



International Pipeline Conference 2018

CONFERENCE

Calgary, Alberta, Canada

IPC is co-owned by ASME and CEPA



canadian energy pipeline association
association canadienne de pipelines d'énergie



PIPELINE SYSTEMS DIVISION



MESSAGE FROM THE PREMIER OF ALBERTA

On behalf of the Government of Alberta, it is my pleasure to welcome everyone to the International Pipeline Conference 2018.

The opportunity to build Canadian energy infrastructure is here. This is an important moment in Canada's history; allowing us to put disagreements behind us and to work together as partners and members of the great Canadian family to build a greener, stronger, more sustainable, more prosperous, more equal, and more resilient country.

We know pipelines are the safest, most cost-effective way to move oil to market. And we know there is a global appetite for oil that is developed responsibly. We have already seen interest in our products from markets around the globe – what we need is the means to get it there.

This conference connects experts from around the world to exchange ideas and learn about exciting, new initiatives in the pipeline industry. From discussions on effective pipeline project delivery and design to reclamation and mitigation, we can all benefit from your shared ideas. I commend all the delegates here today for your dedication to work together to develop safe, reliable, and responsible ways to transport energy resources.

Our government is committed to working in partnership with the energy industry and our provincial and federal partners to build pipelines and expand our market access. I'm very optimistic there is a way forward but this path requires a careful balance. We can protect our environment. We can fight climate change. We can protect good energy industry jobs. And we can build the infrastructure that connects us to the world.

I wish you all the best for a successful and rewarding conference.

Rachel Notley, Premier of Alberta





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Welcome



Patrick Smyth
Chair, IPC 2018
VP Performance , CEPA



W.R. (Bill) Byrd
Vice-Chair, IPC 2018
President, RCP Inc.

2018 IPC CHAIR WELCOME MESSAGE

On behalf of the International Pipeline Conference (IPC) Organizing Committee, we are excited to welcome you to IPC 2018 on September 24 – 28 in Calgary, Alberta, Canada.

As the premier technical conference focused on pipeline systems for over 20 years, this conference provides delegates the opportunity to learn about the latest technical research that drives innovation and change in the pipeline industry around the world, as well as unparalleled networking opportunities. IPC 2018 features approximately 300 technical papers, a poster session, interactive fireside chats, and over 15 tutorials led by experts in their field.

Additionally, this year includes a special Public Engagement and Acceptance track, offering industry representatives from non-technical perspectives including public relations, communications, and stakeholder relations the opportunity to participate at IPC 2018. The concurrent International Pipeline Exhibition features products and services from more than 230 companies in an exhibit area of more than 4,400 square meters (47,000 square feet).

This year's theme is Building the Future Now and includes continued collaboration with young pipeline professionals through a partnership with Young Pipeliners International. Keynote speakers include Cynthia Hansen (Executive Vice President, Utilities and Power Operations, Enbridge Inc.), Calvin Helin (Chairman and President, Eagle Spirit Energy Holdings), Peter Tertzakian (Executive Director, ARC Energy Research Institute), Alan Murray (former Chief Engineer and Chief Safety Officer, National Energy Board), and an executive panel with senior executives from the leading pipeline organizations and regulatory agencies

The continued success of IPC requires the coordinated and dedicated efforts of several stakeholders and we wish to thank them for their support of this year's conference:

- Industry leaders' commitment to fostering technical advancements and supporting their employees who participate in the various committees that make the conference possible, and supporting continued development of the pipeline industry by sending their employees and executives;
- Regulators who engage with IPC and reinforce a commitment to continuous improvement of pipeline safety;
- Professionals who actively create and present content for this conference;
- Delegates who travel from around the world to participate with their peers; and
- The IPC corporate sponsorship partners, who have demonstrated their commitment with a record-setting participation.

Thank you to everyone for your commitment to building on the success of previous conferences to ensure that IPC 2018 offers the unparalleled learning, networking and knowledge-sharing experience that delegates have come to expect during this biennial event. On behalf of the IPC Organizing Committee, we look forward to your participation at IPC 2018.

www.internationalpipelineconference.com



canadian energy pipeline association
association canadienne de pipelines d'énergie



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Technical Services – Dynamic Risk
Representing CEPA

Organizing Committee Vice-Chair:

W.R. “Bill” Byrd, President, RCP Inc.
Representing ASME

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Paul Huddleston,
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Steve Irving, Engineering Consultant
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Bill Santos, NOVA Chemicals
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US DOT PHMSA

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Dynamic Risk USA, Inc.
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Conference Staff

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Christi Marcine, CMARC Inc.

Conference Manager:

Kim Miceli, ASME

Conference Accountant:

Donna Menuz, Consultant

Conference Webtool Manager:

Stacey Cooper, ASME

Calgary Technical Chapter of ASME Pipeline Systems Division

Chair: Daryl Ronsky
Vice Chair: Leigh Myers
Treasurer: Honory Beaujot
Secretary: David Parker
Board Member: Bill Santos

ASME Pipeline Systems Division, 2018 - 2019 Executive Committee

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Vice Chair: Burak Ozturk
Treasurer: Mark McDougall
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Communications Committee

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Special Sessions Committee

Lead: Nathan Len, Enbridge
Pipelines Inc.

Co Lead: Kevin Tsang, Enbridge
Pipelines Inc.

Special Sessions Chairs

Nathan Len – Enbridge
Kevin Tsang – Enbridge

Tutorials

Lorena Cala-Phillips – Trans
Mountain

Fireside Chats

Nadia McCarthy - TransCanada
Jenny Been – National Energy
Board

Distinguished Lecture Series

Taylor Shie – Shell

Executive Panel

Chris Yoxall - Rosen

Young Pipeliners Panel

Daryl Bandstra – Integral
Engineering
Sarah Vandaiyar - TransCanada

Sponsorship Committee

Lead: Steve Irving - Committee
Chairman Engineering Consultant
Ad Shatat
Russell NDE Systems
Niraj Raythatha -
Committee member
Stantec Consulting
Shawn Laughlin - Committee
member CEO Clockspring (retired)

IPC 2018 Proudly Welcomes Our Keynote Speakers



Cynthia Hansen

Enbridge

Executive Vice President, Utilities and Power Operations

Cynthia Hansen was appointed Executive Vice President, Utilities and Power Operations, on February 27, 2017. Cynthia is responsible for the overall leadership and operations of Enbridge Gas Distribution and Union Gas, two of Canada's largest natural gas utilities, as well as Enbridge Gas New Brunswick, Gazifère and St. Lawrence Gas. She also holds responsibility for the operations of Enbridge's power generating assets, which currently include renewable energy investments in wind, solar, geothermal and hydroelectric, as well as waste heat recovery facilities and power transmission lines owned in whole or in part by Enbridge. Cynthia has more than 19 years of experience working in operational, financial and safety leadership roles within Enbridge including President, Enbridge Gas Distribution and Senior Vice President, Operations within Liquids Pipelines. Prior to joining Enbridge, she worked as a Principal for PricewaterhouseCoopers. Cynthia is a member of Calgary-based Enbridge Inc.'s Executive Leadership Team. Cynthia serves on the board of the Ontario Energy Association, Energy Council of Canada, and the University of Alberta School of Business Advisory Council. In the past, she has served on the boards of the Canadian Gas Association, the Canadian Energy Pipelines Association (CEPA), the Alberta Chamber of Resources, the Edmonton Symphony Orchestra, and NorQuest College, among others. Cynthia was named one of Canada's Most Powerful Women: Top 100 by the Women's Executive Network and was recognized as a Canadian Business Leader by Catalyst Canada. Cynthia lives in Toronto with her husband.



Calvin Helin

Eagle Spirit Energy Holdings, Ltd.

Chairman and President

Calvin Helin, a member of the Tsimshian Nation, comes from the community of Lax Kw'alaams on the Northwest coast of British Columbia, Canada. The son of a hereditary chief, Helin is an entrepreneur, lawyer, and best-selling author. For 2015 and 2016 Helin was named one of Canada's most powerful business people by Canadian Business Magazine and in 2017 was named by Vancouver Magazine in top fifty most powerful people in the city. His commercial endeavors include the Eagle Group of Companies, he is involved in major real estate developments, and is associate counsel with the law firm Stewart, Aulinger & Company. He is Chairman and President of Eagle Spirit Energy Holdings, Ltd., a First Nations-led company looking to build an energy corridor through northern B.C. and Alberta. He is former President of the Native Investment and Trade Association and held directorships on the Vancouver Board of Trade (where he chaired the newly formed Aboriginal Opportunities Committee), Geoscience BC, and the Canada-China Resource Development Foundation. In addition to numerous national and regional distinctions, he has received top "40 Under 40" awards for British Columbia and for Canada nationally. He has served as chairman for several past Aboriginal trade delegations to China and New Zealand, introducing an innovative business model to promote long-term benefits for indigenous people from natural resource development. He is also active in social media with over 1.7 million Twitter followers on his verified account. Mr. Helin has written several publications on law, Aboriginal business, and associated issues. He has developed an international reputation through his now seven times best-selling book, *Dances with Dependency: Out of Poverty through Self-Reliance*. His second book *The Economic Dependency Trap: Breaking Free to Self-Reliance* was recognized as a finalist in the 2011 U.S.A. Best Books awards and won the Gold Medal at the IPPY Awards (America's 2012 Independent Publisher Book Awards). His third book *The Empowerment Mindset: Success through Self-Knowledge* was released in 2012 and also received several awards. His title *Dances with Spirits: Ancient Wisdom for a Modern World* was released worldwide in May 2014 and has already won the Living Now Book Award silver medal in the area of social activism/charity. His new book *Dances with Development: Making Good Money from Natural Resources* will be released in

2018. As the result of his writing, Mr. Helin has an expanding international role as a popular public speaker and thought leader. His common sense message of self-reliance and self-responsibility are now being promoted on a global platform. Helin also serves as an ambassador for SOS Children's Village B.C., a non-profit providing a safe foster care environment for the most vulnerable children, and is a member of the Advisory Council of the prestigious think tank, the MacDonald-Laurier Institute. As a fourth degree black belt he instructs at the Shudokan Karate and Education Society, a group he founded in 2002 that provides free martial arts lessons to disadvantaged inner-city children as a way of teaching them discipline, manners, self-respect, and other important life lessons. Mr. Helin is remarried, has three grown children, and a grandson, and two step children.



Peter Tertzakian

ARC Energy Research Institute

Executive Director

Peter is an economist, investment strategist, author and public speaker on issues vital to the future of energy. He has clocked over 30 years of experience in the business of energy, spanning all systems from oil and gas to renewables. Peter's passion is studying how society evolves its energy use and applying the lessons of the past into today's strategic business issues. His holistic knowledge of physics, innovation, finance and economics allows him to give audiences thought provoking advice on how to think about the pressing issues on the future of energy systems. An accomplished author, Peter's two best-selling books, *A Thousand Barrels a Second* (McGraw-Hill, NY 2005) and *The End of Energy Obesity* (John Wiley & Sons, NY 2009) provide insight into the dynamic world of energy transitions through a thoughtful and highly readable examination of economic, environmental and geopolitical pressures. He has written over 600 weekly columns, current issues of which are distributed through various media channels. In 2015 Peter was seconded to the four-person Royalty Review Panel for the province of Alberta – the world's 8th largest producer of oil and gas – where he led the redesign of the fiscal policy. In 2016 Peter was inducted into the Alberta Petroleum Hall of Fame. Peter has an undergraduate degree in Geophysics from the University of Alberta, a graduate degree in Econometrics from the University of Southampton UK, and a Master of Science in Management of Technology from the Sloan School of Management at MIT. In addition to his principal roles at the ARC Energy Research Institute and ARC Financial, he is an Adjunct Professor at the University of Calgary and has lectured at many leading universities and conferences around the world. Peter Tertzakian is the Executive Director of ARC Energy Research Institute.



Alan Murray

Retired, Chief Engineer and Chief Safety Officer

National Energy Board

Dr Alan Murray is a former Chief Engineer and Chief Safety Officer at the National Energy Board. Previously, he was a senior manager with TransCanada, a major Canadian pipeline operating company. His 45 years of work experience spans academe, research, regulation, third-party assessment, design and development in steam plant, pipelines and offshore structures. He has worked extensively in the areas of Pipeline Operations and System Integrity including developing Standards and Regulations. Alan was the founding chairman of the American Society of Mechanical Engineers (ASME) Pipeline Systems Division. He is a co-author of the ASME text books "Pipeline Design and Construction - A Practical Approach" and "Pipeline Integrity Assurance", in addition to publishing over 70 papers most of which did not warrant chopping down a tree to provide the paper. He is an adjunct professor at the University of Calgary Pipeline Engineering Centre where he has instructed on Pipeline topics in the M Eng program and has given training programs throughout the world. He holds a doctorate in Civil Engineering from the Queen's University of Belfast and is a Fellow of the ASME.

Discover Calgary In the Heart of the New West

Nestled in the shadow of the Canadian Rockies, Calgary is a thriving metropolis of 1,230,915 people of diversified ethnic backgrounds. This exciting international city will provide you, as a delegate to the International Pipeline Conference, the opportunity to enjoy unique restaurants, sophisticated shops, exciting attractions and excellent entertainment. For those who prefer the great outdoors to the city lights, the mountains are in close proximity offering hiking, fishing, skiing and other wilderness adventures. Calgary is not only the centre of a thriving energy industry, but is also known for its high-tech research and development, agriculture and manufacturing industries—an entrepreneurial city where the western pioneering spirit still lives on today. So after your day of attending the IPC Technical Tracks and visiting the many exhibitors at the Exposition—take the time to relax and enjoy our warm and friendly city!

Calgary Visitor Information

Calgary—where the old west meets the new west, the real west and the “wild west” providing our visitors with so much to do and see!



Should you have leisure time during IPC/IPE 2018, Tourism Calgary would be delighted to provide you with information on our city and surrounding areas. Please visit our Tourism Calgary Information Booth on the 2nd level of the Hyatt hotel next to the IPC registration area for personal service regarding your tourism requests or contact Tourism Calgary directly at 403.263.8510.

You may wish to take advantage of the Stillwater Spa at The Hyatt Regency Hotel. Pamper yourself with a massage or other spa treatment BUT be sure to reserve ahead as they are booked well in advance and you won't want to be disappointed!

The Stillwater Spa Reservations number: 403.537.4474. Or visit their website at <https://www.hyatt.com/corporate/spas/Stillwater-Spa-Calgary/en/home.html>.

And be sure to check out the IPC 2016 Delegate Restaurant Guide for great, local restaurants and exclusive offers!

While in Calgary

Thank you for supporting IPC 2016 and the pipeline industry. We appreciate your attendance at the conference and offer this list of other activities available should you want to escape for a bit. <http://www.visitcalgary.com/meetings/toolkit/travel-itineraries>

Visitor Information

<https://www.visitcalgary.com/who-we-are?q=visitor-information>

Things to do during Fall 2018

<http://tourism.visitcalgary.com/things-to-do>

Calgary Deals - *There's an amazing amount to do and see.*

That's why we've created a whole menu of offers and packages for you to create your own, personal, perfect Calgary experience.

<https://www.visitcalgary.com/deals?q=calgary48>




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General Conference Information

General Conference Information

Registration

Panel Pre-Registration

If your pre-registration package includes a Panel, pickup will take place on the first floor of the TELUS Convention Centre South.

Monday, September 26 07:00* – 13:30

Tutorial Pre-Registration

If your registration package includes a Tutorial, pickup will take place on the third floor of The Hyatt Regency.

Monday, September 26 07:00* – 13:30

General Conference Pre-Registration

If your registration package contains no Panels or Tutorials, pickup will take place on the first floor of the TELUS Convention Centre South.

Monday, September 26 09:00 – 18:00

Onsite Registration

All onsite registration will take place on the first floor of The TELUS Convention Center South as follows:

Monday, September 26	07:00* – 18:00
Tuesday, September 27	07:00 – 18:00
Wednesday, September 28	07:30 – 18:00
Thursday, September 29	07:30 – 18:00
Friday, September 30	07:30 – 12:00

** Please note early registration from 07:00 to 09:00 is for Monday Tutorial and Panel attendees only! General registration will open at 09:00.*

To avoid lineups please do not come to the registration desk for general conference registration until after 09:00 unless you are attending Tutorials or Panels.



Conference and Exposition Badges

The badge in your registration package must be worn for all sessions and events. For security purposes, at times you may be asked for picture identification while onsite at the Conference and Exposition.

Full Registration Badge

A Full Registration Badge (Red Band) will provide:

- Admittance to all four days of technical tracks
- Admittance to the Wednesday afternoon David J. Horsley
- Distinguished Lecture Series and the Executive Panel Session
- One electronic copy of the Conference Papers
- Admission to all three days of the Exposition
- And entry to the following social activities:
 - Monday – CEPA/ASME Pipeline Systems Division Ice Breaker Reception
 - Tuesday – Opening Plenary Session
 - Tuesday – TransCanada Pipelines Luncheon
 - Wednesday – IPC Luncheon
 - Wednesday – IPC, IPE & Bantrel Co. Networking Reception
 - Thursday – Enbridge Luncheon
 - Friday – IPC Awards Luncheon

Tutorials and Panels are not included as they are optional. If you have not pre-registered for a Tutorial or Panel you may be able to purchase them at the onsite Conference Registration Desk if there is space available.

One Day Registration Badge

A One Day Registration Badge (Tues. Blue Band; Wed. Green Band; Thurs. Orange Band; Fri. Purple Band) will provide:

- Admittance to the technical tracks only for the day specified on your registration form
- The luncheon on that day
- Any Receptions on that day
- Admission to all three days of the Exposition

Event tickets (limit of 1 per event), Conference Papers, Tutorials and the Panel Sessions may be purchased separately at the onsite Conference Registration Desk if there is space available.

Spouse/Partner Registration Badge

Spouse/Partner Registration Badges (Olive Band) only includes the same event tickets listed in the main registrant's category.

If the spouse/partner wishes to attend Technical Tracks, Panels, and/or Tutorials they will need to be registered separately.





Student Registration Badge

A Student Registration Badge – ASME Student Member or Non-Member – (Yellow Band) will provide:

- Admittance to all four days of technical tracks
- Admission to all three days of the Exposition
- Admittance to the Wednesday afternoon David J. Horsley Distinguished Lecture Series and the Executive Panel Session
- One electronic copy of the Conference Papers Event tickets (limit of 1 per event), Tutorials and Panel Sessions may be purchased separately at the onsite Conference Registration Desk if there is space available.

Conference Pin Program

The International Pipeline Conference is excited to continue our well received collectible Pin Program for IPC2016. Wear your Pins proudly to highlight your contribution and support of the conference.

-  Black Pin – all registrants.
-  Blue Pin – Presenters of Papers, Poster Sessions, Tutorials, Panels and Speakers.
-  Burgandy Pin – Organizing Committee Members.
-  Green Pin – anyone supporting the presentations, including Track/Session Chairs; Panel Chairmen; and Technical Committee Members



Free ASME Membership

The Pipeline Systems Division of ASME is providing a free one year ASME membership to all attendees that have paid the non-member registration rate for IPC 2018. Attendees are automatically enrolled in this program. Please expect to receive an email from the ASME membership department within 6 weeks post conference.

Thanks for your support of IPC 2018!

The Conference Papers* for the International Pipeline Conference (IPC) Full Registrants and Students will receive the Conference Papers*, sponsored by ROSEN, as part of their registration package. For those attendees who are not receiving the Conference Papers* as part of their registration package, the Papers may be purchased and the onsite fee is \$325.00 Canadian (including tax). If you wish to purchase the Conference Papers*, please pay for the fee at the Registration Desk.

Access To Online Papers

To access the online papers, please go to the URL that was emailed to you between September 14 – 20 (for pre-registrants), click on a Track and then login and create a user name and password using the ID provided in the email. For subsequent access you will only need to enter the user name and password that you created. For onsite registrations and Conference Papers purchased onsite, please allow 24 hours for the Paper Download email.

Please take note of the email header under which your paper access instructions will arrive. Please contact conferencepubs@asme.org with any questions or concerns regarding paper access.

* PLEASE NOTE: ASME Presenter Attendance Policy: The compilation presented on the online download website is considered the 2018 conference papers and not the archival version of the Proceedings. Paper information contained therein should not be used for citation purposes. According to ASME's presenter attendance policy, if a paper is not presented at the Conference, the paper will not be published in the official archival Proceedings, which are registered with the Library of Congress and abstracted and indexed. It will also not be published in the ASME Digital Library and may not be cited as a published paper. After the Conference, once the non-presented papers are removed and the Conference Proceedings submitted to the Library of Congress, the presented papers will become citable. To cite a paper, a search of the ASME Digital Library will result in finding the abstract, along with the appropriate referencing

information that was derived from the official, printed Proceedings registered with the Library. To reach the ASME Digital Library, please visit <http://asmedl.org>

The Conference Proceedings

IPC Conference Proceedings will be available from ASME after the conference both in print and on the Digital Collection. Authors can obtain citation information such as ISBNs, DOIs etc. in the Digital Collection once the proceedings are published.

For further information please contact:

ASME, 22 Law Drive, Box 2900, Fairfield, New Jersey 07007-2900 USA
Call Toll Free US & Canada: 800-THE-ASME (843-2763)

Mexico: 95-800-843-2763

Outside North America: 973-882-1167

Fax: 24 Hours - 973-882-1717 or 973-882-5155

Email: 24 Hours: customer care@asme.org

Web Site: <http://www.asme.org/shop/>

ASME Digital Library: <http://www.asmedl.org>

ASME Publications

ASME Pipeline Books are available in both print and eBook editions. To view a complete list of ASME pipeline books and to place your order, please go to <http://www.asme.org/kb/books#searchBy=pipeline>

Conference Administration

PLEASE NOTE: Hyatt/TELUS Conference area is strictly non-smoking. Track Room Protocol Conference representatives will check delegate badges at the entrance to tracks and all events. Every effort will be made to ensure that all sessions start and end on time. Presenters and conference registrants are all asked to work together to achieve this. Discussions may have to be cut short and conference organizers request your cooperation for the benefit of all participants.

Speakers' Ready Room – Neilson 4,

Conference Level the Hyatt Hotel

The Neilson 4, on the conference level of The Hyatt hotel, will be utilized as the Speakers' Ready Room. Presenters are welcome to use this facility to test their audio visual materials. The equipment will include two large screen LCD monitors for viewing your presentation. PCs are available for practice, however prior notice is required to guarantee availability. The Speakers' Ready Room will be open during the following hours:

- Monday, September 24 through Thursday, September 27 – 07:00 to 17:00
- Friday, September 30 – 07:00 to 12:00

IPC Conference Offices

This year's Conference offices in the McTavish Room, located on the third floor of The Hyatt Regency.

Monday	7:00am – 5:00pm
Tuesday	7:00am – 5:00pm
Wednesday	7:00am – 5:00pm
Thursday	7:00am – 5:00pm
Friday	7:00am – 2:00pm

General Conference Information

Authors' Briefings – 07:00 daily

Authors, Presenters, Panelists, Track Leaders, Session Chairmen and Co-Chairmen and Session Aides are required to attend a briefing on the day of their session. Session arrangements will be outlined and participants will have the opportunity to become better acquainted. The briefings will include a Continental Breakfast and will be held in these rooms:

- Monday – Tutorial Presenters – Imperial 8
- Tuesday – Walker/Bannerman + Doll Herald Imperial 8
- Wednesday/Thursday/Friday – Imperial Ballroom 4

exp Energy Services Inc. Delegates' Computer Stations

There will be three computer station locations where IPC delegates can check the conference technical session schedules and create their own itinerary and print it off. Two will be located at the TELUS Convention Centre in the foyer of the Glen Rooms.

The third will be located at the Hyatt on the conference level.



Conference Delegate Survey

Our goal is to continue to improve the conference therefore your objective feedback will be carefully considered when planning future events. The Conference Survey is available by logging onto the IPC Conference App. You have a chance to win a \$500 Visa Card by letting us know your thoughts on the conference.

The Sponsors' Media Publication

Many of our sponsors and media will have copies of their publications and/or promotional material for delegates to pick up onsite at our IPC Information Booths. Be sure to visit and find out more about many of the major organizations in the pipeline industry from around the world.

Hotel Facilities

Bakers

Enjoy the Hyatt Regency Calgary's newest addition, Bakers—located on the main floor of the hotel lobby. Bakers offers an array of snacks and beverages, as well as Starbucks coffee. Limited toiletry items are also available.

Hours: 06:00 – 21:00 daily

Business Centre

For faxing, internet access, photocopying and other business needs, please utilize the self-serve Business Centre located on the main floor of the hotel next to Bakers. All hotel guests may access the Business Centre with a guest room key. For all non-hotel guests wishing to use the Business Centre, please see the Front Desk for assistance.



Thomsons

Breakfast 06:30 – 11:00

Lunch 11:00 – 2:00

Dinner Dinner Closed

Sandstone Lounge: 11:00 – 24:00

Thomsons Menu all day and Limited Lounge Menu from 13:30 – 17:00

Hyatt's full service restaurant is rich in dining options and ambience.

Housed in a heritage building dating back to 1893, Thomsons features a wide range of Canadian Regional Cuisine.

Stillwater Spa

08:00 – 21:00 Daily

The Stillwater Spa located on the second floor of the Hyatt has just completed extensive renovations. Imagine a home away from home where well being, peacefulness and calm are instilled by an Asian style haven. Stillwater Spa is known for exceptional service and personally designed spa experiences for each and every guest. If you want time to relax, time to energize and time to treasure, book into Stillwater Spa.

Schedule of Events

Schedule of Events*

*timing, events, and locations are subject to change until announced as final. All the following events and activities will be held at either The Hyatt Regency Hotel or the TELUS Convention Centre unless otherwise noted.

