PART B

WALL THINNING CAUSED BY FLOW-ACCELERATED CORROSION

Introduction.................................................................................................................. 863

PVP2008-61161........................................................................................................... 865
Current Wall Thinning Measured on Piping System of Main or Auxiliary Boiler Plant in Ships
   H. Shihihara, H. Matsushita, and Y. Nagayama

PVP2008-61185........................................................................................................... 873
Flow Accelerated Corrosion: The Entrance Effect
   Andy Barth, Harold M. Crockett, Lee F. Goyette, Jeffrey S. Horowitz, and
   Robert Montgomery

PVP2008-61311........................................................................................................... 883
A Comparison of FAC Programs in Japan and the United States
   Harold M. Crockett, Naoki Hiranuma, Masao Honjin, and Jeffrey S. Horowitz

PVP2008-61427........................................................................................................... 891
Low Cycle Fatigue Behavior of Elbow Pipe With Local Wall Thinning
   Koji Takahashi, Satoshi Tsunoi, Takumi Hara, Sota Watanabe, Akira Mikami,
   Hajime Takada, Kotoji Ando, and Masaki Shiratori

PVP2008-61807........................................................................................................... 897
Experimental Evaluation of the Bending Load Effect on the Failure Pressure of
Wall-Thinned Elbows
   Jin-Weon Kim, Yeon-Soo Na, Sung-Ho Lee, and Chi-Yong Park

PVP2008-61823........................................................................................................... 905
The COMSY: Code for the Detecting of Piping Degradation Due to Flow-Accelerated
Corrosion
   André Zander and Helmut Nopper

PVP2008-61908........................................................................................................... 911
Fracture Mode Prediction Method for Pipes With Wall-Thinning by Using the History
Data of Strain Ratio
   Irwan Herman and Toshiyuki Meshii

MECHANISTIC MATERIALS MODELING INCLUDING LOCAL APPROACHES

Introduction.................................................................................................................. 919

PVP2008-61048........................................................................................................... 921
Mechanically-Based Calibration of Ductile Fracture Models
   Kerry L. Taylor, Andrew H. Sherry, and Martin R. Goldthorpe
Regulatory Perspective on Advanced Finite Element Flaw Growth Analysis of Alloy 82/182 Butt Welds
Edmund J. Sullivan, Aladar A. Csontos, Timothy R. Lupold, and Chia-Fu Sheng

Advanced FEA Modeling of PWSCC Crack Growth in PWR Dissimilar Metal Piping Butt Welds and Application to the Industry Inspection and Mitigation Program
G. White, J. Broussard, J. Collin, M. Klug, C. Harrington, and G. DeBoo

Manufacturing Methodology, Repair History, and Loadings for Westinghouse and Combustion Engineering Pressurizers, to Support Detailed Structural Integrity Evaluations of the Nozzle Safe End Configurations
Cameron Martin, Warren Bamford, and Nathan Palm

FRACTURE ASSESSMENT AT ELEVATED TEMPERATURES
Introduction

Mechanism Based Unified Creep Model Incorporating Damage
Nicola Bonora and Luca Esposito

A Comparative Study of a Single Damage-Parameter Life Prediction Method and a Physically-Based Damage Mechanics Method
S. B. Leen, T. H. Hyde, S. Peravali, and W. Sun

Small Punch Creep Properties of Heat Affected Zones of Reduced Activation Ferritic Steel
Taichiro Kato, Shin-Ichi Komazaki, Yutaka Kohno, and Hiroyasu Tanigawa

Creep Crack Growth of P92 Welds
Masataka Yatomi, Akio Fuji, Ken-ichi I. Kobayashi, Masaaki Tabuchi, Toshimitsu Yokobori, Yasushi Hasegawa, and Takeo Yokobori

Creep-Environment Interactions of Alloy 617 at Elevated Temperature
Daejong Kim, Changheui Jang, and Woo Seog Ryu

The Influence of Specimen Geometry and Test Times on High Temperature Crack Growth Behaviour in Parent and Welded 316H Stainless Steel
Catrin M. Davies, Robert C. Wimpory, Masaakai Tabuchi, David W. Dean, and Kamran M. Nikbin

Damage Evolution and Life Prediction of a P91 Longitudinal Welded Tube Under Internal Pressure Creep
Takashi Ogata, Takayuki Sakai, and Masatsugu Yaguchi
STRUCTURAL INTEGRITY OF PIPELINES AND PRESSURE VESSELS

Introduction .......................................................................................... 1241

PVP2008-61024 .................................................................................. 1243
Fracture Assessment Procedures for Steel Pipelines Using a Modified Reference Stress Solution
Tomasz Tkaczyk, Noel P. O’Dowd, and Kamran Nikbin

PVP2008-61077 .................................................................................. 1259
J-R Curve Testing of SE(T) Fracture Specimens Using Unloading Compliance and
CMOD Data
Sebastian Cravero and Claudio Ruggieri

PVP2008-61095 .................................................................................. 1269
Safety Factor of Austenitic Stainless Steel Pressure Vessels With Strain-Strengthening
Gang Chen, Yang-Chun Deng, and Xiao-Feng Yang

PVP2008-61100 .................................................................................. 1275
Fracture Toughness Evaluation of High Strength Steel Pipe
G. Shen, R. Bouchard, J. A. Gianetto, and W. R. Tyson

PVP2008-61198 .................................................................................. 1283
Technical Specification for Subsea Pipelines Alternative Criteria Based in
Fracture Mechanics
Petrônio Zumpano Júnior, Guilherme Victor Peixoto Donato, Eduardo Hippert Júnior,
and Tiago Bohn Kaspary

