Technical Tracks

Track 1: Production Pipelines & Flowlines
Track Chair: Brandt Sanregret, Encana Services Company Limited
Track Sponsor: Alberta Energy Regulator

**Topic 1-1: Production Pipelines & Flowlines**

**Session 1-1-1: Coal Bed Methane**
Session Chair: Prabhu Srinivasan, Vermilion Energy
Session Co-Chair: Allan Hobbins, ConocoPhillips Canada
Room: HYATT Doll/Herald
Date: Tuesday, September 30
Time: 10:30 - 11:00

10:30
IPC2014-33278, Topology Analysis and Optimization Design of Coal Bed Methane Gathering System in China
J. Zhou, X. Li, M. Cheng, T. Deng, J. Gong, China University of Petroleum

**11:30**
IPC2014-33208, Combining Speed Control Function and Wye Passage in a Long Subsea Gas Line — A Case Study
H. J. Lindner, ROSEN Technology & Research Center GmbH; H. van Remmerden, ROSEN USA, Inc.; A. Shamgar, Williams

**13:30**
IPC2014-33716, Estimating Service Life of Pipelines Under CO2 Corrosion: Application of a Methodology Based on Fitness for Purpose, Flow Assurance Simulation Tools, Reliability and Probabilistic Data Management to a Venezuelan Pipeline
Y. Peña, C. Sánchez, PDVSA INTEVEP S.A.; O. Chooa, C. NÚñez, Universidad Central de Venezuela

**14:00**
IPC2014-33721, Heat-Traced Pipelines a Double-Containment Solution for a High-Temperature Pipeline
C. Geertsen, ITP InterPipe

**14:30**
IPC2014-33741, Different Failure Modes of Non-Metallic Pipelines at Connections
A. Tatarov, F. Gareau, Skystone Engineering

**15:30**
IPC2014-33743, Failure Analysis of 12" Pipeline Riser
A. Tatarov, F. Gareau, Skystone Engineering

**Session 1-1-2: Production Pipelines Posters**
Session Chair: Mark Piazza, Colonial Pipeline Company
Room: TELUS Macleod Hall A
Date: Poster Session 1, Tuesday, September 30, 13:30 - 17:30
Date: Poster Session 2, Wednesday, October 1, 09:00 - 10:15

**IPC2014-33397**, Numerical Modeling for Steady-State Two Phase Flow in Gas-Condensate Pipeline
Z. Wang, J. Gong, T. Yin, China University of Petroleum

**IPC2014-33276**, The Interwell Pressure Matching Analysis of Different Topologies in the Gathering and Transporting System
J. Zhou, X. Li, M. Cheng, S. Zhou, J. Gong, China University of Petroleum

**Session 1-1-3 Production Pipelines**
Session Chair: Allan Hobbins, ConocoPhillips
Session Co-Chair: Prabhu Srinivasan, Vermilion Energy
Room: HYATT Doll/Herald
Date: Tuesday, September 30
Time: 11:00 - 16:00

**11:00**
IPC2014-33072, Case Study for Releasing Stuck Pig in Non-Metallic Pipeline
A. Al-Khaled, H. Al-Zuwayer, F. Al-Ghanem, Kuwait Oil Company

**11:30**
IPC2014-333252, Considerations in Planning and Managing a Large Software Development Project
D. Milton, ARC Business Solutions Inc.

**13:30**
IPC2014-33433, Development and Prioritization Portfolio of Natural-Gas Compression-Station Projects
L. Mattheus Candian, Petrosas Transporte S.A.; L. da Rosa Alves, Petrosas Transporte S.A.; F. Dupin Pres, Petrosas Transporte S.A.; Transpetro / Universidade Federal de Petrolina

**14:00**
IPC2014-33463, Enhancing Pipeline Research Project Management With Post-Assessment
Y. Wang, L. Zeng, C. Zhao, L. Kang, C. Qian, PetroChina Pipeline Company

**14:30**
IPC2014-33137, Best Execution Practices for Pipeline Projects
R. Klerian-Ramirez, F. Parodi, J. Carr, Independent Project Analysis

**14:30**
IPC2014-33090, Engineering-Economic Characteristics of Gas Pipeline Projects
C. Wu, H. Zhang, X. Xing, China University of Petroleum

**Session 2-1-1: Project Management Session 1**
Session Chair: Rod Trefanenko, PII Pipeline Solutions a GE Oil & Gas and Al Shaheen joint venture
Session Co-Chair: Art Harms, Three Streams Engineering Division Foster Wheeler Ltd.
Room: HYATT Stephen
Date: Wednesday, October 1
Time: 08:30 - 11:30

**08:30**
IPC2014-33517, Procurement Do’s and Don’ts
J. Nielsen, WorleyParsons Canada

**09:00**
IPC2014-33707, Safety in Mountain Field Investigations
S. Benay, WorleyParsons

**09:30**
Y. Ding, CNPC International Chad Ltd.; H. Hao, China National Petroleum Company (CNPC)

**Track 2: Project Management**

**Track Chair: Rod Trefanenko, PII Pipeline Solutions a GE Oil & Gas and Al Shaheen joint venture**

**Session 2-1-1: Project Management Session 1**
Session Chair: Rod Trefanenko, PII Pipeline Solutions a GE Oil & Gas and Al Shaheen joint venture
Session Co-Chair: Art Harms, Three Streams Engineering Division Foster Wheeler Ltd.
Room: HYATT Stephen
Date: Tuesday, September 30
Time: 10:30 - 15:00

**10:30**
IPC2014-33515, Why Project’s Fail (and What Can We Do About It?)
M. Schoenhardt, V. Pardas, M. Marino, Stantec
**Session 2-1-3: Project Management Posters**

*Session Chair: Mark Piazza, Colonial Pipeline Company*

*Room: TELUS Macleod Hall A*

*Date: Poster Session 1*
- Tuesday, September 30, 15:30 - 17:30
- Wednesday, October 1, 09:00 - 10:15

*IPC2014-33190, Improvement Flowing Heavy Crude Oil by Development of Transportation Pipe Network*
- H. Abdou, Agiba Petroleum Company

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**Track 3: Design & Construction**

*Track Chair: Austin Voss, Steel Reef Infrastructure Corp.*
*Track Co-Chair: Ron Burdylo, WorleyParsons Canada*
*Track Co-Chair: Mark McDougall, WorleyParsons Canada*
*Track Sponsor: WorleyParsons*

**Topic 3-1: Design & Construction**

*Session 3-1-1: Geotechnical & Civil*

*Session Chair: Ray Bolvin, Plateau Geotechnical Company*

*Room: TELUS Macleod E1*

*Date: Tuesday, September 30*

*Time: 10:30 - 15:00*

**10:30**
IPC2014-33049, Direct Pipe® as Alternative to HDD in Permeable Soil Conditions
- G. Lang, D. Pfaff, Hemmenknecht AG

**11:00**
IPC2014-33096, When HDD Construction Shifts Happen Insertion of a Casing Sleeve Mitigated a Major Threat to Completion of the Project
Session 3-1-5: Facility & Pipeline Modelling

Session Chair: Mark McDougall, WorleyParsons Canada
Room: TELUS Macleod E1
Date: Thursday, October 2
Time: 08:30 - 11:30

08:30
IPC2014-33018, Models and Methods of Determining the Minimum Stack Metal Temperature During Sonic Blowdown of Natural Gas
C. Hartopper, K. Botros, NOVA Research and Technology Center; E. Abdalgawad, S. Reid, TransCanada Pipelines

09:00
IPC2014-33237, Stress Analysis of Lifting and Lowering-In Process
F. Zhang, Center for Reliable Energy Systems; M. Liu, Y. Wang, CRES; W. Bruce, Det Norske Veritas (U.S.A.)

09:30
IPC2014-33740, Pump Station Design
J. Holmer, Enbridge Pipelines Inc.; M. DeBusman, Jacobs

10:00
IPC2014-33134, A Stress Check Procedure for Pipe Lowering-In Process During Pipeline Construction
D. Duan, T. Jurca, C. Zhou, TransCanada Pipelines

11:00
IPC2014-33287, Venting of a 32 km NG Pipeline: Field Measurements and CFD Simulations
A. Godbole, G. Michal, C. Lu, X. Liu, University of Wollongong; P. Venton, Venton & Associates Pty Ltd; N. Laird, APA Group

Session 3-1-6: General Pipeline Design & Construction

Session Chair: Austin Voss, Steel Reef Infrastructure Corp.
Room: TELUS Macleod E1
Date: Thursday, October 2
Time: 13:30 - 16:00

13:30
M. Nessim, R. Adianto, C-FER Technologies

14:00
IPC2014-33437, Limit States Design for Onshore Pipelines Designing for Hydrostatic Test Pressure and restrained Thermal Expansion
R. Adianto, M. Nessim, C-FER Technologies

14:30
IPC2014-33737, An Integrated Approach to Welding, AUT and ECA for Pipeline Construction
D. Horsey, Horsey Consulting Ltd.; J. Ma, M. Fingerhut, Kiefner & Associates; C. Wassink, J. Van der Ent, APPLUS RTD

15:30
IPC2014-33203, IWEX: New Horizons for Pipeline Girth-Weld AUT Inspection
N. Portzgen, J. Schouten, X. Deleye, J. Van der Ent, APPLUS RTD; V. Gaffard, TOTAL SA

Session 3-1-7: Design & Construction Posters

Session Chair: Mark Piazza, Colonial Pipeline Company
Room: TELUS Macleod Hall A
Date: Thursday, October 2
Time: 08:30 - 12:00

08:30
IPC2014-33221, A Spatial Multi-Criteria Analysis Process to Optimize and Better Defend the Pipeline Route Selection Process

09:00
IPC2014-33172, Automatic Linear Disturbance Footprint Extraction Based on Dense Time-Series Landsat Imagery
Z. Chen, P. Adikshtha, B. Salehi, D. Power, C-CORE; B. Jefferyes, LOOKNorth

09:30
IPC2014-33359, Achieving Efficiency in Environmental Assessment
W. Prystay, S. Webster, A. Pomeroy, Stantec
16:30  
IPC2014-33752, Why Marine Mammals Matter to Your Terrestrial Export Pipeline Project  
L. Postiewale, Northern Gateway Pipelines;  
A. Ahrons, J. E. Green, Stantec;  
P. Anderson, RPS HSMA

Session 4-1-3: Operations  
Session Chair: John Hayes, Independent  
Room: HYATT Walker/Bannerman  
Date: Friday, October 3  
Time: 08:30 - 11:30

08:30  
IPC2014-33016, Measurements of NOx Emissions From DLE and Non-DLE Gas Turbine Engines Employed in Natural Gas Compressor Stations and Comparison With PEM Models  
K. Botros, NOVA Research and Technology Center;  
L. Starkowski, S. Barss, R. Manabat, TransCanada Pipelines

09:00  
IPC2014-33152, If You Build It, Will They Come? Caribou Habitat Restoration for Terrestrial Export Pipeline Projects  
B. Coupal, P. Bentham, Golder Associates Ltd.

IPC2014-33253, Advanced Pipeline Risk Assessment Model  
J. Bracic, Pembina Pipeline Corporation;  
D. Owen, Alliance Pipeline Ltd.;  
A. Andrade Caballero, L. Martinez Forero, ROSEN Integrity Solutions

IPC2014-33334, Economic Valuation of Environmental Goods and Services: An Impact Managing Tool for the Oil Spill in the Wínchele River (Esmeraldas, Ecuador)  
M. Aleman, Cardno ENTRIX;  
S. Sarasti, OCP Ecuador S.A.;  
C. Wu, University of Science and Technology of China

10:30  
IPC2014-33355, Short Term Hydrotechnical Risk Control Measures Used During the Implementation of Watercourse Pipe Replacement Projects  
D. Dewar, E. McClarty, Spectra Energy Transmission;  
B. Costerton, BC Rivers Consulting Inc.;  
J. Bracic, Pembina Pipeline Corporation

IPC2014-33362, Risk Management for Lateral Channel Movement at Pipeline Water Crossings  
J. Bracic, Pembina Pipeline Corporation;  
C. Malcolm, Maliron Engineering Ltd.;  
E. Zaremko, Northwest Hydraulic Consultant

Session 5-1-3: Integrity Management Programs & Risk Analysis  
Session Chair: Josh Pendleton, Dynamic Risk  
Session Co-Chair: Zaheed Hasham, Dynamic Risk  
Room: TELUS Glen 208  
Date: Thursday, October 2  
Time: 09:00 - 10:00

09:09  
W. Feng, S. Li, X. Long, J. Xi, PetroChina Pipeline Company;  
C. Wu, University of Science and Technology of China

10:09  
IPC2014-33338, High Energy Natural Gas Internal Corrosion Susceptibility Analysis  
D. Owen, Alliance Pipeline Ltd.;  
S. Schapira, DNV
Technical Tracks

11:00
IPC2014-33598, Inspection Technologies for Traditionally Unpigvable Liquid Pipelines
A. Higgins, R. Dale, M. McTavish, B. Ellestad, Enbridge Pipelines Inc.

