Proceedings of 2024 15th International Pipeline Conference

(IPC2024)

Volume 2A

September 23-27, 2024 Calgary, Alberta, Canada

Conference Sponsor
Pipline Division

THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS

Two Park Avenue * New York, N.Y. 10016

© 2024, The American Society of Mechanical Engineers, 150 Clove Road, Little Falls, NJ 07424, USA (www.asme.org)

All rights reserved. "ASME" and the above ASME symbols are registered trademarks of the American Society of Mechanical Engineers. No part of this document may be copied, modified, distributed, published, displayed, or otherwise reproduced in any form or by any means, electronic, digital, or mechanical, now known or hereafter invented, without the express written permission of ASME. No works derived from this document or any content therein may be created without the express written permission of ASME. Using this document or any content therein to train, create, or improve any artificial intelligence and/or machine learning platform, system, application, model, or algorithm is strictly prohibited.

INFORMATION CONTAINED IN THIS WORK HAS BEEN OBTAINED BY THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS FROM SOURCES BELIEVED TO BE RELIABLE. HOWEVER, NEITHER ASME NOR ITS AUTHORS OR EDITORS GUARANTEE THE ACCURACY OR COMPLETENESS OF ANY INFORMATION PUBLISHED IN THIS WORK. NEITHER ASME NOR ITS AUTHORS AND EDITORS SHALL BE RESPONSIBLE FOR ANY ERRORS, OMISSIONS, OR DAMAGES ARISING OUT OF THE USE OF THIS INFORMATION. THE WORK IS PUBLISHED WITH THE UNDERSTANDING THAT ASME AND ITS AUTHORS AND EDITORS ARE SUPPLYING INFORMATION BUT ARE NOT ATTEMPTING TO RENDER ENGINEERING OR OTHER PROFESSIONAL SERVICES. IF SUCH ENGINEERING OR PROFESSIONAL SERVICES ARE REQUIRED, THE ASSISTANCE OF AN APPROPRIATE PROFESSIONAL SHOULD BE SOUGHT.

ASME shall not be responsible for statements or opinions advanced in papers or . . . printed in its publications (B7.1.3). Statement from the Bylaws.

For authorization to photocopy material for internal or personal use under those circumstances not falling within the fair use provisions of the Copyright Act, contact the Copyright Clearance Center (CCC), 222 Rosewood Drive, Danvers, MA 01923, tel:978-750-8400, www.copyright.com.

Requests for special permission or bulk reproduction should be addressed to the ASME Publishing Department, or submitted online at: https://www.asme.org/publications-submissions/journals/information-for-authors/journalguidelines/rights-and-permissions

ISBN: 978-0-7918-8854-4

TABLE OF CONTENTS

Taojun Liu, Chris Holliday	I
Evaluation of Selective Seam Weld Corrosion Susceptibility	10
Prediction of Critical Exposure Temperature (CET) of Natural Gas Pipeline- a Practical Approach Ehsan Ebrahimnia Bajestan, Bassam Saad	24
Quantifying Corrosion Patterns: A Study of Corrosion Clustering Around Elevation Valleys With a Large Inline Inspection Dataset	31
Accounting for Corrosion Growth and Interaction in Future Severity Assessments	41
Pipe Spring System: The MFL Identification, Characterization, and Assessment of Both Defects and Sleeve	54
Modeling of Thermal Cycling on Initiation of Stress Corrosion Cracking	59
Defect Separation for Full-Scale Burst and Fatigue Testing	70
Full-Scale Burst Tests With Hydrogen	79
Determination of Safe Excavation Pressure During Hoe Ramming Activities	91
How Does Your Technology Fit? A Guide to New ILI Technology Validation	101
Predicting Fatigue Growth of Pipeline Cracks With Non-Ideal Depth Profiles	110
Pipeline External Corrosion Model Validation	119
Pipeline Circumferential Cracking in Near-Neutral pH Environment Under the Influence of Residual Stress	131
Finite Element Analyses of Burst Capacities of Pipelines Containing Pinhole-in-Corrosion Defects Yufei Shen, Wenxing Zhou	144
Impact of Operating Temperature Increase on Liquid Pipeline Corrosion Management	152

