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# FUNDAMENTALS OF SCADA SYSTEMS FOR THE OIL & GAS INDUSTRY

May 4-5, 2020  
Sheraton New Orleans Hotel  
New Orleans, LA

**POST-COURSE WORKSHOP**

## SCADA Oil & Gas Leak Detection

THURSDAY, MAY 5, 2020



*"It was refreshing to hear other professionals' day to day scope of work and goals with technology moving forward."*

Director, Monument Oil

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EUCI is authorized by IACET to offer 1.1 CEUs for the course and 0.4 CEUs for the workshop

## OVERVIEW

The Fundamentals of SCADA Systems for the Oil & Gas Industry course will explore the history and evolution of SCADA systems, including the differences in the SCADA types and how they have evolved. The course will examine SCADA hardware components and how they work together. Attendees of this course will gain a comprehensive understanding of how SCADA systems work for the oil & gas industry, how and why they were developed, how they are structured, the database and data collection techniques, and uses of the dynamic data by the end user.

There will be an explanation of the data flow from field, through RTU, to frontend processor, and to the control room. We will examine how different telemetry points are processed, learn about analogs, status points, accumulators, and the different ways that they can be collected in field RTU for data exchange, scan rates, and protocols. The course will discuss how data can be processed for the end user, alarm processing, supervisory controls, processing logic in database, and putting it into the dynamic graphic user interface for end to end control and monitoring. We will explore the best data maintenance practices, such as maintaining the data standards, templates, creating the point list and checkout lists, performing point-to-point testing, and maintaining the quality assurance systems independent from productions where jobs are run first.

## LEARNING OUTCOMES

- Review the history and evolution of SCADA systems for oil & gas
- Illustrate the basic hardware and software components of SCADA systems
- Discuss protocols that are used to transmit, collect, store, and manage data
- Discuss the increased need for cyber security for ICS
- Describe different instrumentation measurement technologies
- Review SCADA system architecture
- Discuss the data flow from field to control room
- Identify alarm processing and supervisory control

## WHO SHOULD ATTEND

- Oil and Gas Industry Leadership
- Managers
- Marketers
- Engineers
- Accountants
- Technicians
- Volume Processing Analysts
- Legal Professionals



***"This was a good class breaking SCADA down to the basics and then taking it to higher levels."***

Superintendent of  
Operations, Long Beach  
Energy Resources



***"Enjoyed the broad topics discovered and fluid nature of the course. Carin offered practical experience combined with theory and textbook instruction, keeping the course relevant and topical."***

Project Manager, JP3 Measurement

# AGENDA

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MONDAY, MAY 4, 2020

**8:00 – 8:30 am**      **Registration and Continental Breakfast**

**8:30 am – 5:00 pm**      **Course Timing**

**12:00 am – 1:00 pm**      **Group Luncheon**

**SCADA History and Evolution**

- By technological evolution
- Telemetry based SCADA
- Microprocessors – PLC

**SCADA Types**

- By market evolution
- Distributed
- Networked

**SCADA Systems Components**

**Common SCADA Abbreviations**

**Typical Hardware SCADA Architecture**

- Master administrator - data repository
- Communicator - data acquisition
- Front end processor - RTU
- Historian - data archiving
- Human Machine Interface - individual users

**Typical System Division**

- Primary system
- Backup system
- Training system

**RTUs**

- RTU protocols types
- RTU scans rates and options
- Field devices
  - o Upstream vs midstream vs downstream

**Communications**

- Topologies
- Communication media
- Data acquisition strategies

# AGENDA

## Network

- PCN
- Cloud
- Phones
- IT/OT
- Security
  - o Cyber
  - o Physical

## SCADA Data Collection - Point Types and Uses

- Analog points (measurements)
  - o Limits
  - o Setpoints
- Digital points
- Accumulators (periodic collection)
  - o Meter collections
  - o Counter values
- Status points (indication and controls)
  - o Alarm processing
  - o Supervisory controls

