

Corrosion Conference and Expo 2017

**New Orleans, Louisiana, USA
26 - 30 March 2017**

Volume 1 of 8

ISBN: 978-1-5108-4034-8

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2017) by NACE International
All rights reserved.

Printed by Curran Associates, Inc. (2017)

For permission requests, please contact NACE International
at the address below.

NACE International
15835 Park Ten Place
Houston, Texas 77084
USA

Phone: +1-281-228-6200
Fax: +1-281-228-6300

firstservice@nace.org

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

VOLUME 1

STG 03, STG 02: OFFSHORE COATING TECHNOLOGY SYMPOSIUM

Evaluating Corrosion Under Protective Coatings for Steel in Marine Environments	1
<i>James Ellor</i>	
Accelerated Offshore Coating Performance Testing	16
<i>Benjamin Chang</i>	
Navigating the Issues Offshore.....	25
<i>Michael Yee</i>	
Ultra Tolerant Coating Technology: The 15 Years Path From Maintenance to New Construction	35
<i>Joao Salvado Azevedo</i>	
Effect of Water Soluble Salts Affecting Long-Term Durability of Carbon Steel Coated with Epoxy Paint.....	50
<i>Chuljung Kim</i>	
Assessing the Influence of Coating Thickness on its Mechanically Induced Loss of Integrity	59
<i>Shyama Ranade</i>	
New Developments in Coatings for Extended Lifetime for Offshore Wind Structures	68
<i>Claus Erik Weinell</i>	
Repair Coatings for TSA	81
<i>Ole Knudsen</i>	
Epoxy High Temperature Coatings and Considerations	95
<i>Muni Ramakrishnan</i>	
Superhydrophobic Coatings and Oil and Water Separation	101
<i>Rigoberto Advincula</i>	
Are Drill Pipe Conventional Coatings Suitable for Subsea Early Production Risers?.....	108
<i>Rodrigo Barreto</i>	
The Effect of a Cleaning Additive in Conjunction with Waterjetting of Abrasive Blasting for Offshore Coating Maintenance	122
<i>Jerry Woodson</i>	
MIC-Resistant HDPE Lining for Seawater Applications	135
<i>Emily Hunt</i>	

STG 03: ADVANCES IN CUI TECHNOLOGIES

Understanding Insulation Chemistry Proven to Inhibit Corrosion Under Insulation (CUI)	146
<i>David Shong</i>	
Cyclic CUI Testing of Insulation Materials	152
<i>Soeren Rasmussen</i>	
Spread of Corrosion Assessment on Flexible Elastomeric Insulation Systems in a Continuous Salt-Water Spray Environment	161
<i>Luis Mario Rodriguez</i>	
Comparison of Insulation Materials and Their Roles in Corrosion Under Insulation.....	175
<i>Thunyaluk Pojtanabuntoeng</i>	
Performance of Three Types of Coatings in a Simulated Corrosion Under Insulation Condition	189
<i>Junki Miyashita</i>	
Performance of Next Generation CUI Mitigation Systems	200
<i>Neil Wilds</i>	

STG 05: AC INTERFERENCE, AC INDUCED CORROSION, INDUCED AC RISK ASSESSMENT, MONITORING AND MITIGATION

The Evolution of AC Predictive and Mitigation Software	212
<i>John Dabkowski</i>	
Case Study of AC interference on an Urban Gas Pipeline: Field Test, AC Mitigation Design and Assessment	225
<i>Xiaxi Li</i>	
Researches on AC Corrosion Risk Assessment Criteria for Cathodically Protected Carbon Steel.....	236
<i>Yanxia Du</i>	
Calculating and Tracking Soil Resistivity Change in High AC Corridors	249
<i>Jamey Hilleary</i>	
Challenges in Mitigating AC Interference in Remote Areas	255
<i>Malvin Luk</i>	
Challenging AC Corrosion Mitigation System for 100-Mile Long Pipeline	266
<i>Dale Lindemuth</i>	
Prioritization of Potential HVAC Interference on a 6,000 Mile Transmission Pipeline System.....	281
<i>Meng Lopez-Garrity</i>	

Effect of Chemical Environment and pH on AC Corrosion of Cathodically Protected Structures.....	295
<i>Andreas Junker-Holst</i>	
The AC Close Interval Survey and Other Common AC Measurement Errors	309
<i>Wolfgang Fieltsch</i>	
AC Interference and Mitigation: Heartland Case Study	323
<i>Matthew Lechelt</i>	
Review of Recent Developments in Induced AC Current Corrosion Mitigation Design, Materials, Installation and Monitoring Technologies	331
<i>Todd Sirota</i>	
The Use of Ultrasound for Monitoring the Impact of Induced AC Corrosion on Underground Structures	343
<i>Rob Leary</i>	
Effect of Transmission Pipeline Properties on Alternated Induced Voltage	352
<i>Alfonso Garcia Rojas</i>	
The Influence of Scale Formation on the AC Corrosion of API Grade X65 Pipeline Steel Under Cathodic Protection	366
<i>Elmira Ghanbari</i>	

STG 05: ANODIC & CATHODIC PROTECTION

Cathodic Protection Coupon Use for Buried Piping in Plant (I.E., Complex) Facilities.....	379
<i>Douglas Gilroy</i>	
Achievement of Cathodic Protection of Buried Steel Pipelines by Either Passivity or Immunity	389
<i>Fumio Kajiyama</i>	
Deep Anode Bed in a Flowing Atresian Aquifer	397
<i>Dale Claassen</i>	
Inspection and Mitigation of Underground Corrosion at Anchor Shafts of Telecommunication Towers.....	404
<i>Peyman Taheri Bonab</i>	
Modeling of Multi-Pipeline Corridor CP Potential Profile with Common Cathodic Protection System.....	419
<i>Rogelio De Las Casas</i>	
Pipeline New Construction Challenges	428
<i>Eric Langelund</i>	
Methodology to Estimate Edge Effect on Direct Current Cathodic Protection Coupons.....	435
<i>Pavan Shukla</i>	
In Defense of the Monolithic Isolation Joint.....	444
<i>Michael Monica</i>	
Combined Cathodic and Anodic Interference on a Pipeline - Detection, Analysis and Mitigation of Corrosion Risk	462
<i>Rituraj Mishra</i>	
Protection of Deep Sea Steel Structures Using Thermally Sprayed Aluminium	469
<i>Shiladitya Paul</i>	
Influence of Anodic Current on Corrosion Protection Conditions of Buried Steel Pipeline Under Cathodic Protection	480
<i>Tomoyuki Nagai</i>	
High Voltage Direct Current Interference on Buried Pipelines: Case Study and Mitigation Design.....	488
<i>Runzhi Qin</i>	
Retrofit and Management of Water Pipelines with Cathodic Protection: Case Studies	499
<i>Mersedeh Akhoondan</i>	
Use of Corrosion Rate Probes to Evaluate Pipeline Cathodic Protection Performance.....	508
<i>Vera Kustova</i>	
Dealing with Pipelines Positive Potential - A Case of Study	519
<i>Javier Montanez Villamizar</i>	
Assessment of Effects of Cavities and Narrow Channels on CP Design in the Marine Environment	534
<i>Tim Froome</i>	
Can an Intermittent Cathodic Protection System Prevent Corrosion of Buried Pipeline?	546
<i>Marco Ormellese</i>	
Cathodic Protection of Stainless Steel 3¹6L Rotating Screens on Seawater Intake Structures	557
<i>John Norris</i>	
Effect of Trench Breaker Foams on Pipeline Cathodic Protection.....	573
<i>Sujay Math</i>	
Automated Cathodic Protection Waveform Analysis	585
<i>William Mott</i>	
Challenges in Providing Effective Cathodic Protection to Thermally Insulated Pipeline Risers.....	596
<i>Stephen Gibson</i>	
Chemical and Electrical Stability of Reference Electrodes in Sand Bed Dosed with Volatile Corrosion Inhibitors	604
<i>Pavan Shukla</i>	
Optimization of CP Design with Consideration of Temperature Variation for Offshore Structure	612
<i>Min Sung Hong</i>	

STG 08: CORROSION MANAGEMENT, PLANNING, DEVELOPMENT, IMPLEMENTATION & SUCCESS

Combining CP System and Pressure Monitoring at Gas Storage Fields Using Wireless Networked Systems.....	624
<i>Jamey Hilleary</i>	
Developing a Life-Cycle Cost Analysis Framework to Evaluate the Cost-Effectiveness of Hydroelectric	633
<i>Bobbi Jo Merten</i>	
CFD-based Prediction of Flow Induced Corrosion	648
<i>Ashwini Chandra</i>	
Assessing and Sharing Success: Comparing Program-wide Corrosion Engineering Service Benefits Against Individual Project Design Packages	663
<i>Jeffry Giddings</i>	
Corrosion Looping for Down Stream Petroleum Plants: An Enigma for RBI Engineers, A Perspective From the Review of Mechanical Integrity Systems	675
<i>Muazu Mohammed</i>	
Heat Exchanger Failure Case Study: Understanding the Total Cost of a Corrosion Issue in the Oil and Gas Industry	685
<i>Laura Cardenas</i>	
Review of Recommended Practices for Removal of Hydrogen Through Bakeout for Welded Repairs.....	695
<i>Mark Sadowski</i>	
Corrosion Management Planning Lessons for Seawater Conveyance in Mining	711
<i>Zoe Coull</i>	
Risk Based Approach to Integrated Asset Corrosion Management in the Oil and Gas Industry	719
<i>Joseph Akanni</i>	