Monday, September 24	
07:00 - 13:30	Tutorial Pre-Registration Pickup <i>(located on the 3rd floor of Hyatt building)</i>
09:00 - 18:00	Tutorial On-Site Registration <i>(located on the 1st floor of TELUS Convention Centre South Building)</i>
08:00 - 17:00	Tutorials
09:00 - 18:00	Conference Pre-Registration & On-Site Registration <i>(located on the 1st floor of TELUS Convention Centre South Building)</i>
12:00 - 13:00	Luncheon for Tutorial Participants Sponsored by: EXP Energy Services, Inc.
17:00 - 19:00	Young Pipeliners Panel "Help Me, Help You"
18:00 - 20:00	Conference Ice Breaker Reception Sponsored by: ASME Pipeline Systems Division & CEPA <i>(Canadian Energy Pipeline Association)</i>
Tuesday, September 25	
07:00 - 18:00	Conference Pre-Registration & On-Site Registration
08:30 - 10:00	Conference Opening Plenary Session Keynote Speaker: Cynthia Hansen, Executive Vice President, Enbridge Sponsored by: CNR
10:30 - 12:00	Conference Technical Sessions
12:00 - 13:30	Delegate Luncheon Sponsored by: Pembina Pipelines Speaker: Mr. Calvin Helin
12:00 - 18:00	Exposition Open <i>(located on the main floor & upper level)</i>
13:30 - 17:00	Conference Technical Sessions
15:30 - 17:00	Fireside Chat - The Future of Energy <i>(Stephen Room, Hyatt)</i>
16:00 - 18:00	IPE Industry Reception <i>(located on the exposition floor)</i>
Wednesday, September 26	
07:30 - 18:00	Conference Pre-Registration & On-Site Registration <i>(located on the 1st floor of TELUS Convention Centre South Building)</i>
08:00 - 11:30	Public Engagement and Acceptance Session See website for details.
08:30 - 12:00	Conference Technical Sessions

Schedule of Events

Wednesday, September 26	
10:00 - 18:00	Exposition Open <i>(located on the main floor & upper level)</i>
12:00 - 13:30	IPC Delegate Networking Luncheon Sponsored by: TransCanada
13:30 - 16:30	Tutorials
13:45 – 15:45	Executive Leadership Panel Sponsored by: ERM
16:15 – 17:30	Distinguished Lecture Series Presented by the ASME Pipeline Systems Division Sponsored by: Plains Midstream
16:00 - 18:00	IPE Industry Reception <i>(located on the exposition floor)</i>
17:30 - 19:30	IPC Networking Reception <i>(located at The Bank & Baron)</i> Sponsored by: IPC, IPE & Bantrel Co.
Thursday, September 27	
07:30 - 18:00	Conference Pre-Registration & On-Site Registration <i>(located on the 1st floor of TELUS Convention Centre South Building)</i>
08:30 - 12:00	Conference Technical Sessions
10:00 - 16:00	Exposition Open <i>(located on the main floor & upper level)</i>
10:30 – 12:00	Fireside Chat - Understanding the human and organizational factors that contribute to incidents <i>(Stephen Room, Hyatt)</i>
12:00 - 13:30	IPC Delegate Luncheon Sponsored by: Enbridge Pipelines <i>Speaker: Peter Tertzakian</i>
13:30 - 17:00	Conference Technical Sessions
15:30 – 17:00	Fireside Chat - The End of the Pipeline Lifecycle <i>(Stephen Room, Hyatt)</i>
Friday, September 28	
07:30 - 12:00	Conference Pre-Registration & On-Site Registration <i>(located on the 1st floor of TELUS Convention Centre South Building)</i>
08:30 - 12:00	Conference Technical Sessions
12:00 - 13:30	IPC Awards Luncheon Sponsored by: API <i>Speaker: Mr. Alan Murray</i>

For more detailed information visit **International Pipeline Expo (IPE)**.

For more detailed information on IPE visit their website:

Exposition: www.internationalpipelineexposition.com

International Pipeline Exposition (IPE) 2018

FREE Exhibition Entry for IPC Delegates

International Pipeline Exposition is a must-attend biennial trade show where thousands of leading professionals meet over 200 of the industry's most recognized brands and view the latest pipeline technologies, products and services. Your IPC delegate badge allows you unlimited access to IPE, located in the North Building of the Calgary TELUS Convention Centre (adjacent to the Hyatt).

Calgary TELUS Convention Centre

Exhibition Hours:

Tuesday, September 25 12:00 – 18:00
Wednesday, September 26 10:00 – 18:00
Thursday, September 27 10:00 – 16:00

IPE Industry Reception

Free to attend, the IPE Industry Reception is a prime opportunity to network on the exhibition floor with exhibitors and visitors. On Tuesday, September 27 in booths 531, 212, and 808 from 16:00 – 18:00, and Wednesday, September 28 in booths 712, 722 and 913. Enjoy complimentary refreshments while conducting business in a social setting. Free for all IPC delegates – all you need is your IPC delegate badge.

NEW Main Level Exhibits IPE has expanded this year to the main level of the Telus Convention Centre in the Telus Rooms. Visit an additional 70 exhibits and main level attractions.

IPE Trivia Challenge & Bar

Visit the main level of the Telus Convention Centre to celebrate pipeline history for your chance to win one of 12 framed historical photos. Enjoy a Caesar at the trivia bar while you test your skills. Bar hours are Tuesday & Wednesday 12:00 - 16:00.

CSA Group Innovation Forum

Join this new forum on the main level of the Telus Convention Centre to learn how your organization can stay ahead of the curve. Eight presentations over two days highlight products, technologies and services related to safety, international relations, standards, and compliance.

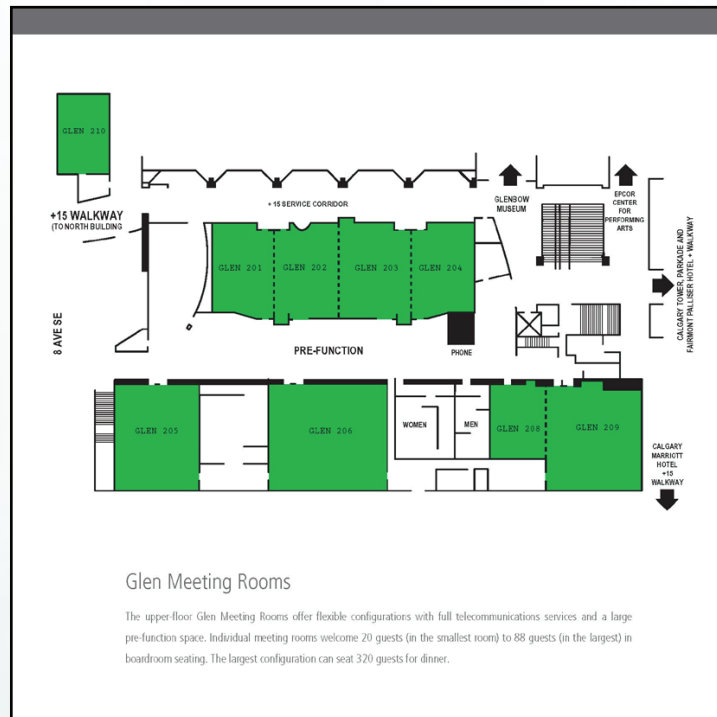
The forum runs Wednesday, September 28 and Thursday, September 29 from 10:30 - 16:00.

For extended details on International Pipeline Exposition, visit www.internationalpipelineexposition.com or see page 36 A copy of the IPE Official Event Guide is also included in your registration package.

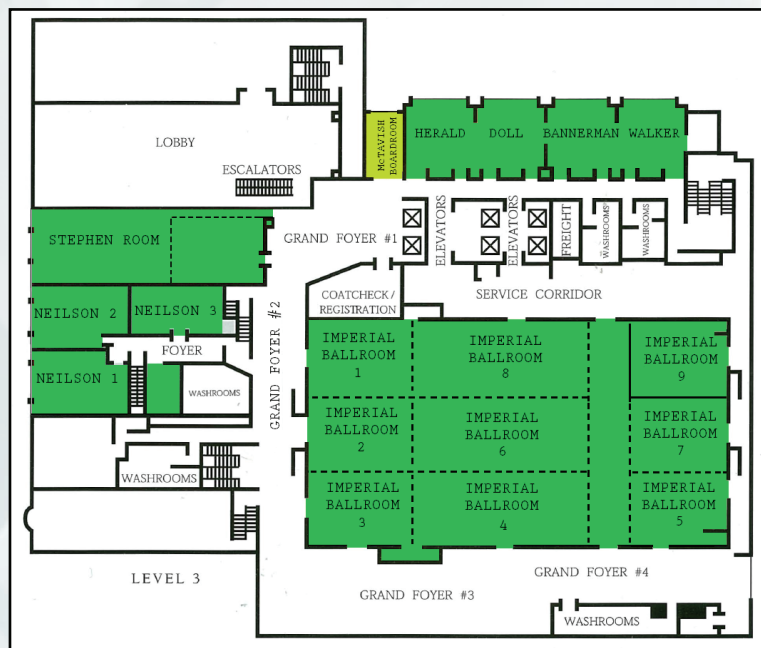


Telus South Building Lower Level





Telus South Building Upper Level

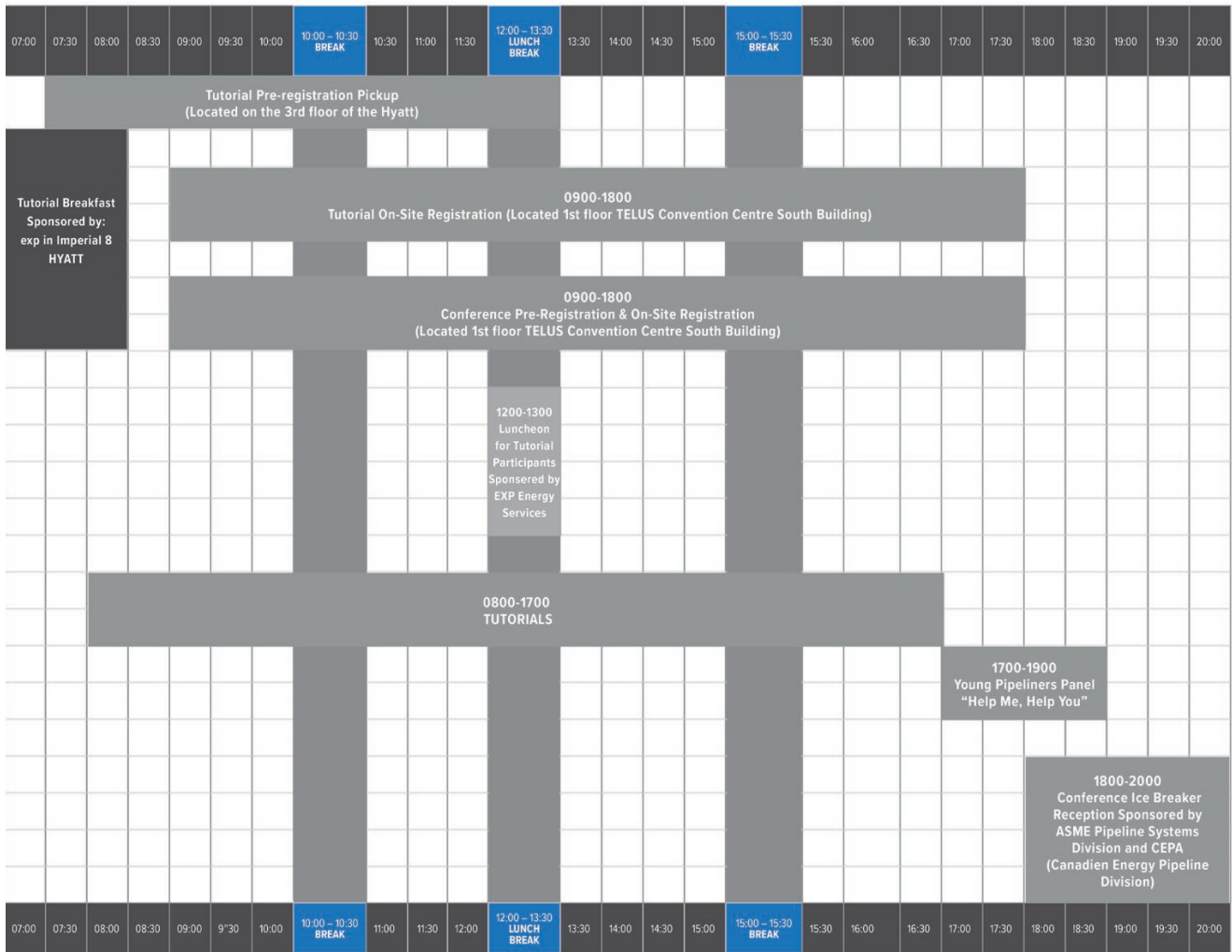


Hyatt Regency 3rd Floor

Schedule at a Glance



MONDAY, SEPTEMBER 24, 2018



- TRACK 1** Pipeline Safety Management Systems
- TRACK 2** Project Management, Design, Construction and Environmental Issues
- TRACK 3** Pipeline and Facilities Integrity
- TRACK 4** Operations, Monitoring, and Maintenance
- TRACK 5** Materials and Joining
- TRACK 6** Strain Based Design
- TRACK 7** Risk and Reliability
- TRACK 8** Northern Offshore and Production Pipelines
- TRACK 10** Poster Session
- EVENT**



TUESDAY, SEPTEMBER 25, 2018

0700-1800 Conference Pre-Registration & On-Site Registration (Located 1st floor of TELUS Convention Centre South Building)										1200-1800 Exposition Open (Located on the main floor & upper Level)										TELUS ROOMS				
07:00	07:30	08:00	08:30	09:00	09:30	10:00	10:00 - 10:30 BREAK	10:30	11:00	11:30	12:00 - 13:30 LUNCH BREAK	13:30	14:00	14:30	15:00	15:00 - 15:30 BREAK	15:30	16:00	16:30	17:00	17:30	18:00		
Authors Breakfast Sponsored by: BC Oil & Gas Commission HYATT <i>(located in Doll/Herald and Walker/Bannerman Wed - Friday (Imperial 8) (located in Doll/Herald and Walker/Bannerman)</i>							0830-1000 Conference Opening Plenary Session: Keynote Speaker: Cynthia Hansen, Executive Vice President Enbridge Sponsored by: CRNL HYATT Imperial Ballroom							Fireside Chat topic: The Future of Energy HYATT Stephen Room										
																		10-1-1 Poster Session 1					MacLeod Hall A	
								3-1-5 Integrity Management Operational Considerations				3-1-1 Organizational Factors - Development & Competency												MacLeod Hall B
								3-5-1 Inspection			1200-1330 Delegate Luncheon Speaker: Mr. Calvin Helin Sponsored by: Pempina Pipelines HYATT Imperial Ballroom	3-2-1A Corrosion & Environmental Cracking I				3-2-1B Corrosion & Environmental Cracking I Includes 2017 Rio Best					MacLeod Hall C			
												3-3-5A Established ILI Technologies III				3-3-5B Established ILI Technologies III					MacLeod Hall D			
								5-1-1: Micro Alloyed Line Pipe Steel				5-1-2A Microstructure-property Relationship				5-1-2B Microstructure-property Relationship					Glen 201/202			
								5-3-1 Crack Propagation - Full Scale Tests				5-4-1 Advancements in Fittings				4-3-2 Geohazard Identification & Characterization					Glen 203/204			
								2-1-1 Project Management				2-4-1 Environmental Issues				8-2-1 Offshore 1 - Glen 205					Glen 205			
								6-2-1: Strain Capacity & Burst Pressure II				6-1-1 Strain Demand & Assessment I				6-1-2 Strain Demand & Assessment II					Glen 208/209			
								1-1-1 Competency				1-2-1: Regulatory				1-2-1: Regulatory					MacLeod E1			
								4-2-1 Pipeline Monitoring & Control I				4-2-1 Pipeline Monitoring & Control I												MacLeod E2
								7-7-3 Historical Data Analysis				7-7-3 Historical Data Analysis				7-7-1B Consequence Assessment								

Schedule at a Glance



WEDNESDAY, SEPTEMBER 26, 2018

0730-1800 Conference Pre-Registration & On-Site Registration (Located 1st floor of TELUS Convention Centre South Building)																			TELUS ROOMS							
07:00	07:30	08:00	08:30	09:00	09:30	10:00	10:00 - 10:30 BREAK	10:30	11:00	11:30	12:00 - 12:30 LUNCH BREAK	12:30	13:00	14:00	14:30	15:00	15:00 - 15:30 BREAK	15:30	16:00	16:30	17:00	17:30	18:00	TELUS ROOMS		
0730-1800 Conference Pre-Registration & On-Site Registration (Located 1st floor of TELUS Convention Centre South Building)																										
1000-1800 • Exposition Open (Located on the main floor & upper Level)																										
Authors Breakfast Sponsored by: Inter Pipeline Ltd. HYATT							1345-1545 Executive Leadership Panel Sponsored by: ERM										1600-1800 IPE Industry Reception (located at The Bank & Baron) Sponsored by: IPC, IPE & Bantrel Co.									
Public Engagement • 0800- 1145 HYATT																										
Poster Session 2																			MacLeod Hall A							
3-3-1 New ILI Technologies I							3-5-2B Integrity Management 1-2												MacLeod Hall B							
3-5-2A Integrity Management							3-1-2 Systems and Data												MacLeod Hall C							
3-3-2 Established ILI Technologies I							4-2-2B Pipeline Simulations & Scheduling							1200-1330					MacLeod Hall D							
4-2-2A Pipeline Simulations & Scheduling							5-4-2: Material Testing Methods							IPC Delegate					Glen 201/202							
5-3-2 Crack Propagation - Tests and Simulations							2-2-1B Project Design I							Networking					Glen 203/204							
2-2-1A Project Design I							6-2-2 Strain Capacity & Burst Pressure							Luncheon					Glen 205							
6-2-2 Strain Capacity & Burst Pressure							1-3-1: Risk-based/informed decision making							Sponsored by:					Glen 208/209							
1-3-1: Risk-based/informed decision making							4-1-2 Experimental Investigations & Testing							Transcanada					MacLeod E1							
4-1-5 Third Party Damage/Prevention							7-7-6 Geohazards, Dents & Other II												MacLeod E2							
7-7-6 Geohazards, Dents & Other I																										MacLeod E4
1345-1545 - Executive Leadership Panel HYATT Sponsored by: ERM																										
1615-1730 • Distinguished Lecture Series Presented by the ASME Pipelines Systems Division Sponsored																										
1600-1800 IPE Industry Reception Located on the exposition floor																										
07:00	07:30	08:00	08:30	09:00	09:30	10:00	10:00 - 10:30 BREAK	10:30	11:00	11:30	12:00 - 12:30 LUNCH BREAK	12:30	13:00	14:00	14:30	15:00	15:00 - 15:30 BREAK	15:30	16:00	16:30	17:00	17:30	18:00	TELUS ROOMS		

Schedule at a Glance



WEDNESDAY, SEPTEMBER 26, 2018

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07:00	07:30	08:00	08:30	09:00	09:30	10:00	10:00 - 10:30 BREAK	10:30	11:00	11:30	12:00 - 12:30 LUNCH BREAK	12:30	13:00	14:00	14:30	15:00	15:00 - 15:30 BREAK	15:30	16:00	16:30	17:00	17:30	18:00	TELUS ROOMS
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6-2-2 Strain Capacity & Burst Pressure																		Glen 208/209						
1-3-1: Risk-based/informed decision making																		MacLeod E1						
4-1-5 Third Party Damage/Prevention																		MacLeod E2						
7-7-6 Geohazards, Dents & Other I																		MacLeod E4						
3-5-2B Integrity Management 1-2																								
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SEPTEMBER 24 – SEPTEMBER 28, 2018 • CALGARY, ALBERTA, CANADA



Thank You to Our Refreshment Break Sponsors

Conference Refreshment Breaks, Tuesday – Friday

Baker Hughes
Bird Industrial Group
BMT Fleet Technology Ltd.
C-FER Technologies
DST Consulting Engineering Inc.
Emc2

Thank You to Our Track Sponsors

1) Pipeline Safety Management Systems

The National Energy Board of Canada
The US Pipeline and Hazardous Materials Safety Administration

2) Project Management, Design, Construction & Environmental Issues

ATCO
WorleyParsons

3) Pipelines & Facilities Integrity

Enbridge
Integrity Plus

4) Operations, Monitoring & Maintenance

merjent
Saskatchewan Ministry of the Economy

5) Materials & Joining

Acuren
BMT Fleet Technology Ltd.

6) Strain Based Design

Centre for Reliable Energy Systems (CRES)
Penspen

7) Risk & Reliability

Dynamic Risk
Stantec

8) Northern Offshore & Production Pipelines

Thurber Engineering Ltd.

IPC Would Also Like to Thank the Following Sponsors for Their Contributions

Delegate ID Tags: Kinder Morgan

Conference Pocket Guide: Amec Foster Wheeler

Conference Abstracts: Baker Hughes

Sponsor a Student: Altek Supply & PII Pipeline Solutions a GE Oil & Gas and AI Shaheen joint venture

Lanyards: Applus RTD Quality Services

Conference Proceedings: ROSEN

Delegate Bags: TransCanada Pipelines Ltd. & DNV GL

Conference Pens: TD Williamson

Daily Newsletter: Pipelines International

Hotel Key Kards: Baker Hughes

Restaurant Guide: NDT Global

Computer Stations: exp Energy Services Inc.

Technical Booth & Support Staff: Proshow

Public Engagement and Acceptance Track

Purpose

To recognize the technical contributions of individuals that have stood the test of time.

Background

The goal of the Distinguished Lecture Series is to present technical content that was produced over the past several decades that have provided a foundation for modern pipeline technology.

Date / Duration (Tentative)

Wednesday afternoon panel session for 1 hour and 15 minutes

- 5 minute introduction to the Distinguished Lecture Series
- 5 minute introduction to the honoree
- 30 to 40 minute presentation by the honoree
- 10 to 15 minutes of questions and answers

Young Pipeliners Panel

Young Pipeliners Panel: “Help Me, Help You!” at IPC 2018

Join the Young Pipeliners Association of Canada (YPAC) on Monday, September 24th as we host a panel and networking session at IPC 2018 where fellow young pipeliners and their mentors will share stories about how mentorship has influenced their careers. We’re excited to welcome the following pipeliners to the panel:

Moderator: Nancy Manchak – *Asset Integrity Engineer at Enbridge Pipelines*

Sarah Vandaiyar, Project Engineer with TransCanada with her mentor,

Vik Kohli, Director of Engineering Services at Enbridge and,

Landon Lucadou, Engineering Specialist at Dynamic Risk with his mentor,

Patrick Vieth, Senior Vice President – Technical Services at Dynamic Risk.

[Click here to view panelists biographies](#)

When: 5–7pm, Monday, September 24, 2018

Location: Stephen Room in the Hyatt Regency Hotel, 700 Centre Street SE, Calgary Alberta

Cost: Free, with Event Only Registration required via the IPC website.

Fireside Chat Series

For 2018 the IPC has initiated three topical “fireside chats”. These informative yet informal talks are designed with audience participation and learning in mind.

The topics to be addressed are:

The Future of Energy

Understanding the human and organizational factors that contribute to incidents

The End of the Pipeline Lifecycle

Please find full descriptions and moderator and speaker bios below.

1. The Future of Energy, Tuesday, September 25, 3:30 – 5:00pm

Session Description

By 2050, global energy demand is projected to double, spurred on by population growth that will exceed nine billion people on the planet. The future of energy will depend on the interplay of a number of factors including technological advances, government policy, energy cost reductions, increased efficiency and transitions to renewable energy sources. What will characterize our energy future? What will be the roles of the industry, the consumers, and the government? Fossil fuels are a human source of greenhouse gas emissions, but wind, solar, and nuclear energy have their own challenges. Whereas ‘green’ energy appears to move towards decentralization with digital energy management systems, fossil fuel energy is relying heavily on global transport and distribution of gas and oil products, thereby affected by world events and worldwide stakeholders. Will it be possible to integrate the various energy sources towards a combination of solutions, obtaining a recognition and acceptance for the current need of fossil fuels and, thereby, a social license to operate?

Session Moderator: Danielle Smith, *Radio Host NewsTalk770*

Speakers

Tim Pickering, Auspice Capital Advisors

Cody Battershill, Canada Action

Keith Brooks, Environmental Defense

2. Understanding the human and organizational factors that contribute to incidents, Thursday, September 27, 10:30 – 12:00pm

Session Description

An awareness of the role of human and organizational factors in the origin of incidents is not new and these factors are being implemented to some degree in current incident investigation processes. Nonetheless, it continues to be a challenge to successfully identify human and organizational factors and implement recommendations and safeguards. A discussion of these challenges are presented, the role of safety culture, and comparisons of contributing human and organizational factors between pipeline incidents and other industry incidents.

Session Moderator: Jake Abes, Det Norske Veritas (Canada)

Speakers

Kathy Fox, Transportation Safety Board of Canada

Jan Hayes, RMIT University, Australia

Alan Mayberry, Pipeline and Hazardous Materials Safety Administration (PHMSA)

3. The End of the Pipeline Lifecycle, Thursday, September, 3:30 – 5:00pm

Session Description

The End of the Pipeline Lifecycle fireside chat takes a significantly different approach to the more common abandonment dialogue. Mike Sullivan from the Canadian Common Ground Alliance and Alberta One-Call Corporation leads this blue-sky discussion on the value of pipelines and rights of way as assets after their useful life transporting hydrocarbons has ended. Paul Anderson, with Anderson and Associates, and Russell Wintersgill, with Stratocom Solutions, and recently retired from AltaGas Utilities, join Mike as they consider what the future might look like.

Session Moderator: Mike Sullivan, Alberta One-Call Corporation

Speakers

Russell Wintersgill, Stratocom Solutions

Paul Anderson, Anderson & Associates

Executive Panel

The executive panel features distinguished leaders from the pipeline industry discussing topics that are timely and relevant to our industry.

Following the IPC 2018 theme of Building the Future Now, this forum will address the challenges we face as an industry, and explore how we can overcome them with a collaborative spirit and shared goals.