## Data Collection and Q&A Session

## Course Adjourns for Day



***“Great for those with minimal or no exposure to SCADA.”***

Gas Services Field Rep III,  
Long Beach Energy Resources



***“Extremely knowledgeable and great speaker. I will highly recommend to my coworkers.”***

IT Systems Administrator,  
MarkWest Energy Partners

# AGENDA

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TUESDAY, MAY 5, 2020

**8:00 – 8:30 am**      **Continental Breakfast**

**8:30 am – 12:00 pm**      **Course Timing**

**Review of Day 1**

**Data Management**

**Maintaining the Data and Designing a SCADA System**

- Assets
- Field equipment
- Network
- Communications
- SCADA platform
- Data standards
  - o Engineering points list
  - o Naming convention
- Historian
- Reporting
- Regulations
- Best practices
  - o HMI
  - o Alarm rationalization
  - o Point to point
  - o Procedures
- Monitoring
  - o Control room
  - o Field notification

**AI and Machine Learning**

**Course Concludes**

## COURSE AND WORKSHOP INSTRUCTOR

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**Carin Meyer**

**Process Automation Manager, Meritage Midstream**

Carin Meyer has been working with Pipeline SCADA for 13 years. Ms. Meyer started with BP Pipelines in Tulsa Oklahoma as a SCADA Engineer and advanced to SCADA Team Lead. Carin has a bachelor's degree in Business Administration from Regis University, an MBA from Colorado Technical University, and a Masters of Management IT – Project Management from Colorado Technical University. Ms. Meyer sits on several industry steering committees for SCADA Regulation, Leak Detection, and SCADA Cybersecurity. In addition to her current role, Carin speaks at industry conferences, is a technical SCADA instructor for continuing education, and consults for clients who benefit from her SCADA expertise.

## POST-COURSE WORKSHOP

# SCADA Oil & Gas Leak Detection

TUESDAY, MAY 5, 2020

**12:30 – 1:00 pm**      **Registration & Continental Breakfast**

**1:00 – 5:00 pm**      **Workshop Timing**

## OVERVIEW

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During this afternoon workshop—paired to run after Fundamentals of SCADA Systems for the Oil & Gas Industry—the goal is to understand the various moving parts when it comes to leak detection, specifically, in SCADA systems. Attendees will learn the types of leak detection, as well as the regulations, implementations, integrations, and more. Those in class will understand the problems and solutions regarding leak detection, and there will be discussion on assets versus evaluations along with a deep dive on leak detection requirements for the differences between assets and levels of operation.

Although this workshop is a continuation of the SCADA Fundamentals course, those not registering for the prior course are more than welcome to attend.

## LEARNING OUTCOMES

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- Understand the process of receiving a leak detection alert and how to handle the situation from beginning to end
- Evaluate how to recognize an alert versus an alarm, assess the problem, and find the solution
- Discuss how everything regarding SCADA and leak detection integrates, along with any implementations and future training, service, or maintenance

## WHO SHOULD ATTEND

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- Oil and Gas Industry Leadership
- Managers
- Engineers
- Technicians
- Volume Processing Analysts

# AGENDA

TUESDAY, MAY 5, 2020

**12:30 – 1:00 pm**

**Registration**

**1:00 – 5:00 pm**

**Workshop Timing**

**1. Regulations**

- a. API 1135/API 1175
  - i. Alert vs alarm
  - ii. Leak detection requirements for different assets and level of operation
    - 1. Pipeline
      - a. Transmission, gathering, pipeline, upstream, water transfer, HDPE, steel, and downstream
    - 2. Storage tank and vessel
      - a. Upstream vs midstream vs downstream
    - 3. Compressor station
    - 4. Terminal
    - 5. Refinery
  - iii. Future regulatory requirements and planning
    - 1. Rollover periods and timing of implementation
  - iv. Show drill down from SCADA

**2. Types of Leak Detection (LDS)**

- a. Types of assets
- b. Problems
  - i. Corrosion
    - 1. Susceptible areas on pipeline elbows
  - ii. Third party impact
    - 1. Mexico article/Pemex
- c. Solutions
  - i. Continuous
    - 1. CPM
      - a. Classified vs certified (alert vs alarm)
      - b. Mass balance / wave
    - 2. Fiber optics
      - a. Discrete vs distributed
      - b. Temperature, position, strain, acoustic

**3. Hydrocarbon detection**

- ii. Snapshot in time
  - 1. Lidar/visual/drone
  - 2. Dogs
  - 3. Asset vs LDS evaluation
    - a. Evaluate by today's standards and today's technology; retrofit vs install on new asset
      - i. Today's technology is ever-changing

**4. Integration/ Implementation/ Training/ Service/ Maintenance**

**5. Making LDS plan with your asset**

## INSTRUCTIONAL METHODS

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Instruction, PowerPoint, discussion, Q&A will be used in this event.