STG 11: WATER TREATMENT VS. THE ECONOMICS ASSOCIATED RISK AND RELIABILITY

Monitoring, Evaluating, and Control of Corrosion and Scaling in Higher Pressure Industrial Boiler Systems	729
<i>John Kelly</i>	

VOLUME 2

Corrosion Protection Enhancement by the Use of Polymers.....	744
<i>John Richardson</i>	
Inhibitory Activity of Biopolymers, Synthetic Polymers, and Phosphonates Against the Formation of Calcium Phosphate Scale in Cooling Water Systems.....	759
<i>George Nicolas</i>	
Kinetic and Morphological Investigation of Calcium Sulfate Dihydrate (Gypsum) Scale Formation on Heat Exchanger Surfaces in the Presence of Inhibitors	772
<i>Zahid Amjad</i>	
Modeling Lead and Copper Corrosion and Solubility in Municipal Water Distribution Systems.....	787
<i>Robert Ferguson</i>	
PBTC Revisited.....	799
<i>Robert Ferguson</i>	
Failures of Brass Components in Water and Steam Systems	814
<i>James Dillon</i>	
The Facts and a Few Urban Legends Too Around Flow-accelerated Corrosion	842
<i>Luis Carvalho</i>	
A Phosphorous-Free Alternative for Corrosion Control	849
<i>Eric Ward</i>	
An Integrated Approach to Optimizing Corrosion Control for Refinery Process and Boiler Systems.....	864
<i>Gregg Robinson</i>	
The Case Against Galvanized Piping in Domestic Water Systems	878
<i>Catherine Noble</i>	
Extended Understanding of Inhibition Mechanism of New Corrosion Inhibitor via Electrochemical Measurements and X-Ray Photoelectron Spectroscopy (XPS)	890
<i>Mary Jane Felipe</i>	
Stressed Alkaline Cooling Water Deposit Control: High Temperature, Suspended Solids, and Iron Impacts.....	900
<i>Libardo Perez</i>	
DNA Based Diversity Analysis of Microorganisms in Industrial Cooling Towers	909
<i>Linna Wang</i>	
Qualification and Application of Ultrasonic Technology for Power Plant Component Fouling Control	921
<i>Charles Marks</i>	
New Yellow Metal Corrosion Inhibitors Targeting Surface Chemistry of Industrial Systems.....	936
<i>Paul Frail</i>	

STG 30: OIL AND GAS PRODUCTION – CATHODIC PROTECTION

Distributed Sacrificial Cathodic Protection – A New Cost Effective Solution to Prevent Corrosion on Subsea Structures	949
<i>Roy Johnsen</i>	
Strategy and Results of an Impressed Current Cathodic Protection Retrofit in the North Sea.....	964
<i>Alex Delwiche</i>	
Impact of Foam Trench Breakers and Ditch Pads on Pipeline Cathodic Protection	972
<i>James Ellor</i>	
Compatibility Analysis of Regional CP System and Electrical Grounding System in Oil/Gas Stations	988
<i>Liang Dong</i>	

STG 32: ADVANCES IN MATERIALS FOR OIL AND GAS PRODUCTION

Fitness-for-Purpose HIC Testing of Heavy Wall Large-Diameter Pipes for Mildly Sour Applications in the New NACE TM0284-2016 Solution C	1001
<i>Thomas Haase</i>	
Materials and Corrosion Risk Mitigation Associated with Flowback of Acid Stimulation Fluids	1014
<i>Sandra Hernandez</i>	
Development of Sucker Rods for Aggressive Environments	1029
<i>Teresa Perez</i>	
New Axially Loaded Full Ring Test Method for Assessment of Susceptibility of Girth Welds and Parent Pipe to Sour Service Cracking	1041
<i>Philip Dent</i>	
Effective Inorganic Salt Corrosion Inhibitors for Titanium Components Exposed to Dilute Hydrofluoric Acid Well Stimulation Fluids	1054
<i>Ronald Schutz</i>	
Study of High Strength Low Alloy Steel OCTG with High Carbon Contents for Mildly Sour Service	1067
<i>Yuji Arai</i>	
Effect of Microstructural Particularities on the Corrosion Resistance of Nickel Alloy UNS N07718 – What Really Makes the Difference.....	1079
<i>Jutta Kloewer</i>	
Optimization of Side-Groove Configuration On DCB Test.....	1094
<i>Jun Nakamura</i>	
Sulfide Stress Cracking Fracture Toughness of 125 ksi Grade in Mild Sour Service Conditions	1106
<i>Florian Thebault</i>	
Long-Term Performance of HLP Solution for Mildly Sour HIC Testing.....	1113
<i>Daisuke Mizuno</i>	
Fatigue Crack Growth Rate Behavior of Welded Line Pipe Steel in Sour Environments.....	1124
<i>Thodla Ramgopal</i>	
Zinc-Nickel Nanolaminates – Advanced Coating for Bolt Corrosion Control.....	1136
<i>Michael Joosten</i>	
Assessment of the Operating Window of 13Cr4Ni1Mo 110 ksi Well Tubulars in a Mild Sour Gas Environment	1151
<i>Pedro Rincon</i>	
Study on Effect of Buffer Capacity on Corrosion Performance of CRAs in Simulated Well Condition	1166
<i>Masayuki Sagara</i>	
Choice of Buffer Solution for Stainless Steel OCTG at Laboratory Corrosion Test to Carry Out SSC and SCC Resistance	1180
<i>Yasuhide Ishiguro</i>	
Corrosion Resistance of Large Components Produced from AF932N High Nitrogen Stainless Steel Ingots.....	1195
<i>Carlo Malara</i>	
Critical Factors Affecting the Pitting Corrosion Resistance of Additively Manufactured Ni-based Alloy in Chloride Containing Environments.....	1205
<i>Helmut Sarmiento Klapper</i>	
Role of H ₂ S In Localized Corrosion and Cracking of CRAs in Upstream Oil and Gas Applications	1213
<i>Gareth Hinds</i>	
Corrosion Risk Evaluation of Duplex Stainless Steel UNS S82551 in Treated Seawater Injection Well Service	1225
<i>Perry Nice</i>	
Effect of Cold Deformation on Sulfide Stress Cracking of High Strength Steels.....	1240
<i>Maria Jose Cancio</i>	
Alignment of Critical Experimental Parameters of Well Stimulation and Scale Dissolver Chemicals Corrosion Testing.....	1254
<i>Luciana Intiso</i>	
Sulfide Stress Cracking (SSC) Resistance of AISI 420 Modified (13Cr) Martensitic Stainless Steel Bar Stock	1265
<i>Karthik Krishnan</i>	
The Effect of Hydrogen on Plain and Notched Test Specimens of PH Nickel Alloys	1277
<i>Stephen McCoy</i>	
Additive Manufacturing for Sour Service: an Experimental Investigation.....	1287
<i>William Kovacs</i>	

Problems Related to the Slow Strain Rate Test Performance and the Specimen Characterization in Austenitic Corrosion Resistant Alloy Tubes	1302
<i>Pilar Esteban</i>	
SSC Resistance of a Double Quench and Tempered T-95 Casing in Extremely Sour and High Pressure Environment.....	1317
<i>Weiji Huang</i>	

STG 33: NONMETALLIC MATERIALS FOR OIL AND GAS

Economically Mitigating Downhole Corrosion and Wear Failures with Thermoplastic Liners.....	1331
<i>Robert Davis</i>	
Assessment of Anticorrosion/Antifouling Performances of a Novel Hybrid Epoxy-Siliconized Coating.....	1345
<i>Rami Suleiman</i>	
Cryogenic Spillage Protection (CSP) on FLNG: Improving Safety Through Standardization.....	1356
<i>Sebastien Viale</i>	
High Temperature and High Chemical Resistant Ambient Cure Tank Liner	1366
<i>Yong Zhang</i>	
Internal Lining Damage Investigation of 24inch Jet Fuel Pipelines	1381
<i>Mushaid Nauman</i>	
Thin Sol-Gel Coatings for Fouling Mitigation in Heat Exchangers.....	1395
<i>Seth Taylor</i>	
Structural Performance of Fibre Reinforced Polymer Materials After Long Term Immersion in a Marine Subsea Environment.....	1404
<i>Simon Eves</i>	
Testing and Design of Nonmetallic Composite Repair Systems for Pipeline Integritiy.....	1416
<i>Davie Peguero</i>	
Case Study: Engineered Polyamide 12 (PA12) Pipeline Liner for Management of Sour Gas Corrosion at Elevated Temperatures	1431
<i>James Mason</i>	
Non-Metallic Liners for Dense Slurry (Oil Sands) Applications.....	1446
<i>Duane Serate</i>	

STG 35: DIRECT ASSESSMENT

Improving the Quality of ECDA Indirect Inspection Data.....	1462
<i>Sorin Segall</i>	
Interpretation and Selection of Direct Examination Locations with Respect to ECDA Methodology.....	1476
<i>Chukwuma Onuoha</i>	

VOLUME 3

How Many Excavations are Required to Confirm the Absence of SCC on a Pipeline.....	1491
<i>Francois Ayello</i>	
ACVG or DCVG - Does it Matter? Absolutely It Does.....	1501
<i>Jim Walton</i>	
Direct Examination Results of High Strength Versus Low Strength Steels - The Dilemma Found During Investigative Digs.....	1514
<i>Joseph Pikas</i>	

