2009 AGA Operating Section Proceedings

Text and images copyright © 2009 American Gas Association. All rights reserved.

The enclosed presentations/papers were presented at the 2011 AGA Operations Conference. The presentations/papers were created by the individual presenters and presented in a public forum. The views, comments and recommendations expressed are the authors' and do not necessarily represent those of the American Gas Association.

The AGA disclaims liability for any personal injury, property or other damages of any nature whatsoever, whether special, indirect, consequential or compensatory, directly or indirectly resulting from the publication, use of, or reliance on this document. All warranties, express or implied, are disclaimed, including without limitation, any and all warranties concerning the accuracy of the information, its fitness or appropriateness for a particular purpose or use, its merchantability and its non-infringement of any third party's intellectual property rights. AGA expressly disclaims any and all responsibilities for the accuracy of the information and makes no representations or warranties regarding the information's compliance with any applicable statute, rule or regulation.

In issuing and making this document available, the AGA is not undertaking to render professional or other services for or on behalf of any person or entity. Nor is the AGA undertaking to perform any duty owed by any person or entity to someone else. Anyone using this document should seek the advice of a competent professional in determining the exercise of reasonable care in any given circumstances.

AGA Catalog Number: X50907
Published by: American Gas Association, 400 N. Capitol Street, NW, Suite 450, Washington, DC 20001


Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA

Some format issues inherent in the e-media version may also appear in this print version.

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2634
Email: curran@proceedings.com
Web: www.proceedings.com
# TABLE OF CONTENTS

## Volume 1

### CORROSION CONTROL

**Dynamics of Pig Motion in Gas Pipelines**

K.K. Botros, H. Golshan  

**Benefits of Laboratory Testing**

Phil La Susa  

### DIMP

**Comprehensive Risk Model for Distribution Integrity Management**

Brett Beaver, Alicia Farag  

**Key Strategies for Developing Distribution Integrity Management Plans**

Kaye White Walker  

**Distribution Integrity Management Data Preparation & Conversion**

Thomas Marlow  

**Distribution Integrity Management for Plastic Gas Pipelines**

K. Oliphant  

**ATMOS Energy DIMP Data Acquisition**

Troy Paige  

**Distribution Integrity Management Update**

Victoria Plotkin, Andrew Lu  

**DIMP Data Management: Where to Start?**

Richard A. Cornell  

### DISTRIBUTION & TRANSMISSION ENGINEERING

**What Tools are Available to Help Maintain a Code Compliant MAOP for a Highly Complex and Changing Gas Pipeline System?**

Larry C. Decker  

**The Impact of the Mechanical Coupling Replacement Legislation on a Distribution System**

Jerry V. Gann  

**Engineering and Operating Standards**

Steven Himmelfarb  

**Gas Construction Standards at PECO Energy**

Michael J. Lyons  

**Gas Standards Processes: NiSource Distribution Operations**

Lee Reynolds  

**Distribution Capital Allocation and Prioritization at NiSource**

Brian Schenk, Charles Crews  

**Electronic Distribution of User Manuals**

Diane Dougherty  

### DISTRIBUTION CONSTRUCTION & MAINTENANCE

**Damage Prevention – Using Trenchless Technology**

Christine Maynard  

**Sewer Lateral Investigation Program (SLIP)**

Jerry Schmitz  

**Stitching Together Disparate Data Systems to Create a ‘Single Version of the Truth’**

Jim Mlachnik
Unmarked Sewer Threats and What We Can Do About It ............................................................. 328
  Jason Samara
Utility-Contractor Safety / Quality: A Contractor's Perspective ................................................. 343
  Dan Weaklend
Modern Leak Detection Technologies .......................................................................................... 389
  Paul D. Wehnert

DISTRIBUTION MEASUREMENT

The Business Case for a Remote Disconnect Meter .......................................................................... 434
  Tal R. Centers Jr.
The Evolution of Sonic Nozzles in Distribution and Small Transmission Measurement Testing
Applications ........................................................................................................................................ 454
  Gregory A. Germ
Meter Installations .......................................................................................................................... 467
  Ed Ostrovich

