



ANS National Meeting

2013 Winter Meeting and Technology Expo



Official Program

75 YEARS
NUCLEAR
FISSION

November 10-14, 2013
Omni Shoreham Hotel



ANS Conference

2013 Winter Meeting & Technology Expo

The 75th Anniversary of the Discovery of Nuclear Fission

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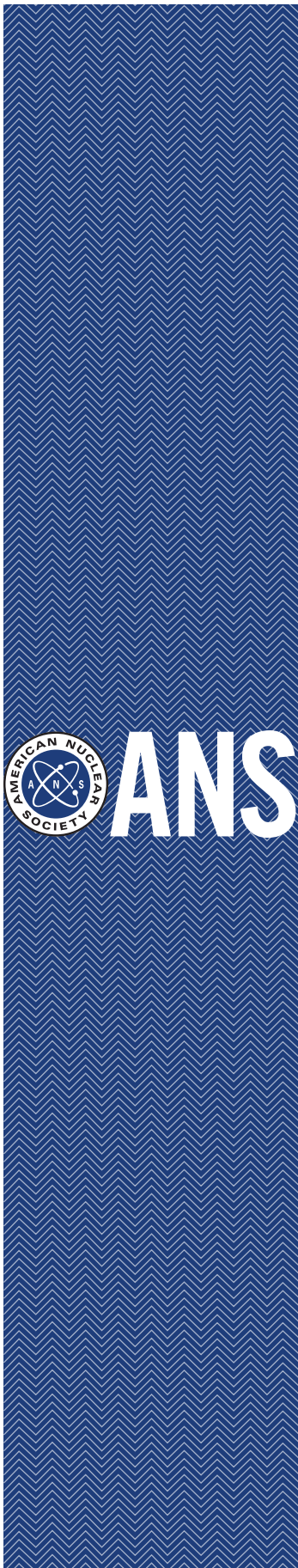


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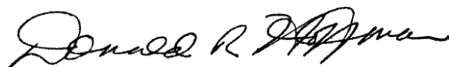
Welcome from the President

Welcome to the 2013 ANS Winter Meeting and Nuclear Technology Expo. This year, we are recognizing the 75th anniversary of the discovery of nuclear fission. At this conference, you will learn from fission's history as we also turn our attention to the next 25 years. The industry has greatly evolved in those 75 years and I believe that a bright future is on the horizon.

We have an exciting opening plenary, president's special session, and evening dinner to celebrate this auspicious anniversary. Many divisions, sections, and partnering organizations have enhanced our recognition of this diamond anniversary by adding their own historic components to technical sessions and the Expo. We are pleased to offer a special reprint of "the 50th Anniversary of the Discovery of Fission" proceedings available at the book fair. Many groups came together to recognize this anniversary and I want to especially thank the National Academy of Sciences (NAS) and the National Academy of Engineering (NAE) for their significant and valuable contributions to this gathering.

I wish you all an enjoyable and enlightening meeting where we celebrate the history of our achievements while looking towards the innovation that is still to come. Let us honor the 75 years of learning about the power of the atom, and increase our understanding of how nuclear science and technology can do more to improve quality of life across the globe.

Sincerely,

A handwritten signature in black ink that reads "Donald R. Hoffman". The signature is fluid and cursive, with the first name being the most prominent.

Donald R. Hoffman
ANS President



Welcome ~

American Nuclear Society

2013 Winter Meeting and Nuclear Technology Expo

November 10-14, 2013

As Mayor of the District of Columbia, it is my pleasure to extend a warm welcome to the American Nuclear Society, on the occasion of your 2013 Winter Meeting and Nuclear Technology Expo.

I applaud the efforts of your organization for promoting the awareness and understanding of the application of nuclear science and technology. As you reflect on your recent accomplishments, discuss new ideas and share best practices, please enjoy the monuments, museums, restaurants and diverse neighborhoods that help enhance this city – our nation's capital.

On behalf of the District of Columbia, you have my best wishes for a productive and memorable event.

Vincent C. Gray

Vincent C. Gray
Mayor, District of Columbia

MEETING HIGHLIGHTS

SATURDAY, NOVEMBER 9, 2013

- 8:00 a.m. - 5:00 p.m. Workshop for K12 Science Educators
8:30 a.m. - 6:00 p.m. Young Professionals Congress 2013
2:00 p.m. - 5:00 p.m. Meeting Registration

SUNDAY, NOVEMBER 10, 2013

- 11:00 a.m. - 7:00 p.m. Meeting Registration
1:00 p.m. - 1:30 p.m. First-Time Attendee Orientation
4:00 p.m. - 5:00 p.m. Student Program Training Session
5:00 p.m. - 6:00 p.m. Mentoring Program
6:00 p.m. - 8:00 p.m. ANS President's Reception
6:00 p.m. - 8:00 p.m. ANS Nuclear Technology EXPO

MONDAY, NOVEMBER 11, 2013

- 7:30 a.m. - 5:00 p.m. Meeting Registration
8:00 a.m. - 10:00 a.m. Spouse/Guest Hospitality
8:00 a.m. - 11:30 a.m. 2013 ANS Winter Meeting: Opening Plenary Session: the 75th Anniversary of the Discovery of Nuclear Fission
11:30 a.m. - 1:00 p.m. Attendee Luncheon in the Technology EXPO
11:30 a.m. - 5:00 p.m. ANS Technology EXPO
1:00 p.m. - 3:00 p.m. ANS President's Special Session
3:00 p.m. - 6:30 p.m. 2013 ANS Winter Meeting: Technical Sessions
7:00 p.m. - 10:00 p.m. Evening Event: Dinner Celebrating 75 Years of Nuclear Fission

TUESDAY, NOVEMBER 12, 2013

- 7:30 a.m. - 5:00 p.m. Meeting Registration
8:00 a.m. - 10:00 a.m. Spouse/Guest Hospitality
8:00 a.m. - 11:45 a.m. 2013 ANS Winter Meeting: Technical Sessions
10:00 a.m. - 11:15 a.m. Special Session: Seismic Safety Issues in Japan After the Accident at Fukushima Daiichi NPP—On the Risks for Faults in Bedrock
8:00 a.m. - 11:30 a.m. Risk Management: Opening Plenary Session: Risk-Informed Decision Making
8:00 a.m. - 11:30 a.m. SMR: Plenary I: Meeting Overview and General Topics
8:00 a.m. - 11:30 a.m. Nuclear Nonproliferation: Opening Plenary: First Fission to the Future: A Reflection and Projection on Nuclear Nonproliferation
10:00 a.m. - 2:00 p.m. ANS Technology (Concession Lunch Available)
1:00 p.m. - 9:00 p.m. 2013 ANS Winter Meeting: Technical Sessions
1:00 p.m. - 6:00 p.m. Embedded Topical: Risk Management
1:00 p.m. - 6:00 p.m. Embedded Topical: SMR

- 1:00 p.m. - 4:30 p.m. Embedded Topical: Nuclear Nonproliferation
4:30 p.m. - 6:30 p.m. TPC Special Session: Environmental Considerations in Long-Term Energy Policy, Including the Role of Nuclear Energy and its Contribution to Reducing Green-House Gas Emissions

WEDNESDAY, NOVEMBER 13, 2013

- 7:30 a.m. - 5:00 p.m. Meeting Registration
8:00 a.m. - 10:00 a.m. Spouse/Guest Hospitality
8:00 a.m. - 11:45 a.m. 2013 ANS Winter Meeting: Technical Sessions
8:00 a.m. - 11:30 a.m. Embedded Topical: Risk Management
8:00 a.m. - 11:30 a.m. SMR: Plenary II: SMR iPWR Owner-Operator Nth of a Kind Vision
8:00 a.m. - 11:30 a.m. Embedded Topical: Nuclear Nonproliferation
1:00 p.m. - 6:30 p.m. 2013 ANS Winter Meeting: Technical Sessions
1:00 p.m. - 7:00 p.m. Embedded Topical: Risk Management
1:00 p.m. - 7:30 p.m. Embedded Topical: SMR
1:00 p.m. - 4:30 p.m. Embedded Topical: Nuclear Nonproliferation
4:00 p.m. - 5:00 p.m. Capitol Hill Visit Pre-briefing
4:00 p.m. - 6:00 p.m. Talking about Nuclear Energy with Policy Makers
6:00 p.m. - 11:00 p.m. Evening Event: Dinner and Tour at Mount Vernon Estate (includes 1 hour travel time)

THURSDAY, NOVEMBER 14, 2013

- 7:30 a.m. - 2:00 p.m. Meeting Registration
8:00 a.m. - 11:45 a.m. 2013 ANS Winter Meeting: Technical Sessions
8:00 a.m. - 11:30 a.m. Embedded Topical: Risk Management
8:00 a.m. - 11:30 a.m. Embedded Topical: SMR
8:00 a.m. - 11:30 a.m. Embedded Topical: Nuclear Nonproliferation
1:00 p.m. - 5:00 p.m. 2013 ANS Winter Meeting: Technical Sessions
1:00 p.m. - 4:30 p.m. Embedded Topical: Risk Management
1:00 p.m. - 4:30 p.m. Embedded Topical: SMR
1:00 p.m. - 4:30 p.m. Embedded Topical: Nuclear Nonproliferation
1:00 a.m. - 5:00 p.m. Technical Tour: An Afternoon on the NS Savannah (includes travel time)

2013 ANS Winter Meeting

“The 75th Anniversary of the Discovery of Nuclear Fission”



GENERAL CHAIR:
James E. Rogers
Duke Energy



ASSISTANT GENERAL CHAIR:
Steven P. Nesbit
Duke Energy



ASSISTANT GENERAL CHAIR:
James W. Behrens
US Navy - Retired



TECHNICAL PROGRAM CHAIR:
Linda H. Hansen
Argonne National Laboratory



ASSISTANT PROGRAM CHAIR:
James J. Byrne
Byrne & Associates LLC



ASSISTANT PROGRAM CHAIR:
Patrick J. Pinhero
University of Missouri/Columbia



ASSISTANT PROGRAM CHAIR:
Martin Sattison
Idaho National Laboratory



STUDENT PROGRAM CHAIR:
Robert M. Bryant
University of Maryland/College Park



SPECIAL EVENTS COCHAIR:
Suzanne K. Schroer
U.S. Nuclear Regulatory Commission



SPECIAL EVENTS COCHAIR:
Matt Dennis
Sandia National Laboratory



TECHNICAL TOURS CHAIR:
Charles R. Martin
Defense Nuclear Facilities Safety Board



MEDIA CHAIR:
Mimi H. Limbach
Potomac Communications Group



TEACHER WORKSHOP CHAIR:
Mike Cullingford

Meeting Information

The 2013 ANS Winter Meeting and four Embedded Topical Meetings: Risk Management for Complex Socio-Technical Systems [RM4CSS], ANS SMR 2013 Conference, Nuclear Nonproliferation - First Fission to the Future, and Young Professionals Congress 2013 will be held November 10-14, 2013, in Washington, DC.

Accommodations/Hotel Information

The Omni Shoreham Hotel, located at 2500 Calvert Street NW, Washington, DC 20008, is the host hotel for the 2013 ANS Winter Meeting, where meeting activities, technical sessions and embedded topical meetings will take place.

ANS Nuclear Technology EXPO

The ANS Nuclear Technology EXPO will be held in conjunction with the 2013 ANS Winter Meeting in the **Exhibit Hall** of the hotel. Please turn to page 79 for additional information.

First-Time Attendee Orientation

The ANS Membership Committee will offer an orientation session for first-time ANS meeting attendees. Learn what goes on at national meetings, how the national organization works, and how to get involved at the national and local levels.

Whether you are a member or not, student or professional, if this is your first ANS national meeting, the Membership Committee invites you to attend this session, which will be held 1:00 - 1:30 p.m. on Sunday, November 10, 2013 in the **Senate Room**.

Student Program

Attendance at the 2013 ANS Winter Meeting is an exciting professional opportunity for college and graduate students.

More information on the new Student Program is available online. The Student Program training session will be held Sunday, November 10, 2013, 4:00-5:00 p.m. in the **Capitol Room**.

Student headquarters room will be located in the **Committee Room**.

ANS Conference Office

Sun., Nov. 10, through Thurs., Nov. 14, 2013 from 8:00 a.m. - 5:00 p.m.

Location: **Sales Conference Room**

ANS Member Business Office

Sun., Nov. 10, through Thurs., Nov. 14, 2013 from 8:00 a.m. - 5:00 p.m.

Location: **Directors Room**

ANS Media Center

Monday, November 11, 2013

7:45 a.m. - 5:00 p.m.

Tuesday, November 12, 2013

8:00 a.m. - 5:00 p.m.

Wednesday, November 13, 2013

8:00 a.m. - 5:00 p.m.

Location: **Executive Room**

Conference Registration

Registration is required for all attendees and presenters. Badges are required for admission to all events.

- The Full Conference Registration Fee includes admission to all technical sessions, the President's Reception, the Attendee Luncheon and the conference proceedings (CD-Rom).
- The Student Registration Fee includes admission to all technical sessions, the President's Reception, the Attendee Luncheon and the conference proceedings (CD-Rom). A full-time student i.d. is required.

ANS Registration

Meeting registration, speakers' & session chairs' desk and the message desk will be located at the West Registration Desk of the Omni Shoreham Hotel, Saturday, November 9, 2013 - Thursday, November 14, 2013. Meeting registration is required for all attendees and presenters. Name badges are required for admission to all technical sessions and events.

Registration Hours:

Saturday, November 9, 2013

2:00 p.m. - 5:00 p.m.

Sunday, November 10, 2013

11:00 a.m. - 7:00 p.m.

Monday, November 11, 2013

7:30 a.m. - 5:00 p.m.

Tuesday, November 12, 2013

7:30 a.m. - 5:00 p.m.

Wednesday, November 13, 2013

7:30 a.m. - 5:00 p.m.

Thursday, November 14, 2013

7:30 a.m. - 2:00 p.m.

Exhibitor Registration - in the Exhibit Hall

Spouse/Guest Hospitality

Spouse/guest hospitality breakfast will be served from 8:00 a.m. - 10:00 a.m., Monday, November 11, 2013, through Wednesday, November 13, 2013, in the **Presidential Suite 225**. Continental breakfast will be served each morning.

Spouse/guest registration is required for admittance to the spouse/guest hospitality breakfast.

Spouse/guest registration includes one ticket to the President's Reception and admittance to the spouse/guest breakfast only - it does not include technical sessions or other events.

Speaker Registration

All speakers are required to register for the conference in advance and to submit a registration fee. Speakers and session chairs are requested to check-in at the speakers' desk, located in the ANS Registration area at least one day prior to their presentation. A speaker ready room will be available.

Location: **West Registration**

Mentoring Program

A special mentoring program will be held from 5:00 p.m. - 6:00 p.m. on Sunday, November 10, 2013, in the **Capitol Room**.

ANS Members who serve as mentors hold a variety of positions within the Society, serving on governance committees and working within the divisions. The mentors encompass a wide range of careers and technical specialties, all of which they hope to share with first-time attendees, student members, new members and those seeking career advancement and networking opportunities.

Student Poster Session

Monday, November 11, 2013

11:30 a.m. - 1:00 p.m. and 3:30 p.m. - 5:00 p.m.

Location: **Exhibit Hall**

Posters will be presented in the following categories:

Accelerator Applications:

Sanjay K. Sah

Fuel Cycle and Waste Management:

Damian H. Browning-Smith

Jitesh A. Kuntawala

Danny Permar

Jeremy A. Washington

Fusion Energy:

Jonathan Coburn

Gunjan Indauliya

Madison E. Martin

Lucas M. Rolison

Human Factors, Instrumentation, and Controls:

William Gordon

Vivek J. Maradia

Isotopes and Radiation:

Benjamin Bond

Prisharan Garg Govindarajan

Omololu Makinde

Materials Science and Technology:

Michael P. Baker

James Carr IV

Slavica Grdanovska

Kurt Harris
 Laura Sudderth
 Chanel N. Tissot
 David A. Woodley

Nuclear Nonproliferation:

Alexandra Asghari
 Savannah A. Fitzwater
 Hannah Hale
 Zachary Jankovsky
 Alexis Kaplan
 Johnathon D. Koglin
 Jennifer L. Littell

Operations and Power:

William M. Cook

Radiation Protection and Shielding:

Hailey M. Green

Reactor Physics:

Bryan R. Herman
 Jesse P. Jones
 Vishal Patel
 Andrew T. Pavlou

Robotics and Remote Systems:

Jorge L. Narvaez

Thermal Hydraulics:

Minghui Chen
 Qiuping Lv
 Enerel Munkhzul
 Joshua Wheeler

Student Outreach Activities:

Marcus E. Wardlow

SPECIAL EVENTS

ANS President's Reception

Sunday, November 10, 2013

6:00 p.m. - 8:00 p.m.

One ticket to the ANS President's Reception is included in the full meeting registration fee. Additional tickets can be purchased on-site at the ANS Registration desk for \$85.00.

Attendee Luncheon in the EXPO

Monday, November 11, 2013

11:30 a.m. - 1:00 p.m., in the **Exhibit Hall**.

One ticket to the Attendee Luncheon in the EXPO is included in the full meeting registration fee.

Additional tickets can be purchased on-site at the ANS Registration desk for \$45.00.

Runners and Walkers: ANS Fun Run

On Tuesday, November 12, 2013, there will be a noncompetitive run starting at 6:00 a.m. from the lobby entrance of the hotel.

We are looking forward to seeing you at the fun run in Washington, D.C. Bring shoes and a big smile.

Dinner Celebrating 75 Years of Nuclear Fission



Our Monday evening dinner will be a celebration, toasting the 75 Years of Nuclear Fission.

The reception dinner will feature remarks from Pulitzer Prize winning author Richard Rhodes. The black-tie optional, ticketed evening event will take place at the Marriott Wardman Park in the Thurgood Marshall Ballroom, a short walk from the Omni Shoreham.

Dinner attendees will also have the chance to view clips from the recordings of the 1989 National Academy of Sciences opening plenary. We invite you to join us as we share in the history with pioneers in nuclear fission, reliving some of the still meaningful work



Richard Rhodes

that left us with 25 years ago.

We have so much to celebrate as we reflect on the last 75 years, and we hope you join us to help us look forward on what is still to come.

Monday, November 11, 2013 • 7:00 p.m. - 10:00 p.m.

Marriott Wardman Park Hotel • Thurgood Marshall Ballroom

Tickets can be purchased on-site at the ANS Registration desk for \$75.00.

Seating is limited.

Talking about Nuclear Energy with Policy Makers

Wednesday, November 13, 2013

4:00 p.m. - 6:00 p.m.

Whether you'll be Storming the Hill or simply want to learn how to effectively talk about nuclear energy, join us for this effective and entertaining workshop. ANS Washington Rep Craig Piercy and Potomac Communications Group Managing Partner Mimi Limbach will discuss the current political landscape for nuclear energy and science along with recent information about how the public and policy makers view nuclear energy. Then, they'll share some proven techniques for developing and delivering effective messages. The session will begin with a Capitol Hill visit pre-briefing and quickly move into the workshop. Complimentary beer, wine and light snacks will be provided.

Sponsored by Babcock & Wilcox Corporation.

Location: **Blue Room Pre-function**

Storm the Hill Day

Thursday, November 14, 2013

9:00 a.m. - 3:00 p.m.

Join your colleagues and visit Capitol Hill. All registered meeting attendees are welcome to participate. The meeting registration form includes a space to mark your intent to participate in the Capitol Hill visits. You must include your home ZIP code to be assigned to the correct team and to visit your local legislators.

Dinner and Tour at Mount Vernon Estate

Wednesday, November 13, 2013

6:00 p.m. - 11:00 p.m. *(includes travel time)*

The evening includes a reception, an estate tour, and a plated 3-course dinner.

Step back in time to walk in George Washington's footsteps and enjoy lantern-lit lanes at Mount Vernon. Your evening includes a personalized candlelight tour of the Mansion with stunning Potomac River views. The expert guides will take you through all three floors of George Washington's beloved home, including the rarely-seen third floor.

Tickets can be purchased on-site at the ANS Registration desk for \$95.00. Based upon availability.

Tour of the USS/NS Savannah

Thursday, November 14, 2013

1:00 p.m. - 5:00 p.m. *(includes travel time)*

Attendees will be transported by bus to the National Historic Landmark/ANS Nuclear Historic Landmark vessel N.S. Savannah. The world's first nuclear-powered merchant ship is maintained in protective storage in Baltimore. Attendees will be selected on a first-come basis. Bus departs the Omni at 1 p.m.; returns to the conference hotel approximately 5:00 p.m.

All ANS Winter Meeting Attendees are welcome to attend. We look forward to having you aboard.

Tickets can be purchased on-site at the ANS Registration desk for \$35.00. Based upon availability.

WINTER MEETING TECHNICAL SESSIONS BY DIVISION

(Asterisks indicate special sessions. Parentheses indicate cosponsorship.)

SPECIAL SESSIONS

*Opening Plenary: “The 75th Anniversary of the Discovery of Nuclear Fission,” Mon. a.m.

*ANS President’s Special Session, Mon. p.m.

*TPC Special Session: Environmental Considerations in Long-Term Energy Policy, Including the Role of Nuclear Energy and its Contribution to Reducing Green-House Gas Emissions, Mon. a.m.

ACCELERATOR APPLICATIONS (AAD)

Accelerator Applications: General, Wed. p.m.

AEROSPACE NUCLEAR SCIENCE AND TECHNOLOGY (ANSTD)

Aerospace Nuclear Science and Technology: General, Wed. a.m.

(Physics of Compact Reactors for Terrestrial and Space Applications), Thurs. p.m.

BIOLOGY AND MEDICINE (BMD)

Recent Developments in Radiation Source Use and Replacement After the NAS Report of 2008—Panel, Mon. p.m.

Biology and Medicine: General, Mon. p.m.

Stepping Stones in Neutron Activation Analysis and 75 Years of Nuclear Fission—Panel, Tues. a.m.

Application of Neutron Activation Analysis to Environmental Materials and Studies, Tues. a.m.

Investigations of Biological Trace Elements by Activation Analysis—Session Honoring A. Chatt, Tues. p.m.

Applications of Activation Analysis in Historical Research—Session Honoring J. M. Blackman, Wed. p.m.

Advanced Prompt Gamma Activation Analysis and Gamma Spectrometry, Thurs. a.m.

DECOMMISSIONING AND ENVIRONMENTAL SCIENCES (DESD)

Environmental Aspects of Fast Reactors with Integral Pyroprocessing of Used Nuclear Fuel—Panel, Tues. a.m.

Advances in Decontamination Technologies and Techniques—Panel, Tues. p.m.

Best of DD&R 2012—Panel, Tues. p.m.

Flood Hazard Assessments and Flood Protection Issues Following the Fukushima Daiichi Events—Panel, Tues. p.m.

Environmental Sciences: General, Wed. p.m.

Modeling and Transport of Radioactive Materials in the Environment, Wed. p.m.

Uranium Recovery and Reclamation, Thurs. a.m.

(U.S. Government Stewardship of Public Lands/Hosting of SMR/Energy Security Services —Panel; see SMR 2013 Meeting, page 60)

EDUCATION, TRAINING, AND WORKFORCE DEVELOPMENT (ETWDD)

Focus on Communications: Meet the Media—Panel, Mon. p.m.

Focus on Communications: Communicating with Policy Makers—Panel, Mon. p.m.

Student Design Competition, Mon. p.m.

Revisiting Accident-Proof Nuclear Energy After the Fukushima Accident—Panel, Mon. p.m.

University Program Accreditation 101—Panel, Mon. p.m.

The Importance of Professional Engineering Licensure in the Nuclear Industry—Panel, Mon. p.m.

Kent W. Hamlin Memorial Session—The Best of CONTE 2013—Panel, Tues. a.m.

The Innovations in Fuel Cycle Research Awards Program—A Student Competition, Tues. a.m.

Recent Developments in Nuclear Science and Engineering Education, Tues. p.m.

Implementation of Successful Nuclear Education Programs in the United States—Panel, Wed. p.m.

Enrollment Diversity and Nuclear Engineering—Panel, Wed. p.m.

Cutting Edge Techniques in Education, Training, and Distance Learning, Wed. p.m.

Research by U.S. DOE NEUP-Sponsored Students—I, Thurs. a.m.

Research by U.S. DOE NEUP-Sponsored Students—II, Thurs. p.m.

FUEL CYCLE AND WASTE MANAGEMENT (FCWMD)

Progress in DOE's Fuel Cycle Research and Development Program—Panel, Mon. p.m.

Public Perception of Risk and Nuclear: Addressing the “Perception Gap”—Panel, Tues. p.m.

Nuclear Fuel Cycle Resources, Sustainability, Reuse, and Recycle, Wed. a.m.

Fuel Cycle and Waste Management: General, Wed. p.m.

Advances in Aqueous Separation Methods and Waste Treatment, Wed. p.m.

FUSION ENERGY (FED)

U.S. Department of Energy—Light Water Reactor Sustainability (LWRS) Program, Mon. p.m.

(Shielding Problems for Fusion Devices), Tues. a.m.

HUMAN FACTORS, INSTRUMENTATION, AND CONTROLS (HFICD)

A Brief History of Nuclear Plant Instrumentation and Controls—Panel, Mon. p.m.

Instrumentation and Controls for Nuclear Power Plants, Tues. a.m.

Nuclear Plant I&C Modernization, Wed. a.m.

Human Factors Engineering for Nuclear Plants, Wed. a.m.

ISOTOPES AND RADIATION (IRD)

Isotopes and Radiation: General, Mon. p.m.

(Nuclear Nonproliferation Technical Group: General), Mon. p.m.

(Stepping Stones in Neutron Activation Analysis and 75 Years of Nuclear Fission—Panel), Tues. a.m.

(Application of Neutron Activation Analysis to Environmental Materials and Studies), Tues. a.m.

(Investigations of Biological Trace Elements by Activation Analysis—Session Honoring A. Chat), Tues. p.m.

(Applications of Activation Analysis in Historical Research—Session Honoring J. M. Blackman), Wed. p.m.

Developments and Applications of Neutron Beam Techniques, Wed. p.m.

Innovations in Radiation Detectors: New Designs, Improvements, and Applications, Wed. p.m.

(Advanced Prompt Gamma Activation Analysis and Gamma Spectrometry), Thurs. a.m.

MATERIALS SCIENCE AND TECHNOLOGY (MSTD)

Computational Modeling, Tues. a.m.

Fuel Cladding and Corrosion in Nuclear Systems, Tues. p.m.

Nuclear Fuel, Wed. p.m.

Reactor Systems and Advanced Measurement Techniques, Thurs. p.m.

MATHEMATICS AND COMPUTATION (MCD)

Current Issues in Computational Methods—Roundtable: Convergence—What Is It?, Mon. p.m.

Deterministic and Stochastic Methods for Eigenvalue Computations: A Retrospective and Prospective Look, Mon. p.m.

Transport Methods: General, Tues. a.m.

(Reactor Physics Analysis Methods—I), Tues. p.m.

Use of CAD in Nuclear Shielding and Criticality Codes, Tues. p.m.

Computational, Uncertainty Quantification, and Sensitivity Analysis Methods, Wed. a.m.

(Reactor Physics Analysis Methods—II), Wed. p.m.

(Nuclear Fission: 75-Year Anniversary—Panel), Wed. p.m.

Mathematical Modeling: General, Wed. p.m.

Transport, Computational, Uncertainty Quantification, and Sensitivity Analysis Methods, Thurs. a.m.

NUCLEAR CRITICALITY SAFETY (NCSD)

Data and Analysis in Nuclear Criticality Safety—I, Mon. p.m.

Data and Analysis in Nuclear Criticality Safety—II, Wed. a.m.

Data and Analysis in Nuclear Criticality Safety—III, Thurs. p.m.

FY2012 Recent Nuclear Criticality Safety Program Technical Accomplishments, Wed. p.m.

ANS 8 Standards Forum, Thurs. a.m.

WINTER MEETING TECHNICAL SESSIONS BY DIVISION

NUCLEAR INSTALLATIONS SAFETY (NISD)

PSA 2013 Highlights—Panel, Mon. p.m.

Modeling and Simulation, Tues. a.m.

Nuclear Installations Safety: General, Tues. p.m.

Research at the NRC, Wed. p.m.

OPERATIONS AND POWER (OPD)

Living Legends in Nuclear—Panel, Mon. p.m.

Codes and Standards Compliance for New Nuclear Plant Construction—Panel, Tues. a.m.

Operations and Power: General—I, Tues. p.m.

Operations and Power: General—II, Wed. p.m.

New Nuclear Construction Around the World—Status Report—Panel, Wed. a.m.

Current Assessment of Objectives and Outcomes of 10 CFR Part 52—Panel, Wed. p.m.