STG 38: CORROSION CONTROL IN PULPING, PAPERMAKING & BIOMASS CONVERSION INDUSTRIES

Synchrotron Based X-Ray Fluorescence Microscopy Confirms Copper in the Corrosion Products of Metals in Contact with Treated Wood	1522
<i>Samuel Zelinka</i>	
Erosion-Corrosion Behavior of Steels in a Particulate-Containing Pulping Liquor Environment at Elevated Temperature.....	1530
<i>Bedi Aydin Baykal</i>	
Pitting Behavior of Lean Duplex Stainless Steels in Thiosulfate-Containing Paper Machine Environment.....	1543
<i>Liang He</i>	

STG 39: RECENT EXPERIMENTS WITH NICKEL, TITANIUM, ZIRCONIUM AND OTHER CORROSION RESISTANCE ALLOYS

Laboratory Testing of OCTG grades UNS N08028 and UNS N08029	1551
<i>Wenle He</i>	
Evaluation of Explosion Clad Hybrid Nickel-Base Alloy UNS N10362	1569
<i>Steve Sparkowich</i>	

Corrosion Properties of N06044 Alloy in Several Kinds of Acidic Solutions	1583
<i>Yuzo Daigo</i>	
A Study on the Microstructure, Mechanical Properties and Corrosion Resistance of Centrifugally Cast Heavy Wall Thickness Low Carbon 46Ni-35Cr-9Mo Alloy	1591
<i>Shankar Venkataraman</i>	
Surface Treatment to Improve Corrosion Resistance of Pure Titanium	1606
<i>Marco Ormellese</i>	
Materials Performance of Corrosion-Resistant Alloys in Individual and Mixed Acids	1620
<i>Ajit Mishra</i>	
The Sensitisation Behaviour of Alloy UNS N08825 After Heat Treatment as Used in Clad Materials	1635
<i>Helena Alves</i>	
Recent Experiences with UNS N08031 Plus Roll Bond Cladding	1644
<i>Helena Alves</i>	
Sour Gas and Hydrogen Embrittlement Resistance of High-Strength UNS N07022 Alloy for Oil and Gas Applications.....	1652
<i>Jeremy L. Caron</i>	
The Performance of Corrosion Resistant Ni-Cr-Mo Alloys in Concentrated Hydrochloric Acid	1660
<i>Suresh Divi</i>	

STG 40: CORROSION ISSUES IN MILITARY EQUIPMENT AND FACILITIES

High Performance Water Based Coating Enhanced with Nano Vapor Corrosion Inhibitors	1672
<i>Markus Bieber</i>	
Characterization of Sacrificial Protection Efficacy and Longevity of a Thermal Spray Non-skid Coating Under Sealants and Topcoats.....	1679
<i>Matthew Strom</i>	
Characterization of Corrosion Behaviors on Additively Manufactured Alloys.....	1691
<i>Liu Cao</i>	
Microstructural Influences of Corrosion Sensitization in Al 5XXX Series Aluminum Alloys	1702
<i>Erik Sundberg</i>	

STG 41: POWER INDUSTRY CORROSION

Developing and Managing a Coatings & Linings Program in an Electric Utility.....	1713
<i>Steve Poncio</i>	
Challenging the Performance Myth of Inorganic Zinc Rich vs Organic Zinc Rich Primers and Activated Zinc Primers.....	1722
<i>Antoni Prieto</i>	
Study on the Mechanism and Influencing Factors of High Voltage Direct Current Interference	1735
<i>Zitao Jiang</i>	
An Approach to Detect Steel Corrosion in Concrete Using Global Strain Measurement.....	1748
<i>Dewan Hossain</i>	
Sustainable Corrosion Management for the Electric Power Industry	1761
<i>Gerhardus Koch</i>	
Modern Electric Power Substation Failure Case Histories and Mitigating Strategies	1776
<i>Jose Santiago</i>	
Life Assessments of Steam Chests and Valve Casings at Four Fossil Fuel Thermal Power Units	1786
<i>James D. Roll</i>	
Considerations for Repairing Live Piping Using Engineered Composite Repair Systems	1797
<i>Matt Green</i>	
Corrosion Detection Using Robotic Vehicles in Challenging Environments	1809
<i>Thaddeus Roppel</i>	
Corrosion Resistance of Alloys in Calcium Bromide and Calcium Chloride Solutions	1823
<i>Brett Tossey</i>	
Environmental Field Trial of an Overhead Power Transmission Conductor in a High Corrosion Rate Coastal Atmosphere in Peru.....	1837
<i>Colin McCullough</i>	
Alignment of Inspection Criteria With Mitigation Methods and its Impact on O&M Funds	1852
<i>Neal Murray</i>	

STG 44: MARINE CORROSION; PAST, PRESENT & FUTURE

Galvanic Protection Coatings for 5xxx Series Aluminum Alloys.....	1866
<i>Adam Goff</i>	
The Ultrasonically Induced Cavitation Corrosion of UNS N010665 Alloy in Seawater.....	1874
<i>Abdul Hameed Al-Hashem</i>	
AA5083 and AA6082 Exposed to Seawater – Effect of Temperature and Potential on Corrosion Behaviour	1883
<i>Roy Johnsen</i>	

Retrofit Strategy Using Aluminium Anodes for the Internal Sections of Windturbine Monopiles	1898
<i>Alex Delwiche</i>	
Concerns Over Utilizing Aluminium Anodes in Sealed Environments	1908
<i>Alex Delwiche</i>	
Estimating Metal Loss in a Marine Environment for Structural Integrity Analyses.....	1922
<i>James Ellor</i>	
Coatings Cracking in Water Ballast Tanks: A Different Look.....	1928
<i>Carl Reed</i>	
Specifying Corrosion Protection for the Offshore Wind Turbine Industry	1936
<i>Birit Buhr Jensen</i>	
Service Performance of Ni-Al Bronze in Marine Environments.....	1947
<i>Moavin Islam</i>	
Corrosion Properties of Ni-Al Bronze and it's Main Alloying Elements - Effect of pH.....	1958
<i>Hedda Krogstad</i>	
Corrosion of Ni-Al Bronze and it's Main Alloying Elements - Effect of Magnetic Field.....	1968
<i>Hedda Krogstad</i>	
Crevice Corrosion of Stainless Steel in Tropical Seas	1982
<i>Dominique Thierry</i>	
Development of Copper Alloys for Seawater Service from Traditional Application to State-Of-The Art Engineering	1994
<i>James Michel</i>	
UNS S32707 Combined to UNS S31266; An Alternative to Titanium for Seawater-Cooled Heat Exchangers.....	2005
<i>Josefin Eidhagen</i>	
Durability of Nano-Coating for Marine Highway Bridge Application	2019
<i>Saiada Fuadi Fancy</i>	
Reflections on 70 Years of Marine Corrosion Research and Testing Inspired by Francis L. LaQue	2031
<i>Robert Kain</i>	
Update on Corrosion Performance of CBPC Coatings in Aggressive Bridge Environment	2043
<i>Md Ahsan Sabir</i>	
Marine Corrosion Performance of Copper Alloy UNS C69100.....	2055
<i>Mengyan Nie</i>	
Ageing Subsea Pipelines External Corrosion Management	2070
<i>James Britton</i>	
Marine Structural Integrity Subject to Mechano-Electrochemical Induced Corrosion	2083
<i>Yikun Wang</i>	

TEG 053X: ACHIEVING INTENDED SERVICE LIFE; CORROSION CONTROL STRATEGIES FOR REINFORCED CONCRETE STRUCTURES

Modeling and Projecting the Onset and Subsequent Failure Rate of Corroding Bridge Post-Tension Tendons	2097
<i>William Hartt</i>	
Review of Cathodic Protection Systems for Concrete Structures in Australia	2121
<i>Atef Cheaitani</i>	
Considerations for Concrete Corrosion Control Alternatives	2130
<i>I-Wen Huang</i>	
Sacrificial Anodes for Reinforced Concrete Structures: A Review	2138
<i>Oladis de Rincon</i>	
Monitoring Rebar Corrosion Propagation Embedded in Concrete	2153
<i>Francisco Presuel-Moreno</i>	
Organofunctional Silane Corrosion Inhibitor Surface Treatment of Concrete to Mitigate Corrosion Due to Chlorides or Carbonation.....	2166
<i>Neal Berke</i>	
Methods of Monitoring Reinforced Concrete Corrosion in Formulations for Nuclear Facilities	2180
<i>Damián Vazquez</i>	
Uncertainty in Service Life Estimation and Probabilistic Service Life of Chloride Induced Steel Corrosion in Reinforced Concrete Structures	2189
<i>Sumanth Cheruku</i>	
Cathodic Protection on Steel Reinforced Concrete Marine Structures	2200
<i>Douglas Leng</i>	
Extent of Cathodic Reaction on Epoxy Coated Rebar with Partially Disbonded Coating	2210
<i>Sylvia Kessler</i>	
Optimizing the Service Life of Concrete Structures Exposed to Chloride Using Modeling and Field Data.....	2222
<i>Eric Samson</i>	

VOLUME 4

Reinforced Concrete Corrosion Damage Forecast with Potential Dependent Threshold: Sensitivity to System Parameters	2235
<i>Andrea Sanchez</i>	

Comparison of Corrosion Management Strategies of RC Structures Using a Reliability-Based Approach	2245
<i>Qindan Huang</i>	
Inland Wharves - Challenges of Service Life Modeling.....	2260
<i>Jonah Kurth</i>	
Galvanic Cathodic Protection for High Resistance Concrete in Marine Environments.....	2275
<i>Ivan Lasa</i>	
Electrochemical Behavior of Prestressing Steel in Alkaline Electrolytes: Influence of Chloride Ions	2288
<i>Ioan Peperan</i>	

