

### Special Session Co-Chairs:

Justin Nesbitt, Integrity Engineer, BC Energy Regulator

Jialin Sun, Integrity Risk Assessment Engineer, Enbridge GTM

### Emerging Fuels (Tuesday Sep 24<sup>th</sup>, 10:30 – 12:00p)

**Hosts:** Justin Nesbitt, Integrity Engineer, BC Energy Regulator

Jialin Sun, Integrity Risk Assessment Engineer, Enbridge GTM

### Panel Description:

A three-part panel that delves into three different aspects of the future of the energy industry. From hydrogen in standards to hydrogen in pipelines to small modular nuclear reactors, this panel has it all!

**Prestation 1:** ASME Standards Update: Progress Addressing Gaseous H<sub>2</sub> & CO<sub>2</sub>, with Simon Slater & Keith Leewis

### Speakers:

- Keith Leewis, President & Chief Engineer, Leewis & Associates Inc

**Bio:** Dr. Keith Leewis PEng. brings over forty years of extensive and comprehensive experience in pipeline safety: in engineering, design, materials, operations, welding, inspections, risk, integrity, and safety management, to the energy industry. Dr. Leewis provides technical assessments that assist clients in achieving comprehensive and timely regulatory approvals. As an active ASME committee executive member, he improves the international standards for the design and integrity management of energy pipelines, including those API & NACE standards related to integrity assessment. In prior years, Dr. Leewis was a tenured professor - TUNS, Director of Technology - Welding Institute of Canada, Project R&D Manager - PRCI, GTI & GRI, Senior Engineer - TCPL, and an R&D engineer – DOFASCO. He is currently semi-retired.

- Simon Slater, Principal Integrity Engineer, Rosen.



**Bio:** Simon Slater is a Principal Integrity Engineer working for ROSEN Integrity Services, based in Columbus, Ohio. He has been working for ROSEN Integrity Services for 13 years. His areas of expertise are structural Integrity assessment, metallurgy, material properties and testing, welding engineering, and In-line Inspection. Prior to joining ROSEN, he worked in the steel industry for 12 years, involved with pipe manufacturing and research and development. Simon is an active

member of PRCI, serving on the research steering committee, and also a member of ASME B31.8 and is the deputy chair for the ASME B31.8 hydroegn task group.

**Presentation 2:** Understanding high-pressure gaseous hydrogen embrittlement in pipelines:  
Exploring nature and testing approaches

**Speaker:** Dr. Frank Cheng, Professor/ Canada Research Chair in Pipeline Engineering, University of Calgary, Alberta, Canada



**Bio:** Dr. Frank Cheng is a Professor and Canada Research Chair in Pipeline Engineering at the University of Calgary. He serves as the Director of the Strength Area in Advanced Materials & Manufacturing. Frank is a world-renowned leader in energy pipeline research, with specializations in corrosion, stress corrosion cracking, hydrogen embrittlement and defect assessment technology. He has authored four influential books, including *Stress Corrosion Cracking of Pipelines* (Wiley, 2013), *Pipeline Coatings* (NACE, 2017), *AC Corrosion of Pipelines* (AMPP, 2021), and *Defect Assessment for Integrity Management of Pipelines* (Wiley, 2024). Frank was named the Canadian Distinguished Materials Scientists in 2019. He has also received numerous awards from international associations and leading agencies in recognition of his contributions to the fields of corrosion science and pipeline engineering. Frank was elected as a Fellow of the Royal Society of Canada (RSC) in 2023 and the Canadian Academy of Engineering (CAE) in 2024. He is also a Fellow of NACE, ICorr, CSCP, IMMM, and IAAM. Frank serves as the Editor-in-Chief of the *Journal of Pipeline Science and Engineering*. He obtained his Ph.D. in Materials Engineering from the University of Alberta in 2000.

