

# MVV, OPERATIONS, SURVEILLANCE, GEOMECHANICS & SEISMICITY

## 2.5 DAY IN-PERSON COMPREHENSIVE COURSE

**ASSESS RISK & COLLECT DATA TO MEET MMV REQUIREMENTS & SUPPORT THE SUCCESS OF YOUR PROJECT**

**April 22, 2024**

Surface Operations incl.  
capture technologies,  
operations & troubleshooting

**April 23, 2024**

Subsurface Risk & MVV incl.  
site selection, CO2 fluid properties  
& capture efficiency

**April 24, 2024**

Geomechanics & Seismicity  
incl. site suitability,  
risk assessment & modeling

**WITH RECOGNIZED INDUSTRY EXPERTS:**



**Dr. Wayne Monnery**  
Ph.D., B.Sc, M.Sc, P.Eng



**Richard Baker**




**Amy Fox PhD, PGeo**

# **MVV, OPERATIONS, SURVEILLANCE, GEOMECHANICS & SEISMICITY**

This focused course is designed to address aspects of Monitoring, Measurement and Verification (MMV) plans, particularly those related to operations, surveillance, geomechanics and seismicity. The emphasis is on assessing risk and collecting data to meet MMV requirements and support the success of projects.

The course will allow ample time for discussion, with a key topic being how to best balance meeting requirements with minimizing both risk and costs. Looking into the future, Canada is going to need 50 to 100 times more CCS projects than currently exist, even in the planning stages, and the industry will be tasked with how to decrease costs while becoming better at assessing and minimizing risk.

**Examine real case studies, understand risks  
& gain confidence when evaluating  
your CCS projects**





**REGISTER ONLINE**

[bre-group.ca/risk-and-mmv-course](http://bre-group.ca/risk-and-mmv-course)

## **COURSE DETAILS**

Dates: April 22 8:30 AM - 4:30 PM MST  
April 23 8:30 AM - 4:30 PM MST  
April 24 8:30 AM - 12:00 PM MST

Location: 1000, 350 - 7 Ave. SW, Calgary, AB T2P 3N9

Investment: \$1500 CDN + 5% GST

### **Why participate in this professional development course?**

1. Diverse range of expertise - from facilities, reservoir/geology & geomechanics
2. Gain confidence in assessing & minimizing risk in your CCS projects
3. Discuss data & studies from *real-world projects*

### **Difficulty level & learning outcomes:**

- Intermediate difficulty
- Examine real case studies - learn from hands-on experience
- Engaging discussions on economics & costs
- Deeper dive into assessing & minimizing risk from: capture technologies, wellbore and fault/fracture leakage, containment failure, wellbore issues, etc
- NETWORK with leading peers & experts of the CCS industry
- Gain clarity on carbon sources, types of capture & storage technologies available
- Thorough overview of Risk and Measurement Monitoring and Verification (MMV)
- Understand, with confidence, geomechanical requirements for project approval & MMV

### **Who should attend:**

- Reservoir Engineers
- Geologists
- Geophysicists
- Anyone working in carbon storage who wishes to better understand risk, monitoring & operations

**LUNCH &  
REFRESHMENTS  
INCLUDED**

# INDUSTRY RECOGNIZED EXPERTS



## WAYNE MONNERY

Dr. Wayne Monnery, Ph.D., B.Sc, M.Sc, P.Eng., has written several papers that have been published in both academic and industry journals. He has over 30 years of industry experience, specializing in gas processing (pipeline hydraulics, separation, dehydration, treating, sulfur recovery and refrigeration processes) and also has experience with crude oil dehydration, stabilization and micro-refining topping plants.

Dr. Monnery has experience with developing new technology and is recently involved in lithium, waste biomass and used motor oil pyrolysis and geothermal projects. Dr. Monnery has recognized expertise in thermodynamics and physical and transport properties of fluids. He has consulted for several EPC and operating companies through his company Chem-Pet Process Tech.

He currently involved with a small power-based carbon capture project as well as helping clients determine the best options for utilities decisions. He has been involved with CO<sub>2</sub> dehydration and CO<sub>2</sub> flood gas treating as well as acid gas injection projects for several years.



## RICHARD BAKER

Richard Baker is an executive/project manager/engineer with over 37 years of practical experience in reservoir engineering and CO<sub>2</sub> projects (EOR/CO<sub>2</sub> sequestration/Acid gas injection). He has worked on projects in 53 countries including reservoir characterization/reservoir simulation worldwide in Canada, Russia, Indonesia, South America, North Africa, Middle East, North Sea and North America.

He has been a president of a number of small companies (Yellowbrick; 2006-2009, Epic Consulting Services). The companies were successful from both an economic and technical point of view. He has written a book called "Practical Reservoir Engineering and Characterization" (Elsevier 2015). Richard is a Distinguished Author Member of the Petroleum Society of CIM and received an SPE award in 2007 and a CIM service award in 2008. He has twice won SPE Reservoir Characterization award for Canada and was nominated for a World Reservoir Characterization award. He won the 2018 SPE Mentoring Award for Canada.