TEG 092X: UNDER DEPOSITE CORROSION IN CRUDE OIL PIPELINES

Under-Deposit Corrosion in a Sub-Sea Water Injection Pipeline—A Case Study	2296
<i>Pavan Shukla</i>	
Application of Electrochemical Noise Technique to Study Carbon Steel Corrosion Under Sand Deposit	2307
<i>Yang Hou</i>	
The Importance of Deposit Characterization in Mitigating UDC and MIC in Dead Legs	2320
<i>Christopher Kagarise</i>	
Comparison of Planktonic and Sessile Bacteria Counts Using ATP and DNA Based Methods	2331
<i>Kim Dockens</i>	
Inhibited Under-Deposit CO₂ Corrosion: Small Particle Silica Sand and Eicosane Paraffin Deposits.....	2340
<i>Shokrollah Hassani</i>	

TEG 093X: INHIBITORS – VAPOR TRANSPORTED (VCI) AND SURFACE COATING RUST PREVENTIVE (RP)

Influence of Powder Size of the Vapor Corrosion Inhibitor on Inhibiting Effectiveness.....	2352
<i>Behzad Bavarian</i>	
Protection of Equipment for Storage and Transport with Vapor Phase Corrosion Inhibitors.....	2362
<i>Ivan Rogan</i>	
Biodegradable Method of Corrosion Management for All Industries	2371
<i>Larry Mudd</i>	
Comparing the Benefits of Environmentally Friendly Removable Coatings to Traditional Products for Protection of Assets Stored Outdoors	2381
<i>Eric Utalda</i>	
Polymer and Nanomaterial Based Inhibitors: Stimuli-Responsive	2390
<i>Rigoberto Advincula</i>	
Novel Synthesis, Characterization and Testing of Vegetable Oil Derived Corrosion Inhibitors	2399
<i>Paul Rostron</i>	

TEG 100X: NOVEL METHODS OF CORROSION MONITORING AND MANAGEMENT

Continuous Monitoring of Atmospheric Corrosion and Coating Degradation.....	2407
<i>Fritz Friedersdorf</i>	
Non-Intrusive Ultrasonic Corrosion-Rate Measurement in Lieu of Manual and Intrusive Methods	2420
<i>Steve Strachan</i>	
Progressive Reduction of Corrosion Phenomena in a COG Desulfurization Unit.....	2435
<i>Takao Ohtsu</i>	
High Accuracy Ultrasonic Corrosion Monitoring	2447
<i>Fangxin Zou</i>	
On-Line, Real-Time Corrosion Monitoring Techniques Under CO₂ - Brine Environment – Comparative Study	2458
<i>Hui Li</i>	
Safe Processing of Naphthenic Acid Opportunity Crudes Using Chemical Inhibition and Online Monitoring	2473
<i>Tom Champlin</i>	
Application of Raman Spectroscopy for Hydrocarbons Characterization.....	2482
<i>Igor Kosacki</i>	
Steel Corrosion Monitoring in Concrete Slab Using a Long Period Fiber Grating Assembly	2496
<i>Fujian Tang</i>	
Observation of Flow Dependent Corrosion Rate by Ultrasound Corrosion Monitoring on a Gas Pipeline	2510
<i>Hanne Martinussen</i>	
Monitoring Pitting Corrosion Growth in Steel Rebar Using Optical Fiber	2521
<i>Fujian Tang</i>	
Multipoint Flux Monitoring by the Hydrogen Collection Method Using a New Wide Temperature Range Flux Measurement Probe	2535
<i>Frank Dean</i>	

TEG 114X: RECENT EXPERIENCE WITH AUSTENITIC AND DUPLEX STAINLESS STEEL

The Validity of Using ASTM A923 Test Method C Corrosion Test for Weld Procedure Qualification of 25% Chrome Duplex Stainless Steels	2545
<i>Richard Colwell</i>	
Atmospheric Corrosion Resistance of Stainless Steel in Middle East: Result of Field Exposure Program in Various Environment.....	2555
<i>Sukanya Mameng</i>	
Evaluation of Alloys for Marine Exhaust Scrubbers.....	2569
<i>Brian DeForce</i>	
UNS N08830 – New Ni-Fe-Cr-Mo-N Super-Austenitic Alloy	2578
<i>Brian DeForce</i>	
Determining the Dissolved Oxygen (DO) Concentration Limit in Saline Solutions for Safe Operation of CRAs	2588
<i>Qing Lu</i>	
Lack-of-Fusion-like Root Flaws in Stainless Steel Welds	2596
<i>Kasra Sotoudeh</i>	
Study on Ferrite Content and Hardness of Thick-Wall 22% Cr Duplex Stainless Steel Welded Joints.....	2609
<i>Mikihiro Sakata</i>	
The Pitting Behavior of Austenitic and Duplex Stainless Steels Under SO ₂ Environments with Cl ⁻ And F ⁻	2625
<i>Zhu Wang</i>	
Electrochemical Characterization of Metstable Austenitic Stainless Steels to Illustrate the Influence of Grinding Parameters on the Corrosion Resistance	2635
<i>Arnulf Hörtnagl</i>	
Optimizing Wallpaper Cladding Repair of WFGD Air Pollution Control Systems in the Power Industry.....	2647
<i>Debabjoti Maitra</i>	
Laboratory Test to Evaluate Lean Duplex UNS S32101 and UNS S32304 Flexible Pipe Carcass at Sour Service.....	2662
<i>Merlin Bandeira</i>	
Temperature Sensitivity of the Corrosion Performance of 316L in Concentrated Sweet Brines	2673
<i>Robert Conder</i>	
Effect on Corrosion Behavior of the Heat Treatment Temperature of 30408 Stainless Steel	2686
<i>Bo Zhao</i>	
Recent Failures of 2205 Duplex Stainless Steel in FGD Scrubbers - Could They Have Been Avoided?	2701
<i>Bud Ross</i>	
A Comparison of Corrosion Resistant, High N Austenitic Stainless Steels	2713
<i>Samuel Kernion</i>	

TEG 121X: CORROSION IN SUPERCRITICAL SYSTEMS

Performance of Thermally Sprayed Corrosion Resistant Alloy (CRA) Coatings in 50MPa Supercritical CO ₂	2722
<i>Shiladitya Paul</i>	
Corrosion Inhibition of Pipeline Steels Under Supercritical CO ₂ Environment.....	2734
<i>Yoon-Seok Choi</i>	
The Microstructure Effect on Fracture Toughness of Ferritic Ni-alloyed Steels	2746
<i>Carlos Kwietniewski</i>	
Preliminary Results from the NIST Supercritical Carbon Dioxide Corrosion Test Facility.....	2761
<i>Brandi Clark</i>	
Lab Performance Testing on Corrosion Inhibitors Under Supercritical Carbon Dioxide Conditions	2773
<i>Larry Chen</i>	

TEG 123X, TEG 126X, TEG 128X, TEG 270X: HIGH TEMPERATURE ISSUES AND MATERIALS FOR THE PROCESS INDUSTRY

Review on the Heat-Resistant Stainless Steel Alloys Used for the Steam Methane Reformer Outlet Systems.....	2787
<i>Shankar Venkataraman</i>	
Investigation on Metal Dusting Corrosion Process Over UNS N08800 Alloy	2802
<i>Xiaoyang Guo</i>	
High Temperature Coking Resistance of an Alumina Forming Alloy	2814
<i>Benjamin Church</i>	
Oxidation Kinetics of Cast Alumina-Forming Austenitic Alloys in Steam.....	2826
<i>Benjamin Church</i>	

TEG 132X: CORROSION CONTROL FOR ABOVEGROUND STORAGE TANKS

Case History on the Selection of Materials in a Bulk Handling Chemical Facility at Partitioned Zone (Kingdom of Saudi Arabia and Kuwait) - A Case Study	2836
<i>Tariq Kamshad</i>	
Premature Failure of API ⁽¹⁾ 650 Oil Storage Tank Bottom Plates Due to Soil Side Corrosion	2849
<i>Jayant Nair</i>	

Compatibility & Interactions Between Cathodic Protection and Vapor Phase Corrosion Inhibitors	2862
<i>Calvin Pynn</i>	
Effects of Different Corrosion Control Systems and Fluid Services on AST Inspection Practices	2871
<i>Mohammed Lutfallah</i>	
The Necessity and Challenges of Using a Float Coat for Preservation of Large Volume Storage Systems	2881
<i>John Wulterkens</i>	
Mitigation of Soil-Side Bottom Corrosion of Aboveground Storage Tanks Utilizing Volatile Corrosion Inhibitors	2889
<i>Kelly Baker</i>	
External Corrosion Protection of Aboveground Storage Tanks Using Vaporized Corrosion Inhibitors	2902
<i>Tunde Kingsley Adelakin</i>	
Corrosion Control for Above Ground Crude Oil Storage Tanks	2909
<i>Ajit Thakur</i>	