ENERGY EFFICIENCY FORUM

Natural Gas Utilities in a Carbon-Constrained World – A Vision of the Future .................................. 485
  Roger B. Cooper
Creating the Climate for Change ..................................................................................................... 493
  Sue Fleck
Ensuring the Role of Natural Gas Utilities in the New Energy Economy ......................................... 517
  Paula A. Gant
Introduction to Today's U.S. and Canadian Gas Efficiency Programs ........................................... 534
  Marc Hoffman
PG&E's Gas Efficiency Programs ..................................................................................................... 547
  Duane Larson
Carbon Footprint Calculator ............................................................................................................. 569
  Neil P. Leslie
Natural Gas Utility in a Carbon Constrained World — A Vision of the Future ......................... 582
  Jack Lewnard, Edward Johnston
Utilization Technology Development (UTD) .................................................................................... 610
  Greg Maxfield
Energy Efficiency & Green Technologies ......................................................................................... 624
  Tom Moskitis
The Next Generation of Gas Products .............................................................................................. 650
  Rinnai
Council for Responsible Energy ....................................................................................................... 667
  Donna N. Peeples
Federal Appliance Standards & Local Building Codes ................................................................ 692
  Jim Ranfone
Naturally Green Natural Gas Program .......................................................................................... 719
  Jim Ranfone
Green Building Program Update ................................................................................................... 737
  Thomas Schultz
Green Globes ................................................................................................................................... 785
  Erin Shaffer

Volume 2

Green Building Standards Panel .................................................................................................... 818
  Catherine T. Sheane
Promoting Direct-Use of Natural Gas to Meet State Goals ........................................................... 866
  UGI Utilities, Inc.
ENVIRONMENTAL MATTERS

Understanding the Behavior of PCBs in Natural Gas Systems ................................................................. 873
  John P. Woodyard

GAS CONTROL

AGA - Control Room Management .................................................................................................................. 920
  Steven Baroni
Gas Controller Training ........................................................................................................................................ 950
  Bill White
Control Room Management ............................................................................................................................... 983
  Byron Coy
Recognizing Signs of Fatigue ............................................................................................................................ 1003
  Todd Dawson
NiSource Gas Control ......................................................................................................................................... 1021
  Skip Hall
Human Factors Analysis of Pipeline Monitoring and Control Operations ....................................................... 1026
  Marvin McCallum

PLASTIC MATERIALS

Status of Plastic Piping Data Collection Project .............................................................................................. 1039
  Stephen Boros
Fundamentals of Conducting Substandard Material Investigations (Failure Analysis) .................................... 1062
  Gregory S. Efthemes
Performance Testing of PE Pipe to Address Operator Needs & Concerns ....................................................... 1130
  Angelo Fabiano
Large Diameter Gas Distribution Mains ........................................................................................................... 1152
  Karen S. Lively
Comprehensive Validation for the Use of Polyamide 12 (PA12) for High Pressure Gas Distribution Applications (Performance Testing and Field Evaluations) ........................................................................... 1186
  Hitesh Patadia, George Rogala, John Kasinski, Andreas Dove
Ensuring Long Term Gas Distribution System Integrity by Performing Testing and Failure Analysis of Materials .................................................................................................................................................................................. 1220
  Parashar (Perry) Sheth

SAFETY & OCCUPATIONAL HEALTH

New Tools Can Reduce Injuries and Improve Safety in Gas Distribution Field Operations... Including the Jackhammer Lift Assist ...................................................................................................................................................... 1244
  Bruce Campbell, Steve Guthrie
AGA Safety Achievement Award Winner Presentation ....................................................................................... 1297
  Gary W. Wojcik
Safety Violations Could Cost You More Than Money— They May Cost You Your Freedom ......................... 1322
  Mark A. Lies II, Megan Newman
Enhanced OSHA Liability for "Controlling Employers" .................................................................................. 1326
  Mark A. Lies II, Elizabeth Leifel Ash
OSHA Defense 101: Avoiding the OSHA Liability Pyramid .......................................................................... 1333
  Mark A. Lies II, Elizabeth Leifel Ash
A Proven Strategy and Key Actions to Accelerate Safety Success .................................................................. 1340
  Cathy Hansell
SUPPLEMENTAL GAS

Decommissioning of Propane Air Plants and Standby Systems ................................................................. 1363
  Robert Armentano, Jennifer Janelle