In addition to authoring and co-authoring 60+ technical papers, he is an Adjunct Professor at the University of Calgary and sits on the Faculty of Engineering Advisory Board. He helped develop the 4th year Design Capstone courses for the University of Calgary. Richard has held senior reservoir engineering positions at both Shell and Husky Oil, and holds two Bachelors degrees and a Masters degree in Petroleum Engineering from the University of Calgary.



## **AMY FOX**

Amy Fox, PhD, PGeo, is a consultant specializing in geomechanics and has worked on projects in several industries including oil and gas, geothermal and carbon storage. She started her career in 1998 with GeoMechanics International (GMI) in Palo Alto, California. After GMI was acquired in 2008, Amy was part of the Reservoir Development Services group at Baker Hughes. In 2011 she moved from the U.S. to Canada, and in 2015 she co-founded Enlighten Geoscience Ltd., based in Calgary, Alberta.

Enlighten has since performed more than 100 projects. Over the past several years Enlighten has worked closely with the British Columbia Energy Regulator on issues around induced seismicity. Amy enjoys increasing awareness of geomechanics through frequent volunteer activities including giving presentations, writing or reviewing articles and papers and co-chairing conference sessions.

She was recently the Chair of the organizing committee for the 2023 Gussow Conference: Geomechanics for Sustainable Energy Development. Also in 2023, Amy received the Robert R. Berg Outstanding Research Award by the American Association of Petroleum Geologists. Amy's academic credentials include a B.Sc. in Geology from the University of New Hampshire and a Ph.D. from Stanford University, where she was part of Dr. Mark Zoback's geomechanics research group.

## **CONNECT WITH OUR EXPERTS ON LINKEDIN**

**WAYNE MONNERY**



**RICHARD BAKER**



**AMY FOX**







# DETAILED COURSE AGENDA



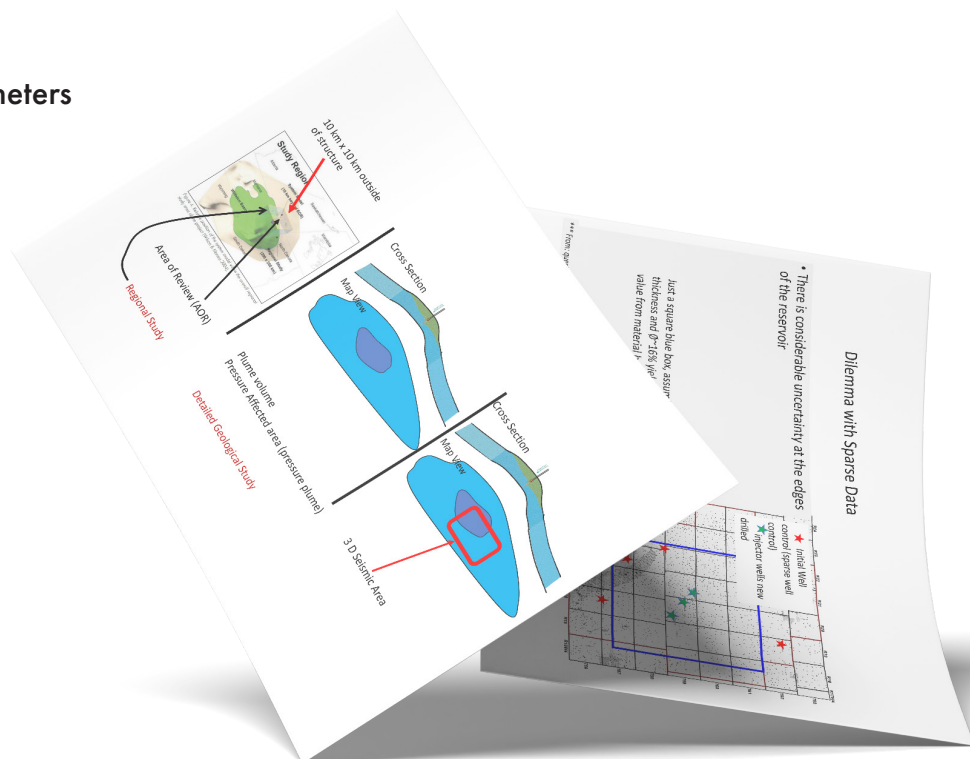
## DAY TWO - Subsurface Risk and MMV w. Richard Baker APRIL 23, 2024 - 8:30 AM TO 4:30 PM

The subsurface portion with Richard Baker will begin halfway through Day 1, and progress to the end of Day 2. The main module components are Risk and Measurement Monitoring and Verification (MMV):

- Site selection
- CO<sub>2</sub> fluid properties
- Trapping mechanisms and capture efficiency

The main portion of the course composes of plume migration, the risk workflow in Saline Aquifer (SA) and Depleted Gas Reservoirs, faults/fractures, risk on individual events, monitoring injectivity, wellbore (design and monitoring), surface casing vent flows, cost benefits of MMV tools, risk (severity) matrix, timing/scheduling and risk mitigation.