TEG 182X: GEOTHERMAL SCALING AND CORROSION

Corrosion Resistance of the Super-Austenitic Stainless Steel UNS S31266 for Geothermal Applications	2920
<i>Ralph Baessler</i>	
Microstructural Study of the Corrosion Effect on AlCrFeNiMn Multicomponent Alloy Tested in Geothermal Environment.....	2931
<i>Ioana Csaki</i>	
Hydrogeochemical Modelling to Monitor Scaling and Corrosion during Geothermal Energy Production in the North German Basin	2941
<i>Helmut Sarmiento Klapper</i>	
Corrosion Testing of Coating Materials for Geothermal Turbine Application	2949
<i>Kolbrun Ragnarsdottir</i>	
Materials Selection Challenges for Geothermal Energy Projects	2963
<i>Keith Lichti</i>	
Geothermal Corrosion: High-Temperature Pitting of Stainless Steels and Ni-Alloys	2973
<i>Walter Bogaerts</i>	

VOLUME 5

Corrosion Behavior of High-Alloy Austenitic Stainless Steel in Simulated Geothermal Environment	2988
<i>Sigrun Karlsson</i>	
Application of Permasense Real-time Ultrasonic Thickness Monitoring at The Geysers.....	3000
<i>John Farison</i>	
Influence of Air on the Corrosivity of Geothermal Fluids Containing Hydrogen Sulfide	3015
<i>Peter Wilson</i>	

TEG 183X: ADVANCES IN CORROSION CONTROL IN COMBUSTION AND CONVERSION

Oxidation and Carburization of Alloys Exposed to Impure Supercritical CO₂.....	3029
<i>Steven Kung</i>	
Corrosion Behavior of Selected Alloys in Kraft Recovery Boiler Superheater Environments	3042
<i>Kasey Hanson</i>	
UNS S31400 Stainless Steel as Reactor Material in a Thermal Cracking Process.....	3053
<i>Alexander Schmid</i>	
The Effect of Shot Peening on Steam Oxidation of Stainless Steel at 600° -650°C	3063
<i>Bruce Pint</i>	
Long-Term Oxidation Performance of High-Temperature Alloys in the Presence of Water Vapor	3074
<i>Joseph Meyer</i>	
Corrosion of Superalloys in 200 Bar, 750°C Supercritical Carbon Dioxide.....	3086
<i>James Keiser</i>	
Corrosion of Ferrous Alloys in a Molten Chloride Salt for Solar Thermal Energy Storage	3100
<i>Jared Logier</i>	
Differences in Fireside Corrosion Under Simulated Char and Lignite Conditions	3109
<i>Mathias Galez</i>	

TEG 184X: CONTROL OF CORROSION IN OIL AND GAS WITH INHIBITORS SYMPOSIUM

Guidelines for Corrosion Inhibitor Selection for Oil and Gas Production.....	3120
<i>Johannes Sonke</i>	
Impact of Pre-Corrosion on Corrosion Inhibitor Performance: Can We Protect Aged Pipelines?	3143
<i>Yao Xiong</i>	
Challenges of Implementing Chemical Treatment Preservation Programs on Oil Production Wells During a Prolonged Shutdown within Partitioned Zone (Kingdom of Saudi Arabia and State of Kuwait)	3154
<i>Tariq Kamshad</i>	

Tailoring Chemicals for Continuous Injection Downhole via Capillary Line and “Sensitive” Jewelry.....	3169
<i>Marko Stipanicev</i>	
Appropriate Rotating Cage Speed for Testing Inhibitors Under Field Simulated Flow Conditions.....	3184
<i>Jose Vera</i>	
Impact of Surface Finish on Carbon Steel Corrosion and Corrosion Inhibition by Chemicals in Carbon Dioxide Environment.....	3199
<i>Zhengwei Liu</i>	
Mechanistic Correlations Between Single and Multicomponent Corrosion Inhibitor Blends for CO₂ Corrosion Control	3218
<i>Carlos Menendez</i>	
Effect of Temperature on Adsorption Behavior and Corrosion Inhibition Performance of Imidazoline-Type Inhibitor.....	3231
<i>Yuan Ding</i>	
A Mechanistic Study of Corrosion Inhibitor Partitioning and Performance in Sweet Corrosion Environments.....	3246
<i>Fang Cao</i>	
Control of Corrosion of Electrical Submersible Wells and Rod Pumped Wells in Varied Carbon Dioxide Environments Using Batch Treatment.....	3261
<i>Sunder Ramachandran</i>	
Inhibitor Partitioning Efficiency Using Fluorescence Spectroscopy Detection	3273
<i>Jody Hoshowski</i>	
Development of Application Friendly Products for Wet Gas Corrosion Inhibition	3282
<i>Jeffery Clark</i>	
Use of Micelle Detection for Corrosion Inhibitor Screening	3298
<i>Melanie Reid</i>	
Development of Test Methods and Factors for Evaluation of Oilfield Corrosion Inhibitors at High Temp	3313
<i>Boyd Laurent</i>	

TEG 186X: ENVIRONMENTAL ASSISTED CRACKING

Electrochemical Crack Size Effect in Stress Corrosion Cracking and Corrosion Fatigue	3328
<i>Alan Turnbull</i>	
Severe Under-Deposit Corrosion Inducing Hydrogen Embrittlement in Water Wall Tubes	3338
<i>Abdelkader Meroufel</i>	
Understanding and Addressing the Challenges of Assessing the Corrosion Fatigue of Metallic Materials for Drilling Applications	3351
<i>Christopher Engler</i>	
Fracture Toughness Testing Methods in H₂S Containing Environment for Metallic Materials.....	3361
<i>Arshad Bavani Gavanluei</i>	
Effect of the Substitution of Ni by N and Mn in Lean Duplex Stainless Steels on SCC Assisted by H₂S	3376
<i>Fiona Ruel</i>	
Influence of Ultrasonic Nanocrystal Surface Modification on the Corrosion and Stress Corrosion Cracking Behavior of Welded Joint in District Heating Pipe.....	3388
<i>Yong-Sang Kim</i>	
Using Digital Image Correlation to Improve Stress-Corrosion Cracking Evaluation by NACE TM0177-B	3400
<i>Brandi Clark</i>	
Elemental Sulfur and Speciation in High Pressure High Temperatures Oil and Gas Well Environments: Their Role in Stress Corrosion Cracking of Corrosion Resistant Alloys.....	3413
<i>Yuhchae Yoon</i>	
Failure of a Vaned Diffuser in a Sour Gas Compressor	3430
<i>Vishwas Gadgil</i>	
Stress Corrosion Cracking of a Duplex Stainless Steel	3442
<i>Kasra Sotoudeh</i>	
Effect of CP on the Occurrence of SCC in X80 and X100 Pipe Steels in a Near-Neutral pH Environment.....	3452
<i>Li Yan</i>	
Hydrogen-Enhanced Stress Corrosion Cracking in Stainless Steel.....	3463
<i>Baotong Lu</i>	
Evaluation of the Potential for Liquid Metal Embrittlement of 304L Stainless Steel by Galvanized Fasteners in an Industrial Fire Scenario	3478
<i>Ramon Solo</i>	
Role of Crack Tip Strain Rate on the Fatigue and Fracture Behavior of Line Pipe Steel in Sour Environments	3489
<i>Thodla Ramgopal</i>	
Investigation of Hydrogen Embrittlement of High Strength Pipeline Steels Under Cathodic Protection	3499
<i>Lei Zhang</i>	
Modeling and Experimental Insights of Sulfide Stress Cracking Corrosion Mechanism.....	3513
<i>D. Guedes</i>	
Susceptibility of Plasma Nitrided 17-4 PH to Sulphide Stress Cracking in H₂S-Containing Environments	3528
<i>Mario Coseglio</i>	
Role of Hydrogen in Intergranular Corrosion of 2024 Aluminium Alloy: An SKPFM Study	3543
<i>Christine Blanc</i>	

Effect of Strain Rate on the Fatigue and Static Cracka Growth Rate of UNS N07718 Under Cathodic Polarization	3554
<i>Thodla Ramgopal</i>	
Corrosion-Fatigue of Carbon Steels in Sweet and Sour Environments: Analysis of Cyclic Elastic and Plastic Strain Effects on the Electrochemical Behavior by a Transient Corrosion Current Method	3564
<i>Diego Leyser</i>	

TEG 187X: MICROBIALLY INFLUENCED CORROSION

A Novel Peptide at a Very Low Concentration Enhanced Biocide Treatment of Corrosive Biofilms.....	3579
<i>Tingyue Gu</i>	
Use of a Methodological Panel for Microbial Diagnostics, Biocide Selection, and Application in an Oil Shale Field	3591
<i>Jennifer Fichter</i>	
Laboratory Testing of Enhanced Biocide Mitigation of Microbiologically Influenced Corrosion In Enhanced Oil Recovery	3605
<i>Ru Jia</i>	
Incompatibility of Biocides and Oxygen Scavengers, An Overlooked Corrosion Risk?	3618
<i>Ben Folwell</i>	
Oil & Gas Water Injection Treatment System Case Study: Field Trial Comparing Biocide/UV Disinfection and New Monitoring Techniques for Mitigating MIC and Reservoir Souring.....	3631
<i>Sabine Doddema</i>	
Sustainable Biocide Formulations to Deliver Controlled Post Fracture Souring Management.....	3647
<i>Stephanie Edmunds</i>	
Accelerated Corrosion of 2304 Duplex Stainless Steel by Marine Pseudomonas Aeruginosa Biofilm	3662
<i>Dake Xu</i>	
Quantification of Microbiologically Influenced Corrosion in Injection Water Pipelines	3676
<i>Uffe Thomsen</i>	
Corrosion Behavior of Copper in Simulated Anoxic Groundwater Inoculated with Sulfate Reducing Bacteria and Methanogens	3686
<i>Leena Carpen</i>	
Corrosion of Stainless Steels AISI 304 and AISI 316 Induced by Sulfate Reducing Bacteria in Anoxic Groundwater	3701
<i>Pauliina Rajala</i>	
Assessment of Microbially Influenced Corrosion Threats Using Molecular Microbiological Methods	3713
<i>Tesfaalem Haile</i>	

