer of any equipment you intend to use in the vicinity of a battery. Review cautionary marking on these products and on engine, vehicle or equipment containing the battery.
- 1.3 Do not expose charger to rain or snow.
- 1.4 Use of an attachment not recommended or sold by the battery charger manufacturer may result in a risk of fire, electric shock, or injury to persons.
- 1.5 To reduce risk of damage to electric plug and cord, pull by plug rather than cord when disconnecting charger.
- 1.6 An extension cord should not be used unless absolutely necessary (see Section 9).
- 1.7 Do not operate charger with a damaged cord or plug - replace the cord or plug immediately.
- 1.8 Do not operate charger if it has received a sharp blow, been dropped, or otherwise damaged in any way; take it to a qualified service center.
- 1.9 Do not disassemble charger; take it to a qualified service center when repair is required. Incorrect reassembly may result in a risk of electric shock or fire.
- 1.10 To reduce risk of electric shock, unplug charger from the AC outlet before attempting any maintenance or cleaning. Turning off the controls will not reduce this risk.
- 1.11 **BOAT BATTERIES MUST BE REMOVED AND CHARGED ON SHORE. TO SAFELY CHARGE THEM ON BOARD REQUIRES EQUIPMENT ESPECIALLY DESIGNED AND UL LISTED FOR MARINE USE.**
- 1.12 **WARNING** - This charger employs parts, such as switches and circuit breakers, that tend to produce arcs or sparks. If used in a garage, locate in room or enclosure provided for the purpose, and not less than 18 inches above floor level.

## 2. PERSONAL PRECAUTIONS

- 2.1 Always have someone within range of your voice, or close enough to come to your aid, when working around lead acid batteries.
- 2.2 Have plenty of fresh water and soap nearby in case battery acid contacts skin, clothing or eyes.
- 2.3 Wear complete eye protection, clothing protection, and wear rubber soled shoes. Place damp cloth over battery to protect against acid spray. When ground is very wet or covered with snow, wear rubber boots. Avoid touching eyes while working near battery.
- 2.4 If battery acid contacts skin or clothing, wash immediately with soap and water. If acid enters eye, immediately flush with running cold water for at least 10 minutes and get doctor's attention.

- 2.5 **NEVER** smoke or allow a spark or flame in vicinity of battery or engine.
- 2.6 Be extra cautious to reduce risk of dropping a metal tool onto battery. It might spark or short circuit the battery or other electrical part that may cause an explosion.
- 2.7 Before working with lead acid battery, remove personal metal items such as rings, bracelets, necklaces, watches, etc. A lead acid battery can produce a short circuit current high enough to weld such items causing a severe burn.
- 2.8 **CAUTION** - To reduce the risk of injury, charge only rechargeable **LEAD ACID TYPE** batteries which may include **MAINTENANCE FREE, LOW MAINTENANCE, DEEP CYCLE** or **GEL** batteries. Other types of batteries may burst causing personal injury and damage. The charger is not intended to supply power to a low voltage electrical system other than applications using rechargeable type batteries. Do not use battery charger for charging dry cell batteries commonly used with home appliances. These batteries may burst and cause personal injury and property damage.
- 2.9 **NEVER** charge a frozen battery, thaw it out first. Charging will then be safer and more efficient.

## 3. PREPARING TO CHARGE BATTERY

- 3.1 If necessary to remove battery from vehicle or equipment, always remove grounded terminal from battery first. Make sure all electrical loads are OFF to prevent a possible arc.
- 3.2 Be sure area around battery is well ventilated before and during charge. Gas can be forcefully blown away by using a piece of cardboard or other nonmetallic material as a fan.
- 3.3 Clean battery case and terminals, being careful to keep any corrosive particles away from your eyes.
- 3.4 Add distilled water in each cell until battery acid reaches level specified by the manufacturer. This helps purge excess gas from cells. Do not overfill. For a battery without cell caps, carefully follow the manufacturer's charging instructions (see Section 10, 11 and 17). **DO NOT OPEN SEALED BATTERIES.**
- 3.5 Check the battery physically and electrically to make certain it is lead acid type and capable of safely charging and discharging. Use good test equipment and follow test instructions.
- 3.6 Study battery manufacturer's specific precautions such as removing or not removing cell caps while charging, recommended rates of charge, etc. Do not use a charger rated higher than the maximum rate specified by battery manufacturer.
- 3.7 Do not overcharge battery (see Sections 10, 11 and 17).
- 3.8 Determine voltage of battery by referring to vehicle or equipment owner's manual and make sure it matches voltage rating of charger.
- 3.9 Connect and disconnect battery leads only when AC supply cord is disconnected.

## 4. CHARGER LOCATION

- 4.1 Locate charger as far away from battery as charger cables permit.
- 4.2 Never place charger directly above battery being charged; gases from battery will condense and damage charger.
- 4.3 Never allow electrolyte to drip onto charger when taking gravity readings or filling a battery.
- 4.4 Operate charger only in dry, well ventilated area free of dangerous vapors and dust.

P/N IN001 09/01

# Instruction manual

MODEL 735  
With Quik-Change™  
Blade Clamp

MODEL 737  
Dual Cutting Action,  
Quik-Change™  
Blade Clamp

MODEL 738

To learn more about Porter-Cable  
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<http://www.porter-cable.com>

**PORTER-CABLE**  
PROFESSIONAL POWER TOOLS

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## Double Insulated Variable Speed TIGER SAW® All-Purpose Saws

Patents Pending



### IMPORTANT

*Please make certain that the person who is to use this equipment carefully reads and understands these instructions before starting operations.*

The Model and Serial No. plate is located on the main housing of the tool. Record these numbers in the spaces below and retain for future reference.

Model No. \_\_\_\_\_

Type \_\_\_\_\_

Serial No. \_\_\_\_\_

Part No. 899716-0112

000325

**INSTRUCTION MANUAL  
GUIDE D'UTILISATION  
MANUAL DE INSTRUCCIONES**

INSTRUCTIVO DE OPERACIÓN, CENTROS DE SERVICIO Y PÓLIZA  
DE GARANTÍA. **ADVERTENCIA:** LEASE ESTE INSTRUCTIVO ANTES  
DE USAR EL PRODUCTO.

**DEWALT** <sup>®</sup>

**DW530/DW531/DW532/DW533/DW541/DW545**

**Rotary Hammers**

**Perceuses rotatives**

**Rotomartillos**

# FLUKE.

## 79/26

### Series III Multimeter

#### Instruction Sheet

#### **Read First: Safety Information**

- Never use the meter if the meter or test leads look damaged.
- Be sure the test leads and switch are in the correct position for the desired measurement.
- Never measure resistance in a circuit when power is applied.
- Never touch the probe to a voltage source when the test leads are plugged into the 10 A or 40 mA input jack.
- Never apply more than rated voltage between any input jack and earth ground.
- Be careful when working with voltages above 60 V dc or 30 V ac rms. Such voltages pose a shock hazard.
- Keep your fingers behind the finger guards on the test probes when making measurements.

#### **Warning**

**To avoid false readings, which could lead to possible electric shock or personal injury, replace the battery as soon as the battery indicator  appears.**

#### **Symbols**

-  Read First: Safety Information
-  Dangerous Voltage May Be Present
-  Double Insulation

Overvoltage Installation Category per IEC 1010:

**CAT II** Typical locations include main wall outlets, local appliances, and portable equipment.

**CAT III** Typical locations include switches in the fixed installation and equipment for industrial use permanently connected to the fixed installation.

**WARRANTY ON  
DIGITORK®  
TORQUE WRENCH**

Upon purchase, this Craftsman  
torque wrench is free of  
defect in material or  
workmanship and will be recalibrated free of charge.

**WARRANTY**

For the full date of purchase,  
terms of workmanship in  
warranty coverage

returning the torque wrench  
throughout the United States.

rights, and you may  
state to state.

534SE-90

**CRAFTSMAN**

*Digitork®*

Made in USA

Owner's Manual

*Model No's:*

44596

44597

Sold by Sears, Roebuck and Co.,  
3333 Beverly Road, Hoffman Estates, IL 60179

# SENSIT®GOLD CGI

---

## INSTRUCTION MANUAL

For use with Combustible Gases  
and optionally available  
Oxygen and Toxic Gases

*219-759-1142  
Ext 282*



Read and understand  
instructions before use.

For more information contact:  
**J And N Enterprises, Inc.**  
P.O. Box 183  
Wheeler, IN 46393  
Phone: (219) 759-1142  
Fax: (219) 759-1835  
Order Line: (800) 820-6199  
[www.jandnent.com](http://www.jandnent.com)



## DESCRIPTION OF OPERATION

The ONMARK Combustible Gas Indicator is a dual-scale instrument capable of detecting the presence of combustible gases. It is a "hot wire" type of indicator with a catalytic 0-5% and a thermal 0-100% range. For each range, there is one filament in a sealed chamber which is used as a reference and one filament in an active chamber through which the sample is passed. The measurement circuit is a Wheatstone Bridge using the filaments as one-half of the bridge.

The filaments for the 100% (thermal) scale are electrically heated to  $150^{\circ}\text{C}$  -  $205^{\circ}\text{C}$  ( $300^{\circ}\text{F}$  -  $400^{\circ}\text{F}$ ). When a combustible gas is passed through the chamber, the thermal conductivity of the gas cools the active filament and changes its electrical resistance. This unbalances the bridge circuit and causes the meter to give a reading proportional to the percentage of gas in the air.

The 5% (catalytic) filaments are heated to  $650^{\circ}\text{C}$  -  $705^{\circ}\text{C}$  ( $1200^{\circ}\text{F}$  -  $1300^{\circ}\text{F}$ ). This burning increases the temperature of the active filament and unbalances the bridge to give a meter reading proportional to the percentage of gas in the air. Any upscale reading on the 5% scale is proof of the presence of a combustible gas. If a sample with a concentration above the upper explosive limit is drawn into the instrument while it is set on the 5% range, the meter will deflect upscale and then rapidly move downscale, usually to below zero. This happens because the gas has stopped burning due to its high concentration and is cooling the 5% filaments. The reading must then be taken on the 100% scale.

The unit is calibrated at the factory with 2.5% and 100% methane.

7949



# Combustible Gas Detectors

OWNER'S MANUAL  
MANUAL DEL PROPIETARIO  
MANUEL DE L'UTILISATEUR  
BEDIENUNGSANLEITUNG

**Covers: TIF8800** Combustible Gas Detector  
and  
**TIF8800A** Combustible Gas Detector  
w/Visual Leak Size Indicators

# BACHARACH

## INSTRUCTION 23-9125 ODOROMETER

Portable Gas Odorant Tester  
Part Number 5110-0200

Operation/Maintenance  
Rev. 11 - October 1997

### WARNING!

*Because this instrument is used to detect and monitor materials and conditions which are listed by OSHA or others as potentially hazardous to personnel and property, the information in this manual must be fully understood and utilized to ensure that the instrument is operating properly and is both used and maintained in the proper manner by qualified personnel. An instrument that is not properly calibrated, operated and maintained by qualified personnel is likely to provide erroneous information, which could prevent user awareness of a potentially hazardous situation for the instrument user, other personnel and property.*

*If, after reading the information in this manual, the user has questions regarding the operation, application or maintenance of the instrument, supervisory or training assistance should be obtained before use. Factory assistance is available by calling (412) 963-2000.*

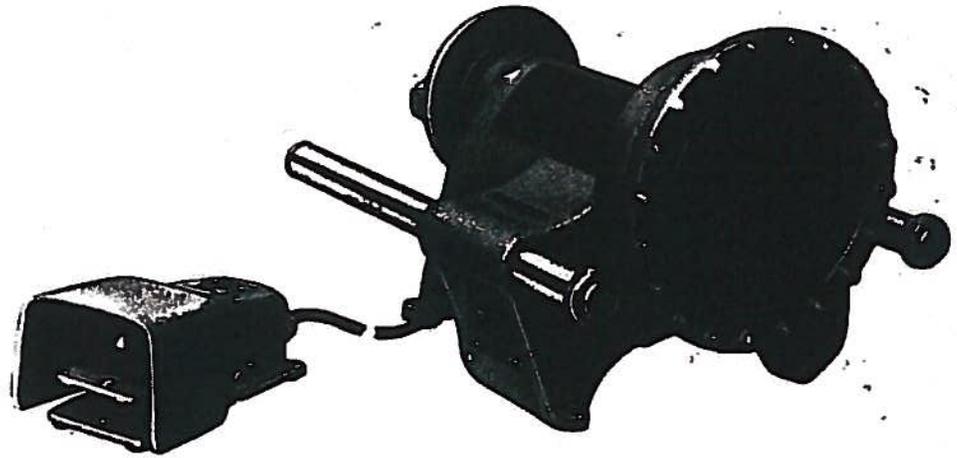
**Bacharach, Inc.**  
625 Alpha Drive, Pittsburgh, PA 15238-2878  
Phone: (412) 963-2000 Fax: (412) 963-2091  
Web: [www.bacharach-inc.com](http://www.bacharach-inc.com)

Printed in U.S.A.

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# **RIDGID.**

## **300 Power Drive**



### **IMPORTANT**

For your own safety, before assembling and operating this unit, read this Operator's Manual carefully and completely. Learn the operation, applications and potential hazards peculiar to this unit.

#### **No. 300 Power Drive**

Record below and retain product serial number which is located on nameplate.

Serial  
No.

**INSTRUCTION MANUAL  
GUIDE D'UTILISATION  
MANUAL DE INSTRUCCIONES**

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DE GARANTÍA. ADVERTENCIA: LÉASE ESTE INSTRUCTIVO ANTES  
DE USAR EL PRODUCTO.**

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# **DEWALT®**

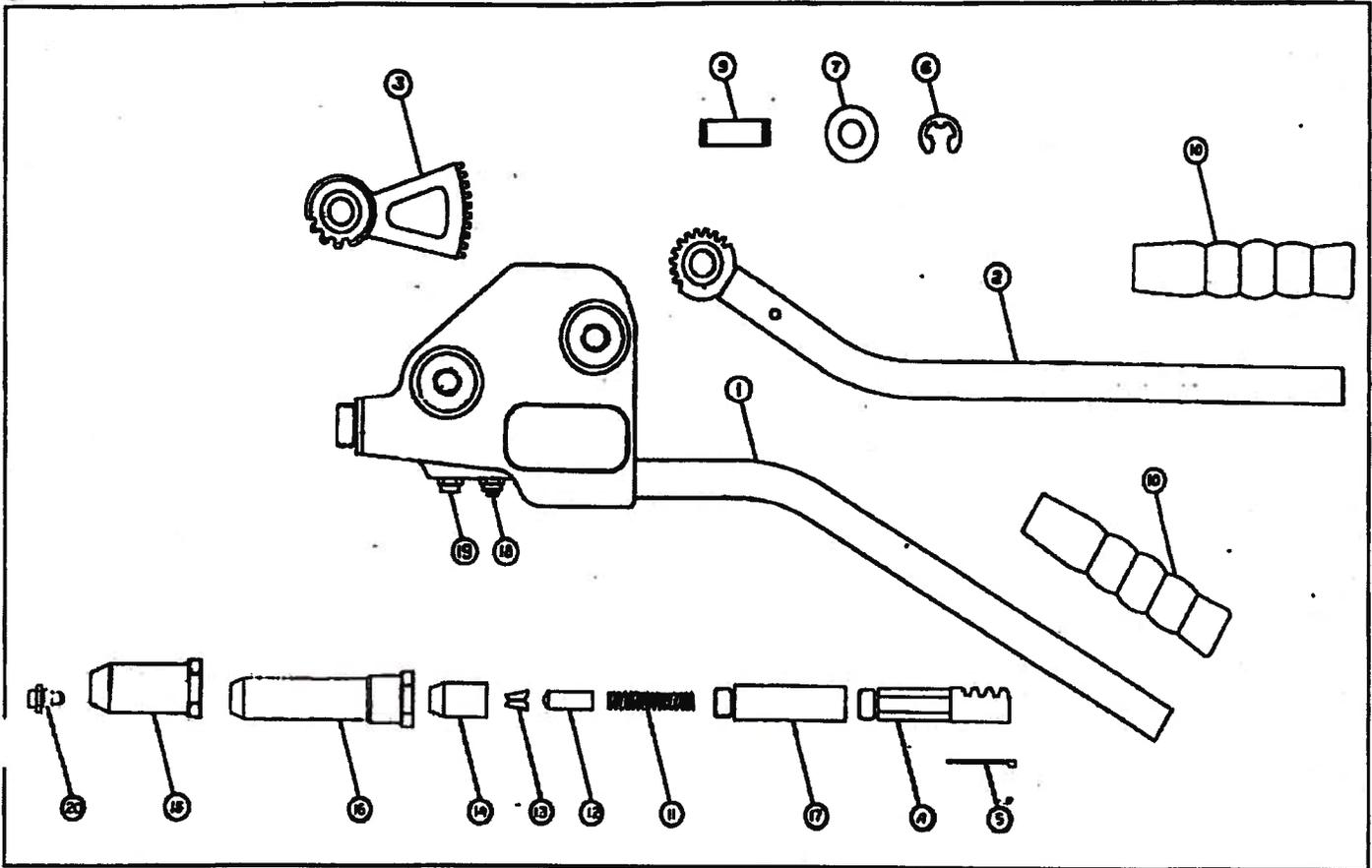
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**DW871**

**14" (355 mm) Heavy Duty Chop Saw**

**Scie fendeuse de 355 mm (14 po) et de service intensif  
Cortadora de metales de 355 mm (14")**

NOTE DE PIÈCES DÉTACHÉES POUR OUTILS 39010/39031/39035 • LISTA DE PIEZAS PARA HERRAMIENTA (39010/39031/39035)



SKETCH NO.	PART NO.	DESCRIPTION	QTY/ASSY.
1	96001†	Tool Housing & Lower Handle	1
2	96002†	Upper Handle Assembly	1
3	96003†	Gear Sector	1
4	96004†	Gear Rack	1
5	96005†	Rack Bearing Plate	1
6	96006	Retaining Ring	4
7	96007	Pivot Pin Washer	4
9	96009	Pivot Pin	2
10	96010	Handle Grip	2
11	96011	Jaw Pusher Spring	1
12	96012	Jaw Pusher	1
13	96013	Jaws (2 Pieces)	1
14	96014	Collet	1
15	96015	Head 2 5/16" (58 mm)	1
16	39115* } 39009	Head Ext. 4 13/16" (121 mm)	1
17	39116* } Kit	Collet Ext.	1
18	96028***	Nosepiece for 1/4" Kill-Split® Rivets	1
Not Shown	96024	Nosepiece for 1/8" Rivets	Optional
Not Shown	96025**	Nosepiece for 5/32" Rivets	1
19	96026	Nosepiece for 3/16" Rivets	1
20	96027	Nosepiece for 1/4" Rivets	1
Not Shown	96030	Nosepiece for 1/4" Monobolt	Optional
Not Shown	96031	Nosepiece for 3/16" Monobolt®	Optional

† Special Note: See Page 3 for Assembly Instructions  
 \* Included in 39035 Tool  
 \*\* Included in 39031 Tool  
 \*\*\* Included in 39010 & 39035 Tools

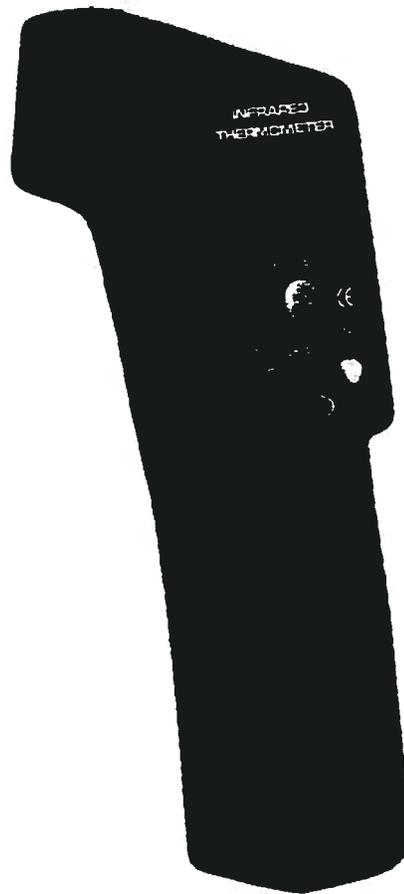
LISTA DE PIEZAS, Pagina 4			
N° CROQUIS	N° CAT.	DESCRIPTION	QTE/MONTAGE
1	96001†	Cadre outil et poignée inférieure	1
2	96002†	Assemblage poignée supérieure	1
3	96003†	Secteur denté	1
4	96004†	Crémaillère d'engrenage	1
5	96005†	Disque d'appui crémaillère	1
6	96006	Bague d'arrêt	4
7	96007	Pionnette de pivot de fusée	4
9	96009	Pivot de fusée	2
10	96010	Prise de maintien poignée	2
11	96011	Ressort de pousseur mâchoire	1
12	96012	Pousseur mâchoire	1
13	96013	Mâchoires (2 pièces)	1
14	96014	Collet	1
15	96015	Tête 2 5/16" (58 mm)	1
16	39009 } 39115*	Prolongé tête 4 13/16" (121 mm)	1
17	Kit } 39116*	Prolongé collet	1
18	96028***	Buse pour rivets Kill-Split® de 1/4"	1
Non exposé	96024	Buse pour rivets de 1/8"	En option
Non exposé	96025**	Buse pour rivets de 5/32"	1
19	96026	Buse pour rivets de 3/16"	1
20	96027	Buse pour rivets de 1/4"	1
Non exposé	96028***	Buse pour rivets Kill-Split® de 1/4"	1
Non exposé	96030	Buse pour Monobolt® de 1/4"	En option
Non exposé	96031	Buse pour Monobolt de 3/16"	En option

† Note spéciale: Voir au dos pour instructions de montage  
 \* Compris avec outil 39035  
 \*\* Compris avec outil 39031  
 \*\*\* Compris avec les outils 39010 et 39035

*Supco*

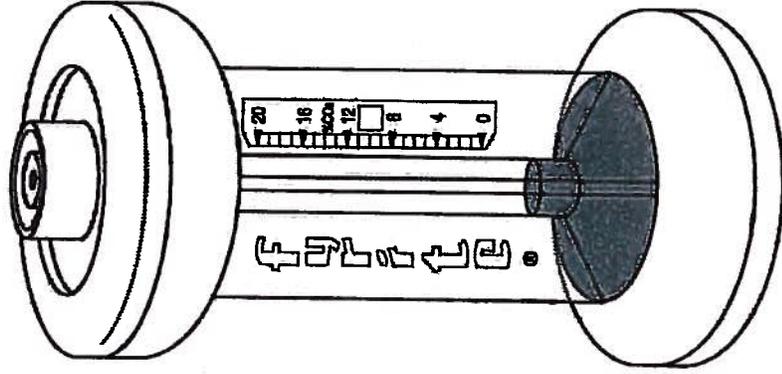
**LIT8**

# **Laser Infrared Thermometer**



# BACHARACH®

**INSTRUCTION 11-9026**  
**FYRITE® Gas Analyzer**  
**CO<sub>2</sub> and O<sub>2</sub> Indicators**  
**Operation/Maintenance**  
**Rev. 7 - June 1998**



Bacharach, Inc.  
625 Alpha Drive, Pittsburgh, PA 15238-2878  
Phone: (412) 963-2157/2184 Fax: (412) 963-2840  
Web: [www.bacharach-inc.com](http://www.bacharach-inc.com)

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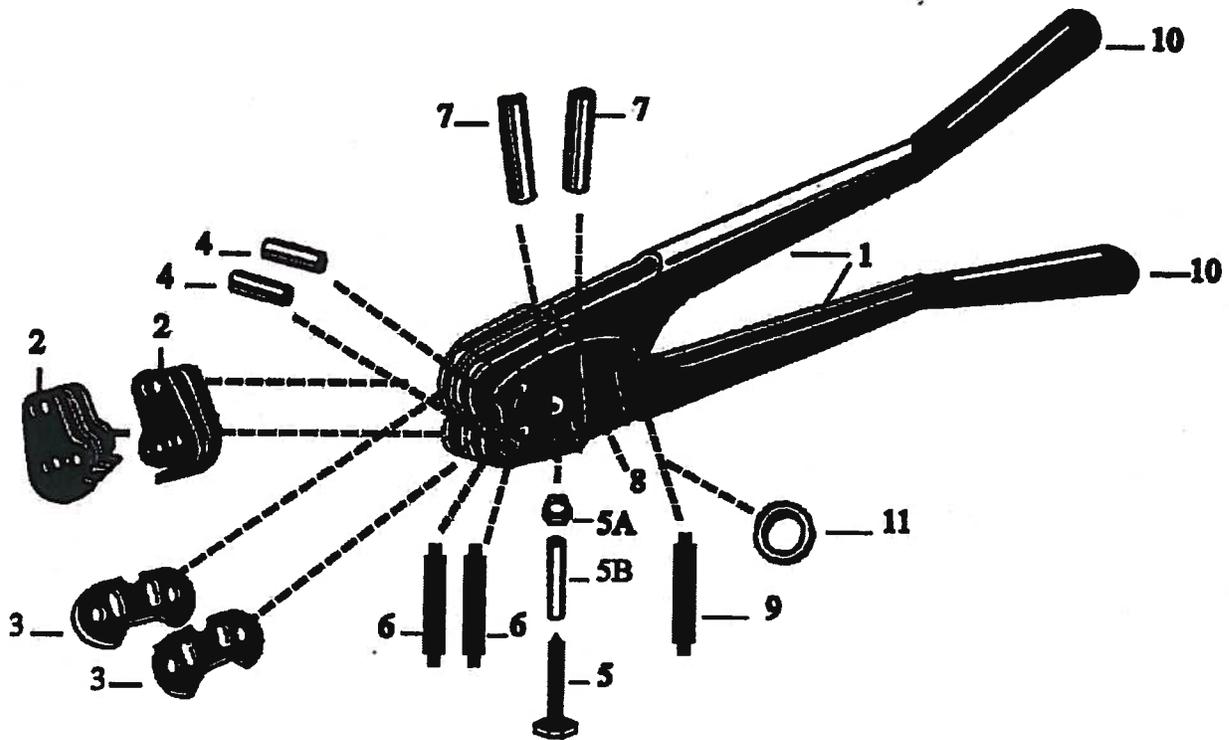
# **BACHARACH®**

**INSTRUCTION 19-9166**  
**COMBINED SERVICE MANUAL for:**  
**DIOXOR® II**  
**MONOXOR® II**  
**MONOXOR® II H (High Range)**  
**NONOXOR® II**

**Rev. 3 - April 1997**

**Bacharach, Inc.**  
**625 Alpha Drive, Pittsburgh, PA 15238-2878**  
**Phone: (412) 963-2157/2164 Fax: (412) 963-2640**

# M1P-1100 STEEL STRAP SEALER



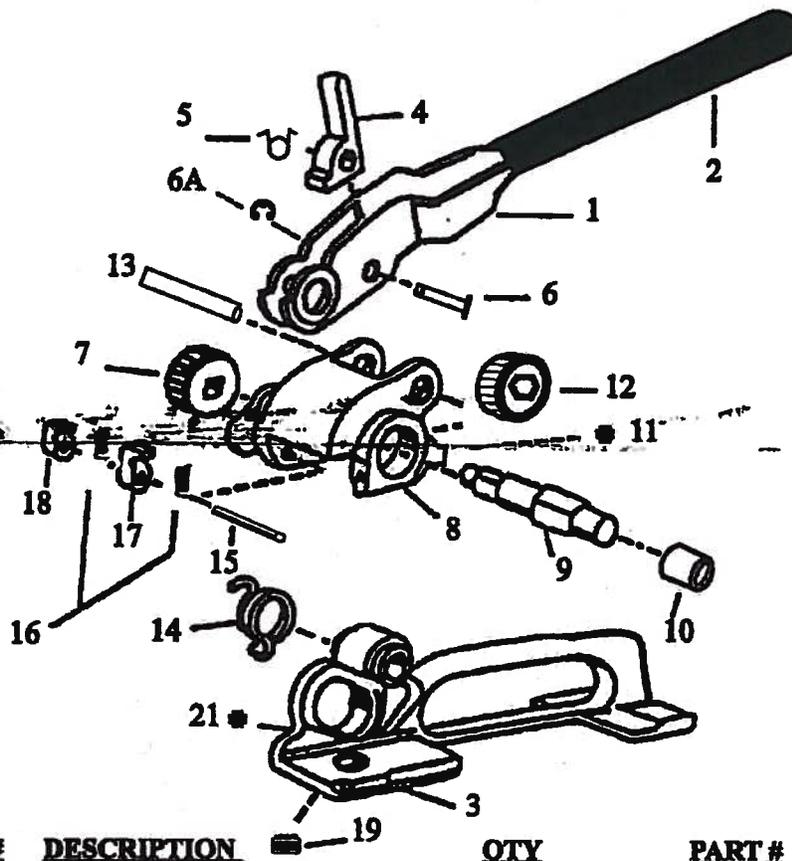
<u>KEY NO.</u>	<u>DESCRIPTION</u>	<u>QTY</u>	<u>PART NO.</u>
1	Sealer Handle Assembly	2	M1100-1
<span style="border: 1px solid black; padding: 2px;">2</span>	Jaw	8	M1100-2
3	Notcher	4	M1100-3
<span style="border: 1px solid black; padding: 2px;">4</span>	Notcher Pin	2	M1100-4
5	Bolt	1	M1100-5
5A	Hex Nut	1	M1100-5A
5B	Bolt Sleeve	1	M1100-5B
<span style="border: 1px solid black; padding: 2px;">6</span>	Jaw Pin	1	M1100-6
7	Toggle Pin	2	M1100-7
<span style="border: 1px solid black; padding: 2px;">8</span>	Side Plate	2	M1100-8
9	Guide Pin	1	M1100-9
10	Rubber Handle	2	M1100-10
11	Handle Spacer	1	M1100-11

This sealer is available in 3/8", 1/2", 5/8", and 3/4" sizes  
 Reference part number and size when ordering.  
 Read and follow all safety & operating instructions on reverse

**MADE IN U.S.A.**

10/98 hls

# MIP-1300 STEEL STRAP TENSIONER



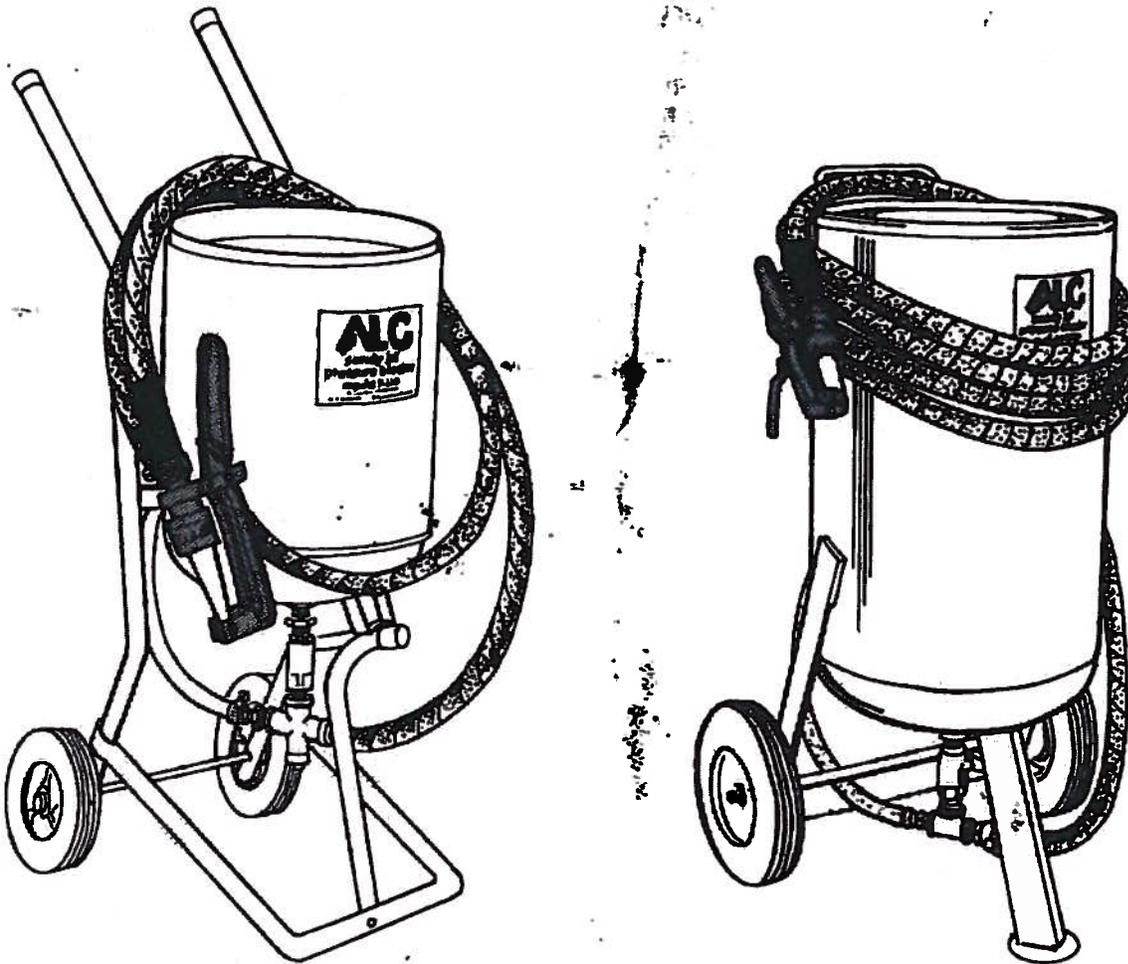
KEY#	DESCRIPTION	QTY	PART #
1	Handle Assembly	1	M1300-1-1
2	Handle Grip	1	M1300-2-1
3	Base	1	M1300-3-1
4	Handle Pawl	1	M1300-4-1
5	Handle Pawl Spring	1	M1300-5-1
6	Crosshead Pin	1	M1300-6-1
6A	Retaining Ring	1	M1300-6A-1
7	Ratchet Gear	1	M1300-7-1
8	Support Frame	1	M1300-8-1
9	Shaft	1	M1300-9-1
10	Bushing	1	M1300-10-1
11	Holding Screw	1	M1300-11-1
12	Feedwheel	1	M1300-12-1
13	Support Pin	1	M1300-13-1
14	Support Frame Spring	1	M1300-14-1
15	Pawl Pin	1	M1300-15-1
16	Pawl Spring	2	M1300-16-1
17	Long Pawl	1	M1300-17-1
18	Short Pawl	1	M1300-18-1
19	Clutch Plug	1	M1300-19-1
21	Clutch Plug Lock Screw	1	M1300-21-1

MADE IN U.S.A. Reference part number when ordering. Read and follow all operating & safety instructions on reverse.

# ALC SANDYJET®

## PRESSURE BLASTER MODELS F-45DM AND F-100DM with Deadman Control System

### OPERATION GUIDE



**ALC SANDYJET**

Division of S&H Industries  
5200 Richmond Road  
Cleveland, Ohio 44146

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GUIDE D'UTILISATION  
MANUAL DE INSTRUCCIONES**

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POLIZA DE GARANTÍA. ADVERTENCIA: LEÁSE ESTE INSTRUCC-  
TIVO ANTES DE USAR EL PRODUCTO.**

# DEWALT®

**DW368, DW369  
7-1/4" (184 mm) Circular Saws  
Scies circulaires de 184 mm (7 1/2 po)  
Sierras circular de 184 mm (7-1/4")**

DeWALT Industrial Tool Co., 701 East Joppa Road, Baltimore, MD 21286  
Printed in U.S.A. (DEC02-CD-1) Form No. 613288-00 DW368 Copyright © 2002

The following are trademarks for one or more DeWALT power tools: the yellow and black color scheme; the "D" shaped air intake grill; the array of pyramids on the handgrip; the kit box configuration; and the array of lozenge-shaped humps on the surface of the tool.

### **General Safety Instructions**

**⚠ WARNING! Read and understand all instructions. Failure to follow all instructions listed below may result in electric shock, fire and/or serious personal injury.**

### **SAVE THESE INSTRUCTIONS**

#### **WORK AREA**

- **Keep your work area clean and well lit. Cluttered benches and dark areas invite accidents.**

**INSTRUCTION MANUAL  
GUIDE D'UTILISATION  
MANUAL DE INSTRUCCIONES**

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**DEWALT®**

**DW217/DW221/DW222/DW223/DW223G/DW226/DW231/DW235G  
DW235-220/DW236/DW238/DW239/DW245/DW246/DW248/DW249**

**Drills  
Perceuses  
Taladros**

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Questions? Consulter notre site Web à l'adresse : [www.dewalt.com](http://www.dewalt.com)  
¿Dudas? Visítenos en Internet: [www.dewalt.com](http://www.dewalt.com)**

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ANTES DE USAR EL PRODUCTO.**

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# **DEWALT®**

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**DW402, DW402G**

**Heavy Duty Small Angle Grinder**

**Petites Meuleuses Angulaires de Service Intensif**

**Esmeriladoras angulares pequeñas para trabajo pesado**

**INSTRUCTION MANUAL  
MANUAL DE INSTRUCCIONES  
MANUAL DE INSTRUÇÕES**

**INSTRUCTIVO DE OPERACIÓN, CENTROS DE SERVICIO Y  
PÓLIZA DE GARANTÍA. ADVERTENCIA: LÉASE ESTE  
INSTRUCTIVO ANTES DE USAR EL PRODUCTO.**

**DEWALT®**

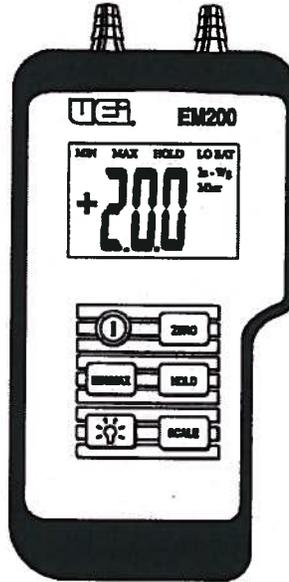
**DW303M  
VS Reciprocating Saw  
Sierra reciprocante VV  
Serra Sabre VV**

DeWALT Industrial Tool Co., 701 East Joppa Road, Baltimore, MD 21286  
Printed in U.S.A. (DEC02-CD-2) Form No. 384299-02 DW303M Copyright © 2001

The following are trademarks for one or more DeWALT power tools: the yellow and black color scheme; the "D" shaped air intake grill; the array of pyramids on the handgrip; the kit box configuration; and the array of trapezoidal bumps on the surface of the tool.

# EM150/EM200 Electronic Manometer

**INSTRUCTION MANUAL**



[www.ueitest.com](http://www.ueitest.com) • Email: [info@ueitest.com](mailto:info@ueitest.com)

**UeI**

Notice to Installer: Instructions must remain with installation.

"QUALITY PUMPS SINCE 1929"

Product information presented here reflects conditions at time of publication. Consult factory regarding discrepancies or inconsistencies.



MAIL TO: P.O. BOX 16347 • Louisville, KY 40258-0347  
SHIP TO: 3849 Cane Run Road • Louisville, KY 40211-1961  
(502) 778-2731 • 1 (800) 928-PUMP • FAX (502) 774-3624

SECTION: 6.10.018  
FM2127  
1202  
Supersedes  
New

4-5-04  
TRUCK #14

## Self-Priming Portable Utility Pump

### INSTALLATION INSTRUCTIONS

These installation instructions are applicable for Model 314 Portable Utility Pump

#### PREINSTALLATION CHECKLIST - ALL INSTALLATIONS

ATTENTION: READ CAREFULLY BEFORE ATTEMPTING TO INSTALL OR OPERATE YOUR PUMP. PROTECT YOURSELF AND OTHERS BY OBSERVING ALL SAFETY INFORMATION AND ADDITIONAL INSTRUCTIONS INCLUDED WITH EQUIPMENT. FAILURE TO COMPLY WITH INSTRUCTIONS COULD RESULT IN PERSONAL INJURY AND/OR PROPERTY DAMAGE! RETAIN FOR FUTURE REFERENCE.

#### ⚠ WARNING

SEE BELOW FOR LIST OF WARNINGS

-  Make sure that the pump is plugged into a properly grounded electrical receptacle. Use an Underwriters Laboratory listed circuit analyzer to test for proper installation of the circuit and ground. Any service to circuits or receptacles should be conducted by a qualified licensed electrician.
-  Do not remove the ground pin from the plug under any circumstances. If the ground pin is damaged, replace the power cord or plug before use.
-  All electrical installations must conform to the requirements of the National Electric Code and all local codes.
-  It is strongly recommended that the unit be plugged into a GFCI protected circuit.
-  Disconnect power before servicing the pump or motor by unplugging the unit from the outlet.
-  Do not touch the motor when operating and allow the motor to cool before touching.
- This pump is designed for water only. It has not been evaluated for pumping of chemicals.
-  Do not use this product to pump flammable or explosive liquids.
-  Do not use this product in hazardous environments or anywhere a spark could potentially ignite explosive gases.
-  Do not handle this product with wet hands or while standing in water or on a wet or damp surface.
- Model 314 is supplied with an automatically resetting thermal overload device and can restart without warning.
-  Do not submerge the pump or motor in water.
- Secure the discharge line before starting the pump. An unsecured hose can whip, possibly causing personal injury or property damage.
-  Provide a means of pressure relief if the pump discharge can be shut off or obstructed. Pumps operating against a closed discharge can create very hot pumped liquid, which can cause burns.
- Do not operate this product while unattended.
-  Product is portable, and not intended to be permanently installed outdoors. If installed outdoors, care should be taken to protect the unit from rain and other elements of the weather.

#### ⚠ CAUTION

SEE BELOW FOR LIST OF CAUTIONS

- Make certain that the power source conforms to the requirements of the equipment as stated on the product nameplates.
- Check hoses for weak or worn conditions before use and make certain that all connections are secure.
- Periodically inspect the pump for damage and perform routine
- The maximum temperature of the pumped liquid must not exceed 120° F. The minimum allowable temperature is 40° F.
- Use a screen or strainer on the inlet to prevent solids from entering the pump.

000347

## Little Giant

"Your Solution Innovator"

Little Giant Pump Company  
P.O. Box 12010  
Oklahoma City, OK 73157-2010  
405.947.2511 • Fax 405.947.8720  
www.LittleGiant.com  
customerservice@lgpc.com

## LITTLE GIANT POTENT PUMP

### INTRODUCTION

This instruction sheet will provide you with information required to safely own and operate Little Giant Potent Utility Pumps.

Little Giant pumps are carefully packaged, inspected and tested to insure safe operation and delivery. When you receive your pump, examine it carefully to determine that there are no broken or damaged parts that may have occurred during shipment. If damage has occurred, make notation and notify the firm you purchased the pump from. They will assist you in replacement or repair if required.

This pump is designed to pump water. Read instructions completely before operating pump.

### INSTALLATION

Your Little Giant pump is delivered to you completely preassembled and pretested from the factory. It is ready for immediate use. These pumps are not submersible, operate the pumps only in the in-line mode. Do not put the units in liquid. Keep the pump in as dry a location as possible.

Do not allow pump to run dry. Do not restrict the intake side of the pump. Connections on the intake side should not be of smaller inside diameter hose than the intake inside diameter. Also, do not restrict the discharge flow to zero. Allowing pump to run dry will damage pump. Inspect impeller for wear periodically by removing four (4) screws on pump front. Pull motor and adaptor assembly away from pump front and check impeller for wear and pump front for obstructions. Replace front.

### ELECTRICAL CONNECTIONS

1. Check the pump label for proper voltage. Do not connect to voltage other than that shown.
2. If pump is supplied with a 3-prong electrical plug, the third plug is to ground the pump to prevent possible electrical shock hazard. **DO NOT REMOVE** the third plug from the cord. If the plug is cut or the cord is shortened, then this action will void the warranty.
3. If the cord is equipped with stripped lead wires, such as on 230v models, be sure that the lead wires are connected to a power source correctly. The green/yellow wire is the ground. The (blue or white) and the (brown or black) are live.
4. To connect model PPS-12 to power source connect the black battery clamp to the negative (-) pole and the red battery clamp to the positive (+) pole on a 12 volt D.C. battery. Do not operate pump with a weak battery. Operation in this manner will cause motor to stall resulting in motor burning out.



### OPERATION

1. **CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DISCONNECT PUMP FROM POWER SOURCE BEFORE SERVICING.**
2. This pump is designed for intermittent use only. (45 min on - 15 min. off)
3. Do not run at heads greater than 35 feet (15 PSIG).
4. Make sure that suction line is airtight, obstruction free and well submerged in fluid to be pumped. Do not allow end of suction line to lay in bottom sludge, etc. Keep end away from bottom.
5. Make sure discharge hose is placed where fluid is to be pumped to.
6. Select proper power source and voltage as indicated on pump label. Energize pump.
7. If fluid is not being pumped through discharge hose within 30 seconds, disconnect pump from power source immediately. Read and follow "Priming Instructions."
8. Drain pump after use in freezing weather.

### PRIMING INSTRUCTIONS

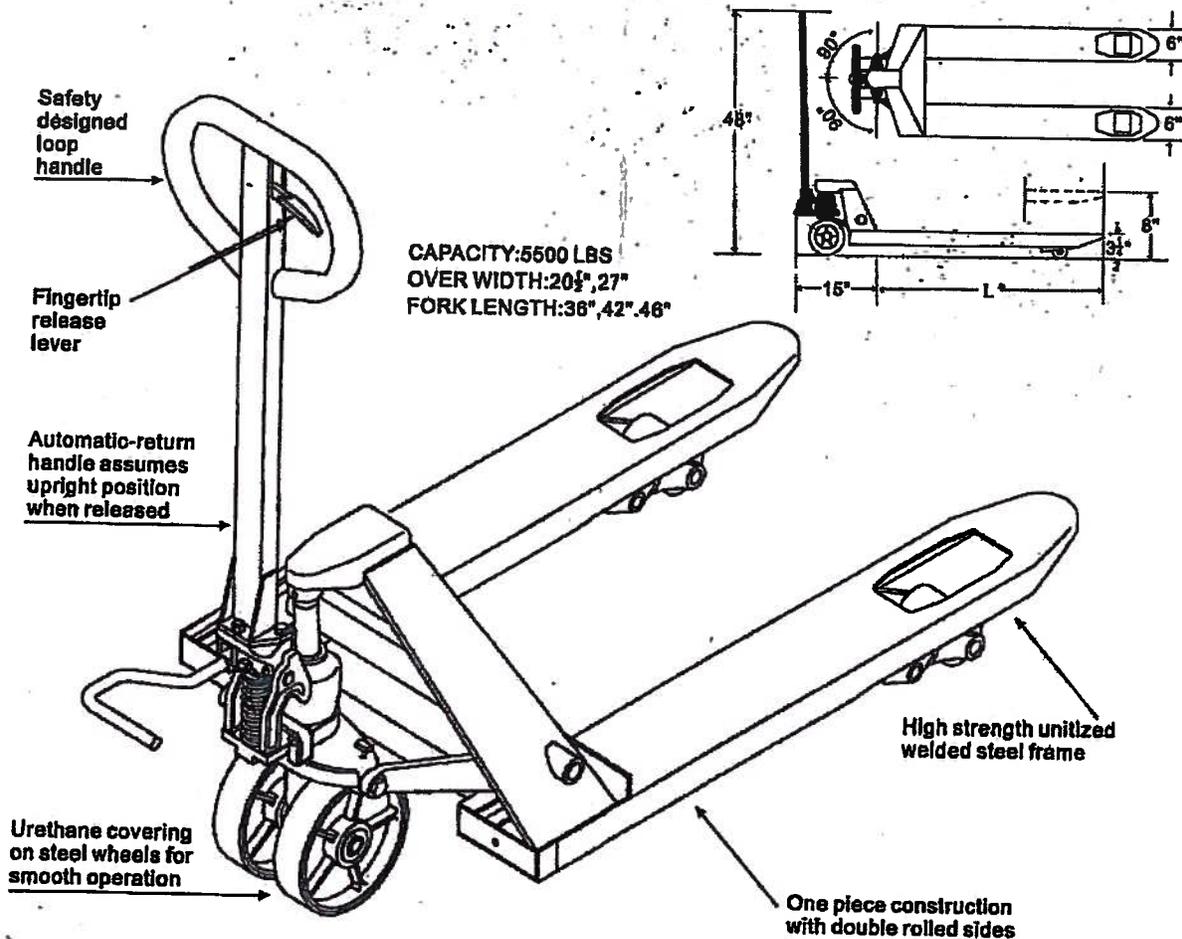
Should pump not begin to move water within 30 seconds after being energized, follow simple priming instructions below:

1. Fill intake hose with water while still connected to the pump. This may be done by simply pouring water down the intake hose from the open end.
2. Have an assistant place a finger over the end of the hose and lower to water source.
3. Immediately energize the pump, releasing finger from the intake hose simultaneously.
4. Potent pump should now operate without needing to be primed again. Repeat steps 1-3 if unit does not begin to pump.

# WESCO® ADJUSTABLE PALLET TRUCK INSTRUCTION MANUAL

READ INSTRUCTION MANUAL CAREFULLY BEFORE OPERATING

## FEATURES:



### HOW TO OPERATE TRUCK:

- (1) PULL THE RELEASE LEVER UP. THE TRUCK WILL LOWER.
- (2) PUSH THE RELEASE LEVER DOWN, YOU CAN NOW PUMP THE TRUCK UP.

### MAINTENANCE

1. DO NOT OVERLOAD.
2. WHEN TRUCK CANNOT LIFT TO FULL HEIGHT. REMOVE OIL PLUG. FILL WITH HYDRAULIC OIL.
3. LUBRICATE THE AXLES OF WHEELS AND ALL MOVING PARTS.
4. DO NOT LEAVE PALLET TRUCK UNDER A HEAVY LOAD FOR AN EXTENDED TIME WHEN NOT IN USE. RELEASE HYDRAULIC PRESSURE ON PUMP TO LOWER TRUCK.

