

International  
Topical  
Meeting

Probabilistic Safety Analysis

PSA '05

September 11 - 15, 2005

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Sir Francis Drake Hotel

450 Powell Street  
San Francisco, California 94102  
800.795.7129  
415.391.8719 (Fax)

## Program Sponsors



Lawrence Livermore  
National Laboratory



American Nuclear Society  
Nuclear Installation Safety Division -  
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## Program Exhibitors

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## Program Committee

General Co-Chairs	B. John Garrick Bernard Fourest	U.S. Nuclear Waste Technical Review Board Electricité de France
Honorary Chair	Chauncey Starr	Electric Power Research Institute
Associate General Chair	Ian B. Wall	Consultant
Technical Program Chairs	Robert P. Kassawara Craig F. Smith	Electric Power Research Institute Naval Postgraduate School & Lawrence Livermore National Laboratory

## Local Organizing Committee

Finance	Linda Schenk	ERIN Engineering and Research, Inc.
Hotel Liaison	Bill Keyworth	Consultant
Registration	Tom Fernandez	Consultant
Publicity/Exhibitors	Bryce Johnson	Retired
Publications	Renée Morell	Electric Power Research Institute
Social Events	Kelly Moriarty	ERIN Engineering and Research, Inc.
Audio/Visual Coordinator	Alan Balilea	ERIN Engineering and Research, Inc.

# Hotel & Meeting Information

## Registration

On-site registration at the meeting is located at the Registration Desk located on the Mezzanine Level of the hotel. Registration is required for all attendees and presenters. Badges are required for admission to all events. The Full Meeting Registration Fee includes the following:

- One badge for Admission to All Technical Sessions (Monday through Thursday)
- One ticket for the Welcome Reception (Sunday Evening)
- One ticket for the Bay Cruise and Dinner (Tuesday Evening)
- One CD of Meeting Proceedings

Additional tickets can be purchased in advance or onsite, based on availability, at the Registration Desk for the Welcome Reception (\$65 each) and the Bay Cruise and Dinner (\$75 each).

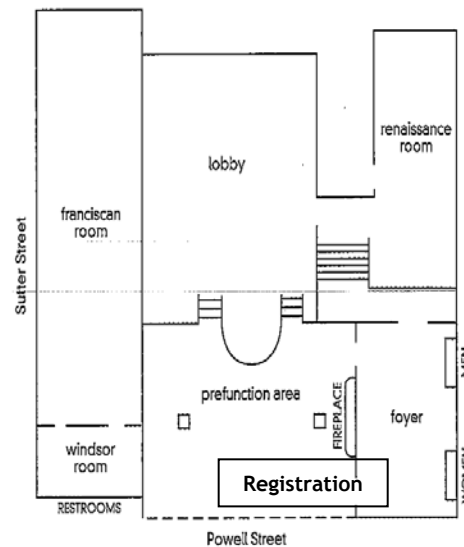
## Registration Hours

Sunday, September 11  
1:00 pm - 7:00 pm

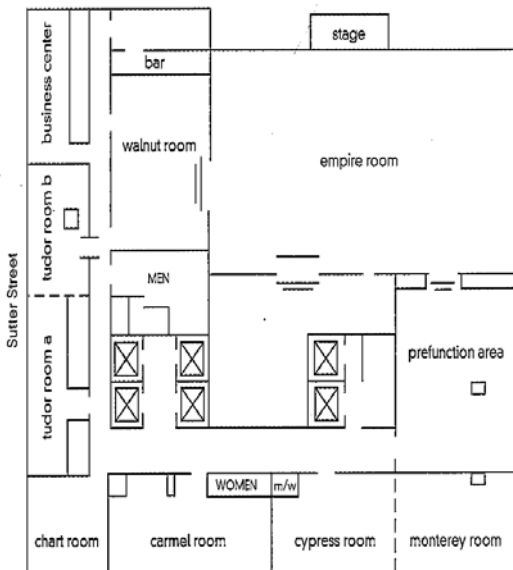
Monday, September 12  
7:30 am - 10:00 am

Tuesday, September 13  
7:30 am - 9:00 am

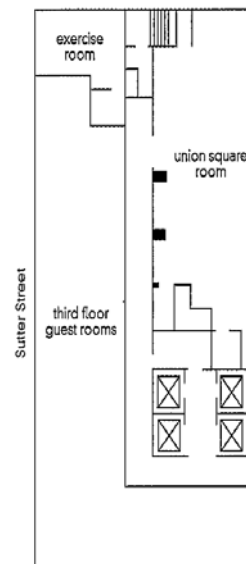
Wednesday, September 14  
7:30 am - 9:00 am



Mezzanine Level



Second Floor



Third Floor

← Restroom

# Topical Meeting Summary

## SUNDAY, SEPTEMBER 11, 2005

1:00 pm - 7:00 pm	Meeting Registration - Mezzanine Level (off of Hotel Lobby)
7:00 pm - 9:00 pm	Welcome Reception - Empire Room (2 <sup>nd</sup> Floor)

## MONDAY, SEPTEMBER 12, 2005

8:30 am - 12:00 pm	Opening Plenary	
12:00 pm - 1:30 pm	Lunch Break	
1:30 pm - 4:30 pm	<u>Technical Sessions</u> Configuration Risk - I Plant Security - I Advanced Reactors - I	Risk-Informed Applications - I Advanced PSA - I Level 2/3 - I
4:30 pm - 6:00 pm	Poster Session	

NOTE: This is a preliminary program. Times, topics and locations are subject to change. The official program, distributed at the meeting, will contain the final meeting details.

## TUESDAY, SEPTEMBER 13, 2005

8:30 am - 10:00 am	LNT Plenary - "Has the LNT Outlived its Usefulness?"	
10:15 am - 11:45 am	<u>Technical Sessions</u> Repository Risk Internal Events Space - I	External Events Chemical Risk Human Reliability Analysis - I
11:45 am - 1:30 pm	Lunch Break	
1:30 pm - 4:30 pm	<u>Technical Sessions</u> PSA Standards - I (1:30-3:30 pm) Advanced PSA (1:30-3:00 pm) Space - II	Risk-Informed Applications - II Human Reliability Analysis - II Level 2/3 - II
3:30 pm - 4:30 pm	Panel Discussion - ASME Standard: Ask The Authors Why?	
6:00 pm - 10:00 pm	Dinner Cruise on the San Francisco Bay	

## WEDNESDAY, SEPTEMBER 14, 2005

8:30 am - 11:30 am	<u>Technical Sessions</u> Risk-Informed Applications - III Plant Security - II Space - III	Advanced PSA - III Safety Culture Generation Risk/RCM
11:30 am - 1:30 pm	Lunch Break	
1:30 pm - 4:30 pm	<u>Technical Sessions</u> Configuration Risk - II Advanced PSA - IV Fire Risk - I	PSA Standards - II (1:30-3:30 pm) Advanced Reactors - II Risk-Informed Applications - IV
3:30 pm - 4:30 pm	Panel Discussion - ANS Standards: Ask The Authors Why?	

## THURSDAY, SEPTEMBER 15, 2005

8:30 am - 11:30 am	<u>Technical Sessions</u> Configuration Risk - III Risk-Informed Applications - V Computer	Fire Risk - II Advanced PSA - V Common Cause Failure
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# Technical Sessions

**MONDAY, SEPTEMBER 12, 2005**

## OPENING PLENARY

8:30 am - 12:00 pm (Empire Room)

### WELCOME

Dr. Ian Wall, Associate General Chair, PSA'05

### PANEL CHAIR

Dr. John Garrick - Chairman, U.S. Nuclear Waste Technical Review Board

### PANELISTS:

- *The Role of Risk Management in Regulation*  
Dr. Nils J. Diaz - Chairman, U.S. Nuclear Regulatory Commission
- *PSA Development and Implementation at EDF*  
Bernard Fourest - Deputy Director, SEPTEN, Electricité de France
- *The Role of PSA in Nuclear Waste Disposal*  
Dr. Margaret Chu - M.S. Chu & Associates and Former Director, Office of Civilian Radioactive Waste Management, U.S. Department of Energy
- *The Role of Nuclear Power in a Carbon Constrained World*  
Dr. Theodore U. Marston - Chief Technology Officer, Sr. Vice President, Electric Power Research Institute
- *Why Probabilistic Risk Assessment?*  
Dr. B. John Garrick, Chairman, U.S. Nuclear Waste Technical Review Board

## CONFIGURATION RISK - I

1:30 pm - 4:30 pm (Renaissance Room)

### SESSION CHAIRS:

John Gaertner - Electric Power Research Institute  
Gene Hughes - ERIN Engineering and Research, Inc.