11:30
IPC2014-33593, Inspection and Prioritization Methods for Small Diameter Auxiliary Piping
A. Pecush, M. McTavish, B. Ellestad, Enbridge Pipelines Inc.

13:30
IPC2014-33700, Real Time Facility Monitoring: Lessons Learned
W. Badawy, M. McKay, IntelliView Technologies Inc.

14:00
IPC2014-33015, Comparison of Degradation of Two Different Gas Turbine Engines in Natural Gas Compressor Stations
K. Botros, C. Hartloper, NOVA Research and Technology Center; H. Golshan, D. Rogers, Z. Samoylove, TransCanada Pipelines

14:30
IPC2014-33488, Pressure Surge Relief Options in Terminal Design
A. Zhou, D. Yu, WorleyParsons; V. Cabrejo, TransCanada Pipelines

Session 5-1-3: Facilities Integrity Management Posters
Session Chair: Mark Piazza, Colonial Pipeline Company
Room: TELUS Macleod Hall A
Date: Poster Session 1 - Tuesday, September 30, 15:30 - 17:30
Date: Poster Session 2 - Wednesday, October 1, 09:00 - 10:15

IPC2014-33123, The Reliability of Acoustic Emission Inspection on the Storage Tank Floor
Z. Guo, Y. Kang, H. Chen, H. Xu, PetroChina Pipeline R&D Center; M. Liu, PetroChina Pipeline Inspection Technology Co. Ltd.

Track 6: Pipeline Integrity Management
Track Chair: Terry DeLong, Spectra Energy Liquids
Track Co-Chair: Byron Souza Filho, Petrobras
Track Co-Chair: Phillip Nidd, Dynamic Risk USA
Track Co-Chair: Steve Gromack, TransCanada Pipelines Limited
Track Co-Chair: Jerry Rau, Energy Transfer
Track Sponsor: Enbridge Pipelines Inc.

Session Chair: Monica Porter, Dynamic Risk & Engineering Assessments
Room: TELUS Glen 201/202
Date: Tuesday, September 30
Time: 10:30 - 17:00

10:30
IPC2014-33236, A Structured Approach for Managing Engineering Assessments
M. Reed, D. Skobinsky, Alliance Pipeline Ltd.; R. Sahney, PBoK Technical Training Ltd.

11:00
IPC2014-33549, An Engineering Assessment to Evaluate Integrity Options for Out of Class Pipelines
H. Wang, S. Kariyawasam, P. Kwong, TransCanada Pipelines

11:30
IPC2014-33674, Effective Improvements to Overcome Blind Spots in A Corrosion Management Program and Practical Measures to Verify Effectiveness
T. Huang, S. Kariyawasam, P. Yeung, M. Sharig, TransCanada Pipelines

13:30
IPC2014-33678, Correlating Corrosion Field Data with Experimental Findings for the Development of Pipeline Mitigation Strategies
K. Chevil, W. Chen, University of Alberta; R. Karja, J. Bean, TransCanada Pipelines; G. Van Boven, Spectra Energy

14:00
IPC2014-33732, Back to the Future Using Root Cause Analysis as a Proactive Risk Management Tool
P. Nidd, Dynamic Risk USA; T. Thom, M. Porter, Dynamic Risk Assessment Systems Inc.

14:30
S. Taylor, Enbridge Pipelines Inc.; R. Sahney, N. Robeson, PBoK Technical Training Ltd.; K. Jonsson, IRISNDT Engineering

15:30
IPC2014-33177, Integrity Implications of Unintentionally Expanded Line Pipe
M. Rosenfeld, Kiefner/Applus R&D

16:00
IPC2014-33409, Intentional Destructive Testing: A Means for Establishing Mechanical Integrity
C. Alexander, B. Vyyial, Stress Engineering Services Inc.

16:30
IPC2014-33757, Probabilistic Bow-Tie Model to Predict Failure Probability of Oil and Gas Pipelines
L. Parvoseghy, T. Zayed, Concordia University

Session 6-1-2: In-Line Inspection—Validation
Session Chair: Alasdair Clyne, Rosen Canada Ltd.
Room: TELUS Glen 206
Date: Tuesday, September 30
Time: 10:30 - 16:30

10:30
IPC2014-33263, Towards Effective Pipeline Integrity Decision Making Under Uncertain Environment
S. Hassanien, J. Gomez, J. Liang, R. Sporns, Enbridge Pipelines Inc.

11:00
IPC2014-33044, Validating ILI Accuracy Using API 1163
L. Smart, H. Haines, Kiefner & Associates

11:30
IPC2014-33578, Evaluation of New In-Ditch Methods for Measurement and Assessment of External Corrosion
P. Cazenave, K. Tinacos, M. Gao, Blade Energy; R. Wang, R. Karja, TransCanada Pipelines

13:30
IPC2014-33489, Systematic Approach to Measuring ILI Tool Performance
S. Keane, K. Cheng, K. Korol, Enbridge Pipelines Inc.
10:30
IPC2014-33209, Critical Crack Size Detection Criteria to Develop a Novel ILI Tool for Non-Piggable Gas Pipelines
H. Al-Muslim, Kle�er and Associates c/o Saudi Aramco; M. Rosenfield, Kle�er/Appius RTD; D. W. Merte, NYSEARCH/Northeast Gas Association

11:00
IPC2014-33357, Qualification of a Combined Ultrasonic Inspection Tool for Detection and Sizing of Circumferential Weld Cracks in Offshore Pipelines
H. Willows, NDT Systems & Services GmbH & Co.KG; H. Petter Bjørgen, Statkraft; T. Ståle Kristiansen, G. Worne, KTN

11:30
IPC2014-33451, Application and Advancement of EMAT ILI Technologies for the Inspection of Cracks in Dents
J. Sutherland, A. Mann, A. Maier, PII Pipeline Solutions; G. Vignal, S. Keane, Enbridge Pipelines Inc.

Session 6-1-4: Data Management & Integration
Session Chair: Usman Choudhary, TransCanada Pipelines
Session Co-Chair: Omar Al Emrani, TransCanada Pipelines
Room: TELUS Glen 206
Date: Wednesday, October 1
Time: 09:00 - 11:30

09:00
IPC2014-33594, The Pipe Inspection Lifecycle
D. Nemeth, Energy Transfer; T. Walda, Global Information Systems

09:30
IPC2014-33708, Pipeline Integrity Data: Managing Past, Present, Future
T. Porter, New Century Software Inc.; D. Donaho, Kinder Morgan Energy Partners L.P.

10:30
IPC2014-33653, The Integrity Review Process for an Asset Acquisition
C. Figueiredo, S. Dawe, Enbridge Pipelines Inc.

11:00
IPC2014-33648, Quantifying the Impact of Assumptions on Predicted Burst Pressure Assessments
S. Polasik, T. Bubenik, DNV GL; S. Keane, Enbridge Pipelines Inc.; W. V. Harper, Otterbein University

Topic 6-2: Time Dependent Threats

Session 6-2-1: Stress Corrosion Cracking
Session Chair: Jenny Been, TransCanada Pipelines
Session Co-Chair: Boon Ong, TransCanada Pipelines
Room: HYATT Stephen
Date: Thursday, October 2
Time: 08:30 - 14:00

08:30
IPC2014-33088, The Effect of Shallow Cracks on the Predicted Failure Pressure of Natural Gas Pipelines Containing Stress-Corrosion Cracks
R. Fessler, Biztek Consulting Inc.; S. Rapp, Spectra Energy

09:00
IPC2014-33180, Bicarbonate, Temperature, and pH Influences on the Passivation of API-X100 Pipeline Steel in Simulated Groundwater Solutions
I. Gadala, A. Alfantazi, University of British Columbia

09:30
IPC2014-33230, Microstructural Feature Analysis of X65 Steel Exposed to Ripple Load Testing Under Near-Neutral pH Conditions
P. Jakupi, W. Jeffrey Binns, I. Barker, Western University; B. Santos, NOVA Research & Technology Centre; J. Been, TransCanada Pipelines

10:30
IPC2014-33325, Development and Validation of Load-Interaction Based Models for Crack Growth Prediction
J. Zhao, W. Chen, University of Alberta; G. Van Boven, Spectra Energy; S. Keane, Enbridge Pipelines Inc.; J. Been, TransCanada Pipelines

11:00
IPC2014-33282, Depressurization-Induced Crack Growth Enhancement for Pipeline Steels Exposed to Near-Neutral pH Environments
M. Yu, W. Chen, University of Alberta; R. Kania, TransCanada Pipelines; G. Van Boven, Spectra Energy; J. Been, TransCanada Pipelines

11:30
IPC2014-33037, Experimental and Analytical Leak Characterization for Axial Through-Wall Cracks in a Liquids Pipeline
Session 6-2-2: ILI - Cracking Threat—Manufacturing Defects
Session Chair: Kevin Spencer, PII Pipeline Solutions
Room: TELUS Glen 206
Date: Friday, October 3
Time: 08:30 - 12:00

08:30
IPC2014-33248, Assessing the Probability of Detecting Crack Features Using Ultrasonic In-Line Inspection Tool Run Results and Excavation Data
D. Lu, J. Skow, C-FER Technologies; S. Keane, Enbridge Pipelines Inc.

09:00
IPC2014-33479, SCC In-Field Inspection Technology Evaluation And its Application to EMAT based Pipeline Integrity Management Programs
S. Tandon, M. Gao, R. Krishnamurthy, Blade Energy Partners; R. Kania, TransCanada Pipelines; M. Piazza, Colonial Pipeline Company

09:30
IPC2014-33545, Validation of EMAT ILI for Management of Stress Corrosion Cracking in Natural Gas Pipelines
T. Fore, Kinder Morgan; S. Klein, Rosen Technology & Research Center; C. Yoxall, S. Cone, ROSEN USA Inc.

10:30
IPC2014-33303, Assessment of Circumferential SCC on an Ethane Pipeline
Y. Beaugeard, C. Edwards, NOVA Research and Technology Center

11:00
IPC2014-33303, Methanol-Induced Axial Stress Corrosion Cracking in a Northern Canadian Liquids Pipeline
B. N. Padgett, D. M. Nelson; J. A. Beavers, Det Norske Veritas (U.S.A.); M. R. Chelbaro, S. D. Ironside, Enbridge Pipelines Inc.

Session 6-2-3: Corrosion Threat
Session Chair: Robert Fassett, Kleinfelder Inc.
Room: TELUS Glen 201/202
Date: Thursday, October 2
Time: 08:30 - 15:00

08:30
IPC2014-33025, Determining Reassessment Intervals From Successive In-Line Inspections
T. Bubenik, P. Moreno, S. Polakis, DNV GL; W. V. Harper, Otterbein University

09:00
IPC2014-33104, Integration of Laser Surface Scanning and Non-Linear Finite Element Analysis for the Assessment of Volumetric Corrosion in Pipeline Fittings
R. Andrews, M. Hadden, P. Casson, MACAW Engineering; T. Kashap, S. Johnstone, National Grid

09:30
IPC2014-33113, Pipeline Sludge Sampling for Assessing Internal Corrosion Threat
A. Garcia, T. Place, Enbridge Pipelines Inc.; M. Holm, TEK Services Inc.; J. Sargent, GE Water and Process Technologies; A. Oliver, GE Power & Water

10:30
S. Zhang, S. Kariyawasam, M. Al-Amin, TransCanada Pipelines; W. Zhou, Western University

11:00
IPC2014-33329, The Detection Method and Its Practice of Dynamic Stray Current Interference from Subway Power System
M. Li, X. Wang, Fushun Research Institute of Petroleum and Petrochemicals; H. Pu, SINOPEC Gas Company; S. Lin, Qi Mao, Genius Technology and Engineering Ltd.