### HANDLE ASSEMBLY INSTRUCTIONS

1. USE SCHEMATIC AS A REFERENCE.
2. POSITION YOURSELF BEHIND THE TRUCK WITH FORKS POINTING AWAY.
3. REMOVE 3 EA. SCREWS (22) FROM HANDLE BASE (23)
4. HOLDING HANDLE (66) IN ONE HAND, AND A SCREWDRIVER IN THE OTHER. PLACE THE SCREWDRIVER IN ONE OF THE 3 SCREW HOLES IN HANDLE BASE (23). PULL ON THE SCREWDRIVER SO THAT THE HANDLE BASE (23) TILTS BACK UNTIL THE CENTER HOLE IN THE HANDLE (23) AND AXLE (21) ARE ALIGNED.
5. SLIP CHAIN (72) THRU BOTH HOLES.
6. REPLACE 3 EA SCREWS (22) ATTACHING HANDLE (66) TO HANDLE BASE (23).
7. PULL UP ON LOWERING ARM (35) AND SLIP CHAIN AND NUT ASSEMBLY (72) INTO PLACE.



# Fyrite® Pro Combustion Gas Analyzer

Instruction 24-9395  
Operation & Maintenance  
Rev. 9 - July 2004



Product Leadership • Training • Service • Reliability

NEW HAMPSHIRE GAS CORPORATION  
OPERATIONS & MAINTENANCE MANUAL

APPENDIX H

Security Plan  
Separate Manual Located at  
32 Central Square  
Keene, NH 03431

**New Hampshire Gas Corporation (NHGC)**

**Department of Transportation (DOT) Security Guidance Document**

**Development of Operators Statement Template**

**February 28, 2003**

# CONSTRUCTION STANDARDS AND METHODS

This manual was prepared by the Construction Standards Committee for use in design and field operations. It is intended for and distributed to Operational Personnel and Contractors. Updates and or additions will be completed annually by the Construction Standards Committee to maintain the most current documentation.

Issued April 2008

COPY NO. \_\_\_\_\_





**RECORD OF REVISIONS**

**Revision(s):**

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**Reviewed By:** SJR **Date:** Jan. 2011 **Approved By:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Revision(s):**

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**Reviewed By:** \_\_\_\_\_ **Date:** \_\_\_\_\_ **Approved By:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Revision(s):**

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**Reviewed By:** \_\_\_\_\_ **Date:** \_\_\_\_\_ **Approved By:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Revision(s):**

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**Reviewed By:** \_\_\_\_\_ **Date:** \_\_\_\_\_ **Approved By:** \_\_\_\_\_ **Date:** \_\_\_\_\_

**Revision(s):**

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**Reviewed By:** \_\_\_\_\_ **Date:** \_\_\_\_\_ **Approved By:** \_\_\_\_\_ **Date:** \_\_\_\_\_



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# GENERAL

## PURPOSE

The purpose of this manual is to provide the general construction requirements and procedures for installing gas mains and services. When conditions prevent installations in accordance with these standards, approval must be obtained from a NH Gas Supervisor before alternate materials or procedures are utilized.

## 1 COMPLIANCE

The Installer/Excavator shall apply any and all applicable safety standards as necessary to meet or exceed all subparts relative to these Construction Standards.

## 2 SAFETY PRECAUTIONS

### 2.1 General Precaution

Specific tasks may require certain workers to wear protective equipment for safety purposes. Attention is directed to ***Certification of Hazard Assessment in Appendix A, Section 1***. These matrixes outline the tasks, which require specific protective equipment to be worn by specific workers in various situations.

The Installer/Excavator shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the work. The Installer/Excavator shall take all reasonable precautions for the safety of, and shall provide all reasonable protection to prevent damage, injury or loss to:

- A. All employees on the work site and all other persons who may be affected thereby,
- B. All the work, materials and equipment to be incorporated therein under the care, custody or control of the Installer,
- C. Other property at the site or adjacent to, including, but not limited to: lawns, walks, roadways, structures, and utilities not designated for relocation.

The Installer/Excavator shall erect and maintain, as required, all reasonable safeguards, including but not limited to the posting of signs, barricades and other warnings against hazards.

### 2.2 Traffic Control

It shall be the Installer/Excavator's responsibility at all times to obtain appropriate traffic control measures and use proper signage.

### 2.3 Dig Safe

An appropriate Dig Safe Ticket shall be obtained and kept current prior to the start and through the completion of all projects. The Excavator shall maintain markings through the duration of the project and follow all NH State Dig Safe Laws.<sup>1</sup>

### 2.4 Excavation around Gas Facilities

The Excavator shall follow all guidelines outlined in the *Safe Excavation around Gas Facilities in Appendix B, Section 1* to aid in a safe and hazard free excavation.

### 2.5 Working with Live Gas

The Installer shall follow all guidelines outlined in the *PPE Matrix – Live Gas Situations in Appendix A, Section 2* to aid in safely working in situations involving live gas.

## 3 PIPE HANDLING

It is the Installer's responsibility to assure that no damage to the pipe or its coating occurs during transporting, handling, storage and installation in accordance with manufacturer's handling specifications.<sup>2</sup>

### 3.1 Transporting Pipe

When transporting pipe, the pipe shall be adequately supported and suitably padded to prevent damage to the pipe and/or its coating.

### 3.2 Handling, Storage and Installation

#### 3.2.1 Steel

Rough handling can result in damage to the pipe wall. Care should be taken to avoid pushing or pulling pipe over or around sharp objects. Steel pipe is subject to coating damage when dropped from heights of three feet or more or when heavy objects are dropped upon it, particularly during cold weather. Pipe shall be lifted, lowered or suspended with appropriate devices that are padded and will not cause damage to the pipe and/or its coating. If coating is damaged during installation or transportation the coating should be repaired using the proper method(s) outlined in the Corrosion Control section. **See Section 17.1.1.3**

#### 3.2.2 Plastic

Rough handling can result in damage to the pipe wall. Care should be taken to avoid pushing or pulling polyethylene pipe over or around sharp objects. Polyethylene pipe is subject to impact damage when dropped from heights of three feet or more or when heavy objects are dropped upon it, particularly during cold weather. Pipe, which has been scratched, cut or gouged greater than **10%** of the pipe wall thickness, will be cut out and discarded. Kinking or buckling must be avoided as well.

---

<sup>1</sup> Refer to NH Dig Safe Laws

<sup>2</sup> Refer to 49 CFR 192.307

### 3.3 Dragging

When long strings of pipe are joined together, it may be necessary to drag the pipe to where it will be installed. If the pipe must be dragged over abrasive or rocky terrain, take precautions to protect the pipe from damage. The use of pipe rollers or padded skids are recommended.

### 3.4 Storage

All pipe should be stored in a manner to minimize damage from crushing, piercing or cutting. Pipe should be protected from ultraviolet (UV) exposure. When stockpiling pipe on the job site, the pipe shall be placed on padded skids and left in a manner in which the pipe will be secure and not damaged. **See Standard NHGAS-GN1**

## 4 INSTALLATION BY BORING OR DIRECTIONAL DRILLING

### 4.1 Precautions

When trenchless technologies are used, the Excavator/Installer shall determine the precise location of underground facilities expected to be crossed or encroached prior to commencing the process. This may require digging test pits to verify exact location and depth of other utilities. See **Section 22.6 and 25.4** for separation distances required from existing structures. **These precautions and guidelines must also be followed for other utilities being installed around or near NHG main and service lines.**

### 4.2 Acceptable Installation by Boring

When pneumatically boring, the bore head must be a suitable diameter for the size of the pipe being installed. The first 5 feet of pipe exiting the bore shall be inspected for coating or pipe surface damage. If the pipe is found to have surface or coating damage, it shall be removed from the bore and the installation method must be re-evaluated. Plastic pipe which is installed using the boring method shall have two tracer wires inserted with the pipe. Incidental contact between the tracer wire and carrier pipe is permissible.

The length and location of the bore shall be noted on the work order and noted on the design plan or sketch.

### 4.3 Acceptable Installation by Directional Drilling

The Installer shall use electronic survey instrumentation to monitor and adjust the drill head. The survey system shall measure the horizontal and vertical location of the drill head throughout the drill and provide readings at 5-foot intervals to allow for slope adjustment.

The pilot holes shall be reamed to a diameter that is sufficiently sized in order to reduce forces applied to pipe during pull back.

A swivel shall be installed between the molehead / reamer and pipe connection to minimize torsion stress imposed on the pipe and allow the reamer to turn without rotating the pipe.

A pipe pulled through the pilot holes shall have two tracer wires securely fixed to the pipe.

The pullback of the pipe shall be conducted in one continuous operation to limit the potential

for binding of the pipe in the pilot hole.

The Installer shall be responsible for the containment and disposal of all drilling fluids or bentonite slurry.

The first 5 feet of pipe exiting the drill shall be inspected for coating or pipe surface damage. If the pipe is found to have surface or coating damage, it shall be removed from the drill and the installation method must be re-evaluated.

The length and location of the drill shall be noted on the work order and noted on the design plan or sketch.

## **5 EXCAVATION**

### **5.1 General**

Reference is made throughout this Section to Keene's Public Works Department (PWD) Excavation Permit Instructions to be employed by Operators/Excavators when restoring any of the Streets, Lanes and Highways in Municipalities. A copy of this document is included in **Appendix B, Section 2**. There may be circumstances, depending on the location of the excavation, that NH State DOT Excavation Permits may be required. In such cases, their instructions must be followed.

All incomplete excavations shall be left in a manner so as to protect public safety and pipeline integrity. No bell hole, trench or obstruction that may potentially lead to a hazardous situation shall be left unattended.

All methods used for securing an incomplete excavation shall be approved by a NH Gas Supervisor and a Keene's City Engineer. Approved methods include, but are not limited to, the following types:

- A. All in roadway excavation shall use steel plates with sufficient thickness to resist bending, vibration, etc., under traffic loads. When steel plates are used overnight, the area shall be marked with appropriate signage or warning devices.
- B. Plywood, backhoe bucket placed in a lowered position, etc., shall be used only within off roadway application and properly sectioned off by traffic cones or horses and warning tape.

### **5.2 Trench Excavation**

Trench excavation, unless otherwise specified by a NH Gas Supervisor or noted on the design plan, shall be carried only to the depths and limits shown in **Table 5-1 and Table 5-2**.

Excavations shall be kept in dry and good conditions at all times.

In all excavation areas, the Excavator shall strip the surficial topsoil layer and underlying subsoil layer separate from underlying soils. In paved areas, the Excavator shall first cut pavement as specified below, and strip pavement and pavement subbase separately from underlying soils. All excavated materials shall be stockpiled separately from each other within the work area. Refer to **Appendix B, Section 2**.

Prior to excavation, trenches in pavement shall be cut in a continuous straight line by an asphalt cutter saw, reclaimed by a milling or grinding machine or an equivalent method approved by a NH Gas Supervisor, to the full depth of pavement. Excavation shall only be between these cuts. Support shall be provided as required to avoid undermining of pavement.

Trenches shall be excavated by machinery to, or just below, the required subgrade provided that the material remaining in the bottom of the trench is not disturbed. The trench shall be prepared to a graded depth to allow no abrupt change of elevation.

### **5.3 Rock Excavation**

The word “rock”, wherever used as the name for excavated material, shall mean ledge rock which, requires for its removal, drilling, blasting, wedging, sledging, barring, or breaking up with a power-operated tool. No soft or disintegrated rock which can be removed by normal earth excavation methods will be considered or allowed as “rock”.

The Excavator shall excavate rock to required widths and depths shown below or as directed by a NH Gas Supervisor. The excavated rock shall be removed from the site and not allowed as backfill.

If rock is excavated beyond the limits shown below, the excess excavation shall be backfilled as outlined in **Section 6.3**

In trench excavations where there is a substantial amount of ledge, a NH Gas Supervisor may require the installed pipe to be protected with “rock shield” to provide an additional protective layer for the pipe.

### **5.4 Trench Widths**

Pipe trenches shall be made as narrow as practicable and shall not be widened by scraping or loosening materials from the sides. Every effort shall be made to keep the sides of the trenches firm and undisturbed until backfilling has been completed.

The width table below is provided as a guide when excavating trenches for pipe installation:

<b>Trench Width Requirements</b>				
<b>Pipe Diameter</b>	<b>Min. In Road Trench Width</b>	<b>Max. In Road Trench Width</b>	<b>Min. Off Road Trench Width</b>	<b>Max. Off Road Trench Width</b>
1" – 2"	12"	18"	12"	18"
3" – 8"	18"	24"	18"	30"
Over 8"	As Directed	As Directed	As Directed	As Directed

**Table 5-1**

Maximum widths are based on contract payment limits. Additional trench widths beyond the maximum shown in this table shall be approved by a NH Gas Supervisor.

Minimum trench widths are provided as a guide when consolidated rock or rocky soil conditions are encountered which will allow for the proper bedding of pipe.

## 5.5 Trench Depths

Depth of cover for mains and services shall be measured from the crown of the pipe to finish grade.

New Hampshire Gas Corporation depth requirements are more restrictive than State and Federal Code requirements. In the event that NH Gas depth requirements cannot be met, mains and services may be installed at lesser depths. In no event shall mains and services be installed at depths less than Code Requirements shown in **Table 5-2** below. If conditions exist that would prevent the installation of mains or services less than the NH Gas Requirements shown below, a NH Gas Supervisor shall be contacted.

Trench Depth Requirements				
Location	NH Gas Minimum Requirements		Code Requirements	
	Main	Service	Main	Service
In Roadway	30 inches	24 inches	24 inches	18 inches
Off Roadway	30 inches	18 inches	24 inches	12 inches
Customer Trench	30 inches	30 inches	See Above	

**Table 5-2**

## 6 BACKFILL AND COMPACTION

### 6.1 General

If the material removed from the excavation is suitable for backfill with the exception that it contains stones larger than permitted, the stones can be removed and that material can be used for backfill, otherwise, proper materials shall be brought in.

### 6.2 Trench Bedding

A minimum of 3 inches of suitable excavated material or sand shall be placed on the bottom of all trenches. This minimum bedding thickness shall be maintained between the pipe and undisturbed material. The material may consist of smooth rounded stones up to 3/4- inch diameter. All pipes shall be supported on well compacted bedding or an undisturbed trench bottom to minimize pipe strain and external loading. The limit of the bedding area above the pipe will be 6 inches of suitable excavated material or sand to a width as determined from **Table 5-1. See Standard NHGAS-GN3 and NHGAS-GN6.**

### 6.3 Trench Backfill

As soon as practical after pipes have been laid, backfilling shall commence.

All trenches shall be backfilled with suitable excavated material or sand as to firmly support and protect the pipe from equipment and external loading. All trenches shall be compacted in no more than 12" lifts with suitable mechanical compaction equipment (**See Section 6.8**).

#### 6.4 Suitable Backfill Material

Suitable backfill material shall be free of stones larger than half the size of the compacted lift, construction debris, trash, frozen soil and other foreign material. It consists of the following:

- A. Well graded gravel and sand;
- B. Gravel-sand mixtures with a small amount of silt;
- C. Gravel-sand mixtures with a small amount of silt and trace amounts of clay.

#### 6.5 Unsuitable Backfill Material

Material considered unsuitable for backfill shall not be placed in the trench and shall be removed from the site. Examples of unsuitable backfill material are as follows:

- A. Inorganic silts and clays;
- B. Organic silts;
- C. Organic soils including peat, humus, topsoil, swamp soils, mulch, and soils containing leaves, grass, branches, and other fibrous vegetable matter.

#### 6.6 Evaluation of Excavated Soil

Excavated soil may be evaluated for use as backfill material by performing a “soil ball” test as follows:

- A. First take a handful of the particular soil from beneath the surface of a stockpile (i.e., excavated from a trench or obtained from a borrow area) and then;
- B. Squeeze the sample firmly making a closed fist;
- C. Open the hand and observe the condition of the soil ball;
- D. If the soil ball is loose and crumbly, the soil is too dry for compaction;
- E. If the soil ball drips water, the soil is too wet for compaction;
- F. If the soil ball holds together firmly or breaks into large chunks, the soil has suitable moisture content for compaction.

#### 6.7 Corrective Treatment

Excavated soil which is deemed unsatisfactory from the above test can be treated for use as backfill material with the following methods:

- A. If the soil is too dry, small amounts of water may be added by sprinkling;
- B. If the soil is too wet, spreading it out and exposing it to the atmosphere may dry out the soil;
- C. After the remedial treatment, the soil shall be tested again (**See Section 6.6**);

- D. If the corrective treatment is not effective, the soil shall be removed from the site and disposed of properly. New material, which meets the backfill requirements, shall be brought in to replace excavated soil found to be unsuitable.

## **6.8 Compaction**

Equipment that may be utilized for trench compaction is specified in **Table 6-1**. Compactors shall be operated in approximately the vertical position. Care should be exercised when compacting near a buried facility to avoid damage to the facility. Making a minimum of four passes per lift with the compactor shall provide proper compaction. The passes shall start around the perimeter of the excavation and move toward the center in an inward spiral. Backfill material shall be placed in lifts with loose thickness (i.e., prior to compaction) as specified in **Table 6-1**.

<b>Compaction Equipment and Maximum Lift Heights</b>	
<b>Equipment</b>	<b>Thickness of Lifts</b>
Pneumatic Air Tamper	6"
Percussive Whacker Rammer	6" – 12"
Vibratory Compactor (7000lb)	6" – 12"
Pavement Breaker Tamping Foot (60 – 90lb)	6"

**Table 6-1**

## **7 DISPOSAL OF EXCAVATED MATERIAL**

All excavated material not suitable for backfilling, including rock, concrete, organic and paving material, shall be removed from the job site. It shall be the responsibility of the Excavator to dispose of all excess material at an approved disposal site in accordance with all applicable Town, State/Federal (EPA) regulations and/or statutes governing the disposal or the recycling of said materials.

## **8 PROTECTION OF PUBLIC AND PRIVATE PROPERTY AND UTILITIES**

### **8.1 Exercising Reasonable Care**

All work shall be executed in such a manner as to prevent any damage to facilities at the site and adjacent property, such as but not limited to streets, curbs, paving, service utility lines, structures, monuments, and other public and private property.

During the course of the work and as excavation approaches underground structures and existing facilities, digging by machinery shall be discontinued and excavation shall be done by means of hand tools as required.

“Reasonable Care” shall be exercised when working in proximity to any existing facility or structure. Reasonable care shall include, without limitation, the use of construction methods appropriate to ensure the integrity of existing facilities and their man-made temporary and permanent support including, but not limited to, adequate and proper shoring and proper

backfill methods and techniques; the selection of equipment capable of performing the work with the minimum reasonable likelihood of disturbance to underground facilities; adequate supervisory personnel to ensure proper actions; proper understanding by the personnel on the job site of the authority of all parties involved in the activity so that prompt action can be taken in the event of unanticipated contact with underground facilities; adequate training of employees in executing their assignments to ensure protection of utility facilities and the public; maintaining necessary liaison with owners of underground facilities; sponsoring preplanning and preconstruction meetings as necessary, and complying with all applicable laws and regulations.

## **8.2 Support of Exposed Facilities**

The Installer/Excavator shall be responsible for properly protecting and supporting all exposed underground facilities. When such protection or support is required, the proper utility shall be notified immediately.

## **8.3 Protection of Catch Basins**

Prior to excavating, the Installer/Excavator shall protect the area by installing approved silt fence, straw bales or other erosion control devices as required by City or State officials having jurisdiction. If required, the Installer/Excavator shall supply, maintain, and remove sediment and erosion control devices.

The Installer/Excavator shall provide adequate drainage facilities so that runoff will not adversely affect construction operations nor cause excessive disturbance of underlying natural ground or abutting properties. The Installer/Excavator shall conform to all Federal, State, and local laws, ordinances, rules and regulations governing the manner in which surface and ground waters are pumped and the manner of disposing such pumped waters.

## **8.4 Sprinkler Systems / Electronic Fencing**

The Installer/Excavator shall investigate the potential presence of a sprinkler system or underground electric fencing within the work area. If encountered, care shall be used when working within the area. The Installer/Excavator will be responsible for any damage which may occur.

## **8.5 Trees, Shrubbery, Flowers, and Other Vegetation**

Trimming, pruning, temporary or permanent removal of trees or shrubbery is strictly prohibited unless authorized by a NH Gas Supervisor. Any unauthorized removal will become the responsibility of the Installer/Excavator. The Installer/Excavator will use extreme care when excavating near trees. When excavating in the proximity of the tree drip line, care must be taken to minimize root damage and minimize soil compression over the root zone adjacent to the trench line. All tree protection and root care (when required) will be in accordance with applicable city tree protection specifications.

## **8.6 Fencing, Mailboxes and Other Markers**

The temporary removal of fencing, mailboxes or other items shall be allowed provided the Excavator has received prior authorization from the NH Gas Supervisor and City, State, Federal or private property owner. It shall be the Excavator's responsibility to replace at that exact location the item which was removed and meet the approval of NH Gas, City, State, Federal or

private property owner.

If a property bound marker has been identified as prohibitive to the construction process, a NH Gas Supervisor will be notified.

## **9 EXPOSED GAS PIPELINES**

### **9.1 Excavation around Gas Pipelines**

Whenever any section of buried pipeline is exposed, the pipe shall be examined for evidence of external corrosion or damage. Results will be documented on the back of the "NH Gas Daily Construction Work Log". If corrosion / damage exists, a NH Gas Supervisor shall be notified to inspect and test the pipe.<sup>3</sup>

### **9.2 Cast Iron Bell Joints**

Any time a caulked cast iron bell and spigot joint is exposed, it shall be sealed by using an anaerobic sealant or by encapsulation.

## **10 SUPPORT OF EXCAVATION**

It is the responsibility of the Installer/Excavator to ensure the safety of workers while working in a trench excavation. OSHA Rules and Regulations regarding support of excavations and shoring shall be followed at all times.

## **11 PIGGING – INTERNAL CLEANING**

All gas lines should be blown out with compressed air or pigged in a safe manner if there is any foreign debris believed to be in the main. **See Standard NHGAS-GN2.**

## **12 MISCELLANEOUS TRENCHING ITEMS**

### **12.1 Tracer Wire**

Tracer wire shall be installed with all direct burial plastic piping to allow the pipe to be located with standard pipe locators. Tracer wire must not be in direct contact with a gas carrying plastic pipe.

- A. Plastic - Connect service tracer wire to existing main tracer wire with a split-bolt connector and wrap with dielectric tape or other water tight seal.
- B. Cast Iron – Leave the end of the service tracer wire coiled under the cast main and service connection.
- C. Connection to the riser shall be made above grade on the undisturbed coated portion of the pipe with a plastic wire tie or tape or wrap a small amount of wire

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<sup>3</sup> Refer to 49 CFR 192.459

around the riser bracket.

- D. The tracer wire shall be installed below and adjacent to but not touching the installed plastic pipe. When boring or drilling installation methods are used, incidental contact between the tracer wire and carrier pipe is permissible. **See Standard NHGAS-GN3 and NHGAS-GN6**
- E. A means of fastening a line locator to the wire must be provided at least every 1000 feet. The wire can be looped inside a valve box or fastened to a steel riser.
- F. On steel to plastic main extensions, the tracer wire shall terminate in a valve box above the transition fitting. The tracer wire shall not be directly attached to the steel main.
- G. Plastic facilities with buried valves shall provide access to the tracer wire in the valve box. This shall be done by looping the tracer wire up the inside of the valve box and extending 2 feet above grade. **See Standard NHGAS-GN5**

## **12.2 Warning Tape**

Warning tape shall be placed twelve inches below finish grade directly above the gas piping, except for gas piping installed in concrete roadways. For concrete roadways, warning tape shall be placed eight inches below the base of the concrete. Warning tape is not required when installed in a boring, casing or directional drilling. **See Standard NHGAS-GN3 and NHGAS-GN6**

## **12.3 Dust and Clean Up**

Streets shall be thoroughly cleaned of all construction materials, excess earth, rock and other debris. The Installer/Excavator shall take the necessary precautions to prevent and avoid dust. Dust control agents may be required based on conditions and will be the responsibility of the Installer/Excavator. The Installer/Excavator will be required to follow the regulations set forth by Company, City or State in which the work is being performed.

## **13 INSTALLATION OF VALVE AND VALVE BOXES**

Valve boxes must be installed in a manner so as not to impose any loading or stress on plastic pipe. Valve installation will be done in accordance with manufacturer's installation procedures.

The trench should be manually backfilled in the area of the valve to assure that the box is centered and plumb over the valve and that the valve is well supported by backfill.

All valves with grease fitting extensions shall be greased and operated prior to backfilling. The valve shall be left in the full open position after operating, unless otherwise specified on the design plan.

Valve boxes shall be centered on valve stems in such a manner so as to ensure valve operation and to avoid damage to the valve, pipe, and coating. When a valve grease fitting extension is installed, a separate valve box may be used. The extension shall be secured to the inside of the valve box within 4 inches of grade.

## 14 PURGING

This section describes the methods used to purge gas lines with a Maximum Allowable Operating Pressure of 200psig or less.<sup>4</sup>

### 14.1 Purging Requirements

#### 14.1.1 General

Connections, valves and fittings, which are part of the purging apparatus or will be left in gas service after the purge is completed, (i.e., vent stack valves and fittings, N<sub>2</sub> fittings, tap hole connections and appurtenances), shall be inspected and tested before the purge is conducted.

Only a CGI that has been checked for calibration within 30 days before the purge shall be used to sample the gas at the vent stack.

#### 14.1.2 Fire Safety

A fire extinguisher shall be placed at a readily accessible location at both ends of the gas line to be purged.

All sources of ignition shall be removed and or neutralized from the immediate vicinity of the vent stack or other areas where gas may escape during the purge (i.e., transformers, electrical cords, open flames, company vehicles).

#### 14.1.3 Isolation

Check all gas line valves to ensure they are in the closed position and readily operable.

#### 14.1.4 Venting Purged Gas

The location of the outlet end of the venting device shall be selected to prevent purged gas from discharging into:

- A. Buildings, confined spaces, or vents, ducts, doors, windows, or other openings through which purge gas may enter a structure.
- B. Areas where there are sources of ignition.
- C. The gas line trench.

An approved compressor hose or bypass hose may be required to be installed between the gas line and vent pipe to prevent purged gas from discharging into a., b., and/or c., above.

When selecting a location for venting, consideration shall be given to the effect on the public due to the odor of gas and the noise that will be created while purging.

It is recommended that an approved NH Gas vent stack be used in all purging procedures. **See Standard NHGAS-GN4**

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<sup>4</sup> Refer to 49 CFR 192.629

The gas line to be purged shall be grounded.

**14.1.5 Communication**

An adequate form of voice communication shall be established between both ends of the gas line to be purged, from start-up, during, and to completion of the purge.

**14.1.6 Purge Risers**

Purge risers shall be located as close as possible to the ends of all new and abandoned gas lines.

**14.2 Purging Air from Gas Mains and Services**

Certain short segments of piping do not need to be purged. For lengths and diameters not mentioned below consult the Engineering Department for special written purging procedures. All mains shall be purged using the proper method outlined on the design plan.

<b>Purging Requirements</b>				
<b>Pipe Diameter (in)</b>	<b>* Alternative Purge Required (ft)</b>	<b>Purge Required (ft)</b>	<b>Inert Purge Required (ft)</b>	<b>Gas Main Network</b>
2 & Under	< 50	50 – 4000	> 4000	See Special Procedure
4	< 40	40 – 4000	> 4000	
6	< 25	25 – 500	> 500	
8	< 10	10 – 500	> 500	
10	< 7	7 – 500	> 500	
12	< 5	5 – 500	> 500	
16	See Special Procedure			

**Table 14-1**

\* These short segments of main need not be purged; instead slowly introduce gas into the pipe before full flow through the pipe begins (i.e., one valve or stop-off device is opened for a period of time before the other valve or stop-off device is opened).

**14.3 Method for Purging Air from Gas Mains and Services**

**14.3.1 Propane/Air Gas Purge (Service)**

- A. Establish the communication system described in **Section 14.1.5**, as necessary.
- B. In cases where a service line has an EFV installed, slowly open the venting device valve(s), otherwise fully open the venting device or vent stack valve(s).
- C. Monitor pressure and/or the flow of the purge gas continuously until the purge is complete.
- D. Test the gas being discharged from the venting device at the sampling point with a CGI. The purge shall be considered complete after 3 consecutive readings of 30% gas or higher.

- E. Close the venting device.

**14.3.2 Propane/Air Gas Purge (Main)**

- A. Establish the communication system described in **Section 14.1.5**, as necessary.
- B. Fully open the venting device or vent stack valve(s).
- C. Partially open the valve (or other shut-off device) that separates the propane/air gas from the main to be purged. The valve shall be partially opened to introduce propane/air gas into the main relatively rapidly while maintaining adequate operating pressure to the distribution system in the immediate vicinity of the purge.
- D. Monitor pressure and/or the flow of the purge gas continuously until the purge is complete.
- E. Test the gas being discharged from the venting device at the sampling point with a CGI. The purge shall be considered complete after 3 consecutive readings of 30% gas or higher.
- F. Close the venting device or vent stack valve(s).
- G. Fully open the source gas valve or shut-off device and fully pressurize the purged main.

**14.3.3 Inert Gas Purge**

- A. Determine the quantity of 210 cubic feet of nitrogen (N<sub>2</sub>) cylinders needed to purge the size and length of main shown in **Table 14-2**.

<b>Number of Nitrogen Cylinders required for Inert Purging</b>						
<b>Main Length (ft)</b>	<b>Size of Pipe (in)</b>					
	<b>2 – 4</b>	<b>6</b>	<b>8</b>	<b>10</b>	<b>12</b>	<b>16</b>
500-1000	NA	1/8	1/4	1/2	1	2
1000-4000	NA	1/4	1/2	1	2	3
> 4000	1/8	1/4	1/2	1	2	3

**Table 14-2**

- B. Connect the nitrogen cylinders and piping. **See Standard NHGAS-GN4**. Ensure that all inert gas valves are in the closed position. Ground the tanks(s) and fittings.
- C. Install and tap out an appropriate connecting device, on the main to be purged, as close as possible to the source of the propane/air gas, but not more than 8 feet from the valve or other shut-off device.
- D. Connect the nitrogen cylinders and piping to purge points specified on design plan.

- E. Confirm the start-up of the purge through the established communication system as described in **Section 14.1.5**.
- F. Fully open the vent stack valve(s).
- G. Open the valve attaching the nitrogen cylinders to the gas line to be purged.
- H. Open the valve(s) on the N2 tank(s) and set the appropriate N2 cylinder to 50psig. Maintain that pressure. The slug of N2 should be rapidly flowing into the main. (Note: Freezing of the pipe components occurs with excessive withdrawal rates from N2 cylinders, which must be avoided.)
- I. When the appropriate amount of nitrogen has been introduced, close all the valves on the N2 tank(s) and close the valve on the gas line to be purged. (Note: A N2 cylinder is considered empty when the cylinder's gauge reads 50psig.)
- J. Immediately open the valve (or other shut-off device) that separates the propane/air gas from the main to be purged. The valve shall be opened to introduce propane/air gas into the main relatively rapidly and continuously, while maintaining adequate operating pressure to the distribution system in the immediate vicinity of the purge. There should be no delay in introducing propane/air gas in order to preserve the effectiveness of the slug. The purge shall be considered void if there is a 3-minute delay.
- K. Test the gas being discharged from the venting device at the sampling point with a CGI. The purge shall be considered complete after 3 consecutive readings of 0% gas or higher.
- L. Close the venting device or vent stack valve(s).
- M. Fully open the source gas valve or shut-off device, and fully pressurize the purged main.
- N. Appropriately retire N2 connection and other purge points as stated on design plan.

#### **14.4 Purging Propane/Air Gas from Gas Mains and Services (Abandonment)**

Certain short segments of piping do not need to be purged. Special procedures shall be developed for lengths and diameters not covered in this section and/or for a network of gas mains, regardless of size. All mains shall be purged using the proper method as outlined on the design plan or as directed by a NH Gas Supervisor. All gas lines within the requirements shown in **Table 14-3** will be purged by directly replacing gas with air.

Determination of Time Required per Max Allowable Pipe Length				
Pipe Size (in)	Max Allowable Pipe Length (ft)	Time Per 100' Lineal Feet (min)	Time Per max Allowable Length (ft)	Ejection Pipe Size (in)
2 & Under	10000	1/8	13	3/4
4	5000	1/4	13	3/4
6	5000	1/2	25	3/4
8	5000	1/2	25	1 1/4
10	2000	1	20	1 1/4
12	1000*	1	10	1 1/4
16	1000*	1	10	1 1/4

Table 14-3

\*For lengths in excess of 1,000 lineal feet, use inert gas method.

## 14.5 Methods for Clearing Gas from Gas Mains and Services

### 14.5.1 Abandoning Gas Lines Using Air

- A. Establish the communication system described in **Section 14.1.5**, as necessary.
- B. Fully open the venting device or vent stack valve(s).
- C. Open the valve (or other shut-off device) that separates the compressed air from the gas line to be purged and abandoned. The valve shall be opened to introduce compressed air into the main relatively rapidly and continuously.
- D. Monitor pressure and/or the flow of the compressed air continuously until the purge is complete.
- E. Test the gas being discharged from the venting device at the sampling point with a CGI. The purge shall be considered complete after 3 consecutive readings of 0% gas.
- F. Close the venting device or vent stack valve(s).
- G. Retire abandoned gas line in accordance with the design plan.

### 14.5.2 Abandoning Gas Lines Using Inert Gas

- A. Determine the number of 210 cubic foot nitrogen (N<sub>2</sub>) cylinders needed to purge the size and length of main shown in **Table 14-2**.
- B. Connect the nitrogen cylinders and piping. **See Standard NHGAS-GN4**. Ensure that all inert gas valves are in the closed position. Ground the tanks(s) and fittings.
- C. Install and tap out an appropriate connecting device, on the main to be purged as close as possible to the source of natural gas, but not more than 8 feet from the valve or other shut-off device.
- D. Connect the nitrogen cylinders and piping to purge points specified on design

plan.

- E. Confirm the start-up of the purge through the established communication system as described in **Section 14.1.5**.
- F. Fully open the vent stack valve(s).
- G. Open the valve attaching the nitrogen cylinders to the gas line to be purged.
- H. Open the valve(s) on the N2 tank(s) and set the appropriate N2 cylinder to 50psig. Maintain that pressure. The slug of N2 should be rapidly flowing into the main. (Note: Freezing of the pipe components occurs with excessive withdrawal rates from N2 cylinders, which must be avoided.)
- I. When the appropriate amount of nitrogen has been introduced, close all the valves on the N2 tank(s) and close the valve on the gas line to be purged. (Note: A N2 cylinder is considered empty when the cylinder's gauge reads 50psig.)
- J. Immediately open the valves (or other shut-off device) that separates the compressed air from the gas line to be purged. The valve shall be opened to introduce compressed air into the main relatively rapidly and continuously.
- K. Test the compressed air being discharged from the venting device at the sampling point with a CGI. The purge shall be considered complete after 3 consecutive readings of 0% gas.
- L. Close the venting device or vent stack valve(s).
- M. Appropriately retire N2 connection at the main and abandon gas line in accordance with the design plan.

## 15 RESTORATION

### 15.1 General

Reference is made throughout this Section to Massachusetts Code, "DTE 98-22, Standards to Be Employed by Public Utility Operators When Restoring any of the Streets, Lanes and Highways in Municipalities". A copy of this standard is included in **Appendix B, Section 2** and should be used only as a reference document.

All excavations shall be restored back to original conditions unless otherwise specified by excavation permit or noted on the design plan.

### 15.2 Off Road Restoration

In required areas, the surface of the trench shall be backfilled to an elevation to allow for the placement of loam and seed.

Loam shall be a natural, fertile, friable soil, typical of productive soils in the vicinity, neither excessively acid nor alkaline, and containing no substances harmful to grass growth. Loam shall be delivered to the site reasonably free of frost, mud, stumps, roots, heavy or stiff clay,

stones larger than 1 inch in diameter, lumps, coarse sand, noxious weeds, sticks, brush or other litter.

Loam shall be worked a minimum of 3 inches deep on the prepared surface. The loam shall be raked until the surface is finely pulverized and smooth and compacted by rollers, weighing less than 100 pounds.

Seed shall be of an approved mixture, the previous year's crop, clean, high in germinating value, a perennial variety, and low in weed seed.

Seeding shall be done when weather conditions are suitable.

### **15.3 Road Restoration**

The Installer/Excavator shall restore existing roads and streets which are disturbed during the course of work. All restoration work will be performed in accordance with the City of Keene Permit specifications (to be obtained from Public Works Engineering Department). ”. A copy of this standard is included in **Appendix B, Section 2** and should be used only as a reference document.

#### **15.3.1 State Highway Repair**

The Installer/Excavator shall repair trenches in state highways in accordance with the state highway permit issued for the project.

### **15.4 Sidewalks and Driveway Apron Restoration**

The Installer/Excavator shall restore existing sidewalks or driveway aprons which are disturbed during the course of work. A sidewalk area that is disturbed shall be restored, in accordance with City of Keene Permit specifications (to be obtained from Public Works Engineering Department).

## **16 CUSTOMER AND COMMON TRENCHING**

It is the responsibility of the Installer to ensure that all NH Gas standards are followed during the installation of gas piping in a customer/common trench. This includes minimum trench width requirements, vertical and horizontal clearance, trench bedding, cover, tracing wire, warning tape and backfilling. The Installer shall contact a NH Gas Supervisor if the Excavator is not adhering to NH Gas standards. **See Customer Trenching Specifications in Appendix B, Section 3.**

The Excavator is responsible to excavate the trench to the limits required by the above referenced specifications. The Excavator is responsible for furnishing and installing suitable bedding and backfill material in accordance with New Hampshire Gas Corporation standards.

# CORROSION

## PURPOSE

The purpose of this section is to provide the Installer with requirements and procedures for the installation of corrosion control measures on coated steel pipelines and appurtenances.

Should conditions not allow installations in accordance with these standards, a NH Gas Supervisor must give prior approval before alternate methods, materials, and procedures are utilized.

## 17 GENERAL

The following general requirements apply to all coated steel pipe and fittings. For specific requirements under various areas, such as gas services or mains, consult those respective sections.

### 17.1 Coating Buried Structures

Every buried coated steel pipe, fitting, etc. utilized by NH Gas must have an effective external coating.<sup>5</sup>

#### 17.1.1 Pipe

All steel pipe to be installed is to have an acceptable mill applied coating unless otherwise specified by a Corrosion Supervisor. All non-coated sections of steel pipe (i.e. pipe exposed for weld joints) will be coated with an approved wrap per manufacturer's specifications. **See Standard Drawing BGAS-CP11**

##### 17.1.1.1 Visual Inspection of Exposed Coated Steel Pipe

All coated steel pipe exposed or installed within an excavation shall be visually inspected for coating holidays and defects prior to backfilling.

##### 17.1.1.2 Electrical Coating Inspection (Jeeping)

All services of 2" or larger in diameter and all steel mains will be electrically "jeeped" before backfill, using an acceptable holiday detector provided by the Installer, and set at the coating manufacturer's recommended inspection voltage. When the recommended voltage is unavailable, the voltage should be:

Jeep Voltage = Square root of coating thickness (In mils) X 1250

$$(\sqrt{\text{Mils X 1250}})$$

##### Testing for Coating Holidays

A. No person will touch or work on the pipe being tested until the test is complete as electrical shock could occur.

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<sup>5</sup> Refer to 49 CFR 192.461

- B. No testing shall be performed, nor any tester turned on, when there is the possibility of escaping gas.
- C. Any holiday discovered will be immediately marked and repaired.
- D. No backfill is to be placed until a holiday detection test is completed and all coating defects are repaired. An additional holiday detection test shall be performed upon previously repaired areas to assure that the coating damage was properly repaired.

#### 17.1.1.3 Coating Repairs

Repairs of mill applied coating holidays, defects and joint connections shall be of such a nature as to provide a coating of similar properties as the mill applied coating. The repair can be accomplished as follows:

- A. Remove all loose or disbonded coating from the surface.
- B. Clean the exposed metal of all dirt, oil, grease, etc.
- C. Apply an approved repair coating according to manufacturer's specifications.  
**See Standard BGAS CP-11**

#### 17.1.2 Coating of Valves and Irregular Fittings

Valves and irregular fittings should be covered and molded with an approved coating material which can be applied in a manner to eliminate voids under the tape.

All surfaces to be coated must be cleaned of all loose scale or rust by wire brushing or other approved methods.

#### 17.1.3 Repairs to Small Imperfections

When a small, (less than 1/4-inch in size), localized holiday is detected, a "tire patch" repair may be used. This method of repair is achieved by cleaning the area around the holiday and applying an approved primer, if required, to no less than a 1-inch square around the area to be coated. Once the primer dries to a tack, tape can be applied per manufacturer's recommendations. For holidays greater than 1/4-inch in size, a spiral wrap shall be used, as previously described.

### 17.2 Coating Piping Above Grade

All exposed mains, services or station piping will have a suitable coating to prevent atmospheric corrosion. Due to the individual nature of these situations, specific coating recommendations shall be obtained from the Corrosion Supervisor.<sup>6</sup>

### 17.3 Clearance from Foreign Structures

All pipe and appurtenances must be installed in a manner to minimize any adverse affect on existing, adjacent underground metallic structures.<sup>7</sup> **See Standard BGAS-CP12**

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<sup>6</sup> Refer to 49 CFR 192.479

<sup>7</sup> Refer to 49 CFR 192.473

## 17.4 Test Wires

Test lead wires are required for various corrosion control testing and monitoring operations after steel pipe installation. Test wires must be securely attached to the steel pipe or structure and should be installed in the configuration recommended.

The following wire types will be used unless otherwise specified:

No.12 - Test Wire: This will be No. 12 A.W.G. solid copper wire with 600 volt THHN Type Insulation. Galvanic Anodes shall be supplied with a minimum of this test wire or a No. 10.

### 17.4.1 Acceptable Connection Method

Connection of test wires to steel pipe or structures must be of such a nature as to maintain mechanical strength and electrical continuity. The only acceptable connection method is the thermite connection, except in the case of fittings requiring a mechanical connection.

### 17.4.2 Thermite Procedure

**Precaution: Never Thermite Weld on the following as a burn through may result.**

- A. All Anodeless Prefab Riser
- B. All Copper Tubing

Only trained personnel should use the Thermite Procedure. If more than one thermite connection is required, the minimum spacing shall be 18”.

- A. Clean a 2” x 2” area to shiny metal at the desired connection point. Steel surface must be ground or filed to remove all scale, rust grease and dirt. DO NOT WIPE surface with a dirty rag or with hands. The skin contains sufficient oils to leave a film on the pipe surface, which will prevent proper bonding of the weld material. **See Standard BGAS-CP13 Fig. A**
- B. Strip enough insulation from the wire to allow the stripped end to protrude from the mold.
- C. A damp or wet mold should not be used, as it will produce a porous weld. Firing a charge before making the desired weld can dry out a mold. This should be done with caution as a wet or damp mold may cause the molten material to splatter.
- D. **When using No.10 solid wire from an anode or No.12 stranded test station wire a copper adapter sleeve must be used over the wire.**
- E. Insert a steel disc over the mold tar-hole.
- F. Place the appropriate charge into the mold.
- G. Place the wire under the center of the mold and place it on the prepared area of pipe. **See Standard BGAS-CP13 Fig. B**
- H. Place a seal of duct-seal around the mold to prevent run-off when required.

- I. Using gloves, safety glasses, and adequate clothing, the operator should hold the mold firmly to the pipe while igniting with the flint gun.
- J. After the mold has cooled it can be removed.
- K. Remove all slag from the weld and give the weld one sharp blow with a hammer to insure its strength. If the weld is unacceptable, repeat the procedure. **See Standard BGAS-CP13**

#### 17.4.3 Minimizing Stress Concentration

The test wires shall be securely tied around the pipe so that the connection point will not be affected by any undue stress on the wires and to minimize possible stress concentration on the pipe. Sufficient slack shall be allowed in the installation of all test wires.

#### 17.4.4 Recoating of Pipe and Wire at Thermite Connection

After the thermite weld has cooled sufficiently, coat the weld and adjacent area to provide a coating of similar integrity and strength of mill-applied coating. **See Standard BGAS-CP13 Fig. D**

Test station configurations must be installed as designed unless specific changes are authorized by a Corrosion Supervisor or shown on the design plan.

**Proper color-coding of the test wires must be followed.**

#### 17.4.5 Insulating Fitting Test Station

Every buried insulating fitting on mains must have an insulating joint test station. All inner wires shall be knotted. Anodes may be installed with insulating joint test stations as specified by a Corrosion Supervisor or as shown on the design plan. The test station configuration will be dependent upon the type of insulated fitting.

##### 17.4.5.1 Steel to Steel Insulating Fitting

**See Standard BGAS-CP1**

##### 17.4.5.2 Cast Iron to Steel Insulating Fitting

**See Standard BGAS-CP2**

#### 17.4.6 Magnesium Anode Test Station

All multiple magnesium anode installations on mains will have a test station. This test station will also be installed on services as specified by a Corrosion Supervisor. **See Standard BGAS-CP3**

#### 17.4.7 Casing Pipe Test Station

A casing test station **MUST** be installed at every entry and exit point of a carrier pipe at a buried casing installation. **See Standard BGAS-CP4**

#### 17.4.8 Current Test Station (Four Wire)

The four-wire line current test station will be installed when specified by a Corrosion Supervisor. This test station should be located so that **NO** laterals, fittings, or service occur within its span. **See Standard BGAS-CP5**

#### 17.4.9 Isolated Sections of Steel Main

On isolated sections of pipe under 100' in length (offsets, short replacements, etc.), only one test station will be installed. Two 17# anodes **MUST** be installed with the anode lead terminating in the test station box. It must be noted, however, that no matter how short the new steel installation is, it **MUST** have this test station to monitor cathodic protection. **See Standard BGAS-CP3**

### 17.5 Magnesium Anodes

NH Gas will use the typical galvanic anode, constructed of high potential magnesium alloy. **See Standard BGAS-CP7**

#### 17.5.1 Types of Magnesium Anodes

The following types of magnesium anodes may be used:

- A. One (1) pound bare magnesium anode
- B. Three (3) pound prepackaged magnesium anode
- C. Seventeen- (17) pound prepackaged magnesium anode.

Seventeen (17) pound and three (3) pound anodes will have a 10 foot, No. 10 A.W.G. solid copper connection lead with **black** insulation. One (1) pound anodes will have 6 foot, No. 10 A.W.G. solid copper connection lead with **black** insulation.

#### 17.5.2 General Handling and Installation Requirements

The following general installation requirements should be observed for all anode installations.

- A. Anodes must never be handled or carried by the wire lead.
- B. Prepackaged anodes must always be thoroughly soaked in water at the time of installation.
- C. All anode connections must be made with a thermite weld. Mechanical connections are allowed on fittings.
- D. Anodes should be located as far away from the pipe or structure as practical to provide maximum current distribution.
- E. Anodes must be located more than 3 feet from another metallic structure. No other metallic structures can be between the anode and the pipe.
- F. When possible, hand-place backfill around and twelve inches above the anodes with excavated material.

### 17.5.3 Anode Requirements

The following tables indicate the number and size of anode(s) required to cathodically protect coated steel pipe in normal conditions.

Quantity and Size of Anodes for Mains		
Main Size	Length of Pipe	Quantity of 17 # Anodes
1" – 4"	1000' or less	2
1" – 4"	1001' – 1500'	3
1" – 4"	1501' – 2000'	4
1" – 4"	2001' – 2500'	5
1" – 4"	2501' – 3000'	6
1" – 4"	3001' and over	1 additional per 500'
6" – 10"	500' or less	2
6" – 10"	501' – 1000'	3
6" – 10"	1001' – 1500'	4
6" – 10"	1501' – 2000'	6
6" – 10"	2001' – 2500'	7
6" – 10"	2501' – 3000'	9
6" – 10"	3001' and over	1 additional per 335'
12" – 14"	500 or less	3
12" – 14"	501' – 1000'	4
12" – 14"	1001' - 1500'	6
12" – 14"	1501' – 2000'	8
12" – 14"	2001' and over	1 additional per 250'

Table 17-1

### 17.6 Electrical Insulation – Earphone Test

Whenever an insulating device is installed on NH Gas piping, it will be the Installer's responsibility to check the device for proper operation. The only acceptable type of test will be the "earphone" test. This test shall be conducted using an acceptable tester approved by a Corrosion Supervisor. **See Standard BGAS-CP14**

#### 17.6.1 Casings

Any gas carrier pipe installed within a casing must be electrically insulated from the casing. Proper centering of the carrier pipe within the casing and the use of sufficient casing spacers can accomplish this insulation. Casing spacers should be installed according to manufacturer's specifications. In addition to centering, a seal will be installed at every entry and exit point to prevent penetration of dirt or moisture into the casing's annular space. Casings which are to be buried must have a test station installed at every entry and exit point of the carrier pipe. **See Standard BGAS-CP4**

## **18 PROPANE/AIR GAS MAINS**

### **18.1 Corrosion Control Requirements**

Any new steel main installation will require the assistance and recommendations of Berkshire Gas Company with the exception of a short (less than 100') replacement segment.

## **19 PROPANE/AIR GAS SERVICES**

### **19.1 Corrosion Control Requirements**

Any new steel service installation will require the assistance and recommendations of Berkshire Gas Company.

## **20 ISOLATED, BURIED FITTINGS AND VALVES**

All isolated, buried steel fittings shall be coated and cathodically protected. A Corrosion Supervisor may be consulted to determine the location, quantity and size of anodes required in these situations



# PROPANE/AIR GAS SERVICE LINES

## PURPOSE

The purpose of this section is to provide the general construction requirements and procedures for installing gas services. When conditions prevent installations in accordance with these standards, approval must be obtained from a NH Gas Supervisor before alternate materials or procedures are used.