Advanced /Gen-IV Reactors—I, Thurs. a.m.

Advanced /Gen-IV Reactors—II, Thurs. p.m.

RADIATION PROTECTION AND SHIELDING (RPSD)

Radiation Protection and Shielding: General, Mon. p.m.

Radiation Protection and Shielding—Roundtable, Mon. p.m.

Shielding Problems for Fusion Devices, Tues. a.m.

Computational Tools for Radiation Protection and Shielding, Tues. p.m.

Illicit Trafficking Radiation Sensor Assessment Program (ITRAP 10) Highlights, Wed. a.m.

Best of ICRS/RPSD 2012, Wed. p.m.

Making Ethics Real in Nuclear Engineering—Panel, Thurs. p.m.

REACTOR PHYSICS (RPD)

Reactor Physics: General—I, Mon. p.m.

Reactor Physics: General—II, Tues. a.m.

Reactor Physics: General—III, Wed. p.m.

Reactor Physics Analysis Methods—I, Tues. p.m.

Reactor Physics Analysis Methods—II, Wed. p.m.

Lattice Physics Benchmarking, Tues. p.m.

Update on DOE IRP Project: Integral Inherently Safe Light Water Reactor (I2S-LWR) Tues. p.m.

Advanced Modeling and Simulation in Reactor Physics, Wed. a.m.

Fuel Cycle Options: A Physics Perspective, Wed. a.m.

Nuclear Fission: 75-Year Anniversary—Panel, Wed. p.m.

Reactor Physics Design, Validation, and Operating Experience, Thurs. a.m.

Physics of Compact Reactors for Terrestrial and Space Applications, Thurs. p.m.

THERMAL HYDRAULICS (THD)

Experimental Thermal Hydraulics—I: Dedicated in Memory of Dr. Chang H. Oh, Mon. p.m.

Experimental Thermal Hydraulics—II, Tues. p.m.

Experimental Thermal Hydraulics—III, Thurs. a.m.

Computational Thermal Hydraulics—I, Tues. a.m.

Computational Thermal Hydraulics—II, Wed. a.m.

Computational Thermal Hydraulics—III, Wed. p.m.

Thermal Hydraulics: General—I, Tues. a.m.

Thermal Hydraulics: General—II, Thurs. p.m.

Highlights of NURETH-15—Papers/Panel, Tues. p.m.

Thermal-Hydraulics Code Verification and Validation—I, Tues. p.m.

Thermal-Hydraulics Code Verification and Validation—II, Tues. p.m.

Young Professional Thermal-Hydraulics Research Competition, Wed. a.m.

Thermal-Hydraulics Reactor Analyst 2.0—Panel, Wed. p.m.

General Two-Phase Flow, Wed. p.m.

YOUNG MEMBERS GROUP (YMG)

(Nuclear Nonproliferation Technical Group: General), Mon. p.m.

(Thermal-Hydraulics Reactor Analyst 2.0—Panel), Wed. p.m.

NUCLEAR NONPROLIFERATION TECHNICAL GROUP (NNTG)

Nuclear Nonproliferation Technical Group: General, Mon. p.m.

WINTER MEETING TECHNICAL SESSIONS BY DAY: MONDAY

MONDAY, NOVEMBER 11, 2013

- 7:30 a.m. - 5:00 p.m. Meeting Registration**
- 8:00 a.m. - 10:00 a.m. Spouse/Guest Hospitality**
- 8:00 a.m. - 11:30 a.m. 2013 ANS Winter Meeting Opening Plenary**
“The 75th Anniversary of the Discovery of Nuclear Fission”
- 11:30 a.m. - 1:00 p.m. Luncheon in the EXPO**
- 1:00 p.m. - 3:00 p.m. ANS President’s Special Session**
- 3:00 p.m. - 6:30 p.m. 2013 ANS Winter Meeting: Technical Sessions**
- Focus on Communications: Meet the Media—Panel
 - Focus on Communications: Communicating with Policy Makers—Panel
 - A Brief History of Nuclear Plant Instrumentation and Controls—Panel
 - Current Issues in Computational Methods—Roundtable: Convergence —What Is It?
 - Deterministic and Stochastic Methods for Eigenvalue Computations: A Retrospective and Prospective Look
 - Living Legends in Nuclear—Panel
 - Progress in DOE’s Fuel Cycle Research and Development Program—Panel
 - Reactor Physics: General—I
 - Isotopes and Radiation: General
 - Recent Developments in Radiation Source Use and Replacement After the NAS Report of 2008—Panel
 - Biology and Medicine: General
 - PSA 2013 Highlights—Panel
 - Radiation Protection and Shielding: General
 - Radiation Protection and Shielding—Roundtable
 - U.S. Department of Energy—Light Water Reactor Sustainability (LWRS) Program
 - Student Design Competition
 - Revisiting Accident-Proof Nuclear Energy After the Fukushima Accident—Panel
 - University Program Accreditation 101—Panel
 - The Importance of Professional Engineering Licensure in the Nuclear Industry—Panel
 - Experimental Thermal Hydraulics—I: Dedicated in Memory of Dr. Chang H. Oh
 - Data and Analysis in Nuclear Criticality Safety—I
 - Nuclear Nonproliferation Technical Group: General

MONDAY, NOVEMBER 11, 2013, 8:00 A.M.

OPENING PLENARY: “THE 75TH ANNIVERSARY OF THE DISCOVERY OF NUCLEAR FISSION.”

Session Organizers: James W. Behrens (*US Navy, retired*), Steve P. Nesbit (*Director, Nuclear Policy & Support, Duke Energy*), Eric Loewen (*Past President, ANS, GE Hitachi Nuclear Energy*)

Chair: James E. Rogers (*Chairman of the Board, Duke Energy*)

REGENCY BALLROOM

SPEAKERS:

- James E. Rogers (*Chairman of the Board, Duke Energy*)
- The Honorable Ernest J. Moniz (*Secretary of Energy, former Director of the Energy Initiative, Massachusetts Institute of Technology*)
- The Honorable George P. Shultz (*former Secretary of State; Distinguished Fellow, Hoover Institution*)
- The Honorable Samuel A. Nunn, Jr. (*former U.S. Senator, State of Georgia; Co-Founder, Co-Chairman, and Chief Executive Officer, Nuclear Threat Initiative*)
- Dr. Sidney D. Drell (*Professor Emeritus, Stanford Linear Accelerator Center; Senior Fellow, Hoover Institution*)

MONDAY, NOVEMBER 11, 2013, 1:00 P.M.

ANS PRESIDENT’S SPECIAL SESSION: “ON THE PATH TO FISSION’S CENTENNIAL AND BEYOND”

Session Organizers: James W. Behrens (*US Navy, retired*), Eric Loewen (*Past President, ANS, GE Hitachi Nuclear Energy*)

Chair: Donald R. Hoffman (*President, ANS, President/CEO EXCEL Services Corporation*)

REGENCY BALLROOM

SPEAKERS:

- Donald R. Hoffman (*President, ANS*)
- Dr. Ralph Cicerone (*President, National Academy of Sciences*)
- Dr. C. D. (Dan) Mote (*President, National Academy of Engineering*)
- The Honorable Allison M. Macfarlane (*Chairman, U.S. Nuclear Regulatory Commission*)
- The Honorable Peter B. Lyons (*Assistant Secretary for Nuclear Energy, U.S. Department of Energy, Office of Nuclear Energy*)
- Dr. John C. Browne (*Director Emeritus, Los Alamos National Laboratory*)
- Dr. Susan E. Eisenhower (*Chairman Emeritus, Eisenhower Institute*)
- Admiral John Richardson, [*USN, Director, Naval Reactors (08)*]

MONDAY, NOVEMBER 11, 2013, 3:00 P.M.

FOCUS ON COMMUNICATIONS: MEET THE MEDIA—PANEL

Sponsored by ETWDD

Session Organizer and Chair: Mimi H. Limbach (*Potomac Communications Group*)

REGENCY BALLROOM

3:00 p.m.

The media is one of the major channels of communication that the nuclear energy industry has with the public. Today that media operates in many formats—print, broadcast, and digital among them. In addition, major journalists communicate through a variety of platforms that include the spectrum of social media.

With deadlines looming every few hours, how can journalists understand the nuances of nuclear energy technology and science to accurately report on them? And, how can ANS members help them? Major journalists who cover the energy industry will share their perspectives about nuclear energy as well as those areas in which ANS members can help with their coverage of the industry and its news.

PANELISTS:

- Matt Wald (*The New York Times*)
- Elaine Hiruo (*Platts Nuclear Publications*)
- Chris Gadomski (*Bloomberg New Energy Finance*)

FOCUS ON COMMUNICATIONS: COMMUNICATING WITH POLICY MAKERS—PANEL

Sponsored by ETWDD

Session Organizer and Chair: Laura Hermann (*Potomac Communications Group*)

REGENCY BALLROOM

4:35 p.m.

Policy decisions at the Federal and state levels are vitally important for the entire energy industry. Consequently, communicating with policy makers clearly and frequently is an important element in the nuclear energy industry's communications efforts. And it is an element in which every ANS member can have a voice. This panel will address the various paths to successful communications about nuclear energy, science, and technology with policy makers. This panel discussion includes professionals who are skilled and experienced in successfully communicating with policy makers at every level.

PANELISTS:

- Matt Bennett (*Third Way*)
- Michael L. Corradini (*Univ of Wisconsin*)
- Ron S. Faibish (*Senate Energy Committee*)
- Marshall Cohen (*Babcock & Wilcox*)

Note: This session will immediately follow the preceding session, which will begin at 3:00 p.m.

A BRIEF HISTORY OF NUCLEAR PLANT INSTRUMENTATION AND CONTROLS—PANEL

Sponsored by HFICD

Session Organizer: Sacit M. Cetiner (*ORNL*)

Chair: Richard T. Wood (*ORNL*)

BLUE ROOM

3:00 p.m.

The instrumentation and control (I&C) systems in a nuclear power plant perform a function similar to the nervous system in the human body. The history of nuclear I&C is as old as the first criticality. The very principles that guide the design and operation of I&C systems in modern nuclear power plants were also used in early critical piles. Though the “systems” were not as advanced, they were employed with the same safety philosophy that is engraved in NRC's general design criteria today, such as the diversity and defense-in-depth principles.

The Human Factors, Instrumentation and Controls Division (HFICD) organized this panel session in recognition of the 75th Anniversary of the Discovery of Fission to inform the ANS members and the meeting attendees in general about the incredible evolution of nuclear I&C systems—as well as the applicable standards and regulations that guide the design process—throughout its brief history.

PANELISTS:

- Syd J. Ball (*ORNL*)
- Hash M. Hashemian (*Analysis and Measurement Services Corp.*)
- Edward (Ted) Quinn (*Technology Resources*)
- Richard T. Wood (*ORNL*)
- NRC representative to be determined

CURRENT ISSUES IN COMPUTATIONAL METHODS—ROUNDTABLE: CONVERGENCE—WHAT IS IT?

Sponsored by MCD

Session Organizer and Chair: Forrest Brown (*LANL*)

AMBASSADOR BALLROOM

3:00 p.m.

Nearly all of our current computational methods for nuclear engineering rely on iterative solution methods, and nearly all of the descriptions of those methods focus on differencing schemes, physics accuracy, iteration methods, acceleration techniques, etc. All iterative methods share a common problem – when to declare success, stop the calculation, and report answers. Convergence of the calculations is a much-neglected topic, frequently treated in an ad hoc manner, but is critical to obtaining “correct” results.

For deterministic reactor calculations, there may be different stopping considerations for inner vs. outer iterations. For Monte Carlo calculations, there are distinct differences between convergence of the source distribution and statistical convergence. For CFD calculations, convergence for different length scales, time scales, and multiple state variables is a challenge. Combinations of high-order and low-order solution methods introduce convergence issues for each order and for the combination. Multiphysics calculations involve each of the previous issues as well as global convergence of coupled code iterations. On a different note, there are also convergence issues with problem modeling and accuracy: mesh convergence, scattering order, time-step sizes, number of fission products, design iterations, etc.

In this roundtable session, several experienced researchers will relate their views and experience on a number of topics involving

convergence of nuclear engineering calculations. As with all Mathematics and Computation Roundtable sessions, the audience is highly encouraged to participate and relate their own experiences, opinions, and suggestions.

PANELISTS:

- Forrest Brown (*LANL*)
- Tim Kelley (*NCSU*)
- Sean Carney (*Univ of Michigan*)

DETERMINISTIC AND STOCHASTIC METHODS FOR EIGENVALUE COMPUTATIONS: A RETROSPECTIVE AND PROSPECTIVE LOOK

Sponsored by MCD

Session Organizer: James S. Warsa (*LANL*)

Chair: Anil K. Prinja (*Univ of New Mexico*)

AMBASSADOR BALLROOM

4:35 p.m.

E. Fermi's Work and the Early Development of the Concept of Criticality, Piero Ravetto (*Politecnico di Torino-Italy*)

5:00 p.m.

Monte Carlo Criticality Calculations—History & Recent Progress, Forrest Brown (*LANL*), Sean Carney (*Univ of Michigan*), Brian Kiedrowski (*LANL*), William Martin (*Univ of Michigan*), invited

5:25 p.m.

Nested Nonlinear Acceleration Methods for Transport Criticality Problems, H. Park, D. A. Knoll, C. K. Newman, J. A. Willert (*LANL*), C. T. Kelley (*NCSU*)

5:50 p.m.

Computing the Alpha-Eigenvalue Using Nonlinear Solvers, Erin D. Fichtl, James S. Warsa (*LANL*)

Note: This session will immediately follow the preceding session, which will begin at 3:00 p.m.

LIVING LEGENDS IN NUCLEAR—PANEL

Sponsored by OPD

Session Organizer and Chair: Gale Hauck (*Westinghouse*)

EMPIRE BALLROOM

3:00

The nuclear industry is unique compared to other energy industries in that many of its early development pioneers are still alive today. This session brings many of these living legends together to share their stories of early industry development and recognizes their contributions as part of the ANS celebration of the 75th anniversary of nuclear fission.

PANELISTS:

- Sam Cerni (*Retired, Westinghouse*)
- Vinny Esposito (*Retired, Westinghouse, 2013 ANS Congressional Fellow*)
- Ed Wenzinger (*Retired, Shaw*)
- Tom Christopher (*Retired, AREVA*)

PROGRESS IN DOE'S FUEL CYCLE RESEARCH AND DEVELOPMENT PROGRAM—PANEL

Sponsored by FCWMD

Session Organizer and Chair: Andrew Griffith (*DOE*)

DIPLOMAT BALLROOM

3:00 p.m.

The objective of this session is to disseminate information and stimulate discussion regarding recent research and development (R&D) progress in the U.S. Department of Energy's (DOE's) Fuel Cycle Research and Development (FCR&D) program. The session will consist of technical presentations provided by researchers in several technical areas of the FCR&D program. Talks will cover a broad range of subjects, including but not limited to, separation technologies, waste form development, innovative fuels, systems analysis, used fuel disposition, material protection and control, and modeling/simulation.

PANELISTS:

- Andy Gaunt (*LANL*)
- Kyle Brinkman (*SRNL*)
- Maria Okuniewski (*INL*)
- Kurt Terrani (*ORNL*)
- Ryan Winkler (*LANL*)
- Ben Cipiti (*SNL*)

REACTOR PHYSICS: GENERAL—I

Sponsored by RPD

Session Organizer: Alexander Stanculescu (*INL*)

Chair: Akio Yamamoto (*Nagoya Univ*)

CAPITOL ROOM

3:00 p.m.

Testing an Energy Dependent Albedo Capability for MCNP, M. L. Fensin, A. B. McKinney, J. S. Hendricks (*LANL*)

3:25 p.m.

McCARD Benchmark Calculations for the HTTR Experiments with ENDF/B-VII.0 and ENDF/B-VII.1, Chang Joon Jeong, Hyun Chul Lee, Tae Young Han, Jae Man Noh (*KAERI*)

3:50 p.m.

The Analysis of Tritium Generation in the Solid Fuel Thorium Molten Salt Reactor, Xingwang Zhu, Zhaozhong He, Chao Peng, Kun Chen (*Shanghai Institute of Applied Physics, Chinese Academy of Sciences*)

4:15 p.m.

Neutronic Effects of Nickel Ferrite CRUD Without Boron Hideout, Brandon LaFleur, Daniel Walter, Annalisa Manera (*Univ of Michigan*)

WINTER MEETING TECHNICAL SESSIONS BY DAY: MONDAY

4:40 p.m.

Important Fission Product Nuclides Identification Method for Simplified Burnup Chain Construction, Go Chiba, Masashi Tsuji, Tadashi Narabayashi (*Hokkaido Univ*), Yasunori Ohoka, Tadashi Ushio (*Nuclear Fuel Industries*)

5:05 p.m.

Validation of OpenMC Reactor Physics Simulations with the B&W 1810 Series Benchmarks, Jonathan A. Walsh, Benoit Forget, Kord S. Smith (*MIT*)

5:30 p.m.

Evaluation of the Highest Multiplication Factor of the Subcritical Assembly, E. Lum, J. F. Kunze (*Idaho State Univ*)

ISOTOPES AND RADIATION: GENERAL

Sponsored by IRD

Session Organizer: Stephen P. LaMont (*LANL*)

Chair: Amanda M. Johnsen (*Penn State*)

EMBASSY ROOM

3:00 p.m.

Operational Effects of High Reactivity Irradiation Targets on a University Research Reactor, Brenden J. Heidrich, Andrew Bascom, Mark Trump (*Penn State*)

3:25 p.m.

Future Cost of Isotopically-Separated Lithium for PWRs, Fluoride-Salt-Cooled High-Temperature Reactors (FHRs) and Lithium Batteries, Charles Forsberg (*MIT*)

3:50 p.m.

Discriminating Fission Weapons Using Lithium-Ion Batteries, Keith E. Holbert, Tyler Stannard, Taipeng Zhang, Anthony Christie (*Arizona State Univ*), Erik B. Johnson (*Radiation Monitoring Devices, Inc.*)

4:15 p.m.

Encapsulation for Copper Production at the Penn State Breazeale Reactor, Andrew Bascom (*Penn State*)

4:40 p.m.

Experimental and Computational Study of Slow and Dense Granular Flow in a Pebble Bed Reactor, Vaibhav Khane, Muthanna H. Al-Dahhan (*Missouri Univ Sci Tech*)

5:05 p.m.

Design Considerations for Neutron Moderators in Prompt Gamma Neutron Activation Analysis, Walid A. Metwally (*Univ of Sharjah*)

5:30 p.m.

Effect of Interfacial Conductance on the Thermal Stresses in a Low-Enriched Uranium Foil Based Annular Target for the Production of Molybdenum-99, S. G. Govindarajan, G. L. Solbrekken (*Univ of Missouri, Columbia*)

5:55 p.m.

New Local Liquid Velocity Measurement Technique in Trickle Bed Reactors (TBRs) Using X-Ray Digital Industrial Radiography and Particle Tracking (DRPT) Techniques, Khairul Anuar Mohd Salleh, Hyoung Koo Lee, Muthanna H. Al-Dahhan (*Missouri Univ Sci Tech*)

6:20 p.m.

Automating X-Ray and Non-Destructive Testing Applications, Joseph Hashem, James Hunter (*LANL*), Mitch Pryor (*Univ of Texas, Austin*)

RECENT DEVELOPMENTS IN RADIATION SOURCE USE AND REPLACEMENT AFTER THE NAS REPORT OF 2008—PANEL

Sponsored by BMD

Session Organizer: Robin P. Gardner (*NCSU*)

Chair: Kevin Crowley (*The National Academies*)

FORUM ROOM

3:00 p.m.

Upon Congressional request, the National Research Council conducted a study in 2008 to review the uses of high-risk radiation sources and the feasibility of replacing them with lower risk alternatives. The study concludes that the U.S. government should consider factors such as potential economic consequences of misuse of the radiation sources in its assessments of risk. The committee expressed specific concerns and offered a number of steps to minimize the overall risk. This panel will review these concerns and proposals and offer the latest status for discussion.

PANELISTS:

- Robin Gardner (*NCSU*)
- Stephen J. Wagner (*American Red Cross*)
- Medhat W. Mickael (*Weatherford*)
- Leonard W. Connell (*SNL*)
- Pingjun Guo (*Exxon Mobil Upstream Research Co.*)

BIOLOGY AND MEDICINE: GENERAL

Sponsored by BMD

Session Organizer: Rolf L. Zeisler (*NIST*)

Chair: Bryan P. Bednarz (*Univ of Wisconsin, Madison*)

FORUM ROOM

4:35 p.m.

The Effects of Smoking on Response of Osteoporosis Treatment Using Dual Energy X-Ray Absorptiometry Scans, M. M. Al-Bogami (*William Harvey Research Inst*), M. A. Alkhorayef (*King Saud Univ*), O. A. Akanle, A. S. Jawad (*The Royal London Hospital*), R. A. Mageed (*William Harvey Research Inst*), invited

5:00 p.m.

A Highly Focused Small Animal Irradiator for Preclinical Trials of Low Energy Sources, Andrew Shepard, Tyler Fowler, Abby Besemer, Bryan Bednarz (*Univ of Wisconsin, Madison*)

5:25 p.m.

Parametric Study of Assembly Process for Targets Carrying LEU Foils, Annemarie Hoyer, A. Sherif El-Gizawy, Brian Graybill, Gary Solbrekken (*Univ of Missouri, Columbia*)

WINTER MEETING TECHNICAL SESSIONS BY DAY: MONDAY

Note: This session will immediately follow the preceding session, which will begin at 3:00 p.m.

PSA 2013 HIGHLIGHTS—PANEL

Sponsored by NISD

Session Organizer and Chair: Kevin R. O’Kula (URS Professional Solutions, LLC)

CABINET ROOM

3:00 p.m.

PSA 2013, the ANS International Topical Meeting on Probabilistic Safety Assessment and Analysis, was held September 22 through September 27, 2013, at the Marriott Columbia in Columbia, South Carolina, USA. This meeting was dedicated to the memory of Professor David Okrent (1922–2012), a nuclear safety/design pioneer and major contributor to PSA and probabilistic safety methods and analysis.

PSA 2013 has been a major international technical forum for communication of major probabilistic risk and safety information since Professor Okrent organized the first of this series in 1978 in Newport Beach, California. This international conference, now conducted on a biennial basis, included 290 participants from 22 nations and featured 65 sessions, 223 presentations (traditional oral and poster papers), and five panel sessions and was the 13th meeting in the technical series sponsored by the NISD.

The panel session will brief attendees on major session highlights of the topical, including Fukushima Insights and Lessons Learned; Fire, Flooding, and External Event PSAs; Level 1, 2, and 3 PSA Methods and Applications; Dynamic PSA, Nonreactor Nuclear PSA; SMR and Low Power & Shutdown PSA; Risk Standards & Requirements; Advances in PSA Knowledge Management & IT; Risk Metrics and Safety Goals, Emergency Preparedness and Response; and SOARCA Uncertainty Analysis, among others. The session content is especially designed to identify noteworthy areas of PSA work that bear watching in the near term as well as other features of PSA 2013 for those that were unable to attend.

PANELISTS:

- Robert A. Bari (BNL)
- Robert Budnitz (LBNL, retired)
- Nsimah J. Ekanem (Univ of Maryland)
- Tina Ghosh (NRC)

RADIATION PROTECTION AND SHIELDING: GENERAL

Sponsored by RPSD

Session Organizer and Chair: Peter F. Caracappa (RPI)

COUNCIL ROOM

3:00 p.m.

Preliminary Radioactive Source Term Analysis for Normal Operation of CLEAR-I, Tongqiang Dang, Yican Wu (*Institute of Nuclear Energy Safety Technology, Chinese Academy of Sciences*)

3:25 p.m.

Optimization of Thin Polymeric Films in Portal Monitors Using Genetic Algorithms, M. J. Urffer, A. Mabe, R. Uppal, D. Penumadu, L. F. Miller (*Univ of Tennessee*)

3:50 p.m.

Effect of Radiation Propagation Time on Criticality Accident Alarm Response, Douglas M. Minnema (*DNFSB*)

4:15 p.m.

Benchmark Improvements Pool Critical Assembly PV Problem Using the 3-D S_n PENTRAN, Christopher A. Edgar, Glenn E. Sjoden (*Georgia Tech*), invited

4:40 p.m.

The Effects of Polystyrene Presence on Neutron Detection: Mass Ratio, Height, and Distance Measurements, J. N. Cantrell (*Univ of Tennessee*), T. E. Margrave (*ORNL*), L. H. Heilbronn (*Univ of Tennessee, Knoxville*)

RADIATION PROTECTION AND SHIELDING— ROUNDTABLE

Sponsored by RPSD

Session Organizer and Chair: Peter F. Caracappa (RPI)

COUNCIL ROOM

5:10 p.m.

Everyone is invited to give a short presentation on any radiation protection and shielding topic of interest. Ten-minute time slots will be allotted on first-come/first-serve basis. This session is meant to be fast, informal, and fun.

Note: This session will immediately follow the preceding session, which will begin at 3:00 p.m.

U.S. DEPARTMENT OF ENERGY—LIGHT WATER REACTOR SUSTAINABILITY (LWRS) PROGRAM, all invited

Sponsored by FED

Session Organizer: Cindie Jensen (INL)

Chair: Kathryn McCarthy (INL)

SENATE ROOM

3:00 p.m.

Crack Initiation Behavior of Neutron Irradiated Model and Commercial Stainless Steels in High Temperature Water, Kale J. Stephenson, Gary S. Was (*Univ of Michigan*)

3:25 p.m.

Concrete Aging and Degradation in NPPs: LWRS Program R&D Progress Report, Igor Remec, Kevin G. Field, Dan J. Haus, Thomas M. Rosseel, Jeremy T. Busby (*ORNL*)

3:50 p.m.

Applying the Results of LWRS Research in Hybrid Control Room Development, Matt Gibson (*Duke Energy*), Ronald L. Boring, Jacques V. Hugo, Kenneth D. Thomas (*INL*)

WINTER MEETING TECHNICAL SESSIONS BY DAY: MONDAY

4:15 p.m.

New Methods and Tools to Perform Safety Analysis Within RISMC, D. Mandelli, C. Smith, C. Rabiti, A. Alfonsi, J. Cogliati, R. Kinoshita (*INL*)

4:40 p.m.

Station Blackout: A Case Study in the Interaction of Mechanistic and Probabilistic Safety Analysis, Curtis Smith, Diego Mandelli, Cristian Rabiti (*INL*)

5:05 p.m.

Out-of-Pile Characterization and Testing of Joined Cylindrical Components for SiC-Based Nuclear Fuel Cladding, Hesham E. Khalifa, George M. Jacobsen, Oscar Gutierrez, Christina A. Back (*General Atomics*)

STUDENT DESIGN COMPETITION

Sponsored by ETWDD

Session Organizer and Chair: Travis W. Knight (*Univ of South Carolina*)

PALLADIAN BALLROOM

The following undergraduate entries have been selected by a panel of judges from industry as finalists in the 2013 Student Design Competition. Oral presentations will be made by students in front of a second panel of judges who will determine the undergraduate winner.

UNDERGRADUATE CATEGORY

3:00 p.m.

“DECAP” Diesel Exhaust Cleaning with Atmospheric Plasma, M. Szott, E. Ziehm, D. Peterson, S. Kleppinger, H. Yun, Z. Shukur (*Univ of Illinois*)

3:30 p.m.

Accident Tolerant Refractory Metal Based Cladding for Light Water Reactors, Albert F. Magyar, Jordan L. Sabella, Mitchell D. Loff, David M. Frazer, Manasseh J. Szwabowski, Ross E. Meyer, Deaho Moon (*Univ of California, Berkeley*)

GRADUATE CATEGORY

4:00 p.m.

Innovative Accident Tolerant UO₂ Composite Fuel for Use in LWRs, Danny Permar, Andrew Cartas, Haitang Wang (*Univ of Florida*)

4:30 p.m.

Cadmium Capture-Gated Detector for Use as a Portal Monitor, Marc Ruch, Alicia Salazar, Charles Sosa (*Univ of Michigan*)

REVISITING ACCIDENT-PROOF NUCLEAR ENERGY

AFTER THE FUKUSHIMA ACCIDENT—PANEL

Sponsored by ETWDD

Session Organizer and Chair: Bulent Alpay (*GE Hitachi Nuclear*)

HAMPTON BALLROOM

3:00 p.m.

In this session, the panelists will discuss sharing the responsibilities of a nuclear accident as educators, regulatory bodies, and scientists in the view of current practices and challenges to establish accident proof nuclear energy by minimizing the risk of nuclear accidents and developing novel design and operation techniques to make nuclear reactors accident-tolerant.