11:30
IPC2014-33369, Internal Corrosion Management of Crude Pipelines
S. Prakash, S. Safri, A. Razaq Al-Shamari, A. Abdullah Jaragh, Kuwait Oil Company

13:30
IPC2014-33637, Effects of Temperature and Glass Transition on the Performance of Polymer Coating on Steels
H. Ha, A. Affanatzi, University of British Columbia

14:00
IPC2014-33128, IPC2014-33128, Advancements in the Detection and Sizing of “Pinhole” Metal Loss
M. Buck, PiP Pipeline Solutions; W. Santamaría, ExxonMobil

14:30
IPC2014-33097, A Novel Approach for Monitoring Pipeline Corrosion Under Disbonded Coatings
F. Varela, M. Yongjun Tan, M. Forryan, Deakin University

Topic 6-3: Time Independent Threats

Session 6-3-1: Weather Related & Outside Forces — Water Hazard
Session Chair: Rod Read, RSRead Consulting Inc.
Session Co-Chair: Moness Rizkalla, Visitless Integrity Assessment
Room: TELUS Glen 206
Date: Thursday, October 2
Time: 13:30 - 16:00

13:30
IPC2014-33627, Managing Risk at Pipeline River Crossings in Changing Regulatory Settings
A. Kammerock, Golder Associates Inc.; K. Ryan, T. Jacobson Moore, Williams Pipeline

14:00
IPC2014-33240, Approaches for Evaluating the Vulnerability of Pipelines at Water Crossings

14:30
IPC2014-33481, Managing Water Crossings From an Operator’s Perspective
Y. Ireland, Kinder Morgan Canada; N. Nguyen, Spectra Energy Liquids

15:30
IPC2014-33656, An Approach for Prioritizing Pipeline Water Crossings (WC) for Effective Mitigation and Monitoring
R. G. Mora, Imperial Oil; J. Barry, ARCADIS U.S.; B. P. Carlin, EMPCO
Session 6-3-2: Weather Related & Outside Forces—Geotechnical

Session Chair: Rick Gailing, Southern California Gas Company
Room: TELUS Glen 206
Date: Thursday, October 2
Time: 08:30 - 12:00

08:30
IPC2014-33179, Fiber Optic Monitoring of Pipeline Subsidence: Analysis of Effective Sensor Cable Deployments
D. Dubois, Omnisens;
K. Ryan, Williams Pipeline;
J. Rice, J. Bay, J. Peralta, Utah State University

09:00
IPC2014-33497, Pipeline Stress Relief and Evaluation of Strain Measurement Technology at a Moving Slope
A. Dinovitzer, A. Fredj, BMT Fleet Technology;
M. Sen, Enbridge Pipelines Inc.

10:30
IPC2014-33559, Implementing a Geohazard Integrity Management Program Statistics and Lessons Learned Over 15 Years
A. Baumgard, T. Coutlith, G. Ferris, BGC Engineering Inc.

11:00
IPC2014-33628, Alternative Geohazard Risk Assessment and Monitoring for Pipelines With Limited Access: Amazon Jungle Example
J. Matarida Moya, G. Massucco De la Sota, Compañía Operadora de Gas Del Amazonas

11:30
IPC2014-33665, Multi-Satellite InSAR Deformation Analysis for Pipeline Monitoring: Operational Application, Results and Validation in the Belridge Oil Field, 2001-2012
M. D. Henschel, B. Deschamps, G. Robert, MDA Geospatial Services Inc.;
R. Gailing, Southern California Gas Company

Session 6-4: Resident Threats

Session 6-4-1: Third Party Damage—Assessment
Session Chair: Aaron Dinovitzer, BMT Fleet
Room: TELUS Glen 209
Date: Thursday, October 2
Time: 13:30 - 16:30

13:30
IPC2014-33499, Excavation Assistance System Design Based on Human Factors: Functional and Technical Analysis
M. Lecchi, R. Perinet, G. Pognonec, N. Herchin, GDF SUEZ;
T. Marmey, GRTgaz;

14:00
IPC2014-33034, Pipeline Plain Dent Fatigue: A Comparison of Assessment Methodologies
S. Cunha, Petrobras;
I. Pasqualino;
B. Pinheiro, COPPE/UFRJ

14:30
IPC2014-33635, Fitness For Service of Unconstrained Shallow Dents
J. Bratton, A. Gallagher, Det Norske Veritas (U.S.A.);
M. Glass, Trans-Northern Pipelines Inc;
W. V. Harper, Otterbein University;
E. Cote, TNPI

15:00
IPC2014-33576, Shallow Dents: Updates to the UKOPA Dent Management Strategy
A. Lockey, R. Palmer-Jones, Ponsen Integrity;
N. Jackson, National Grid;
R. Ellis, Essar Oil (UK) Ltd.

16:00
IPC2014-33199, Prevention of Pipeline Dent Failure Under Fatigue Loading Conditions
J. Fontanabona, Tecinatas;
K. Dang Van, Z. Moumni, Mecamix;
V. Gaffard, P. Wiet, Total SA

Session 6-4-2: Third Party Damage—Characterization
Session Chair: Stephen Westwood, Baker Hughes Ltd.
Room: HYATT Stephen
Date: Friday, October 3
Time: 08:30 - 12:00

08:30
IPC2014-33071, Effect of Dent Depth on the Burst Pressure of NPS30 X70 Pipes with Dent-Crack Defect
H. Graedina, S. Das, University Of Windsor;
R. Wang, R. Kania, TransCanada Pipelines

Session 6-4-3: Manufacturing Defects
Session Chair: Gary Vervake, Spectra Energy
Session Co-Chair: Steve Rapp, Spectra Energy
Room: TELUS Glen 205
Date: Thursday, October 2
Time: 09:00 - 15:00

09:00
IPC2014-33065, Track Record of In-Line Inspection as a Means of ERW Seam Assessment in Response to NTSB Recommendation P-09-1, Arising From the Carmichael, MS Rupture
J. F. Kiefner, B. Nestleroth; Kiefner and Associates Inc.;
J. A. Beavers, C. Maier, Det Norske Veritas (U.S.A.), Inc.
9:15am
IPC2014-33068, Types of Defects that Affect ERW Seam Integrity in Response to NTSB Recommendation P-09-1, Arising From the Carmichael, MS Rupture
J. F. Kiefner, B. Nestleroth, Kiefner and Associates Inc.;
J. A. Beavers, G. T. Quickel, Det Norske Veritas (U.S.A.), Inc.

11:00
IPC2014-33548, Experimental Investigation on Combined “Dent And Gouge” Defects on Vintage Steel Transmission Pipelines
Dr. M. Zarala, P. Cardin, S. Hertz-Clemens, R. Battise, GDF SUEZ

11:30
IPC2014-33445, Mechanical Damage and Fatigue Assessment of Dented Pipelines Using FEA
W. Hanit, S. Kenny, Memorial University of Newfoundland and Labrador

9:00
IPC2014-33210, Structural Integrity of Steel Hydrocarbon Pipelines With Local Wall Distortions
A. E. Pournara, S. A. Karamanos, T. Papathanochiaris,
P. Perdikaris, University of Thessaly

10:30
IPC2014-33510, Characterization of Topside Mechanical Damage
R. Wang, R. Kania, TransCanada Pipelines;
U. Arumugam, M. Gao, Blade Energy Partners Ltd.
**Technical Tracks**

**Track 7: Materials & Joining**

**Topic 7-1: Pipe Manufacturing & Welding**

**Session 7-1-1: Girth Weld Procedures Development 1**

Session Chair: Robert MacKenzie, Enbridge

Room: TELUS Glen 203

Date: Tuesday, September 30

Time: 10:30 - 12:00

**IPC2014-33069, Impact of Welding Parameters on Weld Seam Properties of Seamless X80 Linepipe Steel Grade**


**11:00**

**IPC2014-33079, Advanced Strain-Based Design Pipeline Welding Technologies**

N. Verna, D. Fairchil, F. Noecker II, Exxonmobil Upstream Research Company; N. Nisley, M. Macia, ExxonMobil Development Co.

**11:30**

**IPC2014-33109, Control of Weld HAZ Properties in Modern High Strength Pipeline Steels**

F. Barbaro, Z. Zhu, L. Kuzmikova, H. Li, University of Wollongong

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**Topic 6-6: Track 6 Poster Session**

**Session 6-6-1: Pipeline Integrity Management Posters**

Session Chair: Mark Piazza, Colonial Pipeline Company

Room: TELUS Macleod Hall A

Date: Poster Session 1

Tuesday, September 30, 15:30 - 17:30

Date: Poster Session 2

Wednesday, October 1, 09:00 - 10:15

**IPC2014-33646, Fitness for Service of Dents Associated With Metal Loss due to Corrosion**

H. Olav Heggen, D. A. Kemp, J. Bratton, Jason L. Austin, H. Liu, Det Norske Veritas

**IPC2014-33400, Risk Assessment Procedures and Prioritization of Mitigation Actions in Pipeline Crossings**

V. Carlos Teixeira da Costa, E. L. de Paula, B. M. Gonçalves, D. S. Lima, Petrobras Transporte S.A.

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**Topic 6-5: Repair & Mitigation**

**Session 6-5-1: Repair & Mitigation**

Session Chair: Erika Nicoletti, Petrobras Transporte S.A.

Room: TELUS Glen 201/202

Date: Friday, October 3

Time: 08:30 - 11:30

**IPC2014-33992, Interpretation and Evaluation of Near Girth Weld, Short Axial Cracks in a Petroleum Pipeline**

Session 7-1-2: Girth Weld Procedures Development 2
Session Chair: Gordon Fredine, Enbridge Pipelines
Room: TELUS Glen 203
Date: Tuesday, September 30
Time: 10:30 - 11:30

S. Funderburk, CRC-Evans Pipeline International Inc.;
P. Spielbauer, CRC-Evans Automatic Welding;
Y. Chen, CRES;
M. Quintana, Lincoln Electric Co

11:00
Rio Best Paper, Welding and Heat Treatment of Heavy Wall API 5L X65 Sour Service Pipes

Session 7-1-4: Girth Weld General 1
Session Chair: Marie Quintana, Lincoln Electric Co
Room: TELUS Glen 203
Date: Wednesday, October 1
Time: 08:30 - 10:00

8:30
IPC2014-33374, Comparative Integrity Evaluation of Counterbore-Tapered and Back-Beveled Weld Joints
M. Martens, TransCanada Pipelines;
Y. Chen, M. Liu, CRES

10:00
IPC2014-33464, Effects of High-low Misalignment on Girth Weld Integrity
Y. Wang, K. Kotian, Center for Reliable Energy Systems;
S. Rapp, Spectra Energy

Session 7-1-5: Girth Weld General 2
Session Chair: Laurie Collins, Evraz North America
Room: TELUS Glen 203
Date: Wednesday, October 1
Time: 10:30 - 12:00

10:30
IPC2014-33551, Tandem Flux-Cored Arc Welding for High Strength Line Pipe
C. Fenniston, RMS Welding Systems;
R. Huntley, RMM Welding Consulting

11:00
IPC2014-33630, Experiments and Finite Element Model Results on the Deformation Response of an X80 Weld Zone
Q. Pujdt, M. Kulakov, W. Poole, The University of British Columbia;
L. Collins, S. Kenny, Evraz NA

11:30
IPC2014-33731, Application of Weibull Stress Criterion to Brittle Fracture Assessment of HAZ-Notched Welds With Residual Stress
Y. Seko, M. Mitsuaya, Y. Imai, N. Oguchi, Tokyo Gas Co Ltd;
F. Minami, Osaka University

Session 7-1-6: Pipe & Plate Manufacturing 1
Session Chair: Kevin Widenmaier, TransCanada Pipelines
Room: TELUS Glen 204
Date: Tuesday, September 30
Time: 10:30 - 12:00

10:30
IPC2014-33099, Development of X90 and X100 Steel Grades for Seamless Linepipe Products
D. Tomal, D. Nikitas, D. Mihn, A. Koka, Vulcurex & Mannesmann Tubulder Germany;
S. Harken, Vulcurex: Deutschland GmbH

11:00
IPC2014-33150, Development of TMCP type Alloy625 / X65 clad plate for pipe
S. Tachibana, Y. Kuronuma, T. Yokota, Y. Wada, H. Saeoto, S. Mitao, K. Yabumoto, Y. Moriya,
M. Nagae, JFE Steel Corporation

11:30
IPC2014-33265, Development and Production of Heavy Gauge X80 and High Strength X90 Pipeline Steels Utilizing TMCP/optimized Cooling Process
G. Zhang, X. Bai, Cinhuaungdao Shouqin Metal Materials Co., Ltd.;
D. Stalheim, DGS Metalurgical Solutions, Inc.;
S. Li, W. Ding, Shouqang Research Institute of Technology

Session 7-1-7: Pipe & Plate Manufacturing 2
Session Chair: Nobuyuki Ishikawa,
JFE Steel Corporation
Room: TELUS Glen 204
Date: Tuesday, September 30
Time: 14:00 - 16:30

14:00
IPC2014-33268, Development of API Grade Pipeline Steel With Improved Toughness on a Compact Strip Production (CSP) Line
B. Frye, V. Kendrick, M. Holtman, J. McClure, Gallatin Steel Company;
D. Stalheim, DGS Metalurgical Solutions, Inc.