## DEFINITION

The minimum Federal Safety Standards (**49 CFR 192.3**) for gas pipelines provides the definition of a service as follows:

“Service Line: A distribution line that transports gas from a common source of supply to; (1) a customer’s meter or the connection to a customer’s piping, whichever is farther downstream, or (2) the connection to a customer’s piping if there is no customer meter. A customer meter is the meter that measures the transfer of gas from an operator to a customer.”

## 21 APPLICATION OF PIPE MATERIAL

### 21.1 Steel

Currently steel services are not installed in the New Hampshire Gas Distribution System. If it is determined that the installation of a steel service is necessary, Berkshire Gas Company Standards will be consulted.

### 21.2 Plastic

#### MDPE 2406

Medium density plastic pipe shall be used only where system pressures are a maximum of 60 psi and below.<sup>8</sup> The following table gives some characteristics of medium density plastic pipe used by Berkshire Gas. ½” MDPE can be used for services operating up to 100psi.

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<sup>8</sup> Refer to 49 CFR 192.121 to 192.124

Medium Density Plastic (PE 2406) Characteristics				
Nominal Size	SDR (min.)	Outside Diameter (in)	Wall Thickness (in)	Pressure Design Rating (psi)
1.00 CTS	12.5	1.125	.090	80
1.25 CTS				
2.00 IPS	11.0	1.650	.165	80
4.00 IPS	13.5	2.375	.216	80
6.00 IPS	13.5	4.500	.409	76
8.00 IPS	13.5	6.625	.491	64
12.00 IPS	13.5	8.625	.639	64

Table 21-1

**HDPE 3408**

High density plastic pipe is currently not installed but is acceptable if available.

**22 INSTALLATION**

**22.1 Proposed Location**

The Installer shall contact a NH Gas Supervisor when a gas line location change is required. No change in location shall be permitted without prior approval.

**22.2 Cover**

Minimum cover over the service shall be 24” from the main to a point where the service is not in a traveled way and 18” of cover from that point to the building / riser.<sup>9</sup> Where minimum cover cannot be maintained, refer to **Table 5-2**.

**22.3 Low Pressure Grading**

Low pressure service piping shall be installed to eliminate highs and lows with a continuous positive grade from main to riser. Service drip pots will be installed only when specifically directed by a NH Gas Supervisor.

**22.4 Excess Flow Valve**

Currently, Excess Flow Valves (EFV) are not utilized in the NH Gas Distribution System due to a Maximum Allowable Operating Pressure of 5 PSI.

If future changes dictate, EFV’s will be installed on new or replacement services which operate at a pressure greater than 10 psi and that serve a single family residence.<sup>10</sup>

Each service with an EFV must have an identifying tag installed on the meter riser by the Installer.

<sup>9</sup> Refer to 49 CFR 192.361

<sup>10</sup> Refer to 49 CFR 192.381

## 22.5 Riser Installation

### 22.5.1 Location

The riser shall be located at a place where gas from the vent can escape freely into the atmosphere and away from any opening into the building and 3 feet from a source of ignition. The riser shall be installed plumb with a minimum 6-inch separation from a residential building, or a minimum of 9-inches from a commercial/industrial building.<sup>11</sup> All risers will be installed with a lockwing shut-off at a minimum height of 8 inches from finished grade. **See Standard Drawings BGAS-SV1 to BGAS-SV10.**

In some cases riser location may warrant the installation of meter protection. **See Standard Drawings BGAS-SV12.**

A Construction Supervisor shall be notified before installation of all risers for new construction sites, where grading, paving or landscaping will occur after the service installation is complete.

### 22.5.2 Threaded Joint

Pipe joint compound shall be used on all threaded joints.

For pipe diameters over 2-inches, use Gas Approved Teflon Tape as well as pipe joint compound. Pipe joint compound may also be applied to female threads if necessary.

## 22.6 Clearance from Existing Structure

Each service must be installed in a manner and at a distance that will protect it from any underground structure and allow proper maintenance of both structures.<sup>12</sup> Except as specifically authorized by a NH Gas Supervisor, the vertical and horizontal clearance between a service and any other underground structure will be a minimum of twelve inches.

In addition, each service shall be installed with sufficient clearance and insulated from sources of heat to prevent the heat from impairing the serviceability of the pipe.

## 22.7 Replacement, Tie-over and Relocation

A **partial service replacement** shall be defined as installing new piping after an existing portion has been retired. A **service tie-over** shall be defined as an existing gas service in which the main tie-in and existing service line has changed, based on a main replacement.

A **full service replacement** shall be defined as the installation of a complete new service from main to riser and the retirement of the entire existing service.

All customers shall be notified, in advance, of any service interruption, except in the event of an emergency.

All pipe and fittings including cathodic protection will be installed in accordance with NH Gas standard drawings. **See Standard Drawings BGAS-SV1 to BGAS-SV10.**

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<sup>11</sup> Refer to 49 CFR 192.355

<sup>12</sup> Refer to 49 CFR 192.325

Existing service lines will be shut off and plugged at the meter; also shut off and disconnected at a location designated per the design plan.

Existing services will be purged of gas<sup>13</sup> as specified in **Section 14.1.5**.

Connect the new and existing portions of the service line in accordance with NH Gas service installation standards and appropriate fitting installation procedures.

A pressure test shall be conducted on both the new service piping and the existing reinstated piping for the minimum duration<sup>14</sup> in accordance with NH Gas pressure test requirements. See Error! Reference source not found.. See **Standard Drawing BGAS-SV13**.

Purge the completed service line<sup>15</sup> using purging standards outlined in **Section 14.3.1**. Reconnect meter and light up equipment as required.

## **22.8 Record Drawings**

- H. Installer shall be responsible for providing clear, legible record measurements of completed work. In the event that NH Gas Corporation determines that the record information is unsatisfactory, the Installer shall correct noted deficiencies at their own expense.
  - I. Record all measurements and details on the provided design plan or sketch and provide a detailed, daily description of work performed and parts installed on the **Daily Construction Work Log** form.
  - J. Measurements shall be taken from permanent structures if possible (i.e. buildings, property corners, manholes, catch basins, etc.). Measurements should be taken from structures that appear on the design plan or sketch if possible. Take measurements from the building that is being served. Measurements should be referenced off the primary house-lines.
  - K. A minimum of two (2) measurements are required for the following:
    - Valves, connection (tie-in) points, tees, elbows, reducers, end caps, drip risers, low points, squeeze-off points, purge points, test stations and regulators.
  - L. Provide pipe size, pipe type, depth of cover and reference measurements at a minimum of 100 foot interval on straight runs and 50 foot interval on curves.
- M. Provide detailed plans with any necessary description of all horizontal and vertical offsets. Provide the lengths of the pieces and the names of fittings.

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<sup>13</sup> Refer to 49 CFR 192.629

<sup>14</sup> Refer to 49 CFR 192.511, 49 CFR 192.513, 49 CFR 192.629, and 220 CMR 101.06

<sup>15</sup> Refer to 49 CFR 192.629

## 22.9 Retirement

Except in the case of emergencies, all customers/property owners will be notified in advance of a service retirement.

The existing service shall be disconnected, capped and plugged at a location designated on the design plan using approved fittings.

Full **Service Retirements** should be done at the connection point on the main and any point of disconnection along the service line will be classified as a **Cut Off**.

## 23 INSTALLATION OF PLASTIC SERVICES

### 23.1 Methods

All plastic services shall be installed via direct burial, pneumatic boring, horizontal directional drilling or insertion in accordance with these standards and the design plan.

#### 23.1.1 Direct Burial

All direct buried plastic services shall be installed in accordance with the applicable Standard Drawings. See **Standard Drawing BGAS-SV1 – BGAS-SV10**.

#### 23.1.2 Insertion

Plastic services shall be inserted in the following manner:

- A. The casing shall be reamed. Debris shall be blown clear prior to insertion, from inside of the basement to the outside. Precautions shall be taken to prevent dust and debris from blowing into basement.
- B. The leading end of plastic pipe being inserted shall be sealed.
- C. Plastic pipe insert protectors shall be placed at every casing opening.
- D. A protective sleeve shall be placed over all areas where the new pipe enters the existing abandoned pipe to protect the plastic from external loading and shearing.

#### 23.1.3 Boring and Directional Drilling

Services can be installed by either pneumatically boring or directional drilling. See **Section 4**

### 23.2 Mechanical and Compression Couplings and Fittings

An internal tubular rigid stiffener shall be used in conjunction with a mechanical coupling. The tubular stiffener, installed on the interior diameter of the pipe, shall project at least ½-inch beyond the end of the coupling. The stiffener shall be free of rough or sharp edges and shall not be forced into the plastic pipe.

To provide a gas tight seal and pullout resistance, a torque wrench or the correct size wrench

shall be used to insure the correct torque of mechanical couplings.

All mechanical and stab couplings shall be installed according to manufacturer's specifications.

### 23.3 Joining Methods

The following are accepted methods of joining plastic pipe.<sup>16</sup>

- N. Heat Fusion - Refer to pipe manufacturer's installation procedures according to grade and type. **See 2008 NGA Operator Qualifications Procedures in Manufacture's Installation Instructions Section**
- O. Electrofusion - Refer to fitting manufacturer's installation procedures according to grade and type. **See 2008 NGA Operator Qualifications Procedures in Manufacture's Installation Instructions Section.**

### 23.4 Steel to Plastic Transitions

The following guidelines should be followed when transitioning from steel to plastic pipe.

#### 23.4.1 Weld / Fusion Transition Fitting

- A. The steel side of the fitting is connected to steel pipe using any normal method of making metal-to-metal connections, such as welding. Precautions should be taken to prevent the plastic portion of the fitting from being overheated.
- B. Plastic pipe shall be joined to the plastic side of the fitting by methods outlined in **Section 23.3**.
- C. Protective sleeves are required for plastic-to-steel connections and shall be positioned over the transition area on the plastic side of the fitting.
- D. The excavation should be manually backfilled and compacted in the area of the transition fitting to assure that the sleeve is centered, secured and that the pipe and the transition fitting are well supported.

#### 23.4.2 Mechanical Transition Fitting

- A. Refer to fitting manufacturer's installation procedures.
- B. Protective sleeves are required for plastic-to-steel connections and shall be positioned over the transition area on the plastic side of the fitting.
- C. The excavation should be manually backfilled and compacted in the area of the mechanical fitting to assure that the sleeve is centered, secured and that the pipe and the mechanical fitting are well supported.

### 23.5 Protective Sleeve

Protective sleeves shall be installed in the following situations:

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<sup>16</sup> Refer to 49 CFR 192.283

- A. At the service to main connection (tie-in).
- B. At any transition from plastic pipe to steel pipe.
- C. At the point of entry on an insertion.

**23.6 Pressure Testing**

Each plastic service, new or renewed, shall be blown clear with filtered compressed air or nitrogen and pressure tested, after installation, for the minimum duration in accordance with the table listed below:<sup>17</sup>

<b>Pressure Test Requirements for New and Reinstated Plastic Services</b>				
<b>Pressure Class</b>	<b>Allowable Operating Pressure Range (psi)</b>	<b>Test Pressure (psi)</b>	<b>Duration</b>	<b>Test Media</b>
Low (New)	< 5 psi	50-100 psi	15 minutes	Air
Low (Reinstated)	< 5 psi	50 psi	15 minutes	Air
Intermediate	5 – 60 psi	100 psi	30 minutes	Air
High – 100	61-100 psi	150 psi	1 hour	Air & nitrogen
High – 124	101 – 124 psi	200 psi	1 hour	Air & nitrogen

**Table 23-1**

All pressure test durations commence once the pressure of the air or nitrogen has had adequate time to stabilize.

The Installer’s test gauge and chart recorder shall be periodically tested for accuracy and approved by Berkshire Gas. For all pressure tests, a spring gauge, or equivalent, shall be used as a pressure-measuring device.

The test pressure, medium and duration of the test shall be recorded on the work order form.

The pressure test shall show no apparent loss of pressure after stabilization period.

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<sup>17</sup> Refer to 49 CFR 192.513 and 220 CMR 101.06



# PROPANE/AIR GAS MAIN LINES

## PURPOSE

The purpose of this section is to provide the general construction requirements and procedures for installing gas mains. When conditions prevent installations in accordance with these standards, approval must be obtained from a NH Gas Supervisor before alternate materials or procedures are used.

## DEFINITION

The minimum Federal Safety Standards (**49 CFR 192.3**) for gas pipelines provides the definition of a main as follows:

“Main: A distribution line that serves as a common source of supply for more than one service line.”

## 24 APPLICATION OF PIPE MATERIAL

### 24.1 Steel

Steel pipe shall be used for the following cases:

- A. When system pressure is greater than 124 psi
- B. When required by Corrosion Department to maintain continuity of cathodic protection systems
- C. When required by System Planning

### 24.2 Plastic

#### MDPE 2406

This medium density plastic pipe shall be used only where system pressures are a maximum of 60 psi. See **Table 21-** for some characteristics of this medium density plastic pipe used by New Hampshire Gas.

#### HDPE 3408

High density plastic pipe may be used in place of MDPE 2406 if available but, must be used when system pressures are between 60 psi and 100 psi. High density plastic pipe which was manufactured after July 14, 2004 can be used when system pressures are less than or equal to 125 psi.

## 25 INSTALLATION

### 25.1 Proposed Location

The Installer shall contact a NH Gas Supervisor when a gas line location change is required. No change in location shall be permitted without prior approval.

### 25.2 Cover

Minimum cover over the pipe shall be measured as follows:

Minimum cover for traveled way mains shall be 30” from the top of the pipe to the top of the trench using the shallow side of the trench for measurement.

Minimum cover for off road mains shall be 30” from the top of the pipe to the top of the trench using the shallow side of the trench for measurement.

If minimum cover over the pipe can not be achieved, refer to **Table 5-2**. In the event that the requirements of **Table 5-2** cannot be met, contact a NH Gas Supervisor.<sup>18</sup>

### 25.3 Drip Pots

A drip pot may be installed at the lowest elevation point of a low-pressure main installation, or as directed by a NH Gas Supervisor or as shown on the design plan. See **Standard Drawing BGAS-MN1**

### 25.4 Clearance from Existing Structures

Each main must be installed in a manner and at a distance that will protect it from any underground structure and allow for proper maintenance of both structures. Except as specifically authorized by the NH Gas Supervisor, the separation between a main and any other underground structure will be a minimum of 12 inches (both vertically and horizontally). A minimum of 6 inches of clearance must be maintained for perpendicular crossings of other structures, except as specifically authorized by the NH Gas Supervisor.

In addition, each main shall be installed with sufficient clearance and insulated from sources of heat to prevent the heat from impairing the serviceability of the pipe.<sup>19</sup>

### 25.5 Record Drawings

- A. Installer shall be responsible for providing clear, legible record measurements of completed work. In the event that NH Gas Corporation determines that the record information is unsatisfactory, the Installer shall correct noted deficiencies at their own expense.
- B. Record all measurements and details on the provided design plan or sketch and provide a detailed, daily description of work performed and parts installed on the **Daily Construction Work Log** form.

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<sup>18</sup> Refer to 49 CFR 192.327

<sup>19</sup> Refer to 49 CFR 192.325

- C. Measurements shall be taken from permanent structures if possible (i.e. buildings, property corners, manholes, catch basins, etc.). Measurements should be taken from structures that appear on the design plan or sketch if possible. Take measurements from the building that is being served. Measurements should be referenced off the primary house-lines.
- D. A minimum of two (2) measurements are required for the following:
  - Valves, connection (tie-in) points, tees, elbows, reducers, end caps, drip risers, low points, squeeze-off points, purge points, test stations and regulators.
- E. Provide pipe size, pipe type, depth of cover and reference measurements at a minimum of 100 foot interval on straight runs and 50 foot interval on curves.

## **26 INSTALLATION OF STEEL MAINS**

### **26.1 Methods**

All steel mains shall be installed via direct burial, pneumatic boring, horizontal directional drilling or insertion in accordance with these standards and the design plan.

### **26.2 Joining Methods**

#### **26.2.1 Welding**

All welding will be performed using the Northeast Gas Association (NGA), “Welding Procedures-Specifications for Shielded Metal Arc Welding”. See **Appendix C** for complete procedure.

#### **26.2.2 Mechanical Couplings**

Steel mains may be joined together with mechanical couplings when specified on design plans or as directed by a NH Gas Supervisor. All mechanical couplings shall be installed according to manufacturer’s specifications

### **26.3 Pressure Testing**

After installation, every steel main shall be pressure tested for a minimum duration in accordance with the table listed below.<sup>20</sup>

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<sup>20</sup> Refer to 49 CFR 192.507, 49 CFR 192.509, 49 CFR 192.517 and 220 CMR 101.06

Pressure Test Requirements for Steel Mains				
Pressure Class	Allowable Operating Pressure Range (psi)	Test Pressure (psi)	Duration	Test Media
Low	< 5 psi	100 psi	1 hour	Air
Intermediate	5 – 60 psi	100 psi	1 hour	Air
High – 100	61-100 psi	150 psi	1 hour	Air & nitrogen
High – 200	101 – 200 psi	300 psi	4 hours	Air & nitrogen

**Table 26-1**

All pressure test durations commence once the pressure of the air or nitrogen has had adequate time to stabilize.

The test pressure and duration of the test shall be recorded on a pressure recording chart and noted on the work order form.

The pressure test shall show no apparent loss of pressure after the stabilization period.

NH Gas will perform all dead weight tests for all mains which shall operate at greater than 100 psi. A NH Gas Supervisor may notify a Department of Public Utilities (DPU) representative for each dead weight pressure test.

For all other pressure tests, a spring gauge tester shall be used as a pressure-measuring device. The Installer’s test gauge and chart recorder shall be periodically tested for accuracy and approved by NH Gas.

**26.4 Corrosion Protection**

Refer to the Corrosion section of this Manual for instruction on the following: Hand Applied Field Coating, Inspection for Coating Holiday, Testing for Coating Holiday, Cathodic Protection, Installation of Pipe in Casing and Boring Installation.

**27 INSTALLATION OF PLASTIC MAINS**

**27.1 Methods**

All plastic mains shall be installed via direct burial, pneumatic boring, horizontal directional drilling or insertion in accordance with these standards and the design plan.

**27.2 Joining Methods**

The following are accepted methods of joining plastic pipe.<sup>21</sup>

- A. Heat Fusion - Refer to pipe manufacturer’s installation procedures according to grade and type. **See 2008 NGA Operator Qualifications Procedures in Manufacture’s Installation Instructions Section**
- B. Electrofusion - Refer to fitting manufacturer’s installation procedures according to

<sup>21</sup> Refer to 49 CFR 192.283

grade and type. See *2008 NGA Operator Qualifications Procedures in Manufacture's Installation Instructions Section*.

### 27.3 Mechanical and Compression Couplings and Fittings

An internal tubular rigid stiffener shall be used in conjunction with a mechanical coupling. The tubular stiffener, installed on the interior diameter of the pipe, shall project at least ½" beyond the end of the coupling. The stiffener shall be free of rough or sharp edges and shall not be forced into the plastic pipe.

To provide a gas tight seal and pullout resistance, a torque wrench or the correct size wrench shall be used to insure the correct torque of mechanical couplings.

All mechanical and stab couplings shall be installed according to manufacturer's specifications.

### 27.4 Steel and Plastic Transitions

The following guidelines should be followed when transitioning from steel to plastic pipe:

#### 27.4.1 Weld / Fusion Transition Fitting

- A. The steel side of the fitting is connected to steel pipe using any normal method of making metal-to-metal connections, such as welding. Precautions should be taken to prevent the plastic part of the fitting from being overheated. Refer to the manufacturer's recommended installation requirements.
- B. Plastic pipe shall be joined to the plastic side of the fitting by approved methods outlined in **Section 27.2** (i.e. heat fusion, electrofusion, etc.).
- C. The excavation should be manually backfilled and compacted in the area of the transition fitting to assure that the pipe and transition fitting are well supported.

#### 27.4.2 Mechanical Transition Fitting

- A. Refer to fitting manufacturer's recommended installation procedures.
- B. The excavation should be manually backfilled and compacted in the area of the transition fitting to assure that the pipe and mechanical fitting are well supported.

### 27.5 Flow Control by Squeeze-Off

Effective flow control is a basic requirement in gas distribution systems. Operating system valves should accomplish the primary method for flow control when available and practical. An optional method is "squeeze-off" using suitable equipment specifically designed to control flow for emergency repairs or during certain pipe line extensions. The pipe manufacturer's recommendations should be followed to assure the appropriate tooling with recommended minimum diameters for squeeze bars. The following are guidelines to aid in preventing damage to pipe during squeeze-off:

- A. Select the appropriate size squeeze-off tool and set proper gap stop limits relative

to pipe diameter, grade and SDR.

- B. Make certain the pipe is centered and squared in the squeeze-off tool. It is important to allow pipe to be free to spread as it flattens.
- C. Locate the squeeze-off at least three pipe diameters away from the nearest fitting or heat fusion.
- D. Squeeze-off pipe only once in the same place.
- E. Squeeze-off pipe slowly or use momentary pauses, 2” per minute.
- F. Release squeeze-off at a rate of ½” per minute.
- G. Allow pipe to return to its original shape on its own. No re-rounding is required or allowed. Mark location of squeeze-off. Wrapping the squeezed area with vinyl tape is an acceptable method for marking.

**27.6 Pressure Testing Plastic Mains**

After installation, every plastic main shall be pressure tested for a minimum duration in accordance with the Table listed below.<sup>22</sup>

<b>Pressure Test Requirements for Plastic Mains</b>				
<b>Pressure Class</b>	<b>Allowable Operating Pressure Range (psi)</b>	<b>Test Pressure (psi)</b>	<b>Duration</b>	<b>Test Media</b>
Low	< 5 psi	50-100 psi	1 hour	Air
Intermediate	5 – 60 psi	50-100 psi	1 hour	Air
High – 124	61-124 psi	150 psi	1 hour	Air & nitrogen

**Table 27-1**

All pressure test time limits are started once the pressure of the air or nitrogen has had adequate time to stabilize.

The Installer’s test gauge and chart recorder shall be periodically tested for accuracy and approved by NH Gas. For all pressure tests, a spring gauge, or equivalent, shall be used as a pressure-measuring device.

The test pressure and duration of the test shall be recorded on a pressure recording chart and noted on the work order form.

The pressure test shall show no apparent loss of pressure after the stabilization period.

<sup>22</sup> Refer to 49 CFR 192.507, 49 CFR 192.509, 49 CFR 192.517 and 220 CMR 101.06

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2 2" LP Plastic Service BGAS-SV2  
3 ½" CTS IP Plastic Service BGAS-SV3  
4 ¾" IP Coated Steel Service BGAS-SV4  
5 1 ¼" IP Plastic Service BGAS-SV5  
6 2" IP Plastic Service BGAS-SV6  
7 ½" CTS HP Plastic Service BGAS-SV7  
8 ¾" HP Coated Steel Service BGAS-SV8  
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### D MAINS

1 Typical Drip Installation BGAS-MN1

# MANUFACTURE’S INSTALLATION INSTRUCTIONS

## **A CONTINENTAL INDUSTRIES INC**

- 1 Service Punch Tee
- 2 Con-Stab Connection

## **B CENTRAL PLASTICS CO**

- 1 STAC Wax Tape and Primer

## **C DRESSER INC**

- 1 Style 90 Plasti-lok Connection
- 2 Style 90 Universal Connection
- 3 Style 711 Insulating Reducing Coupling (CI to STL/PE)
- 4 Style 711 Insulating Coupling (STL to PE / PE to PE / STL to STL)
- 5 Style 711 Conductive Coupling (STL to PE / PE to PE / STL to STL)
- 6 Style 711 Line Caps (STL)
- 7 Style 711 Line Caps (STL / PE)
- 8 Style 711 Line Caps (CI)
- 9 Style 711 Line Cap Inserts (STL / PE)

## **D E.F. TECHNOLOGIES**

- 1 Phoenix Electrofusion Processor User Manual

## **E ELSTER PERFECTION CO**

- 1 Permalock Mechanical Tee

- 2 Permasert Connections (Tee, EFV, Valve, Riser, and Coupling)

## **F INNERTITE**

- 1 Posilock Service Head Adapter

## **G MUELLER CO**

- 1 Autopref Service Tee
- 2 Lockwing Cock
- 3 Servi-Seal / Full Seal

## **H NORMAC**

- 1 Compression Coupling

## **I POLYPIPE / RINKER**

- 1 Heat Fusion Joining Procedure

## **J POWERSEAL PIPELINE PRODUCTS CORP**

- 1 Pipe Repair Clamp

## **K SMITH BLAIR INC**

- 1 Maxi-Grip EZ Conductive Coupling (STL to PE / PE to PE / STL to STL)
- 2 Maxi-Grip EZ Insulating Coupling (STL to PE / PE to PE / STL to STL)
- 3 Maxi-Grip EZ Reducing Coupling (CI to PE and CI to STL)

## **L TAPECOAT**

- 1 Tapecoat H35 Grey Wrap

# NEW HAMPSHIRE GAS CORPORATION

## EMERGENCY PLAN

Revision Number	Date Issued	Pages	Reviewed By
0	February 5, 1999	Original Issue	Mark A. Cole
1	October 23, 2000	Appendix V	Mark A. Cole
2	April 6, 2001	2, 23, Appendix V	Mark A. Cole
3	March 30, 2002	Appendix V	David A. Jacques
4	June 9, 2003	10, 25, Appendix II & V	David A. Jacques
5	May 31, 2005	Complete Re-Issue	David A Jacques
6	December 29, 2006	7.0 Roster, Appendix V	David A Jacques
7	April 27, 2007	Appendix V	David Jacques
8	December 6, 2010	1, Appendix V	Stephen J. Rokes
9	December 27, 2011	Complete Re-Issue	Stephen J. Rokes
10	December 5, 2012	Address change, Appendix V	Stephen J. Rokes
11	December 30, 2013	Re-Issue	Stephen J. Rokes

NEW HAMPSHIRE GAS CORPORATION

EMERGENCY PLAN

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## 1.0 PURPOSE

The purpose of this document is to demonstrate compliance by the New Hampshire Gas Corporation to the requirements of the Office of Pipeline Safety Minimum Federal Safety Standards Part 192.615 which states that each operator shall:

1. Have written emergency procedures;
2. Acquaint appropriate operating and maintenance employees with the procedures;
3. Establish liaison with appropriate public officials, including fire and police officials with respect to procedures; and
4. Establish an educational program to enable customers and the general public to recognize and report a gas emergency to the appropriate officials.

When implementing this Emergency Plan and its procedures, the employees of the New Hampshire Gas Corporation should do so with the following objectives in mind:

1. Protect the public
2. Minimize the extent of damage
3. Restore essential services safely and with expedience.

Throughout this document there are references to the "plant" or the "plant at Emerald Street". New Hampshire Gas Corporation (NHGC) has contracted with Keene Propane Corporation (KPC) for propane air supply from KPC's plant located at 207 Emerald Street. That plant is operated by KPC utilizing manpower contracted from NHGC. Any references to responsibilities to be performed at the plant are performed by personnel operating at KPC's direction.

Because the safe and reliable operation of the NHGC distribution system relies directly on the plant, procedures for both the NHGC employees operating the distribution system operating the plant are provided here to allow for a single document for personnel to reference in the event of an emergency.

## 2.0 DEFINITION OF AN EMERGENCY

An emergency condition exists when a designated company official has declared that extraordinary procedures, equipment, and supplies must be employed urgently to protect the public from existing or potential hazards due to:

1. Facility failure:
  - a) Under-pressure in the system
  - b) Over-pressure in the system
  - c) Large volumes of uncontrolled escaping gas
  - d) Abnormal Propane/Air Mixtures entering the distribution system
  - e) Fire/Explosions associated with the Gas Facility
2. Excessive load requirements
3. Civil disobedience
4. Natural disasters

## 2.1 DECLARATION OF AN EMERGENCY

Only the Director of Emergency Operations, or his designated representative, may declare that an emergency condition exists. It is important that this emergency declaration be made in unmistakably clear language to all company personnel.

## 2.2 CLASSIFICATION OF EMERGENCIES

The objective of classifying emergencies is to aid Emergency Personnel in developing individual plans for varying types of emergencies. This company recognizes three separate classifications of emergencies entitled Class A, Class B, and Class C. The criteria for each of these are outlined in this part. It should be noted that the emergency situation may involve criteria from more than one class and response to such a situation should be adjusted accordingly.

The three classifications vary as to the degree of personnel involved, equipment, and authorities to be notified.

The Director of Emergency Operations or his designated representative will be responsible for assigning the appropriate classification of emergency based on the available information provided by his Coordinators or Public Officials (See 2.0, Nos. 3 and 4).

In the event the Director of Emergency Operations is not available at the time a classification must be made, an emergency classification may be assigned by either the Gas Supply Coordinator or Service Department Coordinator. Which of these key personnel should make the classification will depend on the situation and whose area of responsibility pertains to that situation.

**General procedures relevant to each classification of emergency are outlined in Section 6.0.**

Class A Emergencies

- Outages involving less than 25 customers (civil, municipal, or news media not involved).
- Significant unintentional escape of gas with no report of ignition, explosion, evacuation, or serious damage.
- **Abnormal** BTU mixtures due to Plant Facility Equipment failure (**such as Blowers**).

Class B Emergencies

- Interruptions of gas supply affecting service to 25 to 100 customers, requires notification of “Stand-by” status for Incident Command System (**Appendix VI**) or other assistance.
- Explosions or fires where gas may be involved.
- Situations which require taking a main supply line out of service.
- An unintentional escape of gas, which due to existing conditions, would require a more extensive plan other than that designed to deal with a Class A emergency.
- Situations where damage to Company or private property is anticipated to exceed \$5,000.

Class C Emergencies

- Interruptions of gas supply affecting service to over 100 customers, requires notification of “Mobilization” status for Incident Command System (**Appendix VI**) or other assistance.
- Situations resulting in the need to conserve gas in the system in order to prevent or delay a major interruption. Such situations could result in the implementation of the Company Load Curtailment Plan or the shutting off of an isolation area.
- Civil disorders which could cause damage to company facilities or result in a situation involving gas which would be hazardous to the public.
- Natural disasters such as floods, hurricanes, earthquakes, which could result in damages to facilities or create an unsafe situation necessitating an emergency appraisal.

### 3.0 RECEIVING EMERGENCY CALLS

**NORMAL WORKING HOURS:** Emergency calls are received during normal working hours at the business office at **80 Pearl St**, Keene, NH. Two lines are open to the public: 603-352-1230 and 603-352-2418. Emergency calls may be initiated by customers, civil authorities, general public, or **company** personnel. The following procedures shall be followed when a call is recognized as an emergency:

1. Obtain accurate information about the location of the emergency. Include street name, number, intersecting street, color of building, and any other pertinent information which may aid personnel in responding.
2. Obtain the name, telephone number, and location of the caller if the caller is not in the immediate vicinity of the emergency location.
3. Obtain needed information for an accurate description of the nature of the emergency. Examples: gas odor, fire, explosion, lack of pressure, high flames, etc.
4. In the event a gas odor is reported by the caller inside, clearly state the following:
  - a. **DO NOT LIGHT MATCHES**
  - b. **DO NOT OPERATE LIGHT SWITCHES OR ANTHING ELECTRICAL**
  - c. **IF YOU THINK YOU SMELL GAS OR CAN HEAR A BLOWING OR HISSING NOISE, EVACUATE THE PREMISES**
5. Dispatch appropriate personnel immediately.
6. Record all information on a Service Order.
7. When all the initial information has been received and recorded and personnel dispatched to the scene, the person receiving the call will evaluate the data and determine whether the situation requires immediate Emergency Notification Procedures. Criteria for Emergency Notification Procedures are found in **Section 3.1**.

**OFF HOURS:** During hours that the office is not manned by company personnel, all calls are received by the Keene Answering Service. Transfer of calls is done by call forwarding. The answering service records the information and dispatches service response to its page, instructions are to consult the list of emergency personnel and call until a representative is reached (See **Appendix V**).

In the event that additional information is required by company personnel from answering service their private line is **603-352-6500**.

Specific instructions covering the receiving of emergency calls are listed in **Appendix IV**.

### 3.1 EMERGENCY NOTIFICATION PROCEDURES

The original response to a possible emergency situation will be the person dispatched to investigate the complaint. It is important to recognize that under certain conditions it would be expedient to mobilize all key EMERGENCY PERSONNEL so that they can begin performing their appointed tasks. Criteria for such an action are listed in **Section 3.2**, situations requiring Emergency Personnel Notification.

In the Event that an emergency call meets the criteria of **Section 3.2**, the person dispatched to investigate the complaint will contact the coordinators listed in **Appendix V**, Page 1, and give a brief description of the situation.

### 3.2 SITUATIONS REQUIRING EMERGENCY PERSONNEL NOTIFICATION

1. **Reported explosion involving situations other than a single appliance.**
2. **Multiple calls in the same general location involving gas odor in buildings or in atmosphere.**
3. **Multiple calls in the same general location reporting interruption of gas supply or pilot outage.**
4. **Multiple calls in various locations reporting excessive flames or high CO levels.**
5. **Report of damage to company facilities designated as integral to the Central Distribution System.**
6. **Major civil disobedience situation reported by Municipal Authorities.**
7. **Natural disaster affecting City of Keene.**
8. **Company personnel requesting Emergency Personnel Notification Procedures.**

#### 4.0 RESPONSIBILITIES OF EMERGENCY PERSONNEL

This section outlines the general responsibilities of emergency personnel. Additional procedural actions for each are found in **Section 6.0** of this plan. It is the responsibility of the first company employee to arrive at the scene of an emergency to take every corrective action necessary to **protect life and property** (in that order).

(See **Appendix V** for company employees currently assigned to each position.)

#### 4.1 DIRECTOR OF EMERGENCY OPERATIONS (GENERAL)

- Assumes complete charge of emergency operations.
- Based on information readily available, assigns a classification to the emergency relevant to the classes established in **Section 2.2** of this plan.
- Designates the Service Department Coordinator, Administrative Coordinator, Street Department Coordinator, and Gas Supply Coordinator to carry out the emergency procedures deemed applicable.
- Decides the authorities that should be advised of the emergency and initiates their notification.

PUC

DOT

Incident Command System (ICS)(Affiliated Assistance (NYSEG, RGE)) (**Appendix VI**)  
Affiliate/Home Office Contact (**Appendix VI, ICS #8**)

Municipal Agencies (**Appendix I**)

Other Utilities (**Appendix VI**)

Outside Contractors (**Appendix II**)

- Decides if publicity releases to the press or radio are necessary (**Appendix III**).
- Determines if a modified version of the emergency plan should be implemented to cope with any unusual civil disturbance. In such cases, special liaison with the Police Communications Center will be made to evaluate the situation. Based on the evaluation of the disturbance, the Director of Emergency Operations will decide the plan of action and proper notification procedures.
- Direct the operations of all coordinators during the emergency.
- Originates all additional actions necessary.

#### 4.2 ADMINISTRATIVE COORDINATOR

- Assigns personnel and directs activities for the following functions:
  - a. Dispatching: During normal company hours the Administrative Coordinator will perform the activities of the normal dispatcher.  
During off hours the Administrative Coordinator will respond to the Operations Center, informs the answering service of intention, and transfer receiving calls to the Operations Center. The administrative Coordinator will remain in the dispatching capacity until a replacement arrives.
  - b. Meter Books (when isolation of system required).
  - c. Accounting and record keeping.
  - d. Maintaining continuity of communications.
  - e. Claims.
- Keeps the Director of Emergency Operations informed of the activities of those Functions under responsibility.

#### 4.3 SERVICE DEPARTMENT COORDINATOR

- The Service Department Coordinator shall be responsible for directing the activities of the Customer Service Department, coordinating field activities with other departments and keeping the Director of Emergency Operations informed.
- The Service Department Coordinator may be the “Shutdown Supervisor” or he/she may designate a service foreman as a field “Shutdown Supervisor”.
- Should shutdown procedures be initiated, the Service Department Coordinator will secure from the Administrative Coordinator, current customer status information from the meter books and assign crews to initiate Shutdown Procedures as outlined in the Operations Section of the O&M Manual.
- The Service Department Coordinator may be required to act in any of the emergency personnel capacities where his/her expertise is required.

#### 4.4 STREET DEPARTMENT COORDINATOR

- It will be the responsibility of the first company employee to arrive on the scene of an emergency to take every action necessary to **protect life and property** from danger (in that order.)
- The Street Department Coordinator shall be responsible for directing the activities of the street crews and outside contractors, coordinating field activities with other departments and keeping the Director of Emergency Operations informed.
- Steps will be taken to repair the failure, if any, and return the distribution system to normal operation. Specific steps will be governed by such factors as the extent of the failure, its exact location, the time of day and date, and other pertinent information. Consideration should be given to the following:
  1. Stop and control the escape of gas, if any, by closing valves (where applicable) or cutting/bagging main. Note: system maps should be consulted with extreme care due to the interconnections found in this system.
  2. Confine outage area to as small an area as possible.
  3. Communicate effectively with Service Department Coordinator possible locations which might require service department personnel.
  4. Repair the damaged facility.
  5. Restore service to remaining sections, giving priority to institutions, commercial, and industrial customers.
  6. Make initial observations as to the cause of failure and note possible follow-up action as necessary.
  7. Insure all physical evidence necessary to report requirements remains undisturbed for inspection of officials.

#### 4.5 GAS SUPPLY COORDINATOR

In the event the nature of the event is likely to affect the supply of normal flow of gas from the plant, the Gas Supply Coordinator should:

1. Make a quick appraisal of the situation and communicate such to the Director of Emergency Operations and additional personnel deemed necessary.
2. Monitor critical recording devices for changes which might necessitate a reappraisal of the needed actions.
3. After consultation with the Director of Emergency Operations, initiate shutdown procedures for part of all of the plant.

## 5.0 EMERGENCY OPERATIONS CENTER

Unless otherwise specified by the Director of Emergency Operations, the Emergency Operations Center will be the business office at 80 Pearl St, Keene, NH. In the event that this location is unacceptable due to the emergency situation, the Director of Emergency Operations will assign a location deemed appropriate. The Gas Plant would be considered as the first alternate site. If neither facility were available we would work with the City for a suitable location. If the emergency required implementation of the City Emergency Plan; we would work directly with them at their designated locations (ex. Fire Dept.). Attention should be given to the following:

1. Contact Fair Point Communications for remote transfer of call forwarding of needed phone lines.
2. Emergency communication facilities can be easily established.
3. The Facility will readily accommodate the necessary emergency personnel stationed there.
4. Traffic flow and response time is adequate.
5. Should the emergency situation escalate in magnitude, it would be unlikely to affect the location.

Key emergency personnel will respond to alternate locations as outlined in Section 6.0, Emergency Procedures.

## 6.0 EMERGENCY PROCEDURES

Noted earlier in this document were possible situations which could result in the declaration of an Emergency. Listed next are some important considerations necessary for each of the three classifications of emergencies.

**In ALL Emergencies, as soon as possible, a determination MUST be made if 911 should be called for assistance.**

## 6.1 EMERGENCY PROCEDURES - LOW PRESSURE CONDITION

A low pressure condition in the New Hampshire Gas Distribution System is likely to be caused by one of the following:

- Component failure (regulator, relief, vaporizer, norican panel, pump, etc.) at plant facility on Emerald Street.
- Damaged main supply line.
- **Excess** demand due to cold weather.

It will be the responsibility of the first company employee to arrive at the scene of an emergency to take every action necessary to **protect life and property** from danger.

Upon notification of an emergency situation involving a low pressure condition, the following should be considered when responding:

### A. **Component Failure Plant Facility**

1. Gas Supply Coordinator
  - Respond immediately to the plant, investigate the nature of the failure and initiate repairs.
2. Street Department Coordinator
  - Respond to the plant and assist the Gas Supply Coordinator and establish as soon as possible an open line of communication with other emergency personnel.
3. Service Department Coordinator
  - Respond to the Emergency Operations Center and evaluate incoming calls to see if there is a significant customer outage due to the low pressure condition. If an outage situation exists, he/she will proceed as follows:
    - a. Dispatch service personnel to monitor the pressure recording devices at the extremities of the distribution system.
    - b. Review incoming calls, pressure reports, and meter information provided by the Administrative Coordinator and dispatch personnel to shut off service at the meter at appropriate locations as per instructions in the Operations and Maintenance Manual.
    - c. Inform the Director of Emergency Operations when customer outage exceeds 25 customers and necessitates upgrading the status of the emergency (Class A becomes Class B or C).
4. Administrative Coordinator
  - Respond to the Emergency Operations Center.
  - Establish lines of communication as outlined in **Section 4.2a**.

- Furnish the Service Department Coordinator with current active meter information for the affected low pressure area.

5. Director of Emergency Operations

- Insure that all Emergency Personnel have responded and are carrying out their respective duties.
- Respond to the location deemed necessary.
- Monitor communications and classify the Emergency Situation. Assess the situation and determine if it is necessary to initiate any of the following: Incident Command System (ICS) 2.2 and (**Appendix VI**), Load Curtailment Plan 6.5.A, Emergency Reporting Requirements 7.0, Mutual Assistance (**Appendix VI**).
- See also **Section 4.1**.

B. **Damaged Main Supply Line** (See **Section 6.3** also)

Upon notification of emergency due to damaged main supply line, the following should be considered when responding:

1. Gas Supply Coordinator

- Respond immediately to the plant at Emerald Street and monitor critical pressure recording devices to determine whether the line break will result in an excessive demand on facilities.
- Should it become evident that plant facilities will not be able to deliver a gas pressure consistent with the Minimum Allowable Operating Pressure; the Gas Supply Coordinator will confer with the Director and determine if reclassification and shutdown is necessary.

2. Street Department Coordinator

- Respond to the location of damage, make a quick appraisal of the situation and communicate such to the Director.
- Follow procedures outlined in **Section 6.4** if a significant amount of gas is migrating or escaping to the atmosphere.

3. Service Department Coordinator

- Respond to the location of damage and follow procedures outlined in **Section 6.4** if a significant amount of gas is migrating or escaping to the atmosphere.
- Dispatch personnel to monitor pressure recording devices in the area to assess whether a low pressure situation exists.
- Obtain from the Administrative Coordinator current active meter information and dispatch service personnel to investigate each location for suspected pilot outage.
- Should the situation warrant, inform the Director and Street Department Coordinator of the necessity to take a main supply line out of service.

4. Administrative Coordinator
  - Supervise dispatching as outlined in **Section 4.2a**.
  - Secure, if necessary, current active meter information relevant to the area affected.
5. Director of Emergency Operations
  - Insure that all Emergency Personnel have responded and are carrying out their respective duties.
  - Respond to the location deemed necessary.
  - Monitor communications and classify the Emergency Situation. - Assess the situation and determine if it necessary to initiate any of the following: Incident Command System (ICS) **2.2** and (**Appendix VI**), Load Curtailment Plan **6.5.A**, Emergency Reporting Procedures **7.0**, Mutual Assistance (**Appendix VI**).
  - See **Section 4.1** also.

### C. **Excess Demand Due to Cold Weather**

When a low pressure condition exists and it is determined that the situation is created by an excessive demand on supply capabilities, the following should be considered when responding:

1. Gas Supply Coordinator
  - Respond directly to the plant and examine critical pressure recording devices.
  - Calculate the necessary reduction in load demand based on BTU and communicate such to the Director.
  - Take any necessary steps to increase gas supply.
2. Street Department Coordinator
  - Respond directly to the plant, insure that all emergency equipment is operational and standby until otherwise directed.
3. Service Department Coordinator
  - Respond to the Emergency Operations Center and evaluate incoming calls to see if there is a significant customer outage due to the low pressure condition. If an outage situation exists, he/she will proceed as follows:
    - a. Dispatch service personnel to monitor the pressure recording devices at the extremities of the distribution system.
    - b. Review incoming calls, pressure reports, and meter information provided by the Administrative Coordinator and dispatch personnel to shut off service at the meter at appropriate locations as per instructions in the Operations and Maintenance Manual.
    - c. Inform the Director of Emergency Operations when customer outage exceeds 25 customers and necessitates upgrading the status of the emergency (Class A becomes Class B or C).

4. Administrative Coordinator
  - Respond to the Emergency Operations Center.
  - Establish lines of communication as outlined in **Section 4.2a**.
  - Furnish the Service Department Coordinator with current active meter information for the affected low pressure area.
  
5. Director of Emergency Operations
  - Insure that all Emergency Personnel have responded and are carrying out their respective duties.
  - Respond to the location deemed necessary.
  - Monitor communications and classify the Emergency Situation. Assess the situation and determine if it is necessary to initiate any of the following: Incident Command System (ICS) **2.2** and (**Appendix VI**), Load Curtailment Plan **6.5.A**, Emergency Reporting Procedures **7.0**, Mutual Assistance (**Appendix VI**).
  - See also **Section 4.1**

## 6.2 EMERGENCY PROCEDURES - HIGH PRESSURE CONDITION

It will be responsibility of the first company employee to arrive at the scene of an emergency to take every action necessary to **protect life and property** from danger (in that order). Upon notification of a high pressure condition existing in the distribution system, the following should be considered when responding:

1. Gas Supply Coordinator
  - Respond immediately to the plant and inspect all relief valves. In the event that any are allowing gas to escape to the atmosphere, notify the fire department as soon as practical.
  - Locate the component failure creating the high pressure situation and initiate repairs.
  
2. Street Department Coordinator
  - Respond directly to the plant and assist the Gas Supply Coordinator in any capacity requested.
  - Establish lines of communication with other emergency personnel.
  
3. Service Department Coordinator

Respond to the Emergency Operations Center and evaluate incoming calls to see if there is a significant customer outage due to the high pressure condition. If an outage situation exists, he/she will proceed as follows:

  - a. Dispatch service personnel to monitor the pressure recording devices at the extremities of the distribution system.
  - b. Review incoming calls, pressure reports, and meter information provided by the Administrative Coordinator and dispatch personnel to shut off service at the meter at appropriate locations as per instructions in the Operations and Maintenance Manual.
  - c. Inform the Director of Emergency Operations when customer outage exceeds 25 customers and necessitates upgrading the status of the emergency (Class A becomes Class B or C).
  
4. Administrative Coordinator
  - Respond to the Emergency Operations Center.
  - Establish lines of communication as outlined in **Section 4.2a**.
  - Furnish the Service Department Coordinator with current active meter information for the affected high pressure area.
  
5. Director of Emergency Operations will:
  - Insure that all Emergency Personnel have responded and are carrying out their respective duties.
  - Respond to the location deemed necessary.
  - Evaluate information and determine if it is necessary to initiate emergency shutdown procedures or call for additional assistance (**Appendix VI**).
  - See also **Section 4.1**.

### 6.3 EMERGENCY PROCEDURES - **ABNORMAL** BTU MIXTURES (Below 650 or Above 850)

It will be responsibility of the first company employee to arrive at the scene of an emergency to take every action necessary to **protect life and property** from danger (in that order). Upon notification of an abnormal BTU's, Below 650 or above 850, for an extended period of time, the following should be considered when responding:

1. Gas Supply Coordinator
  - Respond immediately to the plant and verify **the equipment failure** causing the **abnormal BTU's**. If it is a **blower fault** begin procedures to bring the Blowers back on line and start producing proper BTU mixtures.
  - Follow procedures on the "Emergency Response Protocol – Gas Plant" (**Appendix VII**)
  - At times this problem may not constitute a "Class A" emergency. To qualify as a "Class A" will depend on the load at time of the failure and the length of time of the failure. Follow (**Appendix VII**)
2. Street Department Coordinator
  - Respond directly to the plant and assist the Gas Supply Coordinator in any capacity requested.
  - Establish lines of communication with other emergency personnel.
3. Service Department Coordinator
  - Respond to the Emergency Operations Center and evaluate incoming calls to see if there have been any reported CO alarms, high flame complaints or fires anywhere in the distribution system.
  - Follow procedures in (**Appendix VII**).
  - Establish lines of communication with other emergency personnel.
4. Administrative Coordinator
  - Respond to the Emergency Operations Center.
  - Establish lines of communication as outlined in **Section 4.2a**.
  - Furnish the Service Department Coordinator with current active meter information for any affected areas.
5. Director of Emergency Operations will:
  - Insure that all Emergency Personnel have responded and are carrying out their respective duties.
  - Respond to the location deemed necessary.
  - Evaluate information and determine if it is necessary to initiate emergency shutdown procedures or call for additional assistance (**Appendix VI**).
  - See also **Section 4.1**.
  - Initiate upgrading the status of the emergency (Class A becomes Class B or C) if necessary.

#### 6.4 EMERGENCY PROCEDURES - ESCAPING GAS, FIRES, EXPLOSIONS, INTERRUPTION OF SERVICE TO 25 TO 100 CUSTOMERS (CLASS B)

Emergencies involving large amounts of escaping gas, gas related fires or explosions, or situations where extensive damage occurred to company or private property are classified as (Class B) Emergencies (See **Section 2.2**). This section emphasizes procedures that should be considered in addition to the procedures outlined in previous sections of this manual. References will be made to preceding sections rather than repeating entire blocks of text. **CLASS B Emergencies MUST be reported to 911 ASAP.**

It will be the responsibility of the first company employee to arrive at the scene of an emergency to take every action necessary to **protect life and property** from danger (in that order.)

##### 1. Gas Supply Coordinator

- Respond immediately to the plant and monitor critical recording devices to ascertain if the failure is creating a low pressure condition. If it is evident that a low pressure situation is developing, he will proceed by guidelines set forth in **Section 6.1.B 1**.
- If no low pressure condition exists, he may aid the Street Department Coordinator by readying necessary emergency equipment and dispatching it to the scene.

##### 2. Street Department Coordinator

- Respond to the scene and conduct a leak investigation to locate the source of escaping gas.
- When the source of escaping gas is located, initiate isolation procedures by closing valves or using emergency stopping equipment.
- When the flow of escaping gas has been curtailed, conduct another leak investigation to insure that all sources of escaping gas have been **eliminated**.
- Conduct an incident investigation as outlined in the O&M Manual.
- Keep a record of all activities conducted throughout the duration of the emergency situation.