### PAPERS:

- *Risk-Informed Shutdown Defense-In-Depth Program Development For Duke Power's Shutdown Risk Management Program*  
Dennis Henneke - Duke Power Company
- *Risk Management Technical Specifications Initiative (RMTS) 4b, Use of Configuration Risk Management for Determining Technical Specification Completion Times: NRC Perspectives*  
Theodore Robert Tjader - U.S. Nuclear Regulatory Commission
- *Application of Risk-Informed Technical Specification Initiative 4B to Hope Creek Generating Station*  
Wei He - PSEG Nuclear LLC
- *Risk-Informed Technical Specifications (RITS) Initiative 5B Pilot Surveillance Frequency Control Program*  
Philip Tarpinian - Exelon Corporation
- *Risk-Managed Technical Specifications (RMTS) - Current Industry Guidelines and Practices*  
James Liming - ABSG Consulting, Inc. (ABS Consulting)
- *Discussion of Issues Related to Maintenance Rule (a)(4) Implementation*  
Yu Shen - Nuclear Management Company

## PLANT SECURITY - I: Security Modeling & Risk Analysis

1:30 pm - 4:30 pm (Franciscan Room)

### SESSION CHAIRS:

Ashok Thadani - U.S. Nuclear Regulatory Commission  
Allen Camp - Sandia National Laboratories

### PAPERS:

- *Vulnerability Analysis Considering Explosive Devices Delivered by Land Transport*  
Marko Cepin - Jozef Stefan Institute, Leon Cizelj - Jozef Stefan Institute, Matjaz Leskovar - Jozef Stefan Institute, Borut Mavko - Jozef Stefan Institute
- *Calculating the Effect of Surface or Underwater Explosions on Submerged Equipment and Structures*  
Charles David Sulfredge - Oak Ridge National Laboratory, Robert L. Sanders - Oak Ridge National Laboratory, Robert H. Morris - Oak Ridge National Laboratory
- *Analysis of Attacks on Spent Fuel Pools*  
Herschel Specter - RBR Consultants, Inc.
- *Risk Assessment Using the Homeland-Defense Operational Planning System (HOPS)*  
Ronald Durling, Jr. - Lawrence Livermore National Laboratory, David Price - Lawrence Livermore National Laboratory, Kimberlee Spero - Lawrence Livermore National Laboratory
- *An Examination of Risk-Based Resource Allocation in the National Strategy for Homeland Security Using the Maritime Domain as Context*  
Paul S. Szwed - U.S. Coast Guard Academy, Duane E. Boniface - Johns Hopkins University, Joseph J. Meyers - Office of Marine Safety, Security, & Environmental Protection

## ADVANCED REACTORS - I: Gas-Cooled Reactors

1:30 pm - 4:30 pm (Union Square Room)

### SESSION CHAIRS:

Karl N. Fleming - Technology Insights  
Jiejuan Tong - Tsinghua University, Beijing, PRC

### PAPERS:

- *Use of PRA to Support the Design and Licensing of the AREVA-HTR*  
Farshid Shahrokhi - Framatome ANP, Inc.
- *Use of PRA for the PBMR Demo in South Africa*  
Henriette van Graan - PBMR Pty Ltd South Africa
- *Licensing Approach for Modular HTGRS*  
Fred A. Silady - Technology Insights
- *Role of PRA to Support Korea's Nuclear Hydrogen Project*  
Joon Eon Yang - Korea Atomic Energy Research Institute, Seok-Jung Han - Korea Atomic Energy Research Institute, Jonghwa Chang - Korea Atomic Energy Research Institute, Chang K. Park - Korea Atomic Energy Research Institute
- *Status of Development, ANS Standard 53.1, Nuclear Safety Criteria for the Design of Modular Helium Cooled Reactor Plants*  
Malcolm LaBar - General Atomics
- *Historical Overview of PSA in Support of U.S. HTGR Design and Licensing (AIPA to GT-MHR)*  
Laurence L. Parme - American Nuclear Society, John Bolin - General Atomics, Arkal Shenoy - General Atomics

# Technical Sessions

**MONDAY, SEPTEMBER 12, 2005 (Continued)**

## RISK-INFORMED APPLICATIONS - I

1:30 pm - 4:30 pm (Cypress & Monterey Rooms)

### SESSION CHAIRS:

Barry Sloane - Dominion Resources, Inc.  
Sunkoo Kang - Korean Power Engineering Company

### PAPERS:

- *Integrated Initiating Event Performance Indicator*  
Dale M. Rasmuson - U.S. Nuclear Regulatory Commission, Steven Eide - Idaho National Engineering and Environmental Laboratory, C. Atwood - Statwood Consulting
- *Fast Risk Significance Evaluation Tool for Inspectors of Nuclear Power Plants*  
Chun-Chang Chao - Institute of Nuclear Energy Research, Meng-Chi Chen - Institute of Nuclear Energy Research, Shu-Tsen Hsu - Institute of Nuclear Energy Research
- *Assessment of Model Uncertainties in Regulatory Decisions Involving PRA Results*  
Hossein P. Nourbakhsh - U.S. Nuclear Regulatory Commission
- *Methods and Results of SPAR to PRA Importance Measure Comparisons*  
John Schroeder - Idaho National Laboratory, James Knudsen - Idaho National Laboratory, Robert Buell - Idaho National Laboratory
- *Guidelines for the Treatment of Uncertainty in Risk-Informed Regulatory Applications*  
Doug True - ERIN Engineering and Research, Inc., Edward T. Burns - ERIN Engineering and Research, Inc., Kenneth T. Canavan - Electric Power Research Institute
- *Risk Informing the Maintenance Rule Unavailability Performance Criteria*  
Raymond Fine - South Texas Project Nuclear Operating Company

## ADVANCED PSA - I: Approaches to PRA Quality/Documentation

1:30 pm - 4:30 pm (Windsor Room)

### SESSION CHAIRS:

Greg Krueger - ERIN Engineering and Research, Inc.  
Barry Kaufer - OECD

### PAPERS:

- *PRA Quality for the Mitigating Systems Performance Index*  
Gareth Parry - U.S. Nuclear Regulatory Commission, Michael Cheok - U.S. Nuclear Regulatory Commission, James Trapp - U.S. Nuclear Regulatory Commission, William Stillwell - South Texas Project Nuclear Operating Company, Jeffrey R. Gabor - ERIN Engineering and Research, Inc.
- *Electronic PRA Documentation for Dominion Nuclear Plants*  
Thomas G. Hook - Dominion Resources, Inc.
- *Analysis of Fault Trees for PRA Quality Assessment*  
Kamal A. El-Sheikh - Reliability & Safety Assurance Consulting Services
- *Guaranteed Failure Analysis for Gaining Insights from PSA*  
Neil Johnson - Ricky Summitt Consulting, Inc., Jeffrey Miller - Ricky Summitt Consulting, Inc.
- *Integration and Simplification of PSA Information to Enhance PSA Management and Communication*  
Ricky Summitt - Ricky Summitt Consulting, Inc.
- *Aggregation of Quantitative Risk Assessment Results*  
Kenneth Canavan - Electric Power Research Institute, Doug True - ERIN Engineering and Research, Inc.