14:30
IPC2014-33520, Measurement of Mechanical Properties on Line Pipe: Comparison of Different Methodologies
S. Cooreman, D. Van Hoecke, ArcelorMittal Global
R&D Gent;
M. Lieberherr, P. Thibaux, ArcelorMittal Global
R&D Gent/OCAS NV;
M. Yamaguti Enderlin, ArcelorMittal Flat Carbon Europe

15:30
IPC2014-33321, Effects of UOE Manufacturing Process on Pressurized Bending Response of Offshore Pipes
G. Chatzopoulos, S. Karamanos, University of Thessaly;
G. Varelis, PDL Solutions (Europe) Ltd
Session 7-1-8: Microstructure & Crack Propagation
Session Chair: Sanjay Tiku, BMT Fleet Technology Ltd
Room: TELUS Glen 204
Date: Wednesday, October 1
Time: 08:30 - 10:00

IPC2014-3341, Effects of Microstructural Inhomogeneity on HIC Susceptibility and HIC Evaluation Methods for Linepipe Steels for Sour Service
K. Kim, S. Ko, J. Han, HYUNDAI STEEL COMPANY (Technical Research Center)

IPC2014-3339, Modern Approach to the Microstructure Characterization of Large Diameter Linepipes
C. Stalbybrass, M. Frommert, J. Konrad, Salzgitter Mannesmann Forschung GmbH; H. Meuser, Salzgitter Mannesmann Grobblech GmbH; J. Schroede, Europipe GMBH

A. Gervasyev, I. Pyshmintsev, RosNITI; V. Carretero Olalla, R. Petrov, Ghent University; M. Kainat, C. Cakiroglu, S. Adeeb, R. Cheng, University of Alberta; M. Martens, TransCanada PipeLines

IPC2014-33206, Recent Development of HFW Linepipe With a High-Quality Weld Seam Suitable for Sour Service Environments
S. Toyoda, S. Isotó, Y. Kato, S. Yakumoto, A. Sato, JFE Steel Corporation

IPC2014-33310, Examinations Regarding the Sour Gas Resistance of Girth Welds Carried Out on API Grade X80 Seamless Pipe Steel (Heavy Wall)
D. Toma, D. Niklasch, A. Koka, Valtourec & Mannesmann Tubes Germany; J. Weibe, Salzgitter Mannesmann Forschung GmbH

IPC2014-33372, Mass Production of X-80 Plate for Bovanenkovo Ukhta (Yamal-Europe) Gas Pipeline in Russia
K. Ebihara, S. Sakamoto, T. Hara, N. Mamada, T. Adachi, Nippon Steel & Sumitomo Metal Corporation

IPC2014-33655, Qualification Testing of Mechanical Pipe Joining Method
D. McColl, CORE Linepipe; A. Whiting, C-FER Technologies

R. Souza, C. Ruggieri, University of São Paulo

Session 7-1-10: Girth Weld Material Properties
Session Chair: Greg Zinter, Applus RTD
Room: TELUS Glen 204
Date: Wednesday, October 1
Time: 10:30 - 12:00

IPC2014-33668, A New Approach Using EBSD to Quantitatively Distinguish Complex Transformation Products Along the HAZ in X80 Linepipe Steel
J. Reichert, M. Militzer, W. Poole, The University of British Columbia; L. Collins, Eneas North America

IPC2014-33254, Microstructure and Toughness of Simulated Grain Coarsened Heat Affected Zones in X80 Pipe Steels
J. Gianetto, Natural Resources Canada; Y. Chen, CRES; B. Shalchi Amirkhiz, F. Fazeli, T. Smith, CanmetMATERIALS

IPC2014-33219, Accuracy of the Double-Clip on Gauge Method for Evaluating CTOD of SE(T) Specimens
Z. Yan, Y. Huang, W. Zhou, University of Western Ontario

Topic 7-2: Crack Propagation & Arrest
Session 7-2-1: Low-Constraint Fracture Toughness Testing with SENT Specimens
Session Chair: Da-Ming Duan, TransCanada Pipelines
Room: TELUS Glen 203
Date: Thursday, October 2
Time: 08:30 - 10:00

IPC2014-33251, Practical Application of Low Constraint SENT Fracture Toughness Testing for Pipeline Girth Welds
P. Schamuhn Kirk, K. Chum, SGS Ludwig Associates Engineering Ltd

IPC2014-33449, Mode Mixity in the Fracture Toughness Characterization of HAZ Material Using SEN(T) Testing

IPC2014-33718, Development of Fracture Toughness Evaluation Using SENT Specimens
X. Zhu, T. McGaughy, Edison Welding Institute

Session 7-2-2: Drop Weight Tear Testing (DWTT) for Modern Pipeline Steels
Session Chair: Derrick Sarafinchan, Ludwig Associates Engineering Ltd.
Room: TELUS Glen 203
Date: Thursday, October 2
Time: 10:30 - 12:00

IPC2014-33133, An Updated Fracture Resistance Dataset of Pipeline Ductile Fracture Propagation Based on High Speed DWTT Tests
D. Duan, J. Zhou, TransCanada Pipelines; J. Ferguson, TransCanada Pipelines; M. Uddin, D. Shin, Engineering Mechanics Corporation of Columbus

IPC2014-33334, Effects of Notch Type and Loading Rate on CTOA of Modern X65 and X70 Pipe Steels
S. Xu, J. Sollen, J. Liang, R. Zavadil, W. Tyson, CanmetMATERIALS

IPC2014-33476, Inverse Fracture: What is it All About?
A. Hasenhiilt, Salzgitter Mannesmann Forschung GmbH; M. Erdelen-Peppler, Salzgitter Forschung GmbH; C. Kalwa, EUROPIPE GmbH
Session 7-2-3: Full-Scale Fracture Propagation & Arrest Tests & Analysis for Gas Pipelines
Session Chair: Andrew Cosham, Atkins
Room: TELUS Glen 203
Date: Thursday, October 2
Time: 13:30 - 15:00

13:30
IPC2014-33080, Analysis of Two Dense Phase Carbon Dioxide Full-Scale Fracture Propagation Tests
A. Cosham, Atkins;
D. Jones, Pipeline Integrity Engineers;
K. Armstrong, D. Allason, GL Noble Denton;
J. Barnett, National Grid Carbon

14:00
IPC2014-33326, Full Gas Burst Test for HFW Linepipe at Low Temperature
S. Igi, S. Yabumoto, JFE STEEL CORPORATION;
M. Mitsuya, Tokyo Gas Co.;
Y. Sumikura, OSAKA GAS CO., LTD.;
M. Takeuchi, TOHO GAS Co., Ltd.

14:30
IPC2014-33514, Brittle Fracture Arrest in High Charpy Energy Steels: Comparisons With Some Existing Data

Session 7-2-4: Fracture Arrest Prediction Methods for Modern Pipeline Steels
Session Chair: Gery Wilkowski, Engineering Mechanics Corp
Room: TELUS Glen 203
Date: Thursday, October 2
Time: 15:30 - 17:00

15:30
IPC2014-33121, Review of Fracture Control Technology for Gas Transmission Pipelines
X. Zhu, Edison Welding Institute

16:00
IPC2014-33164, Establishing the Correlation Between Charpy Impact Energies for Different Sized Specimens of Modern Pipeline Steels
A. Norin, Salzgitter Mannesmann Forschung GmbH;
H. Brauer, Salzgitter Mannesmann Line Pipe GmbH

16:30
IPC2014-33169, How to Assure Fracture Propagation Control for Seamless Gas Pipelines?
A. Norin, Salzgitter Mannesmann Forschung GmbH;
M. Erdelen-Peppler, Salzgitter Forschung GmbH;
W. Wessel, D. Mahn, V&M DEUTSCHLAND GmbH;
S. Harsken, Vallourec Deutschland GmbH

Session 7-2-5: Finite Element Models for Simulating Ductile Cracks & Propagation
Session Chair: Sreekanta Das, University of Windsor
Room: TELUS Glen 204
Date: Thursday, October 2
Time: 08:30 - 10:00

08:30
IPC2014-33047, A Strain Rate-Dependent Finite Element Model of Drop-Weight Tear Tests for Pipeline Steels
P. Yu, C. Ru, University of Alberta

09:00
IPC2014-33440, Bulging Factor for Axial Surface Cracks in Pipes
D. Shim, G. Wilkowski, Engineering Mechanics Corp. of Columbus

09:30
IPC2014-33709, Numerical Model For Unstable Ductile Crack Propagation/Arrest In Natural Gas Pipelines Incorporating Soil Backfill Effect
H. Nakai, S. Altara, The University of Tokyo;
K. Mita, NIPPON STEEL & SUMITOMO METAL CORPORATION

Session 7-2-6: Material Tensile & Fracture Tests & Evaluations
Session Chair: Tom Bubenik, DNV GL
Room: TELUS Glen 204
Date: Thursday, October 2
Time: 10:30 - 14:00

10:30
IPC2014-33042, Correlation of Fracture Behavior in Circumferentially Cracked Pipes and Fracture Specimens Including Ductile Tearing
D. Sarzosa, C. Ruggieri, University of Sao Paulo

11:00
IPC2014-33373, Critical Condition for Hydrogen Induced Cold Cracking of High Strength Weld Metal
N. Ishikawa, H. Sueyoshi, S. Endo, JFE Steel Corporation

11:30
IPC2014-33553, Effect of Chemistry on the Fracture Toughness of Low Carbon X70 Girth Weld Heat Affected Zone
M. Rashid, L. Collins, Y. Bian, Evraz NA

13:30
IPC2014-33684, Best Practices for Yield Stress Determination Using the Flattened Strap Tensile Test
L. Collins, M. Rashid, Evraz North America

Session 7-2-7: Crack Propagation & Arrest Posters
Session Chair: Mark Piazza, Colonial Pipeline Company
Room: TELUS Macleod Hall A
Date: Poster Session 1
Tuesday, September 30, 15:30 - 17:30
Date: Poster Session 2
Wednesday, October 1, 09:00 - 10:15

IPC2014-33143, Re-examination of Battelle Two Curve Method
C. Lu, G. Michael, A. Godbole, University of Wollongong;
P. Venton, Venton & Associates Pty Ltd;
L. Fletcher, Welding and Pipeline Integrity

IPC2014-33457, The Misconception of Employing CVN Toughness as Key-Measure in Crack Arrest Prediction For Modern Line-Pipe Steels
A. Voelkl, M. Erdelen-Peppler, Salzgitter Mannesmann Forschung GmbH;
C. Kalwa, EUROPIPE GmbH

IPC2014-33141, Mechanical Integrity Evaluation of Unequal Wall Thickness Transition Joints in Transmission Pipeline
X. Huo, S. Kenny, Memorial University of Newfoundland;
M. Martens, TransCanada PipeLines

IPC2014-33712, Relationship Between J and CTOD in SE(T) and SE(B) Specimens for Stationary and Growing Cracks
D. Sarzosa, C. Ruggieri, University of Sao Paulo

Track 8: Operations & Maintenance
Track Chair: Robert Hadden, Kinder Morgan Canada
Track Co-Chair: Mark Leir, BGC Engineering Inc.
Track Sponsor: B.C. Oil & Gas Commission

Topic 8-1: Operations & Maintenance

Session 8-1-1: Natural Gas Pipelines
Session Chair: Bryan Balmer, Fortisbc Energy Inc.
Room: TELUS Macleod E3
Date: Tuesday, September 30
Time: 10:30 - 12:00

10:30
IPC2014-33320, Implementing an Algorithm and Training the Console Operators of the TRANSPETRO Integrated Gas Pipeline Networks for Decision-Making in Scenarios of High Psychological Pressure
E. Merson, P. Bruno Peres, M. Fonseca,
E. Merson, P. Bruno Peres, M. Fonseca,
A. Santos, A. Penavilla, PETROBRAS TRANSPORTE S.A. - TRANSPETRO
11:00
IPC2014-33392, Conditioning TRANSPETRO’s LNG Terminal New Regasification Profile
P. Krause, PUC-Rio/SIMDUT; D. Figueredo dos Santos, R. Jardin, M. Bruno Bianchi Carnevale, Transpetro

11:30
IPC2014-33590, Maintenance of Gas Pipeline Automatic Block Valves
T. Botelho Cruz, M. Novaes, J. Paulo Leite, Petrobras Transporte S.A. Transpetro

Session 8-1-2: Pipeline Facilities
Session Chair: Mark Leir, BGC Engineering Inc.
Room: TELUS Macleod E3
Date: Tuesday, September 30
Time: 13:30 - 15:00

13:30
IPC2014-33350, Validation and Verification of Complex Pipeline Terminal Station
F. Lin, Enbridge Pipelines Inc.; A. Chegus, D. Cernelev, Stream Systems Incorporated

14:00
IPC2014-33023, Methods for Determining the Amount of Hydrates Formed During Blowdown of Natural Gas Compressor Station
Y. Beauregard, K. Botros, NOVA Research and Technology Center

14:30
IPC2014-33022, Dynamics of the Recycle Systems of Two Centrifugal Compressors Operating in Series in a Natural Gas Compressor Station
K. Botros, NOVA Research and Technology Center; B. Ruggiero, M. Szwarz, C. Ho, TransCanada Pipelines

Session 8-1-3: Pipeline Repair
Session Chair: Laura Seto, Enbridge
Room: TELUS Macleod E3
Date: Tuesday, September 30
Time: 15:30 - 17:00

15:30
IPC2014-33618, Pipeline Mechanical Damage Excavation Process Review and Recommendations
A. Fredj, A. Dinovitzer, S. Tiku, BMT Fleet Technology; G. Vignal, Enbridge Pipelines Inc.