In this session the moderator, Chris F. Yoxall, Executive Vice President, ROSEN, will guide panelists through a conversation touching on topics such as: Regulations and the changing regulatory environment; technology and innovation in the pipeline industry; and public perception of industry.

Panelists for this session are:

Ian Anderson, President, Kinder Morgan Canada
Andy Drake, Vice President, Enbridge
Howard “Skip” Elliott, Administrator, PHMSA

Peter Watson, CEO/chair, National Energy Board
Carl Weimer, Executive Director, Pipeline Safety Trust

The purpose of the Executive Panel Session is to provide the IPC Delegates with an opportunity to engage in an open dialogue with Senior Executives actively engaged in aspects all of the pipeline industry. In addition, this Executive Panel Session further demonstrates the commitment by industry leadership to promote knowledge sharing that will help to reduce pipeline failures and increase the safe and economic reliability of our very important pipeline infrastructure.



Ian Anderson, President,
Kinder Morgan Canada Limited

Mr. Anderson is President of Kinder Morgan Canada Limited (TSX:KML), a Canadian-based, publically-traded company, and Kinder Morgan Canada, a business segment of Kinder Morgan, one of the largest energy infrastructure companies in North America. Mr. Anderson's responsibilities include providing executive leadership to Kinder Morgan's

pipeline operations, growth and corporate responsibility initiatives in Canada. He is leading the company's C\$7.4 billion Trans Mountain Expansion Project. The existing Trans Mountain Pipeline system transports crude oil and refined petroleum products from the oil sands in Alberta to

Burnaby, British Columbia and Washington State. Mr. Anderson has been with Kinder Morgan and Canadian predecessor companies for more than 38 years. He was named President of Kinder Morgan Canada in 2005 and President of Kinder Morgan Canada Limited in 2017. Mr. Anderson is a Certified Management Accountant and a graduate of the University of Michigan Executive Program. He serves on several boards, including the Canadian Energy Pipeline Association (CEPA), Association of Oil Pipe Lines (AOPL) and the Business Council of British Columbia (BCBC). Kinder Morgan Canada Limited owns an interest in an integrated network of pipeline systems and terminal facilities in Canada. The company focuses on stable, fee-based energy transportation and storage assets that are central to the energy infrastructure of Western Canada.



J. Andrew Drake, PE
Vice President, Asset Integrity and Technical Services
Gas Transmission and Midstream

Andy Drake is vice president of Asset Integrity and Technical Services for the Gas Transmission and Midstream group at Enbridge. He is responsible for the company's risk assessment and integrity programs for all operating assets as well as to

provide technical direction to ensure safe operations across all GTM assets in North America.

Prior to assuming his current role in 2017, Drake served as vice president of Operations and EHS for Spectra Energy's U.S. Gas Transmission Operations.

Drake joined predecessor company Texas Eastern in 1982 as an engineer.

Throughout his career, Drake has held positions of increasing responsibility across the engineering and operations groups, including manager of construction, general manager of

technical services, vice president of engineering and construction, vice president of operations and EHS, and vice president of transmission services.

Drake earned a Bachelor of Science degree in industrial and systems engineering from Ohio State University. He is a registered professional engineer in the state of Texas.

Drake has held leadership positions on numerous technical committees and regulatory initiatives within the natural gas industry, including chairing the American Society of Mechanical Engineers' Gas Piping Standards Committee, and chaired the development of ASME's Gas Piping Integrity Management Program Standard B31.8S. He represents the U.S. natural gas infrastructure industry on the U.S. Department of Transportation's Technical Advisory Committee on Pipeline Safety. He also chaired the development of the Interstate Natural Gas Association of America's Integrity Management Initiative.



Howard "Skip" Elliott,
Administrator,
PHMSA

Howard "Skip" Elliott was sworn in as the fifth Administrator of the Pipeline and Hazardous Materials Safety Administration (PHMSA) by Secretary Elaine L. Chao on October 30, 2017.

Elliott brings a wealth of practical, hands-on experience to PHMSA, after retiring from CSX

Transportation in Jacksonville, FL, where he served as Vice President of Public Safety, Health, Environment, and Security. Elliott's portfolio at CSX included hazardous materials, transportation safety, homeland security, railroad policing, environmental compliance and operations, crisis management, occupational health management, and operational continuity.

Elliott has more than 40 years of experience in the boardroom, on Capitol Hill, in state houses and

city halls. He was a pioneer of the digital age, developing and implementing computer-based tools to assist emergency response officials, first responders, and homeland security personnel in preparing for and mitigating railroad hazmat and security incidents. He firmly believes that application of technology is key to pursuing PHMSA's goal of zero safety incidents.

Elliott has earned honors from a number of institutions and is a recipient of the Association of American Railroads' (AAR) prestigious Holden-Proefrock award for lifetime achievement in hazardous materials transportation safety. Elliott has served on the AAR's Risk Management Working Committee and its Security Committee, and is a member of the American Society of Industrial Security and the FBI-DHS Domestic Security Alliance Council.

Skip Elliott earned a double-major degree in English and Forensic Studies at Indiana University, and a Master of Science from Columbia Southern University.



Peter Watson,
CEO/Chair,
National Energy Board

- Deputy Minister, Executive Council, Government of Alberta. 2011-2014.
- Deputy Minister, Alberta Energy, Government of Alberta. 2008-2011.
- President, Clean Air Strategic Alliance, a

multi-stakeholder alliance composed of representatives selected by industry, government and non-government organizations, to provide strategies to assess and improve air quality for Albertans, using a collaborative consensus process, 2005-2011.

- President, Alberta Water Council, a multi-stakeholder partnership with 24 Members from governments, industry, and non-government organizations. Its primary task is to monitor and steward implementation of the Alberta's Water for Life strategy and to champion achievement of the strategy's three goals, namely, a safe, secure drinking water supply, healthy aquatic

ecosystems and reliable, quality water supplies for a sustainable economy, 2005-2008.

- Deputy Minister, Alberta Environment, Government of Alberta. 2005-2008.
- Assistant Deputy Minister, Environmental Assurance Division, Alberta Environment, Government of Alberta. 2002-2005.

Professional Affiliations, Degrees and Distinctions:

- Member of the Association of Professional Engineers, Geologists and Geophysicists of Alberta.
- Fellow of the Canadian Academy of Engineering
- Completed Directors Education Program through the Institute of Corporate Directors.
- Named Alberta's Resource Person of the Year, 2011.
- B.Sc. Civil Engineering.



Carl Weimer,
Executive Director,
Pipeline Safety Trust

Carl Weimer is the Executive Director of the Pipeline Safety Trust. In that capacity he has served as a member of the U.S. Department of Transportation's Technical Hazardous Liquid Pipeline Safety Standards Committee, the Canadian Energy Pipeline Association's External Advisory Panel, and the

governor appointed Washington Citizen Committee on Pipeline Safety. Carl has been called upon to testify to the U.S. House and Senate multiple times, as a witness by the National

Transportation Safety Board, and was honored in 2015 as a Champion of Change by the White House for his pipeline safety efforts. He has organized eleven national pipeline safety conferences, pushed for stronger pipeline safety legislation on the national and state level, and regularly serves as an independent source of pipeline safety information for news media, local government, and citizens around the country. Carl was elected in 2005 and again in 2009 and 2013 to the Whatcom County Council, where he served as chairman for four of those years. He has a degree in Natural Resources and Environmental Education from the University of Michigan, as well as a degree in Industrial Electronics Technology from Peninsula College.

TRACK 1 PIPELINE SAFETY MANAGEMENT SYSTEMS

TUESDAY, SEPTEMBER, 25

1-1 COMPETENCY

1-1-1 COMPETENCY

Telus, Telus MacLeod E1 10:30am - 12:00pm

Session Chair: *Phillip Nidd, Dynamic Risk USA, Inc., The Woodlands, TX, United States*

10:30am Management System Competency Model and Development Program

Technical Paper Publication. IPC2018-78148

Lynn Sikorski, Kaleidoscope Performance Consulting Ltd, Calgary, AB, Canada, Laura Zaleschuk, Mark Jean, Applied4sight Ltd, Calgary, AB, Canada

11:00am Competency Standards For The Pipeline Industry

Technical Paper Publication. IPC2018-78477

Michelle Unger, ROSEN, Newcastle, United Kingdom, Philip Hopkins, Phil Hopkins Ltd, Newcastle Upon Tyne, United Kingdom

11:30am Achieving and demonstrating pipeline engineering capability ? the role of competency standards, and their use for qualifications and registration.

Technical Paper Publication. IPC2018-78321

Chris Harvey, Chris Harvey Consulting, NSW, NSWQ, Australia

1-2 REGULATORY

1-2-1 REGULATORY

Telus, Telus MacLeod E1 1:30pm - 5:00pm

Session Chair: *Iain Colquhoun, National Energy Board, Calgary, AB, Canada*

1:30pm Special Permits, Waivers, and Other Technology Requests - A Review of Requests that Fall Outside of Codified Rules

Technical Paper Publication. IPC2018-78549

Kenneth Lee, USDOT PHMSA, Vienna, VA, United States, Buddy Secor, USDOT PHMSA, Stafford, VA, United States

2:00pm Is the Push for More Prescriptive Regulation Making Us Less Safe?

Technical Paper Publication. IPC2018-78151

Charlene Wright, Wright & Associates PLLC, Houston, TX, United States, Applied4sight Ltd, Calgary, AB, Canada

2:30pm Is Public Safety Impacted by the Multiple Regulatory Regimes for Gas Pipelines and Networks?

Technical Paper Publication. IPC2018-78160

Jan Hayes, RMIT University, Melbourne, Victoria, Australia, Lynne Chester, Dolruedee Kramnaimuang King, University of Sydney, Sydney, NSW, Australia

3:00pm Compliance Oversight Of Operators Imp Program For Pipelines? A Risk Based Evaluation Approach Incorporating Safety Culture

Technical Paper Publication. IPC2018-78240

Bushra Waheed, BC Oil and Gas Commission, Kelowna, BC, Canada, Brodie Couch, Hassan Iqbal, The University of British Columbia, Kelowna, BC, Canada, Eddie Lee, The University of British Columbia, Vancouver, BC, Canada, Gouri Bhuyan, BC Oil and Gas Commission, Kelowna, BC, Canada

WEDNESDAY, SEPTEMBER, 26

1-3 RIS K-BASED/INFORMED DECISION MAKING

1-3-1 R ISK-BASED/INFORMED DECISION MAKING

Telus, Telus MacLeod E1 8:30am - 10:00am

Session Chair: *Erin Doerffer, Det Norske Veritas (Canada) Ltd., Calgary, AB, Canada*

8:30am Integrity Risk-Informed Decision Making

Technical Paper Publication. IPC2018-78149

Sherif Hassani, Enbridge, Liquids Pipelines, Edmonton, AB, Canada, Douglas Langer, Enbridge, Edmonton, AB, Canada, Mona Abdolrazaghi, Enbridge Pipelines Inc., Edmonton, AB, Canada

9:00am Formalizing Integrity Management Workflows:

TOWARDS INTEGRITY PROCESS MODELLING

Technical Paper Publication. IPC2018-78512

Alejandro Reyes, Otto Huisman, ROSEN Group, Lingen, Ems, Germany

THURSDAY, SEPTEMBER, 27

1-4 INDUSTRY/PIPELINE PERFORMANCE

1-4-1A INDUSTRY/PIPELINE PERFORMANCE

Telus, Telus MacLeod E3 8:30am - 10:00am

Session Chair: *Danielle Demers, Danielle Demers Consulting, Calgary, AB, Canada*

8:30am How Do We (Actually) Know Our Quality Is Improving?

Technical Paper Publication. IPC2018-78407

Justin R. Papp, Enbridge, Edmonton, Alberta, AB, Canada, William H. Forbes, Matthew A. R. Yarmuch, Enbridge, Edmonton, AB, Canada

9:00am Safety Culture Assessment & Continuous Monitoring Approach

Technical Paper Publication. IPC2018-78150

Laura Zaleschuk, Mark Jean, Applied4sight Ltd, Calgary, AB, Canada

9:30am Accelerating Industry Performance through Collaborative Continual Improvement

Technical Paper Publication. IPC2018-78285

Coral Lukaniuk, Canadian Energy Pipeline Association (CEPA), Calgary, AB, Canada, Christopher Coupal, Span Consulting, Calgary, AB, Canada

1-4 INDUSTRY/PIPELINE PERFORMANCE

1-4-1B INDUSTRY/PIPELINE PERFORMANCE

Telus, Telus MacLeod E3 10:30am - 12:00pm

10:30am Asset Integrity Management System Audits For The National Gas Company Of Trinidad and Tobago

Technical Paper Publication. IPC2018-78632

Michiel P. Brongers, Steven J. Weichel, DNV GL USA, Inc., Dublin, OH, United States, Rafer Mohammed, National Gas Company of Trinidad and Tobago, Ltd., Port-of-Spain, Trinidad And Tobago, Amanda Kissoon, Ministry of Energy & Energy Industries, San Fernando, Trinidad And Tobago

11:00am Are Pipelines Being Held to an Unreasonably High Standard of Performance?

Technical Paper Publication. IPC2018-78744

Alan Murray, Principia Consulting Inc., Calgary, AB, Canada

1-5 PIPELINE SAFETY/INTEGRITY

1-5-1 PIPELINE SAFETY/INTEGRITY

Telus, Telus MacLeod E3 1:30pm - 3:00pm

Session Chair: *Max Kieba, US DOT PHMSA, Washington, DC, United States*

1:30pm Operational Change Assessments - A Proactive

APPROACH TO MANAGING PIPELINE INTEGRITY

Technical Paper Publication. IPC2018-78585

Kelsey Fernuik, Sean Keane, Saheed Akonko, Omer Jomha, Wayne Limming, Enbridge Pipelines Inc, Edmonton, AB, Canada

2:00am Are Integrity Management Programs Making A Difference?

Technical Paper Publication. IPC2018-78597

Joe Paviglianiti, Tijani Elabor, National Energy Board, Calgary, AB, Canada, Alan Murray, Principia Consulting Inc., Calgary, AB, Canada

2:30pm Implementing API RP 1173, Pipeline Safety Management Systems

Technical Paper Publication. IPC2018-78656

David Murk, Aaron Duke, Stuart Saulters, American Petroleum Institute, Washington, DC, United States, William Byrd, Rcp Inc, Houston, TX, United States

TRACK 2 PROJECT MANAGEMENT, DESIGN, CONSTRUCTION AND ENVIRONMENTAL ISSUES

TUESDAY, SEPTEMBER, 25

2-1 PROJECT MANAGEMENT

2-1-1 PROJECT MANAGEMENT

Telus, Telus Glen 205 10:30am - 12:00pm

Session Chair: *David Burns, Enbridge, Calgary, AB, Canada*

10:30am Earned Schedule and the use of Schedule Execution Reporting Metrics

Technical Paper Publication. IPC2018-78067

Philip Beck, Enbridge, Edmonton, AB, Canada, Dennis G Kovacs, Enbridge Inc, Edmonton, AB, Canada

11:00am Utilizing Value Management to Increase Project Competitiveness

Technical Paper Publication. IPC2018-78230

Michael Tozer, Enbridge Pipelines Inc, Calgary, AB, Canada, Debra Tetteh-Wayoe, Enbridge Pipelines Inc, Edmonton, AB, Canada

2-4 ENVIRONMENTAL ISSUES

2-4-1 ENVIRONMENTAL ISSUES

Telus, Telus Glen 205 1:30pm - 3:00pm

Session Chair: *Matt Mosher, CH2M, TBD, TX, Canada*

1:30pm Evolving Standards of Indigenous Peoples

ENGAGEMENT AND MANAGING PROJECT RISK

Technical Paper Publication. IPC2018-78319

Bruce Vincent, Wood Environment & Infrastructure Solutions, Calgary, AB, Canada, Indra Maharaj, Prima Regulatory Consulting Inc., Calgary, AB, Canada

2:00pm Using 2D and 3D Oil Spill Trajectory and Fate

MODELS TO ASSESS THE RISK OF ACCIDENTAL CRUDE OIL RELEASES ALONG THE ENBRIDGE LINE 3 REPLACEMENT PROGRAM PIPELINE

Technical Paper Publication. IPC2018-78372

Matt Horn, Jeremy Fontenault, RPS, South Kingstown, RI, United States

2:30pm CSA Z663: Land use planning in the vicinity of pipeline systems

Technical Paper Publication. IPC2018-78808

Ed Plant, T.E.P. R-O-W Co-ordination Inc, Edmonton, AB, Canada, Sue Capper, CSA Group, Acton, ON, Canada

WEDNESDAY, SEPTEMBER, 26

2-2 PROJECT DESIGN

2-2-1A PROJECT DESIGN I

Telus, Telus Glen 205 8:30am - 10:00am

Session Chair: *Thomas H. Greaves, Associated Engineering, Calgary, AB, Canada*

8:30am Inelastic Deformation of Pipelines Induced by Temporary Ground Deformations

Technical Paper Publication. IPC2018-78205

Nobuhisa Suzuki, JFE Steel Corporation, Yokohama, Japan, Takekazu Arakawa, JFE Steel Corporation, Tokyo, Japan

9:00am Integrity Assessment of Pipelines with Ovality

Technical Paper Publication. IPC2018-78281

Fan Zhang, Kiefner & Associates, Columbus, OH, United States, Michael Rosenfeld, Kiefner/ Applus ? RTD, Columbus, OH, United States

9:30am Combining Expert Knowledge and Automation to Maximize Pipeline Route Optionality and Defensibility

A CASE STUDY OF THE AURORA PIPELINE

Technical Paper Publication. IPC2018-78289

Kevin Seel, Golder Associates, Calgary, AB, Canada, Adam Phillips, Nexen, Calgary, AB, Canada

2-2 PROJECT DESIGN

2-2-1B PROJECT DESIGN I

Telus, Telus Glen 205 10:30am - 12:00pm

10:30am Evaluation of Hydraulic Fracturing

Models and their Limitations to Predict No-Drill Zones for Horizontal Directional Drilling

Technical Paper Publication. IPC2018-78304

Saeed Delara, Kendra MacKay, Fluor, Calgary, AB, Canada

11:00am Strengthening the Current Class Location

DESIGNATION SYSTEM

Technical Paper Publication. IPC2018-78672

Diana Willson, Iain Colquhoun, National Energy Board, Calgary, AB, Canada, Dean Carnes, Canadian Natural Resources Ltd., Calgary, AB, Canada

THURSDAY, SEPTEMBER, 27

2-3 PROJECT CONSTRUCTION

2-3-1A PROJECT CONSTRUCTION

Telus, Telus Glen 205 8:30am - 10:00am

Session Chair: *Neil Bolger, FortisBC, Surrey, BC, Canada*

8:30am Automated Creation of the Pipeline Digital

TWIN DURING CONSTRUCTION IMPROVEMENT TO CONSTRUCTION QUALITY AND PIPELINE INTEGRITY.

Technical Paper Publication. IPC2018-78146

Joseph Hlady, INFRASTRUCTURE MAPPING AND AUTONOMY, CALGARY, AB, Canada, Lance Fugate, Matt Glanzer, Lux Modus, CALGARY, AB, Canada

9:00am Post-Construction ILI Execution Planning

GUIDELINES FOR PIPELINE QUALITY VERIFICATION

Technical Paper Publication. IPC2018-78358

Brian Brooks, ROSEN Canada, Calgary, AB, Canada, **Hubert Lindner**, ROSEN Technology and Research Centre GmbH, Lingen (Ems), Germany

9:30am The Application of a Knowledge Transfer

TAXONOMY TO PIPELINE CONSTRUCTION INSPECTION BEST PRACTICES

LEARNING

Technical Paper Publication. IPC2018-78523

Ritch Rappel, Rappel Inspections Ltd., Edmonton, AB, Canada, **Julian Dorscht**, **Reena Sahney**, PBOK Consulting, Calgary, AB, Canada

2-3 PROJECT CONSTRUCTION

2-3-1B PROJECT CONSTRUCTION

Telus, Telus Glen 205 10:30am - 12:00pm

10:30am A Canadian Operator Based Framework for Pipeline Pressure Tests: Lessons Learned

Technical Paper Publication. IPC2018-78666

Nicole-Lee Robertson, Pembina Pipelines Corporation, Calgary, AB, Canada, **Bob Campbell**, In-Line Pigging Solutions Ltd, Calgary, AB, Canada

11:00am How dry is dry?

Technical Paper Publication. IPC2018-78580

Colin Hartloper, **Kamal Botros**, NOVA Chemicals Centre for Applied Research, Calgary, AB, Canada, **Vivian Liu**, **Gerard Lalonde**, **Jason Lu**, **Yuri Saud de Puche**, TransCanada Pipelines Ltd., Calgary, AB, Canada

11:30am Creating a Digital Pipeline During Pipeline Construction

Technical Presentation. IPC2018-78658

Martin Fingerhut, Technical Toolboxes Ltd., Houston, TX, United States, **Bill Amend**, Technical Toolboxes, Yorba Linda, CA, United States, **Drew Lafleur**, Technical Toolboxes, Houston, TX, United States, **Brad Raabis**, Metegrity Inc., Edmonton, AB, Canada

2-2 PROJECT DESIGN

2-2-2 PROJECT DESIGN II

Telus, Telus Glen 205 1:30pm - 3:00pm

Session Chair: **Thomas H. Greaves**, Associated Engineering, Calgary, AB, Canada

1:30pm Well-Integrated Design of Surge Relief Systems in Oil Storage Facilities

Technical Paper Publication. IPC2018-78682

Emma Perez, **Ashishkumar Mehta**, Enbridge Pipelines, Edmonton, AB, Canada

2:00pm Numerical analysis of buried pipelines subject to slope failure and seasonal temperature variation

Student Paper Publication. IPC2018-78736

Mohammad Katebi, **Hongwei Liu**, **Pooneh Maghoul**, **James Blatz**, University of Manitoba, Winnipeg, MB, Canada

2:30pm What Lies Beneath - Geophysical Approaches for Assessing Trenchless Water Crossings

Technical Paper Publication. IPC2018-78782

Alastair McClymont, Advisian Worleyparsons, Calgary, AB, Canada, **Paul Bauman**, **Dan Parker**, Advisian (WorleyParsons), Calgary, AB, Canada, **Erin Ernst**, Advisian, Calgary, AB, Canada

TRACK 3 PIPELINE AND FACILITIES INTEGRITY

TUESDAY, SEPTEMBER, 25

3-1 INTEGRITY MANAGEMENT PLAN (IMP ADMINISTRATION)

3-1-5 INTEGRITY MANAGEMENT OPERATIONAL CONSIDERATIONS

Telus, MacLeod Hall B 10:30am - 12:00pm

Session Chair: **Tara McMahan**, DNV GL, Dublin, OH, United States

10:30am Do We Need a Safe Excavation Pressure for Dented Pipelines: How Should it Be Defined?