##### 3. Service Department Coordinator

- Respond to the scene and direct service personnel to conduct a house-by-house leak investigation as outlined in the O&M Manual.
- Insure that all locations in which positive LEL or percent gas readings have been found are evacuated and vented properly.
- Communicate directly with fire personnel to apprise them of potentially hazardous conditions.
- Communicate with the Administrative Coordinator to ascertain if the situation has resulted in a low pressure condition. If this is the case, initiate procedures outlined in **Section 6.1.B.3**.
- Keep a record of all activities conducted by personnel throughout the duration of the emergency.

- Assist the Street Department Coordinator in incident investigation as outlined in the O&M Manual.
4. Administrative Coordinator
- Respond to the Operations Center.
  - Supervise dispatching as outlined in **Section 4.1a**.
  - Secure current meter information of all active customers in the area affected by the emergency.
  - Monitor incoming calls to ascertain if a low pressure condition is developing and communicate with the Service Department Coordinator the assessment.
  - Keep a log of all emergency communications and actions of office personnel.
  - Develop procedures for receiving and handling any claims which might be brought against the company as a result of the emergency.
  - Arrange accommodations for any persons evacuated as a result of the emergency.
5. Director of Emergency Operations
- Respond to the location deemed necessary.
  - Insure that all emergency personnel have responded and are engaged in carrying out their responsibilities.
  - Coordinate with all Municipal Emergency Personnel involved with the emergency situation.
  - Supervise all press releases associated with the condition or refer to Public Relations at NYSEG.
  - When appropriate, initiate Emergency Reporting Procedures as outlined in **Section 7.0**.
  - Assess the need for additional assistance and initiate notification of appropriate outside help if necessary (**Appendix VI**).
  - Supervise incident investigation procedures.

## 6.5 EMERGENCY PROCEDURES - INTERRUPTION OF SERVICE TO OVER 100 CUSTOMERS (CLASS C)

Class C Emergencies as outlined in **Section 2.2** can be grouped into four categories:

- A. Load Curtailment
- B. System Shutdown
- C. Civil Disorders
- D. Natural Disasters

Class C Emergencies can also develop as a result of an increase in severity of a Class B situation or require the development of a specialized plan of action to prepare for an impending disorder or disaster. Special considerations for each category are listed in this section. **911 Notification MUST be considered for Class C Emergencies.**

It will be the responsibility of the first employee to arrive at the scene of an emergency to take every action necessary to **protect life and property** from danger (in that order.)

### A. Load Curtailment Plan

When an emergency condition exists such that there is a need to conserve gas in the distribution system it may be necessary to initiate a Load Curtailment Plan. This situation might develop from a break in a major supply line, plant facility failure, and excessive demand due to cold weather. Should any of these situations arise, the following considerations should be reviewed:

1. Decision will only be made by the Director of Emergency Operations.
2. Determine volume of reduction necessary and follow sequence below until situation is corrected.
  - a. Contact commercial and industrial customers by phone and request voluntary reduction of usage.
  - b. Actual shutdown of commercial and industrial customers by Service Department. Notification by phone if possible before actual shutdown.
  - c. Appeal to all customers by news media to **voluntarily reduce** their usage of gas (See **Appendix III**).
  - d. Shutting off sections of the system most likely to be affected by pressure conditions.
  - e. In the event that none of the preceding actions are effective, it may become necessary to proceed with plant shutdown as outlined in item B of this part.
3. Initiation of the Load Curtailment Plan will, in all probability, be a result of some form of low pressure condition and therefore careful consideration to **Section 6.1** of this manual is advised.

## B. System Shutdown

When an emergency situation develops that necessitates the actual shutdown of part or all of the Distribution System, the following key points should be considered:

1. The Director of Emergency Operations should make the final decision.
2. Confine the outage to as few customers as possible.
3. Utilize news media to inform the public as to the extent of the emergency and on-going events (See **Appendix III**).
4. Follow emergency shutdown procedures as outlined in the O&M Manual.
5. Review emergency reporting requirements of **Section 7.0**.
6. When it is evident that current manpower is not adequate, the Director of Emergency Operations should initiate Incident Command System (ICS) **2.2** and (**Appendix VI**) and/or a request for mutual assistance from other gas utilities (See **Appendix VI**).

## C. Civil Disobedience

A variety of emergency conditions may arise as a result of a situation involving civil disobedience. It is impractical to prepare specific procedures for each possible situation but it is necessary to list some important considerations in developing a plan. Listed in this part are some key factors to review in the event of an actual or impending emergency of this nature.

1. It will be the policy of this company to refrain from dispatching emergency personnel to a location where civil disobedience is occurring until notified by authorities that the situation is under control.
2. Emergency personnel will proceed as follows:
  - a. Gas Supply Coordinator
    - Respond to the plant if secure and monitor critical pressure recording devices.
    - Establish lines of communication with the Director of Emergency Operations and standby for developments.
    - Review records for the area or areas where disturbance is occurring and list possible facilities which could be damaged and create a hazardous situation.
  - b. Street Department Coordinator
    - Respond to the plant, if secure, and prepare emergency equipment.
    - Confer with the Gas Supply Coordinator on facilities which could be damaged.

- c. Service Department Coordinator
    - Respond to the Operations Center (80 Pearl St), if secure, and monitor incoming calls to evaluate the extent to which the disturbance is affecting service to customers.
    - Confer with the Gas Supply Coordinator to assess areas vulnerable to civil disturbance.
    - Brief additional service personnel on the developing situation.
  
  - d. Administrative Coordinator
    - Supervise dispatching as outlined in **Section 4.1a**.
    - Research meter books and create a list of all active customers in the area of disturbance.
  
  - e. Director of Emergency Operations
    - Respond to the Emergency Operations Center and establish lines of communication with the appropriate authorities.
    - Insure that all emergency personnel have responded and are carrying out their responsibilities.
    - Confer with emergency personnel and develop a plan of action based on the situation.
3. In the event that either the Plant Facility or the Operations Center is involved in the area of civil disturbance, the Director of Emergency Operations will make an assessment of the situation and assign a location to serve as an Operations Center. He/She will insure that all emergency personnel are made aware of this decision.

#### D. **Natural Disasters**

Floods, hurricanes, earthquakes, can create a variety of hazardous situations involving the gas distribution system. Listed in this part are some key points for consideration should any of these situations arising.

1. **Floods:**
  - In the event that floodwaters are likely to affect the plant, it is necessary to prepare for emergency shutdown of the distribution system.
  - In the event that evacuation of residents is evident, a news release asking customers to shut off their gas meters is advised.
  - Where possible, pressure recording devices should be monitored to locate areas where water might have entered into the main and affected pressure.
  
2. **Hurricanes:**
  - Assign standby personnel to the plant in the event it becomes necessary to run on emergency generators or run the plant manually.

- Prepare alternatives to phone communications by utilizing truck and portable radios. Dispatch at least one company representative to South Western New Hampshire District Fire Mutual Aid System Headquarters to monitor communications.
- Prepare a list of customers whose buildings might be susceptible to high winds and shut off gas supply if deemed appropriate.
- Prepare a list of facilities susceptible to debris created by wind velocity.
- Assign a location where emergency personnel can standby where emergency communications can be established and is most likely secured against the hurricane forces.

3. **Earthquakes:**

- Assign personnel to standby at gas plant to monitor critical recording devices.
- Assign personnel to monitor remote pressure reading devices.
- Monitor communications to see if any Class B situations are developing.
- Dispatch mobile FI unit to conduct a survey of the distribution system to locate any hazardous leaks which may have resulted from earth movement. Pay particular attention to areas where cast iron pipe is located.

## 7.0 EMERGENCY REPORTING REQUIREMENTS

Reports of incidents or emergency situations are required by both the State of New Hampshire Public Utilities Commission and the Department of Transportation. Specific language or rules for reporting requirements are included in this section. It will be the practice of this company to report first to the Public Utilities Commission by contacting the **Representative(s) listed in Appendix VIII.**

When reporting emergencies or incidents to the PUC, the following PUC 500 Rules must be followed: **PUC 504.5** and **PUC 504.6**. These rules will outline the types of events that would require accident or incident reporting. The initial report must be made by telephone according to the PUC "**Emergency/Accident Notification Protocol Roster**", (**Appendix VIII**). The above referenced rules may direct you to other PUC rules for further emergency reporting.

The Department of Transportation (DOT) also requires telephone notice of certain incidents. The requirements are stated in **Part 191.5**:

- (a) At the earliest practical moment following discovery, each operator shall give notice in accordance with paragraph (b) of this section of each incident as defined in **191.3**.
- (b) Each notice required by paragraph (a) of this section shall be made by telephone to **800-424-8802** and shall include the following information.
  - (1) Names of operator and person making report and their telephone numbers.
  - (2) The location of the incident.
  - (3) The time of the incident.
  - (4) The number of fatalities and personal injuries, if any.
  - (5) All other significant facts that are known by the operator that are relevant to the cause of the incident or extent of the damages.

After the appropriate notifications have been made and the emergency or incident is under control, further instructions can be found under the above referenced rules and codes for filing the proper written forms and notifications.

## Appendix I

### KEENE MUNICIPAL AGENCIES

City Manager	357-9804
Mayor's Office	357-9804
Police Department Emergency	352-2222
Police Department Dispatch	357-9813
Fire Department Emergency	352-1100
Mutual Aid/FD Dispatch	357-9861
Public Works	352-6550
All Emergencies	911

## Appendix II

### CONTRACTOR ASSISTANCE

R.H. White Construction Co., Inc. 7 White Avenue Merrimack, NH 03431	800-339-2506
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East Coast Utilities Corp. 619 Sand Road – Suite 6 Pembroke, NH 03275	888-234-9931
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## Appendix III

### EMERGENCY RADIO ANNOUNCEMENTS

#### Emergency Radio Announcements No.1 – Threatened Interruption Due to Cold Weather

“Here is an emergency announcement by New Hampshire Gas Corporation. The continued cold wave is resulting in an abnormally high consumption of gas. Industrial customers have been shut off. All commercial and residential users of gas are urged to use as little gas as possible until the emergency passes.

We repeat – please use as little gas as possible until the emergency is over. You will be advised by radio of any changes.”

#### Emergency Radio Announcements No. 2 – Interruption Due to Excess Use in Cold Weather

“Here is an emergency announcement by New Hampshire Gas Corporation. Please listen carefully. There has been an interruption in city gas service in (city or section of city) due to high gas consumption during the extremely cold weather. Customers in (city or section of city) are urgently requested to **TURN OFF YOUR GAS APPLIANCES AND MAKE NO ATTEMPT TO USE THEM AGAIN** until a representative from New Hampshire Gas Corporation arrives to restore service to your location.

If you smell gas, **DO NOT** strike matches or turn on electric appliances. Open windows and doors immediately... and then re-check all gas appliances to be sure they are turned off completely.

Every effort is being made to restore gas service as quickly as possible. You will be advised immediately by radio when the emergency is over.”

(If only a section of the city is affected, add: -- This request to cut off all gas appliances applies only to residents in (section of city affected). All other residential customers are urged to continue using as little gas as possible.

#### Emergency Radio Announcements No. 3 – Interruption Due to Break in Pipeline

“Here is an emergency announcement from New Hampshire Gas Corporation affecting your gas service. Please listen carefully.

There has been an interruption in city gas service in (city or section of city) caused by a break in the pipeline which brings gas to your area.

It is extremely important that you TURN OFF all gas appliances and make no attempt to use them again until further notice.

We repeat – turn off your appliances...make NO attempt to use them until further notice.

The break is being repaired as rapidly as possible. It is expected that the interruption in gas service will be of short duration. You will be advised immediately by radio when this emergency is over.

If you smell gas, DO NOT turn on electric lights or strike matches. Open windows and doors and then RE-CHECK your gas appliances to be sure they are all turned off COMPLETELY.

YOU WILL BE ADVISED IMMEDIATELY WHEN THIS EMERGENCY IS OVER.”

#### Emergency Radio Announcements No. 4 – Emergency is Over After Threatened Interruption

The gas emergency announced earlier by New Hampshire Gas Corporation is over.

Residential consumers can now resume their normal use of gas. Large industrial and commercial customers will be advised by telephone when to resumed operations. New Hampshire Gas Corporation wishes to thank our customers for their conservation efforts during this crisis.

We repeat – the gas emergency is over.”

#### Emergency Radio Announcements No. 5 – Gas Turn On After Interruption

“New Hampshire Gas Corporation announces that gas service was resumed today at (time). PLEASE MAKE NO ATTEMPT TO RELIGHT YOUR GAS APPLIANCES. A representative of New Hampshire Gas Corporation will arrive as promptly as possible to restore your service to your residence.

If you smell gas, DO NOT turn on electric appliance or strike matches. Open doors and windows immediately, RE-CHECK your gas appliances to be certain they are turned off COMPLETELY.

If you are away when the representative arrives, he/she will leave a large printed card and will continue to return until he/she finds you in.

We repeat – gas has been restored to your area. A gas representative will arrive as soon as possible to restore service to your residence. Please DO NOT ATTEMPT to re-light your gas appliances yourself.”

Emergency Radio Announcements No. 6 – No One Home When Service Person Called

“Gas service to New Hampshire Gas Corporation customers resumed on (date and time) in the areas affected. Gas service people have restored service to all location in which entry could be gained.

There are many locations in which a company representative could not gain admittance. New Hampshire Gas Corporation has left notices at these locations. If gas service has not been restored to your location or you have received a notice, please contact our office at 603-352-1230, and we will correct this situation as soon as possible.

If you smell gas, do not UNDER ANY CIRCUMSTANCES, turn on electric appliance or strike matches. Open windows and doors, and call New Hampshire Gas Corporation immediately. DO NOT ATTEMPT TO LIGHT YOUR GAS APPLIANCE YOURSELF. Wait until our representative arrives.

Thank you for your cooperation.”

## Appendix IV

### RECEIVING EMERGENCY CALLS - INSTRUCTION TO ANSWERING SERVICE

TO: Keene Answering Service

FROM: New Hampshire Gas Corporation

SUBJECT: Guidelines for Receiving and Responding to Emergency Calls

The objective of these instructions is to aid those responsible for receiving emergency calls to the New Hampshire Gas Corporation Emergency Number **603-352-1230** during periods when the office is closed for business. **Please have all personnel acquaint themselves with the instructions.**

#### GENERAL

1. Obtain accurate information as to the location of the emergency. Include street name, number, intersecting street if any, color of building, any reference marks which may aid personnel in responding expediently.
2. Obtain the name of caller, phone number, and their location if they are not in the immediate vicinity of the emergency location.
3. Obtain needed information for an accurate description of the nature of the emergency. Examples: gas odor, fire, explosion, lack of pressure, high flames, etc.
4. In the event a gas odor is reported inside by the caller, clearly state the following:
  - a. **DO NOT LIGHT MATCHES**
  - b. **DO NOT OPERATE LIGHT SWITCHES OR ANYTHING ELECTRICAL**
  - c. **IF YOU THINK YOU SMELL GAS OR CAN HEAR A BLOWING OR HISSING NOISE, EVACUATE THE PREMISES**
5. Dispatch personnel immediately from New Hampshire Gas Corporation callout notification list. (Note: In the event a response is not received from pages placed by the answering service to personnel **in Appendix V**, continue calling until a representative is reached.)
6. Keep an accurate log of all communication related to the emergency.
7. When all the initial information has been received and recorded and New Hampshire Gas Corporation personnel dispatched to the scene, answering service personnel shall remain available for further instructions.

## Appendix V

### EMERGENCY PERSONNEL LIST

The following list of personnel is provided to aid all parties concerned in contacting company employees in the event of an emergency situation. The list is organized according to the respective positions that each holds in the implementation of the NHGC Gas Emergency Plan. The list is a private concern and the information contained herein is not to be given to the public.

1.     Director of Emergency Operations  
      **Stephen Rokes**                   446-3725 - Home                   615-2102-Pager  
  209-2582 - Cell  
  
      Successor  
      **Ron Bausum**                    209-2585 - Cell                   615-2102 - Pager
  
2.     Gas Supply Coordinator  
      **Ron Bausum**                    209-2585 - Cell                   615-2102 - Pager  
  
      Successor  
      **Stephen Rokes**                446-3725 - Home                   615-2102 - Pager  
  209-2582 - Cell
  
3.     Street Department Coordinator  
      **John Livingood**                352-3077 - Home                   615-2102 - Pager  
  209-2584 - Cell  
  
      Successor  
      **Ron Bausum**                    209-2585 - Cell                   615-2102 - Pager
  
4.     Service Department Coordinator  
      **Bob Pierce**                    399-7250 - Home                   615-2482 - Pager  
  209-2586 - Cell  
  
      Successors  
      **Ethan Looman**                209-2589 – Cell                   615-2360 - Pager
  
5.     Administrative Coordinator  
      **Linda Crump**                   835-2329 - Home  
  
      Successor  
      **Christy Davis**                239-4011 - Home  
  910-388-5035 – Cell

## Appendix VI

### OTHER OUTSIDE ASSISTANCE

#### Director of Emergency Operations

Will be responsible for any request of additional assistance and should consult this work in the event that an emergency situation warrants such a response.

#### Administrative Coordinator

Upon notification by the Director of Emergency Operations that additional personnel and equipment has been requested, will:

1. Provide routing information upon request;
2. Keep a record of all dates, time, equipment, and services performed by all outside personnel.
3. Make provisions for housing, petty cash, and communication for all outside personnel.

#### Street Department Coordinator & Service Department Coordinator

Will be responsible for all field activities of outside personnel working in their areas of expertise.

### **INCIDENT COMMAND SYSTEM (ICS) assistance from Affiliates (NYSEG, RGE)**

If a Class B or Class C Emergency has been declared then the ICS will be initiated. This will require following the steps below (refer to section 2.2, page 3 for Class B or C Emergency descriptions).

1. Contact NYSEG – Joe Chernak, ICS Director at 607-765-2750 (cell)
2. Jim Postalwait 607-227-4320 (cell)
3. If no answer from either of above contact, NYSEG Dispatch and have them page or contact the above representatives. NYSEG Dispatch 607-762-4209
4. Clearly state the Emergency Classification and pertinent details
5. Establish the lines of communications
6. Determine additional personnel and equipment needed with ICS Director
7. Keep records and notes of conversations, times and details
8. Notify Affiliate/Home Office Personnel  
VP Gas Operations, Michael Eastman 607-761-1026 (cell)

### **MUTUAL ASSISTANCE EMERGENCY DATA FOR NEW ENGLAND GAS UTILITIES**

Directory located at 80 Pearl St contains names of Northeast Gas Association member utilities, their telephone numbers, and names of Emergency Coordinators and lists of equipment available from those utilities in the event of an emergency.

## APPENDIX VII

# New Hampshire Gas Corporation EMERGENCY RESPONSE PROTOCOL GAS PLANT / EMERALD STREET

**Note:** Any "UNCONTROLLED" release of **GAS** - call **911** (see reverse for action)

**"BAD GAS"**  
DESCRIPTION

When the plant produces extremely HIGH or LOW BTU gas.  
**HIGH BTU** would be above **850**  
**LOW BTU** would be under **700**

**Level 1 - Advisory**  
DESCRIPTION

Notify FD of Plant Alarm and that we may produce "BAD GAS"  
Keep FD posted

**Level 1 - Advisory**

**Contact Fire Dept.                      357-9861**

Report Plant Alarm - Level 1 Advisory

*Assess*

Evaluate Plant status and corrective action plan

*Action*

Begin corrective actions

*Notify*

Report current status to FD Officer -  
Plant Alarm Cleared / Same / Reclassified

**Level 2 - Elevated**  
DESCRIPTION

Notify FD that we **have** or **are** producing "BAD GAS" and they may receive related calls. (*producing "BAD GAS" over 20 minutes*)  
**Fire Dept. Officer to report to NH Gas Plant on Emerald Street.**

**Level 2 - Elevated**

**Request Fire Dept Officer to report to Plant.**

*Assess*

Evaluate current status and communicate to on site FD Officer

*Action*

Continue corrective actions at Plant  
Investigate "**Select Locations**" for "**BAD GAS**" hazards -(see reverse)

*Re-evaluate*

Plant Alarm Cleared / Same / Reclassified  
If Plant Alarm is not cleared:  
Continue or implement new, corrective action plan  
Reclassify Plant Alarm Status - as needed

**Level 3 - High Alert**  
DESCRIPTION

The Plant continues to produced "**BAD GAS**" and we have elevated readings at "**Select Locations**". (*producing "BAD GAS" over 40 minutes*)  
**Fire Dept. Officer at Plant and Fire Units will be deployed as needed.**

**Level 3 - Alert**

**Fire Dept. Officer already at Plant and Fire Units deployed**

*Assess*

Continue evaluations and communications with FD Officer

*Action*

If still producing "**BAD GAS**" -  
Initiate Incident Command System (ICS)  
Activate Emergency Plan, as necessary  
Fire Dept. will assist with monitoring of buildings to identify hazards.

**APPENDIX VII (continued)**

**UNCONTROLLED RELEASES**

<b>Uncontrolled Releases</b>	<u>"Uncontrolled" release of GAS at the Plant may include, but not limited to:</u>
<b>DESCRIPTION</b>	Broken or leaking lines or valves, tank failure, transport problems, etc.
<b>Uncontrolled Releases</b>	<b>Fire Department</b> will respond to the <b>Gas Plant</b>
<b>ACTION</b>	<b>FD Officer</b> and <b>NH GAS Personnel</b> will establish a plan to mitigate the incident

**"Select Locations"**  
**Level 2 - Elevated Plant Alarm (ACTION)**

<u>Address</u>	<u>Notes / Instructions</u>
<b>A - EAST SIDE</b>	
116 Church Street	E-060 Cellar entrance thru Front entrance
164 Roxbury Street	C-063 (KEY)
114 Beaver Street	B-160 (KEY)
395 Roxbury Street	C-003
87 Carpenter Street	NH GAS Shop
175 Marlboro Street	E-140 Left side, bulkhead
74 Kelleher Street (rear building)	F-083 (KEY) Bulkhead at rear
<b>B - CENTRAL</b>	
95 Main Street (Colonial Theater)	H-016 (KEY) Right side entry
32 Emerald Street	H-021 (KEY) Bulkhead at rear
27 Proctor Court	F-046 Combo Lock - <b>0996</b>
15 - 17 Blake Street	H-031 Combo Lock - <b>1157</b>
39 Colorado Street	J-113 Right side, cellar entrance thru main entrance
40 Elm Street	A-063.1 (KEY)
<b>C - NORTH END</b>	
16 Pine Street	A100 (KEY)
119 High Street	A137.1 Left side, cellar entrance thru porch
347 Court Street	B-039
36 Ellis Court	B-100.1 (KEY)
546 Washington Street	B-085 Left side, cellar entrance thru porch
<b>D - WEST SIDE</b>	
14 - 16 Cobb Street	H-115
Wendy's / McDonald's / Pizza Hut	H-073 / H-074 / H-071
Price Chopper	H-167
28 Park Avenue	J-012.2 (KEY) Rear of building
32 Park Avenue (Karl Roberts)	J-017
50 -52 Pearl Street	H-142 (KEY)

## APPENDIX VIII

### NH PUC Emergency/Accident Notification Protocol Roster

Pursuant to PUC 306.06 (Electric), 411.08 (Telephone), 504.05 (Gas), 508.03 (Gas), 512.06 (LPG & Landfill), 512.08 (LPG & Landfill), 608.03 (Water), 707.03 (Sewer), or 1105.05 (Steam); the following is a list of commission staff contacts to be used for emergency and accident notifications. Emergencies/Accidents should be reported per the contact order below for your specific industry. Once person-to-person contact has been made with one of the below listed individuals and required information is conveyed, or the procedure has been exhausted, notification is deemed complete.

#### Primary – Monday through Sunday (24 hours):

<u>Contact Name</u>	<u>for Calls Related to</u>	<u>Work Phone</u>	<u>Home Phone **</u>	<u>Cell Phone</u>
David Burnell	Gas, Water, Sewer, Steam, Telephone, Electric	(603) 271-6554	(603) 630-4297	(603) 419-0169

#### Secondary – Monday through Sunday (24 hours):

Randy Knepper	Gas, Water, Sewer, Steam, Telephone, Electric	(603) 271-6026	(603) 219-0331	(603) 419-0399
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#### Tertiary – Monday through Sunday (24 hours):

Joseph Vercellotti	Gas, Water, Sewer, Steam, Telephone, Electric	(603) 271-6040	(603) 735-6168	(603) 419-0534
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**If unable to reach any of the above**, or in the event of an Emergency or Electrical Contact if direct contact with one of the individuals listed above cannot be made during normal business hours please press 0 (zero) to be transferred to the Safety Division or call 271-6022. Identify that you are required to make direct contact with a person in order to get the message to the proper person as soon as possible.

If unable to reach any of the above outside of normal Commission hours, call the Commission's general phone number listed below and leave a voice mail message with required information.

- Commission normal working hours are Monday through Friday, 8:00 AM to 4:30 PM (EST).
- Commission General Phone number is (603) 271-2431.
- This roster is for external use only within your utility and none of these numbers are to be given to anyone except the appropriate utility contact(s) who will be responsible for making the notification calls.

**\*\*Home phone numbers** are to be utilized for accidents requiring **IMMEDIATE NOTIFICATION ONLY**.

NHPUC Revised – October 9, 2013



# OPERATOR QUALIFICATION COMPLIANCE PROGRAM

## WRITTEN PLAN

**ADOPTED BY:  
"Insert Operator Name"**

*October 16, 2000*  
*July 30, 2003 Rev. A*  
*October 20, 2003 Rev. B*  
*June 9, 2005 Rev. C*  
*May 23, 2006 Rev. D*  
*August 1, 2007 Rev. E*  
*September 3, 2008 Rev. F*

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## 1.0 Overview

The Department of Transportation's Operator Qualification (OQ) final rule went into effect on October 26, 1999. The rule requires operators to develop and maintain a written qualification program for individuals performing covered tasks and have it implemented by April 27, 2001. Because of this rule, 49 CFR 192 has been amended to include Subpart N: Qualification of Pipeline Personnel. References to 49 CFR 192 Subpart N in this document also incorporate Title 16 NYCRR 255.604 for New York State operators.

The intent of the operator qualification rule is to minimize human error by establishing a verifiable, qualified workforce. In so doing, operators can help reduce the consequences from human error and promote personnel and public safety. Furthermore, operating and maintenance personnel are qualified to recognize and react to abnormal operating conditions.

Other than the prescriptive specifications for determining a covered task, the rule is performance based in that the operator has flexibility in the administration, application and modification of the written operator qualification plan. Therefore, operators can establish appropriate guidelines that are specific to the operator's policies and procedures.

The operator qualification written plan includes guidelines for identifying covered tasks, establishing an evaluation process including intervals for subsequent evaluation, utilizing non-qualified individuals in a covered task, post-incident evaluation of qualified personnel, re-evaluation of qualified personnel suspected of questionable performance, the role of training, mutual aid, communication of changes that will affect covered tasks, record keeping, revisions to covered tasks, abnormal operating conditions and other critical processes.

## 2.0 Background

Representatives of The New England Gas Association, the regional trade association for 26 distribution companies operating in the 6 New England states and the New York Gas Group, a regional trade association for 10 distribution companies operating in the state of New York, formed consortiums in 1999 to develop operator qualification written plans.

On January 1, 2003, the New England Gas Association and New York Gas Group merged to form the Northeast Gas Association. In July 2003, representatives of the Northeast Gas Association reviewed and updated The New England Gas Association Written Plan. The Northeast Gas Association Written Plan satisfies the requirements of Title 49 CFR Part 192, Subpart N; Section 192.805 entitled Qualification Program.

### 3.0 Purpose

The purpose of the written plan is to develop a unified standard for qualification of pipeline operator and contractor/subcontractor personnel and establish the Northeast Gas Association (NGA) as a central clearinghouse for the OQ written plan under section 192.805. According to the regulation, each operator shall have and follow a Written Qualification Plan. The program shall include provisions to:

- 3.1 Identify covered tasks;
- 3.2 Ensure through evaluation that individuals performing covered tasks are qualified;
- 3.3 Allow individuals who are not qualified pursuant to Subpart N to perform a covered task if directed and observed by an individual that is qualified;
- 3.4 Evaluate an individual if the operator has reason to believe that the individual's performance of a covered task contributed to an incident as defined in Title 49 CFR Part 191;
- 3.5 Evaluate an individual if the operator has reason to believe that the individual is no longer qualified to perform a covered task;
- 3.6 Communicate changes that effect covered tasks to individuals performing those covered tasks; and
- 3.7 Identify those covered tasks and the intervals at which evaluation of the individual's qualifications is needed.

### 4.0 Definitions

The following document language is defined here to aid written plan users in understanding key terms used in this document:

- 4.1 *Ability* – See Appendix F.
- 4.2 *Abnormal operating condition (AOC)* - A condition identified by the operator that may indicate a malfunction of a component or deviation from normal operations that may:
  - 4.2.1 Indicate a condition exceeding design limits; or
  - 4.2.2 Result in a hazard(s) to persons, property, or the environment.

- 4.3 *Covered Task* - An activity identified by the operator that:
  - 4.3.1 Is performed on a pipeline facility;
  - 4.3.2 Is performed as a requirement of Title 49 CFR Part 192; and
  - 4.3.3 Affects the operation or integrity of the pipeline.
- 4.4 *Criterion* - A standard upon which a judgment is based.
- 4.5 *Evaluation* - A process established and documented by the operator to determine an individual's ability to perform a covered task by any of the following:
  - 4.5.1 Written examination;
  - 4.5.2 Oral examination;
  - 4.5.3 Work performance history review;
  - 4.5.4 Observation during:
    - 4.5.4.1 Performance on the job;
    - 4.5.4.2 On-the-job training;
    - 4.5.4.3 Simulations; and
  - 4.5.5 Other forms of assessment.
- 4.6 *Evaluator* - Persons performing evaluations should possess the required knowledge (1) to ascertain an individual's ability to perform the covered tasks and (2) to substantiate an individual's ability to recognize and react to abnormal operating conditions that might surface while performing those activities. This does not necessarily mean that the person performing the evaluations should be physically able to perform the covered tasks themselves.
- 4.7 *Intervals* - The amount of time (years) between two specified evaluations.
- 4.8 *Knowledge* - Understanding gained through experience or study.
- 4.9 *Observe* - The act of watching and directing the performance of a covered task.
- 4.10 *Operator* - "Company Name".
- 4.11 *Pipe* - Any pipe or tubing used in the transportation of gas, including pipe-type holders.
- 4.12 *Pipeline* - All parts of those physical facilities through which gas moves in transportation, including pipe, valves, and other appurtenances attached to pipe, compressor units, metering stations, regulator stations, delivery stations, holders, and fabricated assemblies.

- 4.13 *Pipeline facility* - New and existing pipelines, rights-of-way, and any equipment, facility, or building used in the transportation of gas or in the treatment of gas during the course of transportation.
- 4.14 *Qualified* - means an individual has been evaluated and can;
  - 4.14.1 Perform assigned covered tasks; and
  - 4.14.2 Recognize and react to abnormal operating conditions.
- 4.15 *Record* – The pass or fail result of an individual's evaluation.
- 4.16 *Skills* - A demonstrable competency to perform a highly specialized covered task learned and developed through experience or gained through practice.

## 5.0 Covered Task Analysis

Subpart N of Title 49 CFR Part 192 requires that all operators of natural gas pipelines must include provisions to identify covered tasks. This written plan includes the covered task analysis used to identify the covered tasks found in Appendix B. The New England Gas Association (NEGA) and New York Gas Group (NYGAS) utilized the expertise of Safety and Compliance Evaluation, Inc. of Springfield, Virginia, and its member companies to develop this analysis and review over 250 potential covered tasks.

In June 2003, the NGA Operator Qualification Task Force reviewed covered task lists from operators throughout the United States to determine if additional covered tasks were applicable.

- 5.1 A task must meet the following criteria to be a covered task:
  - 5.1.1 Is performed on a pipeline facility;
  - 5.1.2 Is performed as a requirement of Title 49 CFR Part 192; and
  - 5.1.3 Affects the operation or integrity of the pipeline.
- 5.2 The intent of this provision is to limit, to the extent possible, the scope of the regulation. Significantly, a task that could affect the integrity of the pipeline is not automatically a covered task under this rule. The potential to affect pipeline integrity is just one of the three tests. Many tasks that could affect pipeline integrity will fail one or more of the other tests and not be covered under the Operator Qualification rule.
- 5.3 Operations and maintenance tasks are not limited to tasks found in Title 49 CFR Part 192 Subparts L (Operations) and M (Maintenance). Some tasks found in Subpart I (Corrosion Control) and other Subparts may describe operations and maintenance tasks.
- 5.4 To be regulated under Title 49 CFR Part 192 one must be able to point to a specific provision in Part 192 that specifies how a task must be performed or that an operator's operating and maintenance (O&M) plan must specify how a task must be performed. Operators often include in their O & M plans tasks not mentioned in Title 49 CFR Part 192. This does not cause a task to pass the 2<sup>nd</sup> of the three tests. Similarly, states may enact pipeline safety regulations that regulate tasks not regulated in Title 49 CFR Part 192. This does not cause a task to pass the 2<sup>nd</sup> of the three tests.

5.5 If a task is determined to be a covered task the operator is obligated under the rule to evaluate the qualifications of the operator's personnel and contractor/subcontractor personnel performing that task and ensure that personnel are qualified. If a task is determined not to be a covered task, then the operator has no further obligations for this task under the operator qualification regulations. The determination of whether or not a task is or is not a covered task is perhaps the most important decision in each operator's operator qualification program.

5.6 Subpart N does not restrict operators from qualifying personnel in other non-covered, non-jurisdictional tasks. Even though an operator is not obligated to do so by Subpart N, operators may choose to train, test and/or certify persons to perform tasks that fail the three-part test and, therefore, are non-covered tasks, which are not subject to this rule.

5.7 The covered task list in Appendix B includes:

- 5.7.1 Task Name - A short description of the task;
- 5.7.2 Task Description - A longer description of the task that may include lists of elements or subtasks, limitations on related tasks that may or may not be included under this task and more information. It is intended to allow operators that call tasks by different names than the one used here to match tasks on their systems to the proper task analysis in this document. All of the listed elements and subtasks are provided to help operators match potential job titles or categories to the covered task;
- 5.7.3 Application of a Three-Part Test for Covered Tasks - The determination of whether the task passes each of the three tests. A task is a covered task if it passes all three tests. For the "regulated under 49 CFR 192" test, the analysis includes the section of Part 192 at which the task is regulated;
- 5.7.4 Discussion - Includes information to assist the user in understanding the scope and limitations of the task analysis;
- 5.7.5 Subsequent Qualification Interval - As defined in 4.7;
- 5.7.6 Abnormal Operating Conditions - As defined in 4.2; and
- 5.7.7 Evaluation Method(s) - As defined in 4.5.

5.8 All tasks should be analyzed to the most current edition of Title 49 CFR Part 192.

5.8.1 Amendments to regulations will change, which could cause one or more tasks that formerly were not regulated under Title 49 CFR Part 192 to become regulated. If the only reason a particular task failed related only to its lack of Part 192 recognition, then an amendment to add a requirement related to that task to Part 192 would cause this previously non-covered task to become a covered task. Users of this plan, and its appendixes, are cautioned to apply the three-part test using Part 192 as it existed at the date of publication – the user needs to determine the impact of future rule changes since the 1998 publication of Part 192. Refer to Appendix C for the most current amendment review to Part 192.

5.9 Construction of pipelines, including construction or repair activities associated with the maintenance of such pipelines, is considered a covered task by NGA. Although Subpart N of Title 49 CFR Part 192 does not specifically address new construction activities as a covered task, NGA believes it is sound practice to require qualified personnel to perform construction activities.

Consequently, excavation near active pipelines performed in conjunction with the aforementioned construction activities, while not specifically addressed by Subpart N, can also be considered sound practice, which requires qualified personnel to perform excavations.

## **6.0 Qualification Evaluation Process**

The qualification evaluation process is intended to meet the requirements of Subpart N of Title 49 CFR Part 192. For member operators, contractors/subcontractors, and their employees the following applies (See Figure 1):

6.1 Transitional Qualification Period (Transitional Qualifying Personnel)

6.1.1 Applicable to personnel who had performed that covered task prior to October 26, 1999 on a regular basis.

6.1.2 Work performance history can be used as sole evaluation method for Transitionally Qualified Personnel on or before October 28, 2002. Otherwise, any of the following personnel qualification methods can be used in conjunction with or as a substitute for work performance history:

- 6.1.2.1 Written testing;
- 6.1.2.2 Oral testing;
- 6.1.2.3 On-the-job performance;
- 6.1.2.4 On-the-job training;
- 6.1.2.5 Simulation; and
- 6.1.2.6 Other.

6.1.3 Qualification

- 6.1.3.1 No additional qualification review method is required for Transitionally Qualified Personnel on a one-time basis and only if utilized on or before October 28, 2002.

## 6.2 Initial Qualification Period (Initially Qualifying Personnel)

6.2.1 Initially Qualifying Personnel are those who have not performed the covered task on a regular basis prior to October 26, 1999, but will need to begin performing this covered task after this date.

6.2.2 Available qualification methods:

- 6.2.2.1 Written testing;
- 6.2.2.2 Oral testing;
- 6.2.2.3 On-the-job training;
- 6.2.2.4 Simulation;
- 6.2.2.5 Other; and
- 6.2.2.6 Work history performance review or on-the-job performance only in conjunction with at least one of the above methods.

6.2.3 Qualification

- 6.2.3.1 Unless personnel are under the direct observation of a qualified person(s), these individuals must be qualified by an appropriate qualifying method prior to performing the covered task and the date of qualification will be used for subsequent qualification at the interval established by the operator.

## 6.3 Subsequent Qualification (Subsequently Qualified Personnel)

6.3.1 After October 28, 2002, all Subsequently Qualified Personnel must be qualified at intervals designated by the operator utilizing the applicable date from Transitional, Initial or Subsequent qualification, to begin the interval for subsequent qualification.

6.3.2 Available qualification methods:

6.3.2.1 Written testing;

6.3.2.2 Oral testing;

6.3.2.3 On-the-job training;

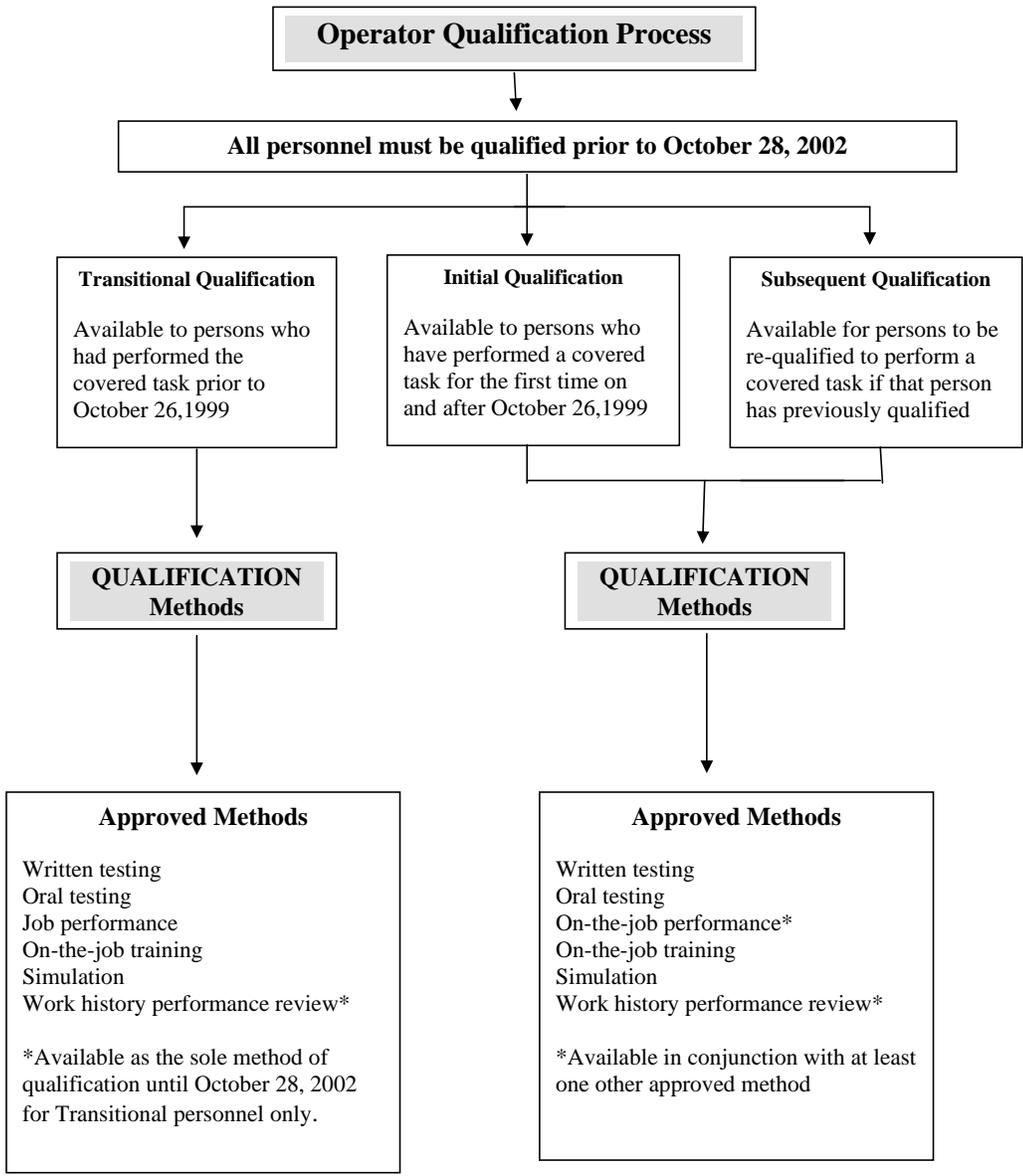
6.3.2.4 Simulation;

6.3.2.5 Other; and

6.3.2.6 Work history performance review or on-the-job performance only in conjunction with at least one of the above methods.

6.3.3 Qualification

6.3.3.1 All applicable personnel will require qualification testing or review at qualification intervals established by the operator with the last date of subsequent qualification as the start of the qualification interval.



**FIGURE 1**

## 7.0 Qualification Criteria

The operator has a variety of assessment methodologies to determine personnel qualification. The criteria for these assessments are presented here to provide some consistency and equivalency, wherever possible. However, the criteria should not be a limiting factor in utilizing new technology and assessment methods that can help personnel prove their qualifications within the limits of their physical and intellectual abilities. The operator will consider the unique needs of individuals and, if appropriate, modify the qualification test process by substituting one available qualification method for another.

All assessment methodologies utilized by the operator shall include a review, individual or group, at the conclusion of the assessment, of any item that an individual answered incorrectly.

### 7.1 Work History Performance Review

An individual qualifying exclusively under this transitional qualifying work history review meets the following parameters:

- 7.1.1 The individual works in an operations and maintenance (O&M) capacity;
- 7.1.2 The individual regularly performs his/her O&M tasks completely;
- 7.1.3 Undergone initial training via on-the-job training, classroom and/or demonstration;
- 7.1.4 Not had any attributable incidents as defined in Title 49 CFR Part 191; and
- 7.1.5 Began O&M experience prior to October 26, 1999.

### 7.2 Training

Pursuant to determinations made during the rulemaking process, non-regulated training material voluntarily added to this Plan is not subject to review or enforcement by federal or state regulators under 49 CFR 192 Subpart N. This material has been included for guidance.

The operator ~~may~~ shall provide training, as appropriate, for new hires, operator and contractor/subcontractor employees transferring from other functions, or seeking to qualify for new covered tasks. If the operator determines that an individual is reasonably unlikely to pass the qualification test for a covered task that he/she will be expected to perform, the operator will provide the appropriate level of training before the individual is allowed to take the qualification test(s). The appropriate level of training will be based on the employee's demonstrated level of knowledge, skill and ability. Such training may include: on-the-job training, classroom instruction, demonstrations, or other methods deemed appropriate by the operator. Prior experience could allow the employee to proceed directly to qualification testing without training.

### 7.3 General Written and Oral Testing Criteria

- 7.3.1 Test to be based on the critical elements and skills as identified in the covered task documentation;
- 7.3.2 Evaluate procedural knowledge of task;
- 7.3.3 Evaluate emergency response knowledge;
- 7.3.4 Evaluate recognition and reaction to abnormal conditions;
- 7.3.5 Evaluate skills associated with covered task;
- 7.3.6 Establish the appropriate level of acceptability (cut-off);
- 7.3.7 The format of the question can include multiple choice, true/false, essay, fill-in the blanks, case studies or other recognized formats;
- 7.3.8 If there is failure on a qualification review, then operator policy will dictate subsequent action. An alternative qualification method may be made available. Examples of alternative qualification methods include, but are not limited to:
  - 7.3.8.1 Substitution of oral test for a written test;
  - 7.3.8.2 Substitution of a written test in a language other than English; or
  - 7.3.8.3 Other.
- 7.3.9 The appropriate documentation of the qualification review will be included.

### 7.4 Special test criteria for testing based on performance on the job and on the job training

- 7.4.1 Follow section 7.3, inclusive;
- 7.4.2 Utilize actual occurrence of response to abnormal operating conditions;
- 7.4.3 Concentration more on case study;
- 7.4.4 Utilize actual field conditions to perform evaluation; and
- 7.4.5 Standardized checklist of measurable criteria to reduce subjective evaluation (possibly use training standards and procedures).

### 7.5 Special test criteria for testing based on simulation and Computer Based Training

- 7.5.1 Follow section 7.3, inclusively;
- 7.5.2 Utilize hands-on simulations to perform evaluation;
- 7.5.3 May or may not require hands-on training, but combines hands-on training and observed ability to repeat the elements of the NGA covered task list;
- 7.5.4 Utilize actual occurrence of response to abnormal operating conditions;
- 7.5.5 Concentration more on case study; and

7.5.6 Utilize standardized checklist of measurable criteria to reduce subjective evaluation (possibly use of training standards and procedures).

#### 7.6 Contractor/Subcontractor Employee Qualification

7.6.1 Contractor/Subcontractor employees must be qualified to perform covered tasks or be under the direction and observation of a qualified individual (refer to Section 8.0). The operator is responsible for ensuring that contractor/subcontractor employees have been qualified to the standard applicable to operator employees performing the same tasks.

#### 7.7 Qualification methods to be administered by approved qualification entities

- 7.7.1 NGA;
- 7.7.2 Operator; or
- 7.7.3 Other NGA or operator-approved agencies [listed in Appendix D which met the requirements of NGA's or operator's OQ Program Review Procedures.](#)

#### 7.8 Subsequent Qualification Frequency Criteria

The determination for an appropriate subsequent qualification interval is based on the following facts:

##### 7.8.1 Operator's Frequency of Performing Covered Task;

- 7.8.1.1 0-6 months;
- 7.8.1.2 6-12 months; or
- 7.8.1.3 12 or more months.

##### 7.8.2 Difficulty of Covered Task;

- 7.8.2.1 Low;
- 7.8.2.2 Medium; or
- 7.8.2.3 High.

##### 7.8.3 Risk or consequences of improper performance of Covered Task;

- 7.8.3.1 Low;
- 7.8.3.2 Medium; or
- 7.8.3.3 High.

Subsequent qualification intervals include a 3 month evaluation grace period. For example, individuals qualified on tasks with a 1-year subsequent qualification interval shall re-qualify within 1 year, but not to exceed 15 months, 3-year subsequent qualification interval shall re-qualify within 3 years, but not to exceed 39 months, and 5-year

subsequent qualification interval shall re-qualify within 5 years, but not to exceed 63 months.

## **8.0 Performance of a Covered Task by a Non-Qualified Individual**

Individuals who are not qualified under the Operator Qualification Rule may perform covered tasks under the direction and observation of a qualified individual.

- 8.1 This qualified individual must have the following responsibility and authority:
  - 8.1.1 The qualified individual must have the ability to take immediate corrective action, if necessary;
  - 8.1.2 The qualified individual must take complete responsibility for the performance of the covered task by the non-qualified individual;
  - 8.1.3 The qualified individual has the authority to dismiss the non-qualified individual from performing a particular covered task for inability to perform the covered task as directed;
  - 8.1.4 The qualified individual must consider the number of people, the amount of equipment and other interference (e.g., noise) at the work site before allowing a non-qualified individual to perform a covered task under direction and observation; and
  - 8.1.5 Before allowing a non-qualified individual to perform a covered task under direction and observation, the qualified individual must consider:
    - 8.1.5.1 External factors, such as weather, ground conditions and obstructions;
    - 8.1.5.2 Task specific factors, such as complexity, risk and potential AOCs;
    - 8.1.5.3 Individual factors related to the non-qualified individual, such as training, experience and any prior direction and observation.
- 8.2 A qualified individual must observe a non-qualified individual performing a covered task by:
  - 8.2.1 Remaining in direct visual and verbal contact at all times with the non-qualified individual performing the covered task;
  - 8.2.2 Allowing multiple covered tasks to be performed only if direct visual and verbal contact is maintained at all times during the performance of those covered tasks; and
  - 8.2.3 Identifying an abnormal operating condition.
- 8.3 A qualified individual must direct a non-qualified individual performing a covered task by:
  - 8.3.1 Prescribing the appropriate operations and maintenance procedure to follow;

- 8.3.2 Communicating to the non-qualified individual when an abnormal operating condition exists; and
- 8.3.3 Prescribing immediate corrective action when an abnormal operating condition takes place.
- 8.4 Non-covered tasks are exempt from necessary observation and direction by the qualified individual.
- 8.5 Tapping an energized pipeline, welding steel and joining plastic are not to be performed by a non-qualified individual.

## **9.0 Post-Incident (Title 49 CFR Part 191) Evaluation**

If an operator has reason to believe that an individual's performance of a covered task contributed to an incident as defined in Title 49 CFR Part 191, Section 191.3, the individual must be evaluated prior to continuing the performance of the covered task.