PANELISTS:

- John C. Lee (*Univ of Michigan*)
- Ronald A. Knief (*SNL*)
- Nathan Siu (*NRC*)
- Eric Loewen (*GE Hitachi Nuclear Energy*)

UNIVERSITY PROGRAM ACCREDITATION 101—PANEL

Sponsored by ETWDD

Session Organizer and Chair: Mary Lou Dunzik-Gougar (*Idaho State Univ*)

CONGRESSIONAL A

3:00 p.m.

This session will provide an update on the criteria and processes used in accrediting university nuclear engineering programs. What is the role of ABET and the ANS? Did you know that program evaluators are identified, trained, and assigned to school visits by ANS' Accreditation Policies and Procedures Committee? Presenters, who are all experienced ABET evaluators, will answer these questions and provide their personal perspectives on “A Day in the Life of a NE Program Evaluator.”

PANELISTS:

- Jason Harris (*Idaho State Univ*)
- Jane LeClair (*Excelsior College*)
- Michael Robinson (*Bechtel Marine Propulsion Corp.*)
- Youssef Shatilla (*Masdar Institute of Science and Technology, UAE*)
- Joe Sussman (*ABET*)

THE IMPORTANCE OF PROFESSIONAL ENGINEERING

LICENSURE IN THE NUCLEAR INDUSTRY—PANEL

Sponsored by ETWDD

Session Organizers: John S. Bennion (*GE Hitachi Nuclear*), Rebecca L. Steinman (*Tetra Tech*), Harold (Hal) Williamson (*Emeritus Member, Washington State Board of Registration for Professional Engineers and Land Surveyors*)

Chair: Rebecca L. Steinman (*Tetra Tech*)

CONGRESSIONAL A

4:35 p.m.

Professional engineering registration and licensure laws have been enacted by all 50 states and 5 U.S. jurisdictions to safeguard life, health, and property, and promote the public welfare. Despite the undeniable and well-known benefits that nuclear power contributes to public welfare and economic development, perhaps no other field of engineering endeavor has the potential to profoundly impact public safety and property as can the nuclear power industry or

the notoriety among antinuclear activists as being inimical to the common health and safety of the public and the environment. In this session, a distinguished panel of experts will provide personal insights from various legal, practical, commercial, and regulatory perspectives regarding the importance of professional engineering licensure in the nuclear enterprise and its role in promoting public confidence and acceptance of nuclear power generation.

PANELISTS:

- Arthur Schwartz (*National Society of Professional Engineers*)
- Steven Arndt (*NRC*)
- Robb Borland (*FirstEnergy Nuclear Operating Co.*)
- Rebecca Steinman (*Tetra Tech, Inc.*)

Note: This session will immediately follow the preceding session, which will begin at 3:00 p.m.

EXPERIMENTAL THERMAL HYDRAULICS—I:

DEDICATED IN MEMORY OF DR. CHANG H. OH

Sponsored by THD

Cochairs: Fan-Bil Cheung (*Penn State*), Yassin A. Hassan (*Texas A&M*)

CONGRESSIONAL B

3:00 p.m.

Observation of Spacer Grid Effects During Dispersed Flow Film Boiling in a Rod Bundle, M. P. Riley, L. Mohanta, F. B. Cheung (*Penn State*), S. M. Bajorek, K. Tien, C. L. Hoxie (*NRC*)

3:25 p.m.

Grid-Induced Heat Transfer Enhancement in Inverted Annular Film Boiling During Reflood, L. Mohanta, M. P. Riley, F. B. Cheung (*Penn State*), S. M. Bajorek, K. Tien, C. L. Hoxie (*NRC*)

3:50 p.m.

Effect of Spacer Grid on Flow Regime Transition in a 1x3 Bundle Two-Phase Flow, Joshua Wheeler, Zachary Franiewski, Seungjin Kim (*Penn State*)

4:15 p.m.

Experimental Study of Flow in a Rod Bundle with Spacer-Grids, Elvis Dominguez-Ontiveros, Yassin Hassan (*Texas A&M*), Michael Conner (*Westinghouse*)

4:40 p.m.

Critical Heat Flux for Downward Flow Boiling in a Vertical Narrow Rectangular Channel, Juhung Lee (*KAIST*), Daesung Jo, Heetaek Chae (*KAERI*), Soon Heung Chang (*KAIST*)

5:05 p.m.

Critical Heat Flux on a Downward Facing Surface with a Shallow Cavity Obstruction, M. Gocmanac, J. C. Luxat (*McMaster Univ*)

5:30 p.m.

Technical Achievement Award Ceremony. This will immediately follow the technical session.

DATA AND ANALYSIS IN NUCLEAR CRITICALITY

SAFETY—I

Sponsored by NCSD

Session Organizer: Allison D. Miller (*SNL*)

Chair: Douglas G. Bowen (*ORNL*)

GOVERNOR'S BOARDROOM

3:00 p.m.

Subcritical Sensitivity Measurements Using the Thor Core, J. Hutchinson, A. Sood, M. Smith-Nelson (*LANL*)

3:25 p.m.

Subcritical Measurements of Godiva Components, J. Hutchinson, J. Goda, D. Dinwiddie, D. Hayes, M. Rawool-Sullivan, J. Bounds (*LANL*)

3:50 p.m.

Subcriticality Measurement Technique Using Inherent Neutron Source in Uranium Fuel, Takeshi Shiozawa, Tomohiro Endo, Akio Yamamoto (*Nagoya Univ*), Cheol Ho Pyeon, Takahiro Yagi (*Kyoto Univ*)

4:15 p.m.

Evaluating the 1969 Reevaluation of Jezebel, Jeffrey A. Favorite (*LANL*)

4:40 p.m.

Development and Validation of a Nuclear Criticality Benchmark Capability in the Advanced Test Reactor Critical, Denis Beller (*UNLV*), John D. Bess (*Battelle Energy Alliance*), Fred Hua (*UNLV*)

5:05 p.m.

The UNLV ATRC Criticality Benchmark Experiment Project, Denis Beller (*UNLV*), John D. Bess, Darin Lords (*INL*), Jeremiah Boles, Kimberly Clark, Anthony Santo Domingo, Alex Lui (*UNLV*), Jacob Mills, Larry Lakeotes (*Univ of Pittsburgh*), Craig Jackson, Benjamin Chase, J. Blair Briggs (*INL*), Fred Hua (*UNLV*)

NUCLEAR NONPROLIFERATION TECHNICAL GROUP:

GENERAL

Sponsored by NNTG; cosponsored by IRD/YMG

Session Organizer: R. Chris Robinson (*Y-12 NSC*)

Chair: Morris E. Hassler (*Y-12 NSC*)

CALVERT ROOM

3:00 p.m.

Fission Product γ -ray Measurements of ²³⁵U and MCNP6 Predictions, M. T. Andrews, E. C. Corcoran, D. G. Kelly (*Royal Military College of Canada*), J. T. Goorley (*LANL*)

3:25 p.m.

Sensitivity Analysis with PRAETOR for Diversion of Plutonium Self-Protected with Pu-238, Royal A. Elmore, Sunil Chirayath, William S. Charlton (*Texas A&M*)

WINTER MEETING TECHNICAL SESSIONS BY DAY: MONDAY/TUESDAY

3:50 p.m.

On the Conversion of KUCA Type-A Cores from HEU to LEU Using U10Mo Foils, Gerardo Aliberti, James A. Morman, John G. Stevens (*ANL*), Hironobu Unesaki, Cheol-Ho Pyeon (*Kyoto Univ*)

4:15 p.m.

Opto-Fluidics Lab-on-Chip Concept for Nuclear Materials Monitoring, Adrian E. Méndez Torres, Poh-Sang Lam (*SRNL*), Guiren Wang (*Univ of South Carolina*)

4:40 p.m.

Summary of Modeling Studies in the High Reliability Safeguards Approach, R. A. Borrelli (*Univ of California, Berkeley*)

5:05 p.m.

Experimental Measurement of Uranium Hexafluoride Enrichment Using Fast Neutron Spectroscopy, Scott Kiff, Mark Gerling, Peter Marleau, Stanley Mrowka (*SNL*), Michael Streicher (*Univ of Michigan*)

5:30 p.m.

Enabling International Fuel Leasing by the United States with Volunteer Industrial-Development Repository Siting, Charles W. Forsberg (*MIT*)

TUESDAY, NOVEMBER 12, 2013

7:30 a.m. - 5:00 p.m. Meeting Registration

8:00 a.m. - 10:00 a.m. Spouse/Guest Hospitality

8:00 a.m. - 11:45 a.m. 2013 ANS Winter Meeting: Technical Sessions

- Environmental Aspects of Fast Reactors with Integral Pyroprocessing of Used Nuclear Fuel—Panel
- Reactor Physics: General—II
- Codes and Standards Compliance for New Nuclear Plant Construction—Panel
- Transport Methods: General
- Instrumentation and Controls for Nuclear Power Plants
- Stepping Stones in Neutron Activation Analysis and 75 Years of Nuclear Fission—Panel
- Application of Neutron Activation Analysis to Environmental Materials and Studies
- Modeling and Simulation
- Shielding Problems for Fusion Devices
- Computational Modeling
- Computational Thermal Hydraulics—I
- Thermal Hydraulics: General—I
- Kent W. Hamlin Memorial Session—The Best of CONTE 2013—Panel

TUESDAY, NOVEMBER 12, 2013 (continued)

8:00 a.m. - 11:45 a.m. 2013 ANS Winter Meeting: Technical Sessions (continued)

- The Innovations in Fuel Cycle Research Awards Program—A Student Competition
- Special Session: Seismic Safety Issues in Japan After the Accident at Fukushima Daiichi NPP—On the Risks for Faults in Bedrock

1:00 p.m. - 4:30 p.m. 2013 ANS Winter Meeting: Technical Sessions

- Recent Developments in Nuclear Science and Engineering Education
- Reactor Physics Analysis Methods—I
- Lattice Physics Benchmarking
- Operations and Power: General—I
- Public Perception of Risk and Nuclear: Addressing the “Perception Gap”—Panel
- Use of CAD in Nuclear Shielding and Criticality Codes
- Advances in Decontamination Technologies and Techniques—Panel
- Investigations of Biological Trace Elements by Activation Analysis—Session Honoring A. Chatt
- Nuclear Installations Safety: General
- Computational Tools for Radiation Protection and Shielding
- Fuel Cladding and Corrosion in Nuclear Systems
- Highlights of NURETH-15—Papers/Panel
- Thermal-Hydraulics Code Verification and Validation—I

4:30 p.m. - 6:30 p.m. TPC Special Session: Environmental Considerations in Long-Term Energy Policy, Including the Role of Nuclear Energy and Its Contribution to Reducing Greenhouse Gas Emissions

7:00 p.m. - 9:00 p.m. Update on DOE IRP Project: Integral Inherently Safe Light Water Reactor (I2S-LWR)—Panel

- Best of DD&R 2012—Panel
- Thermal-Hydraulics Code Verification and Validation—II
- Experimental Thermal Hydraulics—II
- Flood Hazard Assessments and Flood Protection Issues following the Fukushima Daiichi Events—Panel

TUESDAY, NOVEMBER 12, 2013, 8:00 A.M.

ENVIRONMENTAL ASPECTS OF FAST REACTORS WITH INTEGRAL PYROPROCESSING OF USED NUCLEAR FUEL—PANEL

Sponsored by DESD

Session Organizer: Yoon Chang (ANL), Jan van Erp (Consultant)

Chair: Charles Till (Consultant)

REGENCY BALLROOM

8:00 a.m.

Fast Reactors with integral pyroprocessing of used nuclear fuel present a number of attractive environmental characteristics. This session is aimed at highlighting the most important points, including waste-volume reduction and elimination of long-lived radioactive isotopes from the waste stream, as well as some geopolitical aspects such as high proliferation resistance, reduction (or elimination) of enrichment requirements, elimination (or reduction) of mining requirements, and associated environmental impact.

PANELISTS:

- Yoon Chang (ANL)
- Eric Loewen (GE Hitachi Nuclear Energy)
- Sung Won Park (KAERI)
- Alexander Bychkov (IAEA)
- William Hannum (Consultant)
- Frank Goldner (DOE)

REACTOR PHYSICS: GENERAL—II

Sponsored by RPD

Session Organizer: Alexander Stanculescu (INL)

Chair: Fausto Franceschini (Westinghouse)

AMBASSADOR BALLROOM

8:00 a.m.

The Inexact Gauss-Newton Method for Core Power Distribution Monitoring in Pressurized Water Reactors, Xingjie Peng (Tsinghua Univ/Nuclear Power Institute of China), Kan Wang (Tsinghua Univ), Qing Li (Nuclear Power Institute of China)

8:25 a.m.

A Least-Squares Method Based on Coupling Coefficients for Core Power Distribution Monitoring in Pressurized Water Reactors, Xingjie Peng (Tsinghua Univ), Kan Wang (Tsinghua Univ), Qing Li (Nuclear Power Institute of China)

8:50 a.m.

Core Thermal-Hydraulics Analyses of the Molten Salt Fast Reactor (MSFR) in Nominal Conditions, P. R. Rubiolo, A. Laureau, E. Merle-Lucotte, M. Brovchenko, D. Heuer (LPSC-IN2P3-CNRS / UJF / Grenoble INP)

9:15 a.m.

Control Assembly Modeling with the Nodal Equivalence Theory in Sodium-Cooled Fast Reactor, Woong Heo, Yonghee Kim (KAIST), Sang Ji Kim (KAERI)

9:40 a.m.

Incorporation of Random Noise into Rossi-alpha Technique, Chidong Kong, Jiwon Choe (Ulsan Natl Inst Sci Tech), Eunki Lee (Korea Hydraulic & Nuclear Power Corporation), Deokjung Lee (Ulsan Natl Inst Sci Tech)

10:05 a.m.

3D Monte Carlo-Based Depletion of Control Rods for a Small PWR Core, Nicholas Luciano, P. Eric Collins, G. Ivan Maldonado (Univ of Tennessee)

10:30 a.m.

Parametric Study to Capture the Skin Effect in PWR Control Rod Depletion, P. Eric Collins, Nicholas Luciano, G. Ivan Maldonado (Univ of Tennessee)

10:55 a.m.

Eigenfunction Expansion of the Space-Time Dependent Neutron Survival Probability, R. J. Kamm (SNL), A. K. Prinja (Univ of New Mexico)

CODES AND STANDARDS COMPLIANCE FOR NEW NUCLEAR PLANT CONSTRUCTION—PANEL

Sponsored by OPD

Session Organizer and Chair: Peter J. Shaw (Westinghouse Electric Corp)

EMPIRE BALLROOM

8:00 a.m.

Codes and standards for the construction and operation of new nuclear plants have represented a consistent struggle for the industry. Many of these have been in long standing with industry experience backing the application of the items such as the ASME code. New codes are representing new challenges to the industry. As new technology is developed and applied in both new construction and operation, the codes and their interpretations must keep pace. The benefits of standardization and the international programs promoting standardization will be presented.

PANELISTS:

- Travis McKinney (Westinghouse)
- David Teraro (NRC)

TRANSPORT METHODS: GENERAL

Sponsored by MCD

Session Organizer: Brian C. Franke (SNL)

Chair: Allan B. Wollaber (LANL)

CAPITOL ROOM

8:00 a.m.

Monte Carlo Importances in the Presence of Space and Energy Self-Shielding, S. C. Wilson, R. N. Slaybaugh (Bechtel Marine Propulsion Corporation)

WINTER MEETING TECHNICAL SESSIONS BY DAY: TUESDAY

8:25 a.m.

Improved Convergence Rates in Implicit Monte Carlo Simulations Through Stratified Sampling, Alex R. Long (*Oregon State Univ*), Ryan McClarren (*Texas A&M*)

8:50 a.m.

Residual Monte Carlo with Discrete Scattering Angles in the 1-D Transport Equation, Brian C. Franke (*SNL*), Don E. Bruss, Jim E. Morel (*Texas A&M*)

9:15 a.m.

Flux and Reaction Rate Kernel Density Estimators in OpenMC, Timothy P. Burke (*Univ of Michigan*), Brian C. Kiedrowski (*LANL*), William R. Martin (*Univ of Michigan*)

9:40 a.m.

Bandwidth Sensitivity for Kernel Density Estimated Mesh Tallies, Kerry L. Dunn, Paul P. Wilson (*Univ of Wisconsin, Madison*)

10:05 a.m.

MCNP5 vs. KDE: Direct Method for Mesh Tally Comparisons, Kerry L. Dunn, Paul P. H. Wilson (*Univ of Wisconsin, Madison*)

10:30 a.m.

Stability Analysis of Burnup Calculations, Jeffery D. Densmore, Daniel F. Gill, David P. Griesheimer (*BAPL*)

10:55 a.m.

2-D/3-D Coupling Between the Method of Characteristics and Discrete Ordinates, Mitchell T. H. Young, Benjamin Collins, William Martin (*Univ of Michigan*)

11:20 a.m.

Application of Analytic Slowing-Down Kernel for MOC-MC Hybrid Method, Hyunsuk Lee, Deokjung Lee (*UNIST*)

INSTRUMENTATION AND CONTROLS FOR NUCLEAR POWER PLANTS

Sponsored by HFICD

Session Organizer: Sacit M. Cetiner (*ORNL*)

Chair: H. M. Hashemian (*AMS*)

EMBASSY ROOM

8:00 a.m.

Accurate Uncertainty Quantification to Support Online Sensor Calibration Monitoring, Jamie Coble, Guang Lin (*PNNL*), Brent Shumaker (*AMS*), Hash Hashemian (*Analysis and Measurement Services*), Pradeep Ramuhalli (*PNNL*)

8:25 a.m.

Preliminary Development of Sensor for In Situ DNB Margin Measurement, Jordan L. Thompson, Thomas E. Diller, Alan A. Kornhauser (*Virginia Tech*)

8:50 a.m.

EDF Experience and Criteria for Assignment of Automation Functions, Cécile Reboul-Salze, François Chériaux (*EdF R&D*), Rémy Delhomme, Alexander-John Wigg (*EDF SEPTEN*)

9:15 a.m.

On Enhancing Risk Monitors for Advanced Small Modular Reactors, Jamie Coble, Garill Coles, Ryan Meyer, Pradeep Ramuhalli (*PNNL*)

9:40 a.m.

Technical Needs for Prognostic Health Management of Passive Components in Advanced Small Modular Reactors, Ryan M. Meyer, Pradeep Ramuhalli (*PNNL*), Leonard J. Bond (*Iowa State Univ*), Jamie B. Coble, Evelyn H. Hirt (*PNNL*)

10:05 a.m.

Instrumentation and Control Research for Small Modular Reactors, H. M. Hashemian (*AMS*)

10:30 a.m.

Nuclear Process Vector Analysis Simulator, Kaylyn McCoy, Tatjana Jevremovic (*Univ of Utah*)

10:55 a.m.

Design of the Instrumentation and Control for the ITER Tokamak Cooling System, Kofi Korsah, Bill De Van (*ORNL*), David Ashburn, Brad Crotts, Steve Black, Michael Smith, Jerry Broadway (*AREVA Federal Services*)

11:20 a.m.

Cyber Security of Nuclear Instrumentation and Control Systems: Overview of the IEC Standardization Activities, Leroy Hardin (*NRC*), L. Pietre-Cabacedes (*EDF SEPTEN*), Edward L. Quinn (*Technology Resources*)

STEPPING STONES IN NEUTRON ACTIVATION ANALYSIS AND 75 YEARS OF NUCLEAR FISSION—PANEL

Sponsored by BMD; cosponsored by IRD

Session Organizer and Chair: Rolf L. Zeisler (*NIST*)

FORUM ROOM

8:00 a.m.

Georg Hevesy and Hilde Levi reported on the new method of activation analysis in 1936, before the nuclear fission of heavy elements was discovered in 1938 by Lise Meitner, Otto Hahn, Fritz Strassmann, and Otto Robert Frisch. However, the method of neutron activation analysis (NAA) was not used much before strong neutron sources became available, first reported in 1949 by Harrison Brown and Edward Goldberg using the neutron pile at the Argonne National Laboratory. In the 1950s NAA progressed with the increasing availability of research reactors; a particular milestone 55 years ago was the commissioning of the prototype for the TRIGA nuclear reactor (TRIGA Mark I) on May 3, 1958, in San Diego. By the early 1960s, NAA was an accepted method for highly sensitive single- and multi-element determinations in many applications. This panel reviews the growth of NAA and the corresponding efforts at NIST, which were paralleled with 50+ years of development and operation of its research reactor.

PANELISTS:

- Richard M. Lindstrom (*NIST*)
- James T. Tanner (*FDA, retired*)
- W. Dennis James (*Texas A&M*)
- Robert R. Greenberg (*NIST*)

APPLICATION OF NEUTRON ACTIVATION ANALYSIS TO ENVIRONMENTAL MATERIALS AND STUDIES, all invited

Sponsored by BMD; cosponsored by IRD

Session Organizer: Kelly P. Grogan (*NIST*)

Chair: Steven R. Biegalski (*Univ of Texas*)

FORUM ROOM

9:35 a.m.

Analytical Applications of Delayed Neutron Activation Analysis, Kelly P. Grogan, Donna J. O'Kelly (*NIST*)

10:00 a.m.

An Analytical Bias in European Legislation for Mercury in CFLs, Georg Steinhauser (*Colorado State Univ*)

10:25 a.m.

The Role of Instrumental Neutron Activation for SI Traceability in the Determination of Perchlorate, Rabia Oflaz, Lee L. Yu (*NIST*)

10:50 a.m.

Characterization of Italian Tile Samples Using Comparative Neutron Activation Analysis, A. M. Johnsen, C. B. Durrant, K. Ünlü (*Penn State*)

Note: This session will immediately follow the preceding session, which will begin at 8:00 a.m.

MODELING AND SIMULATION

Sponsored by NISD

Session Organizer: Tunc Aldemir (*Ohio State*)

Chair: Diego Mandelli (*INL*)

CABINET ROOM

8:00 a.m.

VETA: Program for Severe Accident Source Term Calculations in CANDU, V. Khotylev, A. Bujor (*Canadian Nucl Safety Comm*)

8:25 a.m.

Simulation of Loss of Flow Accident in an Integral Pressurized Water Reactor by NK/TH Coupling Approach, Salah Ud-Din Khan (*King Saud Univ*), Shahab Ud-Din Khan (*Chinese Academy of Sciences*), Minjun Peng (*Harbin Engineering Univ*)

8:50 a.m.

Mitigation BDA with Ultimate Response Guideline Analysis of Lungmen ABWR Using TRACE, B. H. Lee, Tsung-Sheng Feng, J. R. Wang, H. P. Chou (*Natl Tsing Hua Univ*)

9:15 a.m.

Dynamic PRA: an Overview of New Algorithms to Generate, Analyze and Visualize Data, D. Mandelli, C. Smith, C. Rabiti, A. Alfonsi, R. Youngblood (*INL*), V. Pascucci, B. Wang, D. Maljovec (*Univ of Utah*), P. T. Bremer (*LLNL*), T. Aldemir, A. Yilmaz, D. Zamalieva (*Ohio State*)

9:40 a.m.

An Assessment of Low Probability Containment Failure in a Long-Term Station Blackout Using Dynamic PRA, Acacia Brunett, Richard Denning, Tunc Aldemir (*Ohio State*)

10:05 a.m.

Branch and Bound Algorithm Applied to Discrete Dynamic Event Trees, Joseph Nielsen (*INL*), Akira Tokuhiko, Robert E. Hiromoto (*Univ of Idaho*)

10:30 a.m.

Thresholding Strategies for Dynamic Event Tree Online Labeling with Hidden Markov Models, Daniya Zamalieva, Alper Yilmaz, Tunc Aldemir (*Ohio State*)

10:55 a.m.

Nonlinear Time-Domain Seismic Response Modeling of NPPs Considering Soil-Structure Interactions, Abdollah Shafieezadeh, Jieun Hur (*Ohio State*)

SHIELDING PROBLEMS FOR FUSION DEVICES

Sponsored by RPSD; cosponsored by FED

Session Organizer and Chair: Arkady Serikov (*KIT*)

COUNCIL ROOM

8:00 a.m.

ITER Related Neutronics Calculations with ATTILA Computer Code, P. V. Subhash (*ITER-india, Institute for Plasma Physics*), Russell Feder (*PPPL*), Shrichand Jakhar (*Inst Plasma Research*), Sajal Thomas (*ITER-india, Institute for Plasma Research*), Deepak Aggarwal (*Inst Plasma Research*)

8:25 a.m.

Progressive Steps Towards Integral Nuclear Assessments for Fusion Devices, L. El-Guebaly (*FTI*), invited

8:50 a.m.

Neutronics Analysis of the ITER In-Vessel Viewing System, Andrew Turner (*CCFE*), Raul Pampin, Adrian Puiu (*Fusion for Energy*)

9:15 a.m.

The Status of USITER Diagnostic Port Plug Neutronics Analysis Using Attila, Russell Feder (*PPPL*), Mahmoud Youssef (*UCLA*), Jonathan Klabacha (*PPPL*), invited

9:40 a.m.

Neutronic Challenges for the Estimation of Shut-Down Dose Rates in ITER Ports, A. Serikov (*KIT*), L. Bertalot (*ITER Organization*), U. Fischer (*KIT*), S. Pak, A. Suarez (*ITER Organization*), R. Villari (*Associazione EURATOM-ENEA sulla Fusione*)

WINTER MEETING TECHNICAL SESSIONS BY DAY: TUESDAY

10:05 a.m.

Overview of Experimental Benchmarking of Shutdown Dose Rate Calculations in Fusion Devices, Rosaria Villari, Maurizio Angelone (*ENEA CR Frascati, UT FUS TECN*), Paola Batistoni (*EFDA - JET, Culham Science Centre*), Ulrich Fischer (*KIT-Euratom*), Luigino Petrizzi (*European Commission, DG Research & Innovation K5*), invited

10:30 a.m.

Shielding Analysis for High Flux Test Module Activated in IFMIF, Keitaro Kondo, Ulrich Fischer, Arkady Serikov (*KIT*), invited

10:55 a.m.

Development of Super Monte Carlo Calculation Program SuperMC 2.0, Yican Wu, Jing Song (*Institute of Nuclear Energy Safety Technology, Chinese Academy of Sciences*), invited

11:20 a.m.

Shielding for Gamma Rays from Activated Water in ITER, Michael Loughlin (*ITER*), invited

11:45 a.m.

Implementation, Benchmarking, and Application of R2S-ACT: An Open-Source, Mesh-Based, Rigorous 2-Step Activation Workflow, Elliott D. Biondo, Eric Relson, Andrew Davis, Paul P. H. Wilson (*Univ of Wisconsin, Madison*), invited

COMPUTATIONAL MODELING

Sponsored by MSTD

Session Organizer: Kenneth J. Geelhood (*PNNL*)

Chair: Chaitanya S. Deo (*Georgia Tech*)

SENATE ROOM

8:00 a.m.

FAST: A Multidimensional Multiphysics Fuel Model Based on Commercial Finite-Element Software, Andrew Prudil (*Royal Military College of Canada*), Brent Lewis (*Univ of Ontario Inst of Tech*), Paul Chan (*Royal Military College of Canada*)

8:25 a.m.

Irradiation of Lithium-Intercalated Graphite to Produce Betavoltaic Batteries, A. R. Pace, M. D. Sinclair, M. T. Bernards, P. J. Pinhero (*Univ of Missouri, Columbia*), A. K. Wertsching (*Univ of Idaho*)

8:50 a.m.

Simulation of Fracture in Irradiated Iron Using Molecular Dynamics, Vijay Subramanian, Raman P. Singh (*Oklahoma State University*), Hongbing Lu (*University of Texas at Dallas*)

9:15 a.m.

Constitutive Model Development for Alloy 617 Under High Temperature Multiaxial Loading, Shahriar Quayyum, Tasnim Hassan (*NCSU*)

9:40 a.m.

Constitutive Modeling of High Temperature Uniaxial Responses of Alloy 617, P. G. Pritchard (*NCSU*), L. Carroll (*INL*), T. Hassan (*NCSU*)

10:05 a.m.

Experiment-Based Validation and Uncertainty Quantification of Coupled Multi-Scale Plasticity Models, Garrison Stevens, Sez Atamturktur (*Clemson Univ*), Ricardo Lebensohn (*LANL*)

COMPUTATIONAL THERMAL HYDRAULICS—I

Sponsored by THD

Cochairs: Brian G. Woods (*Oregon State Univ*), David Aumiller (*Bechtel Bettis*)

CONGRESSIONAL A

8:00 a.m.

Comparison between CFD Analysis and Experimental Data for Flow in a 5×5 Rod Bundle with Spacer-Grids, Peng Yuan, Jin Yan, Yiban Xu, Zeses Karoutas (*Westinghouse*)

8:25 a.m.