VOLUME 6

Molecular MIC Diagnoses from ATP Field Test: Streamlined Workflow from Field to 16S rRNA Gene Metagenomics Results	3728
<i>Marc Demeter</i>	
Combined Effects of Microbes and Nitrate on SRB Growth, Souring and Corrosion.....	3741
<i>Bei Yin</i>	
Investigation of Amorphous Deposits and Potential Corrosion Mechanisms in Offshore Water Injection Systems	3752
<i>Violette Eroini</i>	
Interpreting Omic Data for Microbially Influenced Corrosion: Lessons from a Case Study Involving a Seawater Injection System.....	3763
<i>Craig Bartling</i>	
Cathodic Protection and MIC - Effects of Local Electrochemistry	3775
<i>Stefan Jansen</i>	
Interfacial and Corrosion Characterization of Zinc Rich-Epoxy Primers with Carbon Nanotubes Exposed to Marine Bacteria	3786
<i>Homero Castaneda-Lopez</i>	
Case Study for MIC Evaluation and Mitigation in Two Argentinian Oilfields	3800
<i>Emerentiana Sianawati</i>	
Microbiological Influenced Corrosion (MIC) in Florida Marine Environment: A Case Study.....	3815
<i>Mayrén Echeverría Boan</i>	
Identification of Compounds that Effectively Block Microbial H₂S Production.....	3827
<i>Brett Geissler</i>	
Mitigation of Severe Pitting Corrosion Caused by MIC in a CDC Biofilm Reactor	3840
<i>Timothy Tidwell</i>	
MIC Prevention in Oxidizer Treated Water Systems: A Study on Relative Reaction Rates	3851
<i>Ramakrishnan Balasubramanian</i>	
Effect of Biocides and Corrosion Inhibitors On SRB-Mediated MIC Under Flow Conditions	3859
<i>Gerrit Voordouw</i>	
Microbiologically Influenced Corrosion of Carbon Steel and Stainless Steel in Humid Air	3867
<i>Xihua He</i>	

Determining Biocide Selection and Dosage Recommendation via Planktonic and Sessile Kill Studies and Subsequent Biofilm Regrowth: A Case Study.....	3882
<i>Zach Broussard</i>	

TEG 188X: COST OF CLEANING OR NOT; REVIEW OF METHODS AND FUNDAMENTALS OF CHEMICAL AND MECHANICAL CLEANING

A Novel Non-Toxic Method for the Decontamination of Silicate Scales - A Case Study.....	3896
<i>Samar Gharatbeh</i>	
Chemical and Mechanical Cleaning Case Study.....	3907
<i>Hussain Aldarwish</i>	
Benefits of Partial Removal of Corrosion Deposits from Nuclear Steam Generators: ASCA and CODE Applications.....	3916
<i>Charles Marks</i>	
Development and Assessment of Environmentally-Friendly Corrosion Stain Remover for Navy Topside Coatings	3931
<i>Colton Spicer</i>	
Decontamination of a Vacuum Distillation Unit: Mechanical Versus Chemical Cleaning - A Case Study	3945
<i>Roxanne Shank</i>	

TEG 189X: RECENT DEVELOPMENTS IN ATMOSPHERIC CORROSION

Atmospheric Corrosion Resistance of Stainless Steels for Architecture	3960
<i>Sandra Le Manchet</i>	
The Influence of Salt Loading Density on the Atmospheric Corrosion of Aluminum.....	3973
<i>Rebecca Schaller</i>	
Combined Mechanical Stress and Environmental Exposure Accelerated Coating Testing	3987
<i>Patrick Kramer</i>	
The Use of Corrosion Coupons to Control Atmospheric Corrosion Salt Spray Tests.....	4001
<i>Sean Fowler</i>	
A Combined Numerical and Experimental Approach to Study the Effect of Water Layer Thickness on the Electrochemical and Corrosion Distributions in the Galvanic Coupling Between UNS A97050 and UNS S31600	4016
<i>Chao Liu</i>	
Deconstructing DB ASTM G85-A2 Testing Environment with In-Situ Measurements.....	4027
<i>Mary Parker</i>	
Infrastructure Corrosion Issues and Solutions on Military Bases	4037
<i>Vinod Agarwala</i>	
Accelerated Field Exposure Using Seawater Spray: A Comparison to Traditional Atmospheric Test Methods	4048
<i>Derek Horton</i>	
Multiplexed Sensor Array for Accurate Time-of-Wetness (TOW) Measurement.....	4062
<i>Nathaniel Sutton</i>	
Atmospheric Stress Corrosion Crack Growth Rate Analyses of Austenitic Stainless Steel.....	4078
<i>Brian Somerday</i>	
Intergranular Corrosion in Al-Mg 5XXX Alloys Under Atmospheric Exposures.....	4087
<i>Piyush Khullar</i>	
Quantitative Comparison of Outdoor Sites and Accelerated Test Methods Using Optical Profilometry.....	4097
<i>David Jackson</i>	
Corrosion Risk Assessment Through Dynamic Environmental Monitoring on Board a Naval Ship.....	4111
<i>Cosima Boswell-Koller</i>	

TEG 191X: CORROSION SOLUTIONS FOR THE CHEMICAL PROCESS INDUSTRY WITH POLYMER BASED MATERIALS

Using Ultrasonic Technique to Determine Fitness for Service of FRP Equipment for Chemical Handling Applications.....	4122
<i>Pradip Khaladkar</i>	
Evaluation of Degradation of a Fiberglass Pipe Exposed to Two Industrial Fluids Generated in Phosphoric Acid Manufacturing Process	4135
<i>Jie He</i>	
Non-Metallic Piping Systems for Corrosive Fluid Handling	4145
<i>Joe Beaumont</i>	
Low-Cycle Mechanical Fatigue Endurance of Various Joint Configurations Installed on 16-in RTRP Spools	4154
<i>Qizhong Sheng</i>	
Endurance Regression Testing: A Method to Replace ASTM D2992	4169
<i>David Granderson</i>	
Custom Fiberglass Reinforced Plastic Piping (FRP) Proof of Design Testing	4182
<i>Tony Zacharewych</i>	

Glassflake Composite Linings For Protection Of Oil Process Vessels and Process Pipework	4195
<i>Graham Greenwood-Sole</i>	

TEG 202X: FLOW ASSURANCE IN OIL & GAS FROM INLAND TO SUBSEA

The Impact of Ultra-Low Temperature Sandstone Reservoirs on Scale Inhibitor Retention	4205
<i>Myles Jordan</i>	
Corrosion Inhibitor Film Stability Under High Gas Velocity Conditions of Subsea Wet Gas Pipeline	4220
<i>Bei Wang</i>	
Integrity Management of Oil Wellheads and Flowlines Having Scaling	4230
<i>Abdul Razzaq Al-Shamari</i>	
Application of Encapsulated Scale Inhibitors - Understanding the Field Success Factors	4243
<i>Mike Jackson</i>	
Evaluating of Anit-fouling Surfaces for Prevention of Lead Sulfide Scaling in Single and Multiphase Conditions	4259
<i>Thibaut Charpentier</i>	

TEG 205X: REFINING INDUSTRY CORROSION

Assessing Stress Corrosion Cracking Risks on Stainless Steel Piping and Equipment	4274
<i>Tina Tajalli</i>	
High Temperature Sulfidic Corrosion of Carbon Steel in Model Oil/Sulfur Compound Blends	4296
<i>Samin Sharifiasl</i>	
Accelerated Corrosion of UNS S30409 (0304H SS) in RFCC Regenerators Involving High Temperature Eutectic Forming Salts	4308
<i>Jayant Nair</i>	
A Review of High Temperature Hydrogen Attack (HTHA) Modeling, Prediction, and Non-Intrusive Inspection in Refinery Applications	4323
<i>Mike Nugent</i>	
Deployment of Cellular-Based Ultrasonic Corrosion Measurement System for Refining & Petro-Chemical Plant Applications	4336
<i>James Barshinger</i>	
Prediction and Assessment of Ammonium Bisulfide Corrosion Under Refinery Sour Service Conditions - Part 3	4349
<i>Sridhar Srinivasan</i>	
Evaluate Ammonium Chloride Corrosion Potential with Water Partial Pressure	4365
<i>Huang Lin</i>	
Effects of Alloying Elements for Resistance to Naphthenic Acid Corrosion of 18Cr Austenitic Stainless Steels	4380
<i>Masahiro Seto</i>	
Continuous Monitoring Delivers Insight on Corrosion Caused by Changing Sulphur Content Crudes	4394
<i>Jake Davies</i>	
Naphthenic Acid Corrosion in a High TAN Condensing Overhead System	4404
<i>Kwadwo Sarpong</i>	
Sigma Phase Embrittlement of Type 304H Stainless Steel after FCCU Service	4418
<i>Jorge Hau</i>	
Degradation of Carboxylic Acids and the Impact on Refinery Feed Preparation and Overhead Corrosion	4437
<i>Karl Kuklenz</i>	
Work Life Balance – Revisiting the Relationship Between Desalting Efficiency and Overhead Corrosion	4448
<i>James Noland</i>	
Chloride Stress Cracking of an Austenitic Stainless Steel Pipe Fitting in a Hydroprocessing Unit	4459
<i>Hayrik Allahverdian</i>	
Development of High Temperature Non-Triazine Based Hydrogen Sulfide Scavenger: Corrosion Mitigation and Impact on the Refinery Operations	4468
<i>Geeta Rana</i>	