9.1 Section 191.3 defines an incident as:

- 9.1.1 An event that involves a release of gas from a pipeline or of liquefied natural gas or gas from an LNG facility and;
  - 9.1.1.1 A death, or personal injury necessitating in-patient hospitalization; or
  - 9.1.1.2 Estimated property damage, including cost of gas lost, of the operator or others, or both, of \$50,000 or more;
  - 9.1.1.3 An event that results in an emergency shutdown of an LNG facility; or
  - 9.1.1.4 An event that is significant, in the judgment of the operator, even though it did not meet the criteria of paragraphs 9.1.1.1 or 9.1.1.2.

9.2 The operator must determine if the incident occurred as a result of the performance of the covered task. If this is the case, then the operator must perform the following:

- 9.2.1 Identify the covered task being performed prior to the incident and the person(s) performing the covered task;
- 9.2.2 Review the covered task for deficiencies that may have contributed to the incident. This may include, but not be limited to, review of the qualification evaluation method, procedures, processes and training. Any deficiencies discovered by the review should be remedied as soon as reasonably possible and communicated in accordance with Section 11.0;

- 9.2.3 If no deficiencies are identified in 9.2.2, any individual(s) performing the covered task who was directly involved in the incident, cannot continue to perform the covered task unless 9.2.4 and 9.2.5 have been completed;
- 9.2.4 Confirm that the individual's Operator Qualification status is current. If not qualified, the operator will need to determine why this condition existed;
- 9.2.5 If the individual's status is current, the operator must provide the opportunity for the individual to re-establish his/her qualifications to perform the covered task. This can be accomplished by using one or more of the evaluation methods. Work history performance review or on-the-job performance cannot be used for this evaluation;
- 9.2.6 If the individual passes the evaluation he/she can continue to perform the covered task. If the individual does not pass the evaluation, the individual must be considered a non-qualified person and must no longer be allowed to perform the covered task. The operator may require the individual to receive the appropriate level of training and to perform an operator qualification re-qualification; and
- 9.2.7 If the individual passes the re-qualification, he/she will resume performance of the covered task. If the individual does not pass, operator policy will dictate action, but the individual will no longer perform the covered task.

## **10.0 Re-evaluation Due to Questionable Performance**

An operator is required to evaluate an individual or group of individuals, if that operator has reason to believe the individual(s) is no longer qualified to perform a covered task. Reasons for this belief may include, but not be limited to, observation that the individual is improperly performing a task, observable loss of the individual's motor skills, prolonged absence, or other demonstrable indications that the individual may no longer be able to perform the task.

The operator may determine that an evaluation is necessary if an individual's performance has been observed or reported as inadequate. If this occurs, the operator must perform the following:

- 10.1 Determine that a qualified individual has unsatisfactorily performed an operator designated essential element or skill and indicates an inability to perform the covered task;

- 10.2 Provide the opportunity for the qualified individual to reestablish his/her qualifications to perform the covered task by taking a re-qualification evaluation. If the person passes, he/she may resume performance of the covered task;
- 10.3 If the individual does not pass the re-evaluation, the operator may require the appropriate level of training and then perform an operator re-qualification. If the individual passes, he/she may resume performance of the covered task; and
- 10.4 If the individual does not pass the re-qualification, consider the individual as a non-qualified individual and forbid the individual from performing the covered task. Operator policy will dictate the appropriate action.

## **11.0 Communication/Change Process**

This section establishes provisions for communicating information on substantial changes in accordance with 192.805(f) and 192.805(i).

- 11.1 Changes that need to be communicated may include one or more of the following:
  - 11.1.1 Modification or adoption of a new procedure or policy within an Operating and Maintenance Plan;
  - 11.1.2 Changes in state or federal regulations;
  - 11.1.3 Changes in manufactures' equipment or procedures; and
  - 11.1.4 Implementation of new processes or technology.
- 11.2 When changes occur, an evaluation of the change must be made to determine if the change is significant, requires modification of an existing covered task, or a new covered task needs to be established. Figure 2 outlines the communication change process.
- 11.3 NGA is the central clearinghouse for communication changes to member companies (refer to Figure 2). NGA staff is responsible for identifying changes within the industry that may result in an action established under 192.805(f). The information is then forwarded to a Member Review Board which evaluates the change and determines the potential impact to the Operator Qualification program. Subsequent revisions to the Operator Qualification Program may include one or more of the following:
  - 11.3.1 Modification of an existing or establishment of a new covered task;
  - 11.3.2 Corresponding revisions to the written plan; and
  - 11.3.3 Modification of the appropriate section of the record keeping process.

11.4 Recommendations from the Member Review Board (representatives from operators, contractors and regulatory) are distributed to the individual operators for comment. Operator comments are evaluated by the Member Review Board and a final Operator Qualification Change Document is produced. This information is then forwarded back to the NGA staff for dissemination to member companies.

11.5 The Operator Qualification Change Document is sent to the designated key OQ contact of each operator and contractor. Depending on the extent and timeliness of the Operator Qualification Change Documents, the information may be mailed/faxed, emailed, or posted on the NGA website.

11.6 The designated key OQ contact is responsible for communicating the information to the appropriate individuals within the company. The key OQ contact will also identify those individuals affected as participants in the OQ program. Communication methods may include:

- 11.6.1 Written notification;
- 11.6.2 Electronic notification (i.e., internet, web page, email);
- 11.6.3 Department meetings;
- 11.6.4 Training sessions; and
- 11.6.5 Other methods as appropriate.

11.7 The key OQ contact will ensure that the identification of the individuals affected by the Operator Qualification Change Documents is properly documented. The key OQ contact is also responsible for communicating the corresponding record-keeping documentation.

#### 11.8 Annual Review

Changes to the OQ Plan may be initiated at any time as events dictate. However, at least once each calendar year, a Member Review Board shall meet to review changes in state and federal regulations, new technologies, best practices, and incidents; and consider appropriate updates to the OQ Plan, which may include additional covered tasks or abnormal operating conditions.

#### 11.9 Notification of Significant Program Changes

The Member Review Board shall communicate significant OQ Written Plan changes, per criteria established in Section 11.0, to the appropriate state pipeline safety regulators.

#### 11.10 Mergers and Acquisitions

Provisions for addressing OQ requirements following mergers and acquisitions should be developed and documented as soon as practical

after such business transactions have been negotiated (e.g., provisions for either combining the programs or maintaining distinct programs, so long as compatibility issues are reviewed and resolved).

## 12.0 Record keeping

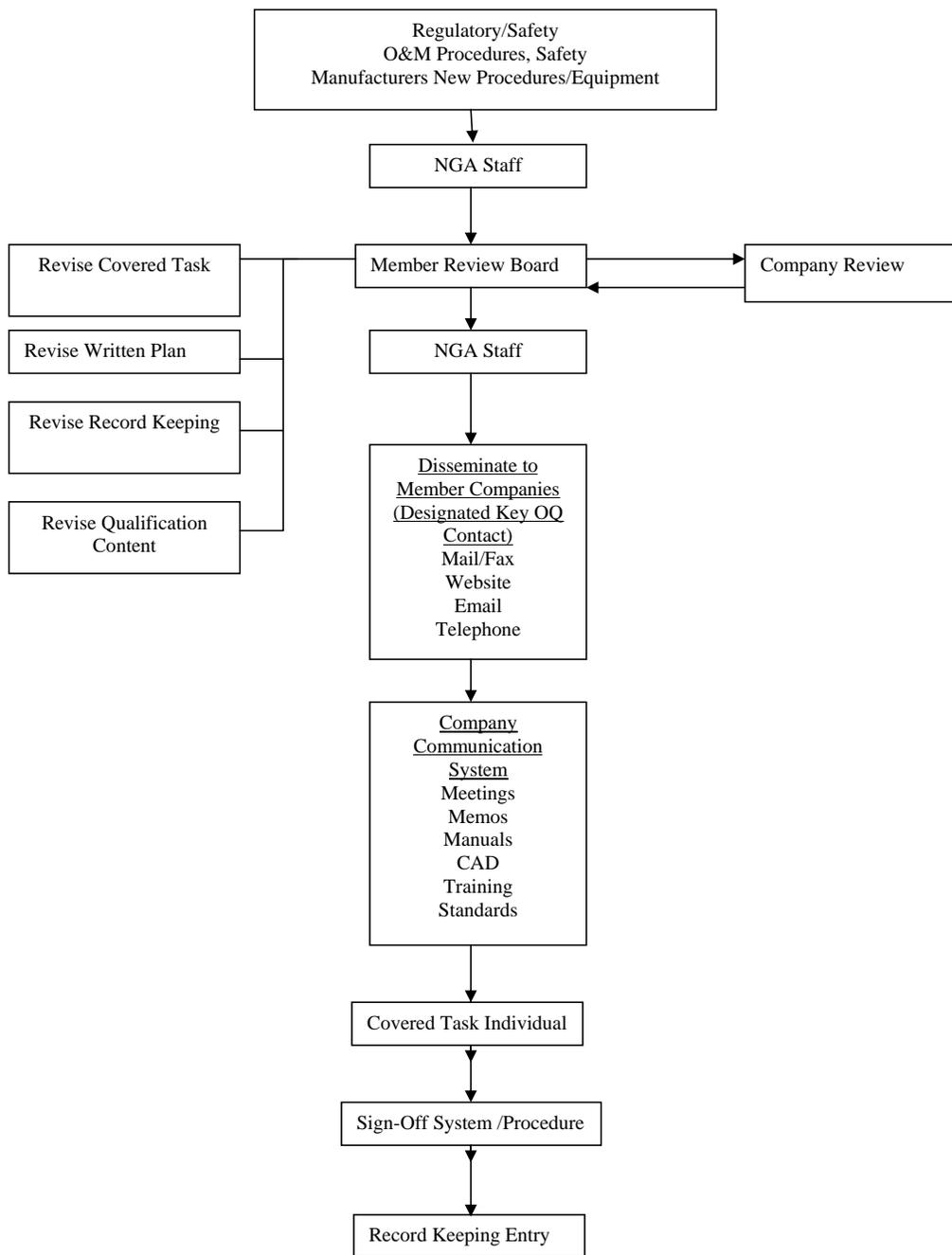
The records that support an individual's qualification are maintained in accordance with 192.807 Record keeping.

- 12.1 The identity of each qualified individual must include as a minimum:
  - 12.1.1 The individual's name;
  - 12.1.2 Identification of the covered task for which the individual is qualified;
  - 12.1.3 Date(s) of initial, subsequent, or transitional qualification; and
  - 12.1.4 Qualification method(s).
- 12.2 The records shall also be maintained for an individual performing a covered task in which:
  - 12.2.1 The operator has reason to believe that the individual's performance contributed to an incident as defined in Part 191;  
or
  - 12.2.2 The operator has reason to believe the individual is no longer qualified to perform the covered task.
- 12.3 Records of an individual's current qualification must be maintained while the individual is performing the current tasks for which the individual is qualified. When an individual is evaluated for subsequent qualification, the prior qualification records must be maintained for a period of five years. Records of prior qualification and record of individuals no longer performing covered tasks shall be retained for a period of five years;
- 12.4 Unless otherwise indicated in Appendix D, NGA is responsible for administering the master record-keeping database. The operator is responsible for updating and maintaining current personnel and covered task information.

## 13.0 Mutual Assistance

- 13.1 In the event of major natural disasters or other emergencies, an operator may require assistance from employees or contractors/subcontractors of another operator. These individuals may be required to perform covered tasks. To allow such mutual assistance without violating 49 CFR 192, Subpart N, as well as applicable state regulations:
- 13.1.1 NGA operators incorporate by reference to this Plan, the qualification requirements of other NGA operators whose employees or contractors/subcontractors might be used to perform covered tasks;
  - 13.1.2 Non-NGA member companies likely to provide assistance in an emergency are identified in Appendix D. The operator's Key OQ Contact shall request a copy of the non-NGA member company's OQ Plan and details of employee qualifications; and
  - 13.1.3 In the event the operator is offered and accepts assistance from an operator not listed in Appendix D, due to the severity of the emergency and need for aid, the Key OQ Contact shall obtain and incorporate the qualification requirements of that Non-NGA member company into Appendix D, as soon as reasonably possible.

## Communication/Change Process



**FIGURE 2**

# APPENDIX A

## Updates/Changes to Northeast Gas Association Operator Qualification Compliance Program Written Plan

### Rev. A - Revised July 30, 2003

On June 3, 2003 NGA OQ teams were formed to review the OQ Written Plan to the newly released OQ protocols and make appropriate revisions. The changes made are the outcome of this review and include addition, modification and deletion of text in various sections.

### Rev. B - Revised October 20, 2003

#### A. Deleted definition of Maintenance and New Construction

4.9 *Maintenance* - means any work performed on an energized pipeline facility or de-energized pipeline facility connected to an energized pipeline facility that can affect the integrity of the pipeline facility.

4.10 *New construction* - The act of building a new pipeline facility, or replacing an existing pipeline facility, or expanding an existing pipeline facility such as to meet load requirements or to enhance reliability of the system.

#### B. Deleted Section 5.9

5.9 Pipeline excavation will be addressed by the operator in tasks associated with damage prevention activities (e.g. line locating and mark out).

#### C. Inserted Section 5.9

5.9 Construction of pipelines, including construction or repair activities associated with the maintenance of such pipelines, is considered a covered task by NGA. Although Subpart N of Title 49 CFR Part 192 does not specifically address new construction activities as a covered task, NGA believes it is sound practice to require qualified personnel to perform construction activities.

Consequently, excavation near active pipelines performed in conjunction with the aforementioned construction activities, while not specifically addressed by Subpart N, can also be considered sound practice, which requires qualified personnel to perform excavations. Excavation can be integrated with one or more covered tasks or stand alone as an independent covered task.

- D. Inserted Section 9.2.2 and revised 9.2.3 (former 9.2.2)**  
9.2.2 Review the covered task for deficiencies that may have contributed to the incident. This may include, but not be limited to, review of the qualification evaluation method, procedures, processes and training. Any deficiencies discovered by the review should be remedied as soon as reasonably possible;
- 9.2.3 If no deficiencies are identified in 9.2.2, any individual(s) performing the covered task who was directly involved in the incident, cannot continue to perform the covered task unless 9.2.4 and 9.2.5 have been completed;
- E. Revised Section 10.0 (first paragraph)**  
An operator is required to evaluate an individual or group of individuals, if that operator has reason to believe the individual(s) is no longer qualified to perform a covered task. Reasons for this belief may include, but not be limited to, observation that the individual is improperly performing a task, observable loss of the individual's motor skills, prolonged absence, or other demonstrable indications that the individual may no longer be able to perform the task.

**Rev. C - Revised June 9, 2005**

- A. Inserted the word "/subcontractor" after contractor in sections, 3.0, 5.5, 6.0, 7.2, 7.6, and 13.1.**
- B. Deleted definition 4.3.2, Is an operations or maintenance task.**
- C. Inserted 4.15, definition of Record.**
- D. Deleted Section 5.1**  
"The rule defines a covered task as any task that:  
5.1.1 Is performed on a pipeline facility;  
5.1.2 Is an operations or maintenance task;  
5.1.3 Is performed as a requirement of Title 49 CFR Part 192; and  
5.1.4 Affects the operation or integrity of the pipeline."
- E. Revised Section 5.0**  
**Modified references to the 4-part test to a 3-part test.**
- F. Revised Section 9.2.2**  
**Inserted the follow statement at the end of the last sentence,**  
"and communicated in accordance with Section 11.0"

- G. Revised Section 7.8**  
**Inserted the following statement at the end of Section 7.8,**  
“Subsequent qualification intervals include a 3 month evaluation grace period. For example, individuals qualified on tasks with a 1-year subsequent qualification interval shall requalify within 1 year not to exceed 15 months, 3-year subsequent qualification interval shall requalify within 3 years not to exceed 39 months, and 5-year subsequent qualification interval shall requalify within 5 years not to exceed 63 months.”
- H. Revised Appendix B Covered Tasks**  
Modified 4 part test to a 3-part test on all covered tasks.  
Modified covered tasks, 11, 13, 14, 15, 16, 17, 24, 34, 38, 40, 45, 49, 50, 52, 53, and 54 to incorporate new construction activities.
- I. Inserted Appendix B Covered Task 71, Operator Excavation in Vicinity of Pipeline.**
- J. Deleted Appendix B Covered Task 46**

**Rev. D - Revised May 23, 2006**

- A. Deleted the following language in Section 5.9,** “Excavation can be integrated with one or more covered tasks or stand alone as an independent covered task.”
- B. Inserted the following language in Section 7.0,** “All assessment methodologies utilized by the operator shall include a review, individual or group, at the conclusion of the assessment, of any item that an individual answered incorrectly.”
- C. Inserted the words,** “as appropriate” to the second paragraph, of Section 7.2
- D. Revised the wording in Section 7.8 from** “not to exceed” to “but not exceeding”
- E. Deleted the following statement in Section 11.0,** “to individuals performing covered task(s)”,
- F. Inserted in Section 11.0,** “and 192.805(i)”
- G. Inserted Section 11.9,** “Notification of Significant Changes”
- H. Inserted the following words to the Task Description for Covered Task 37,** “using specialized tapping equipment”

**Rev. E - Revised August 1, 2007**

- A. Revised the wording in Section 7.8 from “but not exceeding” to “but not to exceed”**
- B. Inserted Section 11.10, “Mergers and Acquisitions”**
- C. Updated Appendix B, “List of Covered Tasks”**
- D. Inserted, “Task includes the installation and maintenance of pipeline markers” to the discussion section of Covered Task 19, Patrolling and Inspecting Pipelines**
- E. Revised Covered Task 31, “Installation of Pipe by Live Insertion” to “Installation of Pipe” and updated sections A, B, and D**
- F. Revised Covered Task 41, “Inspect Valves” to Inspect and Operate Valves” and modified the task description**
- G. Revised Covered Task 49, “Mechanical Joining of Pipe” to “Mechanical Joining of Pipe Other Than Plastic” and modified the task description and the subsequent qualification interval**
- H. Revised Covered Task 51, “Install Bolt-on Tee on Plastic Pipe” to “Install Tapping Tee on Plastic Pipe” and modified the task description**
- I. Revised Covered Task 63, “Testing Overpressure Protection” to “Install and Test Overpressure Protection”**
- J. Revised Covered Task 70 wording for Abnormal Operating Condition, “Under/no pressure” to “Inadequate Pressure” and inserted description language for each AOC**
- K. Revised Covered Task 71, “Operator Excavation in Vicinity of Pipeline” to “Operator Excavation and Backfilling in the Vicinity of a Pipeline”**
- L. Inserted in the Discussion Section of Covered Task 71, “Includes providing adequate pipeline support during excavation and backfilling”**
- M. Added New Covered Tasks:**
  - i. Covered Task 70P – Properties of Propane Air and Abnormal Operating Conditions
  - ii. Covered Task 72 – Installation of Customer Meters and Regulators

- iii. Covered Task 73 - Inspecting and maintaining air compressors at LP-Air plants
- iv. Covered Task 74 – Inspecting and Maintaining Instrument Air Dryers at LP-Air Plants
- v. Covered Task 75 – Inspecting and Maintaining Emergency Shutoff Systems at LP-Air Plants
- vi. Covered Task 76 – Maintaining Fire Protection Systems at LP-Air Plants
- vii. Covered Task 77 - Inspecting and maintaining storage tanks, piping, valves and fittings at LP-Air plants
- viii. Covered Task 78 – Inspecting and Maintaining Vapor Compressors at LP-Air Plants
- ix. Covered Task 79 – Inspecting, Operating, and Maintaining Vapor Detection Systems at LP-Air Plants
- x. Covered Task 80 – Inspecting and Maintaining Propane Vaporizers at LP-Air Plants
- xi. Covered Task 81 – Load, Unload, and Transfer Liquid Propane at LP-Air Plants
- xii. Covered Task 82 – Inspecting and Maintaining Auxiliary Power Sources at LP-Air Plants
- xiii. Covered Task 83 - Operating a Propane Air Plant

**Rev. F - Revised September 3, 2008**

**A. Revised the wording in Section 7.2 from “the operator may provide training” to “the operator shall provide training”**

**B. Inserted the following language to Section 7.7.3, “...listed in Appendix D which met the requirements of NGA’s or operator’s OQ Program Review Procedures.”**

**C. Updated Appendix B, “List of Covered Tasks”**

- i. Covered task 23 - changed the word “steel” to “metallic”
- ii. Covered task 30 – deleted the word “damaged”
- iii. Covered task 32 – changed task title from “purging air from pipeline” to “purging a pipeline into service”
- iv. Covered task 33 – changed task title from “purging gas from pipeline” to “purging a pipeline out of service”
- v. Covered task 40 – deleted the words “...a section of existing...”
- vi. Covered task 48 – deleted covered task
- vii. Covered task 84 – new covered task

**D. Updated Covered Tasks in Appendix B Sections Part A, Description; Part B, 49 CFR designation; and/or Part C, Discussion, for covered tasks: 2, 3, 5, 7, 8, 10, 11, 13, 14, 16, 17, 18, 19, 21, 22, 23,**

24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 42, 43, 44, 45, 47, 49, 50, 51, 52, 53, 54, 55, 56, 57, 60, 61, 62, 63, 64, 66, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, and 83

**E. Updated Covered Tasks in Appendix B Section Part D, Subsequent Qualification Interval, for covered tasks: 44, 50, 51, 52, 53, and 54**

**F. Updated Covered Tasks in Appendix B Section Part E, Abnormal Operating Conditions, for covered tasks: 21, 22, 23, 29, 35, 45, 55, 56, 57, 58, 59, 62, 66, 67, and 68**

**G. Deleted Covered Task 48, Extend or Cut Back on an Existing Service Line, in Appendix B. Task is covered in new covered task 31, installation of pipe.**

**H. Added Covered Task 84, Bending of Steel Pipe, in Appendix B**

# **APPENDIX B**

## **List of Covered Tasks with Analysis**

## LIST OF COVERED TASKS

1. Inspecting for shorted casings
2. Measuring pipe-to-soil potential
3. Conduct a soil resistivity survey
4. Conducting interference testing
5. Electrically checking for proper performance reverse current switches, diodes, and interference bonds
6. Inspecting for atmospheric corrosion
7. Ensure operation of a rectifier
8. Visually inspecting for internal corrosion
9. Remove coupons/sample gas or liquids for analysis and evaluation
10. Clear a shorted casing
11. Applying pipe coating in the field
12. Cleaning and either coating or jacketing pipe for atmospheric corrosion
13. Installing/replacing a rectifier on a pipeline
14. Installing/replacing an anode on a pipeline
15. Installing/replacing and testing electrical isolation couplings on a pipeline
16. Install/replace a corrosion test station on a pipeline
17. Repair coating on a steel pipelines
18. Conducting gas leakage surveys
19. Patrolling and inspecting pipelines
20. Investigating leak/odor complaints
21. Line locating and mark out
22. Inspection of 3<sup>rd</sup> party excavations for damage prevention/cast iron encroachment
23. Inspecting the condition of exposed [metallic](#) pipe or pipe coating
24. Inspect pipe for damage
25. Repair transmission line leaks
26. Repair and maintain transmission line valves
27. Lubricate transmission line valves
28. Uprating
29. Repair distribution line leaks
30. Repair a non-leaking ~~damaged~~ pipe
31. Installation of pipe
32. Purging ~~air from~~ pipeline [into service](#)

33. Purging ~~gas from a~~ pipeline [out of service](#)
34. Performing pressure test on a pipeline
35. Stopping gas flow
36. Abandonment or deactivation of facilities
37. Tapping pipelines under pressure
38. Starting up or shutting down any part of a pipeline that could cause the MAOP to be exceeded
39. Remove service tee or fitting from steel or cast iron mains
40. Install/Replace ~~a section of existing~~ tracer wire
41. Inspect and operate valves
42. Repair and maintain distribution line valves
43. Lubricate distribution line valves
44. Repair inline welds
45. Restore service
46. ~~Deleted~~ [Maintaining service and curb boxes \(Deleted June 9, 2005, refer to Appendix A\)](#)
47. Abandon a gas service line
48. ~~Extend or cut back on an existing service line~~ [\(Deleted September 3, 2008, refer to Appendix A\)](#)
49. Mechanical joining of pipe other than plastic
50. Joining plastic pipe
51. Install tapping tee on plastic pipe
52. Inspect plastic pipe fusion joint
53. Non-destructive testing of welds
54. Welding on a pipeline
55. Maintain a pipeline compressor station
56. Operate a pipeline compressor station
57. Repair a compressor
58. Maintaining gas detection systems and alarms in compressor stations
59. Controlling and monitoring gas pressures and flows
60. Operation of remote control valves
61. Inspect recording gauge
62. Inspect and test pressure regulator station
63. Install and test overpressure protection
64. Inspect telemetering equipment at a pressure limiting or regulating station
65. Bypass a regulator
66. Field interpretation of pressure recording charts
67. Inspecting a pressure regulator vault
68. Operating an odorizer
69. Monitor natural gas odorization levels
71. Operator Excavation and Backfilling in the Vicinity of a Pipeline
72. Installation of Customer Meters and Regulators
73. Inspecting and maintaining air compressors at LP-Air plants
74. Inspecting and Maintaining Instrument Air Dryers at LP-Air Plants

- 75. Inspecting and Maintaining Emergency Shutoff Systems at LP-Air Plants
- 76. Maintaining Fire Protection Systems at LP-Air Plants
- 77. Inspecting and maintaining storage tanks, piping, valves and fittings at LP-Air plants
- 78. Inspecting and Maintaining Vapor Compressors at LP-Air Plants
- 79. Inspecting, Operating, and Maintaining Vapor Detection Systems at LP-Air Plants
- 80. Inspecting and Maintaining Propane Vaporizers at LP-Air Plants
- 81. Load, Unload, and Transfer Liquid Propane at LP-Air Plants
- 82. Inspecting and Maintaining Auxiliary Power Sources at LP-Air Plants
- 83. Operating a Propane Air Plant
- ~~83-84.~~ [Bending of Steel Pipe](#)

#### **NON-COVERED TASK**

- 70. Properties of natural gas and abnormal operating conditions
- 70P. Properties of propane air and abnormal operating conditions

## COVERED TASK #1: Inspecting for Shorted Casings

### **A. Task Description:**

Pipe casing to carrier pipe testing for an electrical short is an external corrosion control practice. The use of voltage potential and circuit continuity test equipment is generally utilized to perform this task. Should a short be detected, a close interval pipe to soil survey would be performed to pin point the location of the short.

### **B. Application of the three part test for covered tasks:**

This task is performed on a pipeline facility;  
This task is performed as a requirement under 49 CFR 192.467; and  
This task can affect the operation or integrity of the pipeline.

### **C. Discussion:**

### **D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within five (5) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	Medium
Risk or Consequence of Performing Task Incorrectly	Low

### **E. Abnormal Operating Conditions:**

Refer to Task 70

### **F. Evaluation Method(s)**

Knowledge (Written or Oral for reasonable accommodations)

## **COVERED TASK #2: Measuring Pipe-to-Soil Potential**

### **A. Task Description:**

Use a voltmeter to measure the voltage difference between the pipe and the surrounding soil. ~~Voltage measurements are used to determine if cathodic protection levels are adequate on protected lines and if active corrosion is occurring on unprotected lines.~~

### **B. Application of the three part test for covered tasks:**

This is performed on a pipeline facility;  
This is performed as a requirement of 49 CFR 192.465; and  
This can affect the operation or integrity of the pipeline.

### **C. Discussion:**

~~Voltage measurements are used to determine if cathodic protection levels are adequate on protected lines and if active corrosion is occurring on unprotected lines.~~

### **D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within five (5) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	Low
Risk or Consequence of Performing Task Incorrectly	Low

### **E. Abnormal Operating Conditions:**

Refer to Task 70

### **F. Evaluation Method(s)**

Knowledge (Written or Oral for reasonable accommodations)

### **COVERED TASK #3: Conduct a Soil Resistivity Survey**

#### **A. Task Description:**

Measure the electrical resistance of the soil in the vicinity of the pipeline. [Resistivity is used in the design of cathodic protection systems.](#)

#### **B. Application of the three part test for covered tasks:**

This task is performed on a pipeline facility;

This is required by any provision in 49 CFR Part 192.455(b) [and 192.465](#); and

This can affect the operation or integrity of the pipeline.

#### **C. Discussion:**

The electrical resistance of the soil is used to evaluate the corrosivity of the soil; generally the lower the resistance, the more corrosive the soil. This is important information for the design of cathodic protection systems and may be used to prioritize bare steel piping segments for installation of cathodic protection.

#### **D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within five (5) years based on the following:

Task Frequency Performed	6-12 months
Complexity of Task	Medium
Risk or Consequence of Performing Task Incorrectly	Low

#### **E. Abnormal Operating Conditions:**

Refer to Task 70

#### **F. Evaluation Method(s)**

Knowledge (Written or Oral for reasonable accommodations)

## **COVERED TASK #4: Conducting Interference Testing**

### **A. Task Description:**

Conduct interference testing to determine interference from stray AC or DC currents on the pipeline.

### **B. Application of the three part test for covered tasks:**

This is performed on a pipeline facility;

This is performed as a requirement of 49 CFR 192.473; and

This can affect the operation or integrity of the pipeline.

### **C. Discussion:**

This includes testing for stray AC or DC currents.

### **D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within three (3) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	High
Risk or Consequence of Performing Task Incorrectly	High

### **E. Abnormal Operating Conditions:**

Refer to Task 70

### **F. Evaluation Method(s)**

Knowledge (Written or Oral for reasonable accommodations)

**COVERED TASK #5: Electrically Checking for Proper Performance Reverse Current Switches, Diodes, and Interference Bonds**

**A. Task Description:**

Inspecting various electrical components of a cathodic protection system, ~~including:~~

~~Reverse current switches~~

~~Diodes~~

~~Interference bonds~~

**B. Application of the three part test for covered tasks:**

This is performed on a pipeline facility;

This is performed as a requirement of 49 CFR 192.465; and

This can affect the operation or integrity of the pipeline.

**C. Discussion:**

**D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within five (5) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	Low
Risk or Consequence of Performing Task Incorrectly	High

**E. Abnormal Operating Conditions:**

Refer to Task 70

**F. Evaluation Method(s)**

Knowledge (Written or Oral for reasonable accommodations)

## COVERED TASK #6: Inspecting for Atmospheric Corrosion

### **A. Task Description:**

Examining above-ground steel pipelines for signs of pitting and other evidence of corrosion. Recognizing corrosion that jeopardizes the integrity of the pipeline.

### **B. Application of the three part test for covered tasks:**

This is performed on a pipeline facility;

This is required by provisions under 49 CFR 192.481; and

This can affect the operation or integrity of the pipeline.

### **C. Discussion:**

Some operators use meter readers for tasks in addition to reading meters, which is not a covered task, such as inspecting the meter set and associated piping for evidence of corrosion. Since inspecting for atmospheric corrosion is a covered task, meter readers and others whose primary task(s) are not covered must be qualified in each covered task that they are asked by the operator to perform.

### **D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within five (5) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	Low
Risk or Consequence of Performing Task Incorrectly	Low

### **E. Abnormal Operating Conditions:**

Refer to Task 70

### **F. Evaluation Method(s)**

Knowledge (Written or Oral for reasonable accommodations)

## COVERED TASK #7: Ensure Operation of a Rectifier

### **A. Task Description:**

Measuring the voltage and current output from a rectifier on a cathodic protection system on a steel pipeline. Inspecting rectifier for proper operation.

### **B. Application of the three part test for covered tasks:**

This is performed on a pipeline facility;  
This is a requirement of 49 CFR 192.465; and  
This can affect the operation or integrity of the pipeline.

### **C. Discussion:**

### **D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within three (3) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	Medium
Risk or Consequence of Performing Task Incorrectly	High

### **E. Abnormal Operating Conditions:**

Refer to Task 70

### **F. Evaluation Method(s)**

Knowledge (Written or Oral for reasonable accommodations)

## COVERED TASK #8: Visually Inspecting for Internal Corrosion

### **A. Task Description:**

~~Whenever an operator knows that an in-service metallic pipeline will be opened,~~  
inspecting the inside pipe wall of the pipeline for pits, general corrosion or other signs that corrosion is occurring inside the pipeline.

### **B. Application of the three part test for covered tasks:**

This is performed on a pipeline facility;  
This is required under 49 CFR 192.475; and  
This can affect the operation or integrity of the pipeline.

### **C. Discussion:**

### **D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within five (5) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	Low
Risk or Consequence of Performing Task Incorrectly	Low

### **E. Abnormal Operating Conditions:**

Refer to Task 70

### **F. Evaluation Method(s)**

Knowledge (Written or Oral for reasonable accommodations)

**COVERED TASK #9: Remove Coupons/Sample Gas or Liquids for Analysis and Evaluation of Internal Corrosion**

***A. Task Description:***

Remove coupons for analysis and evaluation to determine if internal corrosion is occurring. This includes pulling a sample of natural gas or liquids for analysis for corrosivity. This does not include taking samples for heating value determination or other purposes.

***B. Application of the three part test for covered tasks:***

This is performed on a pipeline facility;  
This is performed as a requirement of 49 CFR 192.477; and  
This can affect the operation or integrity of the pipeline.

***C. Discussion:***

Removing a coupon is a covered task. Analyzing the coupon is not a covered task if performed off site, however analysis would be covered if performed on the pipeline facility.

***D. Subsequent Qualification Interval:***

The subsequent qualification interval has been determined to be within three (3) years based on the following:

Task Frequency Performed	6-12 months
Complexity of Task	High
Risk or Consequence of Performing Task Incorrectly	Medium

***E. Abnormal Operating Conditions:***

Refer to Task 70

***F. Evaluation Method(s)***

1. Knowledge (Written or Oral for reasonable accommodations);
2. Skill (Simulation, Demonstration, or other).

## COVERED TASK #10: Clear a shorted casing

### **A. Task Description:**

Clearing a shorted casing refers to activities to electrically insulate by physically separating or insulating a steel pipeline from a casing. ~~When casing and pipeline are not electrically insulated, cathodic protection can be affected. This task is generally accomplished by one of the following methods:~~

- ~~• pumping a dielectric filler into the casing pipe in an attempt to float the pipe free from the casing~~
- ~~• excavating the casing at both ends and jacking the pipe up or down to clear the point of contact~~

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### **B. Application of the three part test for covered tasks:**

This is performed on a pipeline facility;

This is performed as a requirement of 49 CFR 192.477467; and

This can affect the operation or integrity of the pipeline.

### **C. Discussion:**

~~When casing and pipeline are not electrically insulated, cathodic protection can be affected. This task is generally accomplished by one of the following methods:~~

- ~~• pumping a dielectric filler into the casing pipe in an attempt to float the pipe free from the casing~~
- ~~• excavating the casing at both ends and jacking the pipe up or down to clear the point of contact~~

### **D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within five (5) years based on the following:

Task Frequency Performed	12 months and over
Complexity of Task	Low
Risk or Consequence of Performing Task Incorrectly	Low

### **E. Abnormal Operating Conditions:**

Refer to Task 70

### **F. Evaluation Method(s)**

Knowledge (Written or Oral for reasonable accommodations)

## **COVERED TASK #11: Applying Pipe Coating in the Field**

### **A. Task Description:**

Coating a metallic pipe with an insulating material to prevent electrical flow from the pipe to the soil and thereby minimize galvanic corrosion of the metal pipe. ~~This does not include coatings applied before the pipe is brought to the job site.~~

### **B. Application of the three part test for covered tasks:**

This is performed on a pipeline facility;  
This is required by 49 CFR 192.461; and  
This can affect the operation or integrity of the pipeline.

### **C. Discussion:**

In no circumstance will applying coating at a mill, coating facility or other location away from the pipeline right-of-way be a covered task under this rule because those locations are not pipeline facilities, therefore only field coating of pipe could be a covered task.

### **D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within five (5) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	Low
Risk or Consequence of Performing Task Incorrectly	High

### **E. Abnormal Operating Conditions:**

Refer to Task 70

### **F. Evaluation Method(s)**

Knowledge (Written or Oral for reasonable accommodations)

**COVERED TASK #12: Cleaning and Either Coating or Jacketing Pipe for Atmospheric Corrosion**

**A. Task Description:**

Cleaning the surface of the pipe to remove corrosion by-products and other debris, then applying a coating or jacket to control atmospheric corrosion on aboveground metallic pipe.

**B. Application of the three part test for covered tasks:**

This task is performed on a pipeline facility;  
This task is performed as a requirement of 49 CFR 192.479; and  
This can affect the operation or integrity of the pipeline.

**C. Discussion:**

**D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within five (5) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	Low
Risk or Consequence of Performing Task Incorrectly	Medium

**E. Abnormal Operating Conditions:**

Refer to Task 70

**F. Evaluation Method(s)**

Knowledge (Written or Oral for reasonable accommodations)

## **COVERED TASK #13: Installing/Replacing a Rectifier On a Pipeline**

### **A. Task Description:**

Installing or replacing a rectifier on a steel pipeline.

### **B. Application of the three part test for covered tasks:**

This is performed on a pipeline facility;

This is required by provisions in 49 CFR Part 192.465-Subpart I; and

This can affect the integrity of the pipeline.

### **C. Discussion:**

~~49CFR192 requires that an~~ operator is required to apply cathodic protection retroactively to unprotected pipe if the operator finds that active corrosion is occurring. Rectifiers may also break down and need to be replaced. Retrofitting cathodic protection in these circumstances is a covered task. Electrical connection for feed power is not a component of this covered task since it does not affect the integrity of the pipeline.

### **D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within three (3) years based on the following:

Task Frequency Performed	6-12 months
Complexity of Task	Medium
Risk or Consequence of Performing Task Incorrectly	High

### **E. Abnormal Operating Conditions:**

Refer to Task 70

### **F. Evaluation Method(s)**

Knowledge (Written or Oral for reasonable accommodations)

**COVERED TASK #14: Installing/Replacing an Anode On a Pipeline**

**A. Task Description:**

Physically connecting an anode to a steel pipeline.

**B. Application of the three part test for covered tasks:**

This is performed on a pipeline facility;

This is required by provisions in 49 CFR Part 192.463 and 192.465-Subpart I; and

This can affect the integrity of the pipeline.

**C. Discussion:**

~~49CFR192 requires that~~A an operator is required to apply cathodic protection retroactively to unprotected pipe if the operator finds that active corrosion is occurring. Operators also replace anodes that have exceeded their useful lives. Installing an anode in these circumstances is a covered task.

**D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within five (5) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	Medium
Risk or Consequence of Performing Task Incorrectly	Low

**E. Abnormal Operating Conditions:**

Refer to Task 70

**F. Evaluation Method(s)**

Knowledge (Written or Oral for reasonable accommodations)

**COVERED TASK #15: Installing, Replacing and Testing Electrical Isolation Couplings On a Pipeline**

**A. Task Description:**

Installing an insulating fitting to electrically isolate cathodically-protected segments of steel piping from segments that are not cathodically protected. This also includes installing insulating fittings between the company's pipelines and piping owned by other persons, including at customer meters. Testing that the fitting is, in fact, electrically isolating the two pipes is included in this task.

**B. Application of the three part test for covered tasks:**

This is performed on a pipeline facility;  
This is required by 49 CFR 192.467; and  
This can affect the operation or integrity of the pipeline.

**C. Discussion:**

**D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within five (5) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	Medium
Risk or Consequence of Performing Task Incorrectly	Low

**E. Abnormal Operating Conditions:**

Refer to Task 70

**F. Evaluation Method(s)**

Knowledge (Written or Oral for reasonable accommodations)

**COVERED TASK #16: Install/Replace a Corrosion Test Station On a Pipeline**

**A. Task Description:**

Installing a test station to allow corrosion monitoring, such as pipe-to-soil potentials, to be monitored. ~~Elements may include: attaching test lead wires using thermite welding or other means of ensuring an electrical bond between the wire and the pipe.~~

**B. Application of the three part test for covered tasks:**

This task is performed on a pipeline facility;  
This task is performed as a requirement of 49 CFR [192.469 and](#) 192.471; and  
This can affect the operation or integrity of the pipeline.

**C. Discussion:**

~~Elements may include: attaching test lead wires using thermite welding or other means of ensuring an electrical bond between the wire and the pipe.~~

**D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within five (5) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	Medium
Risk or Consequence of Performing Task Incorrectly	Low

**E. Abnormal Operating Conditions:**

Refer to Task 70

**F. Evaluation Method(s)**

Knowledge (Written or Oral for reasonable accommodations)

## **COVERED TASK #17: Repair Coating on Steel Pipelines**

### **A. Task Description:**

This task is performed when the coating on a steel pipe is found to be defective.

### **B. Application of the three part test for covered tasks:**

This task is performed on a pipeline facility;

This task is performed as a requirement under 49 CFR [492.459](#), [49 CFR-192.461](#) and, [49 CFR-192.479](#); and

This task can affect the operation or integrity of the pipeline.

### **C. Discussion:**

### **D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within five (5) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	Low
Risk or Consequence of Performing Task Incorrectly	High

### **E. Abnormal Operating Conditions:**

Refer to Task 70

### **F. Evaluation Method(s)**

Knowledge (Written or Oral for reasonable accommodations)

## **COVERED TASK #18: Conducting Gas Leakage Surveys**

### **A. Task Description:**

Conducting a transmission, main, service line, business district or non-business district leakage survey using leak detection equipment, such as combustible gas indicators (CGI) or Hydrogen Flame Ionization (HFI) units, conduct mobile or walking, transmission or service line, and special one-time surveys.

### **B. Application of the three part test for covered tasks:**

This task is performed on a pipeline facility;

This task is performed as a requirement under 49 CFR 192.706 and ~~49 CFR 192.723, except for vegetation surveys, which are specifically precluded from being used for leakage surveys required under sections 706 or 723;~~ and

This task can affect the operation or integrity of the pipeline.

### **C. Discussion:**

All leakage surveys, including vegetation surveys, if an operator's O&M plan specifies that it will perform vegetation surveys, are covered tasks. Vegetation surveys are not allowed to be counted as leakage surveys under the specific leakage survey sections 49 CFR 192.706 & .723, however 192.605(b)(1) requires each operator's O&M plan to address leakage surveying and some operators specify that special leakage surveys will be done by vegetation survey. We believe that this meets the intent of the negotiated rulemaking committee for a task to be regulated under 49 CFR 192.

### **D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within five (5) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	Low
Risk or Consequence of Performing Task Incorrectly	Medium

### **E. Abnormal Operating Conditions:**

Refer to Task 70

### **F. Evaluation Method(s)**

Knowledge (Written or Oral for reasonable accommodations)

## COVERED TASK #19: Patrolling and Inspecting Pipelines

### **A. Task Description:**

~~Inspecting the pipeline by fFoot, vehicular, or aerial means may be utilized to perform this task. In addition to inspecting the pipeline, inspection of surface conditions on or adjacent to the pipeline right-of-way, construction activity, and other conditions that might affect safety and operations of the pipeline should also be included.~~

### **B. Application of the three part test for covered tasks:**

This task is performed on a pipeline facility;

This task is performed as a requirement under 49 CFR 192.705, 192.707, and ~~49 CFR 192.721~~; and

This task can affect the operation or integrity of the pipeline.

### **C. Discussion:**

Task includes the installation and maintenance of pipeline markers. In addition to inspecting the pipeline, inspection of surface conditions on or adjacent to the pipeline right-of-way, construction activity, and other conditions that might affect safety and operations of the pipeline is included.

### **D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within five (5) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	Low
Risk or Consequence of Performing Task Incorrectly	Medium

### **E. Abnormal Operating Conditions:**

Refer to Task 70

### **F. Evaluation Method(s)**

Knowledge (Written or Oral for reasonable accommodations)

## **COVERED TASK #20: Investigating Leak/Odor Complaints**

### **A. Task Description:**

Using gas detection instruments to search for the source of reported gas odors or leaks inside or outside of buildings.

### **B. Application of the three part test for covered tasks:**

This task is performed on a pipeline facility;  
This is required under 49 CFR 192.615; and  
This could affect the operation or integrity of the pipeline.

### **C. Discussion:**

### **D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within three (3) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	Medium
Risk or Consequence of Performing Task Incorrectly	High

### **E. Abnormal Operating Conditions:**

Refer to Task 70

### **F. Evaluation Method(s)**

Knowledge (Written or Oral for reasonable accommodations)

## COVERED TASK #21: Line Locating and Mark Out

### **A. Task Description:**

Using line-locating equipment to determine the location of an operator's underground natural gas mains and services.

### **B. Application of the three part test for covered tasks:**

This task is performed on a pipeline facility;  
This task is required by 49 CFR 192.614; and  
This task can affect the integrity of the pipeline.

### **C. Discussion:**

### **D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within three (3) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	Medium
Risk or Consequence of Performing Task Incorrectly	High

### **E. Abnormal Operating Conditions:**

- ~~1. Refer to Task 70; and~~
- ~~2. Inability to locate using all available tools and information.~~

### **F. Evaluation Method(s)**

1. Knowledge (Written or Oral for reasonable accommodations); and
2. Skill (Simulation, Demonstration, or other).

**COVERED TASK #22: Inspection of 3<sup>rd</sup> Party Excavations for Damage Prevention/Cast Iron Encroachment**

**A. Task Description:**

Inspection for damage and cast iron encroachment of ~~Where~~ major third party excavation activity near operator buried pipelines, ~~will occur, the operator may assign an on-site inspector.~~

**B. Application of the three part test for covered tasks:**

This task is performed on a pipeline facility;  
This task is regulated under 49 CFR 192.614 and 192.755; and  
This task can affect the integrity of the pipeline.

**C. Discussion:**

**D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within five (5) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	Low
Risk or Consequence of Performing Task Incorrectly	High

**E. Abnormal Operating Conditions:**

- ~~1. Refer to Task 70~~
- ~~2. Missing yellow paint markings in excavation area where gas is known to exist~~
- ~~3. Violation of mark-out laws~~

**F. Evaluation Method(s)**

Knowledge (Written or Oral for reasonable accommodations)

**COVERED TASK #23: Inspecting the Condition of Exposed Metallic Pipe or Pipe Coating**

**A. Task Description:**

Inspecting the condition of the coating and/or the surface of a ~~steel-metallic~~ pipe whenever the operator learns that one of its ~~steel-metallic~~ pipelines has been exposed by its own or a third party's excavation activities. ~~This does not include "jeeping" the pipe coating on a pipeline construction project.~~

**B. Application of the three part test for covered tasks:**

This is performed on a pipeline facility;  
This is required by 49 CFR 192.459 ~~and 192.489~~; and  
This can affect the operation or integrity of the pipeline.

**C. Discussion:**

~~This does not include "jeeping" the pipe coating on a pipeline construction project.~~

**D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within five (5) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	Low
Risk or Consequence of Performing Task Incorrectly	Low

**E. Abnormal Operating Conditions:**

- ~~1. Refer to Task 70~~
- ~~2. Severe Graphitization~~
- ~~3. Severe Corrosion~~

**F. Evaluation Method(s)**

Knowledge (Written or Oral for reasonable accommodations)

## **COVERED TASK #24: Inspect Pipe for Damage**

### **A. Task Description:**

Inspecting pipe prior to installation for damage ~~that could render the pipe unserviceable.~~

### **B. Application of the three part test for covered tasks:**

This is performed on a pipeline facility;

This is performed as a requirement of 49 CFR 192.307; and

This can affect the operation or integrity of the pipeline.

### **C. Discussion:**

~~This is usually done as a construction task, however when performed at a maintenance job, this is a covered task.~~

### **D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within five (5) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	Low
Risk or Consequence of Performing Task Incorrectly	Low

### **E. Abnormal Operating Conditions:**

Refer to Task 70

### **F. Evaluation Method(s)**

Knowledge (Written or Oral for reasonable accommodations)

## COVERED TASK #25: Repair Transmission Line Leaks

### **A. Task Description:**

Repairing transmission line leaks ~~involve elements similar to the repair of other gas leaks with the exception that hazardous leaks must be repaired promptly using acceptable industry practices, equipment, and materials.~~

### **B. Application of the three part test for covered tasks:**

This task is performed on a pipeline facility;  
This task is performed as a requirement under 49 CFR 192.717; and  
This task can affect the operation or integrity of the pipeline.

### **C. Discussion:**

### **D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within three (3) years based on the following:

Task Frequency Performed	12 months and over
Complexity of Task	High
Risk or Consequence of Performing Task Incorrectly	High

### **E. Abnormal Operating Conditions:**

Refer to Task 70

### **F. Evaluation Method(s)**

Knowledge (Written or Oral for reasonable accommodations)

## **COVERED TASK #26: Repair and Maintain Transmission Line Valves**

### **A. Task Description:**

~~Repair and maintenance of transmission line valves including the maintenance of remotely and automatically activated valves.~~

~~This task is NOT to be confused with the “Valve Inspection” covered task but is the performance of elements such as:~~

- ~~• Disassembly of valve;~~
- ~~• Cleaning and inspection of valve’s internal components, i.e. discs, seats, boots, diaphragms;~~
- ~~• Repair or replacement of faulty components; and~~
- ~~• Re-assembly of valve and return to operating condition.~~

~~This includes the maintenance of remotely and automatically activated valves if the operator considers those valves necessary for safe operation of the system.~~

### **B. Application of the three part test for covered tasks:**

~~This task is performed on a pipeline facility;~~

~~This task is performed as a requirement under 49 CFR 192.745; and~~

~~This task can affect the operation or integrity of the pipeline.~~

### **C. Discussion:**

~~49 CFR 192.745 applies only to transmission line valves that might be required during any emergency. Repair and maintenance of other transmission valves is not a covered task.~~

### **D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within three (3) years based on the following:

Task Frequency Performed	6-12 months
Complexity of Task	Medium
Risk or Consequence of Performing Task Incorrectly	High

### **E. Abnormal Operating Conditions:**

Refer to Task 70

### **F. Evaluation Method(s)**

Knowledge (Written or Oral for reasonable accommodations)

## **COVERED TASK #27: Lubricate Transmission Line Valves**

### **A. Task Description:**

~~Lubrication of transmission line valves. This activity may be assigned and performed independent of code required valve inspection. When performed as part of a valve inspection, lubrication of the valve is an element of that task. When performed outside of a required valve inspection, lubrication of a valve is generally considered “servicing” the valve, which is also required by code.~~

### **B. Application of the three part test for covered tasks:**

This task is performed on a pipeline facility;  
This task is performed as a requirement under 49 CFR 192.745; and  
This task can affect the operation or integrity of the pipeline.