The course also gives ranges of risk parameters in the literature for wellbore and fault/fracture leakage (geomechanical effects). Major field CCS cases in terms of risk, what happened and MMV are reviewed.



# DETAILED COURSE AGENDA



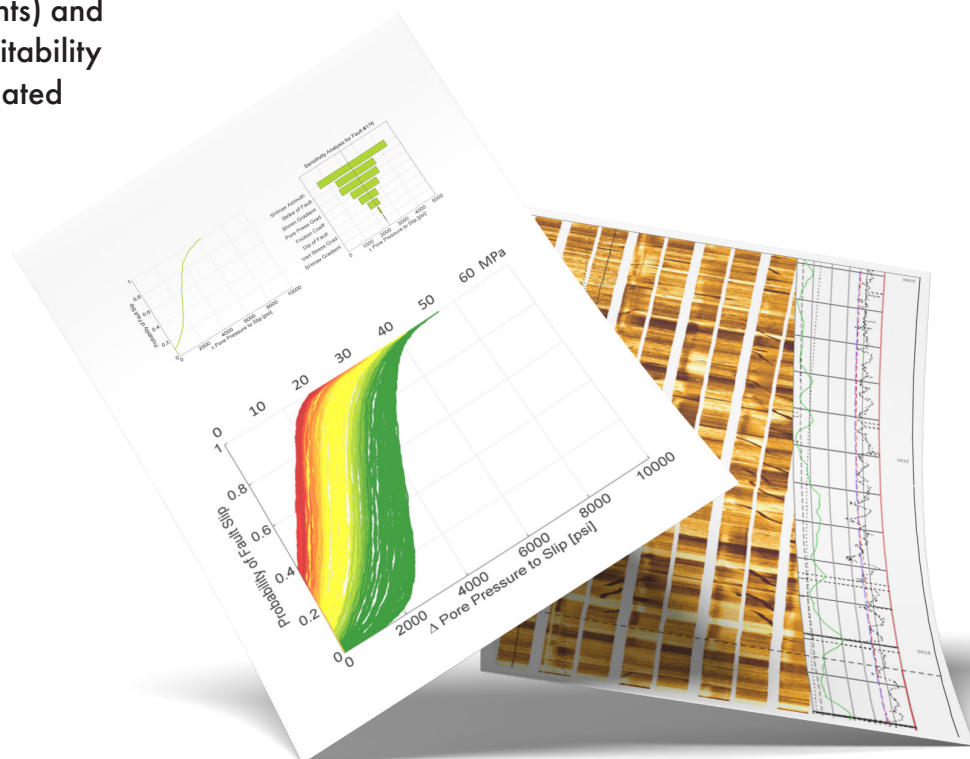
## DAY THREE - Geomechanics and Seismicity w. Amy Fox APRIL 24, 2024 - 8:30 AM TO 12:00 PM (approx.)

This module will review the numerous geomechanical considerations relevant to carbon storage in the deep subsurface.

The initial state of stress can affect both the suitability of injection zones and the effectiveness of containment. Changes in stress and pore pressure during injection lead to a dynamic geomechanical environment that needs to be understood (modeled) prior to project initiation, as many of the risks associated with long-term success of these projects are related to geomechanics.

As a result, many regulators are increasing the geomechanical requirements for project approval and MMV.

- Stresses in the subsurface, how they are determined (including data requirements) and how they relate to CO<sub>2</sub> storage site suitability
- Stress changes during injection and related risks including containment failure and induced seismicity





# ADDITIONAL COURSE DETAILS



## PROMOTION CODES AVAILABLE

- Receive \$150 off when booking BEFORE March 15, 2024 - Use code **EARLY** at checkout
- Registering 3 or more guests at once? Use code **TEAM** for 15% off
- Only 1 code can be applied per transaction



## DIETARY RESTRICTION REQUIREMENTS - PLEASE LET US KNOW!

- We will strive to meet any dietary restrictions - please include your request in the applicable space during checkout. Otherwise, do not hesitate to email us with your questions.



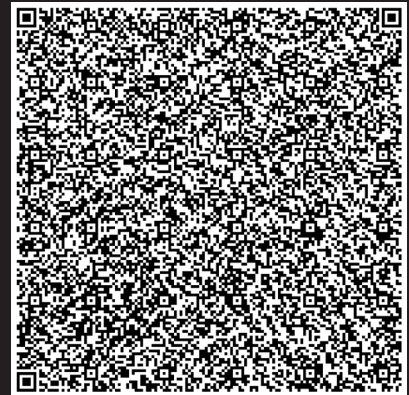
## PAID PARKING AVAILABLE NEAR OBSIDIAN ENGINEERING OFFICE

- The Intact Place Parkade, Parking Indigo Lot 045, and Barclay Centre Parkade are all in close proximity to our course location.
- Scan QR code to view a Google map



## HOTEL PARTNER RATES FOR OUT OF TOWN GUESTS

- Book at participating Wyndham Hotels & Resorts - Use Corporate Code 1000051693\* to receive 8% off standard rates



SCAN QR TO VIEW NEARBY PAID PARKING



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