16:00
IPC2014-33087, Safe and Successful Isolations and Interventions
S. Gower, D. Allen, BP Exploration

16:30
IPC2014-33596, Using HPIR Class Composite Pipe/Line Systems to Overcome the Challenges of Rehabilitating or Replacing a Pipeline Across a Navigable Waterway and Environmentally Sensitive Wetlands
R. McIntosh, G. Littester, A. Ekelund, Smart Pipe Company, Inc.

Session 8-1-4: Pipeline System Modelling
Session Chair: Rich Chan, Kinder Morgan Canada
Room: TELUS Macleod E3
Date: Wednesday, October 1
Time: 10:30 - 11:30

10:30
IPC2014-33349, Application of Multi-Nodal Network Simulation Model in Debottlenecking Complex Pipeline Network
D. Cernelev, A. Chegus, Stream Systems Incorporated; F. Lin, Enbridge Pipelines Inc.

11:00
IPC2014-33431, Application of Probabilistic Methods for Predicting the Remaining Life of Offshore Pipelines
A. Aljaroudi, A. Akinturk, F. Khan, Memorial University; P. Thodi, M. Paulin, INTECSEA Canada / WorleyParsons Group

Session 8-1-5: Liquids Pipelines
Session Chair: David Feser, Kinder Morgan Canada
Room: TELUS Macleod E3
Date: Wednesday, October 1
Time: 08:30 - 10:00

08:30
A. Malekpour, B. Karney, University of Toronto

09:00
IPC2014-33304, Pipelining Fengcheng Extra Heavy Oil over Long Distance by Dilution and Heating
D. Deng, Y. Wai, China University of Petroleum; J. Sun, X. Liu, D. Zeng, Oil & Gas Storage and Transportation Branch, Xinjiang Oilfield Company

09:30
IPC2014-33309, Under Pressure Operations on Dense Phase CO2 Pipelines: Issues for the Operator
J. Barnett, National Grid Carbon; A. Kirkham, National Grid; K. Armstrong, GLND; R. Wilkinson

Session 8-1-6: Operations Programs & Systems
Session Chair: Karl Blank, Enbridge Pipelines Inc.
Room: TELUS Macleod E3
Date: Thursday, October 2
Time: 08:30 - 10:00

08:30
IPC2014-33217, Condition-Based Optimal Maintenance Decision Modeling for Corroding Natural Gas Pipelines
S. Zhang, T. Huang, S. Karyawasam, TransCanada Pipelines; W. Zhou, Western University

09:00
IPC2014-33573, The Application of Lean Six Sigma Methodology in Execution Process, Management and Attribution of Maintenance Activities
R. Souza, T. Cardoso, V. José Campitelli Real, Transpetro; L. Gonçalves Tomaz, Petrobras Transporte S.A. Transpetro

09:30
IPC2014-33528, Achievements of the Professional Qualification Program in Transpetro
L. Gonçalves Tomaz, Petrobras Transporte S.A. Transpetro; V. José Campitelli Real, Transpetro

Session 8-1-7: Operations & Maintenance Posters
Session Chair: Mark Piazza, Colonial Pipeline Company
Room: TELUS Macleod Hall A
Date: Poster Session 1
Tuesday, September 30, 15:30 - 17:30
Date: Poster Session 2
Wednesday, October 1, 09:00 - 10:15

IPC2014-33007, Experimental Investigation of Wax Deposition at Different Deposit Locations Through a Detachable Flow Loop Apparatus
S. Li, Q. Huang, W. Wang, C. Wang, China University of Petroleum; Z. Ding, Trans-Asia Gas Pipeline Company Limited

IPC2014-33064, Identifying Optimal Pigging Frequency for Oil Pipelines Subject to Non-Uniform Wax Deposition Distribution
W. Wang, Q. Huang, S. Li, C. Wang, X. Wang, China University of Petroleum

IPC2014-33429, Identification Method of Oil Pipelines Technical Condition Based Upon Multigraph Models
A. Vlasova, OOO NII TNN
Track 9: Pipeline Automation & Measurement
Track Chair: Renan Martins Baptista, Petrobras R&D Centre
Track Co-Chair: Ray Philipenko, Enbridge Pipelines Inc.
Track Sponsor: Saskatchewan Ministry of the Economy

Topic 9-1: Pipeline Automation & Measurement

Session 9-1-1: Pipeline Leak Detection
Session Chair: Ron Threlfall, Enbridge Pipelines Inc.
Session Co-Chair: Gary Ng, Enbridge Pipelines Inc.
Room: HYATT Doll/Herald
Date: Thursday, October 2
Time: 08:30 - 17:00

08:30
IPC2014-33652, Laboratory and Numerical Simulations of Pipeline Leakage Behaviour: Volatile Organic Compound (VOC) Migration Through Porous Media and Subsequent Atmospheric Dispersion
J. Brydie, S. Trottier, A. Jafari, Alberta Innovates - Technology Futures (AITF); T. Rizwan, M. Derakhshesh, Enbridge Pipelines Inc.

09:00
IPC2014-33495, Leak Detection Using Distributed Temperature Sensing: An Improved Calculation Method
P. Skoczylas, T. Dessein, C-FER Technologies; T. Rizwan, S. Medynski, Enbridge Pipelines Inc.

09:30
S. Chadha, D. Hung, S. Rashid, Enbridge Pipelines Inc.

10:30
IPC2014-33387, Synergy in Leak Detection: Combining Leak Detection Technologies That Use Different Physical Principles
P. Han, M. Kim, ATMOS International Inc.

11:00
IPC2014-33297, A Combined Leak Detection Method Using Pattern Recognition Techniques
G. Geiger, Westphalian University; D. Vogt, Krohne Oil and Gas B.V.

11:30
IPC2014-33719, Dual Threshold Analysis and Its Tuning Tool Development for Leak Detection
J. Gao, M. Chen, Enbridge Pipeline Inc.

13:30
IPC2014-33459, Automated Test System for Monitoring the Efficacy and Reliability of Leakage Detection in Pipelines
D. Inaudi, R. Walder, SMARTEC SA

14:00
IPC2014-33375, External Pipeline Leak Detection Based on Fiber Optic Sensing for the Kinosis 12”-16” and 16”-20” Pipe-in-Pipe System
C. Borda, D. Dutoit, M. Nikes, Ormisens; H. Duncan, Nexen

14:30
IPC2014-33062, Laboratory and Numerical Simulations of Pipeline Leakage Behaviour: Volatile Organic Compound (VOC) Migration Through Porous Media and Subsequent Atmospheric Dispersion
J. Brydie, S. Trotter, A. Jafari, Alberta Innovates - Technology Futures (AITF); T. Rizwan, M. Derakhshesh, Enbridge Pipelines Inc.

15:00
IPC2014-33661, Formulation and Analysis of the Probability of Detection and False Detection for Subsea Leak Detection Systems
A. Aljaroudi, F. Khan, A. Akinturk, M. Haddara, Memorial University of Newfoundland; P. Thodi, INTECSEA Canada-WorleyParsons Group

16:00
IPC2014-33725, Characterization of Thermal and Acoustic Profiles of Potential Underwater Pipeline Leaks
S. Siebenaler, E. Tervo, Southwest Research Institute; M. Kulkarni, ExxonMobil; S. Patni, Shell Upstream; G. Gesoff, BP

16:30
IPC2014-33612, Triggers for the Transient State of a Pipeline in Material Balance Systems Used in Real-Time Transient Hydraulic Modeling
N. Rostamy, N. Okungbowa, Enbridge Pipelines Inc.; J. Yurchevich, Foster Wheeler Upstream

Session 9-1-2: Hydraulic Simulations & Real Time Advanced Functions
Session Chair: Paul Vinh, Enbridge Pipelines Inc.
Room: HYATT Doll/Herald
Date: Wednesday, October 1
Time: 08:30 - 11:30

08:30
IPC2014-33565, Numerical Simulation of Stratified Two-Phase Flow in a Nearly Horizontal Gas-Liquid Pipeline with a Leak
D. Bueno, A. Figueiredo, G. Bodstein, Federal University of Rio de Janeiro (UFRJ); R. Martins Baptista, Petrobras R&D Centre; F. Rachid, Fluminense Federal University (UFF)

09:00
IPC2014-33061, Economic Feasibility of Transporting Natural Gas Hydrates in Slurry Pipelines
K. Botros, NOVA Research and Technology Center; S. Hall, TransCanada Pipelines

10:30
IPC2014-33153, Consideration of Line-Pack Flexibility in Dynamic Steady-State Simulations for Natural Gas Transport Networks
K. Münch, H. Körner, A. Moser, RWTH Aachen University

11:00
N. Okungbowa, N. Rostamy, Enbridge Pipelines Inc.

Session: 9-1-3: SCADA, Automation & Instrumentation
Session Chair: Dion Dube, Enbridge Pipelines Inc
Room: HYATT Doll/Herald
Date: Friday, October 3
Time: 09:00 - 10:00

09:00
IPC2014-33193, Scada and Gas Management System (GMS) Virtualization, an Effort To Improve Optimization, Reliability and Business Continuity for PT Pertamina Gas
A. Wesiarto, Pertamina
Session 9-1-4: Measurement & Metering

Session Chair: Richard Turner, Enbridge Pipelines Inc.
Session Co-Chair: Samir Rashid, Enbridge Pipelines Inc.
Room: HYATT Doll/Herald
Date: Friday, October 3
Time: 10:30 - 11:30

10:30
IPC2014-33019, Measurements and Evaluation of Internal Wall Surface Roughness of Small Diameter Pipes for High Pressure Natural Gas Systems
K. Botros, C. Hartloper, J. Geerligs, NOVA Research and Technology Center (NOVA Chem); H. Golshan, TransCanada Pipelines; K. Jensen, ATCO Pipelines

11:00
IPC2014-33536, Petrobras Transporte S. A.: Transpetro’s Ultrasonic Flow Meter Recalibration Program
T. Carvalho, A. Luisa Ferreira, T. Lourenco, Petrobras Transporte S.A.

Session 9-1-5: Pipeline Automation & Measurement Posters

Session Chair: Mark Piazza, Colonial Pipeline Company
Room: TELUS Macleod Hall A
Date: Poster Session 1 Tuesday, September 30, 15:30 - 17:30
Date: Poster Session 2 Wednesday, October 1, 09:00 - 10:15

10:30
IPC2014-33026, Leakage Detection and Location in Compressible Flow in a Pipeline
H. Emara-Shabaik, D. Adair, Nazarbayev University; M. Jaeger, University of Tasmania

IPC2014-33083, Pipeline Leak Detection Using Four Mode Fibre-Optic Based Distributed Sensing
D. Hill, C. Minto, A. Godfley, J. Williams, J. Worsley, OptaSense Ltd

IPC2014-33115, Direct Hydrocarbon Leakage Detection of Pipelines Using Novel Carbon Nanotube Nanocomposites
K. Parmar, S. Park, University of Calgary

IPC2014-33298, Pipeline Leak Detection Technologies and Emergency Shutdown Protocols
G. Geiger, Westphalian University

IPC2014-33443, Fast Detection and Localization of Small Leaks in Toxic Pipelines Using Distributed Fibre Optic Sensors
D. Inaudi, R. Walder, SMARTEC SA; R. de Bont, Yara

IPC2014-33557, Field Testing of Negative-Wave Leak Detection Systems
S. Siebenaler, E. Tervo, Southwest Research Institute; P. Vrith, C. Lewis, Enbridge Pipelines Inc.