The Cooldown Gap ...................................................................................................................................... 1377
  Jeff Beale, Osifo Akhuemonkhan

Pipeline Quality Biomethane from Dairy Waste: Guidance Document ...................................................... 1423
  Diane L. Saber

Interchangeability of Biogas Assessment for End Use .................................................................................. 1452
  Rosemarie Halchuk

Revitalize Your LNG Asset(s) .......................................................................................................................... 1474
  Chris Hosford

Measurement of Moisture and Carbon Dioxide in LNG ................................................................................. 1489
  Sam Miller

TRANSMISSION MEASUREMENT

Performance Analysis of an Operational Metering Station Using Ultrasonic Flowmeters .............................. 1524
  Martin Bragg, Jeff Tilden, Mike Thackray, Michel Van Groezen

On the Difference between US Example Supply Gases, European Limit Gases, and their Respective
Interchangeability Indices ............................................................................................................................ 1571
  C.J. Ennis, K.K. Botros, D. Engler

Commercialization and Further Development of an Inferential Energy Meter ............................................ 1626
  Darin L. George

Volume 3

Systems” Have on Yesterdays and Today’s Flow Computers? .................................................................... 1654
  James Griffith

TeST “Watchdog” Inter-Laboratory Comparison Test ..................................................................................... 1666

Examination of Ultrasonic Flow Meter in CO2-Rich Applications ............................................................. 1676
  John Lansing, Andreas Ehrlich, Toralf Dietz

Ultrasonic Meter Condition Based Monitoring – A Fully Automated Solution ........................................... 1690
  John Lansing

Comparison of AGA Report No. 8 and GERG 2004 Equations for Gas Property Calculations ..................... 1714
  Eric W. Lemmon

Improved Meter-Factor Corrections for Turbine and Vortex Shedding Flow Meters ..................................... 1751
  G. E. Mattingly

Effect of Orifice Plate Manufacturing Variations on Orifice Meter Performance .......................................... 1774
  Marybeth Nored

AGA 4A (2009) Update .................................................................................................................................. 1788
  Henry W. Pfeilnitz III

Background and Practical Application of the PRCI Multi Run Uncertainty Calculator .................................... 1814
  Rick Rans

Predominance of Pipe fittings on Installation Effects ..................................................................................... 1833
  Blaine D. Sawchuk, Danny A. Sawchuk

Loss of Odor Through Conjugation, Suppression and Cross- Adaptation: How One Plus One Can
Sometimes Equal Zero .................................................................................................................................. 1869
  Thomas J. Bruno

Clamp-on Ultrasonic Meters as Diagnostic Tools .......................................................................................... 2027
  Terrence A. Grimley

Quantification of the Effect of Dirty Upstream Pipe on Ultrasonic Meter Performance ..................................... 2041
  Terrence A. Grimley
UNDERGROUND STORAGE

Carbon Dioxide Corrosion Management in Underground Storage ......................................................... 2050
  Neil Anderson

Internal Corrosion Mechanisms ........................................................................................................... 2098
  Keith Bartrip

Introduction to Inventory Assessment in Underground Gas Storage Reservoirs ....................................... 2164
  Ken Brown

Sequestration Program Overview .......................................................................................................... 2259
  Bob Kleinmann

The Use of Deep Well Anode Systems for Gas Well Casing Cathodic Protection .................................... 2326
  Matt Matlas

Benefits of Injecting CO₂ into Depleted Natural Gas Reservoirs ............................................................ 2357
  Curtis M. Oldenburg

UTILITY & CUSTOMER FIELD SERVICES

Mobile Work Force Management ............................................................................................................ 2397
  Jon Huddleston

Knowledge Transfer: The Education of a New Workforce ........................................................................ 2417
  David J. McCarthy

Smart Notifications for Faster Incident Response .................................................................................... 2430
  Steve Pegram

Knowledge Transfer: Training Tomorrows Workforce ........................................................................... 2450
  Paul D. Puckett

Dispatch Operations and Nontraditional Shifts Surveys ........................................................................... 2460
  Lance Rainge

Utility Customer Field Services: SOS Summary of Field Customer Service Metrics ................................ 2487
  Jim Selman

Author Index