## LEVEL 2/3 - I: Developments in Level 2 Analysis

1:30 pm - 4:30 pm (Carmel Room)

### SESSION CHAIRS:

Richard Denning - Battelle-Columbus Laboratory  
Chair - TBD

### PAPERS:

- *A Technique for Considering the Effect of Severe Accident Management Activities on the Conditional Containment Failure Probability*  
Yoshitaka Yoshida - Institute of Nuclear Safety System
- *Westinghouse Owners Group Simplified Level 2 Modeling Guidelines*  
Justin Robert Armstrong - Westinghouse Electric Company, Raymond E. Schneider - Westinghouse Electric Company/Westinghouse Owners Group
- *Level 2 Analysis to Estimate LERF Risk from a Thermally-Induced Rupture of a Through-Wall Steam Generator Tube Defect*  
Hugo da Silva - TXU Power, Marc A. Kenton - CREARE, Inc.
- *A Level 2 Probabilistic Safety Assessment Developed at EdF*  
François Romanet - Electricité de France
- *Level 2 PSA for KNPP WWER-440/B230*  
Kaliopa Mancheva - Risk Engineering, Marinela Ilieva - Risk Engineering, Dobrin Grigorov - Risk Engineering
- *Risk Comparison between PWR and PHWR Plants in Korea*  
Jongtae Jeong - Korea Atomic Energy Research Institute, Tae Woon Kim - Korea Atomic Energy Research Institute, Jaejoo Ha - Korea Atomic Energy Research Institute

## POSTER SESSION

4:30 pm - 6:00 pm (Empire Room)

### SESSION CHAIR:

Robert Breen - Electric Power Research Institute (Retired)

### PAPERS:

- *Integration of Reliability Models for Nuclear Power Plant Digital Instrumentation and Control Systems Into Probabilistic Risk Assessment Studies*  
Tunc Aldemir - Ohio State University, Don W. Miller - Ohio State University, Audeen Fentiman - Ohio State University, Steven A. Arndt - U.S. Nuclear Regulatory Commission
- *Risk of Oil Products Transportation in Lithuania*  
Juozas Augutis - Lithuanian Energy Institute, Eugenijus Uspuras - Lithuanian Energy Institute, Ricardas Krikstolaitis - Lithuanian Energy Institute, Vaidas Matuzas - Lithuanian Energy Institute
- *Updated Requirements on PSA Scope and Methods for Comprehensive Safety Reviews in Germany*  
Heinz Peter Berg - Federal Office for Radiation Protection, Germany, Thomas Froehmel - Federal Office for Radiation Protection, Rudolf Goertz - Federal Office for Radiation Protection
- *Application of Top Event Protection to Development of Risk-Informed Nuclear Facility and Power Plant Standards*  
Dave Blanchard - Applied Reliability Engineering, William Reuland - Electric Power Research Institute
- *CEA Program of Work to Carry Out a Level 1 PSA on the Gas-Cooled Fast Reactor*  
Nicolas Devictor - Commissariat à l'Énergie Atomique, Paul Saignes - Commissariat à l'Énergie Atomique, Bernard Mathieu - Commissariat à l'Énergie Atomique, Anne Bassi - Commissariat à l'Énergie Atomique, Frédéric Bertrand - Commissariat à l'Énergie Atomique

# Technical Sessions

**MONDAY, SEPTEMBER 12, 2005 (Continued)**

## POSTER SESSION (Continued)

- *Impact of Resampling Spallings Model Parameters on the Waste Isolation Pilot Plant Performance Assessment*  
Sean C. Dunagan - Sandia National Laboratories
- *Epistemic Uncertainty in LOCA PRA Models*  
Steven E. Farkas - Hudson Global Resources, Raymond Schneider - Westinghouse Electric Company
- *End States and Risk Metrics for PRAs of Modular HTGRS*  
Karl N. Fleming - American Nuclear Society
- *Example Application of Advanced Reactor Regulatory Framework*  
Mark R. Holbrook - Idaho National Laboratory
- *An Advanced Display System for Risk-Informed Fire Analysis*  
Pi-lin Hsu - Institute of Nuclear Energy Research, Taiwan, Hsu-Lan Ho - Institute of Nuclear Energy Research
- *PSA Program for Point Lepreau NGS Refurbishment Project*  
Raj K. Jaitly - Atomic Energy of Canada Ltd., L. Comanescu - Atomic Energy of Canada Ltd., D. Mullin - Point Lepreau NGS, A. Jean - Point Lepreau NGS
- *EPRI HRA Calculator™ - Version 3*  
Jeffrey A. Julius - Sciencetech LLC, Jan Grobbelaar - Sciencetech LLC, Frank Rahn - Electric Power Research Institute, Zouhair Elawar - Arizona Public Service
- *An Empirical Study on the Potential of Diagnosis Failures in HRA*  
Wondea Jung - Korea Atomic Energy Research Institute, Jaewhan Kim - Korea Atomic Energy Research Institute, Jinkyun Park - Korea Atomic Energy Research Institute
- *International Network on Incorporation of Aging*  
Christian Kirchsteiger - European Commission, Milan Patrik - European Commission
- *Risk-Informed Optimization, Theory and Applications*  
Alexander Knoll - Exelon Corporation
- *Numerical Comparison Between Analytical Human Reliability (HRA) Methods For Post-Initiator Actions*  
Kaydee Kohlhepp - Texas A&M University, William Burchill - Texas A&M University
- *Risk Assessment of the Bohunice V1 NPP Units for the State After Termination*  
Zoltan Kovacs - RELKO Ltd.
- *Frequency-Consequence Risk Acceptance Criteria*  
Thomas S. Kress - U.S. Nuclear Regulatory Commission
- *The Risk Quantification of Low Temperature Over-Pressure Accident During the Refueling Outage*  
Ho-Gon Lim - Korea Atomic Energy Research Institute, Seung-Cheol Jang - Korea Atomic Energy Research Institute, Jin-Hee Park - Korea Atomic Energy Research Institute
- *Integrated Risk-Informed Safety Management Programs for Commercial Nuclear Power Plants*  
James K. Liming - American Nuclear Society, Andrew A. Dykes - ABSG Consulting Inc. (ABS Consulting)
- *Risk-Informed Decision-making For Prudent Asset Management*  
James K. Liming - American Nuclear Society, Randal L. Montgomery - ABSG Consulting Inc. (ABS Consulting), Ernest J. Kee - South Texas Project Nuclear Operating Company
- *Comparison of Methodologies for Categorizing Components Based on Probabilistic Insights*  
Allen C. Moldenhauer - South Texas Project Nuclear Operating Company
- *Updated Basic Event Parameter Estimates for the SPAR Models*  
Patrick O'Reilly - U.S. Nuclear Regulatory Commission, Dale M. Rasmuson - U.S. Nuclear Regulatory Commission, Steven Eide - Idaho National Engineering and Environmental Laboratory
- *Observations and Lessons Learned from the NRC Revised Fire Protection Significance Determination Process*  
Robert Perch - U.S. Nuclear Regulatory Commission
- *Risk Management Assessment and Actions for Extended Completion Times*  
Leo B. Shanley III - ERIN Engineering and Research, Inc., Doug True - ERIN Engineering and Research, Inc., Young In - ERIN Engineering and Research, Inc., Roy Linthicum - Exelon Corporation
- *The Importance of Trial Usage as an Integral Part of the Development of New PRA Standards*  
Barry D. Sloane - Dominion Resources Services, Inc., Gareth Parry - U.S. Nuclear Regulatory Commission, Doug True - ERIN Engineering and Research, Inc., Michelle Carr - Southern California Edison Company, David Miskiewicz - Progress Energy Inc., Stanley H. Levinson, Framatome ANP, Inc., Ian B. Wall - Consultant
- *Use of PSA for Beyond Design Basis Accidents*  
Vincent Sorel - Electricité de France
- *FATCAT: A Tool for Fire Risk Analysis*  
Ricky Summitt - Ricky Summitt Consulting, Inc., Bruce Logan - Ricky Summitt Consulting, Inc., Robert Young - Ricky Summitt Consulting, Inc.
- *Importance Factors and Common Cause Failure : Which Impact on Preventive Maintenance Optimization*  
Dominique Vasseur - Electricité de France, Berenguer Christophe - Université de Technologie de Troyes, Huyart Thierry - Electricité de France, Voicu Aura - Electricité de France, Grall Antoine - Université de Technologie de Troyes, Dieulle Laurence - Université de Technologie de Troyes
- *An Overview of the Reliability and Availability Data System (RADS)*  
Thomas Wierman - Idaho National Laboratory, Kellie Karfordt - Idaho National Engineering and Environmental Laboratory, Steven Eide - Idaho National Engineering and Environmental Laboratory, Dale M. Rasmuson - U.S. Nuclear Regulatory Commission
- *Risk Assessment Standardization Methods for Risk-Informed Regulatory Applications*  
See-Meng Wong - U.S. Nuclear Regulatory Commission