CFD Simulation of Fibrous Debris Blockage for a 4 Loop Westinghouse Plant, Yiban Xu, Jin Yan, Peng Yuan (*Westinghouse*), Robert A. Brewster (*CD-adapco*), Zeses Karoutas (*Westinghouse*)

8:50 a.m.

Development of Advanced Analysis Tools for Interface Tracking Simulations, Jun Fang, Aaron M. Thomas, Igor A. Bolotnov (*NCSU*)

9:15 a.m.

Interface Tracking Simulation of Air Bubble Growth and Detachment in a Water Domain, Stephen M. Palzewicz, Igor A. Bolotnov (*NCSU*)

9:40 a.m.

Interface Tracking Study of Bubble/Wall Interaction, Sameer S. Vhora (*NCSU*), Silvina Cancelos (*University of Puerto Rico at Mayaguez*), Igor A. Bolotnov (*NCSU*)

10:05 a.m.

Simulation of Particle Behaviors in the Pipe Flow, Shin K. Kang, Yassin A. Hassan (*Texas A&M*)

10:30 a.m.

Prediction of Pressure Drop and Heat Transfer Around Flow Obstructions, B. M. Waite, D. R. Shaver (*RPI*), M. Z. Podowski (*RPI*)

10:55 a.m.

Multidimensional Modeling and Simulation of Supercritical CO₂ Compressor, Farhad Behafarid, Michael Z. Podowski (*RPI*)

11:20 a.m.

A Lattice Boltzmann Method Based Thermal-Hydraulics Simulation Tool for Analyses of Nuclear Reactor Transients—PRATHAM, Emilian L. Popov, Prashant K. Jain, Abhijit S. Joshi (*ORNL*)

Thermal Hydraulics: General—I

Sponsored by THD

Session Organizer: Elia Merzari (ANL)

Cochairs: Stephen M. Bajorek (NRC), Robert Martin (B&W)

Congressional B

8:00 a.m.

Effect of Material and Additives on CHF for IVR-ERVC Strategy, Hae Min Park, Yong Hoon Jeong (KAIST)

8:25 a.m.

Simple and Combined Cycle Power Conversion with Natural Gas Co-Firing, for Mobile PB-FHR, Charalampos Andreades, Per Peterson (Univ of California, Berkeley)

8:50 a.m.

Accident Analysis of Fukushima Daiichi NPP Unit-1 by SAMPSON Code, Masanori Naitoh, Hiroaki Suzuki, Karin Hirakawa (The Institute of Applied Energy)

9:15 a.m.

Melt Progression Analysis of TEPCO's Fukushima Daiichi Unit 3 by the SAMPSON Code, Marco Pellegrini, Hideo Mizouchi, Hiroaki Suzuki, Masanori Naitoh (The Institute of Applied Energy)

9:40 a.m.

Residual Heat Removal System Performance Estimation of DSFR with TRACE Code, Andong Shin, Yong Won Choi, Moo-Hoon Bae (KINS)

10:05 a.m.

Validation of a MATLAB Code Developed for DRACS Thermal Performance Evaluation, Q. Lv, I. Kim, X. Sun, R. N. Christensen, T. E. Blue (Ohio State), G. Yoder (ORNL), D. Wilson (Univ of Pittsburgh), P. Sabharwall (INL)

10:30 a.m.

Fluid-Structure Interactions of a Single Flexible Cylinder in Axial Flow, Oren Breslouer, Elias Balaras, Philippe Bardet (The George Washington Univ)

10:55 a.m.

Generation of View Factors for RELAP5 Using MCNP, Huali Wu, Sunil S. Chirayath, Yassin A. Hassan (Texas A&M)

11:20 a.m.

Feasibility Study of FAil-safe Simple Economical SMR (FASES) System, Ho Sik Kim, Hee Cheon No (KAIST)

Kent W. Hamlin Memorial Session—The Best of CONTE 2013—Panel

Sponsored by ETWDD

Session Organizer and Chair: Jane A. LeClair (Excelsior Coll)

Governor's Boardroom

8:00 a.m.

The Conference on Nuclear Training and Education (CONTE) is "An International Forum on Nuclear Training and Education

and Workforce Issues Facing a Renewed Nuclear Energy Option." As the current workforce retires and the staffing needs emerge with new plant construction, training and qualification of a new workforce will be the critical path to meeting this vital renewed nuclear energy option. This session will present the best papers from CONTE 2013.

Panelists

- Filling the Critical Nuclear Quality System Workforce Gap, Robert Collins (Aiken Technical College)
- The Gulf Nuclear Energy Infrastructure Institute, Alexander Solodov (Khalifa Univ)
- Use of MELCOR in Monticello Simulator, Joseph Yarbrough (Xcel Energy)
- New Nuclear Plants—Interactive 3D Is the Most Effective Path to Mastery, Michael Lerg (GSE Systems, Inc.)
- The Affective Domain in Nuclear Training, Audrey Cate (INPO)

The Innovations in Fuel Cycle Research Awards Program—A Student Competition

Sponsored by ETWDD

Session Organizer: Cathy S. Dixon (West Texas A&M Univ)

Chair: Andrew R. Griffith (DOE)

Calvert Room

8:00 a.m.

Hot Wire Needle Probe for In-Reactor Thermal Conductivity Measurement, Joshua E. Daw, Joy L. Rempe, Darrell L. Knudson (INL)

8:25 a.m.

Neptunium Sorption on Graphite Under Potential Environmental Conditions, C. Keith, M. Kalagorgevich, R. Springs, G. S. Cerefice (UNLV)

8:50 a.m.

Adaptive Femtosecond Laser-Induced Breakdown Spectroscopy of Uranium, P. Ko, K. C. Hartig, J. P. McNutt, R. B. D. Schur, T. W. Jacomb-Hood, I. Jovanovic (Penn State)

9:15 a.m.

Direct Dissolution and Electrochemical Study of Cerium in Ionic Liquid, Janelle Droessler, John Kinyanjui, Beatriz Martinez, David Hatchett, Ken Czerwinski (UNLV)

9:40 a.m.

A Nonlinear Ultrasonic Technique for Radiation Damage Characterization in RPV Steel, Kathryn H. Matlack, Jin-Yeon Kim (Georgia Tech), James J. Wall (EPRI), Jianmin Qu (Northwestern Univ), Laurence J. Jacobs (Georgia Tech)

10:05 a.m.

U.S. Chemical Safety Board Reports and Operational Safety Performance Measures for Nuclear Chemical Facilities, Lyndsey Fyffe (Vanderbilt Univ), James A. Hutton (DOE), James H. Clarke, Steven Krahn (Vanderbilt Univ)

WINTER MEETING TECHNICAL SESSIONS BY DAY: TUESDAY

SPECIAL SESSION: SEISMIC SAFETY ISSUES IN JAPAN AFTER THE ACCIDENT AT FUKUSHIMA DAIICHI NPP—ON THE RISKS FOR FAULTS IN BEDROCK

DIPLOMAT BALLROOM

10:00 a.m.

In Japan, some utilities have been in conflict with Nuclear Regulation Authority (NRA) over seismic safety issues after the accident at the Fukushima Daiichi NPP. One of the most controversial topics is the capability of fault displacement under critical facilities. Old faults and fractures in bedrocks without recent activities had been regarded as incapable before 2011, but the unexpected disasters and accidents in 2011 urged NRA to examine such incapable structures in a manner that seems to be overly conservative and deterministic. NRA also ratified new 2013 safety standards based on this manner. Since it is not always possible to demonstrate the absence of recent activity on structures in rocks, NRA tends to conclude them as capable, and then new standards require shutdown of the facility. The utilities study the structures in great detail and try to argue against NRA. However, NRA experts maintain the capability for their belief in perfect safety, lack of enough expertise in seismic safety, and distrust of the utilities. This situation also affects the arguments on strong ground shaking from floating earthquake sources. This session will share the understanding of ongoing seismic safety assessment in Japan and search for substantial measures to achieve seismic safety from fault displacement from uncertain sources under critical facilities. Any suggestions to incorporate rational judgments into such issues and aggregate engineering and scientific approaches are welcomed.

MODERATOR:

Neil Wilmshurst (EPRI)

PANELISTS:

- Dr. Nilesh Chokshi (*Deputy Director, Division of Site Safety and Environmental Analysis, NRC*)
- Koji Okumura (*Hiroshima University*)

TUESDAY, NOVEMBER 12, 2013, 1:00 P.M.

RECENT DEVELOPMENTS IN NUCLEAR SCIENCE AND ENGINEERING EDUCATION

Sponsored by ETWDD

Session Organizer: John S. Bennion (*GE Hitachi Nuclear*)

Chair: Denis E. Beller (*UNLV*)

REGENCY BALLROOM

1:00 p.m.

Development of the UNLV Graduate Education Program in Nuclear Criticality Safety Engineering, Denis Beller, Charlotta Sanders, Fred Hua (*UNLV*)

1:25 p.m.

The Nuclear Education and Training Program at University of California Irvine, Mikael Nilsson, George Miller, A. J. Shaka (*Univ of California, Irvine*)

1:50 p.m.

Curriculum Development on Nuclear Reactor Instrumentation and Controls (I&C), Belle R. Upadhyaya (*Univ of Tennessee*), Alireza Haghghat (*Virginia Tech*), Clayton Atchley (*Univ of Tennessee*), Nathan Roskoff (*Virginia Tech*)

2:15 p.m.

Workforce Development for Government Research, Development, Testing and Evaluation Programs, T. J. Rosener (*Tasc, Inc.*), D. Simmons (*Defense Threat Reduction Agency*)

2:40 p.m.

Developing a Successful Online Nuclear Engineer Technology Degree, Adrian M. Skinner (*Excelsior Coll*)

3:05 p.m.

Nuclear Industry Meets National Cybersecurity Challenges, Jane LeClair, Sherly Abraham, Adrian Skinner (*Excelsior Coll*)

3:30 p.m.

The Science of Nuclear Materials: Developing Technical Literacy Among Nuclear Policy Professionals at The George Washington University, C. L. Cahill, G. Feldman, W. J. Briscoe, D. B. Shaw (*George Washington Univ*)

REACTOR PHYSICS ANALYSIS METHODS—I

Sponsored by RPD; cosponsored by MCD

Session Organizer: Mark D. DeHart (*INL*)

Chair: Sedat Goluoglu (*Univ of Florida*)

AMBASSADOR BALLROOM

1:00 p.m.

Behavior of Higher Order Fission Source Distribution in Monte-Carlo Calculations, Akio Yamamoto, Kotaro Sakata, Tomohiro Endo (*Nagoya Univ*)

1:25 p.m.

Uncertainty and Correlation Estimation of Reload Safety Parameters of PWR Using Random Sampling Method, Tomoaki Watanabe, Tomohiro Endo, Akio Yamamoto (*Nagoya Univ*), Yasuhiro Kodama, Yasunori Ohoka, Tadashi Ushio (*Nuclear Fuel Industries Ltd.*)

1:50 p.m.

Development of Research on the Boundary Flow Response Method, Zhihong Liu, Zhaoyuan Liu, Jing Zhao (*Tsinghua Univ*)

2:15 p.m.

Verification of the CANDUCS-DEFENS Code System Through the CANDU Initial Core Calculation, Eun Hyun Ryu, Yong Mann Song, Joo Hwan Park (*KAERI*)

2:40 p.m.

Implementation of Perturbation Based Monte Carlo Criticality Search in RMC, Zeguang Li, Kan Wang, Jingkang Deng (*Tsinghua Univ*)

3:05 p.m.

A Method for Detector Response De-Convolution When Using Feynman's Variance-To-Mean Technique, William L. Myers, Sheila G. Melton (*LANL*)

LATTICE PHYSICS BENCHMARKING

Sponsored by RPD

Session Organizer: Matthew A. Jessee (*ORNL*)

Chair: Mark D. DeHart (*INL*)

AMBASSADOR BALLROOM

3:35 p.m.

VERA Benchmark Calculations Using the SCALE-Polaris Lattice Physics Code, Matthew A. Jessee, William A. Wieselquist, Mark L. Williams, Kang Seog Kim (*ORNL*)

4:00 p.m.

Benchmark Experiments in Water-Moderated Fully-Reflected 6.90% Enriched UO₂ Fuel Rod Lattices with a Fuel-to-Water Volume Ratio of 0.52, Gary A. Harms, Allison D. Miller, John T. Ford (*SNL*)

Note: This session will immediately follow the preceding session, which will begin at 1:00 p.m.

OPERATIONS AND POWER: GENERAL—I

Sponsored by OPD

Session Organizer: Belle R. Upadhyaya (*Univ of Tennessee*)

Chairs: Igor A. Bolotnov (*NCSU*), Sasan Etemadi (*Neutronics*)

EMPIRE BALLROOM

1:00 p.m.

A Study on an Applicability of the MHR-50/100is for a General Industrial Use as a Hydrogen Production Source, Isao Minatsuki, Yorikata Mizokami (*Mitsubishi Heavy Industries, Ltd.*)

1:25 p.m.

Fiberoptics-Based Sensing for Real-Time 3D In-Core Monitoring in NGNP/VHTR Environments, Pavel V. Tsvetkov (*Texas A&M*)

1:50 p.m.

Performance Evaluation of Boron Meter Based on MCNPX Model, Hyunsuk Lee, Sooyoung Choi (*UNIST*), Si Hwan Kim (*Hanyang University*), Sekojean Lyou (*Users Inc.*), Deokjung Lee (*UNIST*)

2:15 p.m.

Improving Fuel Assemblies with Axial Relocation, N. Wilson, Z. Koyn, A. Kriha, B. Horstman, C. Lanceri, A. Rader (*Purdue Univ*), invited

2:40 p.m.

Maximizing the US Nuclear Fleet with Mega Uprates – Projecting Concrete Lifetimes, Jacob DeWitte, Neil Todreas, Ron Ballinger (*MIT*)

3:05 p.m.

Numerical Investigation of a Supercritical CO₂ Centrifugal Compressor, Seong Gu Kim, Jekyoung Lee, Yoonhan Ahn, Jeong Ik Lee (*KAIST*), Yacine Addad (*Khalifa University of Science, Technology & Research*), Bockseong Ko (*SAMJIN Industrial Co., Ltd.*)

PUBLIC PERCEPTION OF RISK AND NUCLEAR:

ADDRESSING THE “PERCEPTION GAP”–PANEL

Sponsored by FCWMD

Session Organizer and Chair: Steve E. Skutnik (*Univ of Tennessee*)

DIPLOMAT BALLROOM

1:00 p.m.

The difference between actual risk and how risks are perceived by the public is common to many aspects of everyday life, creating what experts term the “perception gap.” Such a gap is well-known to exist with respect to public perception of nuclear technologies. What can nuclear professionals do to narrow this perception gap with the public between real and perceived risks? This panel of experts will discuss the root of the nuclear perception gap, including looking at the factors that drive perceived risk, best practices by industry, and ways in which nuclear professionals can better communicate with the public.

PANELISTS:

- David Ropeik (*Ropeik & Assoc*)
- John Mueller (*Ohio State*)
- Margaret Harding (*4Factor Consulting*)
- Dan Kahan (*Yale Univ*)
- Andy Karam (*NYPD*)
- Jean Goodwin (*Iowa State Univ*)
- Leonard Greenberger (*Potomac Communications Group*)

USE OF CAD IN NUCLEAR SHIELDING AND

CRITICALITY CODES

Sponsored by MCD

Session Organizer and Chair: Paul Hulse (*Sellafield Ltd.*)

CAPITOL ROOM

1:00 p.m.

Meteor, a CAD-Based Criticality Code, Keith Searson, Fabrice Fleutor, David Dewar, Robert Black (*Sellafield Ltd.*)

1:25 p.m.

FluDAG and Other Implementations of the DAGMC Toolkit, Paul P. H. Wilson, Andrew Davis, Julie Zachman, Kerry L. Dunn (*Univ of Wisconsin, Madison*)

WINTER MEETING TECHNICAL SESSIONS BY DAY: TUESDAY

1:50 p.m.

Comparison Between Unstructured Mesh Capabilities of DAGMCNP and MCNP6, Chelsea A. D'Angelo, Paul P. Wilson, Andrew Davis (*Univ of Wisconsin, Madison*)

2:15 p.m.

On The Benefits of Mesh Partnerships: Attila - MCNP6 Integration, Ian M. Davis (*Transpire, Inc.*), Roger L. Martz (*LANL*)

2:40 p.m.

MCAM 5.2: Advanced Interface Program for Multiple Nuclear Analysis Codes, Shengpeng Yu, Yican Wu (*Institute of Nuclear Energy Safety Technology, Chinese Academy of Sciences*)

3:05 p.m.

Extended and Improved Capabilities of the CAD to MC Geometry Conversion Tool McCad, L. Lu, U. Fischer, P. Pereslavtsev (*KIT*), invited

3:30 p.m.

Applications of the McCad Geometry Conversion Tool in Fusion Technology—ITER, IFMIF and DEMO, U. Fischer, D. Grosse, L. Lei, K. Keitaro, P. Pereslavtsev, A. Serikov, V. Steffen (*KIT*)

ADVANCES IN DECONTAMINATION TECHNOLOGIES AND TECHNIQUES—PANEL

Sponsored by DESD

Session Organizer and Chair: Douglas A. Davis (*DAD Solutions*)

EMBASSY ROOM

1:00 p.m.

Significant progress has been made in the field of D&D utilizing advanced technologies and techniques that reduce cost, schedule, the amount of waste generated, and exposure to workers and the public. This panel will discuss improved characterization, planning, and waste minimization techniques and will highlight technologies utilizing remote handling and decontamination methodologies to advance D&D.

PANELISTS:

- Andy Lombardo (*Perma-Fix Environmental Services*)
Advanced Characterization Technologies to Support D&D
- Jeff Bradford (*UCOR*)
Waste Minimization Techniques at Large Department of Energy Weapons Facilities D&D Projects
- Laurie Judd (*NuVision Engineering*)
Remote Handling Techniques Utilized in Decommissioning Projects in the U.S. and Abroad
- Richard Grondin (*Perma-Fix Environmental Services*)
Decontamination and Recycle of Precious Metals from Nuclear Power Plants

INVESTIGATIONS OF BIOLOGICAL TRACE ELEMENTS BY ACTIVATION ANALYSIS—SESSION HONORING A.

CHATT, all invited

Sponsored by BMD; cosponsored by IRD

Session Organizer and Chair: Rolf L. Zeisler (*NIST*)

FORUM ROOM

1:00 p.m.

Total and Species-Specific Elemental Analysis by Neutron Activation, A. Chatt (*Dalhousie Univ*)

1:25 p.m.

Determination of Mercury by RNAA in Sectioned Hair Samples of Tycho Brahe: He Was Not Murdered by Mercury, Jan Kučera, Jan Kameník, Vladimír Havránek (*Nuclear Physics Institute ASCR, Czech Republic*)

1:50 p.m.

Neutron Activation Analysis of Japanese Green Tea for Trace Elements, M. Fukushima (*Ishinomaki Senshu University*)

2:15 p.m.

Developing Tomato Reference Materials for Food Safety Analysis, Elisabete A. De Nadai Fernandes, Márcio A. Bacchi, Gabriel A. Sarries (*Univ of Sao Paulo*)

2:40 p.m.

Uncovering Errors in NAA Measurements Using Internal Consistency Checks, Robert R. Greenberg, Richard M. Lindstrom (*NIST*)

3:05 p.m.

Applications of INAA for Arsenic and Iodine in FDA Regulated Products, David L. Anderson, Sean D. Conklin (*US FDA*)

3:30 p.m.

Arsenic Speciation in Candidate Fish Tissue Reference Materials, Vivian M. O. Carioni (*Universidade Federal do ABC*), Cassiana S. Nomura (*Universidade de Sao Paulo*), Lee L. Yu (*NIST*), Rolf Zeisler (*NIST*)

NUCLEAR INSTALLATIONS SAFETY: GENERAL

Sponsored by NISD

Session Organizer and Chair: Matthew R. Denman (*SNL*)

CABINET ROOM

1:00 p.m.

Deep Borehole Disposal of Nuclear Waste, Bill W. Arnold, Patrick V. Brady, Robert J. MacKinnon (*SNL*)

1:25 p.m.

Source Term Evaluation for a Spent Fuel Reprocessing Facility, Nathan E. Bixler, David Louie, Fred Gelbard (*SNL*)

1:50 p.m.

A Basic Principles Approach for Determining Radionuclide Aerosol Releases from Accidental Explosions in Reprocessing Facilities, Fred Gelbard, Alexander L. Brown, David L. Louie, Chengcheng Feng, Nathan E. Bixler (*SNL*)

2:15 p.m.

Overview of LWR Severe Accident Research Activities at the Karlsruhe Institute of Technology, A. Miassoedov, M. Steinbrück, W. Tromm (*KIT*)

2:40 p.m.

Consequence Assessment Under Primary Cover Gas Leakage Accident for CLEAR-I, Qian Guo, Yican Wu (*Institute of Nuclear Energy Safety Technology, Chinese Academy of Sciences*)

3:05 p.m.

A Feasibility Study for Electronic SAMG, S. H. Park, J. H. Kim, K. I. Ahn (*KAERI*)

3:30 p.m.

A Concrete Process of the Risk-Informed and Defense-in-Depth Oriented Plant Design Approach, Hidetsugu Morota, Takashi Sakihama, Hiroshi Sano (*MHI Nuclear Engineering Company, Ltd*)

COMPUTATIONAL TOOLS FOR RADIATION PROTECTION AND SHIELDING

Sponsored by RPSD

Session Organizer and Chair: Michael Lorne Fensin (*LANL*)

COUNCIL ROOM

1:00 p.m.

Transport Modeling of High-Energy Neutron Transversal Through Tissue Equivalent Medium, Joseph Grice, S. K. Aghara (*Univ of Massachusetts*), Honglu Wu (*NASA Johnson Space Center*)

1:25 p.m.

A Geant4 Implementation of a Novel Single-Event Monte Carlo Method for Electron Dose Calculations, D. A. Dixon, A. K. Prinja (*Univ of New Mexico*), B. C. Franke (*SNL*)

1:50 p.m.

MCNP6 Cosmic & Terrestrial Background Particle Fluxes—Release 3, G. W. McKinney, T. A. Wilcox, G. E. McMath, N. A. Lines (*LANL*)

2:15 p.m.

How to Use the MCNP6 Background Source Capability, M. L. Fensin, G. W. McKinney (*LANL*)

2:40 p.m.

Monte Carlo, Hybrid and Deterministic Calculations for the Activation Neutronics of the Swiss LWRs, Manuel Pantelias [*Swiss National Cooperative for the Disposal of Radioactive Waste (Nagra)*], Scott Mosher (*ORNL*)

3:05 p.m.

PYNE Progress Report, Anthony Scopatz (*Univ of Chicago*), Elliott D. Biondo (*Univ of Wisconsin, Madison*), Carsten Brachem (*Technische Universität Dresden*), John Xia (*Univ of Chicago*), Paul P. Wilson (*Univ of Wisconsin, Madison*)

FUEL CLADDING AND CORROSION IN NUCLEAR SYSTEMS

Sponsored by MSTD

Session Organizer: Kenneth J. Geelhood (*PNNL*)

Chair: Yong Yang (*Univ of Florida*)

SENATE ROOM

1:00 p.m.

Tensile Strength of Tubular SiC-SiC Composites for Use in Nuclear Cladding, G. M. Jacobsen, H. E. Khalifa, C. A. Back (*General Atomics*)

1:25 p.m.

Precipitate Characterization in Two ODS Steels Using Synchrotron XRD of Consolidated Samples and Cu-K α XRD of Precipitate Extractions, J. Goddard, D. Kaoumi (*Univ of South Carolina*)

1:50 p.m.

Effect of Neutron Irradiation on Select MAX Phases, Darin J. Tallman (*Drexel Univ*), Elizabeth Hoffman (*SRNL*), El'ad Caspi (*Drexel Univ*), Gordon Kohse (*MIT*), Robert L. Sindelar (*SRNL*), Michel W. Barsoum (*Drexel Univ*)

2:15 p.m.

Nuclear Applications of 58Ni-Depleted Nickel Alloys and Superalloys, D. A. Bloore, C. W. Forsberg (*MIT*)

2:40 p.m.

High Temperature and Pressure Stress Corrosion Cracking System, Yi Xie, Jinsuo Zhang (*Ohio State*)

HIGHLIGHTS OF NURETH-15—PAPERS/PANEL

Sponsored by THD

Chair: Nusret Aksan (*Univ of Pisa*)

CONGRESSIONAL A

PAPERS:

1:00 p.m.

General View of the NURETH-15 Conference, F. D'Auria, N. Aksan (*Univ of Pisa*), A. Petruzzi (*Nuclear Research Group of San Piero a Grado*)

1:25 p.m.

The Conduct of NURETH-15 Pre-Workshops and Post-Workshops, Tomasz Kozlowski (*Univ of Illinois*), Alessandro Petruzzi (*Univ of Pisa*), invited

WINTER MEETING TECHNICAL SESSIONS BY DAY: TUESDAY

PANEL DISCUSSION:

1:50 p.m.

The Fifteenth International Topical Meeting on Nuclear Reactor Thermal-Hydraulics (NURETH-15) was held in Pisa from May 12–17, 2013. The objectives of this panel session (at the 2013 ANS Winter Meeting) is to underline some initiatives undertaken during the NURETH-15 Conference other than to summarize the key outcomes. The ideas to have NURETH Fellows and the consideration of specific Student and Poster Sessions are among those initiatives.

PANELISTS:

- N. Aksan (*University of Pisa*)
- N. Todreas (*MIT*)
- Y. Hassan (*Texas A&M*)
- T. Kozlowski (*University of Illinois at Urbana-Champaign*)
- C. Frepoli (*Westinghouse*)
- B. Martin (*B&W*)
- H. Ninokata (*Polytechnic of Milan*)

THERMAL-HYDRAULICS CODE VERIFICATION AND VALIDATION—I

Sponsored by THD

Cochairs: Nam T. Dinh (*NCSU*), Jeffrey W. Lane (*Zachry Nuclear Energy*)

CONGRESSIONAL B

1:00 p.m.

Analysis of a DVI Line Break Accident at the ATLAS Facility, HeeRan Ko, Taewan Kim (*KEPCO International Nuclear Graduate School*)

1:25 p.m.

Steady State and Transient Thermal-Hydraulic Analysis of PHWR Using COBRA-3C/RERTR, A. Hussain, M. Subian Aljohani (*King Abdulaziz Univ*), S. Usman (*Univ of Science and Technology*)

1:50 p.m.

Analysis of Blowdown Event in Small Modular Natural Circulation Integral Test Facility, Brian Wolf, Matt Kizerian, Scott Lucas (*NuScale Power, LLC*)

2:15 p.m.

Predictions of Subcooled Boiling Steam-Water Flows with the IATE in TRACE-T, Matthew Bernard, Ted Worosz, Seungjin Kim (*Penn State*), Chris Hoxie (*NRC*)

2:40 p.m.

Thermal-Hydraulic Transient Code-to-Code Benchmark in a Simplified EBR-II Geometry, R. Zanino, R. Bonifetto (*Politecnico Di Torino*), A. Del Nevo (*Enea Brasimone*), E. Martelli (*Universita' Di Roma*), L. Savoldi Richard (*Politecnico Di Torino*)

3:05 p.m.

Assessment of TRACE Fuel Rod Model Using IFA-431 Experiments, Yu Chiang (*National Tsing Hua Univ*), Hao-Tzu Lin, Jong-Rong Wang (*Institute of Nuclear Energy Research, Atomic Energy Council*), Chunkuan Shih (*National Tsing Hua Univ*)

TUESDAY, NOVEMBER 12, 2013, 4:30 P.M.

TPC SPECIAL SESSION: ENVIRONMENTAL CONSIDERATIONS IN LONG-TERM ENERGY POLICY, INCLUDING THE ROLE OF NUCLEAR ENERGY AND ITS CONTRIBUTION TO REDUCING GREENHOUSE GAS EMISSIONS

Session Organizers: Linda H. Hansen, Yoon Chang (*ANL*),

Jan van Erp (*Consultant*)

Cochairs: Linda H. Hansen (*ANL*), William Hannum (*Retired*)

REGENCY BALLROOM

4:30 p.m.

This session will review the primary requirements for a long-term energy policy and the role that nuclear will have to play in a steady-state mode. Among these requirements are economic viability, sustainability, reduction in greenhouse gas emissions, and material resource availability. Special emphasis will be given to discussing the role that fast-neutron-fission technology can play and will have to play. The limitations of so-called “renewable” (primarily wind and solar) to deliver base-load electric energy economically and reliably to the electric grid will be discussed.