### **C. Discussion:**

~~49 CFR 192.745 applies only to transmission line valves that might be required during any emergency. Repair and maintenance of other transmission valves is not a covered task. This activity may be assigned and performed independent of code required valve inspection. When performed as part of a valve inspection, lubrication of the valve is an element of that task. When performed outside of a required valve inspection, lubrication of a valve is generally considered “servicing” the valve, which is also required by code.~~

### **D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within five (5) years based on the following:

Task Frequency Performed	6-12 months
Complexity of Task	Low
Risk or Consequence of Performing Task Incorrectly	Low

### **E. Abnormal Operating Conditions:**

Refer to Task 70

### **F. Evaluation Method(s)**

Knowledge (Written or Oral for reasonable accommodations)

## COVERED TASK #28: Uprating

### **A. Task Description:**

Uprating a segment of [a](#) pipeline to operate at a higher MAOP.

### **B. Application of the three part test for covered tasks:**

This is performed on a pipeline facility;

This is required under 49 CFR 192.[551](#), [192.553](#), [192.555](#), and [192.557-Subpart K](#); and

This can affect the operation or integrity of the pipeline.

### **C. Discussion:**

### **D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within three (3) years based on the following:

Task Frequency Performed	12 months and over
Complexity of Task	High
Risk or Consequence of Performing Task Incorrectly	High

### **E. Abnormal Operating Conditions:**

Refer to Task 70

### **F. Evaluation Method(s)**

Knowledge (Written or Oral for reasonable accommodations)

## COVERED TASK #29: Repair Distribution Line Leaks

### **A. Task Description:**

Repair of distribution line leaks using acceptable industry practices, equipment and materials. ~~ing hazardous leaks on distribution lines involve elements similar to the repair of other gas leaks with the exception that hazardous leaks must be repaired promptly.~~

### **B. Application of the three part test for covered tasks:**

This task is performed on a pipeline facility;

This task is performed as a requirement under 49 CFR 192.703 and 192.753; and

This task can affect the operation or integrity of the pipeline.

### **C. Discussion:**

### **D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within three (3) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	Medium
Risk or Consequence of Performing Task Incorrectly	High

### **E. Abnormal Operating Conditions:**

~~1. Refer to Task 70~~

~~2. Inability to stop/control gas leaks~~

~~3. Gas readings after leak repair~~

### **F. Evaluation Method(s)**

Knowledge (Written or Oral for reasonable accommodations)

## COVERED TASK #30: Repair a Non-Leaking ~~Damaged~~ Pipe

### **A. Task Description:**

~~Welding a split sleeve, installing Clockspring™, etc. R to repair of a damaged pipe~~ that is not leaking using acceptable industry practices, equipment, and materials.

### **B. Application of the three part test for covered tasks:**

This task is performed on a pipeline facility;

This task is performed as a requirement of 49 CFR 192.309, [192.311](#), [192.713](#), and [192.753](#); and

This can affect the operation or integrity of the pipeline.

### **C. Discussion:**

### **D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within five (5) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	Medium
Risk or Consequence of Performing Task Incorrectly	Medium

### **E. Abnormal Operating Conditions:**

Refer to Task 70

### **F. Evaluation Method(s)**

Knowledge (Written or Oral for reasonable accommodations)

## COVERED TASK #31: Installation of Pipe

### **A. Task Description:**

The installation of pipe in an open ditch; using trenchless technology; or by insertion. Covered task includes the visual inspection of pipe.

### **B. Application of the three part test for covered tasks:**

This is performed on a pipeline facility;

This is performed as a requirement of 49 CFR 192.305, 192.307, 49 CFR 192.317, 49 CFR 192.319, and 49 CFR 192.321, [192.323](#), [192.325](#), [192.361](#), [192.379](#), and [192.381](#); and

This can affect the operation or integrity of the pipeline.

### **C. Discussion:**

### **D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within three (3) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	Medium
Risk or Consequence of Performing Task Incorrectly	High

### **E. Abnormal Operating Conditions:**

Refer to Task 70

### **F. Evaluation Method(s)**

Knowledge (Written or Oral for reasonable accommodations)

**COVERED TASK #32: Purging Air From Pipeline Into Service**

**A. Task Description:**

~~Opening valves to let gas into a new or repaired pipeline, purging~~ Removing air or inert gas from ~~the a pipeline.~~

**B. Application of the three part test for covered tasks:**

This is performed on a pipeline facility;  
This is performed as a requirement of 49 CFR 192.629; and  
This can affect the operation or integrity of the pipeline.

**C. Discussion:**

**D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within five (5) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	Medium
Risk or Consequence of Performing Task Incorrectly	Medium

**E. Abnormal Operating Conditions:**

Refer to Task 70

**F. Evaluation Method(s)**

Knowledge (Written or Oral for reasonable accommodations)

**COVERED TASK #33: Purging Gas From Pipeline Out of Service**

**A. Task Description:**

~~Removing gas from the pipeline. Opening valves to purge gas from pipeline, displacing gas with air or inert gas until the gas concentration is below flammable limits.~~

**B. Application of the three part test for covered tasks:**

This is performed on a pipeline facility;  
This is performed as a requirement of 49 CFR 192.629; and  
This can affect the operation or integrity of the pipeline.

**C. Discussion:**

~~Displacing natural gas with air or inert gas until the gas concentration is below flammable limits.~~

**D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within five (5) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	Medium
Risk or Consequence of Performing Task Incorrectly	Medium

**E. Abnormal Operating Conditions:**

Refer to Task 70

**F. Evaluation Method(s)**

Knowledge (Written or Oral for reasonable accommodations)

## COVERED TASK #34: Performing Pressure Test on a Pipeline

### **A. Task Description:**

Using air, water, natural gas, or inert gas to pressure test pipe segment for leaks, ~~and may be performed as part of a new installation, replacement, relocation, new service taps, or uprating of segment's MAOP. For high stress lines, the test is also intended to verify that the pipe, as constructed, has enough strength to withstand pressures well above what it will be exposed to during normal operation. For low stress level lines the pressure test is a leak test.~~

### **B. Application of the three part test for covered tasks:**

This task is performed on a pipeline facility;

This task is performed as a requirement under 49 CFR 192.503, 192.505, 192.507, ~~192.509, 192.511, 192.513, 192.515, and 192.517, 49 CFR 192.553, 49 CFR 192.555, and 49 CFR 192.557725;~~ and

This task can affect the operation or integrity of the pipeline.

### **C. Discussion:**

May be performed as part of a new installation, replacement, relocation, new service taps, or uprating of segment's MAOP. For high stress lines, the test is also intended to verify that the pipe, as constructed, has enough strength to withstand pressures well above what it will be exposed to during normal operation.

### **D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within five (5) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	Low
Risk or Consequence of Performing Task Incorrectly	High

### **E. Abnormal Operating Conditions:**

Refer to Task 70

### **F. Evaluation Method(s)**

Knowledge (Written or Oral for reasonable accommodations)

## COVERED TASK #35: Stopping Gas Flow

### **A. Task Description:**

~~This task includes utilizing any of many available means to temporarily stopping the flow of gas through a pipeline, either during routine operations, or maintenance, or during an emergency, using acceptable industry practices. Methods could include bags, stoppers, squeeze-off tools, grease, foam, expansion plugs or other means.~~

### **B. Application of the three part test for covered tasks:**

This task is performed on a pipeline facility;

This task is performed as a requirement under 49 CFR 192.605 and ~~49 CFR 192.645751~~; and

This task can affect the operation or integrity of the pipeline.

### **C. Discussion:**

~~Methods could include e.g., bags, stoppers, squeeze-off tools, grease, foam, expansion plugs.~~

### **D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within three (3) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	High
Risk or Consequence of Performing Task Incorrectly	High

### **E. Abnormal Operating Conditions:**

~~1. Refer to Task 70; and~~

~~2. Inability to stop/control gas leak.~~

### **F. Evaluation Method(s)**

1. Knowledge (Written or Oral for reasonable accommodations); and
2. Skill (Simulation, Demonstration, or other).

## COVERED TASK #36: Abandonment or Deactivation of Facilities

### **A. Task Description:**

~~Elements contained in the task of a~~Abandoning or deactivating facilities ~~from all sources and supplies of natural gas may include:~~

- ~~• disconnect pipeline from all sources and supplies of gas~~
- ~~• purge gas from pipe section~~
- ~~• measure mixture using CGI~~
- ~~• seal abandoned pipe section at ends~~
- ~~• filling in of any abandoned vaults~~
- ~~•~~

### **B. Application of the three part test for covered tasks:**

This task is performed on a pipeline facility;  
This task is performed as a requirement under 49 CFR 192.727; and  
This task can affect the operation or integrity of the pipeline.

### **C. Discussion:**

### **D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within three (3) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	High
Risk or Consequence of Performing Task Incorrectly	High

### **E. Abnormal Operating Conditions:**

Refer to Task 70

### **F. Evaluation Method(s)**

Knowledge (Written or Oral for reasonable accommodations)

## COVERED TASK #37: Tapping Pipelines Under Pressure

### **A. Task Description:**

Cutting into a pipeline while the pipeline contains natural gas, under pressure, using specialized tapping equipment. Also referred to as a "hot tap".

### **B. Application of the three part test for covered tasks:**

This task is performed on a pipeline facility;  
This task is performed as a requirement under 49 CFR 192.627; and  
This task can affect the operation or integrity of the pipeline.

### **C. Discussion:**

~~192.627 requires that crews that make hot taps be qualified.~~

### **D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within three (3) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	High
Risk or Consequence of Performing Task Incorrectly	High

### **E. Abnormal Operating Conditions:**

Refer to Task 70

### **F. Evaluation Method(s)**

1. Knowledge (Written or Oral for reasonable accommodations); and
2. Skill (Simulation, Demonstration, or other).

**COVERED TASK #38: Starting Up or Shutting Down Any Part of the Pipeline That Could Cause MAOP to be Exceeded**

**A. Task Description:**

~~All activities required to start up or shut down any part of the pipeline when MAOP could be exceeded. This task may be performed to remove a pipe section from service, put pipe section into service, as well as starting up and shutting down of compressors. This may occur under normal operating conditions or emergency situations.~~

**B. Application of the three part test for covered tasks:**

This task is performed on a pipeline facility;  
This task is performed as a requirement under 49 CFR 192.605; and  
This task can affect the operation or integrity of the pipeline.

**C. Discussion:**

~~This task may be performed to remove a pipe section from service, put pipe section into service, as well as starting up and shutting down of compressors. This may occur under normal operating conditions or emergency situations.~~

**D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within three (3) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	High
Risk or Consequence of Performing Task Incorrectly	High

**E. Abnormal Operating Conditions:**

Refer to Task 70

**F. Evaluation Method(s)**

Knowledge (Written or Oral for reasonable accommodations)

**COVERED TASK #39: Remove Service Tee or Fitting From Steel and Cast Iron Mains**

**A. Task Description:**

The removal of service tees, fittings (including plugs, or drip risers) from steel and cast iron pipe.

**B. Application of the three part test for covered tasks:**

This task is performed on a pipeline facility;

This task is performed as a requirement under 49 CFR 192.605 and 192.627751; and

This task can affect the operation or integrity of the pipeline.

**C. Discussion:**

**D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within five (5) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	Low
Risk or Consequence of Performing Task Incorrectly	Low

**E. Abnormal Operating Conditions:**

Refer to Task 70

**F. Evaluation Method(s)**

Knowledge (Written or Oral for reasonable accommodations)

## COVERED TASK #40: Install/Replace Tracer Wire

### **A. Task Description:**

~~The installation of tracer wire during new plastic pipe installations and replacing an existing section of tracer wire. Tracer wire is installed with plastic pipe to provide a means of locating the plastic pipe with line locating equipment.~~

### **B. Application of the three part test for covered tasks:**

This is performed on a pipeline facility;

This is performed as a requirement of 49 CFR 192.321; and

This can affect the operation or integrity of the pipeline.

### **C. Discussion:**

~~Tracer wire is installed with plastic pipe to provide a means of locating the plastic pipe with line locating equipment.~~

### **D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within five (5) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	Low
Risk or Consequence of Performing Task Incorrectly	Low

### **E. Abnormal Operating Conditions:**

Refer to Task 70

### **F. Evaluation Method(s)**

Knowledge (Written or Oral for reasonable accommodations)

## COVERED TASK #41: Inspect and Operate Valves

### **A. Task Description:**

This task includes the visual inspection, operation, and manual opening and closing of valves.

### **B. Application of the three part test for covered tasks:**

This task is performed on a pipeline facility;  
This task is performed as a requirement under 49 CFR 192.745 and 49 CFR 192.747;  
and  
This task can affect the operation or integrity of the pipeline.

### **C. Discussion:**

### **D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within five (5) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	Low
Risk or Consequence of Performing Task Incorrectly	Medium

### **E. Abnormal Operating Conditions:**

Refer to Task 70

### **F. Evaluation Method(s)**

Knowledge (Written or Oral for reasonable accommodations)

## **COVERED TASK #42: Repair and Maintain Distribution Line Valves**

### **A. Task Description:**

Repair and maintenance of distribution line valves.

This task is NOT to be confused with the “Valve Inspection” covered task but is the performance of elements that may include:

- Disassembly of valve;
- Cleaning and inspection of valve’s internal components, i.e. discs, seats, boots, diaphragms;
- Repair or replacement of faulty components; and
- Re-assembly of valve and return to operating condition.

### **B. Application of the three part test for covered tasks:**

This task is performed on a pipeline facility;

This task is performed as a requirement under 49 CFR 192.747; and

This task can affect the operation or integrity of the pipeline.

### **C. Discussion:**

This task applies only to repair and maintenance of distribution valves necessary for safe operation of the system. Repair and maintenance of other distribution valves is not a covered task.

### **D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within five (5) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	Low
Risk or Consequence of Performing Task Incorrectly	Medium

### **E. Abnormal Operating Conditions:**

Refer to Task 70

### **F. Evaluation Method(s)**

Knowledge (Written or Oral for reasonable accommodations)

## **COVERED TASK #43: Lubricate Distribution Line Valves**

### **A. Task Description:**

~~Lubrication of distribution line valves. This activity may be assigned and performed independent of code required valve inspection. When performed as part of a valve inspection, lubrication of the valve is an element of that task. When performed outside of a required valve inspection, lubrication of a valve is generally considered "servicing" the valve, which is also required by code.~~

### **B. Application of the three part test for covered tasks:**

This task is performed on a pipeline facility;  
This task is performed as a requirement under 49 CFR 192.747; and  
This task can affect the operation or integrity of the pipeline.

### **C. Discussion:**

49 CFR 192.747 applies only to distribution valves necessary for safe operation of the system. ~~Servicing other distribution valves is not a covered task. This activity may be assigned and performed independent of code required valve inspection. When performed as part of a valve inspection, lubrication of the valve is an element of that task. When performed outside of a required valve inspection, lubrication of a valve is generally considered "servicing" the valve, which is also required by code.~~

### **D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within five (5) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	Low
Risk or Consequence of Performing Task Incorrectly	Low

### **E. Abnormal Operating Conditions:**

Refer to Task 70

### **F. Evaluation Method(s)**

Knowledge (Written or Oral for reasonable accommodations)

## COVERED TASK #44: Repair In-Line Welds

### **A. Task Description:**

~~This task includes r~~Repairing existing welds on pipelines, ~~including the welding of additional metal to the original location where the pipe had been oxygen acetylene welded.~~ ~~The SMAW (Shielded Metal Arc Welding) process is commonly utilized to perform this task and requires personnel qualifications of the welder.~~

### **B. Application of the three part test for covered tasks:**

This task is performed on a pipeline facility;  
This task is performed as a requirement under 49 CFR 192.245 and 192.715; and  
This task can affect the operation or integrity of the pipeline.

### **C. Discussion:**

~~The SMAW (Shielded Metal Arc Welding) process is commonly utilized to perform this task. Welder must be qualified to this task and the welding procedures used. Welder must be qualified to this task and the welding procedures used. Note that Subpart N does not replace existing 6 month non-destructive or annual destructive welding qualification requirements found in Subpart E; welders must comply with both.~~

### **D. Subsequent Qualification Interval:**

~~The subsequent qualification interval is per regulation requirements.~~  
The subsequent qualification interval for the knowledge component has been determined to be within three (3) years based on the following:

<u>Task Frequency Performed</u>	<u>0-6 months</u>
<u>Complexity of Task</u>	<u>Medium</u>
<u>Risk or Consequence of Performing Task Incorrectly</u>	<u>High</u>

### **E. Abnormal Operating Conditions:**

Refer to Task 70

### **F. Evaluation Method(s)**

1. Knowledge (Written or Oral for reasonable accommodations);
2. Skill (Simulation, Demonstration, or other); and
3. Ability

## COVERED TASK #45: Restore Service

### **A. Task Description:**

Re-pressuring of mains and services, ~~due to an interruption in service.~~

### **B. Application of the three part test for covered tasks:**

Restoring service is performed on a pipeline facility

Restoring service is required under 49 CFR 192.605 and 192.615; and

Restoring service could affect the operation or integrity of the pipeline.

### **C. Discussion:**

~~Due to an interruption of service.~~

### **D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within five (5) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	Medium
Risk or Consequence of Performing Task Incorrectly	Medium

### **E. Abnormal Operating Conditions:**

~~1. Refer to Task 70;~~

~~2. Plugged, frozen, or buried meters; and~~

~~3. Electrical grounds on service.~~

### **F. Evaluation Method(s)**

Knowledge (Written or Oral for reasonable accommodations)

## COVERED TASK #47: Abandon a Gas Service Line

### **A. Task Description:**

Permanently remove from service a service line that no longer transports gas to a customer. [Disconnect service line at main and remove service tee from main.](#)

### **B. Application of the three part test for covered tasks:**

This is performed on a pipeline facility;  
This is required under 49 CFR 192.727; and  
This can affect the operation or integrity of the pipeline.

### **C. Discussion:**

### **D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within five (5) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	Low
Risk or Consequence of Performing Task Incorrectly	Low

### **E. Abnormal Operating Conditions:**

Refer to Task 70

### **F. Evaluation Method(s)**

Knowledge (Written or Oral for reasonable accommodations)

**COVERED TASK #48: Extend or Cut Back on an Existing Service Line**

*A. Task Description:*

Adding pipe to, or removing pipe from an existing service line in order to lengthen or shorten a service line.

***B. Application of the three part test for covered tasks:***

This task is performed on a pipeline facility;  
This task is performed as a requirement of 49 CFR 192; and  
This can affect the operation or integrity of the pipeline.

***C. Discussion:***

For extensions, this is no different than installing any other pipe -- the tie in is covered under task analysis for tie-ins. Activities before the tie in are construction.

*D. Subsequent Qualification Interval:*

The subsequent qualification interval has been determined to be within five (5) years based on the following:

<b>Task Frequency Performed</b>	<b>0-6 months</b>
<b>Complexity of Task</b>	<b>Low</b>
<b>Risk or Consequence of Performing Task Incorrectly</b>	<b>Low</b>

*E. Abnormal Operating Conditions:*

**Refer to Task 70**

*F. Evaluation Method(s)*

**Knowledge (Written or Oral for reasonable accommodations)**

**COVERED TASK #49: Mechanical Joining of Pipe Other Than Plastic**

**A. Task Description:**

Joining pipe materials, other than plastic, by means other than fusion or welding.

**B. Application of the three part test for covered tasks:**

This is performed on a pipeline facility;

This is performed as a requirement of 49CFR 192.273, 192.275, [and 192.277](#), 192.279; and

This can affect the operation or integrity of the pipeline.

**C. Discussion:**

**D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within five (5) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	Low
Risk or Consequence of Performing Task Incorrectly	Medium

**E. Abnormal Operating Conditions:**

Refer to Task 70

**F. Evaluation Method(s)**

Knowledge (Written or Oral for reasonable accommodations)

## COVERED TASK #50: Joining Plastic Pipe

### **A. Task Description:**

Joining plastic pipe by ~~any of the following methods:~~ heat fusion or mechanical joints.

Heat fusion;

~~• Solvent cement;~~

~~• Adhesive; or~~

~~• Mechanical joints.~~

### **B. Application of the three part test for covered tasks:**

This is performed on a pipeline facility;

This is performed as a requirement of 49 CFR 192.281 and 192.285; and

This can affect the operation or integrity of the pipeline.

### **C. Discussion:**

Note that Subpart N does not replace existing plastic pipe joining annual qualification requirements found in Subpart F; plastic pipe joiners must comply with both.

### **D. Subsequent Qualification Interval:**

The subsequent qualification interval for the knowledge component has been determined to be within three (3) years based on the following:

<u>Task Frequency Performed</u>	<u>0-6 months</u>
<u>Complexity of Task</u>	<u>Medium</u>
<u>Risk or Consequence of Performing Task Incorrectly</u>	<u>High</u>

~~The subsequent qualification interval is per regulation requirements.~~

### **E. Abnormal Operating Conditions:**

Refer to Task 70

### **F. Evaluation Method(s)**

1. Knowledge (Written or Oral for reasonable accommodations);
2. Skill (Simulation, Demonstration, or other); and
3. Ability.

## COVERED TASK #51: Install Tapping Tee on Plastic Pipe

### **A. Task Description:**

Install a tapping tee and perform tapping function.

### **B. Application of the three part test for covered tasks:**

This is performed on a pipeline facility;

This is performed as a requirement of 49 CFR 192.283, 192.281, 192.285, and 192.287; and

This can affect the operation or integrity of the pipeline.

### **C. Discussion:**

Note that Subpart N does not replace existing plastic pipe joining annual qualification requirements found in Subpart F; plastic pipe joiners must comply with both.

### **D. Subsequent Qualification Interval:**

The subsequent qualification interval for the knowledge component has been determined to be within three (3) years based on the following:

<u>Task Frequency Performed</u>	<u>0-6 months</u>
<u>Complexity of Task</u>	<u>Medium</u>
<u>Risk or Consequence of Performing Task Incorrectly</u>	<u>High</u>

The subsequent qualification interval is per regulation requirements.

### **E. Abnormal Operating Conditions:**

Refer to Task 70

### **F. Evaluation Method(s)**

1. Knowledge (Written or Oral for reasonable accommodations);
2. Skill (Simulation, Demonstration, or other); and
3. Ability

## COVERED TASK #52: Inspect Plastic Pipe Fusion Joint

### **A. Task Description:**

Visual inspection of a completed heat fusion joint, ~~to ensure it is acceptable with 49CFR 192 requirements.~~

### **B. Application of the three part test for covered tasks:**

This is performed on a pipeline facility;

This is performed as a requirement of 49 CFR 192.273287; and

This can affect the operation or integrity of the pipeline.

### **C. Discussion:**

Visually inspecting a plastic pipe fusion joint in a shop during qualification tests is NOT a covered task. Note that Subpart N does not replace existing plastic pipe joining qualification requirements found in Subpart F; plastic pipe joiners must comply with both.

### **D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within one (1) year based on the following:

<u>Task Frequency Performed</u>	<u>0-6 months</u>
<u>Complexity of Task</u>	<u>High</u>
<u>Risk or Consequence of Performing Task Incorrectly</u>	<u>High</u>

~~The subsequent qualification interval is per regulation requirements.~~

### **E. Abnormal Operating Conditions:**

Refer to Task 70

### **F. Evaluation Method(s)**

Knowledge (Written or Oral for reasonable accommodations)

## COVERED TASK #53: Non-Destructive Testing of Welds

### **A. Task Description:**

Inspecting welds using X-rays or other non-destructive techniques.

### **B. Application of the three part test for covered tasks:**

This is performed on a pipeline facility;

This is performed as a requirement of 49 CFR 192.241 and 192.243; and

This can affect the operation or integrity of the pipeline.

### **C. Discussion:**

Note that Subpart N does not replace existing welding qualification requirements found in Subpart E; welders must comply with both. Personnel who are covered by an ASNT-TC1A NDT certification program and hold a current certification meet the qualification requirements for this covered task.

### **D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within three (3) years based on the following:

<u>Task Frequency Performed</u>	<u>0-6 months</u>
<u>Complexity of Task</u>	<u>Medium</u>
<u>Risk or Consequence of Performing Task Incorrectly</u>	<u>High</u>

In addition to Subpart N requirements, non-destructive testing technicians are subject to qualification requirements found at 49 CFR 192.243(b)(2), however the latter requirements should be adequate to meet Subpart N requirements.

### **D. Subsequent Qualification Interval:**

The subsequent qualification interval is per regulation requirements.

### **E. Abnormal Operating Conditions:**

Refer to Task 70

### **F. Evaluation Method(s)**

Knowledge (Written or Oral for reasonable accommodations)

## COVERED TASK #54: Welding on a Pipeline

### **A. Task Description:**

The process of joining~~Connecting~~ steel pipe by welding.

### **B. Application of the three part test for covered tasks:**

This is performed on a pipeline facility;

This is performed as a requirement of 49 CFR 192.227~~5~~, 192.229, 192.231, 192.233, and 192.235; and

This can affect the operation or integrity of the pipeline.

### **C. Discussion:**

Subpart N does not replace existing 6 month non-destructive or annual destructive welding qualification requirements found in Subpart E; welders must comply with both.

### **D. Subsequent Qualification Interval:**

The subsequent qualification interval for the knowledge component has been determined to be within three (3) years based on the following:

<u>Task Frequency Performed</u>	<u>0-6 months</u>
<u>Complexity of Task</u>	<u>Medium</u>
<u>Risk or Consequence of Performing Task Incorrectly</u>	<u>High</u>

The subsequent qualification interval is per regulation requirements.

### **E. Abnormal Operating Conditions:**

Refer to Task 70

### **F. Evaluation Method(s)**

1. Knowledge (Written or Oral for reasonable accommodations);
2. Skill (Simulation, Demonstration, or other); and
3. Ability.

## COVERED TASK #55: Maintain a Pipeline Compressor Station

### **A. Task Description:**

~~This task includes the regular and r~~The routine maintenance associated with pipeline compressor stations. ~~Steps m~~May be performed on-site or from a remote location. ~~This does not include gas compressors at CNG refueling stations, air compressors powering pneumatic tools or used for other purposes, or other non-pipeline compressors.~~

### **B. Application of the three part test for covered tasks:**

This task is performed on a pipeline facility;

This task is performed as a requirement under 49 CFR 192.605, 192.731, [192.735](#), and 192.736; and

This task can affect the operation or integrity of the pipeline.

### **C. Discussion:**

~~This does not include gas compressors at CNG refueling stations, air compressors powering pneumatic tools or used for other purposes, or other non-pipeline compressors.~~

### **D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within three (3) years based on the following:

Task Frequency Performed	6-12 months
Complexity of Task	High
Risk or Consequence of Performing Task Incorrectly	High

### **E. Abnormal Operating Conditions:**

- ~~1. Refer to Task 70;~~
- ~~2. Engine malfunction;~~
- ~~3. Compressor malfunction; and~~
- ~~4. Malfunction of emergency shutdown system.~~

### **F. Evaluation Method(s)**

1. Knowledge (Written or Oral for reasonable accommodations); and
2. Skill (Simulation, Demonstration, or other).

## **COVERED TASK #56: Operating a Pipeline Compressor Station**

### **A. Task Description:**

~~All activities associated with the operations of a pipeline compressor station. This task applies only to facilities with pipeline compressor stations. Steps M may be performed on-site or from a remote location. This does not include gas compressors at CNG refueling stations, air compressors powering pneumatic tools or used for other purposes, or other non-pipeline compressors.~~

### **B. Application of the three part test for covered tasks:**

This task is performed on a pipeline facility;  
This task is performed as a requirement under 49 CFR 192.605; and  
This task can affect the operation or integrity of the pipeline.

### **C. Discussion:**

~~This does not include gas compressors at CNG refueling stations, air compressors powering pneumatic tools or used for other purposes, or other non-pipeline compressors.~~

### **D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within three (3) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	Medium
Risk or Consequence of Performing Task Incorrectly	High

### **E. Abnormal Operating Conditions:**

- ~~1. Refer to Task 70;~~
- ~~2. Start-up malfunction;~~
- ~~3. Shut-down malfunction;~~
- ~~4. Extreme changes in pressure, flow, or temperature parameters; and~~
- ~~5. Auxiliary equipment malfunction.~~

### **F. Evaluation Method(s)**

1. Knowledge (Written or Oral for reasonable accommodations); and
2. Skill (Simulation, Demonstration, or other).

## COVERED TASK #57: Repair a Compressor

### **A. Task Description:**

~~This task includes the major~~Major maintenance and overhaul associated with pipeline compressors stations. ~~This does not include gas compressors at CNG refueling stations, air compressors powering pneumatic tools or used for other purposes, or other non-pipeline compressors.~~

### **B. Application of the three part test for covered tasks:**

This task is performed on a pipeline facility;

This task is performed as a requirement under 49 CFR 192.605 ~~and 49 CFR 192.734~~;

and

This task can affect the operation or integrity of the pipeline.

### **C. Discussion:**

~~This does not include gas compressors at CNG refueling stations, air compressors powering pneumatic tools or used for other purposes, or other non-pipeline compressors.~~

### **D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within three (3) years based on the following:

Task Frequency Performed	6-12 months
Complexity of Task	High
Risk or Consequence of Performing Task Incorrectly	High

### **E. Abnormal Operating Conditions:**

~~1. Refer to Task 70;~~

~~2. Engine malfunction;~~

~~3. Compressor malfunction; and~~

~~4. Air intake system malfunction.~~

### **F. Evaluation Method(s)**

1. Knowledge (Written or Oral for reasonable accommodations); and

2. Skill (Simulation, Demonstration, or other).

**COVERED TASK #58: Maintaining Gas Detection Systems and Alarms in Compressor Stations**

**A. Task Description:**

Testing, calibrating and maintaining gas detection equipment in compressor stations.

**B. Application of the three part test for covered tasks:**

This is performed on a pipeline facility;

This is performed as a requirement of 49 CFR 192.736; and

This can affect the operation or integrity of the pipeline.

**C. Discussion:**

**D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within three (3) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	Medium
Risk or Consequence of Performing Task Incorrectly	High

**E. Abnormal Operating Conditions:**

~~1. Refer to Task 70~~

~~and~~

~~2. Alarm malfunction.~~

**F. Evaluation Method(s)**

1. Knowledge (Written or Oral for reasonable accommodations); and

2. Skill (Simulation, Demonstration, or other).

## **COVERED TASK #59: Controlling and Monitoring Gas Pressures and Flows**

### **A. Task Description:**

Gas control or dispatching to distribute gas throughout the distribution system, maintaining adequate flow and pressure to all customers. This may include monitoring flow and pressure indicators, responding to alarms, ensuring adequate pressures in all parts of the distribution system and remotely opening and closing valves or operating other equipment.

### **B. Application of the three part test for covered tasks:**

This is performed on a pipeline facility;

This is required under 49 CFR 192.619, .621, or .623; and

This can affect the operation or integrity of the pipeline.

### **C. Discussion:**

Even at a control room remote from the pipeline, the switches, gauges and alarms are connected to the components that they monitor and/or operate and therefore are considered part of the pipeline facility.

49 CFR 192.619, 621 and 623 require that pressures be maintained at or below the MAOP.

### **D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within three (3) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	Medium
Risk or Consequence of Performing Task Incorrectly	High

### **E. Abnormal Operating Conditions:**

~~1. Refer to Task 70;~~

~~2. High/low flow alarm;~~

~~3. Fluctuating flow rate or pressure; and~~

~~4. Inability to raise/lower system pressure or flow.~~

### **F. Evaluation Method(s)**

Knowledge (Written or Oral for reasonable accommodations)

## **COVERED TASK #60: Operation of Remote Control Valves**

### **A. Task Description:**

Using telemetry to send signals to operate remotely controlled valves.

### **B. Application of the three part test for covered tasks:**

This is performed on a pipeline facility;

This is performed as a requirement of 49 CFR 192.619, 621 and 623; and

This can affect the operation or integrity of the pipeline.

### **C. Discussion:**

Even though the operator may be in a control room or even using a modem to send the signal to cause the valve to close, the switches or buttons to operate these valves are appurtenances to the pipeline just as is a wheel on the valve itself, and therefore are a pipeline facility. Opening and closing valves is an operations task. ~~Valve opening and closing can affect operating pressure, which is specifically regulated in 49 CFR 192. This task was specifically considered by the reg neg committee. In fact, since many of the accidents cited by NTSB to justify this rule involved errors in the operation or non-operation of remotely controlled valves, this was a litmus test whether the regulation was acceptable.~~

### **D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within five (5) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	Low
Risk or Consequence of Performing Task Incorrectly	High

### **E. Abnormal Operating Conditions:**

Refer to Task 70

### **F. Evaluation Method(s)**

Knowledge (Written or Oral for reasonable accommodations)

## COVERED TASK #61: Inspect Recording Gauge

### **A. Task Description:**

Inspection of the recording gauge. This task is generally performed in conjunction with "Regulator Station Inspection" covered task. However, if assigned independent of that covered tasks, "Inspect Recording Gauge" task may include:

- Verify pen remains on line throughout entire range sweep
- Pressurize gauge to normal range, verify recorder calibration
- Adjust span, if necessary to calibrate
- Blow down pressure to zero and confirm chart reading
- Zero recorder, if necessary
- Inspect gauge lines and mount
- Inspect for water tight seal.

### **B. Application of the three part test for covered tasks:**

This task is performed on a pipeline facility;

This task is performed as a requirement under 49 CFR 192.739 and 192.741, ~~and~~ 49 CFR 192.743; and

This task can affect the operation or integrity of the pipeline.

### **C. Discussion:**

This task is generally performed in conjunction with "Regulator Station Inspection" covered task. However, if assigned independent of that covered tasks, "Inspect Recording Gauge" task may include:

- Verify pen remains on line throughout entire range sweep
- Pressurize gauge to normal range, verify recorder calibration
- Adjust span, if necessary to calibrate
- Blow down pressure to zero and confirm chart reading
- Zero recorder, if necessary
- Inspect gauge lines and mount
- Inspect for water tight seal.

### **D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within five (5) years based on the following:

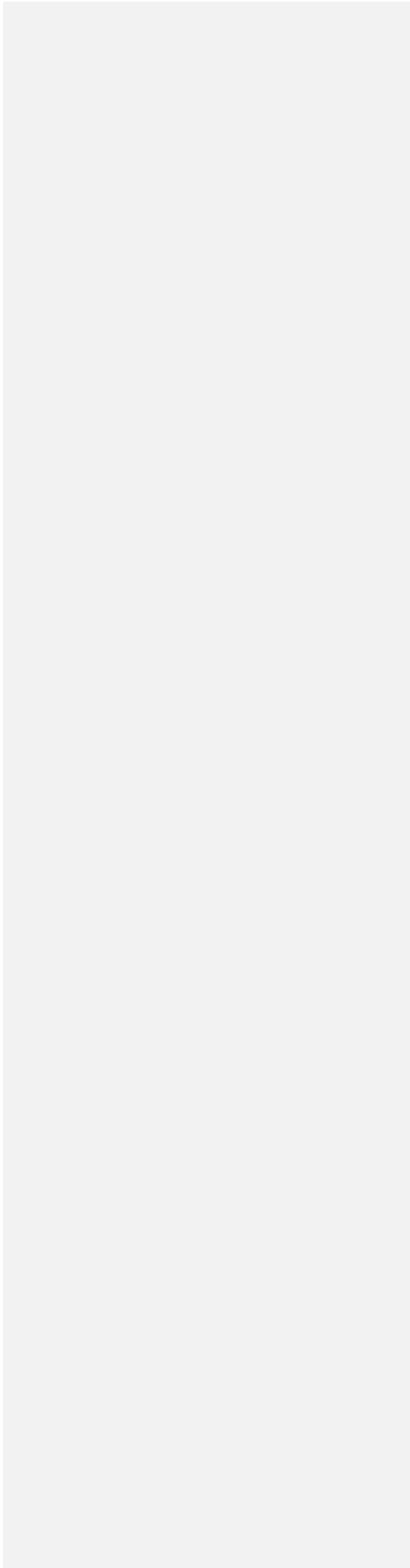
Task Frequency Performed	0-6 months
Complexity of Task	Medium
Risk or Consequence of Performing Task Incorrectly	Medium

### **E. Abnormal Operating Conditions:**

Refer to Task 70

***F. Evaluation Method(s)***

Knowledge (Written or Oral for reasonable accommodations)



**COVERED TASK #62: Inspect and Test Pressure Regulator Station**

**A. Task Description:**

Inspection and testings of equipment located at pressure regulator stations.

**B. Application of the three part test for covered tasks:**

This task is performed on a pipeline facility;

This task is performed as a requirement under 49 CFR 192.739 and 192.741—and 49 CFR 192.743; and

This task can affect the operation or integrity of the pipeline.

**C. Discussion:**

**D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within three (3) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	High
Risk or Consequence of Performing Task Incorrectly	High

**E. Abnormal Operating Conditions:**

Refer to Task 70

**F. Evaluation Method(s)**

1. Knowledge (Written or Oral for reasonable accommodations); and
2. Skill (Simulation, Demonstration, or other).

## **COVERED TASK #63: Install and Test Overpressure Protection**

### **A. Task Description:**

Verify~~ing~~ that pressure regulators and relief valves designed to prevent pressure from exceeding the MAOP ~~of the downstream piping is~~are set to operate at the proper pressure and ~~are~~is working properly.

### **B. Application of the three part test for covered tasks:**

This task is performed on a pipeline facility;

This task is performed as a requirement under ~~49 CFR 192.605, 49 CFR 192.731, 49 CFR 192.739 and 192.743~~; and

This task can affect the operation or integrity of the pipeline.

### **C. Discussion:**

#### **D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within three (3) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	High
Risk or Consequence of Performing Task Incorrectly	High

#### **E. Abnormal Operating Conditions:**

Refer to Task 70

#### **F. Evaluation Method(s)**

1. Knowledge (Written or Oral for reasonable accommodations); and
2. Skill (Simulation, Demonstration, or other).

## **COVERED TASK #64: Inspect Telemetry Equipment at a Pressure Limiting or Regulating Station**

### **A. Task Description:**

~~Gas operators use~~ Inspection of telemetry devices ~~in a number of applications; used~~ to transmit for example, temperature, pressure, flow rate, ~~etc~~ readings from a remote location to a designated ~~Gas company~~ facility. ~~The only mention of telemetry in 49 CFR Part 192 is, however, for telemetry at pressure limiting and regulating stations.~~ Inspections may include:  
~~Operating, testing and maintaining instruments used for telemetry;~~  
~~Verifying that the pressure reading matches the actual pressure; and~~  
~~Verifying that the signal output matches the pressure reading.~~

### **B. Application of the three part test for covered tasks:**

This task is performed on a pipeline facility;  
This task is performed as a requirement under 49 CFR 192.741; and  
This task can affect the operation or integrity of the pipeline.

### **C. Discussion:**

Inspecting telemetry equipment on pressure limiting and regulating stations is required by 49 CFR Part 192.741, however inspecting telemetry equipment in other applications on the gas pipeline system is NOT required by any provision in Part 192. Inspecting telemetry equipment other than at pressure limiting and regulating stations therefore is NOT a covered task. Inspections may include:

- Operating, testing and maintaining instruments used for telemetry;
- Verifying that the pressure reading matches the actual pressure; and
- Verifying that the signal output matches the pressure reading.

### **D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within three (3) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	High
Risk or Consequence of Performing Task Incorrectly	High

### **E. Abnormal Operating Conditions:**

Refer to Task 70

### **F. Evaluation Method(s)**

1. Knowledge (Written or Oral for reasonable accommodations); and
2. Skill (Simulation, Demonstration, or other).

**COVERED TASK #65: Bypass a Regulator**

**A. Task Description:**

Install and/or regulate the flow of gas around a pressure regulator during maintenance of the regulator or for other reasons.

**B. Application of the three part test for covered tasks:**

This is performed on a pipeline facility;

This is performed as a requirement of 49 CFR 192.619, 621 or 623; and

This can affect the operation or integrity of the pipeline.

**C. Discussion:**

**D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within three (3) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	Medium
Risk or Consequence of Performing Task Incorrectly	High

**E. Abnormal Operating Conditions:**

Refer to Task 70

**F. Evaluation Method(s)**

Knowledge (Written or Oral for reasonable accommodations)

**COVERED TASK #66: Field Interpretation of Pressure Recording Charts**

**A. Task Description:**

While on the pipeline facility, reviewing the recording chart at a pressure regulating station to determine if it is operating properly.

**B. Application of the three part test for covered tasks:**

This task is performed on a pipeline facility;  
This task is performed as a requirement of 49 CFR 192.741; and  
This can affect the operation or integrity of the pipeline.

**C. Discussion:**

If a person evaluates the recording chart while on-site, this is covered and that person must be qualified. Evaluation off the pipeline facility is ~~not on a pipeline facility and is~~ not a covered task.

**D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within three (3) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	Medium
Risk or Consequence of Performing Task Incorrectly	High

**E. Abnormal Operating Conditions:**

- 1. Refer to Task 70; and
- 2. ~~Chart does not conform to normal regulation flow characteristics.~~

**F. Evaluation Method(s)**

Knowledge (Written or Oral for reasonable accommodations)

## **COVERED TASK #67: Inspecting a Pressure Regulator Vault**

### **A. Task Description:**

Inspect the physical condition of a vault that contains a pressure regulator or relief valve.

### **B. Application of the three part test for covered tasks:**

This task is performed on a pipeline facility;  
This task is performed as a requirement of 49 CFR 192.749; and  
This can affect the operation or integrity of the pipeline.

### **C. Discussion:**

49 CFR 192.749 only applies to vaults containing pressure-regulating or limiting devices. Other vault inspections are not regulated.

### **D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within five (5) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	Low
Risk or Consequence of Performing Task Incorrectly	Medium

### **E. Abnormal Operating Conditions:**

- ~~1. Refer to Task 70;~~
- ~~2. Gas or other hazardous atmosphere is found in vault;~~
- ~~3. Vault inaccessible;~~
- ~~4. Vent device missing, damaged or plugged; and~~
- ~~5. Structural integrity of facility compromised.~~

### **F. Evaluation Method(s)**

Knowledge (Written or Oral for reasonable accommodations)

## COVERED TASK #68: Operating an Odorizer

### **A. Task Description:**

Controlling the amount of odorant added to the flowing gas by filling and adjusting an odorizer.

### **B. Application of the three part test for covered tasks:**

This is performed on a pipeline facility;  
This is required by 49 CFR 192.625; and  
This can affect the integrity of the pipeline.

### **C. Discussion:**

~~49 CFR Part 192.625 requires that natural gas be odorized so as to be detected at 1/5 the lower flammable limit (approximately 1% gas in air). Therefore tasks related to proper operation of an odorizer are regulated under this section. Proper odorization can affect the operation or integrity of the pipeline because lack of odorant could allow a flammable gas atmosphere in or near a pipeline to go undetected, potentially resulting in a fire that damages the pipeline.~~

### **D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within three (3) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	Medium
Risk or Consequence of Performing Task Incorrectly	High

### **E. Abnormal Operating Conditions:**

- ~~1. Refer to Task 70;~~
- ~~2. Vapor release;~~
- ~~3. Spill; and~~
- ~~4. Overfill tank.~~

### **F. Evaluation Method(s)**

Knowledge (Written or Oral for reasonable accommodations)

## COVERED TASK #69: Monitor Natural Gas Odorization Levels

### **A. Task Description:**

Measuring and recording the concentration of odorant in natural gas. ~~Odorant monitoring task requires the use of special equipment capable of detecting and measuring the level of odorant in natural gas.~~

### **B. Application of the three part test for covered tasks:**

This task is performed on a pipeline facility;

This task is performed as a requirement under ~~49 CFR 192.615 and~~ 49 CFR 192.625; and

This task can affect the operation or integrity of the pipeline.

### **C. Discussion:**

~~Odorant monitoring task requires the use of special equipment capable of detecting and measuring the level of odorant in natural gas.~~

### **D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within five (5) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	Low
Risk or Consequence of Performing Task Incorrectly	High

### **E. Abnormal Operating Conditions:**

Refer to Task 70

### **F. Evaluation Method(s)**

1. Knowledge (Written or Oral for reasonable accommodations); and
2. Ability.

## **TASK #70: Abnormal Operating Conditions and Properties of Natural Gas**

### **A. Task Description:**

An abnormal operating condition that can occur during the performance of any covered task. ~~Abnormal operating conditions specific to a covered task are addressed in the material pertaining to that covered task.~~

Properties of natural gas important in the performance of covered tasks.

### **B. Application of the three part test for covered tasks:**

This is not performed on a pipeline facility;  
This is ~~not~~ required under 49 CFR 192.475803; and  
This can affect the operation or integrity of the pipeline.

### **C. Discussion:**

### **D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within three (3) years based on the following:

Task Frequency Performed	6-12 months
Complexity of Task	Medium
Risk or Consequence of Performing Task Incorrectly	High

### **E. Abnormal Operating Conditions:**

1. Over pressure – Pressure that exceeds the operating limits of the gas system;
2. Inadequate Pressure – Pressure that falls below the normal operating requirements of the gas system;
3. Unintentional ignition – The uncontrolled ignition of gas;
4. Explosion;
5. Component failure – Failure of a component of the pipeline to perform in the manner for which it was designed;
6. Damage to facility – Any damage to a pipeline component;
7. Improper odorization – Excessive or inadequate odorization of a gas system; and
8. Escaping/blowing gas – Any unplanned, uncontrolled escape of gas.

### **F. Evaluation Method(s)**

Knowledge (Written or Oral for reasonable accommodations)

**COVERED TASK #71: Operator Excavation and Backfilling in the Vicinity of a Pipeline**

**A. Task Description:**

An operation performed by the Operator in the vicinity (tolerance zone) of a transmission or distribution gas facility which has as its purpose the powered or mechanized removal of earth for the maintenance or installation of a pipeline. This does not include 3<sup>rd</sup> party, municipal, developer or other entities performing excavation.

**B. Application of the three part test for covered tasks:**

This task is performed on a pipeline facility;

This task is ~~not~~ performed as a requirement under 49 CFR 192.327, 192.361, and 192.605; and

This task can affect the operation or integrity of the pipeline.

**C. Discussion:**

Includes providing adequate pipeline support during excavation and backfilling

**D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within five (5) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	Low
Risk or Consequence of Performing Task Incorrectly	High

**E. Abnormal Operating Conditions:**

Refer to Task 70

**F. Evaluation Method(s)**

1. Knowledge (Written or Oral for reasonable accommodations)

**G. Critical Elements/Skill Set:**

- ~~1. Knowledge of one call system;~~
- ~~2. Recognize location of gas pipeline facility; and~~
- ~~3. Knowledge of excavation and backfilling requirements.~~

## **COVERED TASK #72: Installation of Customer Meters and Regulators**

### **A. Task Description:**

This task includes location of and hanging/setting the meter set.

### **B. Application of the three part test for covered tasks:**

This task is performed on a pipeline facility;

This task is ~~not~~ performed as a requirement under 49 CFR 192.353, 192.355, and 192.357; and

This task can affect the operation or integrity of the pipeline.

### **C. Discussion:**

Attaching a meter bracket is not part of this task.

### **D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within five (5) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	Low
Risk or Consequence of Performing Task Incorrectly	High

### **E. Abnormal Operating Conditions:**

Refer to Task 70

### **F. Evaluation Method(s)**

1. Knowledge (Written or Oral for reasonable accommodations)

**Covered Task #73: Inspecting and maintaining air compressors at LP-Air plants**

**A. Task Description:**

Checking oil, drive belts, oil pumps, cooling water temperature, shear pins, etc to ensure proper operation of an air compressor.

**B. Application of the three part test for covered tasks:**

This task is performed on a pipeline facility;

This task is performed as a requirement under 49 CFR 192.605 and NFPA 59; and

This task can affect the operation or integrity of the pipeline.

**C. Discussion:**

Section 12.1.3 requires that manufacturers preventive maintenance routines and schedules be included in the operators maintenance manual, therefore this meets the intent of the 3<sup>rd</sup> test under 49 CFR Part 192 Subpart N. This task does not include air compressor repairs.

**D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within five (5) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	Medium
Risk or Consequence of Performing Task Incorrectly	Low

**E. Abnormal Operating Conditions:**

Refer to Task 70P

**F. Evaluation Method(s)**

Knowledge (Written or Oral for reasonable accommodations)

**Covered Task #74: Inspecting and maintaining instrument air dryers at LP-Air plants**

**A. Task Description:**

Check the air dryer for proper operation. Ensure that the desiccant is effective.

**B. Application of the three part test for covered tasks:**

This task is performed on a pipeline facility;

This task is performed as a requirement under 49 CFR 192.605 and NFPA 59; and

This task can affect the operation or integrity of the pipeline.

**C. Discussion:**

Section 12.1.3 requires that manufacturers preventive maintenance routines and schedules be included in the operators maintenance manual, therefore this meets the intent of the 3<sup>rd</sup> test under 49 CFR Part 192 Subpart N.

**D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within five (5) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	Medium
Risk or Consequence of Performing Task Incorrectly	Low

**E. Abnormal Operating Conditions:**

Refer to Task 70P

**F. Evaluation Method(s)**

Knowledge (Written or Oral for reasonable accommodations)

**Covered Task #75: Inspecting and maintaining emergency shutoff systems at LP-Air plants**

**A. Task Description:**

Ensure that automatic shutdown sensors, controls and valves are operating properly, i.e. nitrogen supply bottles.

**B. Application of the three part test for covered tasks:**

This task is performed on a pipeline facility;

This task is performed as a requirement under 49 CFR 192.605 and NFPA 59; and

This task can affect the operation or integrity of the pipeline.