**Presentation Abstract:**

Hydrogen is expected to be a critical player in energy transition. Pipelines represent the most economical, efficient, and effective means for transporting gaseous hydrogen in large volumes across long distances, contributing to the realization of a comprehensive hydrogen economy. However, steel pipelines are susceptible to the occurrence of hydrogen embrittlement (HE) in high-pressure hydrogen gas environments. The HE problem jeopardizes the structural integrity, potentially leading to pipeline failures.

When compared to the HE in aqueous environments, gaseous HE manifests distinct mechanisms in the generation and permeation of hydrogen atoms in steels. Without a thorough understanding of the nature of this phenomenon, the methods used for testing, and the techniques for assessment,

it becomes extremely difficult to mitigate and control the issue. This is particularly crucial given the growing development of hydrogen pipelines.

This talk is prepared based on the author's research progress and technical development on gaseous HE in the past several years. It imparts the fundamentals of HE and the essential nature and features of gaseous HE. These include gaseous H-charging and testing methods, and measurements of H atom concentration inside steels under gaseous exposure. Then the talk analyzes the stress-strain behavior and fracture/fatigue testing results of pipeline steels in high-pressure hydrogen gas environments. Through a throughout examination of existing knowledge, the talk proposes possible methods for evaluation of the susceptibility of pipelines to gaseous HE, while clarifying some misunderstandings and confusions, and main concerns about the phenomenon.

### **Presentation 3:** Small Modular Reactors: A Renaissance for Nuclear Power

**Speaker:** Jag Singh, Stantec



**Bio:** With extensive global experience in the nuclear energy, renewable, and oil and gas sectors, Jag provides industry leading solutions that result in a secure, sustainable, and clean energy future. His passion for solving complex challenges is evident in his approach to high quality project delivery and strategic advisory services. As a team leader, he establishes highly skilled teams that provide both client satisfaction and growth in a rapidly changing market.

Drawing from his chemical engineering background, Jag specializes in nuclear energy and small modular reactors (SMR)—he was the technical director for first-of-a-kind, grassroots SMR molten salt facility. He has excellent engineering, project, commercial, and leadership skills in the fields of new nuclear build, plant lifetime extension and nuclear decommissioning and waste management. If you're looking to transition to a high output, stable energy source, give Jag a call!

What energizes Jag outside of his work with clean energy? He enjoys playing the guitar, archery, and trying to maintain his mixed martial arts skills.

#### **Presentation Abstract:**

As the clean energy transition accelerates, nations and industries around the world look to all available technologies to help them operate responsibly while reducing greenhouse gas emissions. Small Modular Reactors (SMR) are a key technology at the forefront of achieving climate-related objectives—enabling clean, reliable electricity generation and decarbonizing heavy, hard-to-electrify industries. In this session, we explore SMRs and the wider nuclear industry, how they can

provide clean, reliable energy, and common questions about the sector and its recent emergence in the energy industry.

**International Practices for adopting innovation into standards Panel Session (Tuesday Sep 24<sup>th</sup>, 1:30 – 3:00 p)**

**Panel Description:**

Innovation and Technology Advancements are accelerating to support the safe and reliable transportation and delivery of sustainable energy globally. To operationalize these innovations efficient processes that incorporate them into industry standards and regulations are necessary. The purpose of this panel is to discuss international best practices in efficiently incorporating new technologies into standards and regulations. Regulators, Standards Development Organizations and operators from around the world will share industry leading technology transfer experiences.

**Moderator:** Gary Hines, Vice President, Operations, PRCI

**Panelists:**

Mervah Khan, Program Manager, Petroleum and Natural Gas, CSA Group;

Patty Fusaro, Senior Manager, Midstream Standards, American Petroleum Institute;

Richard Espiner, Pipeline Integrity Consultant, Espiner Consulting;

Massoud Tahamtani, Deputy Associate Administrator, PHMSA;

Jonathan Timlin, Vice President, System Operations, Canada Energy Regulator.