# Technical Sessions

**TUESDAY, SEPTEMBER 13, 2005**

## LNT PLENARY - "Has the LNT Outlived Its Usefulness?"

8:30 am - 10:00 am (Empire Room)

### PANELISTS:

- *LNT History*  
Dr. Chauncey Starr - Founding President, Electric Power Research Institute
- *Hormesis and Radiation*  
Dr. Bobby R. Scott - Lovelace Respiratory Research Institute, Albuquerque, NM
- *Health Effects of Low Level Radiation*  
Dr. Kenneth L. Mossman - Director, Office of Radiation Safety, School of Life Sciences, Arizona State University, Tempe, AZ
- *BEIR VII Report*  
Dr. William C. Dewey - Director, Radiation Oncology Research Laboratory (RORL), Univ. of California, San Francisco

## REPOSITORY RISK

10:15 am - 11:45 am (Empire Room)

### SESSION CHAIRS:

J. Russell Dyer - U.S. Department of Energy (DOE)  
Chair - TBD

### PAPERS:

- *Impact of Pyrophoric Events on Long-Term Repository Performance*  
Richard Gregg - Idaho National Engineering and Environmental Laboratory
- *Modeling HIC and Failure of TI Alloy Drip Shields Within the Yucca Mountain Nuclear Waste Repository*  
Zack Qin - The University of Western Ontario
- *U.S. Department of Energy Approach to Probabilistic Evaluation of Long-Term Safety for a Proposed Yucca Mountain Repository*  
J. Russell Dyer - U.S. Department of Energy (DOE), Robert Andrews - Bectel Saic LLC, Abraham Van Luik - U.S. Department of Energy (DOE)

## INTERNAL EVENTS

10:15 am - 11:45 am (Franciscan Room)

### SESSION CHAIRS:

Dale M. Rasmuson - U.S. Nuclear Regulatory Commission  
Biff Bradley - Nuclear Energy Institute

### PAPERS:

- *Station Blackout Risk Re-Evaluation*  
Dale M. Rasmuson - U.S. Nuclear Regulatory Commission, Gary DeMoss - U.S. Nuclear Regulatory Commission, Steven Eide - Idaho National Engineering and Environmental Laboratory, C.S. Hunter - U.S. Nuclear Regulatory Commission, Thomas Wierman - Idaho National Engineering and Environmental Laboratory, C.D. Gentillon - Idaho National Laboratory
- *The Update of Initiating Event Frequency for ISLOCA at a PWR Plant in Taiwan*  
Ching-Hui Wu - Institute of Nuclear Energy Research
- *Catastrophic Station Blackout Recovery*  
Ross Anderson - Dominion Resources Services, Joseph Erb - Dominion Resources Services, George Pristas - Dominion Resources Services

## SPACE - I: Panel Comparing Space and Terrestrial PRA

10:15 am - 11:45 am (Union Square Room)

Panel discussion on terrestrial nuclear, space system, and space nuclear system PRA applications.

### SESSION CHAIRS:

Michael Frank - Safety Factor Associates, Inc.  
R. Wilcox - Jet Propulsion Laboratory

### PANELISTS:

- Michael Frank - Safety Factor Associates, Inc.
- William Kastenber - University of California, Berkeley
- Roger Boyer - NASA Johnson Space Center
- Joseph Fragola - Science Applications International Corporation

## EXTERNAL EVENTS

10:15 am - 11:45 am (Cypress & Monterey Rooms)

### SESSION CHAIRS:

Robert Budnitz - Lawrence Livermore National Laboratory  
Chair - TBD

### PAPERS:

- *Simplified risk-Informed Turbine Missile Analysis*  
Dave Blanchard - Applied Reliability Engineering, Peter Szetzu - Applied Reliability Engineering, Steve Hesler - Electric Power Research Institute, Bill Reuland - Electric Power Research Institute
- *Development and Application of a Mid-Level Effort High Winds Analysis Tool*  
Jeffrey Miller - Ricky Summitt Consulting, Inc., Yunlong Li - Entergy Nuclear
- *Development of CGS SPSA to Meet ANS External Event Standard*  
Vincent Andersen - ERIN Engineering and Research, Inc., Hanh Phan - Entergy Northwest

## CHEMICAL RISK

10:15 am - 11:45 am (Windsor Room)

### SESSION CHAIRS:

Ed Jones - Lawrence Livermore National Laboratory (LLNL)  
Christian Kirchsteiger - European Commission

### PAPERS:

- *Probabilistic Risk Assessment on the Abandoned Chemical Weapons in China*  
Steven Epstein - ABS Consulting, Donald Wakefield - ABS Consulting
- *A Simplified Probabilistic Safety Assessment of a Steam-Methane Reforming Hydrogen Production Plant Coupled to a High-Temperature Gas-Cooled Nuclear Reactor*  
Pamela Nelson - Universidad Nacional Autónoma de México, Alain Flores - Universidad Nacional Autónoma de México, Juan Luis Francois - Universidad Nacional Autónoma de México
- *Hazard Analysis with Functional FMEA in PSA Procedure for MOX Fuel Fabrication Facility*  
Hitoshi Tamaki - Japan Atomic Energy Research Institute, Kazo Yoshida - Japan Atomic Energy Research Institute, Norio Watanabe - Japan Atomic Energy Research Institute, Ken Muramatsu - Japan Atomic Energy Research Institute



# Technical Sessions

**TUESDAY, SEPTEMBER 13, 2005**

## HUMAN RELIABILITY ANALYSIS - I

10:15 am - 11:45 am (Carmel Room)

### SESSION CHAIRS:

William Hannaman - Science Applications International Corporation  
Pierre Le Bot - Electricité de France

### PAPERS:

- *The Probability of System Failure and Human Error and the Influence of Depth of Experience*  
Romney Duffey - Atomic Energy of Canada, Ltd., John Saull - International Federation of Airworthiness
- *HRA Calculator Development for Risk-Informed Applications*  
Hak-Kyu Lim - Korea Power Engineering Company
- *HRA Dependency Analysis Using the EPRI HRA Calculator™*  
Jeffrey Julius - Sciencetech LLC, Jan Grobbelaar - Sciencetech LLC, Frank Rahn - Electric Power Research Institute

## PSA STANDARDS - I

1:30 pm - 4:30 pm (Empire Room)

### SESSION CHAIRS:

Rick Grantom - South Texas Project Nuclear Operating Company  
Irina Kouzmina - International Atomic Energy Agency

### PAPERS:

- *Integration and Harmonization of PRA Standards for the Nuclear*  
Robert Bari - Brookhaven National Laboratory, Rick Grantom - South Texas Project Nuclear Operating Company
- *Complying with the ASME PSA Standard*  
Thomas Morgan - Maracor, Michelle Carr - Southern California Edison Company, Eddie Krantz - Sciencetech, Inc.
- *Peer Review of PSAs for Three Ukrainian NPPs - Results of the Trilateral US-German-Ukrainian Program*  
Rolf Janke - Gesellschaft fuer Anlagen- und Reaktorsicherheit (GRS) mbH, Ted Ginsberg - Brookhaven National Laboratory
- *PRA Model Quality for an RG1.200 Pilot Plant*  
Victoria Warren - ERIN Engineering and Research, Inc., Donald Vanover - ERIN Engineering and Research, Inc., Philip Tarpinian - Exelon Corporation
- *Testing the RG1.200 PRA Self-Assessment Process: Lessons Learned from the Surry RG1.200 Pilot*  
Barry Sloane - Dominion Resources, Inc.