## REQUIREMENTS FOR SUCCESSFUL COMPLETION

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Participants must sign in/out each day and be in attendance for a minimum of four hours to be eligible for any continuing education credit.

## IACET CREDITS

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EUCI has been accredited as an Authorized Provider by the International Association for Continuing Education and Training (IACET). In obtaining this accreditation, EUCI has demonstrated that it complies with the ANSI/IACET Standard which is recognized internationally as a standard of good practice. As a result of their Authorized Provider status, EUCI is authorized to offer IACET CEUs for its programs that qualify under the ANSI/IACET Standard.

**EUCI is authorized by IACET to offer 1.1 CEUs for this course and 0.4 CEUs for the workshop**

## EVENT LOCATION

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The event is located at **Sheraton New Orleans Hotel**, 500 Canal Street, New Orleans, LA 70130. A room block has been reserved for the nights of May 3-4, 2020. Room rates are US \$203. Call **504-525-5527** for reservations. Mention the EUCI event to get the group rate. The cutoff date to receive the group rate is April 10, 2020 but as there are a limited number of rooms available at this rate, the room block may close sooner. ***Please make your reservations early.***

## REGISTER 3, SEND THE 4TH FREE

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Any organization wishing to send multiple attendees to this event may send 1 FREE for every 3 delegates registered. Please note that all registrations must be made at the same time to qualify.

To Register Click Here, or

**Mail Directly To:**

PMA Conference Management  
PO Box 2303  
Falls Church VA 22042  
201 871 0474  
Fax 253 663 7224  
register@pmaconference.com

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## PLEASE REGISTER

- FUNDAMENTALS OF SCADA SYSTEMS FOR THE OIL & GAS INDUSTRY COURSE AND POST-COURSE WORKSHOP**  
MAY 4-5, 2020: US \$1795  
EARLY BIRD on or before APRIL 17, 2020: US \$1595
- FUNDAMENTALS OF SCADA SYSTEMS FOR THE OIL & GAS INDUSTRY COURSE ONLY**  
MAY 4-5, 2020: US \$1395  
EARLY BIRD on or before APRIL 17, 2020: US \$1195
- POST-COURSE WORKSHOP: SCADA OIL & GAS LEAK DETECTION**  
TUESDAY, MAY 5, 2020: US \$595  
EARLY BIRD on or before APRIL 17, 2020: US \$495

## ENERGIZE WEEKLY

Energize Weekly is EUCI's free weekly newsletter, delivered to your inbox every Wednesday. We provide you with the latest industry news as well as in-depth analysis from our own team of experts. Subscribers also receive free downloadable presentations from our past events.

Sign me up for Energize Weekly

How did you hear about this event? (direct e-mail, colleague, speaker(s), etc.)

Print Name Job Title

Company

What name do you prefer on your name badge?

Address

City State/Province Zip/Postal Code Country

Phone Email

List any dietary or accessibility needs here

### CREDIT CARD INFORMATION

Name on Card Billing Address

Account Number Billing City Billing State

Exp. Date Security Code (last 3 digits on the back of Visa and MC or 4 digits on front of AmEx) Billing Zip Code/Postal Code

**OR** Enclosed is a check for \$ \_\_\_\_\_ to cover \_\_\_\_\_ registrations.

### Substitutions & Cancellations

Your registration may be transferred to a member of your organization up to 24 hours in advance of the event. Cancellations must be received on or before April 3, 2020 in order to be refunded and will be subject to a US \$195.00 processing fee per registrant. No refunds will be made after this date. Cancellations received after this date will create a credit of the tuition (less processing fee) good toward any other EUCI event. This credit will be good for six months from the cancellation date. In the event of non-attendance, all registration fees will be forfeited. In case of course cancellation, EUCI's liability is limited to refund of the event registration fee only. For more information regarding administrative policies, such as complaints and refunds, please contact our offices. EUCI reserves the right to alter this program without prior notice.