

**2019 WGMSC Topics and Class Descriptions**

**Odorization and Gas Quality**

Introduction to Gas Quality – May Lew, SoCal Gas

This presentation covers the fundamentals of gas quality parameters, analysis and methods used to determine gas composition.

Advanced Gas Quality – May Lew, SoCal Gas

An advanced level presentation on the fundamentals of gas quality parameters, analysis and methods used to determine gas composition.

Principles of Odorization – Olivier Griperay, Arkema

This presentation covers the principles of odorization, including regulatory requirements, types of odorizers, odorant selection, tank sizing, level detection, and system design.

Gas Odorants: Safe Handling, Health and Environment – Dr. Daniel Arrieta, Chevron-Phillips Chemical Company

This presentation covers the occupational hazards and environmental impacts of odorants, the regulatory requirements, and recommendations for safe handling and personal protection equipment (PPE).

Odorant Transfer Systems and Safe Efficient Deliveries – Juraj Strmen, MRR

A detailed discussion of odorant transfer systems (including closed loop, flare, and venting) for product transfers from stationary and portable tanks. The discussion will focus on operations safety, closed loop designs, and system integrity.

Measuring Hydrocarbon Dew Point Accurately – Andy Benton, Michell Instruments

Methods and Economics of measuring the hydrocarbon dew point (HCDP) of the natural gas fuel.

Gas Chromatograph Maintenance – Jamie Marsden, Emerson

This presentation covers maintenance of gas chromatographs, including the sample handling system, and the gas chromatograph analyzer. In addition, it also covers routine diagnostics and system overhaul.

Odorization Equipment Decommissioning – Wesley Lucas, MRR

This class will discuss in detail various methods and processes used for decommissioning odorization systems from removal, deconstruction and scrap.

Pipeline Pickling – Dan McCormack, Tansley Associates

Discuss pipeline conditioning, pickling, and odor fade in new construction, conversions, and in the maintenance of existing odorized facilities.

**Best Practices and General Interest**

Hazardous Area Classification – Larry Matora, SoCal Gas

This presentation reviews AGA and API standards, utilized in determining the hazardous location classification for electrical wiring, along with discussion of typical hazardous location classifications encountered in the gas industry.

Commercial Meter Set Design – Eric Kaert, Spartan Controls

This presentation provides and introduction to meter set design, applications, and best practice recommendations.

Temperature, Pressure and Installation Effects on Metering Accuracy – Paul Tang, FortisBC Energy

This presentation covers the effects of operating pressure, temperature, installation, and other factors on the performance of high volume gas flow measurement.

Valve Maintenance: Best Practices– Jason Dellow, Western Gas Technologies

This presentation covers a general overview of plug and ball valves, preventative and reactive maintenance procedures, recommended tools, “tricks” and “tips”.

Solving Complex Process Analyzer Field Problems – Peter Cartmell and Selwyn Pandian, Galvanic Applied Sciences

Do you know what to expect when servicing online process analyzers? Other than routine maintenance, there are infinite surprises that can occur leaving you scratching your head. In this session, we will be sharing some war stories from the field. Led by an experienced field service engineer, they will share insights for how to approach problem solving.

Telemetry and Wireless Communications at Stations – Mike Pugh, Intermountain Gas Co.

This presentation covers the parameters for selection of Telemetry and/or Wireless Communication at stations, and examples of recommended Best Practices.

Atmospheric Corrosion Mitigation for above-ground Piping – Kelly Crystal, Intermountain Gas Co.

This presentation covers the processes for identifying corrosion on exposed pipe at stations and recommendations for mitigation of the corrosion.

System Pressure Monitoring – John Swartz, Eagle Research

This presentation covers System Pressure Monitoring Best Practices in Distribution systems, with recommendations for: recording, documentation, and reporting.

**Measurement**

Introduction to Basic Gas Laws – Tim Clark, Itron

For those new to measurement or needing a refresher, an introduction to the basic gas laws including Boyle's Law, Charles' Law, Ideal Gas Law, and supercompressibility; and how they are used in gas measurement.

Introduction to Gas Metering – Bob Bennett, Honeywell

A discussion of positive displacement (diaphragm, rotary) and inferential (orifice, coriolis, vortex, turbine, and ultrasonic) meter basics and their application in natural gas measurement.

Introduction to Ultrasonic Meters – John Lansing, Lansing Measurement Services

Discussion of the theory of operation of ultrasonic meters including velocity of sound determination; effects of gas composition, gas velocity, flow conditioning, and flow profiles; accuracy and uncertainty; and flow calibration.