PVP2008-61220 .................................................................................. 1291
Elastic-Plastic Finite Element Simulation and Fatigue Damage Analysis of Wrinklebends
Xian-Kui Zhu and Brian N. Leis

PVP2008-61246 .................................................................................. 1301
Correlation of Fracture Behavior in Circumferentially Cracked Pipes Under Combined
Load Conditions Using SENT Specimens: Effects on J-R Resistance Curves
Sebastian Cravero, Richard E. Bravo, and Hugo A. Ernst

PVP2008-61310 .................................................................................. 1311
Advances in Research of Elevated and High-Temperature Structure Integrity of Process
Pressure-Bearing Equipment in Chinese Petrochemical Industry
Xuedong Chen, Shandong Tu, Zhichao Fan, Tiecheng Yang, Weihe Guan, and
Jialing Jiang

PVP2008-61312 .................................................................................. 1323
Investigation of Cyclic Creep Behavior and Life Prediction Method of Notch Specimen
During High Temperature Fatigue
Zhichao Fan, Heng Jiang, Xuedong Chen, and Jie Dong

PVP2008-61313 .................................................................................. 1331
A New Empirical Life Prediction Equation for Stress-Controlled Fatigue-Creep Interaction
Huifeng Jiang, Zhichao Fan, Xuedong Chen, and Jie Dong

PVP2008-61393 .................................................................................. 1339
Influence of Weld Mismatch on the Structural Integrity of Pipes for Reeling
Gustavo M. Castelluccio, Sebastian Cravero, and Hugo A. Ernst

xxii
SMALL-SCALE AND MINIATURE MECHANICAL TESTING
Introduction.................................................................................................................. 1347

PVP2008-61044.............................................................................................................. 1349
Effect of Dynamic Loading Rates on Cleavage Fracture Toughness Properties of Steels
Robert Moskovic and James A. Joyce

PVP2008-61252.............................................................................................................. 1357
Application of Nondestructive Instrumented Indentation Technique in Small-Scale Testing
of Pressure Vessel and Piping Systems
Kyung-Woo Lee, Kug-Hwan Kim, Kwang-Ho Kim, Young-Hwan Choi, Hae-Dong Chung
and Dongil Kwon

PVP2008-61537.............................................................................................................. 1363
Use of Small Punch Notched Specimens in the Determination of Fracture Toughness
Roberto Lacalle, José Alberto Álvarez, and Federico Gutiérrez-Solana

PVP2008-61704.............................................................................................................. 1371
Using Small-Scale Testing in Integrity Assessment of Clad Pipes
Afshin Motarjemi

LEAK-BEFORE-BREAK ASSESSMENTS
Introduction.................................................................................................................. 1379

PVP2008-61064.............................................................................................................. 1381
Recent Developments to Improve Crack Opening Areas for R6 Leak-Before-Break
Procedures
J. K. Sharples, D. G. Hooton, R. Charles, H. Dodia, and P. J. Budden

PVP2008-61207.............................................................................................................. 1389
A Probabilistic Approach to Leak Before Break Demonstration
Peter Dillström

PVP2008-61375.............................................................................................................. 1409
Crack Opening Area Solutions for Through-Wall Cracks in a Complex Geometry
R. Charles, J. K. Sharples, and P. J. Budden

PVP2008-61562.............................................................................................................. 1417
Revised LOCA Frequency Estimates From an Expert Elicitation Process
Paul Michael Scott, Robert Lee Tregoning, and Lee Richard Abramson

FAILURE PREVENTION VIA ROBUST DESIGN AND CONTINUOUS
NDE MONITORING
Introduction.................................................................................................................. 1425

PVP2008-61180.............................................................................................................. 1427
Reliability Analysis of Pressure Vessels in Lubricant Process Unit for Risk Based Inspection
Chi-Hui Chien and Chun-Hung Chen
A Quantitative Approach to Risk-Based Inspection Methodology of Main Steam and Hot Reheat Piping Systems
  
  Marvin J. Cohn, Jeffrey T. Fong, and Philip M. Besuner

Fracture Mechanics and NDE: The Keys to Failure Prevention
  
  Geoffrey R. Egan and Brian W. Woodman

The Role of Failure Data in Plant Aging Management and Life Extension
  
  Alan D. Chockie and Frank E. Gregor

NDE and Failure Prevention: Past, Present, and Future
  
  Owen F. Hedden

Uncertainty Estimate of Charpy Data Using a 5-Factor 8-Run Design of Experiment
  
  Charles G. Interrante, Jeffrey T. Fong, James J. Filliben, and N. Alan Heckert

Continuous NDE Monitoring via Web Technology
  
  Pedro V. Marcal and Jeffrey T. Fong

A New Approach to Assessing the Reliability of Applying Laboratory Fracture Toughness Test Data to Full-Scale Structures
  
  Yuh J. Chao, Jeffrey T. Fong, and Poh-Sang Lam

ASME NDE Engineering Division: 25 Years of Excellence
  
  William T. Springer and Owen F. Hedden

Robust Engineering Design for Failure Prevention
  
  Jeffrey T. Fong, James J. Filliben, N. Alan Heckert, Roland deWit, and Barry Bernstein

Structural Aging Monitoring via Web-Based Nondestructive Evaluation (NDE) Technology
  
  Jeffrey T. Fong, William F. Ranson III, Reginald I. Vachon, and Pedro V. Marcal

A Web-Based Data Analysis Methodology for Estimating Reliability of Weld Flaw Detection, Location and Sizing
  
  Jeffrey T. Fong, Owen F. Hedden, James J. Filliben, and N. Alan Heckert

Author Index