**Climate Change Special Session (Tuesday, Sep 24<sup>th</sup>, 3:30 to 5:30 p)**

**Panel Description:**

More frequent extreme rainfall events associated with climate change will aggregate several mass movement geohazard mechanisms which would in turn lead to more ground movement induced pipeline integrity hazards. Advances in the field of climate science describe the trends of these events by generating complex models through to engineering-forward tools for possible applications by other disciplines. The panel presentations and subsequent discussion will provide an overview of climate science concepts and introduce preliminary considerations of how they may be integrated in pipeline integrity management planning.

**Moderator** Mr. Moness Rizkalla (via+, Calgary): co-author of IPC2024-133961

**Presenter and Panelist** Dr. Rod Read (RSRead Consulting, Okotoks): Principal Author of IPC2024-133961 paper titled “Preliminary Considerations of a Risk-Informed Approach for Climate Change Resilient Pipeline Geohazards Management”

**Presenter and Panelist** Mr. Jaime Aristizabal (CENIT, Bogota, Colombia): Engineering Specialist and Principal Author of the IPG-2023 Best Paper on climatic micro zonation titled “Predictive Schemes in Geohazards Management of Hydroclimatological Origin”

**Presenter and Panelist** Dr. Charles Curry (Pacific Climate Impacts Consortium, University of Victoria, Canada): Lead Regional Climate Impacts Specialist

**Presenter and Panelist** Dr. David Easterling (NOAA, Asheville, North Carolina) Chief Assessments Section and Director National Centers for Environmental Information

U.S. Department of Energy presents Tools for Removing Challenges & Investing in CO<sub>2</sub> Pipeline Infrastructure (Wednesday Sep 25<sup>th</sup>, 1:30 – 3:00 p)

**Panel Description:** Investing in carbon management solutions and infrastructure will have a critical role in helping the United States achieve a carbon pollution-free electricity sector by 2035 and net-zero emissions economy-wide by 2050. This special session panel will outline how the U.S. Department of Energy’s Office of Fossil Energy and Carbon Management is utilizing its resources to support the carbon dioxide pipeline industry, while also addressing challenges associated with building out infrastructure at scale. These efforts will help the nation advance toward a clean energy and industrial economy.

**Moderator:**

Amanda Raddatz, Division Director Carbon Transport and Storage, U.S. Department of Energy;



**Bio:**

Amanda Raddatz is the Director of the Carbon Transport and Storage Division for the Department of Energy Office of Fossil Energy and Carbon Management. Her experience is in geologic exploration and carbon management, and she has contributed to the development of Carbon Capture, Utilization and Storage (CCUS) projects across the globe. Amanda has provided subject matter expertise for the full value chain of CCUS projects, including Class VI permitting, policy guidance, and risk assessments for integrated transport and storage projects. She has a Master of Science in Geology from the University of Illinois, Urbana-Champaign.

**Speakers:**

Kevin Dooley, Carbon Transport Engineer, U.S. Department of Energy;

**Bio:**

Kevin is currently a Carbon Transport Program Manager, working with teams administering \$2.2 Billion of Bipartisan Infrastructure Law appropriations for carbon transport infrastructure loans, grants, and Front-End Engineering Design (FEED) and Pre-FEED studies at the Department of Energy's Office of Fossil Energy and Carbon Management. He graduated from the University of Texas at Austin in 2013 with a BS in Chemical Engineering. Kevin has over 10 years industry experience ranging from downstream refining, upstream major capital project development, midstream pipeline design and integrity management, and marine scheduling in support of international crude trading.

Robert Smith, Carbon Transport Program Manager, U.S. Department of Energy;

**Bio:**

Robert is currently a Carbon Transport Program Manager, working with teams administering \$2.2 Billion of Bipartisan Infrastructure Law appropriations for carbon transport infrastructure loans, grants, and Front-End Engineering Design studies at the Department of Energy's Office of Fossil Energy and Carbon Management. He graduated from the Pennsylvania State University in 1997 with a BS in Petroleum and Natural Gas Engineering. He managed offshore pipeline and human factors research for 6 years at the Bureau of Safety and Environmental Enforcement (formerly U.S. Minerals Management Service). He was also the Senior R&D Program Manager and led several other strategic initiatives for the Pipeline and Hazardous Materials Safety Administration for nearly 20 years.