VOLUME 7

Carbonate SCC Experiences in Unusual Locations	4476
<i>Jeremy Nelson</i>	

TEG 208X: PIPELINE CROSSINGS: STEEL-CASED, THRUST-BORED, AND HDD

A Simplified Model to Simulate Electrolytic Coupling in Cased Crossings	4491
<i>Pavan Shukla</i>	
How Deep is Too Deep for Indirect Inspections?	4499
<i>Jim Walton</i>	
Improved Methodology in Identification of Buried Casings Using Indirect Inspection Method	4509
<i>Chukwuma Onuoha</i>	

Pipeline Casings - Management of Pipeline Casing Issues	4521
<i>Jeffrey Didas</i>	
Practical Approach to Verifying Coating Quality of Bored Pipe.....	4534
<i>Anthony Martus</i>	
Alternative Method for Recording Coating Conductance Data on Horizontally Directional Drilled and Thrust-Bored Pipe	4540
<i>Levi Blumhagen</i>	

TEG 224X: CORROSION IN NUCLEAR SYSTEMS

Probabilistic Evaluation of Baffle-Former Bolt Cracking in PWRs.....	4547
<i>George Licina</i>	
Thermal Shock Resistance of FeCrAl Alloys for Accident Tolerant Fuel Cladding Application	4562
<i>Raul Rebak</i>	
Assessment of Aging Mechanisms for Zirconium-Based High Burnup Fuel Cladding in Dry Storage Systems	4577
<i>Pavan Shukla</i>	
Optimization of the Double Loop Potentiokinetic Reactivation Method (DL-EPR) for Detecting Sensitization of UNS N06690	4599
<i>Martin Rodriguez</i>	
Irradiation Accelerated Corrosion of Stainless Steel and Ferritic-Martensitic Steel in Simulated Primary Water.....	4613
<i>Stephen Rainman</i>	
Corrosion of Ni-Based Alloys and Stainless Steels in Molten Fluoride Salts for Gen IV Nuclear Reactors.....	4621
<i>Kevin Chan</i>	
Crevice Corrosion of Copper as an Engineering Barrier of High-level Radioactive Waste Containers.....	4632
<i>Maite Ochoa</i>	
The Viscosity of H₂O-B(OH)₃-LiOH Solutions.....	4646
<i>Robert Hendricks</i>	
Hydrogen Cracks in Belgian Nuclear Reactor Pressure Vessels: Five Years After Their Discovery.....	4661
<i>Walter Bogaerts</i>	
Precursor Evolution and SCC Initiation of Cold-Worked Alloy 690 in Simulated PWR Primary Water	4670
<i>Ziqing Zhai</i>	
Corrosion Evaluation of Alloys For High Temperature Service in Molten Salt Cooled Reactors.....	4685
<i>Govindarajan Muralidharan</i>	
Assessment of Aging Mechanisms for Carbon Steel, Low-Alloy Steel, and Stainless Steel Components Exposed to Outdoor and Sheltered Environments in Spent Nuclear Fuel Dry Storage Systems.....	4692
<i>Xihua He</i>	
Development of a Corrosion Control Program for Liquid Radioactive Wastes Stored in Carbon Steel Waste	4708
<i>Bruce Wiersma</i>	
Inhibition of Pitting Corrosion in Simulated Liquid Radioactive Waste.....	4719
<i>Bruce Wiersma</i>	
Characterization of SCC Initiation Precursors in Cold-Worked Alloy 690	4730
<i>Karen Kruska</i>	
An Apparatus for the Investigation of Turbulence on Erosion-Corrosion Behavior of Piping Materials.....	4744
<i>Robert Hendricks</i>	
Electrochemical Studies of Open-Circuit Potential Drift of Carbon Steel in Nuclear Waste Simulants	4758
<i>Sandeep Chawla</i>	

TEG 267X: PIPELINE INTEGRITY

Key Performance Indicators for Effective and Economical Corrosion Control	4773
<i>Sankara Papavinasam</i>	
Strategic NDE Results Collaboration Yields Industry Insights	4788
<i>Steve Biagiotti</i>	
A Study of Nonconventional Biocide Treatments of Barnett Shale Gathering Pipelines	4799
<i>Jared Hebert</i>	
Detecting Hidden Integrity Threats Using CP Current In-Line Inspection Tools.....	4817
<i>David Williams</i>	
Evaluating Drying Time of Residual Hydrotest Water in Pipeline Crevices and Dead Legs.....	4830
<i>Xihua He</i>	
Integrity Evaluation of Seventy Years Old Veteran Pipeline	4845
<i>Mushaid Nauman</i>	
Black Powder Formation by Dewing and Hygroscopic Corrosion Processes.....	4859
<i>Martin Colahan</i>	
Penetration of Cathodic Protection into Pipeline Coating Disbondment.....	4874
<i>Li Yan</i>	
Effect of Solution pH on Corrosion Product Layer Formation in a Controlled Water Chemistry System.....	4888
<i>Supat Teamsupapong</i>	
Investigating EMAT Dig Results for a Low Frequency ERW Seam Inspection.....	4901
<i>Sean Moran</i>	

Pipeline Defect Matching Strategy for Optimization of External Corrosion Remediation	N/A
<i>Luke Jain</i>	
Internal Corrosivity Assessment and Ranking of Crude Pipeline	4911
<i>Abdul Razzaq Al-Shamari</i>	
Using Portable Material Property Devices for Pipe Grade Determination	4920
<i>Steve Biagiotti</i>	
Crack Development in Fatigue Growth Assessment for Pipelines.....	4929
<i>Kathy Zhang</i>	
Long Term Structural Integrity Considerations for Abandoned Pipelines.....	4944
<i>T. J. Prewitt</i>	
Validation of Corrosion Growth Rate Models	4952
<i>Yan Ping Li</i>	
Towards an Effective Corroded Pipelines Integrity Analysis	4967
<i>Mona Abdolrazaghi</i>	
A Method for Assessing Facility Pipe Integrity.....	4980
<i>Daniel Fingas</i>	
Development of a Probabilistic Framework for Integrity and Risk Assessment of Unpigable Pipelines	4988
<i>Carlos Melo Gonzalez</i>	
Fitness for Purpose of Low Temperature Cure Liquid-Applied Coating Systems for Pipeline Maintenance	5003
<i>Haralampos Tsapralis</i>	
Correlation of Inline and Aboveground Integrity Data for Comprehensive Pipeline Integrity Management Program.....	5013
<i>Chukwuma Onuoha</i>	
Enhanced Corrosion Management Analysis of Pipelines	5025
<i>Angel Kowalski</i>	
Root Cause Analysis of an Upstream Pipeline Failure Due to Multiple Operating Factors.....	5037
<i>Jenny Been</i>	
Reliability Assessment of Corrosion Features Interacting with Pipeline Dents	5052
<i>Douglas Langer</i>	

TEG 282X: SOUR GAS CORROSION

Non-Ideal Gases and Solutions, Complexes and Ion Pairs in Corrosion	5067
<i>Stephen Smith</i>	
Effect of Carbon Dioxide and Hydrogen Sulfide on the Localized Corrosion of Carbon Steels and Corrosion Resistant Alloys.....	5082
<i>Teresa Perez</i>	
Iron Source in Sour Gas/Condensate Wells: Reservoir Fluids or Corrosion?	5097
<i>Giulia Verri</i>	
Sohic Resistance of SA516 Grade 70 Carbon-Manganese Steel for Oil and Gas Applications	5112
<i>Sandra Le Manchet</i>	
Corrosion Behavior of Mild Steel in Sour Environments at Elevated Temperatures	5121
<i>Shujun Gao</i>	
Verification of an Electrochemical Model for Aqueous Corrosion of Mild Steel for H₂S Partial Pressures Up to 0.1 MPa	5138
<i>Saba Navabzadeh Esmaeely</i>	
Corrosion of Nickel Alloys in Elevated Temperature Sour Gas Environments.....	5152
<i>Robert Retew</i>	
Design Challenges for Material Selection in Sour and High Salinity Gas and Oil Production Facilities.....	5161
<i>Pedro Rincon</i>	
The Role of Pyrite in Localized H₂S Corrosion of Mild Steel.....	5174
<i>Jing Ning</i>	
Effect of Acetic Acid on Sour Corrosion of Carbon Steel.....	5189
<i>Jon Kvarerval</i>	
Electrochemistry of Mackinawite Electrodes in Sour Aqueous Solutions	5203
<i>Morten Tjelta/</i>	

VOLUME 8

Surface Chemistry of Iron Sulfide Scale and Its Influence on Corrosion Occurring Underneath	5218
<i>Omar Yezz</i>	
In situ Electrochemical Evaluation of Pitting Corrosion of Carbon Steel Pipelines Exposed to Slightly Sour Seawater Service	5233
<i>Ray Case</i>	
Mitigation of Sour Corrosion Using Novel Fast Acting Hydrogen Sulfide Scavengers.....	5247
<i>Sunder Ramachandran</i>	
Factors Affecting Vapor Phase H₂S Concentrations in Asphalt and Mitigation via Scavengers	5255
<i>Kyle Cattanach</i>	