Technical Paper Publication. IPC2018-78376

Muntaseer Kainat, Enbridge, Liquids Pipeline, Edmonton, AB, Canada, **Douglas Langer**, Enbridge, Edmonton, AB, Canada, **Sherif Hassanien**, Enbridge, Liquids Pipelines, Edmonton, AB, Canada

11:00am Liquid Pipeline Location Specific Cyclic Pressure Determination

Technical Paper Publication. IPC2018-78717

Vlado Semiga, Bmt Fleet Tech Ltd, Kanata, ON,

Canada, **Aaron Dinovitzer**, BMT Fleet Technology, Ottawa, ON, Canada, **Sanjay Tiku**, BMT Fleet Technology Limited, Ottawa, ON, Canada, **Geoff Vignal**, Enbridge Pipelines Inc, Edmonton, AB, Canada

3-5 FACILITY INTEGRITY

3-5-1 INSPECTION

Telus, MacLeod Hall C 10:30am - 12:00pm

Session Chair: **Alexandra Chenevey**, Marathon Pipe Line, Findlay, OH, United States
Session Co-Chair: **Sladjana Popovic**, Alliance Pipeline, Calgary, AB, Canada

10:30am Microwave Sensor Array for Corrosion Prediction in Steel Tank Bottoms

Student Paper Publication. IPC2018-78224

Sameir Deif, **Brent Leier**, University of Alberta, Edmonton, AB, Canada, **Michael Snow**, Enbridge Pipelines Inc, Edmonton, AB, Canada, **Mojgan Daneshmand**, University of Alberta, Edmonton, AB, Canada

11:00am Advanced EMAT Crack Tool for Unpigging Pipelines

Technical Paper Publication. IPC2018-78421

Phillip Bondurant, Quest Integrated, LLC, Kent, WA, United States, **Khalid Farrag**, Gas Technology Institute, Des Plaines, IL, United States, **Maureen Droessler**, Operations Technology Development, Des Plaines, IL, United States, **Haraprasad Kannajosyula**, **Tony Mactutis**, Quest Integrated, LLC, Kent, WA, United States

11:30am Advancements in Pigging Valve and Ultrasonic Tool Technologies allow for In-Line Inspections of Formerly Unpigging Lines

Technical Presentation. IPC2018-78443

Sanya Singh, **Charles N Bartunek**, Andeavor Logistics, La Palma, CA, United States, **Jeffrey H. Ewart**, Andeavor Logistics, South Gate, CA, United States, **Brett E. Covey**, Quest Integrity, Kent, WA, United States

3-2 PREVENTION, MONITORING AND GROWTH MODELING

3-2-1A C ORROSION AND ENVIRONMENTAL CRACKING I

Telus, MacLeod Hall C 1:30pm - 3:00pm

Session Chair: **Rick Wang**, TransCanada Pipelines Limited, Calgary, AB, Canada

Session Co-Chair: **Yvan Hubert**, Enbridge Liquids Pipelines, Edmonton, AB, Canada

1:30pm Experimental-numerical assessment of vintage pipe and girth weld with a geometrically complex corrosion feature

Technical Paper Publication. IPC2018-78408

Stijn Hertelé, Ghent University, Zwijnaarde, Belgium, *Timothy Galle*, Ghent University, Melle, OO, Belgium, *Koen Van Minnebruggen*, Ghent University, Belsele, Belgium, *Wim De Waele*, Ghent University, Zwijnaarde BE9052, Belgium, *Otto Jan Huising*, N.V. Nederlandse Gasunie, Groningen, Netherlands

2:00pm Development and Experiences of a Circumferential Stress Corrosion Cracking Management Program

Technical Paper Publication. IPC2018-78315

Neil Bates, DNV GL Canada, Calgary, AB, Canada, *Mark Brimacombe*, Pembina, Calgary, AB, Canada, *Steven Polasik*, DNV GL USA, Inc., Dublin, OH, United States

2:30pm A More Accurate and Precise Method for Large Metal Loss Corrosion Assessment

Technical Paper Publication. IPC2018-78233

Shenwei Zhang, Transcanada Pipeline Ltd, Calgary, AB, Canada, *Jason Yan*, Transcanada Pipelines Limited, Calgary, AB, Canada, *Shahani Kariyawasam*, Transcanada, Calgary, AB, Canada, *Terry Huang*, TransCanada Pipelines Ltd, Calgary, AB, Canada, *Mohammad Al-Amin*, Transcanada Corporation, Calgary, AB, Canada

3-3 ASSESSMENT

3-3-5A ESTABLISHED ILI TECHNOLOGIES III

Telus, MacLeod Hall D 1:30pm - 3:00pm

Session Chair: *Jake Haase*, Enterprise Products, Houston, TX, United States

1:30pm EMAT a Basis for a Comprehensive System- Wide Crack Management Program

Technical Paper Publication. IPC2018-78346

David Katz, Williams Companies, Salt Lake City, UT, United States, *Steve Potts*, Williams Companies, Houston, TX, United States, *Thomas Beuker*, ROSEN Germany GmbH, Lingen, Germany, *Joerg Grillenberger*, ROSEN Germany GmbH, Karlsruhe, Germany, *Ralf Weber*, ILI Consulting, Karlsruhe, Germany

2:00pm A Sensitivity Study Effects of Toughness Values on Fatigue Crack Growth Analysis of Just-Survived Flaws Following a Pressure Test

Technical Paper Publication. IPC2018-78554

Matthew Ellinger, Tom Bubenik, DNV GL, Dublin, OH, United States, *Andrew Lutz*, DNV GL, Katy, TX, United States, *Tara McMahan*, DNV GL, Dublin, OH, United States

2:30pm Development of Pinhole Corrosion Management using MFL

Technical Paper Publication. IPC2018-78642

Guy Desjardins, Desjardins Integrity Ltd, Calgary, AB, Canada, *Vitaly Vorontsov*, Enbridge Liquids Pipelines, Edmonton, AB, Canada, *Joel Falk*, Desjardins Integrity, Ltd., Calgary, AB, Canada

3-1 INTEGRITY MANAGEMENT PLAN (IMP) ADMINISTRATION

3-1-1 ORGANIZATIONAL FACTORS - DEVELOPMENT AND COMPETENCY

Telus, MacLeod Hall B 1:30pm - 5:00pm

Session Chair: *Sheri Baucom*, RCP, Houston, TX, United States

Session Co-Chair: *Stuart Saulters*, American Petroleum Institute, Washington, DC, United States

1:30pm Condition Assessment For Optimizing Gasunies Network Improvement Program

Technical Paper Publication. IPC2018-78116

Martin Hommes, DNV GL Oil&Gas, Groningen, Groningen, Netherlands, *Karen van Bloemendaal*, DNV GL Oil & Gas, Groningen, Groningen, Netherlands, *Roelof Coster*, DNV GL, Groningen, Netherlands, *Maurice Gielisse*, DNV GL Oil & Gas, Groningen, Groningen, Netherlands, *Martin H. van Agteren*, *Eric E. R. Jager*, N.V. Nederlandse Gasunie, Groningen, Groningen, Netherlands

2:00pm Evaluation of Burst Pressures of Corroded Pipe Segments Using Three-dimensional Finite Element Analyses

Student Paper Publication. IPC2018-78130

Ji Bao, *Shulong Zhang*, The University of Western Ontario, London, ON, Canada, *Wenxing Zhou*, University of Western Ontario, London, ON, Canada, *Shenwei Zhang*, Transcanada Pipeline Ltd, Calgary, AB, Canada

2:30pm Reactivating a Legacy Pipeline Simulating ILI Run Behaviour, Operation Optimization, and Project Challenges

Technical Paper Publication. IPC2018-78158

Andrew Greig, Kinder Morgan Canada, Calgary, AB, Canada, *Dan Bonner*, Kinder Morgan, Langley, BC, Canada, *Johannes Becker*, ROSEN Canada, Calgary, AB, Canada, *Barret Roulston*, ROSEN Canada Ltd., Calgary, AB, Canada, *Hubert Lindner*, ROSEN Technology and Research Centre GmbH, Lingen (Ems), Germany

3:00pm Uncertainty Quantification of Nondestructive Techniques to Verify Pipeline Material Strength

Technical Paper Publication. IPC2018-78159

Jeffrey Kornuta, Exponent, Inc., Houston, TX, United States, *Nicoli Ames*, Exponent, Inc., Denver, CO, United States, *Mary Louie*, Exponent, Inc., Menlo Park, CA, United States, *Peter Veloo*, Troy Rovella, Pacific Gas and Electric Company, Walnut Creek, CA, United States

3:30pm Overcoming Difficult to Inspect Multi-diameter, Low Pressure Gas Transmission Pipeline Challenges

Technical Paper Publication. IPC2018-78427

Frank Dauby, PG&E, San Ramon, CA, United States, *Stefan Vages*, Rosen Group, Houston, TX, United States

4:00pm An Approach to Engineering Critical Assessment of Assets that cannot be Inline Inspected

Technical Paper Publication. IPC2018-78132

Jing Ma, Kiefner & Associates, Inc., Columbus, OH, United States, *Michael Rosenfeld*, Kiefner/ Applus RTD, Columbus, OH, United States, *Peter Veloo*, Pacific Gas and Electric Company, Walnut Creek, CA, United States, *Peter Martin*, Pacific Gas & Electric, *San Ramon*, CA, United States, *Troy Rovella*, Pacific Gas and Electric Company, Walnut Creek, CA, United States

3-2 PREVENTION, MONITORING AND GROWTH MODELING

3-2-1B CORROSION AND ENVIRONMENTAL CRACKING I (INCLUDES 2017 RIO BEST PAPER)

Telus, MacLeod Hall C 3:30pm - 5:00pm

Technical Tracks

3:30pm Complex Circumferential Stress corrosion Cracking - Identification, Sizing and Consequences for the Integrity Management Program

Technical Paper Publication. IPC2018-78564

Thomas Hennig, NDT Global Corporate Ltd., Dublin, Ireland, **Brett Johnson**, Plains Midstream Canada, Calgary, AB, Canada, **Bereket Tesfaye**, Plains Midstream Canada, Calgary, AB, Canada, **Ernesto Suarez**, NDT Global ILLC, Houston, TX, United States, **cory Wargacki**, NDT Global Inc., Leduc, AB, Canada

4:00pm Implementation of Reliability-based Criteria for Corrosion Assessment

Technical Paper Publication. IPC2018-78608

Riski Adianto, Maher Nessim, C-FER Technologies, Edmonton, AB, Canada, **Shahani Kariyawasam**, TransCanada, Calgary, AB, Canada, **Terry Huang**, TransCanada Pipelines Ltd, Calgary, AB, Canada

3-3 ASSESSMENT

3-3-5B ESTABLISHED ILI TECHNOLOGIES III

Telus, MacLeod Hall D 3:30pm - 5:00pm

3:30pm In-Line Inspection in Lieu of Hydrostatic Testing for Low Frequency Electric Resistance Welded Pipe

Technical Paper Publication. IPC2018-78522

Matthew Krieg, Marathon Pipe Line LLC, Findlay, OH, United States, **J Bruce Nestleroth**, Kiefner and Associates, Inc., Columbus, OH, United States, **Thomas Hennig**, NDT Global Corporate Ltd., Dublin, Ireland, **Harvey Haines**, ApplusRTD, Vienna, VA, United States

4:00pm Exceeding Limitations - Ultrasonic Crack inspections become feasible for Liquid Natural Gases

Technical Paper Publication. IPC2018-78573

Thomas Hennig, NDT Global Corporate Ltd., Dublin, Ireland, **Rogelio Guajardo**, NDT Global, Stutensee, Germany, **Ernesto Suarez**, NDT Global ILLC, Houston, TX, United States, **Victor Haro**, **Peter Haberl**, NDT Global GmbH, Stutensee, Germany

WEDNESDAY, SEPTEMBER, 26

3-3 ASSESSMENT

3-3-2 ESTABLISHED ILI TECHNOLOGIES I

Telus, MacLeod Hall D 8:30am - 10:00am

Session Chair: **Jake Haase**, Enterprise Products, Houston, TX, United States

8:30am Modeling Pipeline Metal Loss Defects at Tool Speed

Technical Paper Publication. IPC2018-78014

Matthew Romney, T.D. Williamson, Salt Lake City, UT, United States, **Adrian Belanger**, T.D. Williamson, Houston, TX, United States

9:00am Evaluation Of Corrosion Growth Prediction Methodologies Using Burst Pressure Comparisons From Repeated In-line Inspections

Technical Paper Publication. IPC2018-78294

Chance Wright, **Thomas Dessein**, C-FER Technologies, Edmonton, AB, Canada, **Yanping Li**, Enbridge, Edmonton, AB, Canada, **Suzanne Ward**, Enbridge Pipelines Inc, Edmonton, AB, Canada

3-5 FACILITY INTEGRITY

3-5-2A INTEGRITY MANAGEMENT

Telus, MacLeod Hall C 8:30am - 10:00am

Session Chair: **Sladjana Popovic**, Alliance Pipeline, Calgary, AB, Canada

Session Co-Chair: **Alexandra Chenevey**, Marathon Pipe Line, Findlay, OH, United States

8:30am Vibration and Fatigue Failures at Pipeline Facilities

Technical Paper Publication. IPC2018-78176

Lawrence Matta, Stress Engineering Services, Houston, TX, United States, **Gyorgy Szasz**, Stress Engineering Services, Inc., Metairie, LA, United States

9:00am Risk Based Integrity Decision Making for Lateral Piping

Technical Paper Publication. IPC2018-78379

Amanda Kulhawy, Enbridge Pipelines Inc., Edmonton, AB, Canada, **Alex Nemeth**, **Garry Sommer**, Enbridge Pipelines Inc, Edmonton, AB, Canada, **Sherif Hassanien**, Enbridge, Liquids Pipelines, Edmonton, AB, Canada

3-3 ASSESSMENT

3-3-1 NEW ILI TECHNOLOGIES I

Telus, MacLeod Hall B 8:30am - 12:00pm

Session Chair: **John Godfrey**, DNV GL, Dublin, OH, United States

Session Co-Chair: **Justin Harkrader**, Colonial Pipeline Company, Alpharetta, GA, United States

8:30am Operational Experiences with Axial Strain Inline

INSPECTION TOOLS

Technical Paper Publication. IPC2018-78466

Doug Dewar, Enbridge, Prince George, BC,

Canada, **Gregory VanBoven**, Enbridge, Calgary, AB, Canada, **Mohamed ElSeify**, Baker Hughes, a GE company, Calgary, AB, Canada, **Paul Bjorn**, McElhanney Consulting Services Ltd., Prince George, BC, Canada, **Nicolas Bruce**, McElhanney Consulting Services Ltd., Terrace, BC, Canada

9:00am Implementation of a new Tool for Pipelines Integrity Evaluation: A Correlation between Local Strains and Hardness.

Technical Paper Publication. IPC2018-78547

Clément Soret, RICE - GRTgaz, Saint Denis, France, **Joseph Marae Djouda**, Ermess EPF-Ecole d'Ingenieur, Sceaux, France, **Melissandre Bonnaudet**, RICE - GRTgaz, Saint Denis La Plaine Cedex, France, **Murès Zarea**, ENGIE SA - CRIGEN, Saint Denis La Plaine Cedex, Select State/Province, France, **Yazid Madi**, Centre des matériaux / EPF Ecole d'ingénieur-e-s, Corbeil-Essonnes, France

9:30am Breathing New Life to Aging Pipeline Infrastructure Using Unique Wireline Inspection Techniques and Pipe-Lining Technology

Technical Paper Publication. IPC2018-78594

Alex Gutierrez, United Pipeline de Mexico, S.A. de C.V., El Marques, Queretaro, Mexico, **Clay Goudy**, Q-Inline, Houston, TX, United States

10:00am Understanding Quantitative Performance of Large Standoff Magnetometry in Locating Live Gas Pipeline Anomalies with Stress Estimation

Technical Paper Publication. IPC2018-78655

Tianzong (David) Xu, Pacific Gas and Electric Company, San Ramon, CA, United States

10:30am Identifying Stress Concentrations on Buried Steel Pipelines using Large Standoff Magnetometry Technology

Technical Paper Publication. IPC2018-78162

Vignesh Shankar, PureHM Inc, Edmonton, AB, Canada, **Chukwuma Candidus Onuoha**, PureHM, Edmonton, AB, Canada, **Eric Pozniak**, **Shamus McDonnell**, PureHM Inc, Edmonton, AB, Canada

11:00am Bi-Directional Caliper Tool Development

Technical Paper Publication. IPC2018-78242

Dylan Davis, TransCanada Pipelines, Calgary, AB, Canada, **Robert Zazuliak**, On-Stream Pipeline Inspection, Calgary, AB, Canada, **Stephen Westwood**, OnStream Pipeline Inspection, Calgary, AB, Canada

3-1 INTEGRITY MANAGEMENT PLAN (IMP) ADMINISTRATION

3-1-2 SYSTEMS AND DATA

Telus, MacLeod Hall D 10:30am - 12:00pm

Session Chair: *Joseph Bratton, Det Norske Veritas, Dublin, OH,*

United States

10:30am A Strength Test Analysis Model and Its Practical Applications in PG&E Gas Transmission Pipeline

STRENGTH TEST PROJECTS

Technical Paper Publication. IPC2018-78255

Chunlei He, Edward Stracke, Pacific Gas and Electric Company, San Ramon, CA, United States

11:00am Pipeline Data Analytics ? Enhanced Corrosion Growth Assessment through Machine Learning

Technical Paper Publication. IPC2018-78364

Michael Smith, ROSEN GROUP, Newcastle, United Kingdom, Stefan Cronjaeger, Microsoft Deutschland GmbH, München, Germany, Navid Ershad, Inter Pipeline, Calgary, AB, Canada, Randy Nickle, Inter Pipeline, Calgary, AB, Canada, Matthias Peussner, ROSEN Group, Lingen (Ems), Germany

11:30am A web map solution designed as the data messenger for Colonial Pipeline Company

Technical Paper Publication. IPC2018-78646

Eric James, Colonial Pipeline Company, Alpharetta, GA, United States

3-5 FACILITY INTEGRITY

3-5-2B INTEGRITY MANAGEMENT

Telus, MacLeod Hall C 10:30am - 12:00pm

10:30am Remaining strength in pressure vessels with pitting type metal loss: Part 1

Technical Paper Publication. IPC2018-78425

Juan José Trujillo Tadeo, INSTITUTO POLITÉCNICO NACIONAL, Mexico, Mexico, Jorge Luis González Velázquez, E.S.I.Q.I.E. - I.P.N., Mexico D.F., Mexico, Diego Israel Rivas López, INSTITUTO POLITÉCNICO NACIONAL, Mexico, Mexico

11:00am Root Cause Analysis of an Aboveground Pipeline with Stress Corrosion Cracking

Technical Paper Publication. IPC2018-78544

Kevin Ralston, Barbara Nicole (Nikki) Padgett,

Dave Norfleet, Liu Cao, DNV GL, Dublin, OH, United States, Burke Delanty, DNV GL, Calgary, AB, Canada, Mark Klages, DNV GL, Calgary, AB, Canada, John Beavers, T.J. Prewitt, DNV GL, Dublin, OH, United States

THURSDAY, SEPTEMBER, 27

3-1 INTEGRITY MANAGEMENT PLAN (IMP) ADMINISTRATION

3-1-3 INTEGRITY MANAGEMENT PERFORMANCE MEASURES

Telus, MacLeod Hall B 8:30am - 10:00am

Session Chair: *Tara McMahan, DNV GL, Dublin, OH, United States*

8:30am Analysis of the National Energy Board Pipeline

INTEGRITY PERFORMANCE MEASURES

Technical Paper Publication. IPC2018-78413

Joe Paviglianiti, Sarah Shaw, National Energy Board, Calgary, AB, Canada

9:00am A method to analyze the impact of inline inspection accuracy on integrity management program planning of pipelines

Student Paper Publication. IPC2018-78423

Mingjiang Xie, University of Alberta, Edmonton, AB, Canada, Jeff Sutherland, Bingyan Fang, Bill Gu, Baker Hughes, a GE company, Calgary, AB, Canada, Zhigang (Will) Tian, University Of Alberta, Edmonton, AB, Canada

9:30am An ILI Based Program That Prevents Reoccurrence of Post ILI Failures Seen in Industry

Technical Paper Publication. IPC2018-78604

Shahani Kariyawasam, TransCanada, Calgary, AB, Canada, Terry Huang, TransCanada Pipelines Ltd, Calgary, AB, Canada

3-2 PREVENTION, MONITORING AND GROWTH MODELING

3-2-3A O UTSIDE FORCE DAMAGE

Telus, MacLeod Hall C 8:30am - 10:00am

Session Chair: *Aaron Dinovitzer, BMT Fleet Technology, Ottawa, ON, Canada*

Session Co-Chair: *Sanjay Tiku, BMT Fleet Technology Limited, Ottawa, ON, Canada, Ian Stallman, Marathon Petroleum Company, Findlay, OH, United States*

8:30am Full Scale Testing of Dent and Gouge Defects Under Axial Loading Performed with a Four-Point Bending Test Device

Technical Presentation. IPC2018-78385

Charles Fernandez, GRTgaz - RICE, Saint-Denis, France, Murès Zarea, ENGIE SA - CRIGEN, Saint Denis La Plaine Cedex, Select State/Province, France, Maxime Bertin, Research and Innovation Center for Energy of GRTgaz, ENGIE, saint-denis, France, Adrien Lebrun, GRTgaz, saint-denis, Select State/Province, France

9:00am Study of Safe Dig Pressure Level for Rock Dents in Gas Pipelines

Technical Paper Publication. IPC2018-78616

Ming Gao, Blade Energy Partners, Houston, TX, United States, Udayasankar Arumugam, Blade Energy Partners Ltd, Houston, TX, United States, Ravi Krishnamurthy, Blade Energy Partners, Frisco, TX, United States, Rick Wang, TransCanada Pipelines Limited, Calgary, AB, Canada, Richard Kania, TransCanada Pipelines, Calgary, AB, Canada

9:30am Determining Pipeline Depth of Cover at River Crossings by Data Integration

Technical Paper Publication. IPC2018-78731

Peter Chan, Jin Wei, Kinder Morgan Canada, Calgary, AB, Canada

3-2-5A C ORROSION AND ENVIRONMENTAL CRACKING II

Telus, MacLeod Hall D 8:30am - 10:00am

Session Chair: *Rick Wang, TransCanada Pipelines Limited, Calgary, AB, Canada*

Session Co-Chair: *Yvan Hubert, Enbridge Liquids Pipelines, Edmonton, AB, Canada*

8:30am EVALUATION OF CRACK GROWTH AND MATERIAL TOUGHNESS EFFECTS ON PROBABILITY OF PIPELINE FAILURE

Technical Paper Publication. IPC2018-78691

Peter Riccardella, Structural Integrity Associates Inc, Centennial, CO, United States, Scott Riccardella, Structural Integrity Associates, Inc., Centennial, CO, United States, Tyson Manning, Structural Integrity Associates, Inc., Denver, CO, United States, Dilip Dedhia, Structural Integrity Associates, Inc., San Jose, CA, United States

9:00am Fracture Toughness Testing and Its Implications to Engineering Fracture Mechanics Analysis of Energy Pipelines

Technical Paper Publication. IPC2018-78723

Sergio Limon, ELEVARA Partners, Salt Lake City, UT, United States, Peter Martin, Pacific Gas & Electric, San Ramon, CA, United States, Mike Barnum, PG&E, San Ramon, CA, United States, Robert Pilarczyk, Hill Engineering, Rancho Cordova, CA, United States

9:30am Crack Shape Development for Leak-before-Break Analysis in Pipelines

Technical Paper Publication. IPC2018-78587

Kathy Zhang, Luyao Xu, James Ferguson, Stantec Consulting Ltd., Calgary, AB, Canada, Dennis Zadery, Stantec, Calgary, AB, Canada

3-4 EVALUATION AND REPAIR 3-4-2A FITNESS FOR SERVICE

Telus, Telus MacLeod E1 8:30am - 10:00am

Session Chair: *Alasdair Clyne, ROSEN Canada Ltd., Calgary, AB, Canada*

Session Co-Chair: *Michael Palmer, ROSEN GROUP, Newcastle Upon Tyne, United Kingdom*

8:30am An Investigation on Microstructural Evolution and Potential Risk Waiving Post Bend Heat Treatment during Hot Induction Bending of X70 Steel Pipe

Technical Paper Publication. IPC2018-78018

Moe Meschian, Fred Myschuk, Enbridge Inc., Edmonton, AB, Canada, Matthew A. R. Yarmuch, Enbridge, Edmonton, AB, Canada, Andy Duncan, Enbridge, Inc., Edmonton, AB, Canada

9:00am Corrosion Growth Modeling by Learning A Dynamic Bayesian Network from Multiple In-line Inspection Data

Student Paper Publication. IPC2018-78118

Wei Xiang, The University of Western Ontario, London, ON, Canada, Wenxing Zhou, University of Western Ontario, London, ON, Canada

9:30am An Investigation of the Load Carrying Capacity of Pipelines Under Accidental and Longitudinal Moving (Sliding) Loads

Student Paper Publication. IPC2018-78316

farhad davaripour, Bruce Quinton, Memorial University of Newfoundland, St John's, NL, Canada

3-1 INTEGRITY MANAGEMENT PLAN (IMP) ADMINISTRATION

3-1-4 ILI PERFORMANCE VALIDATION

Telus, MacLeod Hall B 10:30am - 12:00pm

Session Chair: *Tara McMahan, DNV GL, Dublin, OH, United States*

10:30am Integration of Data from Multiple Inline Inspection Systems to Improve Crack Detection and Characterization

Technical Paper Publication. IPC2018-78770

Mark Piazza, Colonial Pipeline Company, Alpharetta, GA, United States, Rogelio Guajardo, NDT Global GmbH & Co. KG, Stutensee, Germany, Justin Harkrader, Colonial Pipeline Company, Alpharetta, GA, United States, Miguel Urrea, NDT Global LLC, Houston, TX, United States, Thomas Hennig, NDT Global Corporate Ltd., Dublin, Ireland, Ravi Krishnamurthy, Blade Energy Partners, Frisco, TX, United States, Ming Gao, Blade Energy Partners, Houston, TX, United States, Samarth Tandon, Blade Energy Partners Ltd, Houston, TX, United States

11:00am Development of an Industry Test Facility and Qualification Process for ILI technology Evaluation and Enhancements - Performance Evaluation Phase

Technical Paper Publication. IPC2018-78635

Pablo Cazenave, Ming Gao, Blade Energy Partners, Houston, TX, United States, Hans Deeb, PRCI Inc, Houston, TX, United States, Sean Black, PRCI, Meridian, ID, United States

11:30am Threshold Geometrical Dimensions Of Stage Ii Crack S Versus Resolution Of Crack-Detection Techniques

Technical Paper Publication. IPC2018-78751

Weixing Chen, Jiayi Zhao, Univ Of Alberta, Edmonton, AB, Canada, Karina Chevil, TransCanada Pipelines, Calgary, AB, Canada, Erwin Gamboa, TransCanada Pipelines Limited, Calgary, AB, Canada, Bersi Alvarado, Enbridge Pipelines Inc, Edmonton, AB, Canada

3-2 PREVENTION, MONITORING AND GROWTH MODELING

3-2-3B O UTSIDE FORCE DAMAGE

Telus, MacLeod Hall C 10:30am - 12:00pm

10:30am Buried Pipe Span Ovality Assessment

Technical Paper Publication. IPC2018-78771

Ryan Phillips, C-CORE, St John's, NL, Canada, Michael Martens, TransCanada PipeLines, Calgary, AB, Canada, Rodney Mcaffee, C-CORE, St John's, NL, Canada, Lesley Tan, TransCanada Pipelines, Calgary, AB, Canada, John Barrett, C-CORE, St John's, NL, Canada

11:00am Effect of Residual Stress or Plastic Deformation History on Fatigue Life Simulation of Pipeline Dents

Technical Paper Publication. IPC2018-78805

Xian-Kui Zhu, EWI - Structural Integrity, Columbus, OH, United States, Rick Wang, TransCanada Pipelines Limited, Calgary, AB, Canada

3-2-5B C CORROSION AND ENVIRONMENTAL CRACKING II

Telus, MacLeod Hall D 10:30am - 12:00pm

10:30am Modification Of Crack Assessment Model Inputs For Application On Spiral Welded Pipe

Technical Paper Publication. IPC2018-78293

Mark Neuert, Thomas Dessein, C-FER Technologies, Edmonton, AB, Canada, Millan Sen, Enbridge Pipelines Inc., Edmonton, AB, Canada

11:15am Differences In Near-Neutral Ph Crack Growth Behavior Between Oil Pipelines And Gas Pipelines And Corresponding Crack Growth Mitigation Strategies

Technical Paper Publication. IPC2018-78392

ZHEZHU XU, University of Alberta, Edmonton, AB, Canada, Andrea Daniel, Enbridge Liquids Pipelines, Edmonton, AB, Canada, Karina Chevil, TransCanada Pipelines, Calgary, AB, Canada,