IPC2014-33570, Effects of Data Preparation on Leak Sensitivity Analysis
R. Noguerol, A. Acevedo, Energy Solutions Int'l.; J. Urriza, Ecopetrol S.A.

IPC2014-33579, Large Scale Test Apparatus to Test External Leak Detection Technologies
C. Apps, C-FER Technologies; I. Ozkan, National Research Council Canada; T. Rowan, M. Derakhshesh, S. Medynski, Enbridge Pipelines Inc.

IPC2014-33619, Development of Pipeline Leak Detection Technologies
J. Zhang, A. Hoffman, A. Kane, J. Lewis, ATMOS International

IPC2014-33031, Modulating Pressure Setpoints in Pipeline Pressurizing

IPC2014-33085, Benefits and Methods of Automating Surge Relief Valves
J. Konopa, K. Konopa, Liquid Meter Company Inc.

IPC2014-33098, Considerations for Hydrodynamic Slug Analysis in Pipelines
D. Galatro, F. Marin-Cordero, D. Förnbauer, D. Nerucci, ILF Consulting Engineers; X. Hu, Technische Universität München

IPC2014-33257, Research of Gas Losses During Transportation in Gas Transmission Trunk Line
R. Chen, X. Xing, X. Tian, China University of Petroleum; L. Jiang, China National Oiland Gas Exploration and Development Corporation; S. Pang, Trans-Asia Gas Pipeline Company Limited

IPC2014-33258, Calculation Method of Natural Gas Compressibility Factor and its Application in Pipeline Trade
X. Tian, X. Xing, R. Chen, L. Yang, China University of Petroleum at Beijing; S. Pang, Trans-Asia Gas Pipeline Company Limited

Z. Wang, J. Gong, H. Wu, China University of Petroleum at Beijing; Q. Li, CNOC Research Institute

IPC2014-33758, Dynamic Testing
J. Smith, R. Kalivoda, N. Gailey, FMC Technologies

Track 10: Pipelining in Northern & Offshore Environments

Track Chair: Shawn Kenny, Carleton University
Track Co-Chair: Ken Macdonald, Statoil
Track Sponsor: UniversalPegasus

Topic 10-1: Pipelining in Northern & Offshore Environments

Session 10-1-1: Design Issues
Session Chair: Shawn Kenny, Carleton University
Session Co-Chair: Ken Macdonald, Statoil
Room: TELUS Glen 208
Date: Tuesday, September 30
Time: 10:30 - 12:00

10:30
IPC2014-33078, Corrosion Protection of a Pipeline Section Inside an HDD Coastal Landfall
B. Antunes, B. Cunha, M. Genaio, PETROBRAS - Petroleo Brasileiro S.A.; E. Santana-Diaz, M. Gouriou, SAPIEM S.p.A
11:00
IPC2014-33084, Evaluation of Design Premises and Uncertainties on the Thermo-Mechanical Behavior of a Subsea Pipeline
B. Antunes, R. Familiar Solano, A. Santos Hansen, PETROBRAS - Petroleo Brasileiro S.A.

11:30
IPC2014-33314, Development of Distributed Fiber Optic Sensors for Offshore Pipeline Leak Detection
M. Kulkarni, S. Shahtova, ExxonMobil; A. Rinehart, ExxonMobil Upstream Research Company

Session 10-1-2: Offshore Pipelines & Risers
Session Chair: Shawn Kenny, Carleton University
Session Co-Chair: Ken Macdonald, Statoil
Room: TELUS Glen 208
Date: Tuesday, September 30
Time: 11:30 - 16:00

13:30
IPC2014-33161, Impact of Small-Scale Reeling Simulation on Mechanical Properties on Line Pipe Steel
K. Christoph Melwes, Salzgitter Mannesmann Forschung GmbH; M. Erdelen-Pepper, Salzgitter Forschung GmbH; H. Brauer, Salzgitter Mannesmann Line Pipe GmbH

14:00
IPC2014-33163, Full-Scale Reeling Tests of HFI Welded Line Pipe for Offshore Reel-Laying Installation
K. Christoph Melwes, S. Höhner, Salzgitter Mannesmann Forschung GmbH; M. Erdelen-Pepper, Salzgitter Forschung GmbH; H. Brauer, Salzgitter Mannesmann Line Pipe GmbH

14:30
R. Amarasinge, D. Wijewickreme, University of British Columbia; H. Eid, Qatar University

15:30
IPC2014-33736, A Review of Construction Experience With AUT of Girth Welds in Clad Linepipe
I. Macdonald, Subsea 7 Norway AS; K. Macdonald, Statoil ASA

Track 11: Strain-Based Design
Track Chair: Joe Zhou, TransCanada Pipelines Limited
Track Co-Chair: Yong-Yi Wang, CRES
Track Co-Chair: Ming Liu, CRES
Track Sponsor: Centre for Reliable Energy Systems (CRES)

Session 11-1-1: Strain Based Design Framework & Project
Session Chair: Joe Zhou, TransCanada Pipelines Limited
Room: TELUS Glen 205
Date: Tuesday, September 30
Time: 10:30 - 12:00

10:30
IPC2014-33421, Strain-Based Pipeline Design in Harsh Environments Using Large Diameter High Strain Line Pipes
N. Suzuki, PIN Technologies Corporation; T. Arakawa, JFE Steel Corporation; A. Arabey, Gazprom; JSC

11:00
IPC2014-33550, A Case Study in High Strain Capacity Pipeline Qualification: PNG LNG Project
F. Noecker II, D. Fairchild, Exxonmobil Upstream Research Company; M. Cook, M. Macia, W. Kan, ExxonMobil Development Company

11:30
IPC2014-33745, Overall Framework of Strain-Based Design and Assessment of Pipelines
Y. Wang, M. Liu, CRES; D. Horsley, Horsley Consulting Ltd.; M. Salama, Conoco Phillips; M. Sen, Enbridge Pipelines Inc.

Session 11-1-2: Strain Demand
Session Chair: Fan Zhang, Center For Reliable Energy Systems
Session Co-Chair: James Hart, SSD Inc
Room: TELUS Glen 205
Date: Tuesday, September 30
Time: 13:30 - 15:00

13:30
IPC2014-33318, Use of Discrete Element Modeling to Capture the Effect of Backfill Particle Size on the Soil Restraints of Buried Pipelines Subjected to Lateral Ground Movement
S. Dlirukshi, D. Wijewickreme, University of British Columbia

14:00
IPC2014-33323, Structural Performance of Buried Steel Pipelines Crossing Strike-Slip Faults
P. Vazouras, P. Dakoulas, S. Karamanos, University Of Thessaly

14:30
IPC2014-33611, Pipeline Response to Slope Movement and Evaluation of Pipeline Strain Demand
A. Fredj, A. Dronwitz, BMT Fleet Technology

Session 11-1-3: Material Properties & Toughness Testing
Session Chair: Timothy Weeks, NIST
Session Co-Chair: William Tyson, CanmetMATERALS
Room: TELUS Glen 209
Date: Tuesday, September 30
Time: 10:30 - 15:00

10:30
IPC2014-33046, Prediction of the Mechanical Properties of UOE Pipes for Strain-Based Application

11:00
IPC2014-33484, Ductile Fracture Behavior of Bainite-MA Dual-Phase Steels
J. Shimamura, K. Yasuda, N. Ishikawa, S. Endo, JFE Steel Corporation

11:30
IPC2014-33233, Fracture Toughness of X70 Pipe Girth Welds Using Clamped SE(T) and SE(B) Single-Specimens
D. Park, J. Gravel, H. Smith, J. Liang, CanmetMATERALS, Natural Resources Canada; D. Duan, TransCanada Pipelines

13:30
IPC2014-33571, Determination Of CTOD Resistance Curves In SENT Specimens With a Tilted Notch
K. Van Minnemuggen, R. Derks, W. De Vlaije, Ghent University; B. Verstraete, Soete Laboratory-Ghent University; P. Thibaux, ArcelorMittal Global R&D Gent, OCAS NV

14:00
IPC2014-33695, Direct Comparison of Single-Specimen Clamped SE(T) Test Methods on X100 Line Pipe Steel
T. Weeks, NIST; E. Lucon, PROTRO Inc.
Session 11-1-4: Compressive Strain Capacity
Session Chair: Ming Liu, CRES
Session Co-Chair: Shawn Kenny, Carleton University
Room: TELUS Glen 209
Date: Wednesday, October 1
Time: 08:30 - 11:30

08:30
IPC2014-33202, Refined Modeling Processes and Compressive Strain Capacity Models
M. Liu; CRES;
F. Zhang, K. Kotian, Center For Reliable Energy Systems;
S. Nanney, U.S. DOT - Pipeline and Hazardous Materials Administration

09:00
IPC2014-33321, Bending Deformation Capacity of Large-Diameter Spiral Welded Tubes
D. Valdkije, S. Karamanos, University Of Thessaly;
S. Van Es, A. Gresnigt, Delft University of Technology

10:30
IPC2014-33468, Effect of Girth Welding on Strain Capacity of X80 SAW Pipes
H. Shitamoto, E. Tsuru, H. Nagayama, Y. Nishi, Nippon Steel & Sumitomo Metal Corporation

Session 11-1-5: Tensile Strain Capacity
Session Chair: Yong-Yi Wang, CRES
Session Co-Chair: Satoshi Igi, JFE STEEL CORPORATION
Room: TELUS Glen 209
Date: Thursday, October 2
Time: 09:00 - 11:30

09:00
IPC2014-33432, Ductile Crack Extension Analysis for X80 Bending Deformation Using Damage-based Model
M. Ohata, Osaka University;
S. Igi, T. Sakimoto, K. Oi, J. Kondo, JFE Steel Corporation

11:00
IPC2014-33479, Strain Capacity Prediction of Strain-based Pipelines
14:00
IPC2014-33384, Behaviour of Releases of Carbon Dioxide from Pipelines and Vents
P. Cleaver, D. Allison, K. Armstrong, A. Halford, GL Noble Denton;
J. Barnett, National Grid Carbon

14:30
IPC2014-33477, Comparison of PIR to PIPESAFE-based 1% Lethality Zones For Natural Gas Pipelines
A. Tomic, S. Kariyawasam, TransCanada Pipelines

15:30
IPC2014-33546, Benchmarking Consequence Models with Actual Pipeline Events
G. Pettitt, M. Ramadan, J. Shackleton, Environmental Resources Management

16:00
IPC2014-33036, Forecasting the Consequences of Pipeline Failures
S. Cunha, Petrobras

Session 12-1-2: Incident Data Analysis & Target Reliability Levels
Session Chair: Mark Stephens, C-FER
Room: TELUS Macleod E4
Date: Tuesday, September 30
Time: 10:30 - 12:00

10:30
IPC2014-33366, Onshore Natural Gas and Hazardous Liquid Pipeline Natechs in the USA: Analysis of PHMSA Incident Reports
S. Girgin, E. Krausmann, European Commission Joint Research Center

11:00
IPC2014-33151, Assessment of the Reliability Level Embedded in Pipeline Design Codes
S. Timashev, A. Bushinskaya, Science and Engineering Center

11:30
IPC2014-33129, Building a Target Reliability Adaptive to China Onshore Natural Gas Pipeline
J. Zhang, Z. Zhang, Z. Yu, W. Wu, China Petroleum Pipeline Engineering Corp;
Y. Chen, China Petroleum Pipeline Coating Engineering Co., Ltd

Session 12-1-3: Failure Frequency Assessment I
Session Chair: Guy Desjardins, Desjardins Integrity Ltd
Room: TELUS Macleod E4
Date: Wednesday, October 1
Time: 08:30 - 12:00

08:30
IPC2014-33117, Development of Sinkhole Hazard for Pipeline Risk Assessment in Northern Florida
J. Keaton, L. Bozdra, AMEC Americas

09:00
IPC2014-33728, Probability of Brittle Fracture in Gas Pipelines

09:30
IPC2014-33260, Reducing Human Error Using a Human Factors Life Cycle Approach
L. Harron, Enbridge Pipelines Inc;
D. Atwood, Human Factors Applications

10:00
IPC2014-33552, Structural Reliability of Free Spanning Pipelines
F. Vanden Abeele, Subseawolf;
F. Boël, J. Vanden Berghe, Fugro GeoConsulting Belgium

11:00
IPC2014-33639, Quantitative System Specific Likelihood Algorithms for System Wide Risk Assessment
S. Kariyawasam, N. Zhang, M. Al-Amin, B. Ong, H. Wang, TransCanada Pipelines

11:30
IPC2014-33147, Probability Calculation of Equipment Impact Based on Reliability Method
J. Lu, W. Wu, Z. Zhang, J. Zhang, China Petroleum Pipeline Engineering Corporation

Session 12-1-4: Failure Frequency Assessment II
Session Chair: Shahani Kariyawasam, TransCanada Pipelines
Room: TELUS Macleod E3
Date: Thursday, October 2
Time: 10:30 - 14:00

10:30
IPC2014-33146, Pragmatic Approach to Estimate Corrosion Rates for Pipelines Subject to Complex Corrosion
M. Dann, University of Calgary;
L. Huyse, Chevron ETC

11:00
IPC2014-33511, Probabilistic Modeling of Crack Threats and the Effects of Mitigation
A. Nielsen, J. Mallet-Paret, K. Griffin, Enbridge Pipelines Inc.