**PANEL: ASME Standard: Ask the Authors Why?**

### PANELISTS:

Sid Bernsen - Consultant  
Rick Grantom - South Texas Project Nuclear Operating Company  
Duncan Brewer - Duke Power Company  
Barry Sloane - Dominion Resources, Inc.  
Mary Drouin - U.S. Nuclear Regulatory Commission  
Ian Wall - Consultant

## ADVANCED PSA - II

1:30 pm - 3:00 pm (Franciscan Room)

### SESSION CHAIR:

Mohammad Modarres - University of Maryland  
Chair - TBD

### PAPERS:

- *SWISRUS: Novovoronezh Unit 5 PSA and Regulatory Application*  
Artur V. Lyubarskiy - Scientific and Engineering Centre, Sergey Volkovitskiy - SEC NRS, Dmitry Noscov - SEC NRS, Gennady Samohin - SEC NRS, Irina Kouzmina - International Atomic Energy Agency, Sabyasachi Chakraborty - HSK, Mohsen Khatib-Rahbar - Energy Research, Inc.
- *Survey of Probabilistic Safety Analyses, Level 1, for VVER-1000 Plants*  
Klaus Koeberlein - Gesellschaft fuer Anlagen- und Reaktorsicherheit (GRS) mbH
- *Use and Development of PSA in NEA Member Countries*  
Barry Kaufer - OECD Nuclear Energy Agency

## SPACE - II: Space Shuttle PRA Insights and Applications

1:30 pm - 4:30 pm (Union Square Room)

### SESSION CHAIRS:

Michael Frank - Safety Factor Associates, Inc.  
R. Wilcox - Jet Propulsion Laboratory

### PAPERS:

- *The Role of Precursors in Forecasting and Forestalling Accidents: Lessons to be Learned from Challenger and Columbia*  
Joseph Fragola - Science Applications International Corporation
- *A PRA Structure to Assess the Risk of Wires in the Space Shuttle*  
Michael Frank - Safety Factor Associates, Inc., Karl Fleming - Technology Insights
- *Issues and Insights of PRA Methodology in Nuclear and Space Applications*  
Feng Hsu - SAIC, NASA Johnson Space Center, Zoran Musicki - ZM Engineering Consulting
- *An Integrated Total S&MA Management Framework - The Triple-Triplet Concept for Risk-informed Comprehensive S&MA Management*  
Feng Hsu - SAIC, NASA Johnson Space Center
- *Common Cause Case Study - An Estimated Probability of Four Solid Rocket Booster Hold-Down Post Stud Hang-Ups*  
Robert Cross - NASA Johnson Space Center
- *A Practical Approach to PRA Model Uncertainty*  
Robert Cross - NASA Johnson Space Center, Michael Stewart - Science Applications International Corporation

# Technical Sessions

**TUESDAY, SEPTEMBER 13, 2005 (Continued)**

## RISK-INFORMED APPLICATIONS - II

1:30 pm - 4:30 pm (Cypress & Monterey Rooms)

### SESSION CHAIRS:

Gareth Parry - U.S. Nuclear Regulatory Commission  
Juan Arellano - Instituto de Investigaciones Eléctricas, Mexico

### PAPERS:

- *An Application for PSA Evaluation of Maintenance Rule Performance Criteria*  
Neil Johnson - Ricky Summitt Consulting, Inc.
- *Status of Industry Risk-Informed Technical Specifications Initiatives*  
Donald Hoffman - EXCEL Services Corporation
- *Strategy for Implementation of Flexible Allowed Outage Times at Fort Calhoun Station*  
H. A. Hackerott - Fort Calhoun Station, Raymond Schneider - Westinghouse Owners Group
- *Adaptation of Industry Standard Integrated Leakage Rate Testing (ILRT) Risk Evaluation Methodologies for Plants with Drywells*  
Yunlong Li - Entergy Nuclear, Gary Smith - Entergy Nuclear, Deepak Rao - Entergy Operations, Inc.
- *Low Cost Flood Risk Reduction at Surry*  
Ross C. Anderson - Dominion Resources Services, Thomas G. Hook - Dominion Resources, Inc.
- *Digital Upgrades - Risk-Informed Defense-in-Depth and Diversity Evaluations*  
Dave Blanchard - Applied Reliability Engineering, Raymond Torok - Electric Power Research Institute, Thuy Nguyen - EPRI/EdF, Glenn Lang - Consultant, Robert T. Fink - CDF Services, Inc.

## HUMAN RELIABILITY ANALYSIS - II

1:30 pm - 4:30 pm (Windsor Room)

### SESSION CHAIRS:

Tony Spurgin - Consultant  
Attila Bareith - VEIKI Institute for Electric Power Research

### PAPERS:

- *HRA Methodology Applied in Surry Power Station*  
Song-Hua Shen - Dominion Resources, Inc.
- *Use of Expert Judgments for Assessment of Performance Shaping Factors in Human Reliability Analysis*  
Tibor Stojka - VUJE Inc.
- *Evaluation of Engineering Judgment Applied to Analytical Human Reliability Analysis (HRA) Methods*  
Kaydee Kohlhepp - Texas A&M University, William Burchill - Texas A&M University
- *Assessing the Risk Impact of Diagnosis Failures in HRA*  
Jae Whan Kim - Korea Atomic Energy Research Institute, Wondea Jung - Korea Atomic Energy Research Institute, Jinkyun Park - Korea Atomic Energy Research Institute
- *Human Error Prediction in Air Traffic Management Via Cognitive Simulation*  
Oliver Straeter - Eurocontrol
- *Application of Probability Theory to Human Reliability Analysis*  
G. William Hannaman - Science Applications International Corporation

## LEVEL 2/3 - II

1:30 pm - 4:30 pm (Carmel Room)

### SESSION CHAIRS:

Dana Powers - Sandia National laboratories  
Ignacio Hermana - Iberenco, Spain

### PAPERS:

- *Byron and Braidwood Feed and Bleed Analysis Using MAAP4*  
Jeff R. Gabor - ERIN Engineering and Research, Inc., Doug True - ERIN Engineering and Research, Inc.
- *The Impact of Uncertainties in BWR Lower Head Failure on Source Terms Using MAAP4*  
Barbara Schlenger-Faber - ERIN Engineering and Research, Inc., Jeff R. Gabor - ERIN Engineering and Research, Inc.
- *Severe Accident Analysis of VVER 1000 Using SCDAP/RELAP5 Code*  
Hemant Ganesh Lele - Bhabha Atomic Research Centre, Barun Chatterjee - Bhabha Atomic Research Centre, D. Mukhopadhyay - Bhabha Atomic Research Centre, A.K. Ghosh - Bhabha Atomic Research Centre, H.S. Kushawaha - Bhabha Atomic Research Centre
- *A Methodology for Performing Consequence Analyses in Support of Level-3 PRAs*  
Nathan E. Bixler - Sandia National Laboratories, Randall Gauntt - Sandia National Laboratories
- *Simulation Of Mixed Oxide (MOX) Versus Low Enrichment Uranium (LEU) Fuel Severe Accident Response Using Melcor*  
Scott G. Ashbaugh - Sandia National Laboratories, Randall Gauntt - Sandia National Laboratories, KC Wagner - dycoda LLC
- *A Scoping Study on the Environmental Releases from the Chernobyl Accident (Part I): Fuel Particles, (Part II): Iodines*  
Genn Saji - Secretariat of Nuclear Safety Commission of Japan

**Join Us Tonight For The  
Dinner Cruise on the San Francisco Bay!  
Details Provided  
At The Conference**



**WEDNESDAY, SEPTEMBER 14, 2005**

## RISK-INFORMED APPLICATIONS - III: Risk & Performance Regulations

8:30 am - 11:30 am (Empire Room)

### SESSION CHAIRS:

Herschel Specter - RBR Consultants, Inc.  
Ashok Thadani - U.S. Nuclear Regulatory Commission

### PAPERS:

- *Advancing the Regulatory Process*  
Herschel Specter - RBR Consultants, Inc.
- *PRA Quality and Its Impact on Risk Ranking Applications*  
Greg Krueger - ERIN Engineering and Research, Inc., Donald E. Vanover, ERIN Engineering and Research, Inc., Herschel Specter - RBR Consultants, Inc.
- *Using Reg. Guide 1.174 to Change a Plant's Licensing Basis*  
Hanh Phan - Energy Northwest, Earl Page - RBR Consultants, Inc.
- *Real Time Risk and Performance Monitoring*  
Frank Rahn - Electric Power Research Institute, Kenneth Canavan - Electric Power Research Institute, William Parkinson - Electric Power Research Institute, David Worledge - Asset Performance Technologies, Inc.
- *Risk-Informed Regulation: Time for a Reality Check*  
Tony Pietrangelo - Nuclear Energy Institute

### PANEL - Where Do We Go From Here?

#### PANELISTS:

Herschel Specter - RBR Consultants, Inc.  
Ashok Thadani - U.S. Nuclear Regulatory Commission  
Greg Krueger - ERIN Engineering and Research, Inc.  
Tony Pietrangelo - Nuclear Energy Institute  
Frank Rahn - Electric Power Research Institute  
Hanh Phan - Energy Northwest