Erwin Gamboa, TransCanada Pipelines Limited, Calgary, AB, Canada, Weixing Chen, Univ Of Alberta, Edmonton, AB, Canada

3-4 EVALUATION AND REPAIR 3-4-2B FITNESS FOR SERVICE

Telus, Telus MacLeod E1 10:30am - 12:00pm

10:30am Understanding Pipeline Strain Conditions Case Studies between ILI Axial and ILI Bending Measurement Techniques

Technical Paper Publication. IPC2018-78577

Jeremie J. Choquette, Baker Hughes a GE

Company, Calgary, AB, Canada, **Mohamed ElSeify**, Baker Hughes, a GE company, Calgary, AB, Canada, **Sylvain Cornu**, Raymond Kare, TSC - Eddyfi Technologies, Milton Keynes, United Kingdom

11:00am Using Finite Element Analysis to Prioritize ILI Calls for Combined Features: Dents in Bends

Technical Paper Publication. IPC2018-78636

David Kemp, DNV GL, Dublin, OH, United States, **Joseph Bratton**, Det Norske Veritas, Dublin, OH, United States, **Justin Gossard**, **Shane Finneran**, DNV GL, Dublin, OH, United States

11:30am Fitness for Service Analysis of the Circumferential Extent of Corrosion in Pipelines

Technical Paper Publication. IPC2018-78338

Fan Zhang, Kiefner & Associates, Columbus, OH, United States, **Michael Rosenfeld**, Kiefner/ Applus ? RTD, Columbus, OH, United States, **Jeremy Gustafson**, Alyeska Pipeline Service Company, Anchorage, AK, United States

3-4 EV ALUATION AND REPAIR

3-4-1A IN THE DITCH NDE

Telus, MacLeod Hall D 1:30pm - 3:00pm

Session Chair: **Bala Ganapathy**, Plains Midstream, Calgary, AB, Canada

Session Co-Chair: **Raymond Kare**, TSC - Eddyfi Technologies, Milton Keynes, United Kingdom

1:30pm Adaptive Ultrasonic Imaging of Electric Resistance Welded Pipeline Seams

Technical Paper Publication. IPC2018-78189

Harvey Haines, ApplusRTD, Vienna, VA, United States, **Lars Hörchens**, Applus RTD - Technological Centre, Rotterdam, Netherlands, **Jasper Schouten**, Applus RTD - Technological Center, Rotterdam, Netherlands

2:00pm Interaction Rule Guidance for Corrosion Features Reported by ILI

Technical Paper Publication. IPC2018-78284

Lucinda Smart, Kiefner and Associates, Ames, IA, United States, **Yanping Li**, Enbridge, Edmonton, AB, Canada, **J Bruce Nestleroth**, Kiefner and Associates, Inc., Columbus, OH, United States, **Suzanne Ward**, Enbridge Pipelines Inc, Edmonton, AB, Canada

2:30pm Application of Wide-Band Ultrasound for the Detection of Oblique Crack Features in Oil and Gas Pipelines

Technical Paper Publication. IPC2018-78521

Willem Vos, Halfwave AS, Ovre Ervik, Norway, **Petter Norli**, **Emilie Vallee**, Halfwave AS, Høvik, Norway

3-3 ASSESSMENT

3-3-3 N ON ILI ASSESSMENTS

Telus, MacLeod Hall B 1:30pm - 5:00pm

Session Chair: **Vlado Semiga**, Bmt Fleet Tech Ltd, Kanata, ON, Canada Session Co-Chair:

Vignesh Shankar, PureHM Inc, Edmonton, AB, Canada

1:30pm Validate Crack Assessment Models With In-service and Hydrotest Failures

Technical Paper Publication. IPC2018-78251

Jason Yan, Transcanada Pipelines Limited, Calgary, AB, Canada, **Shenwei Zhang**, Transcanada Pipeline Ltd, Calgary, AB, Canada, **Shahani Kariyawasam**, Transcanada, Calgary, AB, Canada, **Maria Pino**, **Taojun Liu**, TransCanada Pipelines Limited, Calgary, AB, Canada

2:00pm Non-contact Geomagnetic Localization of Pipeline Defects Using Empirical Mode Decomposition and Magnetic Gradient Tensor

Student Paper Publication. IPC2018-78258

Tao Zhang, **Xinhua Wang**, **Yingchun Chen**, **Zia Ullah**, **Yizhen Zhao**, Beijing University of Technology, Beijing, Beijing, China

2:30pm An Investigation Into the Benefits of Employing Multiple Assessments Methods for High Risk Pipelines

Technical Paper Publication. IPC2018-78314

Tara McMahan, **Eric Graf**, **Tom Bubenik**, DNV GL, Dublin, OH, United States

3:00pm Structure assessment using Instrumented Indentation Technique in terms of Strength, Toughness and Residual stress

Technical Paper Publication. IPC2018-78465

Dongil Kwon, **Jong Hyoung Kim**, **Ohmin Kwon**, Seoul National University, Seoul, Korea (Republic), **Kwang-Ho Kim**, FRONTICS, Inc., Seoul, Korea (Republic), **Dongseong Ro**, FRONTICS AMERICA, Inc., Mount Prospect, IL, United States, **Sungki Choi**, **Woojoo Kim**, **Seunghun Choi**, Seoul National University, Seoul, Korea (Republic)

3-4 EV ALUATION AND REPAIR

3-4-1B IN THE DITCH NDE

Telus, MacLeod Hall D 3:30pm - 5:00pm

3:30pm Calibration of a Nondestructive Toughness Tester (NDTT) for Measuring Fracture Toughness of Pipeline Steel

Technical Paper Publication. IPC2018-78538

Steven Palkovic, Massachusetts Materials Technologies, Cambridge, MA, United States, **Kamal Botros**, NOVA Chemicals Centre for Applied Research, Calgary, AB, Canada, **Xiande (Derek) Chen**, Transcanada, Calgary, AB, Canada, **Richard Kania**, TransCanada Pipelines, Calgary, AB, Canada, **Simon C. Bellemare**, Massachusetts Materials Technologies, Cambridge, MA, United States

4:00pm Ultrasonic NDE Technology Comparison for Measurement of Long Seam Weld Anomalies in Low Frequency Electric Resistance Welded Pipe

Technical Paper Publication. IPC2018-78704

Luis Torres, Enbridge, Liquids Pipeline, Edmonton, AB, Canada, **Matthew Fowler**, Enbridge Liquids Pipelines, Edmonton, AB, Canada, **Jason Bergman**, C-FER Technologies, Edmonton, AB, Canada

FRIDAY, SEPTEMBER, 28

3-2 PREVENTION, MONITORING AND GROWTH MODELING

3-2-2A MANUFACTURING DEFECTS, CONSTRUCTION DEFECTS, AND FATIGUE MODELING I

Telus, MacLeod Hall C 8:30am - 10:00am

Session Chair: **Clifford Maier**, DNV GL USA, Inc., Dublin, OH, United States

Session Co-Chair: **Steven Polasik**, DNV GL USA, Inc., Dublin, OH, United States

8:30am Evaluation of the fatigue crack growth behavior by experiments and numerical simulations on full-scale pipeline steels

Technical Paper Publication. IPC2018-78495

SIHAM HJIEJ, **GRTGAZ**, compiegne, France, **NIKOLAY OSIPOV**, transvalor, Corbeil-Essonnes, France, **Adrien Lebrun**, GRTgaz, saint-denis, Select State/Province, France, **Clément Soret**, **RICE - GRTgaz**, Saint Denis, France, **Yazid Madi**, Centre des matériaux / EPF Ecole d'ingénieur-e-s, Corbeil-Essonnes, France

9:00am An Authoritative Comparison of Remaining Life Assessments for Pipeline Dents

Technical Paper Publication. IPC2018-78247

Rhett Dotson, ROSEN USA, Houston, TX, United States, *Chris Holliday*, ROSEN UK, Newcastle upon Tyne, Tyne and Wear, United Kingdom, *Luis Torres*, Enbridge, Liquids Pipeline, Edmonton, AB, Canada, *Damien Hagan*, ROSEN Newcastle, Newcastle Upon Tyne, United Kingdom

3-3 ASSESSMENT

3-3-4 ESTABLISHED ILI TECHNOLOGIES II

Telus, MacLeod Hall B 8:30am - 10:00am

Session Chair: *Jake Haase*, Enterprise Products, Houston, TX, United States

8:30am Do You Have Wrinkles? A Strain and Stress-Based Approach for the Assessment of Wrinkles Reported by In-Line Inspection

Technical Paper Publication. IPC2018-78488

Chris Holliday, *Dominic Wynne*, ROSEN UK, Newcastle upon Tyne, Tyne and Wear, United Kingdom, *Alasdair Clyne*, ROSEN Canada Ltd., Calgary, AB, Canada, *Andrew Wilde*, ROSEN UK, Newcastle upon Tyne, Tyne and Wear, United Kingdom

9:00am Critical Level Assessment from ILI Data

Technical Paper Publication. IPC2018-78750

Pedro Jaya, OCP Ecuador S.A., Quito, Pichincha, Ecuador, *Rodolfo Kock*, CADETECH S.A., Concepcion, Chile

9:30am Achieving North American Record For Longest Intelligent Inspection Of A Natural Gas Pipeline

Technical Paper Publication. IPC2018-78601

Aaron Schartner, TransCanada PipeLines, Calgary, AB, Canada, *Sheshi Epur*, TransCanada PipeLines, Calgary, AB, Canada, *Frank Sander*, Baker Hughes, a GE company, Calgary, AB, Canada

3-2 PREVENTION, MONITORING AND GROWTH MODELING

3-2-4A MANUFACTURING DEFECTS, CONSTRUCTION DEFECTS, AND FATIGUE MODELING II

Telus, MacLeod Hall B 10:30am - 12:00pm

Session Chair: *Clifford Maier*, DNV GL USA, Inc., Dublin, OH, United States

10:30am Influence of Mean Load Pressure Fluctuations on Crack Growth Behavior in Steel Pipelines

Student Paper Publication. IPC2018-78720

Olayinka Tehinse, University of Alberta, Edmonton, AB, Canada, *Karina Chevil*, TransCanada Pipelines, Calgary, AB, Canada, *Lyndon Lamborn*, Enbridge Pipelines Inc., Edmonton, AB, Canada, *Weixing Chen*, University of Alberta, Edmonton, AB, Canada, *Erwin Gamboa*, TransCanada Pipelines Limited, Calgary, AB, Canada

11:00am Improving the Accuracy of Traditional Dent Fatigue Analysis: A Method for Quantifying the Initial Damage Caused By Dent Formation

Technical Paper Publication. IPC2018-78684

Michael Turnquist, Quest Integrity Group, Boulder, CO, United States, *Adam Parsons*, Quest Integrity, Brisbane, Queensland, Australia

11:30am Some Factors Affecting Initiation of Stress Corrosion Cracking of an X80 Pipe Steel in Near-Neutral pH Environment

Technical Paper Publication. IPC2018-78540

Jidong Kang, *Darren Bibby*, Canmetmaterials, Natural Resources Canada, Hamilton, ON, Canada, *Jim Gianetto*, Government of Canada-Natural Resources, Hamilton, ON, Canada, *Mark Gesing*, CanmetMATERIALS, NRCan, Hamilton, ON, Canada, *Muhammad Arafin*, Canmetmaterials, Nrcan, Calgary, AB, Canada

3-2-2B MANUFACTURING DEFECTS, CONSTRUCTION DEFECTS, AND FATIGUE MODELING I

Telus, MacLeod Hall C 10:30am - 12:00pm

10:30am High Ph Crack Growth Sensitivity To Underload-Type Of Pressure Fluctuations

Student Paper Publication. IPC2018-78394

Hamid Niazi, *Hao Zhang*, University of Alberta, Edmonton, AB, Canada, *Kaitlyn Korol*, Enbridge, Edmonton, AB, Canada, *Weixing Chen*, Univ Of Alberta, Edmonton, AB, Canada

11:00am Study On Transition Of Stress Corrosion Cracking To Sharp Edge Corrosion For A Liquids Pipeline

Technical Paper Publication. IPC2018-78405

Jiajun (Jeff) Liang, Enbridge Employee Services Canada Inc., Edmonton, AB, Canada, *Ziqiang (Alex) Dong*, *Mengshan Yu*, *Mariko Dela Rosa*,

Stantec Consulting Ltd., Calgary, AB, Canada, *Gurwinder Nagra*, Enbridge Employee Services Canada Inc., Edmonton, AB, Canada

11:30am Algorithms for the Strain Based Analysis of Dented Pipelines

Technical Paper Publication. IPC2018-78433

Chike Okoloeke, University of Alberta, Saskatoon, SK, Canada, *Muntaseer Kainat*, Enbridge, Liquids Pipeline, Edmonton, AB, Canada, *Douglas Langer*, Enbridge, Edmonton, AB, Canada, *Sherif Hassani*, Enbridge, Liquids Pipelines, Edmonton, AB, Canada, *Samer Adeeb*, University of Alberta, Edmonton, AB, Canada

3-3 ASSESSMENT

3-3-6 NEW ILI TECHNOLOGIES II

Telus, Telus Glen 201/202 10:30am - 12:00pm

Session Chair: *John Godfrey*, DNV GL, Dublin, OH, United States

Session Co-Chair: *Justin Harkrader*, Colonial Pipeline Company, Alpharetta, GA, United States

10:30am A Case Study on SCC Management Using 10-inch EMAT ILI

Technical Paper Publication. IPC2018-78762

Mike Kirkwood, T D Williamson ME FZE, Dubai, United Arab Emir., *Scott Henderson*, ONEOK, Tulsa, OK, United States, *Jeff Ector*, ONEOK Inc., Tulsa, OK, United States

11:00am Validation of Computed Tomography Technology for Pipeline Inspection

Technical Paper Publication. IPC2018-78722

Mark Piazza, Colonial Pipeline Company, Alpharetta, GA, United States, *James Medford*, Inspection Associates Inc, Cypress, TX, United States, *Timothy H. Burns*, Shell Pipeline Co., Houston, TX, United States, *Taylor Shie*, Shell Pipeline Company, LP, Houston, TX, United States

11:30am The Future of In-Line Inspection - Free-floating smart sensors

Technical Paper Publication. IPC2018-78662

Anouk van Pol, *John van Pol*, Ingu Solutions Inc., Calgary, AB, Canada, *Richard McNealy*, Chevron Energy Technology Company, Houston, TX, United States, *Clay Goudy*, Q-Inline,

Houston, TX, United States

TRACK 4 OPERATIONS, MONITORING, AND MAINTENANCE

TUESDAY, SEPTEMBER, 25

4-1 OPERATIONS AND MAINTENANCE

4-1-1 PIPELINE MAINTENANCE AND REPAIR Telus, Telus MacLeod E2 10:30am - 12:00pm

Session Chair: *Tran Mah-Paulson, T.D.*
Williamson Canada ULC, Edmonton, AB, Canada

Session Co-Chair: *Stuart Saulters,*
American Petroleum Institute, Washington, DC,
United States

10:30am State-of-the-Art Assessment of Today's Composite Repair Technologies

Technical Paper Publication. IPC2018-78016
Chris Alexander, ADV Integrity, Inc., Magnolia, TX, United States,
Richard Kania, TransCanada Pipelines, Calgary, AB, Canada

11:00am Effect of Room Temperature Creep on Hydrostatic Leak Test

Technical Paper Publication. IPC2018-78360
Benjamin Zand, Kiefner & Associates, Columbus, OH, United States,
Adam Steiner, Kiefner and Associates, Inc., Columbus, OH, United States

4-2 AUTOMATION AND MEASUREMENT

4-2-1 PIPELINE MONITORING & CONTROL I Telus, Telus MacLeod E2 1:30pm - 5:00pm

Session Chair: *Aaron Jansma, Enbridge Pipelines Inc., Edmonton, AB, Canada*

Session Co-Chair: *Jeffrey De Wit, Enbridge Pipelines Inc., Edmonton, AB, Canada*

1:30pm Use of Fiber Optic Technology in Monitoring Steel Sleeves and Composite Wrap Reinforcements

Technical Paper Publication. IPC2018-78037
Chris Alexander, ADV Integrity, Inc., Magnolia, TX, United States,
Ryan Lavergne, Western Specialties LLC, Avon, NY, United States,
Alan Turner, Lloyd's Register, Houston, TX, United States

2:00pm An Optimization Model for UAV Inspection Path of Oil and Gas Pipeline Network

Student Paper Publication. IPC2018-78171
Yamin Yan, National Engineering Laboratory for Pipeline Safety/ Beijing Key China University of

Petroleum-Beijing, Beijing, China,
Haoran Zhang, Beijing Key Laboratory of Urban oil and Gas Distribution Technology, Beijing, China,
Wan Zhang, China University of Petroleum-Beijing,, Beijing, China,
Bohong Wang, China University of Petroleum, Beijing, Beijing, China,
Qi Liao, National Engineering Laboratory for Pipeline Safety, Beijing, China,
Yongtu Liang, Beijing Key Laboratory of Urban oil and Gas Distribution Technology, Beijing, China

2:30pm Pipeline operations improvement with Ultrasonic Meters Diagnostics

Technical Paper Publication. IPC2018-78266
Noman Rasool, Enbridge, Edmonton, AB, Canada,
waqas unnabi, TechnipFMC, Edmonton, AB, Canada

3:00pm Real-Time Continuous Pipeline Integrity Monitoring Utilising Telecommunications Optical Fibre Cables

Technical Paper Publication. IPC2018-78499
Peter Hayward, Tom Fryer, Fotech Solutions Ltd, Church Crookham, United Kingdom

4-3 GEOHAZARDS

4-3-2 GEOHAZARD IDENTIFICATION AND CHARACTERIZATION

Telus, Telus Glen 203/204 3:30pm - 5:00pm

Session Chair: *Ashton Friesen, TransCanada, Calgary, AB, Canada*

3:30pm InSAR and the Pipeline Geohazards Toolbox: Instructions for Use as of 2018

Technical Paper Publication. IPC2018-78571
Richard Guthrie, Stantec, Calgary, AB, Canada,
Emma Reid, Stantec, Burnaby, BC, Canada,
John Richmond, Enbridge, Edmonton, AB, Canada,
Parwant Ghuman, 3vGeomatics, Vancouver, BC, Canada,
Yves Cormier, Stantec, Edmonton, AB, Canada

4:00pm Satellite Data Analytics for Natural Disaster Assessment & Application to Pipeline Safety

Technical Paper Publication. IPC2018-78695
Mark Piazza, Colonial Pipeline Company, Alpharetta, GA, United States,
Gillian Robert, MDA Geospatial Services Inc., Ottawa, ON, Canada,
Lesley Gamble, MacDonald, Dettwiler and Associates, Ottawa, ON, Canada,
Nic Svacina, MDA Geospatial Services Inc., Ottawa, ON, Canada,
Karineh Gregorian, SoCalGas, Los Angeles, CA, United States

WEDNESDAY, SEPTEMBER, 26

4-1 OPERATIONS AND MAINTENANCE

4-1-5 THIRD PARTY DAMAGE/PREVENTION Telus, Telus MacLeod E2 8:30am - 10:00am

Session Chair: *Bryan Balmer, Fortisbc Energy Inc., Surrey, BC, Canada*

8:30am Practical Improvements to Surface Loading Assessment- Building Efficiency and Accuracy

Technical Paper Publication. IPC2018-78633
Jennifer Klementis, TransCanada Pipelines Ltd., Calgary, AB, Canada,
Shenwei Zhang, TransCanada Pipeline Ltd, Calgary, AB, Canada,
Jonathan Law, TransCanada Pipelines Ltd., Calgary, AB, Canada,
Maria Pino, TransCanada Pipelines Limited, Calgary, AB, Canada,
Jason Yan, TransCanada Pipelines Limited, Calgary, AB, Canada

9:00am Challenges To Repair A Damaged NGL Pipeline By Third Parties In The Andean Mountains Without Pumping Stopped

Technical Paper Publication. IPC2018-78307
Sandro Ramos, Compañia Operadora de Gas del Amazonas, Lima, Lima, Peru

4-2 AUTOMATION AND MEASUREMENT

4-2-2A PIPELINE SIMULATIONS & SCHEDULING

Telus, Telus Glen 201/202 8:30am - 10:00am

Session Chair: *Douglas Robertson, TransCanada, Calgary, AB, Canada*

Session Co-Chair: *Ulli Pietsch, TAU Engineering Solutions Inc, Edmonton, AB, Canada*

8:30am Integrated scheduling for a multi-product pipeline network with delivery due dates

Technical Paper Publication. IPC2018-78057
Ning Xu, Qi Liao, Beijing Key Laboratory of Urban oil and Gas Distribution Technology, Beijing, China,
Zhengbing Li, China University of Petroleum, Beijing, Beijing, China,
Haoran Zhang, China University of Petroleum, Beijing, Beijing, China,
Yongtu Liang, Beijing Key Laboratory of Urban oil and Gas Distribution Technology, Beijing, China

9:00am Numerical Simulation Of Pig Motion In Two-Phase Flow Pipelines In The Presence Of A Leak

Technical Paper Publication. IPC2018-78093

Rodrigo Patricio, Carina N. Sondermann, Federal University of Rio De Janeiro, Rio De Janeiro, Brazil, Aline Figueiredo, Federal University of Rio de Janeiro (UFRJ/COPPE), Rio de Janeiro, Brazil, Raphael Viggiano, Gustavo C. R. Bodstein, Federal University of Rio de Janeiro, Rio de Janeiro, Rio de Janeiro, Brazil, Felipe B. De F. Rachid, Fluminense Federal University (PGMEC/UFF), Rio De Janeiro, Brazil, Renan Baptista, Petrobras R&D Centre, Ilha do Fundão, Brazil

9:30am A New Hydraulic and Thermal Steady-state Calculation Program for Multiphase Pipe Network

Student Paper Publication. IPC2018-78279

Di Fan, Qi Kang, Ruochen Zhang, Jing Gong, Changchun Wu, China University of Petroleum-Beijing, Beijing, China

4-1 OPERATIONS AND MAINTENANCE

4-1-2 EXPERIMENTAL INVESTIGATIONS AND TESTING

Telus, Telus MacLeod E2 10:30am - 12:00pm

Session Chair: *Anita Le, CH2M, Burnaby, BC, Canada*

10:30am Experimental Study on Wax Removal with Real Wax Deposits

Technical Paper Publication. IPC2018-78121

Weidong Li, Qiyu Huang, Xue Dong, Xuedong Gao, Lei Hou, China University of Petroleum-Beijing, Beijing, China

11:00am Investigation Of Heavy Sludge

Formation In A Chemically Inhibited Sour Gas Pipeline: How Far Do We Have To Go?

