2017 Class Descriptions

**General Interest**

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

Principles of Odorization – Stephen West, Welker

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 – Michael Leathers, Chevron-Phillips Chemical Company

This presentation covers odorant transfer systems, focusing on: operations safety, closed loop design, and system integrity, for stationary and portable tanks

Measuring Hydrocarbon Dew Point Accurately and its Financial Impact – Robert Kenney, Michell Instruments

This presentation focuses on identifying the costs, risks and major factors that contribute to best practices for measuring the hydrocarbon dew point (HCDP) of the natural gas fuel

Gas Chromatograph Maintenance – Bonnie Crossland, Emerson Automation

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

Pulsation Mitigation and its Effects on Metering – Terry Grimley, SWRI

This presentation describes the effects of pulsation on orifice, turbine, ultrasonic, and other flow meter types, then covers basic methods for mitigating pulsation effects

Hazardous Area Classification – Alex Hicks, 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

Meter Set Design – Mike Leggitino, Western Gas Technologies

This course will cover the design and application of natural gas meter sets. This presentation discusses the revolution in meter set design and offers insight into meter set design features that increase the fabrication effectiveness

Considerations for M2M Hybrid Wireless Networks – Dan Steele, Automation-X Corporation

This presentation covers the continuous development of Machine-to-Machine (M2M) communication in the Natural Gas Industry, and focuses primarily on wireless networks

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.

Plug and Ball Valve Maintenance – Mike Leggitino, Western Gas Technologies

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

**Measurement**

Introduction to Basic Gas Laws – Nronjie Blamoh, 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, American Meter

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, CEESI

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 presentation of the benefits of Coriolis mass flow meters for gas flow measurement

Differential Testing of Rotary Meters – Craig Lam, 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 – Thomas Kegel, CEESI

While some meter station design details have remained unchanged over the years, others are specific to the ultrasonic meter. Any new technology will include unique features and limitations that need to be considered in the design. This workshop discusses the design details based on material from industry standards, published test results and operating experience. The information is valuable to both new and seasoned ultrasonic meter users

Fundamentals of Flow Computers – Jereme Stewart, Eagle Research Corp.

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

Regulator and Industrial Meter Station Design – Josh Fort, Avista

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 – Terry Grimley, SWRI

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, Elster

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 – Irvin Schwartzenburg, 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

## Run Switching – Thomas Kegel, CEESI

This class will provide an overview of run switching for multiple meters runs to handle ranging flowrates

Regulation

Introduction to Gas Regulation – Kevin Shaw, Itron

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

Introduction to Overpressure Protection – Robbie Swigert, Itron

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

Power Plant Pressure Control – Jim Green, Tri-Pacific

Regulation of large industrial customers and power plants subjected to rapidly changing flow conditions. Concentration on high volume installations with large combustion turbine engine power plants coupled with small auxiliary loads

Noise Mitigation in Regulator Stations – Jim Robertson, EEI

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

Regulator Freeze Protection – John Tomich, Northwestern

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

Troubleshooting Regulators – Paul Anderson, Emerson Controls

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

**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

Fixed Factor vs. Electronic Volume Corrector Measurement

Discuss criteria for installing electronic correctors, determining and verifying pressure/temperature values to apply to fixed factors, applying compressibility to fixed factor meters, the use of temperature compensated meters, and determining pressure zones

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

Pipeline Conditioning and Pickling

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

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

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

Meter Sampling Programs

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

**Hands On**

ABB Chromatograph

ABB Total Flow

Becker Control Valve VPR Pilot

BPE Control Valve and Positioners (Pneumatic and Electronic)

Combustible Gas Indicators

Eagle Research Electronic Volume Corrector

Emerson/Daniel GC

Emerson/Daniel Ultrasonic Meter Setup and Repair

Emerson/Fisher Regulators

Emerson/ROC800/FF107 Configuration

Emerson/ROC800 PID Control

Emerson/Rosemount Smart Transmitter Operation and Calibration

Flow-Cal Application

GE/Dresser D-800 Meter

GE/Dresser Electronic Temp Correcting Index

GE/Dresser Electronic Volume Corrector

GE/Dresser Model 5 Prover

GE/Dresser Rotary Meter Repair

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

Romet Rotary Meter Installation, Maintenance and Service

Sensus Turbine Meter Repair

Sick Inc. 500 and 600 Ultrasonic Meter Setup and Repair

Spectra Sensors H2O Analyzer and Sample System

Swagelok Tube Fitting and Bending

YZ DTEX Odorant Detection

YZ Odorant Pumps