PANELISTS:

- Charles Till (*Consultant*)
- James Hansen (*Columbia Earth Institute, NASA-ret.*)
- Pete Lyons (*DOE*)
- Nobuo Tanaka (*Institute of Energy Economics, Japan*)
- Daniel Meneley (*UOIT, Canada*)
- Tom Blees (*author “Prescription for the Planet”*)
- Joseph Shuster (*author “Beyond Fossil Fools”*)

TUESDAY, NOVEMBER 12, 2013, 7:00 P.M.

UPDATE ON DOE IRP PROJECT: INTEGRAL INHERENTLY SAFE LIGHT WATER REACTOR (I2S-LWR)—PANEL

Sponsored by RPD

Session Organizer and Chair: Bojan Petrovic (*Georgia Tech*)

EMBASSY ROOM

7:00 p.m.

Under the DOE IRP Sponsored Project, a multidisciplinary team led by Georgia Tech, with team members from academia, industry, national laboratory, and international, is developing a concept of an Integral Inherently Safe Light Water Reactor (I2S-LWR). This panel will start with an introductory presentation summarizing the concept, objectives, and work performed so far, followed by a Q&A discussion.

PANELISTS:

- Paolo Ferroni (*Westinghouse*)
- Matthew Memmott (*Westinghouse*)
- Ali Haghghat (*Virginia Tech*)
- Belle Upadhyaya (*Univ of Tennessee*)
- Representative from Univ of Michigan to be determined

BEST OF DD&R 2012—PANEL

Sponsored by DESD

Session Organizer and Chair: Sue Aggarwal (*NMNT International*)

Chair: Nadia Glucksberg (*Haley and Aldrich*)

SENATE ROOM

7:00 p.m.

The purpose of this session is to provide a forum at an ANS National meeting for some of the best papers presented at the DD&R 2012 Topical Meeting at the ANS 2012 Annual Meeting. The papers will cover a range of subjects and have been judged by their peers as the most interesting and timely papers presented at the Topical Meeting.

PANELISTS:

- Jim McKenna (*AECL*)
Decommissioning Projects at the Chalk River Laboratories
- Dustin Miller (*Univ of Illinois*)
TRIGA Research Reactor
- William J. (Bill) Szymczak (*ZionSolutions*)
Dry Cask Storage Project

THERMAL-HYDRAULICS CODE VERIFICATION AND VALIDATION—II

Sponsored by THD

Cochairs: Philippe M. Bardet (*George Washington Univ*), Theron Marshall (*GE Hitachi Nuclear Energy*)

CONGRESSIONAL A

7:00 p.m.

Uncertainty Analysis Using Beta-Bayesian Approach in Nuclear Safety Code Validation, Chengcheng Deng (*Tsinghua Univ*), Weili Liu (*China Institute of Atomic Energy*), Huajian Chang (*Tsinghua Univ*), Qiao Wu (*Oregon State Univ*)

7:25 p.m.

Phenomena Identification and Ranking Matrix (PIRM) for the Pebble Bed Fluoride-Salt-Cooled, High-Temperature Reactor (PB-FHR), Raluca O. Scarlat, Nicolas Zweibaum, Per F. Peterson (*Univ of California, Berkeley*)

7:50 p.m.

Model Development for Nuclear Fuel Assembly Response to Seismic Loads, Noah Weichselbaum, Morteza Rahimi-Abkenar, Oren Breslouer, Elias Balaras, Majid Manzari, Philippe M. Bardet (*George Washington Univ*)

8:15 p.m.

SCRED Database to Support BEPU Licensing, A. Petruzzi (*Nuclear Research Group of San Piero a Grado*), F. D'Auria (*Univ of Pisa*), A. Kovtonyuk (*Nuclear Research Group of San Piero a Grado*)

8:40 p.m.

MARS-KS Code Analysis for Integral Effect Test of the Feedwater Line Break Accident with PAFS (Passive Auxiliary Feedwater System), Byoung-Uhn Bae, Seok Kim, Yu-Sun Park, Kyoung-Ho Kang (*KAERI*)

EXPERIMENTAL THERMAL HYDRAULICS—II

Sponsored by THD

Cochairs: John C. Luxat (*McMaster Univ*), Kurshad Muftuoglu (*GE Hitachi Nuclear Energy*)

CONGRESSIONAL B

7:00 p.m.

Visual Study of Interfacial Structures in a Rectangular Channel, Matthew Williams, Yang Liu (*Virginia Tech*)

7:25 p.m.

Air-Water Bubbly Flows Across a 90-Degree Vertical-Upward Elbow, Mohan Yadav, Ted Worosz, Seungjin Kim (*Penn State*), Stephen M. Bajorek, Kirk Tien (*NRC*)

7:50 p.m.

Local Turbulence Characterization in Subcooled Flow Boiling, Carlos E. Estrada-Perez, Junsoo Yoo, Yuan Di, Yassin A. Hassan (*Texas A&M*)

8:15 p.m.

A Method of Identifying Overlapping Elliptical Bubbles in Two Phase Flow Images, Yuan Di, Yassin A. Hassan, Carlos E. Estrada-Perez, Junsoo Yoo (*Texas A&M*)

8:40 p.m.

Shadowgraphy Measurement for Isothermal Two Phase Bubbly Flow, Abelardo Hernandez-Rubio, Junsoo Yoo, Carlos Estrada-Perez, Yassin A. Hassan (*Texas A&M*)

9:05 p.m.

Identification of Critical Issues for the Visual Measurement of Fundamental Bubble Parameters in the Subcooled Boiling Flow, Junsoo Yoo, Carlos E. Estrada-Perez, Abelardo H. Rubio, Yassin A. Hassan (*Texas A&M*)

FLOOD HAZARD ASSESSMENTS AND FLOOD PROTECTION ISSUES FOLLOWING THE FUKUSHIMA

DAIICHI EVENTS—PANEL

Sponsored by DESD

Session Organizers and Cochairs: Thomas Nicholson (NRC), James Bollinger (DOE)

CABINET ROOM

7:00 p.m.

Following the extreme natural events at Fukushima Daiichi in March 2011, regulatory agencies (e.g., U.S. NRC and the Canadian Nuclear Safety Commission) have worked with their licensees to address hazards from natural events (e.g., flooding and seismic hazards). Significant efforts are being spent to address flood-causing events and processes at nuclear facilities. These flooding mechanisms include local intense precipitation, hurricane and storm surges, tsunamis, riverine flooding, dam and levee failures, and combined events. The panel discussion will focus on strategies and methods being used to evaluate flood hazards and their consequences. Flood protection will also be discussed to understand possible mitigative means to reduce the consequences. Information sources and hydrometeorologic flood analysis methods will be solicited from the panelists.

INDUSTRY PANELISTS:

- Jim Riley (*Nuclear Energy Institute*): NEI principal engineer responsible for managing the regulatory aspects of flooding lessons learned from the March 2011 accident at Fukushima Daiichi
- Joe Gasper (*OPPD*); Joe Bellini (*AMEC/Exelon*); Heather Smith Sawyer (*BWSC*): NEI Task Force members
- Ray Schneider (*Westinghouse*)

U.S. NRC PANELISTS:

- Nilesh Chokshi: Deputy Director, DSEA/NRO/NRC and Team Leader for the Japanese Lessons Learned Directorate (JLD) Task Force on Flooding and Seismic Events
- Christopher Cook: Chief, RHMB/DSEA/NRO/NRC, JLD's Recommendations 2.1 on Flooding and 2.3 on Flood Protection
- Michelle (Shelby) Bensi: Civil Engineer, DSEA/NRO/NRC, "Guidance for Performing the Integrated Assessment for Flooding," JLD-ISG-2012-05 (ADAMS ML ML12311A214)
- Jacob Philip: Senior Geotechnical Engineer, ETB/DRA/RES/NRC, Flood Protection at Nuclear Power Plants

WEDNESDAY, NOVEMBER 13, 2013

7:30 a.m. - 5:00 p.m. Meeting Registration

8:00 a.m. - 10:00 a.m. Spouse/Guest Hospitality

8:00 a.m. - 11:45 a.m. 2013 ANS Winter Meeting: Technical Sessions

- Advanced Modeling and Simulation in Reactor Physics
- New Nuclear Construction Around the World—Status Report—Panel
- Nuclear Fuel Cycle Resources, Sustainability, Reuse, and Recycle
- Computational, Uncertainty Quantification, and Sensitivity Analysis Methods
- Fuel Cycle Options: A Physics Perspective
- Illicit Trafficking Radiation Sensor Assessment Program (ITRAP 10) Highlights
- Nuclear Plant I&C Modernization
- Human Factors Engineering for Nuclear Plants
- Aerospace Nuclear Science and Technology: General
- Computational Thermal Hydraulics—II
- Data and Analysis in Nuclear Criticality Safety—II
- Young Professional Thermal-Hydraulics Research Competition

1:00 p.m. - 4:00 p.m. 2013 ANS Winter Meeting: Technical Sessions

- Reactor Physics Analysis Methods—II
- Current Assessment of Objectives and Outcomes of 10 CFR Part 52—Panel
- Fuel Cycle and Waste Management: General
- FY2012 Recent Nuclear Criticality Safety Program Technical Accomplishments
- Nuclear Fuel
- Applications of Activation Analysis in Historical Research—Session Honoring J. M. Blackman
- Reactor Physics: General—III
- Best of ICRS/RPSD 2012
- Environmental Sciences: General

WINTER MEETING TECHNICAL SESSIONS BY DAY: WEDNESDAY

WEDNESDAY, NOVEMBER 13, 2013 (continued)

1:00 p.m. - 4:00 p.m. 2013 ANS Winter Meeting:

Technical Sessions (cont.)

- Implementation of Successful Nuclear Education Programs in the United States—Panel
- Enrollment Diversity and Nuclear Engineering—Panel
- Thermal-Hydraulics Reactor Analyst 2.0—Panel

4:00 p.m. - 6:30 p.m. 2013 ANS Winter Meeting:
Technical Sessions

- Nuclear Fission: 75-Year Anniversary—Panel
- Operations and Power: General—II
- Advances in Aqueous Separation Methods and Waste Treatment
- Computational Thermal Hydraulics—III
- Mathematical Modeling: General
- Accelerator Applications: General
- Research at the NRC
- Modeling and Transport of Radioactive Materials in the Environment
- Cutting Edge Techniques in Education, Training, and Distance Learning
- General Two-Phase Flow
- Developments and Applications of Neutron Beam Techniques
- Innovations in Radiation Detectors: New Designs, Improvements, and Applications

WEDNESDAY, NOVEMBER 13, 2013, 8:00 A.M.

ADVANCED MODELING AND SIMULATION IN REACTOR PHYSICS

Sponsored by RPD

Session Organizer: Alexander Stanculescu (INL)

Chair: Tunc Aldemir (Ohio State)

AMBASSADOR BALLROOM

8:00 a.m.

Domain Decomposition of Combinatorial Geometry Monte Carlo Transport Code JMCT, Gang Li, Baoyin Zhang, Li Deng (*Institute of Applied Physics and Computational Mathematics*)

8:25 a.m.

Tallying Scheme of JMCT—A General Purpose Monte Carlo Particle Transport Code, ShangGuan DanHua, Li Gang, Deng Li, Zhang BaoYin (*Institute of Applied Physics and Computational Mathematics*)

8:50 a.m.

Development of a Monte Carlo Based PBR Fuel Management Code, Topan Setiadipura, Toru Obara (*Tokyo Inst Technol*)

9:15 a.m.

K-Effective Calculation in SuperMC 2.0 and Benchmarking, Jing Song, Guangyao Sun (*Institute of Nuclear Energy Safety Technology, Chinese Academy of Sciences*)

9:40 a.m.

Estimation of Self-Shielding Effect on Uncertainty of Neutronics Characteristics Using Random Sampling Method and Continuous-Energy Slowing-Down Calculation, Akio Yamamoto, Shunsuke Sato, Tomohiro Endo (*Nagoya Univ*)

10:05 a.m.

Improved Methods for Calculating SFR Feedback Reactivity Coefficients, C. Bouret, L. Buiron, G. Rimpault (*CEA*)

10:30 a.m.

Rossi- α Distribution Calculation Using CUDA Parallel Computing Platform, A. Talamo, Y. Gohar (*ANL*)

10:55 a.m.

Structural Analysis of IBR-2 Based on Continuous Time Canonicity, Marina Demeshko, Takashi Washio (*Osaka Univ*), Yuriy Pepyolyshev (*Joint Institute of Nuclear Research*)

NEW NUCLEAR CONSTRUCTION AROUND THE WORLD—STATUS REPORT—PANEL

Sponsored by OPD

Session Organizer and Chair: Edward L. Quinn (*Technology Resources*)

EMPIRE BALLROOM

8:00 a.m.

This panel provides the latest information on the status and progress in new nuclear construction around the world including government, regulatory, owner-operator, and vendor input. Speakers address the latest in key issues that have impact on the selection of new designs and the status of construction activities.

PANELISTS:

- John Kelly (*DOE*)
- David Matthews (*NRC*)
- Doug Walters (*NEI*)
- Other panelists to be determined

NUCLEAR FUEL CYCLE RESOURCES, SUSTAINABILITY, REUSE AND RECYCLE

Sponsored by FCWMD

Session Organizer and Chair: Guillermo Daniel DelCul (ORNL)

DIPLOMAT BALLROOM

8:00 a.m.

Towards a Theory of Stakeholder Acceptance for New Nuclear Projects, Michael Golay, Adam D. Williams, Ekaterina Paramonva (MIT)

8:25 a.m.

Feasibility Study to Combine Chemical Decladding and Zirconium Recovery and Recycle, E. D. Collins, G. D. Del Cul, B. B. Spencer, R. R. Brunson, J. A. Johnson (ORNL)

8:50 a.m.

Thorium-Uranium Fuel Cycle Based on Fusion-Driven Subcritical Reactor and PWR, Liangzhi Cao, Yunli Xie, Hongchun Wu, Youqi Zheng, Yunzhao Li (Xi'an Jiaotong Univ)

9:15 a.m.

Preliminary Neutronics Analysis of GDT-Based Spent Fuel Burner Blanket, Chao Lian, Yican Wu (Institute of Nuclear Energy Safety Technology, Chinese Academy of Sciences)

9:40 a.m.

Accelerator-Driven Subcritical Fission in a Molten Salt Core: Destroy the Transuranics in UNF, Peter McIntyre, Saeed Assadi, Justin Comeaux, Joshua Kellams, Karie Melconian, Nathaniel Pogue, Akhdiyov Sattarov, Elizabeth Sooby, Pavel Tsvetkov (Texas A&M)

10:05 a.m.

Safety and Reliability in Accelerator-Driven Subcritical Fission in a Molten Salt Core, Peter McIntyre, Saeed Assadi, James Gerity, Jesse Johns, Nathaniel Pogue, Akhdiyov Sattarov, Pavel Tsvetkov (Texas A&M)

10:30 a.m.

Preliminary Neutronics Analysis of a Spallation Target for Transmutation, Zijia Zhao, Yican Wu (Institute of Nuclear Energy Safety Technology, Chinese Academy of Sciences)

10:55 a.m.

High-Resolution Modeling of Energy Systems to Assess the Viability of Advanced Nuclear Technology Development, Anne-Perrine Avrin, Gang He, Daniel M. Kammen (Univ of California, Berkeley)

11:20 a.m.

Risk Assessment of Spent Nuclear Fuel Transportation: Transportation Accidents, Ruth F. Weiner, Douglas J. Ammerman (SNL)

COMPUTATIONAL, UNCERTAINTY QUANTIFICATION, AND SENSITIVITY ANALYSIS METHODS

Sponsored by MCD

Session Organizer: Brian C. Franke (SNL)

Chair: Daniel F. Gill (BAPL)

CAPITOL ROOM

8:00 a.m.

K-Eigenvalue Sensitivity Coefficients to Legendre Scattering Moments, Brian C. Kiedrowski (LANL)

8:25 a.m.

A New Method for Calculating Generalized Response Sensitivities in Continuous-Energy Monte Carlo Applications in SCALE, Christopher M. Perfetti, Bradley T. Rearden (ORNL)

8:50 a.m.

Physics-Based Uncertainty Quantification for the ZrHx Thermal Scattering Law, Weixiong Zheng, Ryan G. McClarren (Texas A&M)

9:15 a.m.

Unified Monte Carlo: Evaluation, Uncertainty Quantification and Propagation of the Prompt Fission Neutron Spectrum, Michael E. Rising, Patrick Talou (LANL), Anil K. Prinja (Univ of New Mexico)

9:40 a.m.

Investigating the Impact of Angular Vectorization on KBA Performance, R. Joseph Zerr (LANL)

10:05 a.m.

Scalar Flux Convergence of the PN Transport Solution in an 1D Infinite Medium, B. D. Ganapol (Univ of Arizona), Y. Wang, R. C. Martineau, F. N. Gleicher (INL)

10:30 a.m.

Exploratory Development of Multi-Physics Reduced Order Modeling II, Bassam A. Khuwaileh, Hany S. Abdel-Khalik (NCSS)

FUEL CYCLE OPTIONS: A PHYSICS PERSPECTIVE

Sponsored by RPD

Session Organizer and Chair: Andrew Worrall (ORNL)

EMBASSY ROOM

8:00 a.m.

Options Development for Comprehensive Fuel Cycle Analysis, R. A. Wigeland (INL), T. A. Taiwo, T. K. Kim (ANL), M. Todosow (BNL), invited

8:25 a.m.

Thorium-Fueled Breed and Burn Core with Low Enriched Uranium Support, F. Heidet, T. K. Kim, T. A. Taiwo (ANL)

8:50 a.m.

Reactor Physics Analysis of Thorium Fuel Cycles Using Molten Salt Reactors, J. J. Powers, A. Worrall, J. C. Gehin, T. J. Harrison (ORNL), E. E. Sunny (Univ of Michigan)

9:15 a.m.

Assessment of Once-Through Thorium Fuel Cycles in Subcritical Systems Driven by a Fusion-Fission Hybrid, M. Fratoni (*Penn State/LLNL*), J. Powers (*ORNL*), B. Halsey (*LLNL*), E. Sunny (*ORNL*), J. Blink, H. Greenberg, M. Sutton (*LLNL*)

9:40 a.m.

Analysis of an Accelerator Driven System with Natural Uranium Fuel, H. Ludewig, A. Aronson, N. R. Brown, G. Raitses, M. Todosow (*BNL*)

10:05 a.m.

Multiple-Stage Fuel Cycle Options Based on Subcritical Systems, F. Heidet, T. K. Kim, T. A. Taiwo (*ANL*)

10:30 a.m.

Reactor Physics Analysis of HWR Fuel Cycle Options, R. J. Ellis (*ORNL*)

10:55 a.m.

Simplified Fuel Cycle Cost Model Applied to LCSR Parametric Studies, Spenser Lewis, Bojan Petrovic, (*Georgia Tech*)

11:20 a.m.

Feasibility of Fueling the Current PWR Fleet with Thorium-Based MOX, L. P. Tucker, A. B. Alajo, S. Usman (*Missouri Univ Sci Technol*)

ILLICIT TRAFFICKING RADIATION SENSOR ASSESSMENT PROGRAM (ITRAP 10) HIGHLIGHTS

Sponsored by RPSD

Session Organizer and Chair: Raymond Klann (*ANL*)

FORUM ROOM

8:00 a.m.

The Illicit Trafficking Radiation Assessment Program+10 (ITRAP+10)—Overview, C. Hautala-Bateman, L.Y. Murphy (*U.S. Department of Homeland Security DNDO*), M. Marin-Ferrer (*Joint Research Center Nuclear Security Unit*)

8:25 a.m.

ITRAP+10 and Operational Testing of Personal Radiation Detectors, D. Weidinger (*SETA*), R. Pelfrey (*SRNL*), C. Hautala-Bateman, L. Y. Murphy (*U.S. Department of Homeland Security DNDO*)

8:50 a.m.

Standards Testing of Hand-Held Radionuclide Identification Systems, J. J. Ressler, D. Trombino (*LLNL*), P. Dimmerling, A. Kriss, M. Demboski (*PNNL*), L. Murphy (*U.S. Department of Homeland Security DNDO*)

9:15 a.m.

Comparisons of Hand-Held and Pager Radioisotope Identification Systems for Inspections, J. Koglin (*LLNL, Penn State*), S. Sangiorgio (*LLNL*), L. Murphy (*U.S. Department of Homeland Security DNDO*)

9:40 a.m.

ITRAP+10 Testing of Gamma and Neutron Search Devices, R. Klann, M. Mannino, L. Brandt (*ANL*), L. Murphy (*U.S. Department of Homeland Security DNDO*)

10:05 a.m.

Nuclear Security Applications of Mobile Radiation Detection, M. Iyer (*SETA*), C. Ward (*ORNL*), L. Y. Murphy (*U.S. Department of Homeland Security DNDO*)

10:30 a.m.

ITRAP+10 Spectroscopic Radiation Portal Monitor Testing, A. L. Sallaska, L. Pibida, H. Chen-Mayer, A. Heckert (*NIST*), C. Ward (*ORNL*), L. Y. Murphy (*U.S. Department of Homeland Security DNDO*)

10:55 a.m.

Replacing Copper Shielding with Steel for Weapons Grade Plutonium: A Look at Spectral and Physical Differences, J. N. Cantrell (*Univ of Tennessee*), T. E. Margrave (*ORNL*), L. Y. Murphy (*U.S. Department of Homeland Security DNDO*)

11:20 a.m.

Lessons Learned from Standards-Based Radiation Detector Testing, A. A. Kriss, M. J. Demboski (*PNNL*), K. Wright (*U.S. Department of Homeland Security DNDO*)

NUCLEAR PLANT I&C MODERNIZATION

Sponsored by HFICD

Session Organizer: Sacit M. Cetiner (*ORNL*)

Chair: Joseph G. Murray (*Lockheed Martin*)

CABINET ROOM

8:00 a.m.

Mitsubishi Experience on Digital I&C and Modernization, Yuichi Tanaka, Richard P. Samples, Shinji Kiuchi (*Mitsubishi Nuclear Energy Systems, Inc.*)

8:25 a.m.

Application of Piezo Electric Wafer Active Sensor for Health Monitoring in Nuclear Structure, Adrián E. Méndez Torres (*SRNL*), Victor Giurgiutiu, Mathieu Gresil, Bin Lin (*Univ of South Carolina*), Poh Sang-Lam (*SRNL*)

8:50 a.m.

Status of the Major Refurbishment and Digital Conversion of the University of Florida Training Reactor, Kelly A. Jordan, Katherin Goluoglu, Brian Shea (*Univ of Florida*)

9:15 a.m.

Human Factors Engineering Experience Applied to Human-System Interface Modernization, Luis Fernández Illobre, Pedro Trueba Alonso, Fernando Ortega Pascual (*Tecnatom*)

HUMAN FACTORS ENGINEERING FOR NUCLEAR PLANTS

Sponsored by HFICD

Session Organizer: Sacit M. Cetiner (*ORNL*)

Chair: Joseph A. Naser II (*EPRI*)

CABINET ROOM

WINTER MEETING TECHNICAL SESSIONS BY DAY: WEDNESDAY

9:45 a.m.

A Technical Skills Evaluation Method in Training for Nuclear Power Plant Operators, Ho-Bin Yim, Poong-Hyun Seong (*KAIST*)

10:10 a.m.

A Systematic Approach to Design the Automatic System's HSI: FWCS, Nuraslinda Anuar, Jonghyun Kim (*KINGS*)

10:35 a.m.

Proposal on Framework for Measurement of Workload of Operators in Advanced MCR, Seunghwan Kim, Yochan Kim, Wondea Jung (*KAERI*)

Note: This session will immediately follow the preceding session, which will begin at 8:00 a.m.

AEROSPACE NUCLEAR SCIENCE AND TECHNOLOGY:

GENERAL

Sponsored by ANSTD

Session Organizer: Martin B. Sattison (*INL*)

Chair: John Bess (*INL*)

COUNCIL ROOM

8:00 a.m.

Update on ^{241}Am Production for Use in Radioisotope Power Systems, Tim Tinsley, Mark Sarsfield (*National Nuclear Lab*)

8:25 a.m.

MEGAHIT: Megawatt Highly Efficient Technologies for Space Power and Propulsion Systems—Roadmap for HORIZON2020, Tim Tinsley (*National Nuclear Lab*), Elisa Cliquet Morneo (*Centre National d'Etudes Spatiales*)

8:50 a.m.

Analysis of Monte Carlo Transport Code—PHITS for Solar Particle Events Source, S. I. Sriprisan, S. K. Aghara (*Univ of Massachusetts Lowell*), R. C. Singleterry (*NASA, Langley*)

9:15 a.m.

Low Enriched Uranium Fuels in NERVA Type Nuclear Thermal Rockets, Paolo Venneri, Yonghee Kim (*KAIST*)

9:40 a.m.

A Potential NASA Research Reactor to Support NTR Development, Michael Eades (*Ohio State*), Harold Gerrish (*NASA*), Leroy Hardin (*NRC*)

COMPUTATIONAL THERMAL HYDRAULICS—II

Sponsored by THD

Cochairs: Emilio Baglietto (*MIT*), Paolo Ferroni (*Westinghouse*)

SENATE ROOM

8:00 a.m.

Thermal Stratification Modeling in Suppression Pool with GOTHIC 8.0, Ozkan Emre Ozdemir, Thomas L. George (*Zachry Nuclear Engineering, Inc.*)

8:25 a.m.

Multi-Physics Computational Models Development for Westinghouse PWRs, Jin Yan, Yiban Xu, Peng Yuan, Andrew Petrarca (*Westinghouse*), Robert Brewster (*CDadapco*), Zeses Karoutas (*Westinghouse*), Emilio Baglietto (*MIT*)

8:50 a.m.

Blow-Down Analysis Using Off-Set Fin Heat Exchanger with RELAP5-3D, Caleb Robison, Fatih Aydogan (*Univ of Idaho*)

9:15 a.m.

Steady State COMSOL Thermal-Hydraulics Models for ORNL's High Flux Isotope Reactor, Vaibhav Khane (*Missouri Univ Sci Tech, Rolla*), Prashant K. Jain (*ORNL*)

9:40 a.m.

Natural Circulation in HTGR Type System with Coolant Channels in Simplified Graphite-Fuel Matrix, Francisco I. Valentin, Hitesh Bindra, Masahiro Kawaji (*City College of New York*)

10:05 a.m.

Study of Two Particular Cases of Abnormal Heat Transfer Phenomena Occurring in a VHTR Reactor Core, Francisco I. Valentin, Ryan Anderson, Masahiro Kawaji (*City College of New York*)

10:30 a.m.

Numerical Study on the Crossflow Printed Circuit Heat Exchanger for Advanced Small Modular Reactors, Su-Jong Yoon (*INL*), Eung-Soo Kim (*Seoul Natl Univ*), Piyush Sabharwall (*INL*)

10:55 a.m.

Radial Nodalization Sensitivity in the Subchannel Code VIPRE-01, Michael S. Bradbury, Ruwan K. Ratnayake (*Babcock & Wilcox*)

DATA AND ANALYSIS IN NUCLEAR CRITICALITY

SAFETY—II

Sponsored by NCSD

Session Organizer and Chair: Allison D. Miller (*SNL*)

CONGRESSIONAL A

8:00 a.m.

A Doppler-Broadening Method for Generating Multi-Temperature Neutron Cross Section Libraries, Chong Chen (*Univ of Science and Technology of China*), Yican Wu (*Institute of Nuclear Energy Safety Technology, Chinese Academy of Sciences*)

8:25 a.m.

Temperature Sensitivity of Neutron Multiplication in Highly Enriched Uranium Solutions, K. E. Hollenbach, D. F. Hollenbach (*Spectra Tech Inc.*)

8:50 a.m.

Measurement of Prompt Fission Neutron Spectrum Using a Gamma Tagging Method, E. Blain, A. Daskalakis, Y. Danon (*RPI*)

9:15 a.m.

Prototype Fixed-Source Sensitivity Capability in MCNP6 Applied to Subcritical Thor Core Measurements, Brian C. Kiedrowski, Avneet Sood (*LANL*)

WINTER MEETING TECHNICAL SESSIONS BY DAY: WEDNESDAY

9:40 a.m.

Coupled Differential and Integral Data Analysis for Improved Uncertainty Quantification, Vladimir Sobes (*ORNL/MIT*), Luiz Leal (*ORNL*), Benoit Forget (*MIT*)

10:05 a.m.

Using Simulations to Determine the Energy Resolution Function of Neutron Time-of-Flight Experiments, A. Youmans, R. Bahran, E. Blain, A. Daskalakis, B. McDermott, S. Piela, N. Thompson, A. Wertz, Y. Danon (*RPI*), D. Barry, G. Leinweber, M. Rapp, R. Block (*Bechtel Marine Propulsion Corp*)

10:30 a.m.