Technical Paper Publication. IPC2018-78123

Nima Tajallipour, Mike Cundall, Enbridge, Calgary, AB, Canada, Andy Tong, Enbridge Inc., Calgary, AB, Canada, Terry De-Long, Gregory VanBoven, ENBRIDGE, Calgary, AB, Canada

11:30am Predicting Drag Reduction in Turbulent Pipe Flow with Relaxation Time of Polymer Additives

Technical Paper Publication. IPC2018-78701

Xin Zhang, Xili Duan, Yuri Muzychka, Memorial University of Newfoundland, St. John's, NL, Canada, Zongming Wang, China University of Petroleum, Qingdao, Shandong, China

4-2 AUTOMATION AND MEASUREMENT

4-2-2B PIPELINE SIMULATIONS & SCHEDULING

Telus, Telus Glen 201/202 10:30am - 12:00pm

10:30am Predicting monthly energy consumption of crude oil pipelines using process simulation and optimization

Technical Paper Publication. IPC2018-78326

Lili Zuo, China University of Petroleum (Beijing), Beijing, China, Changchun Wu, China University of Petroleum-Beijing, Beijing, Select State/Province, China, Song Liu, Yong Jiang, Beijing Oil and Gas Pipeline Control Center of CNPC, Beijing, China, Xiaorui Zhang, China University of Petroleum(Beijing), Beijing, OO, China

11:00am A novel depth-first searching approach for detailed scheduling of operations in multi-product pipelines with multiple pump stations

Student Paper Publication. IPC2018-78341

Qi Liao, Bohong Wang, China University of Petroleum, Beijing, Beijing, China, Jun Liang, PetroChina Southwest Pipeline Company, Sichuang, China, Zhengbing Li, China University of Petroleum, Beijing, China, Haoran Zhang, Yongtu Liang, China University of Petroleum, Beijing, Beijing, China

11:30am Numerical Simulation of Acoustic Resonance in Closed Side Branch with Different Cross-section Shapes

Student Paper Publication. IPC2018-78459

Jiang LiuYi, China University of Petroleum, Beijing, Beijing, China, Hong Zhang, China University Of Petroleum, Beijing, China, Duan QingQuan, China University of Petroleum (Beijing), Beijing, China

THURSDAY, SEPTEMBER, 27

4-1 OPERATIONS AND MAINTENANCE

4-1-3 PIPELINE FACILITIES

Telus, Telus MacLeod E2 8:30am - 10:00am

Session Chair: *Peter Tanchak, Enbridge Inc., Calgary, AB, Canada*

8:30am In-Situ Modal Response Characterization of Pipe Structures Through Reynolds Number Variation

Student Paper Publication. IPC2018-78409

Haobin Chen, Ronald Hugo, Simon Park, University of Calgary, CALGARY, AB, Canada

9:00am Optimizing Electrical Protection for Medium Voltage Controller Lineup to Improve Liquids Pipelines Operation Reliability and Safety

Technical Paper Publication. IPC2018-78117

Ting Yu, Tushar Chaitanya, Enbridge Inc., Edmonton, AB, Canada

4-2 AUTOMATION AND MEASUREMENT

4-2-3A LEAK DETECTION I

Telus, Telus Glen 203/204 8:30am - 10:00am

Session Chair: *Philip Martin, Enbridge, Edmonton, AB, Canada*

Session Co-Chair: *Richard Fletcher, DNVGL, Calgary, AB, Canada*

8:30am Leak Localization Algorithm Applied To Non-Isothermal Liquid Flow In Horizontal Pipelines

Technical Paper Publication. IPC2018-78094

Aline Figueiredo, Federal University of Rio de Janeiro (UFRJ/ COPPE), Rio de Janeiro, Brazil, Carina N. Sondermann, Rodrigo Patricio, Raphael Viggiano, Gustavo C. R. Bodstein, Federal University of Rio De Janeiro, Rio De Janeiro, Brazil, Felipe B. De F. Rachid, Fluminense Federal University (PGMEC/UFF), Rio De Janeiro, Brazil, Renan Baptista, Petrobras R&D Centre, Ilha do Fundão, Brazil

9:00am A Calculation Model For Leak Detection And Location Of Single Pipeline With Two Leaks

Student Paper Publication. IPC2018-78169

Xu Diao, Juncheng Jiang, Lei Ni, Nanjing Tech University, Nanjing, China, Yong Pan, Nanjing Tech Univeristy, Nanjing, China, Qiang Chen, Nanjing Tech University, Nanjing, China

9:30am Acoustic Characteristics of Liquid Hydrocarbon Releases from Buried Pipelines: An Experimental Evaluation

Technical Paper Publication. IPC2018-78244

Fernando Castellanos, Mirko van der Baan, University of Alberta, Edmonton, AB, Canada, Mathew Bussiere, C-FER Technologies (1999) Inc., Edmonton, AB, Canada, Mark Stephens, C-FER Technologies, Edmonton, AB, Canada

4-2 A UTOMATION AND MEASUREMENT

4-2-4 G EOGRAPHIC INFORMATION SYSTEMS

Telus, Telus MacLeod E2 10:30am - 12:00pm

Session Chair: *Jessie Passi, Enbridge Pipelines Inc., Edmonton, AB, Canada*

10:30am Monitoring of Pipeline RoU using Remote Sensing and GIS Techniques

Technical Paper Publication. IPC2018-78125

Yogin Gajjar, GSPL India Transco Limited, Gandhinagar, Gujarat, India

11:00am Reducing Excavation Damage in the Natural Gas Industry Using Real-Time GIS and Sensors

Technical Paper Publication. IPC2018-78615

Aaron Rezendez, Pacific Gas and Electric Company, San Ramon, CA, United States, Robert J. Marros, Khalid Farrag, Saurav Acharya, Gas Technology Institute, Des Plaines, IL, United States

4-2-3B LEAK DETECTION I

Telus, Telus Glen 203/204 10:30am - 12:00pm

10:30am Three new leak localization approaches for gas pipelines using acoustic waves

Technical Paper Publication. IPC2018-78327

Cuiwei Liu, China University of Petroleum (East China), Qingdao, China, yuxing li, College of Pipeline and Civil Engineering in China University of Petroleum (East China), Qingdao, China, Qihui Hu, China University of Petroleum (East China), Qingdao, Shandong, China, Wuchang Wang, China University of Petroleum (East China), Qingdao, China, yazhen wang, xuejie li, minghai xu, College of Pipeline and Civil Engineering in China University of Petroleum (East China), Qingdao, China

11:00am A Nonintrusive Pipeline Leak Detection Service Using Pressure Wave Analysis

Technical Paper Publication. IPC2018-78343

Srinivasan Jagannathan, Halliburton, Houston, TX, United States, Graham Jack, Halliburton Pipeline & Process Services, Aberdeen, Aberdeenshire, United Kingdom, Neil Stewart, Halliburton Pipeline and Process Services, Aberdeen, Aberdeenshire, United Kingdom

11:30am Pipeline Rupture Detection Using Real-Time Transient Modelling and Convolutional Neural Networks

Student Paper Publication. IPC2018-78426

Joel Smith, Jaehee Chae, University of Calgary, Calgary, AB, Canada, Shawn Learn, TransCanada PipeLines, Calgary, AB, Canada, Ronald Hugo, Simon Park, University Of Calgary, Calgary, AB, Canada

4-2 A UTOMATION AND MEASUREMENT

4-2-6 PIPELINE MONITORING & CONTROL II

Telus, Telus MacLeod E2 1:30pm - 3:00pm

Session Chair: *Aaron Jansma, Enbridge Pipelines Inc., Edmonton, AB, Canada*

Session Co-Chair: *Jeffrey De Wit, Enbridge Pipelines Inc., Edmonton, AB, Canada*

1:30pm Tracking Batches Accurately in a Multi-Product Pipeline with large Elevation Changes and Prominent Slack Flow

Technical Paper Publication. IPC2018-78715

Giancarlo Milano, Atmos International, San Antonio, TX, United States, Nitesh Goyal, Kinder Morgan Canada Inc., Sherwood Park, AB, Canada, David Basnett, Atmos International, Manchester, United Kingdom

2:00pm Economic And Operational Evaluation Of The Use Of Drag Reducing Agents In A Pipeline

Technical Paper Publication. IPC2018-78619

Bruno Amorim, Puc-Rio, Rio de Janeiro, Rio de Janeiro, Brazil, Luis F. G. Pires, Pontificia Universidade Catolica do Rio de Janeiro, Rio de Janeiro, RJ, Brazil, Fábio Limeira, Transpetro, Rio de Janeiro, Brazil, António Montalvão, Petrobras Transportes SA, Rio de Janeiro, Brazil, Ivan Menezes, Puc-Rio, Rio De Janeiro, Brazil

2:30pm Motorized Valve Control System Centralization:

How Does It Impact On Reliability, Costs And Performance?

Technical Paper Publication. IPC2018-78534

Alessandro M. Fonseca, Petrobras Transporte SA - TRANSPETRO, Senador Canedo, GOIAS, Brazil, Valdivino Lima, Fernando Fernandes, Vilmar Souza, Petrobras Transporte SA, Senador Canedo, Outside USA & Canada, Brazil

4-2-7A LEAK DETECTION II

Telus, Telus Glen 203/204 1:30pm - 3:00pm

Session Chair: *Philip Martin, Enbridge, Edmonton, AB, Canada*

Session Co-Chair: *Richard Fletcher, DNVGL, Calgary, AB, Canada*

1:30pm Optimization of Averaging Window Length and Alarming Hold Time in Volume Balance RTTM Leak Detection to Minimize False Alarms and Spill Volume

Technical Paper Publication. IPC2018-78791

Ehsan Shahidi, Shawn Learn, TransCanada Pipelines, Calgary, AB, Canada

2:00pm Application of Machine Learning to Distributed Temperature Sensing (DTS) Systems

Technical Paper Publication. IPC2018-78640

Maria Araujo, Shane P. Siebenaler, Heath Spidle, Samantha Blaisdell, David Vickers, Southwest Research Institute, San Antonio, TX, United States

4-3 GEOHAZARDS

4-3-1 G EOHAZARD TRIGGERS: SEISMIC AND FLOODING

Telus, MacLeod Hall C 1:30pm - 3:00pm

Session Chair: *John Richmond, Enbridge, Edmonton, AB, Canada*

1:30pm Near-Real-Time Seismic Monitoring for Pipelines

Technical Paper Publication. IPC2018-78013

Martin Zaleski, BGC Engineering Inc., Vancouver, BC, Canada, Gerald Ferris, BGC Engineering Inc., Calgary, AB, Canada, Alex Baumgard, BGC Engineering Inc., Vancouver, BC, Canada

2:00pm Development of a Pipeline Post Seismic Response Screening Process

Technical Paper Publication. IPC2018-78422

David Warman, David Kendrick, Enterprise Products, Houston, TX, United States, John Mackenzie, Kiefner & Associates, Inc., Bellingham, WA, United States

2:30pm Flood Monitoring: Evaluating Action Response Time Relative To Warning Time

Technical Paper Publication. IPC2018-78740

Sarah Davidson, BGC Engineering Inc., Vancouver, BC, Canada, Gerald Ferris, BGC Engineering Inc., Calgary, AB, Canada, Joel Van Hove, BGC Engineering Inc., Vancouver, BC, Canada, Joel Babcock, Pembina Pipeline Corporation, Calgary, AB, Canada, Jan Bracic, Pembina Pipeline Corporation, Calgary, AB, Canada

4-2 A UTOMATION AND MEASUREMENT

4-2-5 PIPELINE COLUMN SEPARATION

Technical Tracks

Telus, Telus MacLeod E2 3:30pm - 5:00pm

Session Chair: *Clarice Ng, Enbridge Pipelines Inc., Edmonton, AB, Canada*

3:30pm Validating a Single-Phase Flow Pipeline Simulation Model Against Real Data From a Vapor Collapse Event

Technical Paper Publication. IPC2018-78235

Hanna Sieben, Tau Engineering Solutions Inc., Edmonton, AB, Canada, Ulli Pietsch, TAU Engineering Solutions Inc., Edmonton, AB, Canada

4:00pm Column Separation In A Shut-in Liquid Hydrocarbon Transmission Pipeline

Technical Paper Publication. IPC2018-78743

Hamed Ghasvari Jahromi, Michael Roxas, Vanmok Consulting Services Inc., Edmonton, AB, Canada, Satya Mokamati, Vanmok, Edmonton, AB, Canada

4-2-7B LEAK DETECTION II

Telus, Telus Glen 203/204 3:30pm - 5:00pm

3:30am Testing Of An Oil-On-Water Sensing Technology For Detecting Pipeline Leaks In Remote Locations Subject To Freezing Conditions

Technical Paper Publication. IPC2018-78624

Stefan Balatchev, Valbotech Inc., Ottawa, ON, Canada

4:00pm Strategies for Isothermal, Real-Time, Transient Pipeline Models in Shut-in Conditions

Technical Paper Publication. IPC2018-78548

Norens Okungbowa, ENBRIDGE PIPELINES INC, Edmonton, AB, Canada, Trent Brown, PhaseIQ, Houston, TX, United States

4-3 GEOHAZARDS

4-3-3 D ETAILED GEOHAZARD ASSESSMENTS

Telus, MacLeod Hall C 3:30pm - 5:00pm

Session Chair: *Jan Bracic, Pembina Pipeline Corporation, Calgary, AB, Canada*

3:30pm Pipeline Geohazard Risk Monitoring with Optical Fiber Distributed Sensors: Experience with Andean and Arctic Routes

Technical Paper Publication. IPC2018-78047

Fabien Ravet, Fabien Briffod, Sang Hoon Chin, Etienne Rochat, Jean-Grégoire Martinez, Omnisens, Morges, Vaud, Switzerland

4:00pm Terrain Analysis and Geologic Hazards Assessment:

A Comparison of the Objectives and Methods of Each, and the Benefits of Completing Both in Parallel

Technical Paper Publication. IPC2018-78129

Bailey Theriault, Golder Associates, Manchester, NH, United States, Dennis O'Leary, Golder Associates, Edmonton, AB, Canada, Donald West, Golder Associates, Redmond, WA, United States, Mark Nixon, Golder Associates, Calgary, AB, Canada

FRIDAY, SEPTEMBER, 28

4-1 OPERATIONS AND MAINTENANCE

4-1-4 MAINTENANCE PLANNING AND RELIABILITY

Telus, Telus MacLeod E2 8:30am - 10:00am

Session Chair: *Nelson Tonui, Kinder Morgan Canada, Calgary, AB, Canada*

8:30am Risk-Based Inspection Optimization for Valve Inspections

Technical Paper Publication. IPC2018-78216

Patrick Vibien, Ken Oliphant, David Joyal, William Luff, JANA Corporation, Aurora, ON, Canada

9:00am Thin-Wall Pipeline Repair: Evaluation Of Reinforcement Systems And Internal Temperature Monitoring During Maintenance Procedures

Technical Paper Publication. IPC2018-78647

Colton Sheets, Stress Engineering Services Inc., Houston, TX, United States, Taylor Shie, Adam Crawford, Shell Pipeline Company, LP, Houston, TX, United States

9:30am Instructive Value Of Flow Assurance Assessment Based J-Curve Analysis On Pipeline Maintenance And Operation

Technical Paper Publication. IPC2018-78660

David Cheng, Fluor, Sugar Land, TX, United States

4-3 GEOHAZARDS

4-3-4 GEOHAZARD MITIGATION

Telus, Telus MacLeod E2 10:30am - 12:00pm

Session Chair: *Martin Zaleski, BGC Engineering Inc., Vancouver, BC, Canada*

10:30am Experimental Evaluation of Blasting Near Pipelines

Technical Paper Publication. IPC2018-78630

Justin Gossard, Shane Finneran, Steven Waters, DNV GL, Dublin, OH, United States

11:00am Pipeline Geohazard Assessment Bridging the Gap between Integrity Management and Construction Safety Contexts

Technical Paper Publication. IPC2018-78225

Rodney S. Read, RSRead Consulting Inc., Okotoks, AB, Canada

11:30am Preserving Pipeline Integrity with Large Diameter Stone Columns at Deadhorse Creek Crossing, southern Manitoba

Technical Paper Publication. IPC2018-78651

Wing-Keat (Wayne) Wong, Brad Wiebe, Amec Foster Wheeler, Winnipeg, MB, Canada, Curtis Treen, Amec Foster Wheeler, Edmonton, AB, Canada, John Richmond, Enbridge, Edmonton, AB, Canada

TRACK 5 MATERIALS AND JOINING

TUESDAY, SEPTEMBER, 25

5-1 MATERIALS

5-1-1 MICRO ALLOYED LINE PIPE STEEL

Telus, Telus Glen 201/202 10:30am - 12:00pm

Session Chair: *Melissa Gould, DNV GL, Katy, TX, United States*

10:30am Transverse Strain Aging Behaviour of Uncoated Thick Walled X70 UOE Microalloyed Steel Pipes

Technical Paper Publication. IPC2018-78102

J. Barry Wiskel, Jun Ma, Doug. G. Ivey, Hani Henein, University of Alberta, Edmonton, AB, Canada

11:00am Structure formation control of microalloyed pipe steels during TMCP for enhance low temperature toughness

Technical Paper Publication. IPC2018-78511

Dmitrii Ringinen, Andrei Chastukhin, Leonid Efron, OMK Vyksa Steel Works, Vyksa, Nizhniy Novgorod, Russia

11:30am Effect of Straining and Aging on Material Properties of Linepipe Suitable for Deepwater Applications

Technical Paper Publication. IPC2018-78815

Melissa Marsay, Graham Alderton, Martin Connelly, Liberty Steel, Hartlepool, Durham, United Kingdom

5-3 CRACK PROPAGATION

5-3-1 C RACK PROPAGATION - FULL SCALE TESTS

Telus, Telus Glen 203/204 10:30am - 12:00pm

Session Chair: *Satoshi Igi, JFE STEEL CORPORATION, Kurashiki, Japan*

10:30am Verification Of Applicability

Of Battelle Two-Curve Method To Ultrahigh-Pressure Rich-Gas Pipelines Based On A Full-Scale Burst Test

Technical Paper Publication. IPC2018-78447
Yasuhito Imai, Tokyo Gas Co., Ltd., Kanagawa, Japan, Masaki Mitsuya, Tokyo Gas Co, Tokyo, Japan, Masao Toyoda, Osaka University, Osaka 565-0871, Japan

11:00am Experimental measurement of CTOA during ductile crack propagation in pipeline burst tests

Technical Paper Publication. IPC2018-78510
Kazuki Shibanuma, Hikaru Yamaguchi, Takahiro Hosoe, Katsuyuki Suzuki, Shuji Aihara, The University of Tokyo, Tokyo, Japan

11:30am The EPRG Recommendations for Crack Arrest Toughness for Line Pipe Steel (Third Edition)

Technical Paper Publication. IPC2018-78043
Andrew Cosham, Ninth Planet Engineering Limited, Newcastle upon Tyne, United Kingdom, Robert M Andrews, ROSEN UK, Newcastle upon Tyne, United Kingdom, Tanja Schmidt, Vallourec, Düsseldorf, Germany

5-1 MATERIALS

5-1-2A MICROSTRUCTURE-PROPERTY RELATIONSHIP

Telus, Telus Glen 201/202 1:30pm - 3:00pm

Session Chair: *J. Barry Wiskel, University of Alberta, Edmonton, AB, Canada*

1:30pm Prediction of mechanical properties of ERW pipes considering manufacturing process through numerical analysis

Student Paper Publication. IPC2018-78491
Seong-Wook Han, Seoul national university, Seoul, Seoul, Korea (Republic), Soo Chang Kang, POSCO, Incheon, Korea (Republic), Jiwoon Yi, Korean Institute of Bridge and Structural Engineers, Seoul, Korea (Republic), Ho-Kyung Kim, Seoul national university, Seoul, Korea (Republic)

2:00pm Effect of initial bainite microstructure on tensile properties after long-term exposure at elevated temperature

Technical Paper Publication. IPC2018-78551
Junji Shimamura, JFE Steel Corporation, Fukuyama, Japan, Shusaku Ota, JFE Steel Corporation, Chiyoda-ku, Tokyo, Japan, Tomoyuki Yokota, Ryuji Muraoka, JFE Steel Corporation, Fukuyama, Japan

2:30pm Advanced constitutive model for the accurate evaluation of the structural performance of welded pipes in offshore applications

Technical Paper Publication. IPC2018-78574
Steven Cooreman, Arcelormittal Global R&D, Zelzate, Belgium, Dennis Van Hoecke, ArcelorMittal Global R&D Gent, Zelzate, Belgium, Martin Liebeherr, Arcelormittal R&D / OCAS, Zelzate, Belgium, Philippe Thibaux, ArcelorMittal Global R&D Gent, Zelzate, Belgium, Herve Luccioni, ArcelorMittal, Fos-sur-Mer, France

5-4 FITTINGS & TESTING METHODS

5-4-1 ADVANCEMENTS IN FITTINGS

Telus, Telus Glen 203/204 1:30pm - 3:00pm

Session Chair: *Junfang Lu, Enbridge Inc., Edmonton, AB, Canada*

1:30pm Quality Assurance for Quenched and Tempered Pipeline Fittings - A Regulator's Perspective and Plan of Action

Technical Paper Publication. IPC2018-78299
Negar van Schalkwyk, National Energy Board, Calgary, AB, Canada, Hong Wang, National Energy Board, Calgary, AB, Canada, Iain Colquhoun, Joe Paviglianiti, National Energy Board, Calgary, AB, Canada

2:00pm Industry Best Practices for Hot Tap Branch Connections

Technical Paper Publication. IPC2018-78306
William Bruce, Brad Etheridge, DNV GL, Dublin, OH, United States, Melissa Gould, DNV GL, Katy, TX, United States, Matt Boring, Kiefner & Associates, Inc., Columbus, OH, United States, Patrick Fleck, Marathon Pipe Line, LLC, Findlay, OH, United States

2:30pm Coupling Metallurgy and Manufacturing Parameters of Pipeline Fittings to Avoid Substandard Properties

Technical Paper Publication. IPC2018-78431

Fateh Fazeli, Colin Scott, James Saragosa, Canmet MATERIALS, Hamilton, ON, Canada, Robert Cicoria, McMaster University, Brantford, ON, Canada, Jim Fraser, TransCanada, Calgary, AB, Canada

5-1 MATERIALS

5-1-2B MICROSTRUCTURE-PROPERTY RELATIONSHIP

Telus, Telus Glen 201/202 3:30pm - 5:00pm

WEDNESDAY, SEPTEMBER, 26

5-3 CRACK PROPAGATION

5-3-2 C RACK PROPAGATION - TESTS AND SIMULATIONS

Telus, Telus Glen 203/204 8:30am - 10:00am

Session Chair: *Su Xu, Canmet MATERIALS, Hamilton, ON, Canada*

8:30am Next Generation Ductile Fracture Arrest Analyses for High Energy Pipelines Based on Detail Coupling of CFD and FEA Techniques

Technical Paper Publication. IPC2018-78097
Kamal Botros, NOVA Chemicals Centre for Applied Research, Calgary, AB, Canada, Eric Clavelle, NOVA Chemicals, Calgary, AB, Canada, Mo Uddin, Engineering Mechanics Corporation of Columbus, Upper Arlington, OH, United States, Gery Wilkowski, Engineering Mechanics Corporation of Columbus, Columbus, OH, United States, Cindy Guan, TransCanada Pipelines Limited, Calgary, AB, Canada

9:00am The effect of material strain hardening on the determination of CTOD R-curves using SENB specimens

Technical Paper Publication. IPC2018-78278
Philippa Moore, TWI Ltd, Cambridge, Cambs, United Kingdom, Wee Liam Khor, Brunel University/NSIRC, Cambridge, Cambs, United Kingdom

9:30am Effect Of Notch Type In Drop-Weight Tear Test Specimen On Crack Propagation And Arrest Behavior

Technical Tracks

Technical Paper Publication. IPC2018-78579
Satoshi Igi, JFE STEEL CORPORATION, Kurashiki, Japan, **Toshihiko Amano**, Nippon Steel & Sumitomo Metal Corporation, Amagasaki, Japan, **Takahiro Sakimoto**, JFE Steel Corporation, Chiba, Japan, **Yasuhiro Shinohara**, Nippon Steel & Sumitomo Metal Corporation, Kimitsu, Chiba, Japan, **Tetsuya Tagawa**, JFE Steel Corporation, Chiba, Japan

5-4 FITTINGS & TESTING METHODS

5-4-2 MATERIAL TESTING METHODS

Telus, Telus Glen 203/204 10:30am - 12:00pm

Session Chair: **Jing Ma**, Kiefner & Associates, Inc., Columbus, OH, United States

10:30am Standardization of Flattening Procedure for Transverse to Pipe Axis Strap Tensile Samples

Technical Paper Publication. IPC2018-78311
Muhammad Rashid, Shaojie Chen, Evraz NA, Regina, SK, Canada, **Laurie Collins**, EVRAZ Inc NA, Regina, SK, Canada

11:00am An Integrated Approach for the Verification of Pipeline Material using latest State of the Art Technologies and Engineering Processes

Technical Paper Publication. IPC2018-78776
Simon Slater, ROSEN, Columbus, OH, United States, **Katrina Dwyer**, Xcel Energy, Denver, CO, United States, **Markus Ginten**, ROSEN USA, Houston, TX, United States, **Thomas Eiken**, ROSEN, Lingen, Emsland, Germany, **Ollie Burkinshaw**, ROSEN, Newcastle Upon Tyne, Tyne and Wear, United Kingdom

11:30am Ctod-Resistance Curve Testing And Evaluation For Clamped Sent Specimens

Technical Paper Publication. IPC2018-78806
Xian-Kui Zhu, EWI - Structural Integrity, Columbus, OH, United States, **Tom McGaughy**, EWI, Columbus, OH, United States

THURSDAY, SEPTEMBER, 27

5-3 CRACK PROPAGATION

5-3-3 C RACK PROPAGATION - CO2 PIPELINES

Telus, Telus Glen 201/202 8:30am - 10:00am

Session Chair: **Andrew Cosham**, Ninth Planet Engineering Limited, Newcastle upon Tyne, United Kingdom

8:30am Co2safe-Arrest: A Full-Scale Burst Test Research Program For Carbon Dioxide Pipelines

Paper 1 Project Overview And Outcomes Of Test 1

Technical Paper Publication. IPC2018-78517
Valerie Linton, Energy Pipelines CRC, Wollongong, NSW, Australia, **Bente Helen Leinum**, DNV GL AS, Oslo, Norway, **Robert Newton**, Energy Pipelines CRC, Wollongong, NSW, Australia, **Olav Fyrileiv**, Det Norske Veritas Germanischer Lloyd (DNV GL), Asker, Norway

9:00am Is The Btcm Out Of Touch With Densephase Co2 Reporting On The First Co2safe-Arrest Full-Scale Test

Technical Paper Publication. IPC2018-78525
Guillaume Michal, **Bradley J. Davis**, University of Wollongong, Wollongong, NSW, Australia, **Erling Ostby**, DNV GL, **Hovik, Hovik**, Norway, **Cheng Lu**, Univ of Wollongong, Wollongong, NSW, Australia, **Sigbjørn Røneid**, DNV GL, Høvik, Norway

9:30am Simulation of a Full-Scale CO2 Fracture Propagation Test

Technical Paper Publication. IPC2018-78631
Gaute Gruben, **Stephane Dumoulin**, SINTEF Industry AS, Trondheim, Norway, **Haakon Nordhagen**, SINTEF Industry, Trondheim, Norway, **Morten Hammer**, **Svend Tollak Munkejord**, SINTEF Energy Research AS, Trondheim, Select State/ Province, Norway

5-2 WELDING

5-2-2 WELD FITNESS-FOR-SERVICE I

Telus, Telus Glen 201/202 10:30am - 12:00pm

Session Chair: **Cindy Guan**, TransCanada Pipelines Limited, Calgary, AB, Canada

10:30am Mechanical behaviour of intercritically reheated coarse-grained heat affected zone in high strength line pipe steels

Student Paper Publication. IPC2018-78317
Madhumanti Mandal, **Warren J. Poole**, **Thomas Garcin**, **Matthias Militzer**, The University of British Columbia, Vancouver, BC, Canada, **Laurie Collins**, EVRAZ Inc NA, Regina, SK, Canada

11:00am Integration of Welding, NDT, Mechanical Testing and Field Control when Using an ECA Flaw Acceptance Criteria in Pipeline Construction

Technical Paper Publication. IPC2018-78416
Junfang Lu, **Bob Huntley**, **Luke Ludwig**, **Axel Aulin**, Enbridge Inc., Edmonton, AB, Canada, **Andy Duncan**, Enbridge, Inc., Edmonton, AB, Canada

11:30am Integrity of longitudinal welds in pipes bridging scales

Technical Paper Publication. IPC2018-78504
Marion Erdelen-Peppler, Salzgitter Mannesmann, Duisburg, Germany, **Christoph Kalwa**, EUROPIPE GmbH, Muelheim an der Ruhr, Germany, **Jens Schroeder**, Eurpipe GMBH, Muelheim An Der Ruhr, Germany