Fundamentals of Gas Turbine Meters – Paul Honchar, Sensus

This class will focus on the basic theory, operating principles, performance characteristics and installation requirements used in turbine meter applications. A discussion of fundamental turbine meter terminology is also included.

Selection and Usage of Coriolis Meters for Gas Measurement – Tonya Wyatt, Emerson

A discussion about properly selecting and sizing the correct Coriolis meters for various applications within the natural gas market.

Differential Pressure Testing of Rotary Meters – Madeline Corb, Dresser

A discussion on how to conduct differential testing of rotary meters, how to interpret and act on the results, and the various state commission rules pertaining to differential testing.

Ultrasonic Meter Station Design – David Crandall, Cameron Measurement

A discussion of the specific considerations the engineer should consider when designing ultrasonic meter installations such as noise abatement, header design, meter maintenance and gas flow conditioning.

Fundamentals of Flow Computers – John Swartz, Eagle Research Corp.

Presentation on the fundamental parameters to consider when designing an Electronic Flow Measurement (EFM) system.

Regulator and Industrial Meter Station Design – Lamar May, Williams Northwest Pipeline

Presentation on regulator and meter station design from concept to installation. Emphasis on district regulator stations, large industrial meter stations, and custody transfer facilities.

Measurement Standards and Updates – Jeremiah Gage, Genie Filters

Presentation will focus on recently updated U.S standards, guidelines and recommended practices pertaining to dry natural gas volume/mass measurement and energy/content/heating value determination.

Distribution Gas Meter Proving – Gregory Germ, Honeywell

The lecture-type workshop will discuss the importance of accurate gas meter proving and testing. The discussion will introduce common gas meter testing terminology and definitions, describe the three most common types of distribution gas meter test equipment, explain proper prover calibration and certification techniques, and list common direct and indirect concerns that may lead to errant gas meter test results.

Understanding Gas Ultrasonic Meter Diagnostics – Joel Nava, Sick

This session will introduce attendees to the basic concepts of ultrasonic measurement and introduce the basic diagnostic signals and how they may be interpreted.

Combined Accuracy – Rex Allen, Sempra Utilities

In this workshop we will discuss elements that make up combined accuracy: over/under calculation of EVC accuracy. Technician error/mis-programming, transducer error, RTD error, meter error and meter degradation. How to calculate “as found” and “as left” combined accuracy. Billing and LUAF impact.

Meter Sampling Theory – David Thai, Sempra Utilities

Discuss meter sampling program specifications and results. Sub-topics to include sample criteria, acceptable accuracy for meter retention, regulatory requirements, meter family replacement, considerations and trends; and related economics factors.

**Regulation**

Introduction to Gas Regulation – Robbie Swigert, Itron

The fundamentals of pressure regulation covering spring and pilot type regulators, sizing, operation, and troubleshooting.

Introduction to Overpressure Protection – Peter Cathcart, Northwest Natural Gas

Introduction of methods available to prevent over-pressurization of downstream piping per applicable code requirements

Introduction to Regulator and Relief Sizing – Mark Dykoff, Caltrol

Introduction to concepts required to size regulators, relief valves, and monitor stations.

Flexible Element Regulators – Reese Dawes, Spartan Controls

Presentation of the advantages and disadvantages of flexible element regulators including a review of monitor and single cut/relief applications, principles of operation, sizing, installation/ maintenance, and best practices.

Noise Mitigation in Regulator Stations – Lamar May, Williams Northwest Pipeline

Introduction to the causes of regulator station noise and methods used to mitigate.

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Regulator Freeze Protection – Austin Sorenson, Williams Northwest Pipeline

Application of technologies to mitigate freezing issues associated with the Joule-Thomson effect in the natural gas industry.

Troubleshooting Regulators – Paul Anderson, Emerson

Presentation will offer a systematic approach to troubleshooting. Discussion will include common causes of delivery pressure problems at regulation facilities: overpressure, under-pressure, cyclic or unstable control; and solutions for those issues.

Troubleshooting Control Valves – Jim Green, Tri-Pacific

Presentation will offer a systematic approach to troubleshooting and correcting problems with pressure control valves.

Three Mode Control (PID) Tuning – Ed Austin, PCE Pacific

Presentation will offer methods for tuning Three Mode Control (PID) loops, including PID definition and basic theory.

Monitor Strategies and Implementation – Sam Hegje, Tri-Pacific

Presentation will discuss various strategies for Monitor regulator or control valve use and provide example of different methodologies.

Regulator and Relief Valve Field Challenges: Writing and Implementing Field Procedures for Testing Regulator Lockup & Relief Valve Set Points – Ken Goodwin, PCE Pacific

Presentation will discuss variations in maintenance practices in the industry and will cover important considerations.