Verification of MCNP5-1.60 and MCNP6.1 for Criticality Safety Applications, Forrest B. Brown, Brian C. Kiedrowski, Jeffrey S. Bull (*LANL*)

10:55 a.m.

A Revision to ANS-8.1 “Nuclear Criticality Safety in Operations with Fissionable Material Outside of Reactors,” Douglas G. Bowen (*LANL*), Nicholas W. Brown (*Nuclear Fuel Services, Inc.*)

YOUNG PROFESSIONAL THERMAL-HYDRAULICS

RESEARCH COMPETITION

Sponsored by THD

Cochairs: Rui Hu (*ANL*), Wade R. Marcum (*Oregon State Univ*)

CONGRESSIONAL B

8:00 a.m.

Sensitivity Study of Hypothetical Debris-Generated Core Blockage Scenarios, Rodolfo Vaghetto, Andrew Franklin, Yassin A. Hassan (*Texas A&M*)

8:25 a.m.

Characterization of the Laser-Imaged Natural Circulation (LINC) Facility at Oregon State University, S. S. Goodrich, W. R. Marcum (*Oregon State Univ*)

8:50 a.m.

Bubble Coalescence Control Development for Level Set Interface Tracking Method, Matthew L. Talley, Igor A. Bolotnov (*NCSU*)

9:15 a.m.

Scaling Study of the DCC Event in the HTTF Using RELAP5-3D/ ATHENA, Robert J. Aldridge, Brian G. Woods (*Oregon State Univ*)

9:40 a.m.

Experimental Interface Tracking Method and Gas Entrainment in Liquid Flows, Matthieu A. Andre, Philippe M. Bardet (*George Washington University*)

10:05 a.m.

Velocity Measurement Reconstruction in a Rod Bundle Using Particle Tracking Velocimetry, D. L. Reyes, E. E. Dominguez-Ontiveros, Y. A. Hassan (*Texas A&M*)

10:30 a.m.

Characterization of the OSU HMFTF Piping System, T. K. Howard, W. R. Marcum (*Oregon State Univ*)

10:55 a.m.

Air Test of the Coolant Distribution in a Two-Block Prismatic VHTR Model, Huhu Wang, Elvis Dominguez-Ontiveros, Yassin A. Hassan (*Texas A&M*)

11:20 a.m.

Fuel Rod in Axial Flow on Integral Effects Shake Table, Noah Weichselbaum, C. Sickel, D. Ly, S. Hussain, S. Wang, M. Rahimi Abkenar, M. Manzari, P. M. Bardet (*George Washington University*)

WEDNESDAY, NOVEMBER 13, 2013, 1:00 P.M.

REACTOR PHYSICS ANALYSIS METHODS—II

Sponsored by RPD; cosponsored by MCD

Session Organizer: Alexander Stanculescu (*INL*)

Chair: Mark D. DeHart (*INL*)

AMBASSADOR BALLROOM

1:00 p.m.

Hybrid Reduced Order Modeling Algorithms for Reactor Physics Calculations, Youngsuk Bang, Hany S. Abdel-Khalik (*NCSU*), invited, Mark Mills Award winner

1:20 p.m.

Utilizing CMFD in OPENMC to Estimate Dominance Ratio and Adjoint, Bryan R. Herman, Benoit Forget, Kord Smith (*MIT*)

1:40 p.m.

Generation of Kinetics Parameters Based on the PARCS Code, Moo-Hoon Bae, Yong Won Choi, Andong Shin, Namduk Suh (*KINS-Korea*)

2:00 p.m.

CALIBAN Measurements Near Delayed Critical Using Subcritical Measurement Methods, J. Hutchinson, B. Rooney, W. Myers, A. Sood, M. Smith-Nelson (*LANL*), N. Authier, A. Chapelle, P. Casoli, B. Richard (*CEA*)

2:20 p.m.

Lattice Boltzmann Method for Nuclear Reactor Physics, Hitesh Bindra (*City College of New York*)

2:40 p.m.

Determining the Equivalent Reactivity of a LSCR 2D Fuel Assembly and 3D Full Core Models, Spenser Lewis, Bojan Petrovic (*Georgia Tech*)

3:00 p.m.

Whole-Core Transport Calculation of Two-Dimensional Hexagonal HTGR Cores with Overlapping Local/Global (OLG) Iteration Framework, Han Jong Yoo, Muhammad Imron, Nam Zin Cho (*KAIST*)

3:20 p.m.

Application of Consistent Spatial Homogenization Method in Neutron Transport Theory to Pressurized Water Reactor, Saam Yasserli, Farzad Rahnema (*Georgia Tech*)

CURRENT ASSESSMENT OF OBJECTIVES AND OUTCOMES OF 10 CFR PART 52—PANEL

Sponsored by OPD

Session Organizer and Chair: N. Prasad Kadambi (*Consultants*)

Empire Ballroom

1:00 p.m.

The USNRC regulation, 10 CFR Part 52, was promulgated as regulatory reform to resolve safety and environmental issues early in licensing proceedings and to enhance the safety and reliability of nuclear power plants through standardization. This is a special session of invited speakers to address where we currently stand relative to accomplishing these objectives. The context for this assessment is that the regulatory process set forth in the regulation has been successfully used recently relative to two of its key provisions, namely, design certification and combined operating licensing. Yet, there appears to be a sentiment among key players in Small Modular Reactors (SMRs) space that the old 10 CFR Part 50 process is preferable. Considering that SMRs are looked upon as an extremely important feature of nuclear technology's future growth, the effectiveness of 10 CFR Part 52 relative to reducing regulatory uncertainty needs to be critically examined.

PANELISTS:

- David Matthews (*NRC*)
- Jerry Wilson (*Retired, NRC*)
- Robert Bishop (*Retired, NEI*)
- Amy Aughtman (*Southern Company*)
- Darrell Gardner (*Generation mPower*)

FUEL CYCLE AND WASTE MANAGEMENT: GENERAL

Sponsored by FCWMD

Session Organizer and Chair: Jack D. Law (*INL*)

DIPLOMAT BALLROOM

1:00 p.m.

Exploring Technology Choices Against Nuclear Energy Scenarios, Fiona Rayment, Kevin Hesketh, Robert Gregg (*National Nuclear Lab*), Gregg Butler (*Univ of Manchester*)

1:25 p.m.

A Real Options Evaluation of New Nuclear Generating Capacity Development Relative to New Coal-Fired Generating Capacity Development, William H. Wilson, Bonnie Canion, Franziska Klingberg, Eric Compher, Erich Schneider (*Univ of Texas, Austin*)

1:50 p.m.

Continental Seabed Disposal of Low-Level Waste: The Barge Waste Package, Aditi Verma, Charles W. Forsberg (*MIT*)

2:15 p.m.

Towards the Development and Application of Borehole Virtual Reality Simulation Tools, Nazar Lubchenko, Emilio Baglietto, Michael J. Driscoll (*MIT*)

2:40 p.m.

Optimizing Nuclear Waste Disposal: A Yucca Mountain Case Study, Benjamin Johnson, Jeff King, Alexandra Newman (*CSM*)

3:05 p.m.

Weld Residual Stress and Used Nuclear Fuel Canister Life Prediction, S. E. Ferry, Bradley Black, R. G. Ballinger (*MIT*), Sebastien Teyseyre (*BEA*)

3:30 p.m.

Effects of Operating and Design Variables on the Phases' Distribution Using Gamma Ray Computed Tomography (CT) of Spouted Beds for Coating TRISO Nuclear Fuel Particles, Neven Ali, Thaar Al-Juwaya, Muthanna H. Al-Dahhan (*Missouri Univ Sci Tech*)

FY2012 RECENT NUCLEAR CRITICALITY SAFETY

PROGRAM TECHNICAL ACCOMPLISHMENTS

Sponsored by NCSD

Session Organizer: Nichole Ellis (*Ellis Nuclear Engineering LLC*)

Chair: Gladys Udentia (*DOE*)

CAPITOL ROOM

1:00 p.m.

Godiva IV Critical Assembly Machine Reassembly and Startup, J. Goda, D. Hayes, R. Sanchez (*LANL*)

1:25 p.m.

Neutron Transmission, Capture, and Scattering Measurements at the Gaertner LINAC Center, Y. Danon, L. Liu, E. J. Blain, A. M. Daskalakis, B. J. McDermott, K. Ramic, C. R. Wendorff (*RPI*), D. P. Barry, R. C. Block, B. E. Epping, G. Leinweber, M. J. Rapp, T. J. Donovan (*Bechtel Marine Propulsion Corporation, KAPL*)

1:50 p.m.

MCNP Accomplishments for the Nuclear Criticality Safety Program, Brian C. Kiedrowski, Forrest B. Brown, Jeffrey S. Bull (*LANL*)

2:15 p.m.

Establishing a United States Nuclear Accident Dosimetry Laboratory, David P. Hickman, Jennifer G. Burch, Rebecca R. Hudson, Douglas P. Mcavoy, Gary W. Slavik, Carolyn T. Wong (*LLNL*), Rashelle D. Will (*Natl Security Tech LLC*)

2:40 p.m.

SCALE and AMPX Advancements to Support NCS Applications, B. T. Rearden, M. E. Dunn, D. Wiarda, C. Celik (*ORNL*), K. Bekar (*ORNL/UT-Battelle, LLC*), M. L. Williams, D. E. Peplow, C. M. Perfetti, J. P. Lefebvre (*ORNL*), F. Havluj (*Nuclear Research Institute at Husinec - Rež*), K. J. Dugan (*Texas A&M*)

3:05 p.m.

Summary of Recent Los Alamos Contributions to the Nuclear Criticality Safety Program, Robert C. Little, William L. Myers, A. C. Kahler, Jeffrey A. Favorite, Robert W. Margevicius (*LANL*)

NUCLEAR FUEL

Sponsored by MSTD

Session Organizer: Kenneth J. Geelhood (PNNL)

Chair: Robert J. Hanrahan (Nat'l Nuclear Security Administration)

EMBASSY ROOM

1:00 p.m.

Design and Predicted Behavior of UN-Kernel LWR TRISO Fuel, T. M. Besmann, M. K. Ferber, H. T. Lin (ORNL), B. Collin (INL)

1:20 p.m.

Characterization of Oxide Fuel Surface Chemistry with Atom Probe Tomography, Billy Valderrama, Hunter B. Henderson (Univ of Florida), Abdel-Raman Hassan (Purdue Univ), Jian Gan (INL), Anter El-Azab (Purdue Univ), Michele V. Manuel (Univ of Florida)

1:40 p.m.

Fabrication of UO₂ Pellets by an Advanced Sintering Technique, Ghatu Subhash, James Tulenko (Univ of Florida)

2:00 p.m.

Distribution and Thermal Properties of UO₂-CNT Ceramic Matrix Composites Fabricated by Spark Plasma Sintering (SPS), Andrew Cartas, Haitang Wang (Univ of Florida)

2:20 p.m.

Performance of U-Silicide Coated U-Mo Fuel Particle Dispersion in Al During Irradiation, Yeon Soo Kim (ANL), J. M. Park, H. J. Ryu (KAERI)

2:40 p.m.

An Investigation of U-Zr Alloy Phase Diagram Using In-Situ Heating Electron Diffractometry, Sangjoon Ahn, Sean M. McDevitt (Texas A&M)

3:00 p.m.

Formation Mechanism of Delta Phase in the As-cast U-10wt%Zr Alloy, Sandeep Irukuvarghula, Sean M. McDevitt (Texas A&M)

3:20 p.m.

Electron Microprobe Examination of Metallic Fuel for Minor Actinides Transmutation in Fast Reactor, S. Brémier, P. Pöml (European Commission, JRC), K. Inagaki (CRIEPI), L. Capriotti, D. Papaioannou (European Commission, JRC), V. V. Rondinella (EC-JRC-ITU), H. Ohta, T. Ogata (CRIEPI)

3:40 p.m.

Determination of Thermal Diffusivity of Irradiated, Layered Fuel Samples, Andrew M. Casella, Sarah R. Suffield, Douglas E. Burkes (PNNL)

APPLICATIONS OF ACTIVATION ANALYSIS IN HISTORICAL RESEARCH—SESSION HONORING J. M. BLACKMAN, all invited

Sponsored by BMD; cosponsored by IRD

Session Organizer: Rolf L. Zeisler (NIST)

Chair: Robert G. Downing (NIST)

FORUM ROOM

1:00 p.m.

Chemical Characterization by INAA of Obsidian Sources from SW Asia and the Arabian Peninsula, M. James Blackman (Smithsonian Institution)

1:25 p.m.

Mining the Maya: 50 Years of Data Generation and Interpretation, Ronald L. Bishop (Smithsonian Institution)

1:50 p.m.

Stepping into Some Pretty Big Shoes: Following in the Tradition of Jim Blackman in the Ancient Near East, Leah Minc (Oregon State Univ)

2:15 p.m.

Quantifying Ceramic Paste Standardization: A Case Study from Oaxaca, Mexico, Jeremias Pink (Oregon State Univ)

2:40 p.m.

Interaction Between Puebloan Villages from the West-Central to the Rio Grande Regions of New Mexico, William D. James, Suzanne L. Eckert (Texas A&M), Judith A. Habicht-Mauché (Univ of California, Santa Cruz)

3:05 p.m.

New Dendrochemical Findings for Pinus Nigra Trees Grown in the Mediterranean Region, Dağistan Şahin (NIST), Kenan Ünlü (Penn State), Peter I. Kuniholm, Charlotte Pearson (Univ of Arizona)

3:30 p.m.

Production Locations of Mesoamerican Plumbate Ware Identified by INAA and Confirmed by Archaeological Fieldwork, Hector Neff (California State University Long Beach)

REACTOR PHYSICS: GENERAL—III

Sponsored by RPD

Session Organizer: Alexander Stanculescu (INL)

Chair: Piero Ravetto (Politecnico Di Torino)

CABINET ROOM

1:00 p.m.

Monte Carlo Doppler Temperature Coefficients with Perturbation Theory, Matthew Gonzales (Univ of New Mexico), Brian Kiedrowski, Forrest Brown (LANL), Anil Prinja (Univ of New Mexico)

1:25 p.m.

Verification and Validation of MHI Nuclear Design Code System GalaxyCosmo-S, Kazuki Kirimura, Kazuya Yamaji, Shinya Kosaka, Hideki Matsumoto (Mitsubishi)

1:50 p.m.

Two Dimensional Calculations for Liquid Salt Cooled Reactors, Nathan George, Cole Gentry, Ondrej Chvala, G. Ivan Maldonado (Univ of Tennessee)

2:15 p.m.

Fuel Element Design and Analysis for Advanced Test Reactor Conversion to LEU Fuel, Mark D. DeHart, Michael A. Pope, David W. Nigg, R. Kirt Jamison, Sean R. Morrell (INL)

WINTER MEETING TECHNICAL SESSIONS BY DAY: WEDNESDAY

2:40 p.m.

Development of MHI Core Analysis Code Package Based on GalaxyCosmo-S, Shinya Kosaka, Kazuki Kirimura, Kazuya Yamaji, Hideki Matsumoto (*Mitsubishi*)

3:05 p.m.

Neutronic Performance of Accident Tolerant Fuels, Rachel A. Shapiro, Ian M. Younker, Massimiliano Fratoni (*Penn State*)

BEST OF ICRS/RPSD 2012, all invited

Sponsored by RPSD

Session Organizer: Arzu Alpan (*Westinghouse*)

Chair: Nolan E. Hertel (*Georgia Tech*)

COUNCIL ROOM

1:00 p.m.

Shielding and Activation Calculations for the FASTEF-MYRRHA ADS Design in the Subcritical Operation Mode, Anna Ferrari (*Helmholtz-Zentrum Dresden-Rossendorf*), Salvatore Di Maria (*ITN*), Massimo Sarotto (*ENEA*), Alexey Stankovskiy (*SCK-CEN*)

1:20 p.m.

A Tangible Augmented Reality System to Support Comprehension of Radiation Shielding, Ayako Yano (*Osaka Univ*), Hideki Tenzou, Shougo Yamashita, Kouhei Motoki (*Kagawa National College of Technology*)

1:40 p.m.

Measurement of Radioactive Fragment Production Excitation Functions of Lead by 400 MeV/u Carbon Ions, Tatsuhiko Ogawa (*JAEA*), M. N. Morev (*Science and Engineering Center for Nuclear and Radiation Safety*), T. Kosako (*Univ of Tokyo*)

2:00 p.m.

Analyses of TIARA Shielding Benchmark Experiments Using the FENDL-3 Library, Keitaro Kondo, Ulrich Fischer (*KIT*)

2:20 p.m.

MCNP Neutron Streaming Investigations from the Reactor Core to Regions Outside the Reactor Pressure Vessel for a Swiss PWR, Ben Volmert (*Nagra*), Elena Tamaseviciute (*ETH Zurich*), Manuel Pantelias (*Nagra*), Beat Bitterli (*NPP Goesgen*)

2:40 p.m.

Calculation System for Estimation of Decontamination Effect, Daiki Satoh, Kensuke Kojima, Akito Oizumi, Norihiro Matsuda, Hiroki Iwamoto, Teruhiko Kugo, Yukio Sakamoto, Akira Endo, Shigeaki Okajima (*JAEA*)

3:00 p.m.

Estimation of Surface Concentration of Radon Decay Products from Gamma Dose Rate Change After Rain, Jun Hirouchi, Shigekazu Hirao, Jun Moriizumi (*Nagoya Univ*), Atsuo Suzuki (*Shizuoka Prefectural Environmental Radiation Monitoring Center*), Hiromi Yamazawa (*Nagoya Univ*)

3:20 p.m.

Beta Ray Coincidence in Radioactivity Measurement of Mixed Radionuclide Samples, Yasuhiro Unno (*NIAIST*), Toshiya Sanami, Masayuki Hagiwara, Shinichi Sasaki (*KEK*), Akira Yunoki (*NIAIST*)

3:40 p.m.

Preliminary Study for Polygon-Surface Representation of ICRP Reference Phantoms, Yeon Soo Yeom, Min Cheol Han, Chan Hyeong Kim (*Hanyang University*)

4:00 p.m.

Extreme Solar Particle Event Radiation Exposures on Mars, Lawrence W. Townsend, Anne M. Adamczyk, Charles M. Werneth (*Univ of Tennessee*), Hanna M. Moussa (*Texas Tech University*), Jeremy P. Townsend (*Univ of Tennessee*)

4:20 p.m.

Evaluation of Radiation Levels and Comparison with PHITS Calculations for the BigRIPS Separator in Radioactive Isotope Beam Factory, Kanenobu Tanaka, Naohito Inabe, Koich Yoshida, Toshiyuki Kubo (*RIKEN Nishina Center*)

ENVIRONMENTAL SCIENCES: GENERAL

Sponsored by DESD

Session Organizer: Douglas A. Davis (*DESD Program Chair*)

Cochairs: Nadia Glucksberg, Jay Peters (*Haley and Aldrich*)

SENATE ROOM

1:00 p.m.

U.S. Nuclear Regulatory Commission Technical Evaluation for the U.S. Department of Energy West Valley Waste Incidental to Reprocessing Determination, Leah Parks, Nishka Devaser, Amy Hixon (*NRC*), Thomas Crandall (*DOE*)

1:25 p.m.

Development of Mechanistic Core Degradation Analysis Code and Plan for Validation Experiments Toward the Regulation of Fukushima Daiichi NPS, Tsuyoshi Okawa, Hiroshi Endo, Toshihisa Yamamoto, Tomoko Ishizu, Akitoshi Hotta, Harutaka Hoshi (*JNES*)

1:50 p.m.

In-Vessel Inspection Probing Technique Using Remote Imaging and Laser Spectroscopy, Chikara Ito, Akihiko Nishimura, Hironori Ohba, Ikuo Wakaida, Hiroyuki Naito, Akira Sugiyama, Keiji Chatani (*JAEA*)

2:15 p.m.

Change of Corrosion Characteristics of SUS304L and Zircaloy-4 by an Immersion Test Under the Pre-Heat Treatment and Constant Potential, Shinichiro Yamashita, Masahiko Osaka (*JAEA*)

2:40 p.m.

Neutron Background Variation with Altitude, John E. Gunning, Alexander L. Enders, Jeffery A. Chapman, Stephen Croft (*ORNL*), Glenn E. Sjoden (*Georgia Tech*)

3:05 p.m.

Remediation of Uranium-Contaminated Concrete, Seung Soo Kim, Gye Nam Kim, Jei Kwon Moon (*KAERI*)

3:30 p.m.

Risk Assessment of Spent Nuclear Fuel Transportation: Routine Transportation, Ruth F. Weiner (*SNL*)

IMPLEMENTATION OF SUCCESSFUL NUCLEAR EDUCATION PROGRAMS IN THE UNITED STATES—PANEL

Sponsored by ETWDD

Session Organizer and Chair: Tanya Parwani-Jaimes (*NRC*)

CONGRESSIONAL A

1:00 p.m.

The Energy Policy Act of 2005 authorized the NRC Nuclear Education Grant Program to support courses, studies, training, curricula, and disciplines pertaining to nuclear safety, security, and environmental protection. NRC's curriculum development grant program's primary purpose is supporting and developing the educational infrastructure necessary to allow the nation to safely advance its nuclear energy initiatives. This panel, composed of past and present NRC curriculum development grant recipients, will describe the various curricula developed including impacts, benefits, collaborations, and successes that have resulted from this funding.

PANELISTS:

- Sama Bilbao y Leon (*Virginia Commonwealth Univ*)
- Jeremiah Kiran Billa (*Alcorn State Univ*)
- Daniel Cole (*Univ of Pittsburgh*)
- Cathleen McColgin (*Onondaga Community College*)

ENROLLMENT DIVERSITY AND NUCLEAR ENGINEERING—PANEL

Sponsored by ETWDD

Session Organizer and Chair: Lisa M. Marshall (*NCSU*)

CONGRESSIONAL A

2:35 p.m.

This session will discuss the preparation of diverse student populations for the nuclear industry. Perspectives on starting and expanding programs will be discussed. How do you utilize human and financial capital to build a pipeline with other stakeholders? What is involved in pre-college through graduate school pipeline development for diverse enrollments? How has industry worked to attract and retain these talents? These panelists will provide best practices and discuss challenges.

PANELISTS:

- Lisa M. Marshall (*South Carolina Universities Research & Education Foundation*)
- Ines Triay (*Florida International Univ*)
- R. Craig Williamson (*South Carolina Universities Research & Education Foundation*)
- Additional panelist to be determined

Note: This session will immediately follow the preceding session, which will begin at 1:00 p.m.

THERMAL-HYDRAULICS REACTOR ANALYST 2.0—PANEL

Sponsored by THD; cosponsored by YMG

Cochairs: Elia Merzari (*ANL*), Brian Collins (*PNNL*)

CONGRESSIONAL B

1:00 p.m.

DOE and other national and international research organizations are investing significant amounts of resources into updating or developing new tools for multi-physics analysis of nuclear reactor systems. Most of these new tools are based on radically different methods than traditional system analysis codes. This is particularly true in the area of thermal hydraulics, where for a number of years first principle-based approaches have started to be used in conjunction with or be coupled to traditional system codes. How will current and future trends change the profession of reactor analyst? How will this affect the skills needed to perform an analysis? Are the universities prepared for this paradigm shift? These are just a few of the questions that will be addressed.

PANELISTS:

- Emilio Baglietto (*MIT*)
- David Pointer (*ORNL*)
- Vincent Mosseau (*SNL*)
- Nam Dinh (*NCSC*)
- Yassin Hassan (*Texas A&M*)
- Chris Boyd (*NRC*)
- Tom Keheley (*AREVA*)
- Kurt Flaig (*Dominion*)

WEDNESDAY, NOVEMBER 13, 2013, 4:00 P.M.

NUCLEAR FISSION: 75-YEAR ANNIVERSARY—PANEL

Sponsored by RPD; cosponsored by MCD

Session Organizer: Piero Ravetto (*Politecnico di Torino*)

Cochairs: Massimo Salvatores (*Consultant*), Harold F. McFarlane (*INL*)

AMBASSADOR BALLROOM

4:00 p.m.

In December 1938, Otto Hahn and Fritz Strassmann reported that they had discovered the element barium after bombarding uranium with neutrons. Simultaneously, they communicated these results to Lise Meitner in Sweden. Meitner and Otto Frisch correctly

WINTER MEETING TECHNICAL SESSIONS BY DAY: WEDNESDAY

interpreted Hahn's results to mean that the nucleus of uranium had split roughly in half. Frisch suggested the process be named "nuclear fission." The 2013 ANS Winter Meeting will celebrate the 75th anniversary of this occasion. The Reactor Physics Division will sponsor a panel session of distinguished speakers to commemorate this event, discussing the past, present, and future of fission as an energy source harnessed to serve mankind.

Highlights of Historically-Based Generalized Perturbation Theory (HGPT) Methodology, Augusto Gandini (*Univ of Rome "Sapienza"*), Eugene P. Wigner Reactor Physicist Award winner

PANELISTS:

- Phillip Finck (*INL*)
- Vasudeva Rao (*Indira Gandhi Centre for Atomic Research*)
- Yoshiaki Oka (*WASEDA Univ*)
- Mujid Kazimi (*MIT*)
- Jean-Pierre West (*EDF*)

OPERATIONS AND POWER: GENERAL—II

Sponsored by OPD

Session Organizer: Belle R. Upadhyaya (*Univ of Tennessee*)

Chair: Sasan Etemadi (*Nuclronics*)

EMPIRE BALLROOM

4:00 p.m.

Demonstration of MHI RCP Seal Endurance Under Station Blackout, Takeo Arai, Hitoshi Ito, Yasushi Takayama (*MHI*), Takashi Yamaguchi, Hiroshi Hamamoto, Masanori Onozuka (*Mitsubishi Nuclear Energy Systems, Inc.*)

4:25 p.m.

Active Heat Removal System for Continuous Operation of the Missouri S&T Reactor, C. Castano, A. Kumar, X. Liu, A. Alajo (*Missouri Univ Sci Technol*)

4:50 p.m.

Thermodynamic Optimization of EM² Plant with Organic Rankine Bottoming Cycle, Joshua Stone, Robert W. Schleicher (*General Atomics*)

5:15 p.m.

Preliminary Design of Power Conversion System for Small Modular Gas Cooled Reactor, Seong Jun Bae, Jeong Ik Lee, Yoonhan Ahn, Jekyoung Lee (*KAIST*)

5:40 p.m.

Application of Mode-K Strategy to Daily Load-Follow Operation of OPR1000, Jiwon Choe, Minyong Park, Sooyoung Choi, Taewoo Tak, Deokjung Lee (*UNIST*)

ADVANCES IN AQUEOUS SEPARATION METHODS AND WASTE TREATMENT

Sponsored by FCWMD

Session Organizer and Chair: Jack D. Law (*INL*)

DIPLOMAT BALLROOM

4:00 p.m.

Impact of Advanced Nuclear Fuel Cycle Parameters on Radioactive Waste Classification Using the Fuel-Cycle Integration and Tradeoffs (FIT) Model, Denia Djokic (*Univ of California, Berkeley*), Steven Piet, Layne Pincock, Nick Soelberg (*INL*)

4:25 p.m.

Advances in On-Line Spectroscopic Monitoring for Weak Acid Based Nuclear Fuel Reprocessing Schemes, Amanda Casella, Laura Hylden, Emily Valerio, James Peterson, Gregg Lumetta, Tatiana Levitskaia, Sam Bryan (*PNNL*)

4:50 p.m.

Modeling of Cesium Trapping Reaction by Fly-Ash Filter, Jang Jin Park, Jin Myeong Shin, Jae Hwan Yang, Young Hee Baek, Geun Il Park (*KAERI*)

5:15 p.m.

Transmutation of Minor Actinides by Hydride Target, Kenji Konashi (*Tohoku Univ*), Tsugio Yokoyama (*Toshiba Nuclear Engineering Services Corp*)

COMPUTATIONAL THERMAL HYDRAULICS— III

Sponsored by THD

Chair: Igor A. Bolotnov (*NCSU*)

CAPITOL ROOM

4:00 p.m.

Transient Heat Transfer Analysis for SRS Radioactive Tank Operation, Si Y. Lee, Frank G. Smith (*SRNL*)

4:25 p.m.

2-D FEM/1-D FDM Hybrid Method for Two-Temperature Homogenized Model in 3-D Transient Thermal Analysis of Prismatic Block Type VHTR Compact Fuel, Yoonhee Lee, Nam Zin Cho (*KAIST*)

4:50 p.m.

Verification of Interface Source Terms in COSINE, Jun Chen, Hao Zhang, Zhaoguo Wu, Yanghua Yang (*The State Nuclear Power Software Development Center*)

5:15 p.m.