5-4 FITTINGS & TESTING METHODS

5-4-4 C RACK ADVANCEMENT TESTS

Telus, Telus Glen 201/202 1:30pm - 3:00pm

Session Chair: **Lyndon Lamborn**, Enbridge Pipelines Inc., Edmonton, AB, Canada

1:30pm Quantification of Splitting in X80 Pipeline Steel

Technical Paper Publication. IPC2018-78389
Alexey Gervasyev, **Roumen Petrov**, Ghent University, Zwijnaarde, Belgium, **Igor Pyshmintsev**, R&D Center TMK, Ltd., Moscow, Russia, **Chunyong Huo**, CNPC Tubular Goods Research Institute, Xi'an, China, **Frank Barbaro**, Barbaro & Associates, Thirroul, Australia

2:00pm Control of %age shear area in DWTT at low temperature in niobium microalloyed line pipe steel

Technical Paper Publication. IPC2018-78100
Sundaresa Subramanian, McMaster University, Hamilton, ON, Canada, **Xiaoping Ma**, Algoma Steel Inc., Sault Ste Marie, ON, Canada, **Xuelin Wang**, **Chengjia Shang**, University of Science and Technology Beijing, Beijing, China, **Chengliang Miao**, shougang research Institute of Technology, Beijing, China, **Xiaobing Zhang**, Shagang Com. Ltd., Zhangjiagang, China, **Laurie Collins**, EVRAZ Inc NA, Regina, SK, Canada

2:30pm Analysis of a Full-Scale Burst Test Data Using Fully-Instrumented Standard Pressed-Notch and Modified Backlot DWTT specimens

Technical Paper Publication. IPC2018-78243
Mo Uddin, Engineering Mechanics Corporation of Columbus, Upper Arlington, OH, United States, **Gery Wilkowski**, Engineering Mechanics Corp. Columbus, Upper Arlington, OH, United States, **Cindy Guan**, TransCanada Pipelines Limited, Calgary, AB, Canada

5-1 MATERIALS

5-1-3 MODERN LINE PIPE STEEL

Telus, Telus Glen 201/202 3:30pm - 5:00pm

Session Chair: **Muhammad Rashid**, Evraz NA, Regina, SK, Canada

3:30pm New Production Process of High Strength

Pipeline Steel Coil with Large Thickness and Low Internal Stress

Technical Paper Publication. IPC2018-78113
Chengliang Miao, Fei Li, shougang research Institute of Technology, Beijing, China, **Zheng Cheng**, Shougang Jingtang United Iron & Steel Co., Ltd., tangshan, China

4:00pm Development of Heavy Gauge X70 Helical Line Pipe

Technical Paper Publication. IPC2018-78763
Laurie Collins, Kendal Dunnett, EVRAZ Inc NA, Regina, SK, Canada, **Tim Hylton**, EVRAZ Inc NA, Pueblo, CO, United States, **Atish Ray**, EVRAZ Inc NA, Regina, SK, Canada

4:30pm Attributes Of Modern Linepipes And Their Implications On Girth Weld Strain Capacity

Technical Paper Publication. IPC2018-78809
Yong-Yi Wang, Center for Reliable Energy Systems, Dublin, OH, United States, **Jim Gianetto**, CANMET Materials Technology Laboratory, Hamilton, ON, Canada, **David Horsley**, Horsley Consulting Ltd., Calgary, AB, Canada, **Steve Rapp**, Enbridge Energy, Houston, TX, United States, **David Warman**, Enterprise Products, Houston, TX, United States

FRIDAY, SEPTEMBER, 28

5-2 WELDING

5-2-3 WELD FITNESS-FOR-SERVICE II

Telus, MacLeod Hall D 8:30am - 10:00am

Session Chair: **Stuart Guest**, Stantec Consulting Ltd., Calgary, AB, Canada

8:30am Toughness of ERW Pipe Seam Welds of Contemporary Steels

Technical Paper Publication. IPC2018-78283
 Su Xu, Andrew Laver, Jie Liang, CanmetMATERIALS, Hamilton, ON, Canada, William R. Tyson, CanmetMATERIALS, Ottawa, ON, Canada, SHINYA MATSUNO, Marubeni-Itochu Tubulars Canada Ltd., Calgary, AB, Canada

9:00am Crack formation in Charpy tests of the heat-affected zone of large-diameter linepipe material

Technical Paper Publication. IPC2018-78498
Lars Schemmann, Charles Stallybrass, Salzgitter Mannesmann Forschung GmbH, Duisburg, Germany, **Jens Schroeder**, Eurpipe GMBH, Muelheim An Der Ruhr, Germany, **Andreas Liessem**, Europipe GmbH, Muelheim an der Ruhr, Germany, **Stefan Zaefferer**, Max-Planck-Institut für Eisenforschung GmbH, Düsseldorf, Germany

9:30am Recommendations For Submerged Arc Spiral Pipe Welding With Optimized Ctod Properties

Technical Paper Publication. IPC2018-78518
Martin Liebeherr, Arcelormittal R&D / OCAS, Zelzate, Belgium, **Özlem E. Güngör**, Arcelormittal Global R&D Gent / OCAS, Gent-Zwijnaarde, Belgium, **Nuria Sanchez**, Arcelormittal Global R&D Gent / OCAS, Gent- Zwijnaarde, Belgium, **Herve Luccioni**, ArcelorMittal, Fos-sur-Mer, France, **Nenad Ilic**, Arcelormittal Bremen, Bremen, Germany

5-3 CRACK PROPAGATION

5-3-4A C RACK PROPAGATION - MICROMECHANICS SIMULATIONS

Telus, Telus Glen 203/204 8:30am - 10:00am

Session Chair: **Xian-Kui Zhu**, EWI - Structural Integrity, Columbus, OH, United States

8:30am Fast Ductile Fracture: Dependence of Propagation

Resistance on Crack Velocity

Technical Paper Publication. IPC2018-78109
Christopher Bassindale, Xin Wang, Carleton University, Ottawa, ON, Canada, **William R. Tyson**, CanmetMATERIALS, Ottawa, ON, Canada, **Su Xu**, CanmetMATERIALS, Hamilton, ON, Canada

9:00am Comparison of plasticity and damage models to quantify the effects on the

dynamic, ductile fracture propagation in pipelines

Technical Paper Publication. IPC2018-78366
Vincent Keim, Aida Nonn, OTH Regensburg, Regensburg, Bavaria, Germany, **Marcelo Paredes, Tomasz Wierzbicki**, Massachusetts Institute of Technology, Cambridge, MA, United States

9:30am Understanding inverse fracture ? a comparison of results of Drop Weight Tear Tests and Partial Gas Tests

Technical Paper Publication. IPC2018-78686
Marion Erdelen-Peppler, Salzgitter Mannesmann, Duisburg, Germany, **Alexander Voelling**, Salzgitter Mannesmann Grobblech, Muelheim an der Ruhr, Germany, **Christoph Kalwa**, EUROPIPE GmbH, Muelheim an der Ruhr, Germany

5-2 WELDING

5-2-1 IN-SERVICE WELDING

Telus, MacLeod Hall D 10:30am - 12:00pm

Session Chair: **Luke Ludwig**, Enbridge Inc., Edmonton, AB, Canada

10:30am Justification for Reducing In-service Weld Inspection Delay Times for Liquid Pipelines

Technical Paper Publication. IPC2018-78250
Matt Boring, Kiefner & Associates, Inc., Columbus, OH, United States, **Mike Bongiovi, David Warman, Harold Kleeman**, Enterprise Products, Houston, TX, United States

11:00am An Alternative Approach to Time Delay Prior to Inspection for Hydrogen Cracking

Technical Paper Publication. IPC2018-78305
William Bruce, Jared Proegler, Brad Etheridge, DNV GL, Dublin, OH, United States, **Steve Rapp, Russell Scoles**, Enbridge Energy, Houston, TX, United States

11:30am Simulating In-Service Welding Of Hot-Tap Branches To Quantify The Effect Of Geometry On Level Of Restraint

Technical Tracks

Technical Paper Publication. IPC2018-78600

Jason Dyck, Stantec, Calgary, AB, Canada, Stuart Guest, Alireza Kohandehghan, Stantec Consulting Ltd., Calgary, AB, Canada, Sean Lepine, Enbridge Employee Services Inc., Edmonton, AB, Canada

5-3 CRACK PROPAGATION

5-3-4B C RACK PROPAGATION - MICROMECHANICS SIMULATIONS

Telus, Telus Glen 203/204 10:30am - 12:00pm

TRACK 6 STRAIN BASED DESIGN

TUESDAY, SEPTEMBER, 25

6-2 STRAIN CAPACITY AND BURST PRESSURE

6-2-1 STRAIN CAPACITY AND BURST PRESSURE - I

Telus, Telus Glen 208/209 10:30am - 12:00pm

Session Chair: *Nader Yoosef-Ghods, Enbridge Pipelines Inc., Edmonton, AB, Canada*

Session Co-Chair: *Bo WANG, Center for Reliable Energy Systems, Dublin, OH, United States*

10:30am Girth weld strength matching effect on tensile strain capacity of X70 36-inch OD steel pipe

Technical Paper Publication. IPC2018-78778

Hisakazu Tajika, Takahiro Sakimoto, Tsunehisa Handa, Rinsei Ikeda, JFE Steel Corporation, Chiba, Chiba, Japan, Joe Kondo, JFE Steel Corporation, Tokyo, Japan

11:00am Assessment of Dents under High Longitudinal Strain

Technical Paper Publication. IPC2018-78797

Bo WANG, Yong-Yi Wang, Center for Reliable Energy Systems, Dublin, OH, United States, Brent Ayton, Mark Stephens, C-FER Technologies, Edmonton, AB, Canada, Steve Nanney, PHMSA Southwest Region — US DOT, Houston, TX, United States

11:30am A Strain Based Criterion to Evaluate the Tensile Capacity of Transmission Pipelines under Large Scale Cyclic Bending

Student Paper Publication. IPC2018-78103

Y. Andrés Plata Uribe, University of São Paulo, São Paulo, São Paulo, Brazil, Claudio Ruggieri, Univ Of Sao Paulo, Sao Paulo 05508-900, Brazil

6-1 STRAIN DEMAND AND ASSESSMENT

6-1-1 STRAIN DEMAND AND ASSESSMENT - I

Telus, Telus Glen 208/209 1:30pm - 3:00pm

Session Chair: *Yong-Yi Wang, Center for Reliable Energy Systems, Dublin, OH, United States*

Session Co-Chair: *Robert M Andrews, ROSEN UK, Newcastle upon Tyne, United Kingdom*

1:30pm Methodologies For Establishing The Probability Of Pipeline Failure At Slope Crossings

Technical Paper Publication. IPC2018-78352

Millan Sen, Enbridge Pipelines Inc., Edmonton, AB, Canada, Sherif Hassanien, Enbridge, Liquids Pipelines, Edmonton, AB, Canada, Yves Cormier, Stantec, Edmonton, AB, Canada, Smitha Koduru, C-FER Technologies, Edmonton, AB, Canada

2:00pm Improving Fitness for Purpose Methodology and Safety Target Definitions on Geo-hazard

Technical Paper Publication. IPC2018-78710

Nader Yoosef-Ghods, Enbridge Pipelines Inc., Edmonton, AB, Canada, Yvan Hubert, Enbridge Liquids Pipelines, Edmonton, AB, Canada, Mike Hill, Kurt Baraniecki, Enbridge Employee Services Canada Inc., Edmonton, AB, Canada

2:30pm Using Controlled Global Buckling to Improve Buried Pipelines Performance under Large Compressive Deformations Caused by Ground Movements

Technical Paper Publication. IPC2018-78084

Ali Fathi, ALFA Upgrades Inc., Winnipeg, MB, Canada, Samer Adee, Onyekachi H. Ndubuaku, University of Alberta, Edmonton, AB, Canada

6-1 STRAIN DEMAND AND ASSESSMENT

6-1-2 STRAIN DEMAND AND ASSESSMENT - II

Telus, Telus Glen 208/209 3:30pm - 5:00pm

Session Chair: *Yong-Yi Wang, Center for Reliable Energy Systems, Dublin, OH, United States*

Session Co-Chair: *Robert M Andrews, ROSEN UK, Newcastle upon Tyne, United Kingdom*

3:30pm Assessment of Stress Based Design Pipelines Experiencing High Axial Strains

Technical Paper Publication. IPC2018-78111

Robert M Andrews, ROSEN UK, Newcastle upon Tyne, United Kingdom, Mark Stephens, C-FER Technologies, Edmonton, AB, Canada, Malcolm Carr, Crondall Energy Subsea, Cramlington, United Kingdom, Johannes Brückner, Open Grid Europe GmbH, Essen, Germany

4:00pm The Effect of Ground Displacement and Stress Relief on Pipeline Behaviour; A Case Study

Technical Paper Publication. IPC2018-78245

Hamid Karimian, BGC Engineering Inc., Vancouver, BC, Canada, Chris Campbell, BGC Engineering Inc, Vancouver, BC, Canada, Chris Blackwell, Colin Dooley, Alliance Pipeline, Calgary, AB, Canada, Pete Barlow, BGC Engineering Inc., Edmonton, AB, Canada

WEDNESDAY, SEPTEMBER, 26

6-2 STRAIN CAPACITY AND BURST PRESSURE

6-2-2 STRAIN CAPACITY AND BURST PRESSURE - II

Telus, Telus Glen 208/209 8:30am - 10:00am

Session Chair: *Millan Sen, Enbridge Pipelines Inc., Edmonton, AB, Canada*

Session Co-Chair: *Da-Ming Duan, Trans Canada, Calgary, AB, Canada*

8:30am Tensile and Compressive Strain Capacity in the Presence of Corrosion Anomalies

Technical Paper Publication. IPC2018-78802

Honggang Zhou, Yong-Yi Wang, Center for Reliable Energy Systems, Dublin, OH, United States, Jason Bergman, C-FER Technologies, Edmonton, AB, Canada, Steve Nanney, PHMSA Southwest Region — US DOT, Houston, TX, United States, Mark Stephens, C-FER Technologies, Edmonton, AB, Canada

9:00am Burst Pressure of Pipelines with Corrosion

Anomalies under High Longitudinal Strains

Technical Paper Publication. IPC2018-78803

Honggang Zhou, Yong-Yi Wang, Center for Reliable Energy Systems, Dublin, OH, United States, Mark Stephens, Jason Bergman, C-FER Technologies, Edmonton, AB, Canada, Steve Nanney, PHMSA Southwest Region — US DOT, Houston, TX, United States

9:30am Influence of Material Heterogeneity on the Strain Capacity of Pipelines

Technical Paper Publication. IPC2018-78397

Susanne Hoehler, Andreas Mondry, Salzgitter Mannesmann Forschung GmbH, Duisburg, Germany, Christoph Kalwa, EUROPIPE GmbH, Muelheim an der Ruhr, Germany, Kaveh Samadian, Soete Laboratory, Gent University, Zwijnaarde, Belgium, Wim De Waele, Ghent University, Zwijnaarde BE9052, Belgium, Stijn Hertelé, Ghent University, Zwijnaarde, Belgium

THURSDAY, SEPTEMBER, 27

6-2 STRAIN CAPACITY AND BURST PRESSURE

6-2-3 STRAIN CAPACITY AND BURST PRESSURE - III

Telus, Telus Glen 208/209 8:30am - 10:00am

Session Chair: *Mark Stephens, C-FER Technologies, Edmonton, AB, Canada*

Session Co-Chair: *Satoshi Igi, JFE STEEL CORPORATION, Kurashiki, Japan*

8:30am Burst Pressure Of Wrinkles Under High Longitudinal Strain

Technical Paper Publication. IPC2018-78804

Honggang Zhou, Yong-Yi Wang, Center for Reliable Energy Systems, Dublin, OH, United States, Steve Nanney, PHMSA Southwest Region — US DOT, Houston, TX, United States

9:00am Effect of UOE Forming Process on the Buckling Strains of Steel Pipes

Technical Paper Publication. IPC2018-78131
Majid Tanbakuei Kashani, SKC Engineering (An Applus+ Company), Coquitlam, BC, Canada, Magdi Mohareb, University of Ottawa, Ottawa, ON, Canada, Mahyar Asadi, Mathew Smith, SKC Engineering (An Applus+ Company), Surrey, BC, Canada

6-1 STRAIN DEMAND AND ASSESSMENT

6-1-3 STRAIN DEMAND AND ASSESSMENT - III

Telus, Telus Glen 208/209 10:30am - 12:00pm

Session Chair: *Nader Yoosef-Ghods, Enbridge Pipelines Inc., Edmonton, AB, Canada*

Session Co-Chair: *Bo WANG, Center for Reliable Energy Systems, Dublin, OH, United States*

10:30am Landslide Pipe-Soil Interaction: State of the Practice

Student Paper Publication. IPC2018-78434

Geoffrey N. Eichhorn, Stuart K. Haigh, University of Cambridge, Cambridge, United Kingdom

TRACK 7 RISK AND RELIABILITY

TUESDAY, SEPTEMBER, 25

7-7 RIS K AND RELIABILITY

7-7-3 HISTORICAL DATA ANALYSIS

Telus, Telus MacLeod E4 10:30am - 12:00pm

Session Chair: *Jason Skow, Integral Engineering, Edmonton, AB, Canada*

Session Co-Chair: *Robin Magelky, Integrity Plus, Fort Collins, CO, United States*

10:30am Statistical analyses of incidents on onshore hazardous liquid pipelines based on PHMSA database

Technical Paper Publication. IPC2018-78528

Shengli Iiu, Yongtu Liang, Xiao Wang, Dong Han, China University of Petroleum-Beijing, Beijing,

11:00am A Brazilian Pipeline Incident Database - The Petrobras and Transpetro Initiative

Technical Paper Publication. IPC2018-78584

Douglas Alves, PETROBRAS, Rio de Janeiro, RJ, Brazil, Ana Bahiense, Michelle Bastos, TRANSPETRO, Rio de Janeiro, RJ, Brazil, Cassiano Borges, PETROBRAS, Rio de Janeiro, RJ, Brazil, Gilson Lima, UFF, Niterói, RJ, Brazil

11:30am An Update to the Recommended UKOPA External Interference Frequency Prediction Model & Pipeline Damage Distributions

Technical Paper Publication. IPC2018-78767

Graham Goodfellow, Chris Lyons, Pipeline Integrity Engineers, Newcastle Upon Tyne, Tyne & Wear, United Kingdom, Susannah Turner, Fraser Gray, Highgrade Associates, Newcastle upon Tyne, Tyne and Wear, United Kingdom, Simon Joyce, SGN, Horley, Surrey, United Kingdom

7-7 RIS K AND RELIABILITY

7-7-1A CONSEQUENCE ASSESSMENT

Telus, Telus MacLeod E4 1:30pm - 3:00pm

Session Chair: *Graham Goodfellow, Pipeline Integrity Engineers, Newcastle Upon Tyne, Tyne & Wear, United Kingdom* Session Co-Chair: *Dan Ferguson, Enbridge Pipelines, Inc., Edmonton, AB, Canada*

1:30pm Assessment Of The Threat From Wildfires On Above Ground Natural Gas Facilities

Technical Paper Publication. IPC2018-78059

Clive Robinson, Zoë Wattis, DNV GL, Loughborough, Leicestershire, United Kingdom, Colin Dooley, Sladjana Popovic, Alliance Pipeline, Calgary, AB, Canada

2:00pm Development and Execution of Consequence Assessment for Liquid Pipeline Facilities

Technical Paper Publication. IPC2018-78180

Chowdhury Mohammed Refaul Ferdous, Chris Beaudin, Anthony Payoe, Lily Li, Enbridge Pipeline Inc., Edmonton, AB, Canada

2:30pm Development Of Empirical Method To Calculate Natural Gas Pipelines Rupture Exposure Radius

Technical Paper Publication. IPC2018-78272

Abdulaziz Ababtain, Saudi Aramco, Dhaharan, Saudi Arabia, Arafat Aloqaily, Saudi Aramco, Dhahran, Saudi Arabia

7-7 RIS K AND RELIABILITY

7-7-1B CONSEQUENCE ASSESSMENT

Telus, Telus MacLeod E4 3:30pm - 5:00pm

Session Chair: *Dan Ferguson, Enbridge Pipelines, Inc., Edmonton, AB, Canada*

Session Co-Chair: *Graham Goodfellow, Pipeline Integrity Engineers, Newcastle Upon Tyne, Tyne & Wear, United Kingdom*

3:30pm CO2SAFE-ARREST - A full-scale burst test research project for carbon dioxide pipelines Paper 3: Dispersion modelling

Technical Paper Publication. IPC2018-78530

Ajit Godbole, Xiong Liu, Guillaume Michal, University of Wollongong, Wollongong, NSW, Australia, Cheng Lu, Univ of Wollongong, Wollongong, NSW, Australia, Clara Huescar Medina, DNV GL, Gilsland, Cumbria, United Kingdom

Technical Tracks

4:00pm Pipeline Dent Fatigue Crack Leak Rate For Liquids Pipelines And The Application To Release Consequence Assessment

Technical Paper Publication. IPC2018-78716
Sanjay Tiku, BMT Fleet Technology Limited, Ottawa, ON, Canada, *Aaron Dinovitzer*, BMT Fleet Technology, Ottawa, ON, Canada, *Mark Piazza*, Colonial Pipeline Company, Alpharetta, GA, United States, *Binoy John*, BMT Fleet Technology Limited, Ottawa, ON, Canada, *Vlado Semiga*, Bmt Fleet Tech Ltd, Kanata, ON, Canada

WEDNESDAY, SEPTEMBER, 26

7-7 RIS K AND RELIABILITY

7-7-6 GEOHAZARDS, DENTS AND OTHER I

Telus, Telus MacLeod E4 8:30am - 10:00am

Session Chair: *Guy Desjardins*, Desjardins Integrity Ltd, Calgary, AB, Canada

8:30am Third-Party Damage Model for Gas Distribution Pipelines

Student Paper Publication. IPC2018-78400
Joseph Santarelli, Wenxing Zhou, University of Western Ontario, London, ON, Canada, *Carrie Dudley-Tatsu*, Union Gas Limited, Chatham, ON, Canada

9:00am Semi-Quantitative Reliability-Based Ranking Method for Assessment of Pipeline Dents with Stress Risers

Technical Paper Publication. IPC2018-78156
Douglas Langer, Enbridge, Edmonton, AB, Canada, *Sherif Hassanien*, Enbridge, Liquids Pipelines, Edmonton, AB, Canada, *Janine Woo*, Enbridge, Edmonton, AB, Canada

9:30am Estimating Landslide Induced Probability of Failure to Pipelines Using a Structured Reductionist Approach

Technical Paper Publication. IPC2018-78157
Richard Guthrie, Stantec, Calgary, AB, Canada, *Emma Reid*, Stantec, Burnaby, BC, Canada

7-7 RIS K AND RELIABILITY

7-7-7 GEOHAZARDS, DENTS AND OTHER II

Telus, Telus MacLeod E4 10:30am - 12:00pm

Session Chair: *Guy Desjardins*, Desjardins Integrity Ltd, Calgary, AB, Canada

10:30am Limit States Design Checks for Geotechnical Loads

Technical Paper Publication. IPC2018-78569
Maher Nessim, *Smitha Koduru*, C-FER Technologies, Edmonton, AB, Canada

11:00am Geohazard Management Approach within Safety Case

Technical Paper Publication. IPC2018-78678
Dario Zapata, Enbridge, Edmonton, AB, Canada, *Ingrid Pederson*, *Sean Keane*, Enbridge Pipelines Inc, Edmonton, AB, Canada

11:30am Development of Strain Demand and Capacity Distributions to Use in Limit States Design For Geotechnical Loads

Technical Paper Publication. IPC2018-78784
Smitha Koduru, *Maher Nessim*, C-FER Technologies, Edmonton, AB, Canada

THURSDAY, SEPTEMBER, 27

7-7 RIS K AND RELIABILITY

7-7-5A RISK AND RELIABILITY II

Telus, Telus MacLeod E4 8:30am - 10:00am

Session Chair: *Shahani Kariyawasam*, Transcanada, Calgary, AB, Canada

8:30am System Wide Risk Assessment in the 21st Century - TransCanada's Approach

Technical Paper Publication. IPC2018-78657
Aleksandar Tomic, TransCanada, Calgary, AB, Canada, *Terry Huang*, TransCanada Pipelines Ltd, Calgary, AB, Canada, *Shahani Kariyawasam*, Transcanada, Calgary, AB, Canada

9:00am Guidelines for Quantitative Risk Model Development

Technical Paper Publication. IPC2018-78783
Smitha Koduru, C-FER Technologies, Edmonton, AB, Canada, *Jason Skow*, Integral Engineering, Edmonton, AB, Canada

9:30am Updates on Pipeline Integrity Reliability Targets

Technical Paper Publication. IPC2018-78378
Alex Nemeth, Enbridge Pipelines Inc, Edmonton, AB, Canada, *Sherif Hassanien*, Enbridge, Liquids Pipelines, Edmonton, AB, Canada, *Len LeBlanc*, Enbridge Pipelines Inc, Edmonton, AB, Canada

7-7 RIS K AND RELIABILITY

7-7-5B RISK AND RELIABILITY II

Telus, Telus MacLeod E4 10:30am - 12:00pm

Session Chair: *Shahani Kariyawasam*, Transcanada, Calgary, AB, Canada

10:30am A Methodology to Assess the Gas Supply Capacity and Gas Supply Reliability of a Natural Gas Pipeline Network System

Student Paper Publication. IPC2018-78173

Weichao Yu, *Kai Wen*, *Yichen Li*, China University of Petroleum, Beijing, Beijing, China, *Weihe Huang*, China National Petroleum Corporation, Beijing, China, *Jing Gong*, China University of Petroleum- Beijing, Beijing, China