## PLANT SECURITY - II

8:30 am - 11:30 am (Franciscan Room)

### SESSION CHAIRS:

Gregory Wyss - Sandia National Laboratories  
Mark Cunningham - U.S. Nuclear Regulatory Commission

### PAPERS:

- *Probabilistic Safety Analysis Techniques Applied to Nuclear Power Plant Security Evaluation*  
James Liming - American Nuclear Society, Andrew A. Dykes - ABSG Consulting Inc. (ABS Consulting)
- *Risk-Informed Physical Security; Dynamic Allocation of Resources*  
Dave Blanchard - Applied Reliability Engineering, Dick Worrell - Logic Analysts, Bruce Varnado - Sandia National Laboratories
- *Estimating Threat Potential for Security Risk Analysis*  
Betty Biringer - Sandia National Laboratories
- *Issues Regarding the Assessment of Terrorist Risk*  
Terry F. Bott - Los Alamos National Laboratory, Stephen Eisenhower - Los Alamos National Laboratory
- *An Approach to Integrating Non-Normative Information into the Characterization of Terrorist Threats*  
Jean B. Savy - Lawrence Livermore National Laboratory

## SPACE - III

8:30 am - 11:30 am (Union Square Room)

### SESSION CHAIRS:

William Kastenberg - University of California, Berkeley  
John Turner - NASA Space Shuttle Program

### PAPERS:

- *Development of an HRA Tool for the International Space Station PRA*  
Anthony J. Spurgin - IEEE - Systems, Man, and Cybernetics Society, Michael Frank - Safety Factor Associates, Inc.
- *Risk Management Considerations for Space-Reactor Missions*  
Michael Frank - Safety Factor Associates, Inc., William Kastenberg - University of California, Berkeley
- *A Trial Set of Quantitative Safety Goals for Nuclear Powered Spacecraft*  
William Kastenberg - University of California, Berkeley, Michael Frank - Safety Factor Associates, Inc.
- *Development of a Dynamic Simulation Approach to Mission Risk and Reliability Analysis*  
Ian Miller - GoldSim Technology Group, Andrew Burns - GoldSim Technology Group
- *Application of PRA Techniques to Evaluate Space Mission Reliability*  
Karl Fleming - American Nuclear Society, Michael Frank - American Nuclear Society
- *A Proposed Framework for Analyzing Astronaut Health Risks*  
Robert G. Fitzpatrick - Futron Corporation, Kwesi Ewool-Robotham - Futron Corporation

## ADVANCED PSA - III: Data/Uncertainty

8:30 am - 11:30 am (Cypress & Monterey Rooms)

### SESSION CHAIRS:

Ricky Summitt - Ricky Summitt Consulting, Inc.  
Chair - TBD

### PAPERS:

- *Japanese Component Failure Rates Using Bayesian Approach*  
Chikahiro Sato - TEPCO Systems Corporation
- *Assessment of the Significance of Correlated Data in Uncertainty Analyses*  
Robert Kirchner - RFK Dynamics, Inc., Edward Burns - ERIN Engineering and Research, Inc.
- *Influence Of Uncertainties On Level 1 PSA Results*  
Nicolas Devictor - Commissariat à l'Energie Atomique, Paul Saignes - Commissariat à l'Energie Atomique
- *Applicability of LERs from NUREG/CR-5750 for Entergy Nuclear South Plants' Initiating Event Probability Calculations*  
Loys K. Bedell - Entergy Operations, Inc., Yunlong Li - Entergy Nuclear South Region
- *Evaluation of Transient Event Experience for Nuclear Power Plants in Korea*  
Jin-Hee Park - Korea Atomic Energy Research Institute, Sang-Hoon Han - Korea Atomic Energy Research Institute
- *Estimation of Failure Probabilities Based On Uncertain Binomial Event Data*  
Jussi K. Vaurio - Fortum Power and Heat Oy

# Technical Sessions

**WEDNESDAY, SEPTEMBER 14, 2005 (Continued)**

## SAFETY CULTURE

8:30 am - 11:30 am (Windsor Room)

### SESSION CHAIRS:

Jack Haugh - Electric Power Research Institute  
Mike Golay - Massachusetts Institute of Technology

### PAPERS:

- *Organisational Factors' Impact on Safety - Pilot Study Starting from PSA*  
Aura Voicu - Electricité de France, Pierre Le Bot - Electricité de France
- *Development of PRA Qualification Guidance and Curriculum*  
William Burchill - Texas A&M University, Frank Rahn - Electric Power Research Institute, Richard Anoba - Anoba Consulting Services LLC, Yehia Khalil - Yale University, Ian Wall - Consultant
- *An Integrated Risk Management Paradigm*  
Gene Hughes - ERIN Engineering and Research, Inc., Edward Burns - ERIN Engineering and Research, Inc., Greg Krueger - ERIN Engineering and Research, Inc., Jeff Gabor - ERIN Engineering and Research, Inc., Doug True - ERIN Engineering and Research, Inc., Duane Wilson - ERIN Engineering and Research, Inc.
- *Integrated Risk Management on Programs and Projects - Improving the Paradigm*  
John Turner - NASA Space Shuttle Program

## GENERATION RISK/RCM

8:30 am - 11:30 am (Carmel Room)

### SESSION CHAIRS:

Doug True - ERIN Engineering and Research, Inc.  
Luiz Gerez - Iberdrola Ingenieria, Spain

### PAPERS:

- *Generation Risk Assessment at the Cooper Nuclear Station - Objectives and Results*  
Kent Sutton - Nebraska Public Power District, Ole Olson - Nebraska Public Power District, Wesley Brinsfield - Applied Reliability Engineering, Inc., Dave Blanchard - Applied Reliability Engineering, Inc., Peter Szetu - Applied Reliability Engineering, Inc.
- *Power Plant Generation Risk Assessment (GRA)*  
Dave Blanchard - Applied Reliability Engineering, Wesley Brinsfield - Applied Reliability Engineering, Inc., Peter Szetu - Applied Reliability Engineering, Inc., George Sliter - Electric Power Research Institute
- *Prototype Long-term Asset Management Database (LAMDA)*  
David Worledge - Asset Performance Technologies, Inc., George E. Sliter - Electric Power Research Institute, William Parkinson - Electric Power Research Institute
- *GRA/RIAM Model Development at Darlington Nuclear Station*  
Ranbir Parmar - Nuclear Safety Solutions Limited, Jacques Plourde - Ontario Power Generation
- *Risk and Economic Estimation of Inspection Interval for Periodically Tested Repairable Components*  
Carlos E. Barroeta - University of Maryland College Park, Mohammad Modarres - University of Maryland College Park
- *Operational Level Models and Methods for Risk-Informed Nuclear Asset Management*  
Elmira Popova - University of Texas at Austin, David Morton - University of Texas at Austin, Alexander Galenko - University of Texas at Austin, Ernest J. Kee - South Texas Project Nuclear Operating Company, Alice Sun - South Texas Project Nuclear Operating Company, Rick Grantom - South Texas Project Nuclear Operating Company

## CONFIGURATION RISK - II

1:30 pm - 4:30 pm (Union Square Room)

### SESSION CHAIRS:

Duncan Brewer - Duke Power Company  
Jim Chapman - Scientech

### PAPERS:

- *Development of Risk Evaluation Software*  
Ho Seok - Korea Power Engineering Company, Inc., Dong Kyu Kim - Korea Power Engineering Company, Inc., Sun Koo Kang - Korea Power Engineering Company, Inc.
- *Insights and Pitfalls in Using Equipment Out Of Service (EOOS) Risk Monitor Quantification and Component Mapping Options*  
Yunlong Li - Entergy Nuclear, Deepak Rao - Entergy Operations, Inc., Chris Cragg - Data Systems & Solutions
- *Applying the South Texas Project (STP) Configuration Risk Management Program (CRMP) to Risk Management Technical Specifications Initiative 4b*  
Andrew M. Richards Jr. - South Texas Project Nuclear Operating Company
- *Configuration Risk Management Using Risk Documents at Three Mile Island*  
Brandon Irvin - ERIN Engineering and Research, Inc., Leo B. Shanley III - ERIN Engineering and Research, Inc.
- *The EPRI Configuration Risk Management Forum*  
Thomas Morgan - Maracor Software & Engineering, Inc., John Gaertner - Electric Power Research Institute, John Steinmetz - ERIN Engineering and Research, Inc.
- *Use of PSA for NPP Paks in Hungary*  
Attila Bareith - VEIKI Institute for Electric Power Research, József Elter - Paks Nuclear Power Plant, Elod Holló - VEIKI Institute for Electric Power Research, Péter Siklóssy - VEIKI Institute for Electric Power Research