**C. Discussion:**

Section 12.1.3 requires that manufacturers preventive maintenance routines and schedules be included in the operators maintenance manual, therefore this meets the intent of the 3<sup>rd</sup> test under 49 CFR Part 192 Subpart N.

**D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within three (3) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	High
Risk or Consequence of Performing Task Incorrectly	High

**E. Abnormal Operating Conditions:**

Refer to Task 70P

**F. Evaluation Method(s)**

Knowledge (Written or Oral for reasonable accommodations)

**Covered Task #76: Maintaining fire protection systems at LP-Air plants**

**A. Task Description:**

Ensuring that fire detection and suppression systems are in good working order. Maintenance should strive to ensure that maintenance takes a minimum of equipment out of service at any one time.

**B. Application of the three part test for covered tasks:**

This task is performed on a pipeline facility;

This task is performed as a requirement under 49 CFR 192.605 and NFPA 59; and

This task can affect the operation or integrity of the pipeline.

**C. Discussion:**

This task does not include the inspection of fire protection systems.

**D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within three (3) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	Medium
Risk or Consequence of Performing Task Incorrectly	High

**E. Abnormal Operating Conditions:**

Refer to Task 70P

**F. Evaluation Method(s)**

Knowledge (Written or Oral for reasonable accommodations)

**Covered Task #77: Inspecting and maintaining storage tanks, piping, valves and fittings at LP-Air plants**

**A. Task Description:**

Inspecting and maintaining LPG storage tanks, piping, valves, and fittings at LP-Air peaking plants for corrosion, leaks and other damage that could impair serviceability. Also includes the operations of relief valves.

**B. Application of the three part test for covered tasks:**

This task is performed on a pipeline facility;

This task is performed as a requirement under 49 CFR 192.605 and NFPA 59; and

This task can affect the operation or integrity of the pipeline.

**C. Discussion:**

Section 12.1.3 requires that manufacturers preventive maintenance routines and schedules be included in the operators maintenance manual, therefore this meets the intent of the 3<sup>rd</sup> test under 49 CFR Part 192 Subpart N.

**D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within three (3) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	Medium
Risk or Consequence of Performing Task Incorrectly	High

**E. Abnormal Operating Conditions:**

Refer to Task 70P

**F. Evaluation Method(s)**

Knowledge (Written or Oral for reasonable accommodations)

**Covered Task #78: Inspecting and maintaining vapor compressors at LP-Air plants**

**A. Task Description:**

Checking oil levels, valve positions, etc on vapor compressors.

**B. Application of the three part test for covered tasks:**

This task is performed on a pipeline facility;

This task is performed as a requirement under 49 CFR 192.605 and NFPA 59; and

This task can affect the operation or integrity of the pipeline.

**C. Discussion:**

Section 12.1.3 requires that manufacturers preventive maintenance routines and schedules be included in the operators maintenance manual, therefore this meets the intent of the 3<sup>rd</sup> test under 49 CFR Part 192 Subpart N.

**D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within five (5) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	Medium
Risk or Consequence of Performing Task Incorrectly	Medium

**E. Abnormal Operating Conditions:**

Refer to Task 70P

**F. Evaluation Method(s)**

Knowledge (Written or Oral for reasonable accommodations)

**Covered Task #79: Inspecting, operating and maintaining vapor detection systems at LP-Air plants**

**A. Task Description:**

Ensure that stationary flammable gas detection systems and alarms are working properly. Test alarms.

**B. Application of the three part test for covered tasks:**

This task is performed on a pipeline facility;

This task is performed as a requirement under 49 CFR 192.605 and NFPA 59; and

This task can affect the operation or integrity of the pipeline.

**C. Discussion:**

Section 12.1.3 requires that manufacturers preventive maintenance routines and schedules be included in the operators maintenance manual, therefore this meets the intent of the 3<sup>rd</sup> test under 49 CFR Part 192 Subpart N.

**D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within three (3) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	Medium
Risk or Consequence of Performing Task Incorrectly	High

**E. Abnormal Operating Conditions:**

Refer to Task 70P

**F. Evaluation Method(s)**

Knowledge (Written or Oral for reasonable accommodations)

**Covered Task #80: Inspecting and maintaining propane vaporizers at LP-Air plants**

**A. Task Description:**

Checking fluid levels, proper operation of burners, inspect for leaks and inspect knockout drum levels.

**B. Application of the three part test for covered tasks:**

This task is performed on a pipeline facility;

This task is performed as a requirement under 49 CFR 192.605 and NFPA 59; and

This task can affect the operation or integrity of the pipeline.

**C. Discussion:**

Section 12.1.3 requires that manufacturers preventive maintenance routines and schedules be included in the operators maintenance manual, therefore this meets the intent of the 3<sup>rd</sup> test under 49 CFR Part 192 Subpart N.

**D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within three (3) years based on the following:

Task Frequency Performed	≥ 12 months
Complexity of Task	Medium
Risk or Consequence of Performing Task Incorrectly	Medium

**E. Abnormal Operating Conditions:**

Refer to Task 70P

**F. Evaluation Method(s)**

Knowledge (Written or Oral for reasonable accommodations)

**Covered Task #81: Load, unload and transfer liquid propane at LP-Air plants**

**A. Task Description:**

Moving propane between tank truck, rail car, and/or on-site storage containers. This does not include loading liquid propane into trucks or other vehicles associated with retail propane sales operations, even if drawing propane from the same tanks as used by the peakshaving plant. Elements of this task include (Not all steps are performed by every operator. Steps are included only to assist users of this document to match tasks described in this document with tasks performed on each operator's system):

- Perform proper grounding procedures
- Connecting and disconnecting hoses
- Inspection of hoses and fittings
- Liquid pumps
- Valve sequencing
- Verification of gas tightness of connections and fittings
- Purging

**B. Application of the three part test for covered tasks:**

This task is performed on a pipeline facility;

This task is performed as a requirement under 49 CFR 192.605 and NFPA 59; and

This task can affect the operation or integrity of the pipeline.

**C. Discussion:**

Some operators use the same tanks for storing propane for separate propane sales operations. Persons filling trucks for purposes unrelated to the operation of the peakshaving facility are not performing covered tasks subject to the operator qualification rule, however they may be subject to qualification requirements under hazardous material transportation regulations or other state or federal regulations.

**D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within three (3) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	Medium
Risk or Consequence of Performing Task Incorrectly	High

**E. Abnormal Operating Conditions:**

Refer to Task 70P

**F. Evaluation Method(s)**

Knowledge (Written or Oral for reasonable accommodations)

**Covered Task #82: Inspecting and Maintaining Auxiliary Power Sources at LP-Air Plants**

**A. Task Description:**

Inspecting and maintaining electrical generators and the drivers. This includes at least a monthly test to verify the auxiliary power source is operable.

**B. Application of the three part test for covered tasks:**

This task is performed on a pipeline facility;

This task is performed as a requirement under 49 CFR 192.605 and NFPA 59 12.3; and

This task can affect the operation or integrity of the pipeline.

**C. Discussion:**

**D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within three (5) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	Low
Risk or Consequence of Performing Task Incorrectly	Low

**E. Abnormal Operating Conditions:**

Refer to Task 70P

**F. Evaluation Method(s)**

1. Knowledge (Written or Oral for reasonable accommodations); and

## Covered Task #83: Operating a propane air plant

### A. Task Description:

Starting and stopping air compressors, vapor compressors and other equipment at a propane-air plant. Elements may include (Not all steps are performed by every operator. Steps are included only to assist users of this document to match tasks described in this document with tasks performed on each operator's system):

- Starting air compressors, vaporizers, flow controllers, etc and opening valves in the proper sequence to begin sending propane-air mixtures into the distribution system.
  - Checking tank pressures
  - Starting air compressors
  - Checking for proper valve positions
  - Adjusting flow controller set points
  - Adjusting specific gravity controller set points
  - Starting up vaporizers
- Shutting down air compressors, vaporizers, flow controllers, etc and closing valves in the proper sequence to stop sending propane-air mixtures into the distribution system or reduce LP-air output to an "idle rate".
- Operating the controllers that control the mixing of propane vapor with air to the desired Btu content to ensure interchangeability when mixed with natural gas in the distribution system

### B. Application of the three part test for covered tasks:

This task is performed on a pipeline facility;

This task is performed as a requirement under 49 CFR 192.605 and NFPA 59; and

This task can affect the operation or integrity of the pipeline.

### C. Discussion:

Task also includes security procedures currently conducted by gas operations personnel only. It does not include functions performed by third-party security personnel.

### D. Subsequent Qualification Interval:

The subsequent qualification interval has been determined to be within three (3) years based on the following:

Task Frequency Performed	0-6 months
Complexity of Task	High
Risk or Consequence of Performing Task Incorrectly	High

### E. Abnormal Operating Conditions:

Refer to Task 70P

### F. Evaluation Method(s)

1. Knowledge (Written or Oral for reasonable accommodations); and
2. Skill (Simulation, Demonstration, or other).

## **Covered Task #84: Bending of Steel Pipe**

### **A. Task Description:**

This task includes the field bending of steel pipe as specified and inspection of completed field bends.

### **B. Application of the three part test for covered tasks:**

This task is performed on a pipeline facility;

This task is performed as a requirement under 49 CFR 192.313 and 192.315; and

This task can affect the operation or integrity of the pipeline.

### **C. Discussion:**

Refer to GPTC Guide material 192.313 Bends and elbows, for evaluation guidelines.

### **D. Subsequent Qualification Interval:**

The subsequent qualification interval has been determined to be within five (5) years based on the following:

<u>Task Frequency Performed</u>	<u>0-6 months</u>
<u>Complexity of Task</u>	<u>Low</u>
<u>Risk or Consequence of Performing Task Incorrectly</u>	<u>Medium</u>

### **E. Abnormal Operating Conditions:**

Refer to Task 70

### **F. Evaluation Method(s)**

1. Knowledge (Written or Oral for reasonable accommodations)

# **APPENDIX C**

## **Statutory Authority and Regulatory History**

[Federal Register: August 27, 1999 (Volume 64, Number 166)]  
[Rules and Regulations]  
[Page 46853-46867]

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DEPARTMENT OF TRANSPORTATION

Research and Special Programs Administration  
49 CFR Parts 192 and 195  
[Docket No. RSPA-98-3783; Amendment 192-86; 195-67]  
RIN 2137-AB38

Pipeline Safety: Qualification of Pipeline Personnel

AGENCY: Research and Special Programs Administration (RSPA); Office of Pipeline Safety (OPS).

ACTION: Final rule.

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SUMMARY: This final rule requires pipeline operators to develop and maintain a written qualification program for individuals performing covered tasks on pipeline facilities. The intent of this qualification rule is to ensure a qualified work force and to reduce the probability and consequence of incidents caused by human error. This final rule creates new subparts in the gas and hazardous liquid pipeline safety regulations. It establishes qualification requirements for individuals performing covered tasks, and amends certain training requirements in the hazardous liquid regulations. This final rule was developed through a negotiation process.

DATES: This final rule will be effective on October 26, 1999.

SUPPLEMENTARY INFORMATION:

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### I. Introduction

Although no regulatory program is capable of completely eliminating human error, the objective of this final rule is to reduce the risk of accidents on pipeline facilities attributable to human error. This final rule for the qualification of individuals is intended to provide an additional level of safety. This final rule does not replace existing

qualification requirements in 49 CFR Part 192. However, it does remove the operations and maintenance training requirements of 195.403. The final rule does not diminish the importance of the safety requirements already in the pipeline safety regulations. These include requirements for safety design features, such as relief valves and over-pressure protection devices, to provide protection against human error and other causes of incidents and accidents.

The final rule requires operators of pipelines to develop a qualification program to evaluate an individual's ability to perform covered tasks, and to recognize and react to abnormal operating conditions that may occur while performing covered tasks.

The final rule also sets recordkeeping requirements that operators must follow to successfully demonstrate compliance, and the information that must be maintained on each individual who has been evaluated and deemed qualified to work on a pipeline facility. Finally, the final rule specifies the deadlines by which operators must develop and implement their qualification programs.

This final rule allows operators with existing programs to modify those programs if necessary to ensure compliance with the minimum requirements of this final rule. The final rule also requires operators without a qualification program to establish a program to evaluate the qualifications of individuals performing certain operation and maintenance activities on those pipeline facilities that could affect pipeline operation or integrity.

This final rule establishes a new Subpart N in 49 CFR Part 192 and a new Subpart G in 49 CFR part 195. The final rule amends the training regulations in 49 CFR 195.403. The emergency response training requirements remain as they appear in 49 CFR 195.403.

## II. Statutory Authority and Regulatory History

Sections 106 and 205 of the Pipeline Safety Act of 1992 (Pub. L. No. 102-508) required the Department of Transportation to establish regulations requiring that "all individuals responsible for the operation and maintenance of pipeline facilities be tested for qualifications and certified to operate and maintain those facilities."

On August 3, 1994, RSPA published a notice of proposed rulemaking to establish specific training requirements for the qualification of pipeline workers (59 FR 39506). This proposal would have introduced qualification standards for personnel that perform, or supervise persons performing, regulated operations, maintenance, and emergency response functions. The purpose of the proposal was to improve pipeline safety by requiring operators to ensure the competency of pipeline personnel through training, testing, and periodic refresher training.

In response to this notice, RSPA received 131 comments that expressed a wide variety of interests and concerns. Most commenters asserted that the proposal should have taken a more general approach to qualification with broad requirements for persons performing "safety related" functions. Commenters stated that the proposal was too prescriptive and that the many references to training requirements should be modified to focus the proposal on actual qualification, rather than on the method(s) of achieving qualification.

OPS' technical advisory committees, the Technical Pipeline Safety Standards Committee and the Technical Hazardous Liquid Pipeline Safety Standards Committee, disapproved of the proposal. These Committees passed several motions for amendments to the proposal. These motions were generally consistent with the written comments.

Subsequently, the Pipeline Safety Act was amended to require that "all individuals who operate and maintain pipeline facilities shall be qualified to operate and maintain the pipeline facilities" (49 U.S.C. 60102(a)). This Act also requires that the "qualifications applicable to an individual who operates and maintains a pipeline facility shall address the ability to recognize and react appropriately to abnormal operating conditions that may indicate a dangerous situation or a condition exceeding design limits" (49 U.S.C. 60102(a)).

Following review of the comments to the 1994 proposed rulemaking, as well as recommendations by the Technical Advisory Committees, and a petition for withdrawal and alternative proposal submitted collectively by the American Gas Association, the American Public Gas Association, and the Southern Gas Association, RSPA decided that a regulatory process other than traditional rulemaking would better address the issues surrounding operator qualifications. Consequently, RSPA issued a Notice of Withdrawal of the 1994 proposed rulemaking (61 FR 34413; July 22, 1996) and simultaneously issued a Notice of Intent to form a negotiated rulemaking committee to develop a final rule on the qualification of pipeline personnel (61 FR 34410; July 22, 1996).

### III. Negotiated Rulemaking

RSPA understands that effective regulatory solutions to certain issues can be difficult for an agency to craft. In the typical rulemaking process, the participants often develop adversarial relationships that prevent effective communication and creative solutions. Exchange of ideas that may lead to solutions that are acceptable to all interested groups does not often occur in the traditional notice and comment rulemaking procedure.

Negotiated rulemaking is conducted under authority of the Negotiated Rulemaking Act of 1990 and the Federal Advisory Committee Act. The process involves assembling representatives of the affected interests to discuss a particular issue and all potential solutions. The goal was to reach consensus and prepare a proposed rule for consideration by the agency. On February 22-23, 1999, the group reconvened to review received comments and make recommendations for the final rule. This inclusive

process was intended to make the rule more acceptable to all affected interests and minimize the likelihood of petitions for reconsideration and litigation.

RSPA believed that the negotiated rulemaking process would provide ample opportunity for all affected parties to present their views and to reach a consensus on a proposed qualification rule. Negotiated rulemakings have been used successfully by the Department of Transportation, including the Federal Aviation Administration, the United States Coast Guard, the Federal Highway Administration, the National Highway Traffic Safety Administration, and the Federal Railroad Administration. In addition, the Environmental Protection Agency, and the Occupational Safety and Health Administration have successfully used the process.

#### A. Members of the RSPA Negotiated Rulemaking Committee

The Federal Mediation and Conciliation Service (FMCS) served as the convenor and facilitator for the RSPA Negotiated Rulemaking Committee (Committee). FMCS chaired the negotiations, offered suggestions in attempting to reach the desired consensus, and helped determine the feasibility of negotiating particular issues. From the beginning of this process, RSPA met with FMCS on several occasions to discuss the issues that needed to be addressed and the interests that needed to be represented on a Committee. After a comprehensive search, RSPA selected the following organizations, representing broad interests, to serve on the Committee:

1. American Gas Association (A.G.A.): represents a large number of gas distribution and a few transmission companies in the pipeline industry. A.G.A. members consist of both large and small operators.
2. American Petroleum Institute (API): represents the interests of the hazardous liquid pipeline companies. API is the major trade association in the petroleum industry, and also represents the interests of operators of other hazardous liquid pipelines.
3. Interstate Natural Gas Association of America (INGAA): represents the interests of the larger interstate gas transmission pipeline companies in the natural gas transportation industry. INGAA consists mainly of the larger interstate gas transmission pipelines.
4. American Public Gas Association (APGA): represents publicly- owned and municipal gas companies. Although these public companies are generally small, they operate a large number of the distribution pipelines in American cities and suburbs.
5. National Propane Gas Association (NPGA): represents the interests of propane marketing and distribution at the local level. NPGA is made up of both large and small companies.
6. Association of Texas Intrastate Natural Gas Pipelines: represents the interests of intrastate natural gas transmission pipelines.
7. Midwest Energy Association (MEA): represents over 300 investor-owned utilities, municipal utilities, contractors and manufacturers. MEA brought considerable expertise in pipeline personnel training issues.
8. NACE International, The Corrosion Society (NACE): an organization of corrosion experts. NACE works primarily on issues of corrosion and corrosion control systems.
9. National Association of Pipeline Safety Representatives (NAPSR): represents state pipeline safety programs. Many of these organizations will incorporate the final rule on operator qualifications into their pipeline safety program.

10. National Association of Regulatory Utility Commissioners (NARUC): represents the interests of the state utility commissioners, who regulate gas rates and terms of service in most of the fifty states.

11. National Association of State Fire Marshals (NASFM): represents the interests of state fire officials in state safety programs and the issue of qualification for emergency response.

12. International Union of Operating Engineers (IUOE): represents the interests of a substantial number of pipeline construction and maintenance workers.

13. International Brotherhood of Electrical Workers (IBEW): represents over 21,000 gas industry workers.

14. Office of Pipeline Safety (OPS): served as the representative of RSPA, and the Designated Federal Official on the Committee.

#### B. Negotiated Rulemaking Committee Ground Rules

Most of the procedures and protocols followed in the negotiation were established by the Committee. A set of Committee "ground rules" was developed by participants at the initial meeting. Issues discussed and agreed upon by the Committee included: how discussions would be conducted, possibility of subgroups to work on particular issues, expectations of Committee members, the Committee's role throughout the rulemaking process, audience participation, and other topics. The following are some of the more significant ground rules established by the Committee:

1. Membership: All organizations were allowed one seat at the table, and permitted to name one alternate to serve in their absence.

2. Good faith: All participants were expected to act in good faith on behalf of their organization. OPS agreed to issue the Committee's proposed rule as long as it was not in conflict with any other legal requirements. In turn, the Committee agreed to support the proposal following publication in the Federal Register. It was agreed that the Committee would be actively involved through publication of the final rule.

3. Conduct of meetings: Committee members reserved the right to bring constituents to the table to address the Committee, and could quietly consult with constituents during the course of the negotiation. All meetings were open to the public. The Committee agreed that there would be time scheduled on every meeting agenda for comment by the audience.

4. Public Record: RSPA kept a record of all Committee meetings. This record was placed in the public docket (Docket No. PS-94) and is publicly available.

5. Consensus: The goal of the negotiating process is consensus. The Committee developed its own definition of consensus for the purposes of this rulemaking, which was as follows: "A decision which all members or designated alternates present at the meeting can agree upon. The decision may not be everyone's first choice, but they have heard it and everyone can live with it."

#### C. Committee Meetings

The Committee convened a total of eight times between May 1997, and February 1999. Each negotiating session lasted a minimum of two days, with two sessions convening for two and a half days. These meetings resulted in an NPRM which was

published in the Federal Register on October 27, 1998, (63 FR 57269). The Committee reached final consensus on the final rule in its last meeting in February 1999.

#### IV. Discussion of Comments in Response to NPRM

##### General Comments

RSPA received 41 comments to the NPRM. Comments were received from nine pipeline-related trade associations, 25 pipeline operators, two state government agencies, two union organizations, two independent organizations, and the National Transportation Safety Board. Most commenters expressed support for the rule.

Four commenters questioned the need for an operator qualification rule. They said there is no evidence in the pipeline industry's safety record to demonstrate the need for what they alleged would be a new administrative burden. Another commenter expressed that it is inappropriate to add a new subpart to the pipeline safety regulations. However, RSPA was mandated by Congress to develop qualification requirements in several pipeline safety reauthorization actions, most recently in 1996. The mandate was supported by several entities, including many state government agencies, the National Transportation Safety Board, and others.

In addition, seven out of the 14 members of the Committee that developed this rule represented various parts of the gas and hazardous liquid pipeline industry. The Committee agreed to focus the rule on the requirements of the 1996 Act, which called for the establishment of "qualification" requirements rather than "training and certification" requirements that were mandated in the 1992 Pipeline Reauthorization Act. RSPA believes the proposed rule addresses the intent of the 1996 Act.

One commenter said that the goal of the rule could be better served by implementing general language into the pipeline safety regulations, such as "all tasks required by Part 192 will be carried out by qualified individuals." RSPA disagrees that this language would be sufficient to ensure a qualified work force. This ambiguous language would not satisfy the requirements called for in the 1996 Act.

A pipeline industry trade association recommended that RSPA conduct a formal cost-benefit analysis as described in the 1996 Act. A cost-benefit analysis was performed and is a part of the public docket. RSPA is statutorily required to prepare a cost-benefit analysis, even if a rule is developed by a negotiated rulemaking committee. RSPA worked closely with the Committee on the regulatory analysis section of the rule.

Another commenter said that RSPA did not adequately consider the burdens imposed on the operator resulting from responsibility for contractor qualification, and asked that RSPA exempt operators from qualifying contractors. Another commenter noted that pipeline contractors with in-house safety training will suffer because different pipeline companies will have different qualification plans. As is the case with all pipeline

safety regulations, responsibility for compliance lies with the pipeline operator. RSPA does not have regulatory jurisdiction over pipeline contractors. However, to ensure the qualification of the many contractor personnel that work regularly on pipelines, the proposed rule covers all operator employees, contractors, sub-contractors, or any other entities working on behalf of the operator.

One commenter suggested that RSPA facilitate the development of a "model qualification program," to assist small operators, and to provide outreach and explanation of the rule to pipeline contractors and sub-contractors. Another commenter said that RSPA should not require compliance with "model" or "industry standard" qualification programs. RSPA believes the spirit of this rule is to allow flexibility for operators to develop specific qualification programs for their unique systems, and that a compliance "model" would be inconsistent with the spirit of the rule. However, RSPA will be working with state government agencies, and pipeline industry groups to facilitate implementation of the qualification rule. RSPA believes cooperative efforts with affected parties will provide the necessary guidance for compliance with the rule.

One commenter said there should be provisions for "transitional allowances," in situations where merging operators have inconsistent qualification programs. RSPA believes the time frames provided allow adequate time to resolve inconsistencies between qualification programs. Program modifications are inevitable in the case of company mergers. RSPA understands the problems that arise in the event of company mergers, and will work with operators on a case by case basis to ensure compliance with this rule.

Eleven commenters believed that the references to the existing authority of inspectors to evaluate the adequacy of qualification programs should be eliminated from the preamble of the final rule, because this authority "already exists." They insisted that existing procedures provide administrative processes for resolution of disagreements. The Committee discussed this issue at length, and agreed that the references should be retained to remind all affected parties that the increased flexibility provided in this rule does not limit the authority of oversight agencies.

There were several comments regarding the implementation of this rule, and on measuring performance. A commenter suggested that RSPA provide the following provisions to mitigate the financial impact on local government systems that must comply with the rule: (1) A federally sponsored and funded training program to be administered on a state/local level; and (2) federal funds necessary for local government compliance. RSPA provides federal funds in the pipeline safety grant program, which provides up to 50% of a state agency's program, if they are considered a "state partner" to RSPA. Additional training programs dealing with compliance with the rule are currently under development and will be open to all interested parties, including local government entities affected by the regulation. Further, federal guidance documents such as the revised version of the "Guidance Manual for Operators of Small Gas Systems" will help small operators achieve compliance. Also, two commenters suggested that RSPA develop a mechanism(s) to evaluate the rule's effectiveness. RSPA plans to establish a periodic review with stakeholders regarding the effectiveness of the qualification rule.

Finally, eleven commenters said that language should be implemented in the preamble describing what process or procedure RSPA would use if it became necessary to revise the qualification rule. They suggested the following options: (1) Reconvene the Committee; (2) establish an industry/government task team; (3) hold public meetings and/or workshops; or (4) nominating stakeholders to form a peer review team. RSPA cannot predict what changes might be necessary for this rule in the future, but will periodically work with stakeholders to evaluate the effectiveness of this rule.

One commenter was concerned with the effect of the proposed rule on small operators, and suggested that RSPA provide guidance on compliance with the rule to assist small operators, and state pipeline safety inspection personnel. Another commenter believed master meter operators should be exempt from qualification requirements, because many master meter operators are small "mom and pop" operations. This commenter asked how these small operators would be able to evaluate qualification of the many contract personnel that work on their master meter systems.

The Committee discussed the issue of the effects of the rule on small operators and master meter systems, and agreed that special provisions would not be appropriate because the qualification of workers at both large and small pipeline operators can impact safety. Federal guidance documents such as the "Guidance Manual for Operators of Small Gas Systems" will be revised to help small operators achieve compliance. In addition, many training programs are currently under development by government organizations and members of the pipeline industry.

A commenter said RSPA should clarify how individuals involved in emergency response, who do not perform covered tasks, would be subject to the qualification requirements. The Committee agreed not to re-write the qualification requirements of emergency response personnel. The rule applies only to personnel performing operations and maintenance activities.

#### Comments to Secs. 192.801/195.501--Scope

One pipeline operator suggested the reference to gas control operations on page 57273 of the proposed rule be removed from the rule. This operator claimed that monitoring is related to market response and customer delivery, not overpressure protection, and would not necessarily be a covered task. RSPA believes that controlling gas would clearly have to be considered a covered task. Any handling of the noted "physical and mechanical devices" would require qualification. The example remains in the final rule.

Thirty commenters were concerned with a paragraph on page 57273 of the proposed rule dealing with tasks "performed pursuant to requirement in part 192 or 195," and the example of "calibrations and low-pressure shutdowns." These commenters believe this language directly conflicts with the rule language, which describes a covered task as one that is "performed as a requirement of this Part." The commenters noted RSPA added this paragraph to clarify the meaning of a covered task, but that it appears to expand the criteria for determining a covered task. These commenters also said that

any references to "pursuant to" a requirement in the pipeline safety regulations should be revised to "as required by" to be consistent throughout the preamble and rule language. This paragraph was intended to provide further clarification of activities that would be considered covered tasks, but apparently caused confusion. RSPA has deleted the paragraph in the final rule.

Two commenters called for better guidance in identifying covered tasks. For clarification, they believed the term "pipeline facility" should be defined in the rule, using the existing definition in the pipeline safety regulations. The definition of the term "pipeline facility" can be found in 192.3 and 195.2. These definitions apply generally to those subparts of the pipeline safety regulations. RSPA does not see any merit in adding the definition to the rule.

One commenter said the preamble should include a note of clarification to distinguish the term "task" from "covered task," as there could be some misinterpretation of the meaning of the term. RSPA agrees with this comment and has revised any appropriate references to "task" with "covered tasks" or replaced the term "task" with "activity."

Thirteen commenters expressed that under "Tasks affecting the operation or integrity of the pipeline," the term "could" should be deleted where used in the generic sense in column 1 of page 57273 of the proposed rule to match the language in the rule. RSPA agrees and has made this change in the final rule.

Fourteen commenters wanted clarification of the "examples" in the proposed rule used to describe the four-part test. These commenters said that the spirit of the rule is to provide operators with opportunity to identify covered tasks unique to their systems, but the discussion of "examples" imply that these examples would always be covered tasks under the rule. These commenters said the preamble should be revised to express that the "hypothetical examples," are not to imply that they would necessarily be covered for all operators. RSPA believes the term "hypothetical" speaks for itself. We believe no change is necessary.

One pipeline operator had many problems with various provisions and examples throughout the preamble. This operator incorrectly believed that the example dealing with leak surveys on page 57273 of the NPRM was inappropriate, because leak surveys do not affect the operation or integrity of the pipeline. The commenter also incorrectly said use of the term "covered task" is unnecessary because a covered task is simply an operations and maintenance task. Activities such as painting a pipeline for appearance reasons would not require qualification. This operator also stated that the concept of a task not being covered when performed on an unattached pipeline component was confusing, and asked for clarification. The Committee decided that when pipeline facilities are not physically attached to the pipeline, work on these facilities should not be "covered," such as a manufacturers repair work off site.

This operator also alleged that the preamble does not explain that the term "integrity" includes the potential long-term effects of an activity. Also, this operator did not believe the example dealing with the coating and jacketing of pipelines was appropriate to

illustrate the significance of tasks affecting the operation or integrity of a pipeline. RSPA disagrees with this commenter in all of these areas. The Committee discussed pipeline integrity considerably, and agreed that the examples used were appropriate. Therefore RSPA does not believe any changes are necessary.

#### Comments to 192.803/195.503--Definitions

##### Abnormal Operating Condition

Fourteen commenters suggested that the preamble should state that the Committee determined that the current definition for "Abnormal Operation" in part 192 would not satisfy the provisions in the 1996 Act. These commenters also claimed that this definition could be read to require individuals to recognize and react to an abnormal operating condition that is unrelated to their expertise. RSPA believes that all persons performing covered tasks should be able to reasonably recognize and react to abnormal operating conditions while performing their work. The current definition of "Abnormal Operation" in part 192 does not meet the requirements of the 1996 Act. Further, the Committee agreed that a separate definition would be appropriate for the purposes of this subpart.

One commenter said that the structure of Abnormal Operating Condition definition is unclear and inconsistent with the structure of other definitions. RSPA agrees and has revised the format of the definition to provide clarity.

##### Evaluation

Eleven commenters said that Note 1 of the table on page 57274 of the NPRM, should be clarified from "during the period between the effective date of the rule and the three-year compliance date" to "October 28, 2002." RSPA agrees and has made the appropriate change in the final rule.

Twelve commenters said that RSPA should add the table to the rule language because the description in the preamble is not sufficient guidance for pipeline operators. RSPA does not believe the change is warranted because the rule language provides clear guidance. The table was included in the preamble for illustrative purposes only.

One commenter asked that RSPA clarify how operators should identify and document covered tasks during "transitional" qualification. The commenter said the reference to transitional qualification is confusing because no covered tasks are required to be documented for 20 months. It is clear that no worker may be qualified under this rule before an operator has established a qualification program, including a covered task list. Although a qualification program may be established at any time, it must be completed and documented no later than 20 months after the rule is published in the Federal Register. The use of the term "transitional" in the preamble to the rule merely highlights that current workers can be qualified solely through use of a work performance history review only during the period ending 38 months after the rule is published.

## Qualified

One commenter believed there was no need to define this term because it will lead to confusion and inconsistency with other regulations. However, the Committee agreed early in the negotiating process that this term should be defined for the purposes of this rule, so no changes have been made.

One commenter stated that RSPA may need to define "Operations and Maintenance" or designate which sections of parts 192 and 195 are covered by the proposed rule. The final rule describes covered tasks as those identified by the operator using the "four-part test." This topic is discussed further in the discussion concerning identification of covered tasks, in particular operations and maintenance tasks. Therefore, RSPA does not believe that further description is warranted in the final rule.

## Comments to Secs. 192.805/195.505--Qualification Program

Two commenters did not agree with the language "contributed to an incident as defined in Part 191 of this chapter," because it includes LNG facilities in the definition of "incident." These commenters do not believe the scope of the rule should include individuals that work at or near LNG facilities. The scope section of this rule states that the regulation would cover only Parts 192 or 195 of the pipeline safety regulations.

Two commenters believed that there may be situations where a covered task is simple or repetitive enough that a required re-evaluation at any interval is not warranted. The commenters asked that this be noted in the preamble. The Committee discussed this issue at length, and agreed that simple repetition of a covered task does not ensure that the task is performed safely and properly. Appropriate intervals (as determined by the operator) will ensure that the person performing a covered task is continually qualified. Thus, RSPA does not believe a change is needed.

One commenter noted that the description of 192.805 allows operators to add to the seven required elements of their qualification program and makes clear that operators will not be held accountable for the qualification of personnel performing non-covered tasks. However, the commenter was concerned that attempts could be made to treat non-covered tasks included in a qualification program as if they were covered tasks. The commenter suggested that RSPA revise the preamble to emphasize that voluntary tasks included in a qualification program would not be treated as required covered tasks. RSPA believes the rule is clear as written. If a task does not meet the "four-part test" in Sec. 192.805 and Sec. 195.505, it is not covered task, even if voluntarily included in the qualification program.

## Comments to Secs. 192.807/195.507--Recordkeeping

No comments were received regarding these sections.

## Comments to Secs. 192.809/195.509--General

Thirteen commenters suggested that ``18 months" should be changed to ``20 months after publication of the final rule." They also asked that RSPA change the final rule to clarify ``three years" to ``38 months from the publication date of the final rule." RSPA agrees and has made the appropriate change in the final rule.

Thirteen commenters said that the language stating that a ``qualification program would be effective for a minimum of 10 years" is confusing. Commenters suggested that RSPA remove the sentence because it could be subject to multiple interpretations. RSPA agrees and has made the change in the final rule.

#### Comments to 195.403--Emergency Response Training

A petroleum trade association supported the proposed revisions in 195.403, which would remove prescriptive O&M training requirements and provide consistency with gas regulations. However, the commenter suggested that the preamble clarify that hazardous liquid operators may modify or discontinue operations and maintenance training requirements only when the qualification rule is fully implemented. RSPA agrees and has added language in 195.403 to reflect this change.

RSPA has implemented several other suggested grammatical corrections in the final rule.

#### Comments to rulemaking analysis and notices

RSPA worked closely with the Committee, as well as with several representatives in the pipeline industry when developing the rulemaking analysis. One commenter suggested RSPA should use simple annualized costs, rather than amortized costs. However, amortized costs more accurately reflect the costs incurred by the pipeline industry.

RSPA received several comments on the following paragraphs regarding Executive Order 12866:

``However, the impact of inadequate qualification of pipeline personnel is not always apparent. For example, incidents/accidents that operators attribute to equipment failure or corrosion may actually have been set in motion by poorly performed operation or maintenance procedures." (63 FR 57276)

``In 1997, there were a total of 363 reportable pipeline incidents/accidents. Of these, 105 were directly attributable to human error." (63 FR 57276)

``In fact, human error frequently is not cited as a contributing factor in incident/accident investigations, even though it is recognized that human error underlies nearly all pipeline failures to some degree." (63 FR 57276)

``Perhaps the most important factor to consider when assessing the benefits of this proposal is that very few pipeline failures occur without some degree of human failure." (63 FR 57277)

Twenty-two commenters contend that the above references are not reasonable. They request that RSPA describe its methodology used to reach these conclusions, and substantiate these statements with sufficient and credible data, or delete them.

These commenters did not agree that human error is a contributing factor to nearly all incidents. Further, human error is not always related to lack of qualification. The commenters suggested that RSPA remove or substantiate the "non-quantifiable benefits," because they questioned the assumption that the rule will improve "work productivity and down-time."

"In 1997, there were 88 reportable incidents attributed to outside force damage in the natural gas pipeline industry. Although the data reflects outside force damage as the cause of the incidents, human error is inherently present in most outside force damage. For instance, the outside force damage may have resulted from a pipeline worker not following local one-call system procedures or from improper marking of the pipeline prior to excavation" (63 FR 57277).

Seventeen commenters expressed that this discussion is misleading and not supported by facts. They noted that the discussion referring to "the difficulty in quantifying the benefits of this proposed rule \* \* \*" were only made to narrow the gap between costs and benefits. They believe that these assumptions were not substantiated and should be deleted from the preamble. RSPA acknowledges that language was added to the NPRM after the final review by the Committee. However, the cost/benefit section was not part of the negotiated discussion by the entire Committee during the development of this rulemaking. RSPA has nonetheless considerably revised this discussion to take into consideration the comments on this topic.

Two commenters argued that litigation costs may increase, not decrease, as a result of this rule. RSPA has removed the reference to litigation costs since it would be difficult to predict the effect of this rule on litigation costs.

Eighteen commenters expressed that DOT's reference to the 1994 gas pipeline incident in Edison, NJ is inappropriate. This incident was the result of illegal third party activity. They requested that DOT delete the paragraph. RSPA agrees with these commenters and has removed the reference in this final rule.

#### Specific Comments on the Proposed Rule Language

Several comments were received regarding the regulatory language. One commenter suggested that 192.801 does not need the phrase "as identified by the operator." Several industry representatives on the Committee wanted this clarification to highlight that the operator is responsible for identifying covered tasks. Therefore, RSPA has not made the suggested change to the final rule.

Ten commenters said that 192.803 should be changed by adding the phrase "that may reasonably be anticipated to be encountered while performing the covered task" to the

end of item #2 in the definition of "Qualified" (63 FR 57278). The commenters believed this would be consistent with the language in the preamble and thus does not obligate pipeline personnel to know all types of potential abnormal conditions. The Committee discussed this issue and concluded that no change to the regulatory language is warranted.

Nine commenters suggested that 191.805(f) should have the word "substantive" between the words "communicate" and "changes". Commenters believed this change would make the rule consistent with the preamble (page 57275, 3rd column, 2nd full paragraph) where the term "substantive" is used and makes it clear that not every change must be communicated. This issue was discussed by the Committee, and RSPA does not believe change to the regulatory language is warranted.

Ten commenters noted that 192.809(a) should read "20 months" instead of "2018 months". This typographical error was corrected in this final rule.

Eleven commenters said 192.803 should be revised to clarify that the reference to "other forms of assessment" is distinct from "observation during" in the Evaluation definition. RSPA discussed this with the Committee and revised the rule to distinguish the term "observation" from "other forms of assessment."

The term "integrity" in the Scope sections is unclear. This issue was discussed by the Committee, and RSPA does not believe changes to the regulatory language are warranted.

One commenter suggested that section 192.809 be revised to allow extra time for operators to ensure qualification of contractor personnel. This issue was discussed by the Committee, and RSPA does not believe changes to the regulatory language are warranted.

One commenter suggested that an additional section be inserted in the rule to measure the performance of the qualification rule. RSPA plans to establish a periodic review with stakeholders regarding the effectiveness of the qualification rule. RSPA does not believe changes to the regulatory language are warranted.

## V. Scope

The Accountable Pipeline Safety and Partnership Act of 1996 required RSPA to adopt regulations requiring that "all individuals who operate and maintain pipeline facilities shall be qualified to operate and maintain the pipeline facilities" and "shall address the ability to recognize and react appropriately to abnormal operating conditions that may indicate a dangerous situation or a condition exceeding design limits" (49 U.S.C. 60102(a)). The Committee determined that a national qualification program conducted by RSPA, another federal agency, or a state agency, would not be an appropriate or practical response to the 1996 Act. Such a system offers the advantages of national consistency,

including the ability of contractor employees to work for different operators under a single qualification regime. However, it was determined that the complexity and cost of administering such a system, coupled with the difficulty of devising a system appropriate for the wide variations in the operations and maintenance procedures and facilities of individual operators, precluded this from being an effective option.

The Committee determined the mandate would best be met by a non-prescriptive, performance based regulation requiring each operator to develop, or have developed, a written program for the qualification of individuals. This would allow each program to be tailored to the unique operations and practices of each operator.

#### A. Persons Covered by the Final Rule

This final rule applies to operators subject to the requirements of 49 CFR parts 192 or 195. The rule applies to all individuals who perform covered tasks, regardless of whether they are employed by the operator, a contractor, a sub-contractor, or any other entity performing covered tasks on behalf of the operator.

#### B. Operators are Responsible for Identifying Covered Tasks

Under this final rule, the operator is responsible for identifying which activities performed on the pipeline facility are covered tasks. The process for identifying covered tasks is set forth in 49 CFR 192.801 and 195.501 ("Scope") of this final rule.

The Committee discussed whether the regulator or the operator should be responsible for identifying covered tasks. Because of large differences between operations of pipelines across the country, a uniform list of covered tasks would not be useful, and could result in overall increased costs. For example, some operators do not have transmission lines in their systems, others operate only distribution lines, and others do not have compressors, pump stations, or storage facilities. Some operators perform a large number of covered tasks, while other, smaller, operators may have only a limited number of tasks that must be classified as covered tasks.

Identification of covered tasks is a key component of the qualification requirements under this final rule. The Committee proposed that it would be more effective and practical to let each operator determine the covered tasks requiring qualification.

However, some Committee members were concerned that if operators are allowed to determine the covered tasks, the final rule should also ensure that the regulators retain the authority to review each operator's determinations. Some Committee members objected to allowing each operator to identify covered tasks requiring individuals to be qualified. These members objected to the use of the words "determined by," which could be interpreted to preclude regulators from questioning the operator's identification of covered tasks. The Committee decided to use the words "identified by" to mean the selection of covered tasks by the operator. The Committee concluded that the authority to allow pipeline safety regulators to require modifications to programs that fail to meet

regulatory requirements was already within the scope of federal and state jurisdiction, as was the authority to question particular activities included as covered tasks by the operator. The Committee concluded that covered tasks would be activities identified by the operator.

Therefore, under this final rule, the operator of a pipeline facility is responsible for identifying which activities performed on that facility are covered tasks. The criteria for identifying covered tasks on gas and hazardous liquid pipelines is set forth in 49 CFR 192.801 and 195.501, respectively.

Although operators are responsible for identifying covered tasks for which individuals must be qualified, regulators remain responsible for reviewing operator qualification programs and ensuring that federal regulatory standards are applied and met nationwide. Regulators may question an operator's inclusion and exclusion of particular activities as covered tasks. Regulators may require modifications to programs that fail to meet the requirements of the rule.

#### B. Identification of Covered Tasks

The final rule includes a four-part test that each operator must use to determine whether an activity constitutes a covered task. A covered task is: (1) Performed on a pipeline facility; (2) an operations or maintenance task; (3) performed pursuant to a requirement in 49 CFR part 192 or 195; and (4) affects the operation or integrity of the pipeline.

1. Tasks Performed on a Pipeline Facility. The phrase "performed on a pipeline facility" means an activity that is performed by an individual whose performance directly impacts the pipeline facility. An individual who works on a pipeline component that is physically connected to the pipeline system is performing work "on a pipeline facility" and may be subject to the final rules, regardless of whether or not product is flowing through the pipeline. However, a person who repairs a pipeline system or appurtenance, that has been removed from the system, would not be performing work on the pipeline, and therefore would not be performing a covered task.

2. Operations or Maintenance Tasks. The Federal pipeline safety law requires that all individuals who operate and maintain pipeline facilities be qualified to operate and maintain those facilities (49 U.S.C. 60102(a)(1)(C)).

Most of the operations and maintenance activities on pipeline facilities are found in 49 CFR part 192, subparts L and M, or in 49 CFR part 195, subpart F. In addition, the regulations contain other subparts that include requirements for conducting operations and maintenance activities. For example, part 192, Subpart I, establishes requirements for protecting metallic pipelines from external, internal, and atmospheric corrosion. The requirements to monitor corrosion control systems are operations activities. The requirements to take corrective action when deficiencies are found in a corrosion control program are maintenance activities. Therefore, repairing pipelines affected by corrosion is also a maintenance activity.

Certain tasks performed on pipeline facilities may be covered tasks when performed in the course of operation and maintenance activities, but may not be covered tasks in

the course of other activities. For example, "welding" could be a covered task when performed as an operations and maintenance activity on a pipeline, such as when installing a weld-over sleeve to repair an anomaly. However, "welding" is not a covered task under this subpart when performed during the fabrication of new installations, because this would not be an operations and maintenance task.

However, welders are currently subject to qualification requirements in 49 CFR part 192, Subpart E, and Part 195, Subpart D. To comply with the final rule, welders would have to be additionally qualified to recognize and react to abnormal operating conditions when welding as a covered task. This also applies to other activities such as "plastic pipe joining," for which the regulations contain specific requirements.

3. Tasks Performed Pursuant to a Requirement in 49 CFR Part 192 or 195. Covered tasks include only those operations and maintenance activities required by 49 CFR Part 192 or 195.

Examples of covered tasks might include:

- purging a pipeline because it is specifically required by 49 CFR 192.629;
- leakage surveys of distribution lines, required by 49 CFR 192.723;
- starting, operating, and shutting down gas compressor units, because 49 CFR 192.605(b)(7) specifically requires written procedures on these activities, to provide safety during maintenance and operations;
- inspection of navigable water crossings under 49 CFR 195.412; and
- inspection of breakout tanks required by 49 CFR 195.432.

Operators of pipeline facilities may voluntarily conduct operations and maintenance activities that are not required by a specific provision in 49 CFR parts 192 or 195. However, an activity does not necessarily become a covered task simply because an operator develops procedures for conducting the activity, and includes those procedures

in its Operations and Maintenance Plan. For example, an operator may voluntarily choose to maintain a customer's buried piping, and include procedures for this activity in its Operations and Maintenance Plan. Because such maintenance is not specifically required by 49 CFR parts 192 or 195, the associated maintenance activities are not covered tasks.

4. Tasks Affecting the Operation or Integrity of the Pipeline. Under the final rule, covered tasks include only those activities that affect the operation or integrity of the pipeline.

The main purpose of the final rule is to ensure safety of pipelines through qualification of individuals. Initial discussions centered around safety-related activities and the need to categorize covered tasks as only those activities having safety implications. Some Committee members argued that most of the provisions in parts 49 CFR 192 and 195 regulate safety-related activities. It would therefore be redundant to include the word "safe" on pipeline operations addressed under this criteria. Therefore, it was decided to use the phrase, "operation or integrity," because some activities do not adversely affect the operation or integrity of the pipeline, even though they meet the other three criteria. The Committee decided to include a fourth criteria that must be satisfied for an activity to be a covered task, namely that the activity affects the operation or integrity of the pipeline.

The Committee discussed the term "operation" as used here in the safety context of normal versus abnormal operation, where the latter could result in an unsafe condition. For example, the control of flow and pressure in pipelines could result in abnormal operation, if the pressure is allowed to rise above an acceptable limit. Therefore, in this example, activities that include controlling flow and pressure on a pipeline system would be considered covered tasks if the other three criteria for covered tasks were met.

An additional example of an activity affecting the integrity of the pipeline would be coating or jacketing of aboveground pipeline components. In the event atmospheric corrosion is present, coating or jacketing the component could affect the integrity of the pipeline. However, painting a pipeline for aesthetic reasons would not affect the integrity of the pipeline.

The "integrity" of the pipeline refers to the pipeline's ability to operate safely and to withstand stresses imposed during operations. An example of a short-term effect on integrity would be exceeding the Maximum Allowable Operating Pressure (MAOP) for gas pipelines and Maximum Operating Pressure (MOP) for liquid pipelines. An example of a long-term effect would be failure from corrosion due to improper coating after repair of a welded joint.

Because the term "pipeline facility" was used in the first criterion, the Committee also considered whether it would be appropriate to use the term "pipeline facility" in the fourth criterion instead of the term "pipeline." Although some argued that consistency should be maintained, others stated that the primary goal of the final rule is to ensure the safe operation and integrity of the pipeline itself. Furthermore, the term "pipeline" as defined in 49 CFR parts 192 and 195 already encompasses the "facilities" targeted by the final rule. The Committee therefore agreed that this criterion should remain unchanged.

If an activity fails to meet any one of the four criteria, the activity would not be considered a covered task under this final rule. The following are hypothetical examples of how the four-part test can be used to identify a covered task:

Example 1: Leakage surveys on gas transmission pipelines.

- (1) Performed on a pipeline facility? Yes, because leakage surveys are performed immediately above the pipeline and on the pipeline right-of-way.
- (2) Is an operations and maintenance task? Yes, leakage surveys are conducted in the course of pipeline operations and maintenance activities.
- (3) Is performed as a requirement of this part? Yes, leakage surveys are required by 49 CFR 192.706 and 192.723.
- (4) Affects the operation or integrity of the pipeline? Yes, if a leakage survey is not properly conducted, a leak might not be detected, resulting in a potentially hazardous situation.

Since all four criteria are met, the leakage survey is a covered task.

Example 2: Measuring pipe-to-soil potentials.

- (1) Performed on a pipeline facility? Yes, pipe-to-soil potentials are measured at cathodic test stations attached directly to the pipeline.

(2) Is an operations and maintenance task? Yes, pipe-to-soil potentials are read in the course of pipeline operations and maintenance activities.

(3) Is performed as a requirement of this part? Yes, pipe-to-soil potential measurements are required by 49 CFR 192.465 and 195.416.

(4) Affects the operation or integrity of the pipeline? Yes, pipe-to-soil potential measurements, if taken improperly, will not accurately reflect the level of cathodic protection being provided. While not affecting the immediate operation of the pipeline, the future integrity of the pipeline might be jeopardized (for example, corrosion might develop), if inadequate cathodic protection is applied to the pipeline over a period of time.

Since all four criteria are met, the measurement of pipe-to-soil potentials is a covered task.

Example 3: Meter reading.

(1) Performed on a pipeline facility? Yes, a meter is a part of a pipeline facility.