Assessment of Cooling Tower Discharge Recirculation and Dispersion Using CFD Techniques, Sanjeeb Pal, Leonard J. Peltier, Andri Rizhakov, Michael P. Kinzel, Mallory Elbert, Kelly J. Knight (*Bechtel Systems & Infrastructure Inc.*)

5:40 p.m.

Thermal Hydraulic Behavior in Lower Plenum of Chinshan Nuclear Power Plant Using Computational Fluid Dynamics, Yu-Ting Ku, Yung-Shin Tseng (*Tsinghua Univ*), Jong-Rong Wang (*INER*), Chunkuan Shih, Y. M. Ferng (*Natl Tsing Hua Univ*)

MATHEMATICAL MODELING: GENERAL

Sponsored by MCD

Session Organizer: Brian C. Franke (SNL)

Chair: Robert J. Zerr (LANL)

EMBASSY ROOM

4:00 p.m.

A Linear Stability Analysis of a Three-Temperature Operator-Split System for Two-Temperature Radiation Packages, Allan B. Wollaber (LANL)

4:25 p.m.

Characterization of Types of Inclusion Edge Effects in Finite Stochastic Materials, C. Russell Willis, Erich Schneider (University of Texas at Austin), David P. Griesheimer (Bechtel Marine Propulsion Corporation)

4:50 p.m.

Benchmarking a Simulation of Sub-Critical Neutron Chains, Mathieu Brener (Penn State)

5:15 p.m.

Sharp Fuel Assembly Coupled Simulation Demonstrations, V. Mahadevan, E. Merzari, R. Jain, A. Obabko, M. Smith, T. Tautges, P. Fischer (ANL), W. D. Pointer (ORNL), R. Ferencz (LLNL)

ACCELERATOR APPLICATIONS: GENERAL

Sponsored by AAD

Session Organizer: Erich A. Schneider (Univ of Texas, Austin)

Chair: Bradley Micklich (ANL)

FORUM ROOM

4:00 p.m.

MCNP6 Study of Spallation Products from 500 MeV $p + {}^{136}\text{Xe}$, Stepan G. Mashnik (LANL)

4:25 p.m.

Fission Fragments Produced from Proton Irradiation of Thorium between 40 and 200 MeV, Jonathan W. Engle, Stepan G. Mashnik, J. W. Weidner, Michael E. Fassbender, Hong T. Bach, John L. Ullmann, Aaron J. Couture, Leo J. Bitteker, Mark S. Gulley, Kevin D. John, Eva R. Birnbaum, Francois M. Nortier (LANL)

4:50 p.m.

Breeding of ${}^{233}\text{U}$ by Neutron Irradiation of ${}^{232}\text{Th}$, A. R. Pace, P. J. Pinhero, M. T. Bernards (Univ of Missouri, Columbia)

5:15 p.m.

Accelerator-Based Neutron Damage Testing—High Energy Neutrons for Accelerated Material Qualification, Peter McIntyre, Pavel Tsvetkov, Saeed Assadi, Nathaniel Pogue, Ajhdiyoy Sattaroy (Texas A&M)

RESEARCH AT THE NRC

Sponsored by NISD

Session Organizer and Chair: Girija S. Shukla (NRC)

CABINET ROOM

4:00 p.m.

Technical Basis Development for Filtered Containment Venting System Requirements, Sudhamay Basu, Allen Notafrancesco (NRC), Kyle Ross, Jeff Cardoni (SNL), Edward Fuller, Richard Lee, Hossein Esmaili (NRC)

4:25 p.m.

BWR Anticipated Transients Without Scram Leading to Emergency Depressurization, Lap-Yan Cheng, Joo-Seok Baek, Arantxa Cuadra, Arnold Aronson, David Diamond (BNL), Peter Yarsky (NRC)

4:50 p.m.

TRACE/PARCS Core Modeling of a BWR/5 for Accident Analysis of ATWS Events, Lap-Yan Cheng, Joo-Seok Baek, Arantxa Cuadra, Arnold Aronson, David Diamond (BNL), Peter Yarsky (NRC)

5:15 p.m.

BWR Anticipated Transients Without Scram Leading to Instability, Lap-Yan Cheng, Joo-Seok Baek, Arantxa Cuadra, Arnold Aronson, David Diamond (BNL), Peter Yarsky (NRC)

5:40 p.m.

TRACE Model for Simulation of Anticipated Transients Without Scram in a BWR, Lap-Yan Cheng, Joo-Seok Baek, Arantxa Cuadra, Arnold Aronson, David Diamond (BNL), Peter Yarsky (NRC)

MODELING AND TRANSPORT OF RADIOACTIVE

MATERIALS IN THE ENVIRONMENT

Sponsored by DESD

Session Organizer and Chair: Jay Peters (Haley Aldrich)

SENATE ROOM

4:00 p.m.

Preliminary Calculation of Sediment and ${}^{137}\text{Cs}$ Transport in the Ukedo River of Fukushima, Hiroshi Kurikami, Akihiro Kitamura, Masaaki Yamaguchi (JAEA), Yasuo Onishi (PNNL)

4:25 p.m.

Simulating Long-Term ${}^{137}\text{Cs}$ Distribution on Territory of Fukushima, Akihiro Kitamura, Masaaki Yamaguchi, Yoshihiro Oda (JAEA), Hiroshi Kurikami, Yasuo Onishi (PNNL)

4:50 p.m.

Computational Modeling of Radioactive Contaminants in the Fukushima Environment, Akihiro Kitamura, Masahiko Machida, Haruo Sato, Shinichi Nakayama, Mikazu Yui (JAEA)

5:15 p.m.

Balancing Realism and Conservatism in Risk Assessment for LLW Repositories, David J. LePoire, Sunita Kamboj, Charley Yu (ANL)

WINTER MEETING TECHNICAL SESSIONS BY DAY: WEDNESDAY

5:40 p.m.

First-Principles Calculation Studies for Radioactive Cesium Adsorption to Clay Minerals, Masahiko Okumura, Hiroki Nakamura, Masahiko Machida (*JAEA*)

6:05 p.m.

A Study on the Remediation of Radioactive Contaminated Soil, S. W. Kwon, Y. S. Choi, H. M. Yang, G. W. Lee, B. K. Seo, J. K. Moon (*KAERI*)

CUTTING EDGE TECHNIQUES IN EDUCATION, TRAINING, AND DISTANCE LEARNING

Sponsored by ETWDD

Session Organizer: John S. Bennion (*GE Hitachi Nuclear*)

Chair: Frances M. Marshall (*INL*)

CONGRESSIONAL A

4:00 p.m.

The “My Amazing Future” Program at Idaho National Laboratory, Frances M. Marshall (*INL*)

4:25 p.m.

Advanced Test Reactor National Scientific User Facility “New User” Experiment, Frances M. Marshall, A. Joe Palmer (*INL*)

4:50 p.m.

Managing Nuclear Technology: An Experiment in Applying the Science: Systems: Society Educational Triad, Richard Lester, Aditi Verma (*MIT*)

5:15 p.m.

A Virtual, Interactive, Multiplayer Radiation Laboratory, Imran Haddish, Ye Li, Rizwan-uddin (*Univ of Illinois*)

5:40 p.m.

A Field Survey Laboratory for a Course in Nuclear Instrumentation, Kenneth Dayman, Tracy Tipping, Steven Biegalski (*Univ of Texas, Austin*)

6:05 p.m.

Bridging the Nuclear Generation Practical Training Gap, Ryan Schow, Tatjana Jevremovic (*Univ of Utah*)

GENERAL TWO-PHASE FLOW

Sponsored by THD

Cochairs: Hisashi Ninokata (*Politecnico Di Milano*), Xiaodong Sun (*Ohio State*)

CONGRESSIONAL B

4:00 p.m.

Observations of Bubble Nucleation and Interaction Dynamics in High Heat Flux Boiling, Nam T. Dinh (*NCSU*), J. P. Tu (*Tulabs*)

4:25 p.m.

Assessment of a Baseline Two Phase CFD Closure for PWR Applications, Koroush Shirvan, Emilio Baglietto, Mujid Kazimi (*MIT*)

4:50 p.m.

Internal Structure and Void Fraction Profile Shape in Horizontal Bubbly Flow, G. Monni, M. De Salve, B. Panella (*Politecnico di Torino*)

5:15 p.m.

Numerical Simulation of Void Fraction in a Rod Bundle Under Stagnant Liquid Condition, Michio Murase, Chihiro Yanagi (*Institute of Nuclear Safety System, Inc.*), Takashi Takata, Akira Yamaguchi (*Osaka Univ*), Akio Tomiyama (*Kobe Univ*)

5:40 p.m.

Numerical Simulation of Annular Flow Using Volume of Fluid Method, Yang Liu, Heng Xiao (*Virginia Tech*)

6:05 p.m.

A Fundamental Model for Predicting Bubble Size in Diabatic Multiphase Flows, D. R. Shaver, M. Z. Podowski (*RPI*)

6:30 p.m.

Lift Forces in Bubbly Flows, Thomas Daly (*Univ of Tennessee*), Sreekanth Pannala (*ORNL*), Arthur Ruggles (*Univ of Tennessee*)

DEVELOPMENTS AND APPLICATIONS OF NEUTRON BEAM TECHNIQUES

Sponsored by IRD

Session Organizer: Kenan Ünlü (*Penn State*)

Chair: Lei (Raymond) Cao (*Ohio State*)

CALVERT ROOM

4:00 p.m.

Deuterium Cluster Type Foils for an Intense Pulsed Neutron Source, George H. Miley, Xiaoling Yang (*Univ of Illinois, Urbana-Champaign*)

4:25 p.m.

SIDecSo, A Simple Analytic Software for Neutron Depth Profiling, Matthew Scott Parsons (*Material Measurement Laboratory, NIST*), invited

4:50 p.m.

NIST Neutron Depth Profiling Facility: 2013, R. Gregory Downing (*NIST*), invited

5:15 p.m.

Preliminary Physics Analysis of GDT-Based Neutron Source for Hybrid Application, Hongfei Du, Yican Wu (*Institute of Nuclear Energy Safety Technology, Chinese Academy of Sciences*)

INNOVATIONS IN RADIATION DETECTORS: NEW DESIGNS, IMPROVEMENTS, AND APPLICATIONS

Sponsored by IRD

Session Organizer: Igor Jovanovic (*Penn State*)

Chair: Steven R. Biegalski (*Univ of Texas*)

CALVERT ROOM

WINTER MEETING TECHNICAL SESSIONS BY DAY: WEDNESDAY/THURSDAY

5:45 p.m.

Novel Carbon Nanomaterial Radiation Sensors, Erik M. Dahl, Christopher N. Kryworuk, Mark A. Pierson (*Virginia Tech*)

6:10 p.m.

Measuring the Half-Life of ^{111m}Pd , Richard M. Lindstrom, Dağistan Şahin (*NIST*), invited

6:35 p.m.

High Neutron Cross-Section Cladding Layers for Wide Bandgap Semiconductors, Gabriel Brown, MVS Chandrashekhar, T. S. Sudarshan (*Univ of South Carolina*)

Note: This session will immediately follow the preceding session, which will begin at 4:00 p.m.

THURSDAY, NOVEMBER 14, 2013

7:30 a.m. - 2:00 p.m. **Meeting Registration**

8:00 a.m. - 11:45 a.m. **2013 ANS Winter Meeting: Technical Sessions**

- Reactor Physics Design, Validation, and Operating Experience
- Advanced /Gen-IV Reactors—I
- Advanced Prompt Gamma Activation Analysis and Gamma Spectrometry
- Transport, Computational, Uncertainty Quantification, and Sensitivity Analysis Methods
- Uranium Recovery and Reclamation—Panel
- Research by U.S. DOE NEUP-Sponsored Students—I
- ANS 8 Standards Forum
- Experimental Thermal Hydraulics—III

1:00 p.m. - 5:00 p.m. **2013 ANS Winter Meeting: Technical Sessions**

- Physics of Compact Reactors for Terrestrial and Space Applications
- Advanced /Gen-IV Reactors—II
- Reactor Systems and Advanced Measurement Techniques
- Making Ethics Real in Nuclear Engineering—Panel
- Research by U.S. DOE NEUP-Sponsored Students—II
- Data and Analysis in Nuclear Criticality Safety—III
- Thermal Hydraulics: General—II

THURSDAY, NOVEMBER 14, 2013, 8:00 A.M.

REACTOR PHYSICS DESIGN, VALIDATION, AND OPERATING EXPERIENCE

Sponsored by RPD

Session Organizer: Alexander Stanculescu (*INL*)

Chair: Stefano Monti (*IAEA*)

AMBASSADOR BALLROOM

8:00 a.m.

Validation of Fuel Burnup for the NRU Research Reactor, T. C. Leung (*AECL*)

8:25 a.m.

A Complex-Geometry Validation Experiment for Advanced Neutron Transport Codes, David W. Nigg, Anthony LaPorta, Joseph W. Nielsen, James Parry, Mark D. DeHart, Samuel E. Bays, William F. Skerjanc (*INL*)

8:50 a.m.

Benchmarking of Depletion Calculations for LWR Fuel Assemblies Using ThO_2 - UO_2 pins and TRU FCM Pins, Ser Gi Hong, Do-Yeon Kim, Hae Lee Hyun, Gonghoon Bae (*Kyung Hee Univ*), Ho Jin Park (*KAERI*)

9:15 a.m.

Effects of the Burnable Poison Particles in LWR Fuel Assemblies Using ThO_2 - UO_2 Pins and TRU FCM Pins, Gonghoon Bae, Ser Gi Hong (*Kyung Hee Univ*)

9:40 a.m.

Evaluation of Anomalous TMI-1 Radiochemical Assays, Brian E. Mays (*AREVA Federal Services LLC*), Claude W. Mays [*AREVA (Retired)*], Joseph J. Sapyta [*B&W (retired)*]

10:05 a.m.

Kinetics Parameters of a Th-Pu Re-Entrant-Channel Pressure-Tube SCWR, Eleodor Nichita (*Univ of Ontario Inst of Tech*)

10:30 a.m.

Neutronic Analysis of Candidate Accident-Tolerant Iron Alloy Cladding Concepts, Nathan M. George, Kurt A. Terrani, Jeffrey J. Powers (*Univ of Tennessee*)

ADVANCED /GEN-IV REACTORS—I

Sponsored by OPD

Session Organizer and Chair: William Arthur Wharton III (*Westinghouse STD*)

EMPIRE BALLROOM

8:00 a.m.

Optimum Double-Wall Heat Exchanger for Containment and Trapping of Tritium in a Salt-Cooled Reactor, Lindsey Gilman, Charles Forsberg (*MIT*)

8:25 a.m.

External Breakthrough Technologies for Salt-Cooled Reactors, Charles W. Forsberg (*MIT*)

WINTER MEETING TECHNICAL SESSIONS BY DAY: THURSDAY

8:50 a.m.

Purification of Non Uranium Bearing Fluoride Salts for Nuclear Applications, Brian Kelleher, Guiqiu Zheng, Mark Anderson, Kumar Sridharan, Gouping Cao (*Univ of Wisconsin, Madison*)

9:15 a.m.

Goals and Licensing Strategy for a Fluoride Salt-Cooled High Temperature Test Reactor (FHTR), Lin-Wen Hu, Charles Forsberg (*MIT*)

9:40 a.m.

Commercialization Approaches and Challenges for Fluoride-Salt-Cooled High-Temperature Reactors (FHRs), Charles W. Forsberg (*MIT*)

10:05 a.m.

Safety Analysis of a Super Fast Reactor with Single Flow Pass Core, Sutanto Sutanto, Yoshiaki Oka (*Waseda Univ*)

10:30 a.m.

Investigation of Sodium-Cooled Fast Reactor Active Control for Use with the Supercritical Carbon Dioxide Brayton Cycle, Anton Moiseyev, James J. Sienicki (*ANL*)

10:55 a.m.

Trace Elemental Analysis of Flibe by Neutron Activation Analysis in Support of FHR Research, Michael Ames, Lin-Wen Hu (*MIT*)

ADVANCED PROMPT GAMMA ACTIVATION ANALYSIS AND GAMMA SPECTROMETRY

Sponsored by BMD; cosponsored by IRD
Session Organizer and Chair: Rick L. Paul (*NIST*)

FORUM ROOM

8:00 a.m.

Development of Prompt Gamma-Ray Analysis Using Guided Neutrons at JRR-3, M. Ebihara, M. A. Islam (*Tokyo Metropolitan Univ*), Y. Toh, H. Harada (*JAEA*), invited

8:25 a.m.

A New NIST Instrument for Cold Neutron Prompt Gamma-Ray Activation Analysis, Rick L. Paul, Christoph Brocker, Jeremy C. Cook, Richard M. Lindstrom (*NIST*), invited

8:50 a.m.

Characterization of Smithsonian Institution's Building Stones and Brick by PGNA, R. A. Livingston, M. Al-Sheikhly (*Univ of Maryland*), C. A. Grissom, E. Aloiz (*Smithsonian Institution*), R. Paul (*NIST*)

9:15 a.m.

A Multivariate Deconvolution Approach to Rapid Radionuclide Screening/Semiquantitative Analysis, J. M. Ondov, G. M. Beachley (*Univ of Maryland*), B. E. Tomlin, J. J. Goodell (*NIST*), invited

9:40 a.m.

Development of Prompt Gamma-Ray Analysis Using Spallation Neutrons at J-PARC, Y. Toh (*JAEA*), M. Ebihara (*Tokyo Metropolitan University*), H. Harada (*JAEA*), invited

10:05 a.m.

Applying Method of Integral Thermal Neutron Cross-Section Measurement Using Activated Prompt Gamma Rays to Non-1/v Isotopes, D. Turkoglu (*Ohio State*), S. Glover (*NIOSH*), H. Spitz (*Univ of Cincinnati*), L. Cao (*Ohio State*), invited

10:30 a.m.

The Design Considerations of a Prototype MPGA System at NIST, Dağistan Şahin (*NIST*), invited

10:55 a.m.

On the Determination of Carbon by PGAA, Rolf Zeisler, Rick Paul, Jeffrey Fagan (*NIST*), Zsolt Révay, Stefan Söllradl (*FRM II*), invited

TRANSPORT, COMPUTATIONAL, UNCERTAINTY QUANTIFICATION, AND SENSITIVITY ANALYSIS

METHODS

Sponsored by MCD
Session Organizer: Brian C. Franke (*SNL*)
Chair: Fatih Aydogan (*Univ of Idaho*)

CABINET ROOM

8:00 a.m.

Improved Differential Evolution Implementation for Solving Inverse Transport Problems, Keith C. Bledsoe (*ORNL*), Jeffrey A. Favorite (*LANL*)

8:25 a.m.

Stabilized Finite Element Schemes for Consistent Discretization of Neutron Transport Equation, Vijay S. Mahadevan, Micheal A. Smith (*ANL*)

8:50 a.m.

Streaming Gauss-Seidel Nodal Sweeping Scheme for PWR Pin-by-Pin Calculation, Yunzhao Li, Hongchun Wu, Liangzhi Cao, Youqi Zheng (*Xi'an Jiaotong Univ*)

9:15 a.m.

A Modal Expansion Equilibrium Cycle Perturbation Method for Optimizing Fast Reactors, Nicholas W. Touran (*TerraPower LLC*), John C. Lee (*Univ of Michigan*)

9:40 a.m.

On the Fuel Escape Probability Approximation of Equivalence Theory, Sooyoung Choi, Jiwon Choe, Deokjung Lee (*UNIST*)

10:05 a.m.

Modeling Spatial Dependence of Resonance Self-Shielding Effects Including Resonance Interference and Temperature Distribution, Yuxuan Liu, William Martin (*Univ of Michigan*), Mark Williams, Kang-Seog Kim (*ORNL*)

10:30 a.m.

The Effect of Implicit Self-Shielding on the Inverse Sensitivity/Uncertainty Method for Thermal Reactors, Bassam A. Khuwaileh (*NCSU*), Goran Arbanas, Mark Williams, Luiz C. Leal, Michael E. Dunn (*ORNL*), Hany S. Abdel-Khalik (*NCSU*)

WINTER MEETING TECHNICAL SESSIONS BY DAY: THURSDAY

10:55 a.m.

Integral Benchmark Experiments in the Inverse Sensitivity/Uncertainty Computations, Goran Arbanas (*ORNL*), Bassam A. Khuwaileh (*NCSU*), Mark Williams, Luiz C. Leal, Michael E. Dunn (*ORNL*), Hany S. Abdel-khalik (*NCSU*)

11:20 a.m.

A New Analogue Monte Carlo Eigenvalue Calculation Algorithm Based on a Normalized Transport Kernel, Hyung Jin Shim, Sung Hoon Choi, Chang Hyo Kim (*Seoul Natl Univ*)

URANIUM RECOVERY AND RECLAMATION—PANEL

Sponsored by DESD

Session Organizer and Chair: James Clarke (*Vanderbilt University*)

SENATE ROOM

8:00 a.m.

This session will explore both the environmental issues and technical challenges currently impacting uranium mines. Topics will include the decontamination of soils, sediment, and groundwater. Topics will also include current technologies that are in place to ensure that future mining efforts are protective of the environment and account for future decontamination and realization.

PANELISTS:

- Uranium Recovery, Bill von Till (*NRC*)
- Decommissioning and Uranium Recovery, Drew Persinko (*NRC*)
- DOE Legacy Management, Jody Waugh (*Stoller*)
- Issues for Long-Term Containment of Residuals from Uranium Refining, Craig Benson (*Univ of Wisconsin*)
- Environmental Health and Safety Aspects of Uranium Mining and Recovery, Bethany L. Smith (*Vanderbilt Univ*)

RESEARCH BY U.S. DOE NEUP-SPONSORED

STUDENTS—I

Sponsored by ETWDD

Session Organizer: Gregory A. Bala (*INL*)

Cochairs: Gregory A. Bala (*INL*), Jenna Payne (*INL*)

PALLADIAN BALLROOM

8:00 a.m.

Simulations of Multiplicity Distributions with Perturbations to Nuclear Data, S. R. Bolding (*Texas A&M*), C. J. Solomon (*LANL*)

8:25 a.m.

1-D Inverse Heat Flux Estimation Using Least-Squares Method for MASLWR Test Facility, Dongyoung Lee, Qiao Wu (*Oregon State Univ*)

8:50 a.m.

Investigation of 2LiF-BeF_2 (FLiBe): Salt Transfer, Corrosion Tests and Characterization, G. Zheng, B. Kelleher, G. Cao, K. Sridharan, M. Anderson, T. Allen (*Univ of Wisconsin, Madison*)

9:15 a.m.

A Comparison of Various Clustering Schemes for Proliferation Resistance Measures, Zachary Jankovsky, Daniya Zamalieva, Richard Denning, Alper Yilmaz, Tunc Aldemir (*Ohio State*)

9:40 a.m.

Chemical Detection in Flowing Molten LiCl-KCl Salt via Laser-Induced Breakdown Spectroscopy, Ammon N. Williams, Supathorn Phongikaroon (*Univ of Idaho*)

10:05 a.m.

Enhanced Accident Tolerant UO_2 -Diamond Composite Fuel Pellets Prepared by SPS, Danny Permar, Zhichao Chen, James Tulenko (*Univ of Florida*)

10:30 a.m.

Dynamic Response Analysis of a Scaled-Down Offset Strip-Fin Intermediate Heat Exchanger, M. Chen, I. Kim, X. Sun, R. N. Christensen (*Ohio State*), N. Bartel, V. Utgikar (*Univ of Idaho*), P. Sabharwall (*INL*)

10:55 a.m.

Lifecycle Prognostic Algorithm Development Using Bayesian Statistics, Alan Nam, Michael Sharp, J. Wes Hines, Belle Upadhyaya (*Univ of Tennessee*)

11:20 a.m.

Development of a Method for Monitoring Pump Parameters in Small Modular Reactors Using Motor Signatures, C. Mehta, V. B. Lollar, B. R. Upadhyaya, J. W. Hines (*Univ of Tennessee*), D. Bayram (*Istanbul Tech Univ*)

11:45 a.m.

Development of Cylindrical Sources for Testing the Accuracy of Radioactivity Measurements in Nuclear Medicine Imaging, Matthew M. Mille (*RPI*), Brian E. Zimmerman (*NIST*), X. George Xu (*RPI*)

ANS 8 STANDARDS FORUM

Sponsored by NCSD

Session Organizer: Thomas P. McLaughlin (*Univ of Pittsburgh*)

Chair: Lon Paulson (*GE Wilmington*)

CONGRESSIONAL A

8:00 a.m.

SPEAKERS:

- Speakers to be determined.

EXPERIMENTAL THERMAL HYDRAULICS—III

Sponsored by THD

Cochairs: S. Y. Lee (*SRNL*), David Pointer (*ORNL*)

CONGRESSIONAL B

8:00 a.m.

Heat Removal Characteristics by Water Injection over Upper Crust During MCCI, A. Nishida, J. Sugimoto (*Kyoto Univ*)

WINTER MEETING TECHNICAL SESSIONS BY DAY: THURSDAY

8:25 a.m.

A Simultaneous Observation of Vapor Bubbles and Heat Transfer Characteristics in the Subcooled Boiling Flow, Junsoo Yoo, Carlos E. Estrada-Perez, Yassin A. Hassan (*Texas A&M*)

8:50 a.m.

CCFL at the Lower End of a Vertical Pipe, Yuki Fujii, Taiga Doi (*Kobe Univ*), Michio Murase (*Institute of Nuclear Safety System, Inc.*), Shigeo Hosokawa, Akio Tomiyama (*Kobe Univ*)

9:15 a.m.

Overview of NuScale Testing Programs, Robert Houser, Eric Young, Adam Rasmussen (*NuScale Power*)

9:40 a.m.

The Experiment of an Inclined Single-Tube Condensation for Passive Auxiliary Feedwater System of APR+, Chang Wook Shin, Hee Cheon No (*KAIST*), Bong Yo Yun (*KHNP*), Byong Guk Jeon (*KAIST*)

10:05 a.m.

Design of a Compact Integral Effects Test Facility for Fluoride-Salt-Cooled, High-Temperature Reactors, Nicolas Zweibaum, Raluca O. Scarlat, Per F. Peterson (*Univ of California, Berkeley*)

10:30 a.m.

Chemical Reactivity of a Molten Salt with Coke, Ian Jentz, Mark Anderson (*Univ of Wisconsin, Madison*), Richard Pollard (*Shell International Exploration & Production*)

10:55 a.m.

Directional DRACS Heat Exchanger Concepts for the FHR, J. T. Hughes, S. J. Kim, P. F. O'Rourke, E. D. Blandford (*Univ of New Mexico*)

11:20 a.m.

Wavelet Analysis of Complex Coolant Flow Behavior in Fuel Gaps of a Pebble Bed Reactor, Noushin Amini, Yassin A. Hassan (*Texas A&M*)

THURSDAY, NOVEMBER 14, 2013, 1:00 P.M.

PHYSICS OF COMPACT REACTORS FOR TERRESTRIAL AND SPACE APPLICATIONS

Sponsored by RPD; cosponsored by ANSTD
Session Organizer: Shannon M. Bragg-Sitton (*INL*)
Co-chairs: John D. Bess (*INL*), Blair Bromley (*CNS*)

AMBASSADOR BALLROOM

1:00 p.m.

Benchmark Evaluation of HTR-PROTEUS Absorber Rod Worths (Cores 9 and 10), John D. Bess (*INL*)

1:25 p.m.

Utility of the KUCA-Er Benchmark to Address Erbium Sensitivities in the NRAD Reactor, John D. Bess (*INL*)

1:50 p.m.

Initial Neutronic Viability of a "TRIGA-Style" Isotope Production Reactor Fueled Solely with Molybdenum-99 Targets, Andrew Hummel, Todd S. Palmer (*Oregon State Univ*)

2:15 p.m.

Verification of UCFR-100 Depletion Calculation with Deterministic Method by Comparing with Probabilistic Method, Taewoo Tak, Jiwon Choe, Hyunsuk Lee, Deokjung Lee (*UNIST*)

2:40 p.m.

Optimization of Excess Reactivity and Power Profile in a Linear Breed-and-Burn Fast Reactor, Donny Hartanto, Yonghee Kim (*KAIST*)

3:05 p.m.

Design and Analysis of Nuclear Thermal Rocket Reactors for a Range of Low Earth Orbit Payloads, Satira Labib, Jeffrey King (*CSM*)

3:30 p.m.

Integrated Solid-State Nuclear Pumped Laser/Reactor Design for Asteroid Redirection, Matthew L. Watermann, Mark A. Prelas (*Univ of Missouri, Columbia*)

ADVANCED /GEN-IV REACTORS—II

Sponsored by OPD

Session Organizer and Chair: Thomas A. Remick (*APS*)

EMPIRE BALLROOM

1:00 p.m.