Challenges to Manage Short But Deep Crack-Like Features	161
Reducing Cost of ILI Inspections by Assessing and Improving Accuracy of Past Inertial Surveys	169
Development of Earthquake-Resistance Evaluation Method for Composite-Repaired Pipelines Considering Interface Delamination	179
Pragmatic Study of Dent Restraint Conditions for ILI-Reported Dents Based on API RP 1183	192
Different Vintage Pipeline Coating Failure Mechanisms and External Corrosion Conditions Between Liquids and Gas Transmission Pipelines Hermain Kazmi, Jiajun (Jeff) Liang, Amanda Bai, Hena Rehman, Haralampos (Harry) Tsaprailis	199
Matching of Corrosion Features in Multiset Pipeline In-Line Inspection Data Utilizing Relative Point Positions	205
Experimental Evaluation of Fitness-for-Service Assessment Procedures for Line Pipes With Circumferential Crack-Like Features	212
Development of an Advanced 3D Profile Matching Approach for Pipeline Dent FEA Assessment	221
Prioritizing the Correct Crack-Like Feature for Remediation Requires Burst and Fatigue Calculations	232
Steven J. Polasik, Ben Hanna, Zach Booth, Tom Bubenik An Investigation of Indicators for Determining Significant Changes in Dent Shapes Using Repeat ILI Data Morry Bankehsaz, Ryan Sager, Andrew Wilde	239
Skelp Weld Crack Failure Investigation of 24" Helical Welded Pipeline	250
Effects of Corrosion Pit Idealization Shape on the Susceptibility of Crack Initiation in the Analysis of Pipeline Dents Interacting With Corrosion	259
A Direct Assessment `Style' Methodology for Evaluating Type B Sleeves	269
Historical Perspective on Wind-Induced Vibration of Above-Ground Pipeline Configurations on the Alaskan North Slope	277
Development of an Ultrasonic ILI Tool for the Assessment of Crack-Type Anomalies in Ammonia-Carrying Pipelines	288

Engineering Critical Assessment for MAOP Reconfirmation: Insights From a Project Instituted by a	
Consortium of Pipeline Operators	295
An Overview of the 2021 Edition of the PRCI Pipeline Repair Manual	302
In-Situ Determination of Pipe Body Fracture Toughness Using Planing-Induced Microfracture Method	309
Xuejun Huang, Bryan Feigel, Aidan Ryan, Intisar Rizwan I Haque, Brendon Willey, Simon C. Bellemare	
Vibroacoustic Technology for Pig Tracking: Case Studies and Operational Insights for Permanent or Temporary Installations	316
Ana Paula Gomes, Marco Marino, Fabio Chiappa, Matteo Rota	
Metallurgical Analyses of 26 EMAT Anomalies on a 1949 Vintage Electric Flash Welded Pipeline	322
Non-Destructive Evaluation of Pipe Seam Toughness via Frictional Sliding	332
An Analysis of Flow Strength Models for Failure Pressure Prediction of Metal Loss Features in Oil and Gas Pipelines	339
Colin Scott, Abu Muntakim	
Flow-Induced Vibration Assessment and Mitigation for Compressor Station Expansion	349
Application of PyAnsys for Level 3 Assessment Tool Development	357
Development of an ILI Service for Heavy Wall Pipelines Based on EMAT Technology	367
Case Study: Leveraging API 1163 Validation and Verification to Manage SCC Using ILI Ultrasonics Crack Tool	375
Rogelio Guajardo, Santiago Urrea	
Optimal Balancing of ILI Excavations and Integrity Confidence Through Engineering Assessment Methods	383
Stephen F. Biagiotti Jr., Daniel Bruce, Bhaskar Neogi, Phillip G. Nidd, Jonathan Prescott	
A Practical Approach to Manage Hard Spot Threat	390
Advanced Surface Loading Stress Analysis Using CEPA Model	398
Optimized ILI-based Corrosion Management Program Towards a High Reliability Industry	408
Utilizing Partial Safety Factors to Better Manage Stress Corrosion Cracking on Pipelines	416

Detailed Elastic-Plastic Finite Element Analysis Study to Determine an Optimal Process for Type-B	424
Repair Sleeve Welding	424
Assessment of Previously Examined Dent Recoated With Two-Part Epoxy and Later Found With Near Neutral Stress Corrosion Cracking - What Was Missed	437
Composite Repair of Large-Size Diameter Pipe With Severe Metal Loss Defects	446
Guidelines for Effective Management of Corrosion Coincident With Seam Welds	455
Phased Array Non-Destructive Error Measurement in the Characterization of Axially and Circumferentially Oriented Crack and Weld Defects in Transmission Pipelines	463
Verification of Internal Corrosion Through ILI and Non-Destructive Testing: Lessons Learned	468
Getting to the Bottom of the Groove: NDE of SSWC	477
Solving the Non-Linear ILI Sizing Challenge of Crack-Like Flaws With Bayesian Logic	488
Profile Matching for Performance Assessment of Dented Pipe	497

Author Index