(2) Is an operations and maintenance task? Yes, meters are read in the course of pipeline operations and maintenance activities.

(3) Is performed as a requirement of this part? No, meter reading is not a requirement of 49 CFR part 192 or part 195.

(4) Affects the operation or integrity of the pipeline? No, meter reading has no impact on pipeline operation or integrity.

Because meter reading fails at least one of the four criteria, meter reading is not considered a covered task.

In identifying covered tasks, operators must consider specific activities and not necessarily the job classification of individuals performing the activities, because each job classification may incorporate several activities. For example, an individual with the job classification, "meter reader," may be assigned activities other than reading a meter, such as distribution line patrolling under 49 CFR Part 192.721, that could be covered tasks.

#### D. Amendments to Section 195.403 (Training).

Section 195.403 currently prescribes the training requirements for operations, maintenance, and emergencies for operators of hazardous liquid pipelines. Because the final rule includes a qualification process for operations and maintenance activities, but does not address emergency response qualification, 49 CFR Sec. 195.403 is amended to retain emergency response training requirements. This rule removes the specific operations and maintenance training requirements addressed in 49 CFR Sec. 195.403. Persons performing operations and maintenance tasks need to be qualified in accordance with the final rule. This amendment is not effective until October 28, 2002.

#### VI. Definitions

The definitions section of this final rule was developed to facilitate common understanding of key terms. The Committee began using a number of terms that were

not commonly defined by all members. To facilitate communication, these terms were defined and are provided in the final rule.

Abnormal operating condition.

An abnormal operating condition, as defined in this final rule, is ``a condition identified by the operator that may indicate a malfunction of a component or deviation from normal operations that may:

- (1) Indicate a condition exceeding design limits; or
- (2) Result in a hazard(s) to persons, property, or the environment."

This definition is derived from Federal pipeline safety law (49 U.S.C. 60102) and from the pipeline safety regulations (49 CFR 192.605 (c)(1)(v) and 49 CFR 195.402(d)(1)(v)).

``Abnormal operating conditions" is also referenced in the definition of the term ``qualified". To be qualified, an individual needs to be able to properly perform assigned covered tasks and be able to recognize and react to an abnormal operating condition that may be encountered while performing the covered task. For example, this may include notifying the responsible parties or taking corrective action to mitigate the condition.

As an example, an individual who has been qualified to perform leak surveys should be able to recognize and react to an abnormal operating condition such as blowing gas. Likewise, an individual who is qualified to perform control of gas pressure and flow should be able to recognize and react to an abnormal operating pressure in a pipeline segment.

Not all atypical operating conditions are abnormal. An example of an atypical operating condition that is not abnormal is a pipeline which can (not to exceed MAOP or MOP) operate up to 200 pounds per square inch (psig), but which typically operates at 50 psig. Operating this pipeline at 150 psig could be atypical, but not abnormal. If however the atypical operating condition would cause the pressure in the pipeline to exceed its allowable limits or cause a hazard to persons, property or the environment, an abnormal operating condition would result. A qualified individual performing control of gas pressure and flow who observes an unanticipated pressure increase in such a pipeline segment should know to investigate the cause of the change before it reaches the MAOP/MOP of the line.

Evaluation

An evaluation of an individual's ability to perform a covered task is the process that assesses and documents the individual's qualifications to perform the covered task. Although the definition lists several acceptable methods for evaluation, the list is not all-inclusive.

The evaluation of an individual's qualifications should be an objective, consistent process that documents an individual's ability to perform the covered task. This includes the individual's ability to recognize and react to abnormal operating conditions that the operator could reasonably anticipate the qualified individual will encounter

while performing the covered task. The operator should establish the acceptance criteria for the evaluation method used (for example, for on-the-job training spell out the performance criteria; for a written exam establish the cutoff score). The following table was developed in Committee discussion to illustrate acceptable evaluation methods for "transitional", "initial" and "subsequent" qualification, although these terms do not appear in the rule:

Evaluation method qualification <sup>3</sup>	"Transitional" qualification <sup>1</sup>	"Initial" qualification <sup>2</sup>	"Subsequent" qualification
Written exam.....	YES.....	YES.....	YES.
Oral exam.....	YES.....	YES.....	YES.
Work performance history review method.....	YES.....	May not be used as the sole evaluation method.	May not be used as the sole evaluation method after the three-year compliance date.
Performance on-the-job.....	YES.....	YES.....	YES.
On-the-Job Training.....	YES.....	YES.....	YES.
Simulation.....	YES.....	YES.....	YES.
Other.....	YES.....	YES.....	YES.

**Notes:**

<sup>1</sup> "Transitional" qualification means qualification completed by October 28, 2002, of individuals who have been performing a covered task on a regular basis prior to the effective date of the rule.

<sup>2</sup> "Initial" qualification means qualification, at any time, of individuals who were not performing a covered task on a regular basis prior to the effective date of the rule.

<sup>3</sup> "Subsequent" qualification means evaluation of an individual's qualification, after "transitional" or "initial" qualification, at the interval established by the operator.

Under 49 CFR Secs. 192.809(c) and 195.509(c), a work performance history review may not be used as a sole evaluation method after October 28, 2002. "Transitional" qualification may rely on a work performance history review as the sole evaluation method. "Initial" qualification may not rely on only a work performance history review. "Subsequent" qualifications may rely on work performance history review if used in conjunction with at least one other evaluation method.

Prior to the three year compliance date operators may use work performance history review as the sole method for evaluation when qualifying individuals. After the three year compliance date, if work performance history review is used, it must be combined with at least one other form of assessment. Any of the other forms of assessment specified in the definition of evaluation may be used as the sole method of evaluation both before and after the three year compliance date. When an operator has qualified an individual prior to the three year compliance date and used work performance history review as the sole method of evaluation, the operator is not required to re-evaluate each individual using additional criteria until the next scheduled evaluation, which may vary by covered task.

The operator must establish the parameters for the work performance history review. For example, a work performance history review may include:

- (1) A search of existing records for documentation of an individual's past satisfactory performance of a covered task(s);
- (2) verification that the individual's work performance history contains no indications of substandard work or involvement in an incident (part 192) or accident (part 195), caused by an error in performing a covered task; and,
- (3) verification that the individual has successfully performed the covered task on a regular basis prior to the effective date of the rule.

#### Qualified

Qualified, means that an individual has been evaluated and is able to properly perform a covered task(s), and recognize and react to abnormal operating conditions that may be encountered during the performance of the covered task(s). An individual may be qualified using any of the evaluation methods specified in the operator's written qualification program.

#### VII. Qualification program

The Committee identified the following seven elements as requirements in the operator's qualification program:

Paragraph (a) of 49 CFR 192.805 and 195.505 requires operators to identify the covered tasks to be included in the qualification program. Whether an activity is a covered task would be determined using the four criteria in 49 CFR 192.801(b) or 195.501(b). Because operators are responsible for identifying covered tasks, variations among qualification programs are expected.

A concern of the Committee was whether periodic review of covered tasks should be required. Although a periodic review requirement was not included in the final rule, an operator may consider a periodic review to ensure the accuracy of its covered task list.

Paragraph (b) requires that the qualification program include provisions to ensure through evaluation that individuals performing covered tasks are qualified. This would set forth the evaluation methods to determine if an individual is qualified.

The Committee discussed contractor personnel and who is responsible for their qualification and compliance under this rule. Some members believed contractors should not be subject to this final rule and that OPS should be responsible for ensuring the qualification of contractor personnel. OPS does not have the authority to directly enforce compliance by contractors with this rule. The pipeline operator is responsible for all individuals working on their pipeline systems. This includes operator and contractor personnel.

The Committee discussed the role of those performing evaluations. Members agreed not to include a provision in the rule to require that evaluators be "qualified" to evaluate.

However, persons performing evaluations should possess the required knowledge (1) to ascertain an individual's ability to perform covered tasks and (2) to substantiate an individual's ability to recognize and react to abnormal operating conditions that might surface while performing those activities. This does not necessarily mean that the persons performing evaluations should be physically able to perform the covered tasks themselves.

The Committee discussed the concerns and options available to the operator regarding who should evaluate the individuals performing covered tasks. Because the operator is responsible for the development and implementation of the evaluation methods, the Committee thought that the operator should also be responsible for selecting appropriately knowledgeable individuals to perform evaluations. The final rule requires a qualification program that focuses on ensuring an individual can properly perform a covered task(s) rather than the credentials of persons conducting evaluations.

Paragraph (c) allows for performance of covered tasks by individuals who are not qualified as long as a qualified individual directly observes the non-qualified individual(s), and is able to take immediate corrective actions when necessary. For example, an operator may use a three-person crew to repair gas leaks. Two of the crew members could be non-qualified. The crew excavates and repairs leaking gas mains and services under the direct and close observation of the qualified member of the crew. The intent of this provision is to ensure that non-qualified individuals performing covered tasks are subject to close observation by a qualified individual. Ultimately, the qualified member of the crew is responsible for the repair. The ratio of non-qualified individuals to "qualified" individuals should be kept to a minimum.

Paragraph (d) requires the operator to evaluate an individual if the operator has reason to believe that the individual's performance of a covered task could have contributed to an incident as defined in 49 CFR part 191 or accident as defined in 49 CFR part 195. If so, the individual's qualification should be evaluated to determine if the individual continues to be qualified to perform the covered task.

Paragraph (e) requires the operator to evaluate an individual if there is reason to believe that the individual is no longer qualified to perform a covered task. This could occur if the individual displays unsatisfactory performance of the task or if there is reason to believe the individual can no longer perform the covered task. The operator's qualification program must include provisions for evaluating an individual's qualification if the circumstances warrant.

Paragraph (f) recognizes that changes may occur that impact how a covered task is performed. Changes that may need to be communicated to individuals performing covered tasks may include:

- Modifications to company policies or procedures.
- Changes in state or Federal regulations.
- Utilization of new equipment and/or technology.
- New information from equipment or product manufacturers.

The final rule requires that the qualification program include provisions for communicating information on substantive changes to the individuals performing the affected covered tasks. When significant changes occur, the operator should consider whether additional qualification requirements are necessary and whether individuals performing the covered task should be evaluated again.

Paragraph (g) addresses the identification of covered tasks, and the frequency of evaluation intervals for each covered task. The appropriate interval may vary depending on the covered task. It was therefore left to the operator to determine which covered tasks and the interval at which subsequent qualification of an individual performing a covered task will occur. The Committee felt that the evaluation intervals could be specified in units of time, frequency of performance or other appropriate units. The Committee recognized that subsequent evaluation methods may differ from initial qualification methods.

This rule does not require that the written qualification program be incorporated into an operator's Operations and Maintenance Plan. The operator may expand any of the seven required elements and add additional elements to their program but will only be held accountable to meet the requirements of this Subpart.

#### VIII. Recordkeeping

Under the final rule, each operator is required to maintain records that demonstrate compliance. The Committee had considerable discussion regarding records content, records to be retained, and length of retention.

The records that support an individual's qualifications must include the identity of each qualified individual (for example, name, social security number, or employee number), identification of each covered task for which qualified, date(s) of current qualification and qualification methods(s). Records of an individual's current qualifications must be maintained while the individual is performing the covered tasks for which qualified. When an individual is evaluated for subsequent qualification, the prior qualification records must be maintained for a period of five years. Also, when an individual stops performing a covered task (for example, the individual retires or is promoted) the individual's qualification records must be retained for a period of five years. The Committee selected five years to be consistent with other regulatory time periods. The records may be kept in paper, electronic, or any other appropriate format. The records may be kept at a central location or at multiple locations.

The final rule does not address whether a certification or other record of qualification need be issued to each qualified individual. This matter is solely within the discretion of the operator.

#### IX. General

Development and implementation of a qualification program will take some operators longer than others. Many operators currently have adequate processes or programs to

ensure the qualification of individuals working on their pipeline systems. However, to ensure that this final rule is enforceable, definitive time frames must be specified. The Committee decided that 18 months would be sufficient time to develop a written qualification program.

An operator will have 38 months from the effective date of the final rule to complete the qualification of all individuals performing covered tasks on its system. This will allow operators with more limited resources and differing budget cycles adequate time to complete the qualification process. Those operators who are able to comply before the mandatory compliance date are encouraged to do so. The rule does not intend to penalize early compliance. Therefore, the starting time for subsequent evaluation intervals determined by the operator is not required to begin until the compliance date.

Finally, work performance history review will only be allowed as the sole method of evaluation during the three-year period prior to mandatory compliance with the rule. After this time, work performance history review will be an acceptable method of evaluating individuals only in combination with another evaluation method.

#### Rulemaking Analyses and Notices

##### Executive Order 12866

This final rule is considered a significant regulatory action under section 3(f) of Executive Order 12866 and, therefore, is subject to review by the Office of Management and Budget. The final rule is considered significant under the Department of Transportation Policies and Procedures (44 FR 1103; February 26, 1979) because of the substantial interest expressed by the pipeline industry, state and Federal agencies, and Congress. This section summarizes the conclusions of the regulatory evaluation. Copies of the regulatory evaluation are available in the docket. Several groups, including the Congress, the National Transportation Safety Board, and the National Association of State Pipeline Safety Representatives, have called repeatedly for a pipeline personnel qualification rule.

This final rule is the product of a negotiated rulemaking in which representatives of all interested parties participated, including pipeline trade associations, pipeline operators both large and small, organized labor, state pipeline safety representatives, and the Federal government. The members of the negotiated rulemaking committee agreed that this process ensured adoption of a cost-effective standard for pipeline personnel qualification. The American Gas Association (AGA) and other participants in the negotiated rulemaking contributed to estimates of the cost of this proposal. RSPA adjusted the cost estimates to provide an annualized cost estimate for the entire pipeline industry. Based on an estimated 175,000 covered pipeline employees, including both operator employees and contractors, the industry and the Committee identified three major cost categories for implementation and compliance with the rule by gas and hazardous liquid pipeline operators:

1. Cost for qualification program set-up, \$210 million
2. Cost of transitional evaluation and qualification, \$140 million
3. Cost of subsequent evaluation and qualification, \$87.5 million

RSPA determined that the program set-up costs should be amortized over 9 years. Therefore, RSPA amortized the set-up costs over 9 years using a 7% interest rate for an annualized cost of \$29.3 million for program development and initial qualification.

The transitional qualification costs were amortized over a six year period (three years before the effective date of the regulation that requires initial qualification, and an estimated three years before subsequent qualification) using a 7% interest rate for an annualized transitional qualification cost of \$28.6 million.

The Committee estimated that qualification for various covered tasks would be reviewed approximately every three years, although the length of time between evaluations for a particular covered task and pipeline operator might vary widely. Therefore, the next qualification (and each subsequent qualification) is amortized over three years at 7% or an annual subsequent qualification cost of \$32.4 million.

The result of these calculations is a cost of \$57.9 million per year for the years 1-6 (\$29.3 million + \$28.6 million) and a cost of \$61.7 million per year for years 7-9 (\$29.3 million + \$32.4 million). The average annual cost for compliance with the rule is approximately \$59 million.

The preamble to this final rule notes that the intent of the qualification rule is to ensure a qualified workforce and to reduce the probability and consequences of accidents caused by human error. Investigations of pipeline incidents/accidents clearly attributable to human error often indicate either a deficiency of knowledge or skill (for example, lack of qualification) or an error in judgment on the part of pipeline personnel. However, the impact of inadequate qualification of pipeline personnel is not always apparent. For example, incidents/accidents that operators attribute to equipment failure or corrosion may actually have been set in motion by poorly performed operation or maintenance procedures. Although many state pipeline safety representatives have stated that this rule will reduce incidents/accidents by ensuring a qualified workforce, they concede that the task of quantifying that reduction is very difficult.

Perhaps the most important factor to consider when assessing the benefits of this rule is that human error is frequently not cited as an element contributing to an incident/accident. Available data does not always capture the contribution of human error to incidents/accidents. In 1997, there were 354 reportable pipeline incidents/accidents. Of these, 87 gas pipeline incidents and 40 hazardous liquid pipeline accidents were attributed to outside force damage. Although most outside force damage is caused by persons not covered by this rule--as when a third party disregards one-call procedures--damage sometimes results when a pipeline worker fails to follow one-call system procedures or from improper marking of the pipeline prior to excavation. Consequently, while third parties causing damage will not be better prepared to prevent pipeline

damage, they will potentially reap the benefits of this rule by working around pipelines that are more clearly marked.

These scenarios show the difficulty in quantifying the benefits of this rule. Nonetheless, it is clear that some incidents/accidents could be avoided as a result of implementation of this rule, and that the cost of these incidents/accidents is substantial. Total outside force incidents/accidents resulted in 7 fatalities (\$19 million), 38 injuries (\$18.5 million), and \$27 million in property damage. This results in a total monetized loss of \$ 64.5 million in 1997. Monetization of fatalities and injuries employed DOT's "willingness to pay" estimates. Because the record keeping and reporting system of OPS lacks detailed data, it is not possible to accurately quantify the percentage of accidents that will be avoided as a result of this rule.

Although quantifying all the benefits of an operator qualification rule is impossible, most of the Committee members agreed that this rule, as written, is as cost beneficial as practicable, and RSPA believes that the overall benefits justify the costs of the rule. Furthermore, although relatively few fatalities and injuries occur each year from pipeline failures, the potential exists for significant, and very costly, disasters.

In addition, even a small reduction in overall pipeline expenses resulting from a fully-qualified workforce could result in significant savings that could offset the costs of this rule. If standardizing qualification procedures increases productivity and reduces operating expenses by one-half of one percent per year, the annual expenses of the major pipeline operators could drop by more than \$68 million (FERC Form 2, page 116, reports \$13.77 billion in total 1996 operating expenses for 53 large pipeline operators).

Other no quantifiable benefits of this rule may include:

1. Reducing the likelihood of incorrectly following procedures;
2. Eliminating and correcting inadequate operating and maintenance procedures;
3. Reducing or eliminating the occurrence of sending inadequately prepared individuals into the field to perform covered tasks;
4. Increasing the formal communications between operator and workers;
5. Increasing the attention and oversight on safety-related procedures; and
6. Improving the documentation that ensures a qualified workforce.

These no quantifiable benefits could translate into reduced operating expenses. Finally, documentation of a qualified workforce could improve operator public relations. RSPA provides further analysis for its conclusion that this rule will have a positive benefit/cost in its "Regulatory Evaluation," which is included in the docket.

#### Regulatory Flexibility Act

Under the Regulatory Flexibility Act (5 U.S.C. 601 et seq.), RSPA must consider whether a rulemaking would have a significant economic impact on a substantial number of small entities. Based on the regulatory evaluation, RSPA has determined that the rule will not have a significant impact on a substantial number of small entities. The Committee unanimously agreed that all operators, regardless of size, should be subject to the final rule because the qualification of workers at both large and small pipeline operators can impact safety. One of the participants in the negotiated rulemaking was a

representative of the American Public Gas Association (APGA). The APGA represents municipal gas distribution companies, the main group of small entities in the pipeline industry. Hazardous liquid and gas transmission companies tend to be quite large. As a result, there are not a substantial number of small hazardous liquid pipeline entities. In conversations between RSPA and APGA, APGA indicated that as a trade association it would make itself available to assist its members in complying with this final rule.

As indicated in the regulatory evaluation, many resources exist to assist both small and large operators in compliance with this rule, including classes from DOT's Transportation Safety Institute, nonprofit industry associations, as well as for-profit companies. Additionally, while some costs, such as the development of the qualification program, are on a per company basis, the actual qualification will be on a per-employee basis. As a result, costs incurred by smaller companies should not be significant.

Further, the Committee considered the flexibility that this final rule allows in terms of permitting each company to tailor its worker qualification program to its own unique needs, and would allow small operators to interact with inspectors to evaluate and modify their qualification programs if necessary. Because of this flexibility, the availability of assistance in developing qualification plans, the fact that much of the cost will be proportionate to the number of employees, and the fact that very few small entities can be found among hazardous liquid and gas transmission companies, I certify that this final rule will not have a significant impact on a substantial number of small entities.

#### Paperwork Reduction Act

This Final Rule contains information collection requirements. As required by the Paperwork Reduction Act of 1995 (44 U.S.C. 3507(d)), the information collection requirements in the rule have been submitted to the Office of Management and Budget for their review and have been approved under OMB #2139-0600.

#### Executive Order 12612

This final rule has been analyzed with the principles and criteria in Executive Order 12612 ("Federalism") (52 FR 41685), and does not have sufficient federalism impacts to warrant the preparation of a federalism assessment.

#### Unfunded Mandates Reform Act of 1995

This final rule does not impose unfunded mandates under the Unfunded Mandates Reform Act of 1995. It does not result in costs of \$100 million or more to either State, local, or tribal governments, in the aggregate, or to the private sector, and is the least burdensome alternative that achieves the objective of the final rule.

#### National Environmental Policy Act

We have analyzed the final rule for purposes of the National Environmental Policy Act (42 U.S.C. 4321 et seq.). Requiring all gas and hazardous liquid pipeline operators to

adopt the operator personnel qualification regulation should result in a reduction of pipeline incidents that are caused by human error. This should result in reduced fatalities, injuries, property damage, and environmental damage. Furthermore, this regulation will not have a detrimental impact on the environment. Thus, we have determined that the final rule will not significantly affect the quality of the human environment. An environmental assessment document is available for review in the docket.

#### Impact on Business Processes and Computer Systems

Many computers that use two digits to keep track of dates will, on January 1, 2000, recognize "double zero" not as 2000 but as 1900. This glitch, the Year 2000 problem, could cause computers to stop running or to start generating erroneous data. The Year 2000 problem poses a threat to the global economy in which Americans live and work. With the help of the President's Council on Year 2000 Conversion, Federal agencies are reaching out to increase awareness of the problem and to offer support. We do not want to impose new requirements that would mandate business process changes when the resources necessary to implement those requirements would otherwise be applied to the Year 2000 Problem.

This final rule does not require business process changes or require modifications to computer systems. Because this final rule should not affect the ability of organizations to respond to the Year 2000 problem, we do not intend to delay the effectiveness of the rule changes.

#### List of Subjects

##### 49 CFR Part 192

Natural gas, Pipeline safety.

##### 49 CFR Part 195

Anhydrous ammonia, Carbon dioxide, Hazardous liquids, Petroleum, Pipeline safety.

In consideration of the foregoing, RSPA amends 49 CFR Parts 192 and 195 as follows:

#### PART 192 AMENDED

1. The authority citation for Part 192 continues to read as follows:

Authority: 49 U.S.C. 5103, 60102, 60104, 60108, 60109, 60110, 60113, and 60118; and 49 CFR 1.53.

2. Subpart N is added to read as follows:  
Sec.

- 192.801 Scope.
- 192.803 Definitions.
- 192.805 Qualification Program.
- 192.807 Recordkeeping.
- 192.809 General.

192.801 Scope.

(a) This subpart prescribes the minimum requirements for operator qualification of individuals performing covered tasks on a pipeline facility.

(b) For the purpose of this subpart, a covered task is an activity, identified by the operator, that:

- (1) Is performed on a pipeline facility;
- (2) Is an operations or maintenance task;
- (3) Is performed as a requirement of this part; and
- (4) Affects the operation or integrity of the pipeline.

Sec. 192.803 Definitions.

Abnormal operating condition means a condition identified by the operator that may indicate a malfunction of a component or deviation from normal operations that may:

- (a) Indicate a condition exceeding design limits; or
- (b) Result in a hazard(s) to persons, property, or the environment.

Evaluation means a process, established and documented by the operator, to determine an individual's ability to perform a covered task by any of the following:

- (a) Written examination;
- (b) Oral examination;
- (c) Work performance history review;
- (d) Observation during:
- (e) Performance on the job,
- (f) On the job training, or
- (g) Simulations; or
- (h) Other forms of assessment.

Qualified means that an individual has been evaluated and can:

- (a) Perform assigned covered tasks; and
- (b) Recognize and react to abnormal operating conditions.

Sec. 192.805 Qualification program.

Each operator shall have and follow a written qualification program. The program shall include provisions to:

- (a) Identify covered tasks;
- (b) Ensure through evaluation that individuals performing covered tasks are qualified;

- (c) Allow individuals that are not qualified pursuant to this subpart to perform a covered task if directed and observed by an individual that is qualified;
- (d) Evaluate an individual if the operator has reason to believe that the individual's performance of a covered task contributed to an incident as defined in Part 191;
- (e) Evaluate an individual if the operator has reason to believe that the individual is no longer qualified to perform a covered task;
- (f) Communicate changes that affect covered tasks to individuals performing those covered tasks; and
- (g) Identify those covered tasks and the intervals at which evaluation of the individual's qualifications is needed.

Sec. 192.807 Recordkeeping.

Each operator shall maintain records that demonstrate compliance with this subpart.

(a) Qualification records shall include:

- (1) Identification of qualified individual(s);
- (2) Identification of the covered tasks the individual is qualified to perform;
- (3) Date(s) of current qualification; and
- (4) Qualification method(s).

(b) Records supporting an individual's current qualification shall be maintained while the individual is performing the covered task. Records of prior qualification and records of individuals no longer performing covered tasks shall be retained for a period of five years.

Sec. 192.809 General.

(a) Operators must have a written qualification program by April 27, 2001.

(b) Operators must complete the qualification of individuals performing covered tasks by October 28, 2002.

(c) Work performance history review may be used as a sole evaluation method for individuals who were performing a covered task prior to August 27, 1999.

(d) After October 28, 2002, work performance history may not be used as a sole evaluation method.

PART 195--AMENDED

3. The authority citation for Part 195 continues to read as follows:

Authority: 49 U.S.C. 5103, 60102, 60104, 60108, 60109, 60118; and 49 CFR 1.53.

4. Section 195.403 is revised to read as follows: This section becomes effective October 28, 2002.

Sec. 195.403 Emergency response training.

(a) Each operator shall establish and conduct a continuing training program to instruct emergency response personnel to:

(1) Carry out the emergency procedures established under 195.402 that relate to their assignments;

(2) Know the characteristics and hazards of the hazardous liquids or carbon dioxide transported, including, in case of flammable HVL, flammability of mixtures with air, odorless vapors, and water reactions;

(3) Recognize conditions that are likely to cause emergencies, predict the consequences of facility malfunctions or failures and hazardous liquids or carbon dioxide spills, and take appropriate corrective action;

(4) Take steps necessary to control any accidental release of hazardous liquid or carbon dioxide and to minimize the potential for fire, explosion, toxicity, or environmental damage; and

(5) Learn the proper use of firefighting procedures and equipment, fire suits, and breathing apparatus by utilizing, where feasible, a simulated pipeline emergency condition.

(b) At the intervals not exceeding 15 months, but at least once each calendar year, each operator shall:

(1) Review with personnel their performance in meeting the objectives of the emergency response training program set forth in paragraph (a) of this section; and

(2) Make appropriate changes to the emergency response training program as necessary to ensure that it is effective.

(c) Each operator shall require and verify that its supervisors maintain a thorough knowledge of that portion of the emergency response procedures established under 195.402 for which they are responsible to ensure compliance.

Subpart G--[Added]

5. Subpart G is added to read as follows:

Sec.

195.501 Scope.

195.503 Definitions.

195.505 Qualification Program.

195.507 Recordkeeping.

195.509 General.

Sec. 195.501 Scope.

(a) This subpart prescribes the minimum requirements for operator qualification of individuals performing covered tasks on a pipeline facility.

(b) For the purpose of this subpart, a covered task is an activity, identified by the operator, that:

(1) Is performed on a pipeline facility;

(2) Is an operations or maintenance task;

(3) Is performed as a requirement of this part; and

(4) Affects the operation or integrity of the pipeline.

Sec. 195.503 Definitions.

Abnormal operating condition means a condition identified by the operator that may indicate a malfunction of a component or deviation from normal operations that may:

- (a) indicate a condition exceeding design limits; or
- (b) result in a hazard(s) to persons, property, or the environment.

Evaluation means a process, established and documented by the operator, to determine an individual's ability to perform a covered task by any of the following:

- (a) written examination;
- (b) oral examination;
- (c) work performance history review;
- (d) observation during:
- (e) performance on the job,
- (f) on the job training, or
- (g) simulations; or
- (h) other forms of assessment.

Qualified means that an individual has been evaluated and can:

- (a) perform assigned covered tasks and
- (b) recognize and react to abnormal operating conditions.

#### Sec. 195.505 Qualification program.

Each operator shall have and follow a written qualification program. The program shall include provisions to:

- (a) Identify covered tasks;
- (b) Ensure through evaluation that individuals performing covered tasks are qualified;
- (c) Allow individuals that are not qualified pursuant to this subpart to perform a covered task if directed and observed by an individual that is qualified;
- (d) Evaluate an individual if the operator has reason to believe that the individual's performance of a covered task contributed to an accident as defined in Part 195;
- (e) Evaluate an individual if the operator has reason to believe that the individual is no longer qualified to perform a covered task;
- (f) Communicate changes that affect covered tasks to individuals performing those covered tasks; and
- (g) Identify those covered tasks and the intervals at which evaluation of the individual's qualifications is needed.

#### Sec. 195.507 Recordkeeping.

Each operator shall maintain records that demonstrate compliance with this subpart.

- (a) Qualification records shall include:
  - (1) Identification of qualified individual(s);
  - (2) Identification of the covered tasks the individual is qualified to perform;
  - (3) Date(s) of current qualification; and
  - (4) Qualification method(s).
- (b) Records supporting an individual's current qualification shall be maintained while the individual is performing the covered task. Records of prior qualification and records of individuals no longer performing covered tasks shall be retained for a period of five years.

Sec. 195.509 General.

(a) Operators must have a written qualification program by April 27, 2001.

(b) Operators must complete the qualification of individuals performing covered tasks by October 28, 2002.

(c) Work performance history review may be used as a sole evaluation method for individuals who were performing a covered task prior to August 27, 1999.

(d) After October 28, 2002, work performance history may not be used as a sole evaluation method.

Issued in Washington, DC, on August 20, 1999. Kelley S. Coyner, Administrator.  
[FR Doc. 99-22208 Filed 8-26-99; 8:45 am] BILLING CODE 4910-60-P

# **APPENDIX D**

## **“Insert Operator Name” Amendments to Northeast Gas Association Operator Qualification Compliance Program Written Plan**

# **APPENDIX E**

**“Insert Operator Name” Forms, Policies, Procedures**

# **APPENDIX F**

**Letter from Dr. Sherry Rubinstein on  
Knowledge, Skills and Ability**

**Measurement Dimensions, Inc.  
Post Office Box 1101  
Marblehead, Massachusetts 01945**

Mr. José Costa  
Northeast Gas Association  
75 Second Avenue, Suite 510  
Needham Heights, MA 02494-2824

June 29, 2003

Dear José,

This letter responds to your request for input on determining when a written test is sufficient and when a hands-on test is indicated to evaluate the knowledge, skills, and ability (KSA) required by a Covered Task (CT).

Types of Evaluation

I will use the term “hands-on test” to refer to any test requiring a behavioral performance, including structured demonstrations under controlled conditions or simulations of job tasks. “Audits” in the field are another type of evaluation, typically used when “hands-on” testing is indicated but impractical or unfeasible.

The term “written test” used here will mean a paper-and-pencil consisting of questions in any format (e.g., multiple-choice, true/false, fill-in-the-blank, or short answer). “Oral tests” are an alternative to written tests, as long as the evaluation focuses on the content of responses, not on speaking or other delivery skills.

Working Definitions of KSA

“Knowledge” is distinct because it is generally understood to be wholly cognitive, a result of acquired information. Distinguishing “abilities” from “skills” is trickier, but the easiest way is to say that “abilities” are natural, inborn capacities, whereas “skills” are learned and developed through experience or gained through training.

In a technical training environment, we think of “skills” as the competence to perform or do things, such as cut or join pipe, operate locating equipment, or drive a truck. For maximum contrast, we can view “abilities” as underlying capacities which enable an individual to acquire and use knowledge or develop and apply skills. “Abilities” include physical attributes (e.g., dexterity, strength, agility), perceptual attributes (e.g., visual acuity), and cognitive attributes (e.g., mechanical aptitude, logical thinking, and other specific sorts of intelligence). “Skills” are even more numerous and varied, as they can be defined in terms of the demands of any human task we might contemplate.

It is useful to keep these distinctions in mind, even though in common usage the terms “ability” and “skill” are often used broadly or interchangeably. Despite commonly accepted loose usage of the terms, it is the nature of the attribute that distinguishes knowledge from ability from skill.

### Methods of Evaluation

Written tests are normally used to assess “knowledge,” while hands-on tests are normally used to assess “skills.” Either type of evaluation may be used to assess “abilities,” depending on the ability in question.

To learn a skill, an individual must possess relevant physical, perceptual, and mental abilities, as well as relevant knowledge. This complexity makes hands-on tests especially suited to evaluating skills. As a hands-on test requires performance of an entire task, an individual who passes the test demonstrates all relevant abilities, skills, and knowledge. By contrast, a written test limited to assessing knowledge might not be considered sufficient to demonstrate one’s qualification to perform a task.

“Abilities” are rarely directly tested to qualify personnel on the job. To the extent that the industry uses written tests of mental abilities (e.g., mechanical aptitude) and direct assessments of physical abilities (e.g., ability to lift, carry, climb), such tests are usually administered as screening tools for hiring or job placement to ensure that an individual has aptitudes needed to learn a job. After an individual has been hired and trained, evaluation tends to focus on knowledge and skills—not on ability, as defined here.

If both “abilities” and “skills” are deemed relevant to qualifying employees to perform an assigned task, the issue of evaluation methods in effect comes down to assessing knowledge via a written test and/or *ability/skill* via a hands-on test.

### Justifying the NGA Approach to Evaluation

Determining the sufficiency of evaluation depends on the KSA's required to perform a Covered Task. If the Critical Elements/Skill Set for a CT suggests that qualification depends solely or even heavily on knowledge alone, one could argue that a written test is sufficient. Where one or more skills play a key role in performing the CT, a hands-on test (or audit) would be expected in addition to or in lieu of a written test.

To illustrate: One of the tasks of a major league ballplayer is to get from home plate to a base during a game. To perform the task, one needs knowledge of the rules the game, an understanding of team signals, and awareness of the difference between a foul ball and various safe hits. Although these and other knowledge elements could be assessed via a written test, one could hardly claim that anyone who possesses this knowledge is qualified for the task. It is essential that a person also have the ability/skill to read the field, keep an eye on the ball, and actually hit the ball when appropriate. Therefore, a valid evaluation to qualify an individual for the task of reaching a base would have to include a hands-on test.

By contrast, there are many tasks that hinge largely on knowledge and for which abilities/skills are relatively incidental. For example, to perform the task of getting dressed for a game, a ballplayer must know whether the game is home or away, the appropriate uniform to wear, the difference between the front and back of a jersey, and the importance of donning socks before shoes, etc. He also must have the physical ability to dress himself and skill in tying shoelaces, but these abilities/skills are so elementary that it is reasonable to presume that anyone who has acquired the necessary knowledge could easily perform the whole task. Thus, for this task, a written test would suffice for qualification.

The NGA Covered Tasks vary in similar ways. For example, CT #60 (Operation of Remote Control Valves) requires knowledge of the gas distribution system, related Code, valve types, characteristics, and locations, valve positioners, system MAOP's, how the SCADA system works, etc. The task also requires one to recognize and actually operate remote control valves, but these abilities/skills are so basic that it seems safe to claim that anyone with the requisite knowledge could execute them properly. Similarly, CT #41 (inspecting valves) requires knowledge of valve locations, evidence of corrosion, and procedures for verifying, operating, and lubricating the valve, etc. For someone who possesses this knowledge, the "abilities/skills" of manually operating or lubricating a valve are relatively incidental. In effect, "knowing how to" perform the task is tantamount to "being able to" perform it.

At the other end of the extreme, CT #49-52 (joining pipe) and CT #54 (welding pipe) certainly require knowledge, but they also require practice to develop the skills involved. Knowledge of the procedures involved would not necessarily entail being able to perform them with satisfactory skill. Therefore, in contrast to CT#60 and CT#41 for which a written test alone would be justified, CT #49-52 and #54 call for a hands-on test to address their skill aspects.

To determine whether any particular CT should be covered by a hands-on test, consider the skills listed in the Critical Elements/Skill Set and answer these questions:

1. How much ability/skill in proportion to knowledge is required to perform the task?
2. Do any of the listed abilities/skills require practice to develop (e.g., to perfect one's technique)?
3. Are any of the listed abilities/skills highly specialized and critical to overall performance of the task?

A written test alone should be sufficient for any CT for which (a) knowledge comprises the lion's share of successful performance, and (b) none of the associated skills requires finetuning through practice or the mastering of specialized techniques. For these CT's, we would argue that a person who demonstrates adequate knowledge of relevant facts, concepts, rules, principles, policies, or procedures is qualified to perform the whole task. For CT's that do not meet the foregoing criteria, a hands-on test (or audit) is indicated.

Best regards,



Sherry Rubinstein, Ph.D.  
Testing Specialist

**New Hampshire Gas Corporation is adopting the following  
Operator Qualification Plan to cover details and direction  
beyond the Northeast Gas Association's Plan**

**David M. Grande**

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**General Manager  
New Hampshire Gas Corporation**

**Date**

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**Revisions**

August 20, 2005	Cover Page, Table of Contents, 10.3 Requal., 15 Task, Attachments
November 12, 2005	Table of contents, #3 Date, 5 task, 6.4 Mergers, 10.2 AOC, 11.1 records, 11.2 no ss #, 11.2 10 years, 11.3 field records, Attachments 1 thru 4
February 9, 2007	#3 NGA, Attachments 1 thru 5 regarding Uprate,
November 1, 2008	Removed Supervisor of Distribution and replaced with Supervisor of Distribution

# New Hampshire Gas Corporation

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# **New Hampshire Gas Operator Qualification Plan**

## **1.0 Scope**

This written Operator Qualification Plan (OQ Plan) outlines the requirements for compliance with DOT 192.805, requiring gas system operators to have a written OQ Plan.

This OQ Plan applies to all New Hampshire Gas Corp. (NHGC) personnel performing covered O&M tasks on NHGC's gas distribution system, including any subcontractor employees.

OQ requires that personnel doing Covered Tasks demonstrate:

- competency to perform identified Covered Tasks
- understand the issues associated with that Task including the types of abnormal conditions that may be encountered and the specific risks of those conditions
- or perform the Covered Task under the close observation of a qualified person.

While training is a necessary component of developing competence, training is not part of NHGC's OQ program. NHGC's OQ program is designed to demonstrate competence through a fundamental understanding for the task in question including what major elements need to be accomplished to successfully complete the task, and the potential problems or abnormal conditions that could be encountered while performing the task. The program is not designed to test/qualify personnel on each specific fitting, piece of equipment, NHGC procedure, etc. The qualified individual is expected to refer to applicable procedures, manufacturer's installation instructions, equipment operating instructions, etc. for specific guidance.

## **2.0 Regulatory Requirements**

DOT 192.805

## **3.0 Northeast Gas Association (NGA)**

**NGA**, including NHGC as a member company, formed a consortium to address the DOT Operator Qualification regulations. Since many **NGA** companies operate similar gas distribution systems, the purpose of the consortium was to eliminate duplicate efforts at each company where possible, and to provide for uniformity. For example, **NGA** contracted with a consultant to develop a single list of Covered Tasks for all participating

members to eliminate the need for each company developing such a list under the same regulatory criteria.

NGA's Operator Qualification Compliance Program Written Plan Rev D dated May 23, 2006 (updated as required) forms the basis for NHGC's Written Plan. The NGA Written Plan is incorporated by reference as a part of NHGC's Written Plan. NHGC's Written Plan will provide additional specific details beyond the NGA Plan as to Operator Qualification at NHGC, and provide specific direction where NHGC's Plan may differ with the NGA Plan.

NGA will also offer qualification testing for the various Covered Tasks, and NHGC may use that qualification testing for its in-house or subcontractor employees.

#### **4.0 Definitions**

Definitions are in accordance with Section 4.0 of the NEGA Written Plan and DOT 192.803.

Defined terms/words include:

- Abnormal operating condition
- Covered Task
- Evaluation
- Qualified

#### **5.0 Covered Tasks**

NGA, as a consortium, developed a Covered Task list for use by all participating companies, including NHGC, in accordance with the DOT four part test. That list of Covered Tasks is Attachment 1, will be used as NHGC's list of Covered Tasks.

#### **6.0 Determination of Employees/Subcontractors Performing Covered Tasks.**

##### **6.1 NHGC Operating Areas**

The following major operating areas have been identified that may have personnel or subcontractors performing Covered Tasks:

- Gas Supply
- Distribution
- Customer Service

## **6.2 Responsibility**

The Supervisor of Distribution is responsible for reviewing and updating NHGC's OQ Plan on an annual basis, and for providing guidance in implementing the OQ Plan.

The General Manager is responsible for overseeing the implementation of OQ at NHGC. The implementation phase will begin on 4/27/01. The General Manager will hold quarterly reviews with each of the operating areas to monitor implementation. After the 10/28/02 full implementation date the review frequency will be adjusted to an appropriate interval.

The Supervisor of Distribution is responsible for review of the area's operations to determine which NHGC personnel or subcontractors may be involved in performing Covered Tasks. The Supervisor of Distribution will be responsible for the following:

- Identification of employees/subcontractors who may be involved in performing Covered Tasks.
- Insure that employees/subcontractors involved in performing Covered Tasks are qualified, or that operating area management insures that non-qualified personnel performing Covered Tasks are closely observed by a person qualified to do that Task.
- Insure that new employees/subcontractors are properly qualified before performing any Covered Task without close observation.
- Insure that employees/subcontractors are properly requalified at the designated requalification interval for each Covered Task.
- Make necessary decisions concerning any alternative test type to be administered, evaluating work history reviews, and other items specific to the operating area with approval from the operating area manager, Supervisor of Distribution, or the General Manager depending on the impact or complexity of the issue.
- Identify any issues of questionable performance within the operating area or incidents involving questionable performance that would warrant a review of an employee's/subcontractor's qualification and need for requalification or removal from performance of one or more Covered Tasks

## **6.3 Employees/Subcontractors Performing Covered Tasks**

Attachment A sets forth the full list of Covered Tasks and identifies by major operating area and employee title or type of subcontractor the Covered Tasks

those employees/subcontractors will normally be required to be qualified to perform. Attachment A also identifies the supervisory titles in each area and identifies those Covered Tasks the supervisory personnel will normally be qualified to perform.

For subcontractors working with multiple personnel on a crew, not each subcontractor employee will be required to be qualified. Normally one or two key personnel on the crew will require qualification to insure that a qualified subcontractor employee is on site to either perform the Covered Task or closely observe another person perform the Covered Task. Subcontractor laborers will not normally be required to be qualified, except for such tasks they would ordinarily perform independently such as coating a pipe. The supervisor for that operating area will establish which and how many subcontractor employees must be qualified.

NHGC will require subcontractor employees who must be qualified to do so either through the NEGA qualification program or by NHGC. NHGC will not accept a subcontractor's own internal qualification program for work on NHGC's system. A subcontractor may request NHGC to accept the subcontractor's own internal qualification program in lieu of NEGA or NHGC qualification. In such a case, the program must be reviewed by the Supervisor of Distribution, and acceptance of the subcontractor's program must be approved by the General Manager. That Program must also be referenced in NHGC's OQ Plan.

In the event of a gas emergency requiring NHGC to accept outside employees under a Mutual Aid Agreement, such as the NEGA Mutual Assistance Plan, NHGC will review the tasks to be performed by outside employees and determine which tasks are Covered Tasks under OQ. Only qualified employees will perform Covered Tasks. NHGC will accept **NGA** qualification for Covered Tasks and will normally accept another NEGA company's in-house qualification for employees received under mutual aid. In the event there is any question about qualification, those outside employees supplied under mutual aid will only support qualified personnel in the performance of Covered Tasks or work under close observation of a qualified NHGC employee/supervisor when performing such Task.

#### **6.4 Mergers**

**During a merger this plan shall stay in effect till a new plan is approved by the Public Utilities Commission.**

## **7.0 Timetable**

The timetable for Operator Qualification is as follows:

After 10/28/02- any employee or subcontractor who performs a Covered Task for the first time and was not previously qualified must be qualified by a method other than Work History Review. This also applies to any/all requalifications required.

## **8.0 Work History Review**

The Work /History Review is only applicable to employees/subcontractors who performed a Covered Task prior to 10/26/99 for NHGC. Work History Review is considered Transitional Qualification in accordance with DOT 192.805. Most NHGC employees requiring qualification prior to the 10/28/02 deadline, will be qualified based on Work History Review. The operating area's supervisor is responsible for conducting the Work History Review, which will be reviewed/approved by the operating area's manager or director.

NHGC has targeted July 1, 2002 to complete all Work History Reviews for applicable incumbents.

Work History Reviews for qualification on Covered Tasks will not be used for NHGC's subcontractors. Subcontractor qualification will involve a test as required by Initial Qualification. The Supervisor of Distribution with concurrence with the General Manager may make an exception and approve qualifying a subcontractor on the basis of Work History Review.

## **9.0 Initial Qualification**

Those employees who were not performing Covered Task(s) as of 10/26/99 or are newly hired or newly assigned to an operating area must be qualified in a manner other than Work History Review.

The available qualification methods include:

- Written testing
- Oral Testing
- Observation during performance on the job
- Observation during on the job training
- Simulation

Qualification to perform a Covered Task will use one or more of the above methods. The Supervisor of Distribution, subject to review and approval of the qualification method and content by the General Manager, Qualification testing may be either in-house or through the **NGA** program.

## **10.0 Requalifications**

### **10.1 Requalifications**

Requalifications are defined as subsequent or periodic qualification for Covered Tasks for which a person was previously qualified and needs to be requalified for the continued performance of those Tasks.

### **10.2 Abnormal Operating Conditions**

Abnormal operating conditions are required to be answered correctly no matter which method of requalification is used.

### **10.3 Requalification Methods**

Requalification methods will consist of one or more of the following:

- Written Testing
- Oral Testing
- Observation during performance on the job
- Observation during on the job training
- Simulation

The Supervisor of Distribution is responsible for coordinating or conducting requalifications. The requalification may be done in-house, through use of the **NGA** testing service, or through use of another approved qualification service.

### **10.4 Requalification Intervals**

The normal task requalification intervals for NHGC are listed in Attachment 1. The Supervisor of Distribution may establish requalification intervals more or less than the nominal depending on the specific task. However, there will not be different requalification intervals for the same task in different operating areas at NHGC.

## **11.0 Records**

### **11.1 Qualified Employees/Subcontractors**

The database of currently qualified employees/subcontractors and the Covered Tasks they are qualified to perform will be recorded and maintained in NHGCs office. The managers and supervisors of the operating areas, and personnel assigned will update those records.

PUC personnel will be allowed access to NHGC records of qualified employees/subcontractors.

### **11.2 Record Retention**

The OQ database will include the name of the employee/subcontractor. The qualified Covered Tasks, the date(s) of last qualification, the name of the qualifier, the method of qualification, and the required date of requalification.

Records will be kept for the required ten (10) year period for both active employees/subcontractor employees including any employees/subcontractor employees who performed Covered Tasks who are no longer actively performing Covered Tasks at NHGC.

For qualification or requalification, the only record retained will be a pass/fail for the employee/subcontractor, the date tested/qualified, the method used, and the person(s) who administered or approved the qualification or requalification. Copies of actual tests or numerical grades will not be retained.

11.3 Records will be keep in the field for inspection by pipe line safety officials.

## **12.0 Part 191 Gas Incidents**

If a gas incident occurs requiring NHGC to file a DOT Incident Report, the manager of the affected operating area, the Supervisor of Distribution, and the General Manager shall review the details of the incident to determine if any individual's performance of a Covered Task contributed to the incident.

If it is determined that an individual or individuals' performance did or may have contributed to the incident, those individuals will immediately cease performing the Covered Task(s) in question. Such individuals will not be allowed to perform the Covered Tasks in question until successfully requalified.

### **13.0 Reasonable Cause**

If an employee's or subcontractors employee's performance raises reasonable cause for concern in that employee's/subcontractor employee's ability to continue to perform a given Covered Task, NHGC may prohibit such individual from performing the Covered Task(s) in question until the individual is successfully requalified. Requalification based on a reasonable cause finding shall be by one of the testing methods covered in 10.2.

A reasonable cause finding for requalification may stem from poor performance in the field of Covered Tasks, field failures involving Covered Tasks even though there may not be a resulting Part 191 gas incident, or a physical change in the employee that could affect performance of a Covered Task.

The determination to require reasonable cause requalification will be the decision of the Supervisor of Distribution, with final approval from the General Manager.

An employee's/subcontractor's failure or refusal to submit to requalification based on a reasonable cause finding will immediately preclude that employee/subcontractor employee from performing the Covered Task, alone or under observation, on NHGC's system, until that employee/subcontractor employee is successfully requalified for the Covered Task(s) in question and the operating area's manager has approved reinstatement of the employee/subcontractor employee.

### **14.0 Failure to Qualify or Requalify**

NHGC employees who fail an initial qualification test or requalification test for performing a Covered Task will be allowed to retake the test two times within 3 months from the time of the initial failure. During this period the employee may not perform the Covered Task(s) in question unless closely observed by a qualified individual. If the employee does not pass the qualification test or requalification test on the third attempt, they will be reviewed by the Supervisor of Distribution as to whether they should continue in their position.

Subcontractor employees who require qualification will not be allowed to work on NHGC's system performing Covered Tasks unless they hold valid current qualification.

## **15.0 Changes That Affect Covered Tasks**

Supervisor of Distribution shall perform an annual review of OQ to determine if there are any changes that affect the employees performing Covered Tasks and whether the Covered Task list by title in the area is current. That annual review shall be documented.

The General Manager will advise each of the operating areas of any regulatory changes, which affect the list of Covered Tasks for that area and direct the Supervisor of Distribution to then update the affected titles within its area.

Changes in specific equipment used in an area for a task, or changes in types of fittings are not considered changes affecting an employee's or subcontractor employee's qualification to perform a Covered Task. They are considered training and instruction items for employees qualified to perform the task.