11:30
IPC2014-33213, Reliability Analysis of Corroding Pipelines Considering the Growth and Generation of Corrosion Defects
H. Qin, W. Zhou, Western University

13:30
IPC2014-33368, Markovian Analysis of Aging Distributed Systems Remaining Life
A. Bushinskaya, Science and Engineering Center Ural Branch Russian Academy of Sciences;
S. Timashev, Science and Engineering Center

Session: 12-1-5 Risk Assessment I
Session Chair: Jason Skow, C-FER Technologies
Room: TELUS Macleod E4
Date: Thursday, October 2
Time: 08:30 - 12:00

08:30
IPC2014-33624, Use of Field-Owned Risk Registers as a Means of Improving Employee Awareness of Risk and Operational Safety
M. Weichel, Det Norske Veritas (U.S.A.), Inc.

09:00
IPC2014-33705, Development and Implementation of a Liquid Pipeline Quantitative Risk Assessment Model
J. Perez, C. Seguin, R. Ferdous, D. Weir, Enbridge Pipelines Inc.
Technical Tracks

Session 12-1-6: Risk Assessment II
Session Chair: Graham Goodfellow, Penspen Ltd.
Session Co-Chair: Keith Leewis P.Eng., Dynamic Risk Assessment Systems, Inc.
Room: TELUS Macleod E4
Date: Thursday, October 2
Time: 11:00 - 13:30

Topic 13-1: Standards & Regulations
Track Chair: Vincent Holohan, US DOT/PHMSA
Track Co-Chair: Iain Colquhoun, National Energy Board & The US Pipeline and Hazardous Materials Safety Administration

Session 13-1-1: Regulatory Issues
Session Chair: Robert Smith, US DOT/PHMSA
Room: HYATT Walker/Bannerman
Date: Tuesday, September 30
Time: 10:30 - 14:30

10:30
IPC2014-33040, Pipeline Hydrostatic Pressure Test Pass/Fail Criteria Used by a Regulatory Agency
M. Edwards, California State Lands Commission

11:00
IPC2014-33228, Regulatory Next Steps in Addressing Pipeline Seam Weld Challenges
S. Nanney, U.S. DOT - Pipeline and Hazardous Materials Administration

11:30
IPC2014-33323, IMP 2.0: The Evolution of PHMSA’s Approach for Improving Pipeline Integrity
J. Wiese, L. Daugherty, Pipeline and Hazardous Material Safety Administration

13:30
IPC2014-33450, The Role, Limitations, and Value of Hydrotesting vs. In-Line Inspection in Pipeline Integrity Management
J. Johnson, S. Nanney, U.S. DOT - Pipeline and Hazardous Materials Administration

14:00
IPC2014-33390, Development of Pipeline Regulations in the Norwegian Petroleum Industry and Examples of Follow Up
T. Sundby, K. Arild Anfinsen, Petroleum Safety Authority Norway
Session 14-1: Student Paper Finalist Competition

Track Chair: Alan Murray, Principia Consulting
Track Co-Chair: Bob Smyth, PetroSleeve
Track Co-Chair: Nitesh Neelanshu, Shell Canada

Topic 14-1: Student Paper Finalist Competition

Session 14-1-1: Student Paper Finalist Competition

Session Chair: Alan Murray, Principia Consulting
Session Co-Chair: Bob Smyth, PetroSleeve
Room: TELUS Glen 203/204
Date: Friday, October 3
Time: 08:00 - 12:00

08:00
IPC2014-33097, A Novel Approach for Monitoring Pipeline Corrosion Under Disbonded Coatings
F. Varela, M. Yongjun Tan, M. Forsyth, Deakin University

08:30
IPC2014-33678, Correlating Corrosion Field Data with Experimental Findings for the Development of Pipeline Mitigation Strategies
K. Chovi, W. Chen, University of Alberta; R. Kania, J. Been, TransCanada Pipelines;

G. Van Boven, Spectra Energy

09:00
IPC2014-33219, Accuracy of the Double-Clip on Gauge Method for Evaluating CTOD of SE(T) Specimens
Z. Yan, Y. Huang, W. Zhou, University of Western Ontario

09:30
IPC2014-33282, Depressurization-Induced Crack Growth Enhancement for Pipeline Steels Exposed to Near-Neutral pH Environments
M. Yu, W. Chen, University of Alberta; R. Kania, TransCanada Pipelines; G. Van Boven, Spectra Energy; J. Been, TransCanada Pipelines

10:30
A. Malekpour, B. Kaney, University of Toronto

11:00
IPC2014-33668, A New Approach Using EBSD to Quantitatively Distinguish Complex Transformation Products Along the HAZ in X80 Linepipe Steel
J. Reichert, M. Mitlzer, W. Poole, The University of British Columbia; L. Collins, Evraz North America

The Calgary Pipeline Award

IBP and IPC have a reciprocal arrangement and the best paper (and winner of the Calgary Award) at IBP 2013 in Rio was authored by G illmar Z. Batista, Marcy S. de Menezes, Andrés F. F. Acuña, Thiago L. Silveira, Celso R. Araújo, and Edgar Schneider.

Their paper, entitled "Welding and Heat Treatment of Heavy Wall API 5L X65 Sour Service Pipelines" was presented by March S. de Menezes at 11:00, Wednesday, October 1, 2014.

Abstract

In the design of the onshore part of the export gas pipeline from pre-salt, due to the high design pressure, it is necessary to apply pipes with wall thicknesses of 1.452 inches, to the design code ASME B31.8 and the Brazilian standard NBR 12712, when the wall thickness exceeds 1.25 inches, it is necessary to perform a stress relieving heat treatment after welding. The mandatory requirement of the standard raises some concerns, such as the difficulty of carrying out this treatment in field conditions, the heating effect in mechanical properties of pipe body and the stresses imposed by thermal expansion, particularly in the tie-in welds where the restrictions are significant. In the gas to be transported by these pipes, there is also the presence of H2S which can result in sulfide stress cracking. To avoid this, it is necessary to use pipes and welding procedures suitable for sour service, including sulfide stress cracking test and hardness test. Due to the particularities of this project, it was decided to conduct a comprehensive welding study that serves as the basis for the use of this material in the field. In this study, the grth weld and pipe body were evaluated in the heat treated and without heat treatment conditions. The methodology of analysis included tensile, nick-break, side bend, Charpy, CTOD, hardness, HIC and SSC tests. Additionally, the CTOD results were compared with the results from a fracture mechanics study that was done considering the residual stress not relieved because of the absence of heat treatment. The results demonstrated that the heat treatment decreases the yield and tensile strength of the API 5L X65 sour service pipe. On the other hand, all requirements were fulfilled in the as welded condition.

ASME Pipeline Systems Division Best Paper Award (The Rio Pipeline Award)

IPC 2014 will carry on 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 2014 technical sessions, the winner shall receive the Rio Pipeline Award at the final luncheon of the Conference on Friday, October 3.

Apart from gaining the 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 September 2015.
Special / Panel Sessions

Dr. Mo Mohitpour Distinguished Lecture Series
Room: TELUS Macleod Hall D
Date: Wednesday, October 1
Time: 13:45 - 15:30

Purpose:
Recognize the technical contributions of individuals that have stood the test of time

Background:
At IPC 2012 the conference organizing committee started the tradition of honoring an individual that has made a significant contribution to the pipeline industry with their professional work as a Distinguished Lecturer. In 2012, IPC honored Willard A. (Bill) Mawey. In special recognition of Dr. Mo Mohitpour, posthumously, IPC has established this panel in honor of Dr. Mo to recognize his significant technical contribution to the pipeline industry. Dr. Mo’s significant contributions to the pipeline industry will be recognized by Dr. Alan Murray. Two of Dr. Mo’s previously published papers will then be represented. These papers will also be presented to recognize the significant contributions of Dr. Mo and is other technical collaborators.

The goal of the Distinguished Lecture Series is to present papers published over the past several decades that have provided a foundation for modern pipeline technology. The papers and presenters were identified by a selection committee and the presentations will provide a perspective on development of the original work, how the work has evolved over time, and how the work aligns with technical approaches still used today.

Panel Presenters
Panel Facilitator:
Taylor Shi

Panel Participants
• Dr. Alan Murray
• Dr. Kamal Botros
• Mr. Gabriel Nahas

Pipeline Executive Leadership—Challenging Pipeline Performance
Room: TELUS Macleod Hall D
Date: Wednesday, October 1
Time: 15:30 - 17:30

Purpose:
Provide conference attendees with the opportunity to better understand the challenges faced by Executive Leadership. Define ‘Pipeline Performance’, and discuss key challenges across the pipeline industry from the perspective of Executive Leadership

Background:
IPC is a forum to share experience across the industry, challenge the development and implementation of new technology, and to disseminate information and experiences that can be used to increase the safety and reliability of pipelines. Recognizing that all stakeholders have an obligation to increase pipeline safety and reliability, this forum has been created as a unique opportunity and presentation format for Executive Leadership from pipeline operating companies to present their perspective, along with an opportunity to answer questions raised by conference attendees.

Panel Presenters
Panel Facilitator: Patrick Vieth, Dynamic Risk

Panel Participants
• Tim Felt, Colonial Pipeline - President and CEO
• Alex Pountsoulis, TransCanada Pipelines, Executive Vice-President and President, Development
• Alan Armstrong, Williams Companies - President and CEO
• Ron McClain, Kinder Morgan Energy Partners – Products Pipelines - President

Panel Session 1: Integrity Leading KPIs: Lessons Learned & Path Forward
Room: TELUS Glen 206
Date: Monday, September 29
Time: 08:00 - 11:30

Purpose
The purpose of the panel is to share lessons learned for identifying a path to Key Performance Indicators (KPIs) enabling the anticipation of integrity threats leading to incidents. The panel will discuss benefits and challenges in measuring, trending and interpreting pipeline integrity performance. Furthermore, the panel seeks to create a brainstorming atmosphere engaging audience participation with the goal of synthesizing a potential path forward to leading KPIs.

Background
Pipeline industry standards such as API 1160 and ASME B31.8S have been continuously updating their recommended indicators for assessing pipeline integrity performance. Pipeline industry associations such as CEPA and API-ADPI have also worked on indicator standardization and reporting resulting in the development of strategies and advisories for performance improvement.

Similarly, provincial and federal regulators (e.g. PHMSA, NEB, AER, BC OGC) have recently updated their performance measures. The UK Health and Safety Executive has developed tools for improving Health, Safety and Environmental performance within the safety culture context, as well as KPIs for evaluating and reviewing integrity management performance.

Multiple stakeholders have challenged pipeline integrity performance, requiring the review of the existing leading indicators and their ability to anticipate incidents and trigger actions.

Panel Presenters
Panel Facilitator: Phil Kormann

Panel Participants:
• Ian Colquhoun, National Energy Board of Canada
• Joe Zhou, TransCanada Pipelines Limited
• Harvey Haines, Kiefner & Associates – APPL RTD Group
• James Ferguson, Stantec
• Felix G. G. Saint-Victor, DNV
• Thomas Lindey, Canadian Energy Pipeline Association

Panel Session 2: The Quest for Social Acceptance
Room: TELUS GLEN 201/202
Date: Monday, September 29
Time: 08:00 - 11:30

Purpose
• Inform and enhance the knowledge and awareness of attendees about the importance and driving forces behind the meaning and understanding of social acceptance as it pertains to major oil and gas infrastructure projects...
Panel Sessions


Room: TELUS Glen 206
Date: Monday, September 29
Time: 13:15 - 16:00

Purpose

The panel, through its discussions, will enable greater North American alignment on Safety Management Systems and Safety Culture for energy pipelines.