11:00am Risk Assessment for Small Diameter Piping for Liquid Pipeline Facilities

Technical Paper Publication. IPC2018-78182

Chowdhury Mohammed Refaul Ferdous, Enbridge Pipeline Inc., Edmonton, AB, Canada, *Amanda Kulhawy*, *Jessica Farrell*, Enbridge Pipelines Inc., Edmonton, AB, Canada, *Chris Beaudin*, *Anthony Payoe*, *Lily Li*, Enbridge Pipeline Inc., Edmonton, AB, Canada

11:30am A Multi-module Systemic Approach for the Supply Reliability Analysis of Multi-product Pipeline under Pump Units Failure

Technical Paper Publication. IPC2018-78367
Xingyuan Zhou, *Qi Liao*, *Mengyun Lv*, National Engineering Laboratory for Pipeline Safety, Beijing, China, *Chengcheng Xiang*, University of Southern California, Los Angeles, CA, United States, *Haoran Zhang*, *Yongtu Liang*, National Engineering Laboratory for Pipeline Safety, Beijing, China

7-7 RIS K AND RELIABILITY

7-7-4A RISK AND RELIABILITY I

Telus, Telus MacLeod E4 1:30pm - 3:00pm

Session Chair: *Sherif Hassanien*, Enbridge, Liquids Pipelines, Edmonton, AB, Canada

1:30pm Effective risk management for in-service pipelines: achieving ALARP by pressure management and slab protection

Technical Paper Publication. IPC2018-78170
Francis Carroll, APA Group, Brisbane, Queensland, Australia, *Jan Hayes*, RMIT University, Melbourne, Victoria, Australia

2:00pm Use of Risk and Engineering Assessments to Improve Safety in Class Location Changes South American Case Study

Technical Paper Publication. IPC2018-78302

John Erick Malpartida Moya, Compañía Operadora De Gas Del Amazonas, Lurin, Select State/Province, Peru

2:30pm Developing a Full Risk Picture for Gas Pipeline Consequences

Technical Paper Publication. IPC2018-78217

Ken Oliphant, David Joyal, Vida Meidanshahi, JANA Corporation, Aurora, ON, Canada

7-7 RISK AND RELIABILITY

7-7-4B RISK AND RELIABILITY I

Telus, Telus MacLeod E4 3:30pm - 5:00pm

Session Chair: *Sherif Hassaniien, Enbridge, Liquids Pipelines, Edmonton, AB, Canada*

3:30pm Quantitative Risk Assessment Techniques based on Uncertainty Theory for Natural Gas Distribution Station

Technical Paper Publication. IPC2018-78260

Jiao Zhou, XINGYU PENG, Dongchi Yao, Southwest Petroleum University, Chengdu, Sichuan, China

4:00pm Application of In-Line Inspection and Failure Data to Develop Risk Model Scores for Unpiggable Pipelines

Technical Paper Publication. IPC2018-78735

Yannick Beauregard, NOVA Chemicals, Calgary, AB, Canada, Aaron Woo, TransCanada Pipelines, Calgary, AB, Canada, Terry Huang, TransCanada Pipelines Ltd, Calgary, AB, Canada

4:30pm The use of sensitivity analyses for optimum data gathering in risk assessments

Technical Paper Publication. IPC2018-78402

Francois Ayello, DNV GL, Dublin, OH, United States, Hao Chen, DNV GL, DUBLIN, OH, United States, Narasi Sridhar, DNV GL, Dublin, OH, United States, Lydia Ruiz, Southern California Gas Company, Los Angeles, CA, United States, Travis Sera, Southern California Gas Co., Los Angeles, CA, United States, Mari Shironishi, Socal Gas, Los Angeles, CA, United States

FRIDAY, SEPTEMBER, 28

7-7 RISK AND RELIABILITY

7-7-2A CORROSION AND CRACKS

Telus, Telus MacLeod E1 8:30am - 10:00am

Session Chair: *Dan Williams, Dynamic Risk Assessment Systems Inc., Calgary, AB, Canada*

Session Co-Chair: *Samah Hasan, Dynamic Risk, Calgary, AB, Canada*

8:30am Corrosion Growth Modeling based on Mass In-line Inspection Data using Variational Inference

Technical Paper Publication. IPC2018-78081

Monica Birkland, Markus Dann, University of Calgary, Calgary, AB, Canada

9:00am The application of Bayesian network threat model for corrosion assessment of pipeline in design stage

Technical Paper Publication. IPC2018-78388

Guanlan Liu, Francois Ayello, DNV GL, Dublin, OH, United States, Jiana Zhang, DNV GL, Parth, Western Australia, Australia, Peter Stephens, SHELL, Perth, Western Australia, Australia

9:30am Development of Reliability-based Criteria for Corrosion Assessment

Technical Paper Publication. IPC2018-78605

Riski Adiando, Maher Nessim, Dongliang Lu, C-FER Technologies, Edmonton, AB, Canada

7-7 RISK AND RELIABILITY

7-7-2B CORROSION AND CRACKS

Telus, Telus MacLeod E1 10:30am - 12:00pm

Session Chair: *Dan Williams, Dynamic Risk Assessment Systems Inc., Calgary, AB, Canada*

Session Co-Chair: *Samah Hasan, Dynamic Risk, Calgary, AB, Canada*

10:30am A Robust Risk Assessment Model for Stress Corrosion Cracking

Technical Paper Publication. IPC2018-78694

Mohammad Al-Amin, TransCanada Corporation, Calgary, AB, Canada, Shahani Kariyawasam, TransCanada, Calgary, AB, Canada, Elvis Sanjuan Riverol, TransCanada Corporation, Calgary, AB, Canada

11:00am Effect Of Model Error On Reliability Analysis Of Surface Cracks

Technical Paper Publication. IPC2018-78237

Mahmoud Ibrahim, Karmun Doucette, Enbridge, Edmonton, AB, Canada, Sherif Hassaniien, Enbridge, Liquids Pipelines, Edmonton, AB, Canada, Douglas Langer, Enbridge, Edmonton, AB, Canada

TRACK 8 NORTHERN OFFSHORE AND PRODUCTION PIPELINES

TUESDAY, SEPTEMBER, 25

8-2 OFFSHORE PIPELINES AND RISERS

8-2-1 OFFSHORE 1

Telus, Telus Glen 205 3:30pm - 5:00pm

Session Chair: *Ken Macdonald, University of Stavanger, Stavanger, Norway*

3:30pm Case Studies Highlighting Rapid Subsea Repair Methods of Pressurised Pipelines

Technical Paper Publication. IPC2018-78105

Dale Millward, STATS Group, Kintore, Aberdeenshire, United Kingdom

4:00pm Program to Evaluate Readiness Levels of Pipeline-oriented Technologies

Technical Paper Publication. IPC2018-78238

Chris Alexander, ADV Integrity, Inc., Magnolia, TX, United States, Satish Kulkarni, Chevron Energy Technology Company, Houston, TX, United States

4:30pm Advanced Sawl Developments And Optimizations For High Toughness, Low Hardness And Sour Environment

Technical Paper Publication. IPC2018-78108

Fernando Silva, Fabio Arroyo, Tenaris Confab, Pindamonhangaba, Sao Paulo, Brazil, Philippe Darcis, Dalmine S.p.A., Dalmine, BG, Italy, Marcelo Fritz, Marcelo Salani, Adriano Silva, Tenaris Confab, Pindamonhangaba, São Paulo, Brazil

FRIDAY, SEPTEMBER, 28

8-1 N ORTHERN AND PRODUCTION PIPELINES

8-1-1A NORTHERN 1

Telus, Telus Glen 205 8:30am - 10:00am

Session Chair: *Ken Macdonald*, University of Stavanger, Stavanger, Norway

Session Co-Chair: *Te Ma*, Kinder Morgan Canada Inc., Calgary, AB, Canada

8:30am Harmonic analysis of the pipeline route thermal profile

Technical Paper Publication. IPC2018-78342

Alla Vladova, Russian Academy of Sciences, Moscow, Russia, *Yury Vladov*, Ural Branch, Russian Academy of Sciences, Orenburg, Select State/Province, Russia

9:00am Optimization of Hydrate Management in Deepwater Gas Well Testing Operations

Student Paper Publication. IPC2018-78269

Shangfei Song, *Bohui Shi*, China University of Petroleum-Beijing, Beijing, China, *Weichao Yu*, China University of Petroleum, Beijing, Beijing, China, *Wang Li*, PetroChina Southwest Pipeline Company, Sichuan, China, *Jing Gong*, China University of Petroleum- Beijing, Beijing, China

8-1 N ORTHERN AND PRODUCTION PIPELINES

8-1-1B NORTHERN 1

Telus, Telus Glen 205 10:30am - 12:00pm

10:30am Comparative Study on Atmospheric Temperature Models for the Buried Hot Oil Pipeline

Student Paper Publication. IPC2018-78451

Qing Yuan, China University of Petroleum, Beijing, Beijing, China, *Zhiming Wu*, *Wang Li*, PetroChina Southwest Pipeline Company, Sichuan, China, *Bo Yu*, Beijing Institute of Petrochemical Technology, Beijing, China, *Changchun Wu*, China University of Petroleum, Beijing, Beijing, China

11:00am A Simplified Simulation Model of Buried Hot Oil Pipeline Temperature Field during Shutdown

Technical Paper Publication. IPC2018-78812

Lei Chen, *Junjie Gao*, *Gang Liu*, *Cheng Chen*, China University of Petroleum, Qingdao, China

TRACK 10 POSTER SESSION

TUESDAY, SEPTEMBER, 25

10-1 POSTER SESSION

10-1-1 POSTER SESSION 1

Telus, MacLeod Hall A 3:30pm - 5:00pm

Session Chair: *Sarah Vandaiyar*, TransCanada, Calgary, AB, Canada

3:30pm Water Protection - Metropolitan Region Of The State Of São Paulo - Brazil

Poster Presentation. IPC2018-78031

Ricardo Sambugaro, *Valdir Pereira Ramos Filho*, Milton Pinto de Magalhães, Petrobras Transporte S.A. - TRANSPETRO, São Caetano do Sul, Brazil

3:36pm An Internet of Things (IoT) project based on a text messaging (SMS) gateway applied to a pipeline SCADA system

Poster Paper Publication. IPC2018-78044

MARCO ANTONIO DIAS BEZERRA, PETROBRAS, Salvador, BA, Brazil, *MATEUS DA COSTA SILVA CABRAL*, TRANSPETRO, Ipojuca, PE, Brazil, *EDSON RODRIGUES SANTIAGO*, TRANSPETRO, Salvador, BA, Brazil

3:42pm Failure Assessment Of The Gas Pipeline By Considering The Geometric Constraint Effect

Poster Paper Publication. IPC2018-78135

Hui Feng, *Chunyong Huo*, *Qiang Chi*, CNPC Tubular Goods Research Institute, Xian, China, *Junnan Lv*, Xi'an Jiaotong University, Xi'an, China, *Qun Li*, Xian Jiaotong University, Xian, China

3:48pm Robust Pipeline Coatings Inspired by the Structures of Nacre

Poster Paper Publication. IPC2018-78178

Zachary Kockerbeck, University of Calgary, Calgary, AB, Canada, *Majid Tabkhpaz*, University of Calgary, Calgary, AB, Canada, *Simon Park*, *Ronald Hugo*, University of Calgary, Calgary, AB, Canada

3:54pm Investigation on Drag Reduction Through Dimple Machining

Poster Paper Publication. IPC2018-78179

Majid Tabkhpaz, University of Calgary, Calgary, AB, Canada, *Lindsay Howell*, University of Calgary Schulich School of Engineering, Calgary, AB, Canada, *Zachary Kockerbeck*, *Simon Park*, *Ronald Hugo*, University of Calgary, Calgary, AB, Canada

4:00pm Addressing the Challenges of Decommissioning Pipelines

Poster Presentation. IPC2018-78185

Chris Bayley, *Landon Lonsberry*, Allnorth Consultants Limited, Sherwood Park, AB, Canada

4:06pm Compression Capacity And The Seismic Integrity Of Locally Deformed Line Pipes

Poster Paper Publication. IPC2018-78320

Atsushi Sukanuma, Nagoya University, Nagoya, Japan, *Junpei Kono*, *Masataka Hayashiguchi*, TOHO GAS Co., Ltd., Nagoya, Japan

4:12pm Practical Application of Remote Sensing Technology Using a Multi-Tiered Approach to Support Natural Disaster Response and PHMSA Post-Storm Assessment Requirements

Poster Presentation. IPC2018-78454

Gillian Robert, *Nic Svacina*, MDA Geospatial Services Inc., Ottawa, ON, Canada, *Lesley Gamble*, MacDonald, Dettwiler and Associates, Ottawa, ON, Canada, *Mark Piazza*, Colonial Pipeline Company, Alpharetta, GA, United States, *Karineh Gregorian*, SoCalGas, Los Angeles, CA, United States

4:18pm Yield Strength Estimation Using a Nearly-Flat Instrumented Indenter

Poster Presentation. IPC2018-78568

Abdelbaset Midawi, University of Waterloo, Waterloo, ON, Canada, *Hari Simha*, School of Engineering, Guelph, ON, Canada, *Adrian Gerlich*, University of Waterloo, Waterloo, ON, Canada

4:24pm Integrating a pipeline odorant system using open source software, including a Kalman Filter solution to virtualize a flow rate indicator

Poster Paper Publication. IPC2018-78643

MARCO ANTONIO DIAS BEZERRA,

*PETROBRAS, Salvador, BA, Brazil, **SIDNEY C.***

***DA SILVA,** TRANSPETRO, Ipojuca, PE, Brazil,*

SILVIO C. SILVA, TRANSPETRO, Santos,

SP, Brazil

4:30pm A numerical corrosion rate prediction method for external corrosion of buried pipeline

Poster Presentation. IPC2018-78687

Luis Quej, Antonio Contreras, Instituto Mexicano del Petroleo, Ciudad de Mexico, Mexico,

Hongbo Liu, Mexican Institute of

Petroleum, Ciudad de Mexico, Mexico, **Jorge**

Luis Alamilla, Instituto Mexicano del Petroleo,

Ciudad de Mexico, Mexico, **Eliceo Sosa**

Hernandez, Mexican Institute of Petroleum,

Ciudad de Mexico, Ciudad de Mexico, Mexico

4:36pm Development Of Large Diameter Heavy Wall Seamless Tee Fitting Of Wphy-X80 Grade

For Low Temperature Pipeline Station Application

Poster Paper Publication. IPC2018-78748

YU Liu, China Petroleum Pipeline Research

Institute Co. Ltd, Langfang, Hebei, China, **Peng**

Zhu, Lijun Yan, China Petroleum Pipeline

Machinery Manufacture Co. Ltd, Langfang,

Hebei, China, **Tao Han, Yezheng Li, Zhanghua**

Yin, China Petroleum Pipeline Research Institute

Co. Ltd, Langfang, Hebei, China, **Qiang Li,**

Hebei University of Technology, Tianjin, China

4:42pm Pipeline Open Data Standard Next Generation Data Model

Poster Paper Publication. IPC2018-78753

Peter Veenstra, TRC, Kansas City, MO,

United States

WEDNESDAY, SEPTEMBER, 26

10-1 POSTER SESSION

10-1-2 POSTER SESSION 2

Telus, MacLeod Hall A 10:30am - 12:00pm

Session Chair: **Sarah Vandaiyar,** TransCanada, Calgary, AB, Canada

MONDAY, SEPTEMBER 24, 2018

Full Day Tutorials

TUTORIAL #1: PIPELINE INTEGRITY EVALUATIONS & ENGINEERING ASSESSMENTS

PRESENTER: ANDREW GOSHAM

Description:

An introduction to the assessment of defects in pipelines. Defect types will be discussed, with emphasis on their potential to result in failure. The background to the commonly applied defect assessment methods will be presented, ranging from simple, quick assessments, to more detailed 'fitness-for-purpose' analysis.

- Introduction to pipeline defects, and why pipelines fail
- Fundamental pipeline defect failure relationships
- How to assess corrosion defects
- How to assess gouges and dents
- How to assess weld defects
- Pipeline integrity

TUTORIAL #2: FRACTURE MECHANICS

PRESENTER: TOM BUBENIK AND STEVEN POLASIK

Description:

An overview of fracture mechanics principles including:

- Basic materials properties and their application to design
- Linear elastic fracture mechanics
- Elastic-plastic fracture mechanics
- Fracture-toughness testing
- Fracture behavior of steels
- Fatigue crack growth
- Environmentally assisted crack growth
- Predicting failure stress in pipelines
- Calculation of remaining life for pipelines
- Use in pipeline failure analysis

TUTORIAL #3: PIPELINE MATERIALS 101

PRESENTER: STEPHEN RAPP

Description:

An overview of the mechanical properties of pipeline materials and how they relate to pipeline integrity:

1. Vintage Materials

- Historical Overview of Manufacturing Processes
- Chronology of API 5L
- US Regulatory Advisory Notices of Vintage Pipe (Liquids/Gas)
- Current Industry Activities With Respect to Vintage Pipelines
- Chronology of Field Joining Practices

2. Modern Materials

- Overview of applicable specifications
- Pipe Materials Selection and Design
- Responsible Procurement Practices, Legacy Problems

- Purchasing Specification Enhancements

TUTORIAL #4: AN ENGINEERING OVERVIEW OF OFFSHORE PIPELINE DESIGN

PRESENTER: MARK MARLEY, KEN MACDONALD

Description:

An overview of offshore pipeline engineering.

Topics include:

- Risk-based design principles
- Review of design codes
- Load calculation and limit state design
- Pipeline materials, welding and corrosion protection
- Offshore pipeline construction; lay barge; reeling; tow; trenching and burial
- On-bottom stability and span assessment and correction
- Upheaval/lateral buckling
- Operation, inspection, re-qualification and repair

TUTORIAL #5: PIPELINE DESIGN AND CONSTRUCTION

PRESENTER: ALAN MURRAY

Description:

Overview of the following fundamentals:

- Design Sequence from Concept to Detailed Design
- Route Selection, Permitting and Public Consultation
- Geotechnical Considerations
- Pipeline Hydraulics: Design of Compressible and Incompressible systems
- Compressor and Pump Selection Considerations
- Pipe Material Selection, Metallurgy, Manufacture, Testing
- Pipe Protection Requirements (Coatings and Cathodic Protection)
- Overview of Working Stress and Strain Based Design
- Advanced Construction and Inspection Techniques.
- Specialty Construction: Directional Drilling, Micro tunnelling.

TUTORIAL #6: GEOHAZARD CONCERNS IN PIPELINE DESIGN AND OPERATION

PRESENTER: ALEX BAUMGARD, MARK LIER

Description:

The purpose of this workshop is to emphasize the importance of identifying and managing the impact of geohazards, such as landslides and river erosion on pipeline feasibility and operations. This course is intended for engineers and project managers involved in pipeline routing, design, and operations and pipeline integrity.

Major themes will include:

- Introduction to geohazards
- The significance of geohazards on pipeline integrity
- Pipeline regulations concerning geohazards
- How to identify and avoid geohazards
- How to prioritize and manage geohazards
- Monitoring Strategies – Determining when to monitor a site
- Mitigation Strategies – How to protect the pipeline against

MONDAY, SEPTEMBER 24, 2018

Half Day Tutorials – PM

TUTORIAL #14: PIPELINE IN-LINE INSPECTION – VALIDATION AND USE OF RESULTS

PRESENTER: PHILL NIDD

Description:

This tutorial will address what companies need to do after the data is received from the ILI vendor. The checks that should be done to determine whether the inspections meet the contractual quality communicated by the vendor (ex. +/- 10%, 80% of the time). In addition to the analysis of reporting quality, the session will also discuss how to use tool tolerance in making decisions based on tool data (ex. Re-inspection intervals). Issues such as probability of detection and probability of indication will also be covered.

TUTORIAL #15: PIPELINE STRESS ANALYSIS

PRESENTER: ROBERT THOM

Description:

This session will focus on the theoretical and practical aspects of piping stress analysis. Topics to be covered include pipeline monitoring and analysis related to surface loading and geotechnical concerns.

TUTORIAL #16: RECOMMENDED PRACTICES FOR PIPELINE REPAIR

PRESENTER: ROBERT SMYTH

Description:

Discussion on pipeline integrity issues, repair and new technologies with a focus on:

- Repair methods
- Alternative defect assessment
- Evaluation of critical defect size
- Hydrostatic testing and defect growth

WEDNESDAY, SEPTEMBER 24, 2018

Half Day Tutorials - PM

TUTORIAL #17: FACILITIES INTEGRITY MANAGEMENT

PRESENTER: MONICA HERNANDEZ

Description:

Managing Facility Integrity. Topics to be discussed include:

- Risk management
- Integrity planning
- Maintenance optimization

TUTORIAL #18: ROOT CAUSE ANALYSIS OF PIPELINE FAILURES

PRESENTER: PHILLIP NIDD

Description:

The objective of a Root Cause Analysis (RCA) is to determine the direct cause and root cause(s) of an unexpected event (such as a pipeline operational failure or product release), identify the contributing factors, and provide recommendations that when implemented, will be effective in preventing recurrence of this type of failure. This tutorial will describe many of the different tools, processes, and philosophies for performing a complete RCA. Discussed is how the application of such industry tools as TapRooT, MORT, PAS 55 during the RCA process, can provide consistency and reliability in defining best practice benchmarks. The benefit of an effective RCA applied as a learning tool and as a key element within a Management System continuous improvement process is also discussed.

WEDNESDAY, SEPTEMBER 24, 2018

Half Day Tutorials - PM

TUTORIAL #19: PIPELINE MAINTENANCE WELDING

PRESENTER: BILL BRUCE

Description:

Topics to be discussed include:

- In-Service Welding
- Burn through and Safety Related Concerns
- Hydrogen Cracking Concerns
- Full-Encirclement Repair Sleeves
- Hot Taps Branch Connections
- Simple Approach to Hot Tap and Repair Sleeve Welding

TUTORIAL #20: FUNDAMENTAL GUIDELINES TO EXECUTE PIPELINE PIGGING RUNS

PRESENTER: JOHN MORROW, PJ ROBINSON

Description:

This tutorial is the first step in building a foundation for pipeline operations and engineering personnel with the “know how” knowledge to plan, prepare, and execute pigging operations in a safer and more cost effective manner. The following outline of the Guidelines used is divided into six (6) modules:

- Basic pipeline knowledge
- Purpose of pigging
- Types of pigs
- Factors affecting pigging
- Launch and receive procedures
- Pigging excavation plans
- Case studies



INTERNATIONAL PIPELINE expo

SEPTEMBER 25 - 27, 2018

Calgary Telus Convention Centre, North Building
Upper Level – Halls C, D, E
Lower Level – Telus Rooms 101-109

Show Hours

Tuesday: 12pm – 6pm
Wednesday: 10am – 6pm
Thursday: 10am – 4pm

Hosted Caesar Bar

Stop by Telus Rooms on the Main Level to enjoy a drink and network with your colleagues.

Telus Rooms – Main Level

Tuesday: 12pm – 3pm
Wednesday: 12pm – 3pm
Thursday: 12pm – 3pm

Industry Receptions

Tuesday: 4pm – 6pm
Wednesday: 4pm – 6pm

Halls CDE – Upper Level

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Monday, September 24 through Friday, September 28, 2018.

In 2018, the Pipeline Industry will gather once again in Calgary to exchange ideas and information on the latest technological developments.

Please visit our websites on a regular basis for the most up to date details:

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We're looking for volunteers who want to get involved. The Conference attracts delegates from over 30 countries and continues to grow. Visit our information table on the third floor of The Hyatt convention area outside the Stephen Room for more details. or send an email to info@ipcyyc.

The Calgary Pipeline Best Paper Award

IBP and IPC have a reciprocal arrangement and the best paper (and winner of the Calgary Award) at IBP 2017 in Rio was authored by Victor G. Silva¹, Gustavo L. Vaz², Pedro A. Ferreira³, Anna Ramus⁴, Neusvaldo L. de Almeida.

Their paper, entitled EVALUATION OF NON-INTRUSIVE SYSTEMS FOR INTERNAL CORROSION MONITORING will be presented by Victor G. Silva in Session in Session 3-2-1 to be held from 1:30 PM – 5:00 PM on Tuesday, September 25, 2018.

Abstract

Internal corrosion is one of the major problems affecting the integrity of pipelines and process equipment. For this reason, the internal corrosion monitoring becomes essential to anticipate eventual problems and select the most appropriate strategy to mitigate the corrosive process. Due to the problems related to the cost, logistics and safety inherent to coupon and electric resistance (ER) probe retrieving, it is very important to seek alternatives to the current methods, in order to optimize the monitoring tasks. The use of non-intrusive equipment (NIE) to monitor internal corrosion is an alternative that aims to optimize this step, as well as NIE has easy installation and maintenance, higher data reliability and faster results. These systems consist of estimating the trend of the corrosion rate through devices installed on the external side of pipelines without the need of access fittings, unlike conventional techniques. The great advantage of using this technique is the absence of interventions for components retrieving, minimizing operational risks. To evaluate such equipment, tests were carried out under dynamic conditions, varying the fluid characteristics in order to verify the speed of response of some commercial devices, always comparing them to conventional methods (coupon and ER probe). The results showed that the trend of measured corrosion rate obtained by NIE converged with corrosion coupons and ER probe data.

ASME Pipeline Systems Division Best Paper Award (The Rio Pipeline Award)

The IPC 2018 will carry the tradition started in 2002, when the Pipeline Systems Division (PSD) introduced the Rio Pipeline Award to honour the best paper presented at the International Pipeline Conference (IPC).

Selected from among all papers presented during the IPC 2018 technical sessions, the winner shall receive the Rio Pipeline Award at the final luncheon of the Conference on Friday September 28, 2018.

Apart from gaining recognition of having authored the best paper, the PSD has agreed to provide airfare and expenses for the winning author to present his/her paper at the Rio Pipeline Conference & Exposition sponsored by the Brazilian Petroleum Institute (IBP) in Rio de Janeiro in Fall 2019.

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