Electrochemical Study of the Influence of Acetic Acid on Carbon Steel Corrosion in Sour Environment	5267
<i>Suresh Divi</i>	

TEG 316X: NOVEL USE OF MULTIELECTRODE SYSTEMS ON CORROSION MONITORING AND STUDIES

Segmented Multi Electrode Sensor for Investigation of Environment-Assisted Cracking Under Dynamic Atmospheric Conditions	5280
<i>Patrick Kramer</i>	
A Multielectrode Array Sensor for Coating and Pretreatment Evaluation on Carbon Steels	5291
<i>Yugo Ashida</i>	
Monitoring Dynamic Corrosion and Coating Failure Events on Buried Steel Using Electrode Arrays	5300
<i>YongJun Tan</i>	
Principles and Issues in Structural Health Monitoring Using Corrosion Sensors	5308
<i>YongJun Tan</i>	
Investigation of Under-Deposit Corrosion on X-60 Using Multielectrode System	5321
<i>Nayef Alanazi</i>	
Assessment of Coupled Multi-Electrode Array Technique for Monitoring Corrosion Performance of a Martensitic Stainless Steel Under Salt-fog Environments	5332
<i>Guru Prasad Sundararajan</i>	
Experimental Study on the Effect of Voltage Drop Imposed by Ammeters Between Electrodes of Coupled Multielectrode Array Sensors on Corrosion Rate Measurements	5347
<i>Lietai Yang</i>	

TEG 331X: CORROSION OF BIOMEDICAL MATERIALS AND DEVICES

The Role of Fenton Reaction in Biodegradable of Magnesium and its Alloys.....	5361
<i>Ben-Hanu Guy</i>	
Patient-specific Orthopaedic Implants Manufactured by Additive Manufacturing – A Corrosion Study	5369
<i>Ben-Hanu Guy</i>	
Bio-Functional High Performance Coatings of Titanium and Magnesium Alloys for Biomedical Applications.....	5379
<i>Amir Eliezer</i>	
Controlling the Degradation Profile of Mg Biomedical Devices by Alloy Design and Thermomechanical Processing.....	5386
<i>Stephen LeBeau</i>	
Electrochemical Studies of Titanium-Boron Alloys in Physiological Solutions.....	5401
<i>Kevin Robles</i>	
Corrosion Behavior of Niobium-containing Titanium Alloys in Biological Solutions.....	5409
<i>Kevin Robles</i>	
Graphene Based Nanomaterials for Biomedical Coatings.....	5419
<i>Rigoberto Advincula</i>	

TEG 341X: CORROSION IN OIL SANDS

Qualitative Assessment of Corrosion Rate in Oilsands Slurry Pipeline.....	5427
<i>Kofi Freeman Adane</i>	
Assessing the Corrosivity of Field Produced Water in In-situ Oil Sands Water Treatment Systems	5438
<i>Tesfaalem Haile</i>	
Optimizing Composition, Fabrication, and Inspection of Chromium Carbide Overlay (CCO) for Oil Sands Sliding and Impact Wear Applications	5453
<i>Duane Serate</i>	
Remote Monitoring of the Mechanical Integrity of Oil Sands Facility High Wear Components	5469
<i>Rob Leary</i>	

TEG 407X: LOCALIZED CORROSION: CHARACTERIZATION AND CONTROL

Effect of Microstructure on the Corrosion Resistance of Super Duplex Stainless Steels: Materials Performance Maps.....	5476
<i>Mariano Iannuzzi</i>	
Comparison of Pitting and Crevice Corrosion - The Effect of Alloying Elements	5491
<i>Brian DeForce</i>	
Effect of Thiosulfate on the Pitting Corrosion of Nickel Base Alloys in Chloride Solutions	5500
<i>Martin Rodriguez</i>	
Localized Corrosion Behavior of Ferritic and Austenitic Passive Materials.....	5515
<i>Raul Rebak</i>	
Online Continuous Corrosion Monitoring for Detection, Monitoring and Control of Localized Corrosion.....	5529
<i>Jake Davies</i>	
Effect of Cold-work on Repassivation and Corrosion Behaviors of Carbon Steels A569.....	5538
<i>Gaoxiang Wu</i>	

Localized Corrosion of UNS A95052 Aluminum Alloy in Desalination Plants	5550
<i>Mariano Kappes</i>	
Localized Corrosion on Coating Damaged Surface of Automotive Suspension Coil Springs	5565
<i>Yugo Ashida</i>	
Effects of Annealing Temperature on Pitting Corrosion of UNS S32003 Duplex Stainless Steels.....	5575
<i>Liang He</i>	
Qualification of Acid Systems for Wellbore Damage Removal: Case Histories from the Norwegian Continental Shelf.....	5583
<i>Yogesh Choudhary</i>	
A Localized Corrosion Managing Clamp in a Crevice Between Clamp and Stainless Steel Tube	5593
<i>Byoung Young Yoon</i>	
In-situ CPT of Duplex Stainless Steels in Artificial Seawater Using ECN.....	5601
<i>Luis Garfias-Mesias</i>	
Evaluation of Simulated Corrosion Pits in X65 Steel	5614
<i>Farnoosh Farhad</i>	
Uniform and Localized Corrosion Study of Base Material and Welds of Ni-Cr-Mo (W) Alloys.....	5627
<i>Ajit Mishra</i>	
Effect of Crevice Former on the Crevice Corrosion of 316L Stainless Steel in Synthetic Tap Water.....	5642
<i>Seon-hong Kim</i>	
Characterization and Control of the Intergranular Corrosion Defects in a 2024 T351 Aluminium Alloy	5654
<i>Marie-Laetitia De Bonfils-Lahovary</i>	
Stochastic Modeling of Non-Uniform Corrosion of Carbon and Low Alloy Steel During Chemical Cleaning.....	5666
<i>Charles Marks</i>	
Ammonium Chloride Corrosion in the Refining Industry	5682
<i>Sudhakar Mahajanam</i>	
Monitoring of Stagnant and Low-flow Lines in Petroleum Refineries.....	5693
<i>Samir K. Al-Ali</i>	
Chemical Evaluation of Corrosion Products Formed on Carbon Steel Exposed to Water from Known Sources.....	5709
<i>Kimberly Steiner</i>	
Pitting Corrosion in AZ31 Magnesium Alloy in Potassium-Based Electrolytes.....	5724
<i>Somi Doja</i>	
Investigation the Pitting Resistance of SS304 and SS316L in Neat Chemical Products Using EIS	5736
<i>Yolanda De Abreu</i>	

TEG 462X: CORROSION ISSUES OF BIOFUELS/CONVENTIONAL FUELS

Materials Compatibility Issues with Ethanol Storage and Transportation - A Review	5751
<i>Narasimha Sridhar</i>	
Compatibility Evaluations of Sealing Materials with Aged Biofuels.....	5767
<i>Margit Weltschev</i>	
Evaluation of the Resistance of Metallic Materials Under the Influence of Biofuels.....	5779
<i>Margit Weltschev</i>	
Development and Experimental Verification of a Corrosion Fatigue Assessment Method for Highly-Stress Engine Components in E85 Biofuel	5791
<i>Sven Kaefner</i>	
Material-Biodiesel Compatibility – Survey of Industry Experience.....	5807
<i>Li Yan</i>	

TEG 474X: NANOTECHNOLOGY AND CORROSION

Ni-W-B and Ni-W-B-Nanodiamond Metal Matrix Nanocomposite Protective Coatings.....	5813
<i>Sankaran Murugesan</i>	
A Promising Coating of Nanostructured Graphene-Ceria Nanofillers in Polyurethane for Corrosion Protection.....	5822
<i>Mohammad Mizanur Rahman</i>	
Study of Adsorption of Corrosion Inhibitor 1-(2-Aminoethyl)-2-Oleyl-2-Imidazolinium Chloride on Carbon Steel Under CO₂ Environment by Using In-Situ AFM Measurements.....	5828
<i>Zineb Belarbi</i>	
Nanostructured and Superhydrophobic Coatings Against Corrosion	5843
<i>Rigoberto Advincula</i>	
Silicon-Based CVD Nanocoatings for Corrosion Resistance and Advanced Surface Properties	5850
<i>Min Yuan</i>	
Electrochemical Performance of Nano Engineered-Coatings Based on ANA in Corrosive Environment	5859
<i>Tse-Ming Chiu</i>	
The Use of Nanostructured Materials Loaded with pH Indicating Molecules for Corrosion Sensing	5869
<i>Joao Tedim</i>	
Corrosion Resistance of Ni-Metal Matrix Composite Coatings: Effect of Microstructure.....	5879
<i>Othon Monteiro</i>	

TOP OF LINE CORROSION

Thiols as Volatile Corrosion Inhibitors for Top of the Line Corrosion	5890
<i>Zineb Belarbi</i>	
Development of an Electrochemical Method to Study Top-Of-The-Line Corrosion.....	5904
<i>Md Mayeedul Islam</i>	
Sour Top of Line Corrosion Testing with Methanol	5917
<i>Gaute Svenningsen</i>	
Enhanced Corrosion Prediction Model for Multiphase Oil and Gas Production Systems	5930
<i>Hui Li</i>	
Assessing Corrosion Risk and Selection of Appropriate Testing Programs for Gas and Gas-Condensate Pipelines.....	5943
<i>Caroline Simpson</i>	

ADDITIONAL PAPER

Nanoparticle/Nanofibre-based Coatings for Corrosion/Oxidation Protection.....	5958
<i>Wolfram Fuerbeth</i>	
Author Index	