Background

Both the United States and Canada are witnessing steady growth in their energy sectors, spurring increased pipeline construction and repurposing of existing lines. This growth, and a related increase in public interest with regard to safety and environmental issues associated with energy production and transportation, has brought pipeline regulators to the forefront of the conversation around safe and sustainable growth in the energy sector.

Other major industries have successfully implemented comprehensive Safety Management Systems (SMS) in support of an effective safety culture. This has resulted in marked improvements in company performance. Regulators believe it is logical to move forward in the development and implementation of similar programs for the oil and gas industry.

The U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration (PHMSA) and Canada’s National Energy Board (NEB) continue to coordinate by sharing information, sponsoring public events to gain broader perspectives, participating in the development of industry standards, and releasing regulatory guidance/requirements on SMS and safety culture. However, the path toward further development and implementation of SMS could be improved through further alignment of North American regulatory requirements. Major alignment must be a hallmark of this initiative since several sizable pipeline companies own and operate pipelines under both U.S. and Canadian regulatory frameworks.

This panel will summarize the related actions taken to date, showcase the growing areas of regulatory alignment, and build upon the current regulatory vision for full implementation of SMS and an overall safety culture within North American pipeline companies.

Panel Presenters

Panel Facilitators: Vincent D. Holohan, US DOT/PHMSA; Iain Colquhoun, National Energy Board

Panel Participants:

- Linda Daugherty, Deputy Associate Administrator for Pipeline Safety, DOT/PHMSA
- Jim Fox, Business Unit Leader, Strategy & Analysis, NEB
- Jeff Wiese, Associate Administrator for Pipeline Safety, DOT/PHMSA
- Claudine Bradley, Technical Leader - Safety, Operations, NEB
- Peter Watson, Chair and Chief Executive Officer, NEB

Panel Session 4: Pipeline Leak Detection Systems: Industry Regulations, Strategies, Challenges, & Technology

Room: TELUS Glen 201/202
Date: Monday, September 29
Time: 13:15 - 17:00

Purpose

The objective of this panel session will be to present perspectives on how industry is progressing on various fronts related to leak detection performance. Panel discussions will provide opportunities for alignment and to give feedback on direction of industry based initiatives.

Background

Pipeline companies are being held to a standard of perfection regarding safe pipeline operation and environmental responsibility. People, technology, process, procedures, standards and regulations will need to converge to meet what the public expects when pipeline incidents occur. Effectively mitigating impacts with prompt detection is a critical element to achieving this objective.

Leak detection is a key focus area within the oil and gas pipeline transportation industry and is being reviewed extensively by government regulators, operating companies and technology vendors. Regulatory bodies are exploring ways to push the industry to perform to a higher leak detection standard and many aspects of leak detection are being reviewed including proper front-end design, standardization, research, rupture detection and potential consideration of leak detection performance targets. Understanding current and potential future expectations is critical as engineering approaches for new pipelines and retrofitt/retrofit projects will need to be adjusted.

Technology providers need to identify new and innovative ways to go beyond the current limits and enhance the key performance indicators of leak detection systems including sensitivity, accuracy, reliability and robustness.

The panel presenters will deliver leak detection content relating to USA and Canadian regulations, pipeline operational challenges, technology research and the application of different technologies such as computational pipeline monitoring and external systems.

Expected results include a documented list of key points raised during the discussions, suggested and existing strategies coming from different organizations, as well as ongoing and future initiatives on pipeline leak detection.

Panel Presenters

Panel Facilitators: Ray Philippenko, Enbridge Pipelines Inc.; Renan Baptista, Petrobras R&D Centre

Panel Participants:

- Steve Nanney, US DOT / PHMSA
- Iain Colquhoun, National Energy Board
- Jun Zhang, ATOMS
- Shane Siefkenal, SWRI
- Dave Bolton, Enterprise Products
- Steve Redding, PG&E
- Henry Ren, Chevron
Monday, September 29, Full Day Tutorials

Time: 08:00 – 17:00

Tutorial #1: Pipeline Integrity Evaluations & Engineering Assessments
Presenter: Andrew Cosham, Atkins Boreas
Room: Imperial 6
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 presently 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: Pipeline Risk Management
Presenter: Mark Stephens, C-FER Technologies
Room: Imperial 3
Description:
The course will focus on:
• Hazard and threat identification
• Methods for probability and consequence estimation
• Risk measures and the determination of acceptable risk levels
• Risk control strategies

Tutorial #3: Pipeline Design & Construction: 101
Presenter: Alan Murray, Principia Consulting
Room: Imperial 4
Description:
Overview of the following fundamentals:
• Hydraulic design considerations for gas, liquid and two phase systems
• Route selection, water crossings and geotechnical issues
• Criteria for materials and coating selection
• Design loads on buried pipe
• Batching in products lines
• Pigging operations for cleaning and inspection lines
• Surveillance systems, maintenance strategies, risk based inspection and repair methods

Tutorial #4: An Engineering Overview of Off-Shore Pipeline Design
Presenters: Mark Marley, DNV; Prof. Kenneth MacDonald
Room: Walker
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
• Pipeline integrity
• Operation, inspection, re-qualification and repair

Tutorial #5: Pipeline Materials
Presenters: Stephen Rapp, Spectra Energy; Gary Vervake, Spectra Energy
Room: Neilson 1
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 SL
   • 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 #6: Geotechnical Concerns in Pipeline Design & Operation
Presenters: Alex Baumgard, BGC Engineering Inc.; Mark Leir, BGC Engineering Inc.
Room: Stephen
Description:
The purpose of this workshop is to emphasize the importance of early identification of environmental considerations when planning and designing a pipeline. Major topics will include:
• First Nations Consultation and Archaeological Impact Assessments
• Watercourse and wetlands considerations
• Wildlife considerations for pipeline routing
• National Energy Board requirements
• Emergency Preparedness, Emergency Response, and Remediation
• Update on Province of British Columbia’s proposed new, world class spill response regime
• Reclamation
• Importance of Route selection and early consideration of environmental, socio-cultural, technical and economic constraints and opportunities

Tutorial #7: Environmental Factors Influencing Pipeline Design & Operation
Presenter: Trevor Bohay, Golder Associates Ltd.; Brent Murphy, Golder Associates Ltd.; Corey Stelera, Golder Associates Ltd.; Corey De La Mare, Golder Associates Ltd.; Brent Olson, Golder Associates Ltd.; Les Fuller, Golder Associates Ltd.; Dennis O’Leary, Golder Associates Ltd.; Kevin Seel, Golder Associates Ltd.
Room: Bannerman
Description:
The purpose of this workshop is to emphasize the importance of early identification of environmental considerations when planning and designing a pipeline. Early identification eases mitigation efforts, which can have a positive effect on the permitting process. In addition to planning and routing studies, the entire environmental lifecycle of a pipeline will be discussed including mitigation of environmental concerns during construction, emergency response related to pipeline spills, and subsequent remediation of such spills, followed by reclamation at the end of the pipeline’s life. Tools for routing-decision making will be discussed.

Major topics will include:
• First Nations Consultation and Archaeological Impact Assessments
• Watercourse and wetlands considerations
• Wildlife considerations for pipeline routing
• National Energy Board requirements
• Emergency Preparedness, Emergency Response, and Remediation
• Update on Province of British Columbia’s proposed new, world class spill response regime
• Reclamation
• Importance of Route selection and early consideration of environmental, socio-cultural, technical and economic constraints and opportunities

Tutorial #8: Fracture Mechanics
Presenters: Carl E. Jaske, DNV; Tom Bubenik, DNV
Room: Herald
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
Monday, September 29,  
Half Day Tutorials  
Morning Sessions

Time: 08:00 – 11:45

**Tutorial #9: Internal Corrosion & Solids Management**  
Presenter: Sandy Williamson, Ammonite Corrosion  
*Room: Imperial 1*

**Description:**  
The discussion will examine the following:  
• Effect of flow on corrosion  
• Localized corrosion and corrosion monitoring  
• Predicting localized corrosion in pipelines  
• Options for mitigating internal corrosion

**Tutorial #10: SCADA & Leak Detection Systems**  
Presenters: Mike Yoon, Voon Consulting; Bruce Warren, BCT Consulting  
*Room: Doll*

**Description:**  
The tutorial will provide an overview of pipeline SCADA systems and leak detection systems for hydrocarbon liquids. The SCADA overview will provide an overview of SCADA concepts, history, future trends and SCADA project management. The tutorial may look at data accuracy, data formats, data security, polling methodologies, communication system alternatives and provide a description of the basic functions within the SCADA host. Leak detection will discuss material balance methods, with and without line pack compensation, and will discuss basic principles as they relate to instrumentation selection and SCADA system design, together with a discussion on leak detect ability and uncertainty.

**Tutorial #11: Pipeline Stress Analysis**  
*Room: Imperial 2*

**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.

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Monday, September 29,  
Half Day Tutorials  
Afternoon Sessions

Time: 13:15 – 17:00

**Tutorial #12: External Corrosion Basics**  
Presenter: Robert Worthingham, Worthingham Professional Services Inc.  
*Room: Imperial 2*

**Description:**  
This tutorial will discuss the primary methods of external corrosion control for pipelines. A brief summary of the science of external corrosion will be provided followed by theory and practical aspects of pipeline coatings and cathodic protection. Both plant and field applied coating application concepts will be discussed. Conventional impressed current cathodic protection systems and associated monitoring will be presented.

**Tutorial #13: Design & Selection of Compression Equipment**  
Presenter: Tom Van Hattem, Strategic Maintenance Solutions Inc.  
*Room: Doll*

**Description:**  
The world of compression design continues to change with new challenges related to lower environmental footprint, fuel flexibility, more remote and challenging locations such as subsea pipelines and transportation of LNG and CO2. This tutorial provides an introduction to compressor design and selection by covering topics including:  
• Modern design of pipeline compressors, including centrifugal, reciprocating, and screw compressors, gas turbines, electric motors and engines  
• Performance characteristics for different driver and driven equipment combinations  
• Acoustic/mechanical design studies  
• Rotodynamic considerations and torsional analysis  
• Impact of environmental issues  
• Selection criteria for compressors and drivers

**Tutorial #14: Pipeline Assessment Methods**  
Presenters: Keith Leewis, Dynamic Risk; Phillip Nidd, Dynamic Risk USA  
*Room: Imperial 1*

**Description:**  
The discussion will examine the following:  
• Description of Integrity Assessment Types  
• Pressure Testing  
• Direct Assessment  
• In-line Inspection  
• Failure threats individual and interactive  
• Selection of integrity assessment methods depending on threat(s)  
• Discussion of Alternatives

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Wednesday, October 1,  
Half Day Afternoon Sessions

Time: 13:30 – 16:30

**Tutorial #15: Management of Stress Corrosion Cracking**  
Presenter: Jenny Been, TransCanada; Elvis Sanjuan Riverol, TransCanada; Derek Spitzmacher, Pinnacle Integrity Engineering  
*Room: Stephen*

**Description:**  
The following subject matter will be discussed:  
• What is Stress Corrosion Cracking and what is Corrosion Fatigue? (photos, show and tell samples, mechanisms)  
• Do we have it and how do we know? (data gathering, predictive modeling, assessments incl. EMAT, defect assessment, hydrotests)  
• How sure can we be? How sure do we need to be? (assessment reliability, inspection interval, industry best practices, regulations)  
• What do we do when we find cracks? (in the ditch, crack sizing techniques, mitigation methods and strategy)  
• Now that we have found cracks on our line, how do we manage the rest?

**Tutorial #16: Recommended Practices for Pipeline Repair**  
Presenter: Bob Smyth, PetroSleeve  
*Room: Herald/Doll*

**Description:**  
Discussion on pipeline integrity issues, repair and new technologies with a focus on:  
• Protocols  
• Defect descriptions  
• Defect analysis  
• Safety  
• Repair Methods  
• Codes & standards

**Tutorial #17: Reliability Based Design & Assessment**  
Presenter: Maher Nessim, C-FER Technologies  
*Room: Walker/Bannerman*

**Description:**  
An Introduction on Reliability Based Design and Assessment  
• An introduction to reliability and limit states design methods  
• Application  
• Target reliability levels  
• Reliability estimation techniques

**Tutorial #18: Facilities Integrity Management**  
Presenter: Wytze Sloterdijk, DNV KEMA Energy & Sustainability  
*Room: Neilson 2*

**Description:**  
Managing Facility Integrity. Topics to be discussed include:  
• Risk management  
• Integrity planning  
• Maintenance optimization

**Tutorial #19: Pipeline In-line Inspection — Validation & Use of Results**  
Presenter: Phillip Nidd, Dynamic Risk USA; Keith Leewis, Dynamic Risk  
*Room: Neilson 1*

**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.