Kelly Rose, Senior Fellow, Computational Science & Engineering ,U.S. Department of Energy



**Bio:**

Kelly Rose, PhD, is a senior research scientist and group leader with over 20 years of service and research experience at the U.S. Department of Energy's National Energy Technology Laboratory (NETL). She NETL's Senior Fellow for Computational Science & Engineering. Her research focuses on developing novel science-based, data-driven methods and advanced computing solutions for addressing energy and environmental challenges. Rose also serves as the 1st Technical Director of NETL's Science-based Ai/ML Institute (SAMI), a cross-disciplinary research institute focused on accelerating and enabling explainable and trustworthy, science-based artificial intelligence research. Her research has been applied to many scientific and societal domains including Earth science, geoinformatics, research data management and virtualization, climate and metocean, oil spill prevention, mineral and groundwater resources, geohazards, social and environmental justice, materials innovation, and energy infrastructure resiliency. She is coauthor on more than 100 public datasets, models, tools, journal publications, and technical studies. Rose has also mentored more than 50 STEM research interns and fellows.

**Executive Leadership Panel (Wednesday, Sep 25<sup>th</sup>, 3:30 – 5:00 p)**

**Panel Description:**

**TBD**

**Moderator:** Lauren Tipton, Title, Company

**Panelists:**

Joe Zhou, Title, Company

Tracy Sletto, CEO, Canada Energy Regulator

<Name>, <Title>, Saudi Aramco

**Emerging Fuels Research (Thursday Sep 26<sup>th</sup>, 11:30 – 12:00p)**

**Panel Description:** A thirty-minute mini-session that will include a presentation overview of the current state of emerging fuels research in industry.

**Speakers:** Jeff Whitworth, Director of the Emerging Fuels Institute (EFI) at PRCI

**Dent Panel Discussion - Industry insights on the implementation of API RP 1183 (Thursday, Sep 26<sup>th</sup>, 1:30 – 3:00 p)**

**Panel Description:**

As the development of the second edition of API PR 1183 is underway, this panel discussion seeks to gather valuable insights and practical experiences from the application of the 1st edition, published in 2020. Panelists will share learnings, highlight key areas for improvement, and discuss the successes and challenges encountered by operators and consultants during the implementation of the first edition. The objective is to gather constructive feedback that will contribute to refining the second edition, ensuring it more effectively addresses the evolving needs of the industry.

**Moderator:** Joe Bratton, Principal Engineer, DNV, API RP 1183 Co-chair



**Panelists:**

Jake Haase, Director, Asset Integrity, Colonial Pipeline Company, API RP 1183 Co-chair

Brian Leis, Principal, B N Leis, Consultant, Inc, USA

Aaron Dinovitzer, President, ADIM Consulting Ltd, Canada

Shanshan Wu, Principal Engineer, DNV



Rick Wang, Pipeline Integrity Engineer, TC Energy, Canada

Huang Tang, Integrity Risk Assessment Specialist, Enbridge GTM, USA

**Leading in the Technical Space (Thursday Sep 26<sup>th</sup>, 3:30 – 5:00 p)**

**Panel Description:**

To inspire attendees who are focused on the progression of their technical abilities and to present a clear pathway to technical leadership.

**MC/Host:** Claudia Soriano Vazquez, Engineering Specialist, Enbridge GTM;



**Moderator:** Kevin Tsang, Engineering Supervisor, Enbridge GTM;

**Panelists:** Eunice Yin, Director GTM Engineering Data and Systems Strategy, Enbridge GTM;

Shahani Kariyawasam, Executive Director, Knowledge Transfer, PRCI;



Chioma Izugbokwe, Acting Vice President of Energy Adjudication, Canada Energy Regulator

Women's networking event (Thursday Sep 26<sup>th</sup>, 5:30 – 7:00 p)

**Host:** Jasmen Atwal, Supervisor TIS Demand Management, TIS Infrastructure Operations, Enbridge/FEMINEN