Regulator Sample Testing – Peter Klock, ESC Engineering Services

Presentation covers implementation of regulator sample testing to monitor incoming product quality and methods to test incoming regulators.

**Roundtable**

Overpressure Protection & Slam-Shut Regulator Strategies

Discuss overall OPP methodologies as well as both low- and high-pressure applications for slam-shut regulator devices including any operational experience and strategies associated with this form of overpressure protection.

Gas Quality Management and Interchangeability

Discuss natural gas properties, downstream end-user considerations, and gas quality management solutions including gas quality specification and BTU changes, blending, customer outreach, equipment tuning, and real-time gas quality monitoring/reporting.

AMR/AMI Selection, Deployment, and Operations

Discuss major deployments, limited strategic deployments, telecommunication devices, communication methods, implementation problems, validation methods, and host hardware and software.

Wireless Communications and Data Collection

Discuss emerging communication bands, competing technologies alternatives, line of site limitations, alarm troubleshooting, regulatory issues, and changing price structures

Alternate Supply Sources and Issues

Discuss management and use of non-traditional feedstocks such as CNG, LNG, and biogas as well as gas quality management processes and operational considerations associated with their use.

Automatic and Remote Control Valves, Applications and Considerations for System Isolation

Discuss the design, installation, operation and maintenance of remotely-controlled and automatic shut-off valves on transmission and distribution pipeline systems. Sub-topics to include regulatory interpretation, deployment strategy, equipment selection, control modes, system interdependencies, SCADA, communications and experience with unintended closures

Field Meter Testing / Proving

Discuss experiences with differential testing of rotary meters and how this has reduced costs by increasing the period between meter proofs. Discussion will include regulatory compliance requirements, procedures, policies, practices operational issues and accuracy of meters being tested using this method.

Management & Reporting of Fugitive Emissions

Discuss the management of fugitive emissions and the reporting requirements thereof including compliance strategies for meeting both state and federal mandates.

Pressure Monitoring

Discuss strategies for tracking changes in pressure and flow control remotely.

Changes and New Developments in Meter/Regulator/Electronic selection, Calibration and Maintenance Practices – all equipment types

What's New Quick Hit: Discuss any change in meter/regulator/electronic device selection, calibration and field maintenance practices incorporated in the last two years. Include changes to billing and or gas quality and leak registration testing. Quick hit of changes adopted since last WGMSC: Purpose and results of change.  
Bring examples of what new processes, procedures, or policies your company has recently adopted.

Protecting Your Company from an Over-Pressure Event – A Discussion on the Industry’s Response to Recent Events

A discussion surrounding the emergency response planning in the event of an over-pressure incident. The discussion will include strategies on how to mitigate and control the severity of the event.

Sulfur (Dithiazine) Sources

Sulfur reactions in gas distribution piping systems and the use of scavenger chemicals during the production process.

**Hands On**

ABB Chromatograph

ABB Total Flow

Becker Control Valve VPR Pilot

BPE Control Valve and Positioners (Pneumatic and Electronic)

Combustible Gas Indicators

Dresser D-800 Meter

Dresser IMCW2 Electronic Temp Correcting Index

Dresser ES3/ETC Electronic Volume Corrector

Dresser Differential Pressure Testing of Rotary Meters

Dresser Model 5 Prover

Dresser Rotary Meter Repair

Eagle Research Electronic Volume Corrector

Emerson/Daniel GC

Emerson/Daniel Ultrasonic Meter Setup and Repair

Emerson/Fisher Regulators

Emerson/ROC800/FF107 Configuration

Emerson Section VIII Low Pressure Relief Valves

Emerson/Rosemount Smart Transmitter Operation and Calibration

FMG Meters

Heath “Odorator” Odorant Tester

Honeywell/American Meter Regulators

Honeywell/American Meter RPM/RABO Rotary Meter

Honeywell/American Meter Snap Prover

Honeywell/American Meter Turbine Meters

Honeywell/Elster/Instromet Ultrasonic Meter Setup and Repair

Honeywell/Mercury EC 350 Installation and Maintenance

Hy-Loc Tube Fitting and Bending

Itron Regulators B42

Mooney Flowgrid Operation and Maintenance

Mooney Flowmax Operation and Maintenance

Pietro Fiorentini Regulators

Romet Rotary Meter Installation and Maintenance

Schneider Electric

Sensus Turbine Meter Repair

Sick Inc. 500 Ultrasonic Meter Setup and Repair

Sick Inc. 600 Ultrasonic Meter Setup and Repair

Swagelok Tube Fitting and Bending

Welker Ecosystem Pulse Bypass Odorization

YZ DTEX Odorant Detection

YZ Odorant Pumps