## ADVANCED PSA - IV: Advanced Applications

1:30 pm - 4:30 pm (Windsor Room)

### SESSION CHAIRS:

Dave Blanchard - Applied Reliability Engineering  
Jean Primet - Electricité de France

### PAPERS:

- *Symptom-Based Diagnosis from Extended Fault Trees*  
Juan Arellano-Gómez - Instituto de Investigaciones Eléctricas
- *Value-of-Information Analysis in Performance Assessment*  
Robert W. Youngblood - Information Systems Laboratories, Inc.
- *Risk-Informed Concepts for Complex Systems*  
Ed Jones - Lawrence Livermore National Laboratory
- *Developing the Probability Distribution of the Failure Limit of High-Burnup Fuels via Simulation*  
George Apostolakis - Massachusetts Institute of Technology, Lorenzo Pagani - Massachusetts Institute of Technology
- *Benchmark Development for Comparing Digital Instrumentation and Control System Reliability Modeling Approaches*  
Jason Kirschenbaum - Ohio State University, Michael Stovsky - Ohio State University, Paolo Bucci - Ohio State University, Tunc Aldemir - Ohio State University, Steven A. Arndt - U.S. Nuclear Regulatory Commission

# Technical Sessions

**WEDNESDAY, SEPTEMBER 14, 2005 (Continued)**

## **FIRE RISK - I**

1:30 pm - 4:30 pm (Cypress & Monterey Rooms)

### **SESSION CHAIRS:**

Bijan Najafi - Science Applications International Corporation  
Raymond Gallucci - U.S. Nuclear Regulatory Commission

### **PAPERS:**

- *Quantification Of Judgment: Defense-In-Depth and Safety Margin for Fire Protection*  
Raymond Gallucci - U.S. Nuclear Regulatory Commission
- *Interdisciplinary Expert Collaboration Method (IECM) for supporting Human Reliability Analysis in Fire PSA*  
Jan-Erik Holmberg - VTT Industrial Systems, Kristiina Hukki - VTT Industrial Systems
- *Use of Fire PSA in As-Built Facilities in the Presence of Uncertainties*  
Francisco J. Joglar - Science Applications International Corporation
- *Insights Gained from a Risk-Oriented Analysis of Fire Events Data*  
Steven P. Nowlen - Sandia National Laboratories, Francisco Joglar-Biloch - Science Applications International Corporation, Mardy Kazarians - Kazarians and Associates, Bijan Najafi - Science Applications International Corporation
- *The Buildup of a Value-Impact Analysis Tool for Risk-Informed Fire Analysis Applications to Cable Tray Fire Wrapping Issue*  
Pi-lin Hsu - Institute of Nuclear Energy Research, Taiwan

## **PSA STANDARDS - II**

1:30 pm - 4:30 pm (Empire Room)

### **SESSION CHAIRS:**

Robert Budnitz - Lawrence Livermore National Laboratory  
Ravi Ravindra - ABS Consulting

### **PAPERS:**

- *Approach to Determination of PSA Quality for Applications*  
Irina Kouzmina - International Atomic Energy Agency
- *Status of the American Nuclear Society Fire PRA Standard*  
Dennis Henneke - Duke Power Company
- *Identifying and Resolving Critical Issues in Seismic PSA Using the ANS Standard*  
David L. Moore - David L. Moore Consulting, Robert D. Campbell - Consultant, Ivan Verbanic - NEK, Bozidar Krajnc - Krsko Nuclear Power Plant, Georges Dellopoulos - Westinghouse Electric Belgium, Marc Goffart - Westinghouse Electric Belgium
- *Quality of Risk-Informed Applications in the Era of Standards*  
Gene Hughes - ERIN Engineering and Research, Inc., Doug True - ERIN Engineering and Research, Inc., Edwards Burns - ERIN Engineering and Research, Inc.

**PANEL- ANS Standards: Ask The Authors Why**

### **PANELISTS:**

Robert Budnitz - Lawrence Livermore National Laboratory  
Ravi Ravindra - ABS Consulting  
Dennis Henneke - Duke Power Company  
Kenneth Kiper - FPL Energy Company  
Mark Leonard - dycoda, LLC  
NRC Representative

## **ADVANCED REACTORS - II**

1:30 pm - 4:30 pm (Franciscan Room)

### **SESSION CHAIRS:**

Timothy Leahy - Idaho National Laboratory  
Mikhail Khorochev - International Atomic Energy Agency

### **PAPERS:**

- *Development of Risk-Based and Technology-Independent Safety Criteria for Generation IV Systems*  
William Kastenbergh - University of California, Berkeley
- *A Framework for Assessing and Managing the Risk of Advanced Nuclear Energy Systems*  
William Kastenbergh - University of California, Berkeley
- *The IAEA International Project on Innovative Nuclear Reactors and Fuel Cycles (INPRO): Development of Probabilistic Approaches*  
Yury Sokolov - International Atomic Energy Agency, Juergen Kupitz - International Atomic Energy Agency, Mikhail Khorochev - International Atomic Energy Agency
- *Challenges and Opportunities in the Performance of PRAs on New Reactors*  
Karl N. Fleming - American Nuclear Society
- *Risk-Informed Licensing of New Nuclear Power Plant in Finland*  
Ari Julin - Radiation and Nuclear Safety Authority of Finland
- *Risk-Informed Design Process of the IRIS Reactor*  
Andrea Maioli - Politecnico di Milano Technical University, David J. Finnicum - Westinghouse Electric Company, Luca Oriani - Westinghouse Electric, Davide Lamperti - Politecnico di Milano Technical University

## **RISK-INFORMED APPLICATIONS - IV**

1:30 pm - 4:30 pm (Carmel Room)

### **SESSION CHAIRS:**

William Burchill - Texas A&M University  
Vincent Sorel - Electricité de France

### **PAPERS:**

- *Risk Informed Regulation in Canada: Industry Perspective and Activities*  
Steve S. Kaasalainen - Nuclear Safety Solutions Ltd., Keith Dinnie - Nuclear Safety Solutions Ltd., A Oliva - CANDU Owners Group, Dan Austman - Ontario Power Generation Inc.
- *Performance-Based Regulation Applied to Novel Reactor Designs*  
N. Prasad Kadambi - U.S. Nuclear Regulatory Commission
- *Use of PSA in the Risk-Informed Design and Licensing for the HTR-PM in China*  
Jiejuan Tong - Tsinghua University, Xuhong He - Tsinghua University, Dazhi Xue - Tsinghua University
- *Management of Nuclear Risks by Intrinsic Safety, Siting: Lessons Learned From The Chernobyl Accident*  
Genn Saji - Secretariat of Nuclear Safety Commission of Japan
- *Evaluation of the Safety System Performance of Ulchin Unit 3 Using MSPI*  
Daeil Kang - Korea Atomic Energy Research Institute, Kilyou Kim - Korea Atomic Energy Research Institute, Jinhee Park - Korea Atomic Energy Research Institute, Keyyoung Sung - Korea Institute of Nuclear Safety
- *Characteristics of Nuclear Power Plant Performance*  
Steven Eide - Idaho National Engineering and Environmental Laboratory

# Technical Sessions

**THURSDAY, SEPTEMBER 15, 2005**

## CONFIGURATION RISK - III

8:30 am - 11:30 am (Empire Room)

### SESSION CHAIRS:

Jeff Riley - Data Systems & Solutions  
Woo Sik Jung - Korea Atomic Energy Research Institute

### PAPERS:

- *Development of Leningrad NPP Unit 1PSA-model in SAPHIRE 7.15 Code Format for Prompt Monitoring of Safety Level*  
Bronislav Ivanovich Vinnikov - Russian Research Center, Sergei Cheremiskin - Leningrad Nuclear Power Plant
- *A Proposed Method for Fire Configuration Risk Management*  
Leo B. Shanley III - ERIN Engineering and Research, Inc., Doug True - ERIN Engineering and Research, Inc., Kiang Zee - ERIN Engineering and Research, Inc., John Gaertner - Electric Power Research Institute
- *Obtaining Risk Insights Using Advanced Features of PARAGON™*  
Edward Parsley - ERIN Engineering and Research, Inc., Donald E. Vanover - ERIN Engineering and Research, Inc.
- *Defense-In-Depth Models Revisited*  
Raymond J. Dremel - Maracor Software & Engineering, Inc., Diane M. Jones - Maracor Software & Engineering, Inc., Roland F. Dunn - South Texas Project Nuclear Operating Company, D. Shawn Pobst - Arizona Public Service Company, James A. Tunink - AmerenUE
- *PSA Contribution to Risk-based Technical Specifications Assessment*  
Stanislav Hustak - Nuclear Research Institute Rez

## RISK-INFORMED APPLICATIONS - V

8:30 am - 11:30 am (Franciscan Room)

### SESSION CHAIRS:

Frank Rahn - Electric Power Research Institute  
Dominique Vasseur - Electricité de France

### PAPERS:

- *On the Issue of Integrated Risk - A PRA Practitioner's Perspective*  
Karl N. Fleming - American Nuclear Society
- *Can We Trust PRA?*  
Steven Epstein - ABS Consulting, Antoine Rauzy - Arboost Technologies
- *Including Uncertainty in Risk-Informed Decision Making*  
George Apostolakis - Massachusetts Institute of Technology, Joshua Reinert - Massachusetts Institute of Technology
- *Technical Insights Resulting from the Mitigating Systems Performance Index Pilot*  
Donald A. Dube - U.S. Nuclear Regulatory Commission, Corwin L. Atwood - Statwood Consulting, Steven A. Eide - Idaho National Laboratory, Bruce B. Mrowca - Information Systems Laboratories, Inc., Robert W. Youngblood - Information Systems Laboratories, Inc., Douglas P. Zeek - Idaho National Laboratory
- *Lessons Learned From the 14 Aug 2003 Grid Event*  
Steven E. Farkas - Hudson Global Resources, Raymond E. Schneider - Westinghouse Owners Group
- *Improvements to the USNRC's SPAR Models: Objectives, Status, Implications*  
Selim Sancaktar - U.S. Nuclear Regulatory Commission, Patrick O'Reilly - U.S. Nuclear Regulatory Commission, F. Mark Reinhart - U.S. Nuclear Regulatory Commission

## THE USE OF COMPUTER POWER TO SUPPORT RISK ANALYSIS

8:30 am - 11:30 am (Union Square Room)

### SESSION CHAIRS:

Stanley Levinson - Framatome ANP, Inc.  
Marc Bouissou - Electricité de France

### PAPERS:

- *Monte Carlo Simulation Enhancements to Steam Generator Burst and Leakage Models*  
Stanley Levinson - Framatome ANP, Inc., Alan M. Brown - Framatome ANP, Inc.
- *Internal Flooding Analysis Methods Based on TIFA - A Tool for Flooding Analysis*  
Ricky Summitt - Ricky Summit Consulting, Inc., Robert Young - Ricky Summitt Consulting, Inc.
- *Reliability Parameters Estimation and Analysis Toolkit*  
Vaidas Matuzas - Lithuanian Energy Institute, Robertas Alzbutas - Lithuanian Energy Institute
- *ATLAS™ Lite - An Immediate Access to PRA Bases Documents*  
Duane Wilson - ERIN Engineering and Research, Inc., Doug True - ERIN Engineering and Research, Inc., Gene Hughes - ERIN Engineering and Research, Inc., Tom Daniels - ERIN Engineering and Research, Inc.
- *FinPSA - Tool for Living PSA*  
Ilkka M. Niemelä - Radiation and Nuclear Safety Authority of Finland, Jorma Rantakivi - Radiation and Nuclear Safety Authority of Finland

## FIRE RISK - II

8:30 am - 11:30 am (Cypress & Monterey Rooms)

### SESSION CHAIRS:

Dennis Henneke - Duke Power Company  
Steven Nowlen - Sandia National Laboratories

### PAPERS:

- *Risk-Significance of Degraded One-Hour Fire Barriers Using the Nuclear Regulatory Commission's Fire Protection Significance Determination Process*  
Daniel Frumkin - U.S. Nuclear Regulatory Commission
- *Application of PSA-Model of Leningrad NPP Unit 1 in SAPHIRE 7.15 Code Format for Analysis of Fire Consequences*  
Bronislav Vinnikov - Russian Research Center "Kurchatov Institute", Nikolai Stebenev - Leningrad Nuclear Power Plant
- *Actual Results from a Fire PSA Performed with an Advanced Methodology for an Older German BWR*  
Marina L. Roewekamp - Gesellschaft fuer Anlagen- und Reaktorsicherheit (GRS) mbH, Heinz Peter Berg - Federal Office for Radiation Protection, Germany, Michael Tuerschmann - GRS mbH, Joachim Von Linden - GRS mbH
- *Risk-Informed Fire Protection for Duke Power's Oconee, Catawba and McGuire Nuclear Plants*  
Dennis Henneke - Duke Power Company
- *Some Pitfalls in Applying the IPEEE Fire Risk Analyses in Significance Determination Process (SDP) Evaluations*  
Loys K. Bedell - Entergy Operations, Inc., Deepak Rao - Entergy Operations, Inc.
- *Detailed Evaluation Technique for Main Control Room Internal Fire Analysis*  
Ricky Summitt - Ricky Summit Consulting, Inc.

# Technical Sessions

**THURSDAY, SEPTEMBER 15, 2005 (Continued)**

## ADVANCED PSA - V: PRA Methodology

8:30 am - 11:30 am (Windsor Room)

### SESSION CHAIRS:

Thomas Hook - Dominion Resources, Inc.  
Sugata Ganguli - Ontario Power Generation, Canada

### PAPERS:

- *Pyrrhic Risk Assessment in A Procrustean Regulatory Arena - A Pragmatic Viewpoint*  
Ching Guey - Florida Power and Light
- *An ISLOCA Methodology for PWRs Combining NUREG/CR-5102 and NUREG/CR-5744*  
J. Russell Sharpe - Maracor Software and Engineering, Inc.
- *A Time-Phased Risk Model for a Degraded Emergency Diesel Generator*  
Christopher Pupek - ERIN Engineering and Research, Inc., Donald E. Vanover - ERIN Engineering and Research, Inc., Robert F. Kirchner - RFK Dynamics, Inc.
- *Issues Related to LPSD Risk Assessments*  
Kenneth Kiper - FPL Energy Company, Jeffrey A. Julius - Scientech LLC, William Burchill - Texas A&M University
- *Discussion of SDP Issues*  
Yu Shen - Nuclear Management Company

## COMMON CAUSE FAILURE

8:30 am - 11:30 am (Carmel Room)

### SESSION CHAIRS:

Ali Mosleh - University of Maryland  
Aline Elia-Hervy - Framatome ANP, Inc.

### PAPERS:

- *Consistent Mapping of Common Cause Failure Model Parameters*  
Jussi K. Vaurio - Fortum Power and Heat Oy
- *Treatment of Common Cause Failure in Flexible Allowed Outage Time*  
Rupert A. Weston - Westinghouse Electric Company
- *Modeling and Quantification of Common Cause Failures Among Pumps with Different Operation Histories*  
Young G. Jo - Southern Nuclear Operating Company
- *Recent Work for the Update of Common Cause Parameters at Electricité de France*  
Aura Voicu - Electricité de France, Dominique Vasseur - Electricité de France, Jean Primet - Electricité de France, Marie Gallois - Electricité de France, Jean Dewailly - Electricité de France
- *CCF Factor Estimation Under Mixed Testing Schemes Within a Same CCF Group*  
Meejeong Hwang - Korea Atomic Energy Research Institute, Joon-Eon Yang - Korea Atomic Energy Research Institute
- *Techniques for Modeling Initiating Events Arising from Common Cause Failure of Electrical Busses*  
Parviz Moieni - Southern California Edison Company, Eric J. Jorgenson Maracor Software and Engineering, Inc.