Single Pass Core Design of Super LWR, Jianhui Wu, Yoshiaki Oka (*Waseda Univ*)

1:25 p.m.

Restoration for Damaged Components in Reactor Vessel of the Experimental Fast Reactor Joyo, Eiji Okuda, Chikara Ito, Misao Takamatsu, Takashi Ashida, Hideaki Ito, Akinori Nagai (*JAEA*)

1:50 p.m.

Nickel Catalyst Activity and Hybrid Decomposer Design for Hydrogen Iodide Decomposition Process of Sulfur-Iodine Hydrogen Production Cycle, Jin Young Choi, Hee Cheon No (*KAIST*)

2:15 p.m.

Preliminary Studies of Two Fluids Heat Exchangers for S-CO₂ Power Conversion Cycle Coupled to SFR, Hwa-Young Jung, Jeong Ik Lee (*KAIST*), Myung-Hwan Wi, Jae-Hyuk Eoh, Sang-Min Park (*KAERI*), Yoonhan Ahn (*KAIST*)

2:40 p.m.

Performance and Transient Analysis of WHEN (Water-Hydrogen-Electricity Nuclear) System, Ho Sik Kim, Hee Cheon No (*KAIST*), Hyung Gon Jin (*KAERI*)

3:05 p.m.

Integral Inherently Safe Light Water Reactor (I²S-LWR)—Concept, Overview, Bojan Petrovic (*Georgia Tech*)

3:30 p.m.

3D Mapping and Reconstruction for In-Core Monitoring in Advanced Reactors, Matthew P. Johnson, Pavel V. Tsvetkov (*Texas A&M*)

3:55 p.m.

Energy Mix Grid Aggregation Analysis, Ahmad Al Rashdan, Vishal Patel, Pavel Tsvetkov (*Texas A&M*)

REACTOR SYSTEMS AND ADVANCED MEASUREMENT TECHNIQUES

Sponsored by MSTD

Session Organizer: Kenneth J. Geelhood (*PNNL*)

Chair: Cynthia Papesch (*INL*)

CABINET ROOM

1:00 p.m.

Preliminary Fission Product Behavior in the Fluoride Salt-Cooled High-Temperature Reactor, John D. Stempfen, Ronald G. Ballinger, Charles W. Forsberg (*MIT*)

1:25 p.m.

Uncertainty Quantification of Calculated Temperatures for AGR Experiments, Binh T. Pham, Jeffrey J. Einerson (*INL*)

1:50 p.m.

Fuel Performance Modeling for the Fluoride Salt-Cooled High-Temperature Reactor, John D. Stempfen, Ronald G. Ballinger, Charles W. Forsberg (*MIT*)

2:15 p.m.

Development of a Radiolysis Model for PWR Primary Water Chemistry, J. A. Jarvis, R. G. Ballinger (*MIT*)

2:40 p.m.

Nonlinear Sliding Evaluation of Nuclear Power Plant Structures, Hiyoyuki Fuyama, Kyosuke Kamito (*Mitsubishi Heavy Industries, Ltd.*), Takanori Ogata, Masanori Onozuka, Kazuya Sasahara (*Mitsubishi Nuclear Energy Systems, Inc.*), Radu Popescu, Michael McKenna (*URS Corporation*)

3:05 p.m.

Large-Scale Tests of Steel Concrete Structures for US-APWR Containment Internal Structure, Masanori Onozuka, Takanori Ogata (*Mitsubishi Nuclear Energy Systems, Inc.*), Hiroyuki Fuyama, Ryo Fujimoto, Tomoyuki Kitani (*Mitsubishi Heavy Industries, Ltd.*), Matthew Van Liew, Derek Winkler (*URS Corporation*), Amit H. Varma (*Purdue Univ*)

3:30 p.m.

Thermal Wave Techniques for Thermophysical Properties Characterization for Ion-Irradiation Studies, C. Jensen (*Utah State University/Universite de Reims Champagne-Ardenne*), M. Chirtoc, N. Horny, J. S. Antoniow, H. Pron (*Universite de Reims Champagne-Ardenne*), H. Ban (*Utah State Univ*)

3:55 p.m.

Frequency Scanning Thermal Diffusivity Measurement Technique, Zilong Hua, Heng Ban (*Utah State Univ*)

4:20 p.m.

Tensile Behavior of Inconel 617 vs. Haynes 230: Effects of Temperature and Strain Rate, K. Hrutkay, D. Kaoumi (*Univ of South Carolina*)

MAKING ETHICS REAL IN NUCLEAR ENGINEERING—PANEL

Sponsored by RPSD

Session Organizer and Chair: Robert B. Hayes (*Nuclear Waste Partnership, LLC*)

COUNCIL ROOM

1:00 p.m.

PANELISTS:

- Ethics by Example from Management, Donald Hoffman (*ANS President, EXCEL Services Corporation*)
- Ethics When Nobody is Watching, Edward (Ted) Quinn (*Technology Resources*)
- Ethics and Safety, Michael C. Brady Raap (*President Elect, ANS, PNNL*)
- Improving Ethics in Employees, Scott Bowman (*GE Hitachi*)
- Ethics in the Workplace, Mark Peres (*Fluor*)
- Some Engineering Ethics Cases and Their Resolution by NSPE Judges, Nicholas Tsoulfanidis (*UNR, Nuclear Technology*)
- Overcoming Fear to Behave Ethically, Peter Caracappa (*RPI*)
- Ethics Expectations from the Public, Vic Uotinen (*Past ANS Ethics Chair*)
- Ethics in Commerce and Procurement, Tim Martinson (*Canberra*)
- Ethics Everywhere Always, Kevan Weaver (*TerraPower*)

RESEARCH BY U.S. DOE NEUP-SPONSORED STUDENTS—II

Sponsored by ETWDD

Session Organizer: Gregory A. Bala (*INL*)

Cochairs: Gregory A. Bala (*INL*), Jenna Payne (*INL*)

PALLADIAN BALLROOM

1:00 p.m.

Three-Dimensional Modeling of the Pebble-Bed Fluoride-Salt-Cooled, High-Temperature Reactor (PB-FHR) Commercial Plant Design, David L. Krumwiede, Raluca O. Scarlat, Jae Keun Choi, Tung M. Phan, Per F. Peterson (*Univ of California, Berkeley*)

1:25 p.m.

Transient Model of Wavy-Channel Printed Circuit Heat Exchangers, N. Bartel, V. Utgikar (*Univ of Idaho*), P. Sabharwall (*INL*), M. Chen, I. H. Kim, X. Sun, R. N. Christensen (*Ohio State*)

1:50 p.m.

Thermoelectrically Powered Sensing for Nuclear Power Plants, Mahder Tewolde, Chih Chieh Lin, Hanfei Chen, He Tao, Gaosheng Fu, Di Liu, Tao Zhang, Chao Nie, Weixiao Zheng, David Benjamin, Fan Liu, Lei Zuo, David Hwang, Jon Longtin (*Stony Brook Univ*), invited

2:15 p.m.

Characterization of ¹⁴C in Neutron-Irradiated NBG-25 Graphite, Daniel LaBrier, Mary Lou Dunzik-Gougar (*Idaho State Univ*)

WINTER MEETING TECHNICAL SESSIONS BY DAY: THURSDAY

2:40 p.m.

Simulations of the Flow of Supercritical Carbon Dioxide Through Circular and Annular Orifices, Haomin Yuan, Mark H. Anderson, John Dyreby, John Edlebeck, Matthew Wolf (*Univ of Wisconsin, Madison*)

3:05 p.m.

Improved Accident Tolerance of Austenitic Stainless Steel Cladding Through Colossal Supersaturation with Interstitial Solutes, Zhen Li, Frank Ernst, Arthur Heuer (*Case Western Reserve Univ*), invited

3:30 p.m.

A Map View Concept for Cyclus Input Control, Urairisa Phathanapirom, Erich Schneider (*Univ of Texas, Austin*), Anthony Scopatz (*Univ of Chicago*), Robert Flanagan (*Univ of Texas, Austin*)

3:55 p.m.

Thermophysical Property Characterization of Nuclear Materials, Colby Jensen (*Utah State University/Universite de Reims Champagne-Ardenne*), Heng Ban (*Utah State Univ*), Mihai Chirtoc (*Universite de Reims Champagne-Ardenne*)

4:20 p.m.

Network Distribution Effects on a Steam Generator Level Control System, Michael Pietrykowski, Qingti Guo, Carol Smidts (*Ohio State*)

4:45 p.m.

On the Effects of Containment Design to GT-MHR Air-Ingress Accidents, Tae K. Ham, David J. Arcilesi, In H. Kim, Xiaodong Sun, Richard N. Christensen (*Ohio State*), Chang H. Oh (*INL*)

DATA AND ANALYSIS IN NUCLEAR CRITICALITY

SAFETY—III

Sponsored by NCSD

Session Organizer: Allison D. Miller (*SNL*)

Chair: Katherin L. Goluoglu (*Univ of Florida*)

CONGRESSIONAL A

1:00 p.m.

Generation of 1800 New Sensitivity Data Files for ICSBEP Using SCALE6.0, Ian Hill, Jim Gulliford (*OECD-NEA*), J. Blair Briggs (*INL*), Bradley T. Rearden (*ORNL*), Tatiana Ivanova (*IRSN*)

1:25 p.m.

Comparison of ENDF71x and ENDF70 Using ICSBEP Criticality Benchmarks in MCNP6, Steven J. Gardiner, Jeremy Lloyd Conlin, A. C. Kahler, D. Kent Parsons (*LANL*)

1:50 p.m.

Radiochemical Processing Laboratory Building-Wide Flooding Event, A. W. Prichard (*PNNL*)

2:15 p.m.

Completion of the De-Inventory Program at Lawrence Livermore National Laboratory, David Riley, Debdas Biswas (*LLNL*)

2:40 p.m.

Integrated Approach to Documenting Readiness for a Potential Criticality Incident, B. S. Carlisle, A. W. Prichard, R. A. Jones (*PNNL*)

3:05 p.m.

Energy Release in Criticality Accidents Involving Two Fuel Solution Tanks, Toru Obara, Haruka Kikuchi (*Tokyo Inst Technol*)

THERMAL HYDRAULICS: GENERAL—II

Sponsored by THD

Cochairs: Fatih Aydogan (*Univ of Idaho*), Yang Liu (*Virginia Tech*)

CONGRESSIONAL B

1:00 p.m.

Measurements and Modeling of the Flow of Supercritical Carbon Dioxide Through Orifices and Annuli, Matthew Wolf, Haomin Yuan, John Edlebeck (*Univ of Wisconsin, Madison*)

1:25 p.m.

Fuel Temperature Prediction in the Coolant Channel Blockage Case of VHTR, Sung Nam Lee, Nam-Il Tak, Min Hwan Kim, Jae Man Noh (*KAERI*)

1:50 p.m.

Thermal Radiation Heat Transfer Analysis for High Temperature Steam, Paul J. Marotta (*nuExergy, LLC*), Trevor M. Moeller, Basil N. Antar (*Univ of Tennessee Space Institute*), Arthur E. Ruggles (*Univ of Tennessee*)

2:15 p.m.

The Design Analysis of Passive Containment Cooling System for PWR, Jae Young Choi, Sang Ho Kim, Soon Heung Chang (*KAIST*)

2:40 p.m.

Stability Analysis of a Natural Circulation Lead-Cooled Fast Reactor, Qiyue Lu, Rizwan-uddin (*Univ of Illinois*)

3:05 p.m.

Transient Analysis in a Supercritical Water Reactor Concept with Multiple Heat-Up Steps, A. M. Barragán-Martínez (*UNAM*), G. Espinosa-Paredes, A. Vázquez-Rodríguez (*Universidad Autonoma Metropolitana-Iztapalapa*), C. Martin-del-Campo (*Univ Nacional Autonoma De Mexico*), J. L. François (*Facultad de Ingenieria UNAM*)

3:30 p.m.

TRACE Analysis of Spent Fuel Pool Loss-of-Coolant Accidents, Hui-Chen Wang (*Natl Tsing Hua Univ*), Jong-Rong Wang, Hao-Tzu Lin (*INER*), Chunkuan Shih (*Natl Tsing Hua Univ*)

Embedded Topical Meeting: *Risk Management for Complex Socio-Technical Systems*



HONORARY CHAIR:
George Apostolakis
U.S. Nuclear Regulatory Commission



GENERAL CHAIR:
Ronald A. Knief
Sandia National Laboratories



**TECHNICAL PROGRAM
CO-CHAIR:**
Zahra Mohaghegh
University of Illinois at Urbana Champaign



**TECHNICAL PROGRAM
CO-CHAIR:**
Ali Mosleh
University of Maryland



DEPUTY PROGRAM CO-CHAIR:
Kevin A. Coyne
U.S. Nuclear Regulatory Commission



DEPUTY PROGRAM CO-CHAIR:
Rick Grantom
*South Texas Project
Nuclear Operating Company*



DEPUTY PROGRAM CO-CHAIR:
Reza Kazemi
*U.S. Food and Drug
Administration*

TUESDAY, NOVEMBER 12, 2013

7:30 a.m. - 5:00 p.m. Meeting Registration

8:00 a.m. - 10:00 a.m. Spouse/Guest Hospitality

**8:00 a.m. - 11:30 a.m. 2013 Risk Management:
Opening Plenary**
"Risk-Informed Decision Making"

**1:00 p.m. - 6:00 p.m. 2013 Risk Management:
Technical Sessions**

- Risk Management Approaches in the Post-Macondo Offshore Industry
- Influences of Organizational Factors and Safety Culture on Risk of Technical Systems—Panel
- Digital I&C and Cyber Security
- Risk Management for Cyber Security and Digital I&C—Panel

TUESDAY, NOVEMBER 12, 2013, 8:00 A.M.

OPENING PLENARY ON RISK-INFORMED DECISION MAKING

Sponsored by NISD

Session Organizer: Zahra Mohaghegh (*Univ of Illinois*)

Cochairs: Zahra Mohaghegh (*Univ of Illinois*), Ronald Knief (*SNL*)

HAMPTON BALLROOM

8:00 a.m.

The genesis of Probabilistic Risk Assessment (PRA) was the

landmark Reactor Safety Study published in 1975. Since then, PRA has grown into a well-established technical discipline with a wide range of applications. PRA can provide input for risk-informed decision making for the design, operation, and regulatory oversight of complex socio-technical systems. Despite significant methodological advancements, new tools and techniques for PRA are needed. On this panel, experts from the nuclear regulatory agency, academia, and industry will share their experiences and opinions on (1) the importance of PRA insights for regulatory actions, (2) effective utilization of PRA tools for risk-informed activities, (3) advanced techniques to improve the adequacy and efficacy of PRA, and (4) state-of-the-art applications of PRA for the resolution of long-lasting industry safety issues.

PANELISTS:

- Ronald Knief (*SNL*), Opening Remarks
- Zahra Mohaghegh (*Assistant Professor, Dept. of Nuclear, Plasma, and Radiological Eng., Univ of Illinois at Urbana-Champaign*), Technical Program Overview
- George Apostolakis (*Commissioner, NRC*), Risk Management at the U.S. NRC
- Doug Coe (*Deputy Director, Division of Risk Analysis, Office of Nuclear Regulatory Research, NRC*), Risk-Informed Thinking—A Regulator's Perspective
- Ali Mosleh (*Professor, Center for Risk and Reliability, Univ of Maryland*), Improving Utility and Credibility of PRA Through Methodological Advancements
- Antoine Rauzy (*Professor, Ecole Polytechnique*), PRA/PSA: Can We Improve the Engineering of Models?
- Rick Grantom (*Manager, South Texas Project Nuclear Operating Company*), Use of Risk-Informed GSI-191 Methodology for Other Complex Problems

TUESDAY, NOVEMBER 12, 2013, 1:00 P.M.

RISK MANAGEMENT APPROACHES IN THE POST-MACONDO OFFSHORE INDUSTRY

Sponsored by NISD

Session Organizer: William R. Nelson (*Det Norske Veritas*)

Cochairs: William R. Nelson (*Det Norske Veritas*), Jan Erik Vinnem (*NTNU*)

HAMPTON BALLROOM

1:00 p.m.

Challenges for Risk Management Approaches in the Offshore Industry in the Modelling of Human & Organizational Factors' Influence on Risk, Jan-Erik Vinnem (*NTNU*)

1:25 p.m.

A Risk Analysis Study to Assess the Critical Role of Human and Organizational Factors in Offshore Drilling, Maryam Tabibzadeh, Najmedin Meshkati (*Univ of Southern California*)

1:50 p.m.

Risk Management Models in an Integrated Operations Context, Nicola Paltrinieri, Stein Hauge (*SINTEF Technology and Society*), Eirik Albrechtsen (*Norwegian Univ Sci Tech*)

2:15 p.m.

Integrated Operations Methods for Risk Management to Prevent Major Accidents in the Offshore Oil & Gas Industry, William R. Nelson (*Det Norske Veritas*)

INFLUENCES OF ORGANIZATIONAL FACTORS AND SAFETY CULTURE ON RISK OF TECHNICAL SYSTEMS—PANEL

Sponsored by NISD

Session Organizer: Justin T. Pence (*Univ of Illinois*)

Cochairs: Justin T. Pence (*ANL/Univ of Illinois*), Zahra Mohaghegh (*Univ of Illinois*)

HAMPTON BALLROOM

2:50 p.m.

We have witnessed the gaps in safety culture and organizational factors as significant risk contributors to many major accidents, such as Three Mile Island and Chernobyl and the recent disasters at Fukushima and the Macondo well in the Gulf of Mexico. However, there has not yet been any consensus among industry, academia, and regulatory organizations regarding the best approaches to assess safety culture and how to model its impact on technical systems risk. This panel will discuss these challenges and current approaches.

Current Probabilistic Risk Analysis (PRA) models are incapable of “explicitly” covering organizational factors and, therefore,

currently (1) it is not possible to assess the risk due to the specific organizational status of technological systems, (2) it is not feasible to locate the organizational root causes of failures to take effective corrective actions, and (3) there is the possibility of underestimating risk.

By incorporating organizational factors into risk frameworks, we can provide more accurate predictions of organizational performances and, in certain cases, relate those to the probabilities for some of the basic events of PRA. Consequently, this will lead to more realistic estimate of system risk and enable management to provide additional and timely provisions for key equipment and functions supporting long-term safe and reliable operations.

PANELISTS:

- Tim Bedford (*Univ of Strathclyde Glasgow*)
- Earl Carnes (*DOE*)
- David Hofmann (*Univ of North Carolina*)
- Ronald Knief (*SNL*)
- Najmedin Meshkati (*Univ of Southern California*)
- Stephanie Morrow (*NRC*)
- Undine Shoop (*NRC*)

Note: This session will immediately follow the preceding session, which will begin at 1:00 p.m.

DIGITAL I&C AND CYBER SECURITY

Sponsored by NISD

Session Organizer: Rizwan-uddin (*Univ of Illinois*)

Cochairs: Rizwan-uddin (*Univ of Illinois*), David Johnson (*ABS Consulting*)

CALVERT ROOM

1:00 p.m.

Quantitative Reliability Analysis for Intelligent Water Distribution Networks, Koosha Marashi, Mark Woodard, Sahra Sedigh, Ali R. Hurson (*Missouri Univ Sci Tech*)

1:25 p.m.

Good Things in Small Packages: Micro Worlds and Cyber Security, David I. Gertman (*INL*)

1:50 p.m.

An Explanatory Model of Cyber-Attacks Drawn from Rational Choice Theory, Seymour Mandelcorn, Mohammad Modarres, Ali Mosleh (*Univ of Maryland*)

2:15 p.m.

Security Risk: A Brief History and New Risk Management Approach, Felicia A. Durán, Gregory D. Wyss, Joseph Sandoval (*SNL*)

2:40 p.m.

Digital I&C and Cyber Security in Nuclear Power Plants, Yongkyu An, Rizwan-uddin, William Sanders (*Univ of Illinois*)

RISK MANAGEMENT FOR CYBER SECURITY AND DIGITAL I&C—PANEL

Sponsored by NISD

Session Organizer: Rizwan-uddin (*Univ of Illinois*)

Cochairs: Rizwan-uddin (*Univ of Illinois*), David Johnson (*ABS Consulting*)

CALVERT ROOM

3:10 p.m.

Cyber security of sensitive installations in general is of heightened concern. These include NPPs and other installations related to the nuclear enterprise such as enrichment and storage facilities. For nuclear power plants, the concern is made further complicated by the fact that there is a simultaneous effort underway to at least partially switch from analog to digital I&C units. Digital assets at NPPs are being catalogued, regulatory bodies are developing guidelines for reviews, and new designs—such as SMRs—are taking advantage of similar transformations in other industries. A symposium was held at the University of Illinois in spring of 2013 to identify the challenges and to chart future directions for research.

This panel will be aimed at furthering the conversation with the broader stakeholders in addressing the inter-related and evolving issues of digital I&C and cyber security, and to identify approaches to manage associated risk in the nuclear arena. Panelists will include experts from the industry, regulatory bodies, vendors, academia, and national laboratories.

PANELISTS:

- Edward (Ted) Quinn (*Tech Resources*)
- Brian Arnholt (*B&W*)
- Barry Westreich (*NRC*)

Note: This session will immediately follow the preceding session, which will begin at 1:00 p.m.

Public Perception of Risk and Nuclear: Addressing the “Perception Gap”—Panel

See Winter Meeting, page 27.

WEDNESDAY, NOVEMBER 13, 2013

7:30 a.m. - 5:00 p.m. Meeting Registration

8:00 a.m. - 10:00 a.m. Spouse/Guest Hospitality

8:00 a.m. - 11:30 a.m. 2013 Risk Management: Technical Sessions

- Simulation Based PRA—I
- Simulation Based PRA—II
- Risk-Informed Resolution of Generic Safety Issue 191—I
- Risk-Informed Resolution of Generic Safety Issue 191—II
- System Thinking Approaches to Safety and Security
- Rethinking Emergency Planning and Response

1:00 p.m. - 3:30p.m. 2013 Risk Management: Technical Sessions

- Aviation Safety Risk Analysis
- Risk-Informed Decision Making and Regulation—I
- Risk Analysis in Healthcare—Papers/ Panel
- Human Performance Modeling and Analysis
- External Event Modeling for Risk Analysis
- Physics-of-Failure Models

4:00 p.m. - 7:00p.m. 2013 Risk Management: Technical Sessions

- Risk-Informed Decision Making and Regulation—II
- Human Reliability and Performance in Nuclear Plant Operation

WEDNESDAY, NOVEMBER 13, 2013, 8:00 A.M.

SIMULATION BASED PRA—I

Sponsored by NISD

Session Organizer: Gregory B. Baecher (*Univ of Maryland*)

Cochairs: Gregory B. Baecher (*Univ of Maryland*), Kevin A. Coyne (*NRC*)

HAMPTON BALLROOM

8:00 a.m.

Simulating Hydropower Dam System Risks, Gregory B. Baecher (*Univ of Maryland*)

8:25 a.m.

Applying Monte Carlo Simulation to Propagate Uncertainty in Event Trees—An Application to Dam and Levee Risk Analysis, Javier Ordonez (*Palisade Corporation*), Robert C. Patev (*US Army Corps of Engineers*), invited

8:50 a.m.

Simulation Approaches in Seismic Risk Analysis, Martin W. McCann, Jr. (*Jack R. Benjamin & Associates, Inc.*)

9:15 a.m.

Simulation-Based Analysis for Nuclear Power Plant Risk Assessment: Opportunities and Challenges, Kevin Coyne, Nathan Siu (*NRC*), invited

SIMULATION BASED PRA—II

Sponsored by NISD

Session Organizer: Gregory B. Baecher (*Univ of Maryland*)

Cochairs: Gregory B. Baecher (*Univ of Maryland*), Kevin A. Coyne (*NRC*)

HAMPTON BALLROOM

10:00 a.m.

Proof of Principle Framework for Risk-Informed Severe Accident Management Guidelines, M. R. Denman, K. M. Groth, T. A. Wheeler (*SNL*)

10:25 a.m.

Efficient Rare-Event Simulation and Decision Making, Chun-Hung Chen, John Shortle (*George Mason Univ*), invited

10:50 a.m.

Impact of Team Characteristics on the Operating Crew Response in Complex Systems: A Modeling and Simulation Approach, Mandana Azarkhil, Ali Mosleh (*Univ of Maryland at College Park*)

NOTE: This session will immediately follow the preceding session, which will begin at 8:00 a.m.

RISK-INFORMED RESOLUTION OF GENERIC SAFETY

ISSUE 191—I

Sponsored by NISD

Session Organizer: Ernest John Lowry Kee (*South Texas Project Nuclear Power Plant*)

Cochairs: Bruce Letellier (*Alion Sci Technol*), Ernest John Lowry Kee (*South Texas Project Nuclear Power Plant*)

GOVERNOR'S BOARDROOM

8:00 a.m.

Decision Process for GSI-191 Risk Informed Closure Path, Phillip Grissom (*Southern Nuclear*)

8:20 a.m.

Risk-Informed Decision Making: Application in Nuclear Power Plant Design & Operation, Ernie Kee (*South Texas Project Nuclear Operating Company*), Zahra Mohaghegh (*Univ of Illinois*), Reza Kazemi (*Soteria Consultants, LLC*), Seyed A. Reihani (*Univ of Illinois*), Bruce Letellier (*Alion Sci Technol*), Rick Grantom (*South Texas Project Nuclear Operating Company*)

8:40 a.m.

Adapting a PRA Model of Record to Support Risk-Informed Investigation of GSI-191, David H. Johnson, Donald J. Wakefield (*ABS Consulting*)

9:00 a.m.

CASA Grande Uncertainty Propagation Framework for Risk-Informed Closure of GSI-191, Bruce Letellier (*Alion Sci Technol*), Ernie Kee (*South Texas Project Nuclear Operating Company*), David Morton (*Univ of Texas, Austin*)

9:20 a.m.

RELAP5-3D Simulation of Core Flow Paths During a Hypothetical Debris-Generated Core Blockage Scenario, Rodolfo Vaghetto (*Texas A&M*), Ernie Kee (*South Texas Project Nuclear Power Plant*), Yassin A. Hassan (*Texas A&M*)

RISK-INFORMED RESOLUTION OF GENERIC SAFETY

ISSUE 191—II

Sponsored by NISD

Session Organizer: Ernest John Lowry Kee (*South Texas Project Nuclear Power Plant*)

Cochairs: David H. Johnson (*ABS Consulting*), Bruce Letellier (*Alion Sci Technol*)

GOVERNOR'S BOARDROOM

10:00 a.m.

Modeling Loss of Coolant Accident Frequencies and Break Sizes, David P. Morton, Ying-An Pan, Jeremy J. Tejada (*Univ of Texas, Austin*)

10:20 a.m.

Location Specific LOCA Frequencies for GSI-191 Applications, Karl N. Fleming (*KNF Consulting Services LLC*), Bengt O. Y. Lydell (*Scandpower Risk Management Inc.*)

10:40 a.m.

Experimental Investigation of Corrosion Conditions for Identifying Onset of Chemical Product Formation in Support of Risk-Informed Closure of GSI-191, Seung-Jun Kim (*Univ of New Mexico*), Janet Leavitt (*Univ of New Mexico/Alion Sci Technol*), Bruce Letellier (*Alion Sci Technol*), Kyle Hammond, Lana Mitchell, Edward Blandford (*Univ of New Mexico*), Ernie Kee (*South Texas Project Nuclear Operating Company*), Kerry Howe (*Univ of New Mexico*)

11:00 a.m.

Risk-Informed Resolution of Chemical Effects for Generic Safety Issue 191, Tim Sande, Austin Glover (*Enercon Services, Inc.*)

11:20 a.m.

Measurement of Water Chemistry Sensitivity on NUKON Fibrous Debris Penetration Through a Sump Strainer, Saya Lee, Rodolfo Vaghetto, Yassin A. Hassan (*Texas A&M*)

NOTE: This session will immediately follow the preceding session, which will begin at 8:00 a.m.

SYSTEM THINKING APPROACHES TO SAFETY AND SECURITY

Sponsored by NISD

Session Organizer: Lawrence Hettinger (*Liberty Mutual Research Institute for Safety*)

Cochairs: Nancy Levinson (*MIT*), Marzieh Abolhelm (*Univ of Illinois*)

CALVERT ROOM

8:00 a.m.

System Security: Rethinking Security for Facilities with Nuclear Materials, Adam D. Williams (*MIT/SNL*)

8:20 a.m.

Managing for the Unexpected: A Cultural Perspective, Luigi Macchi, Pia Oedewald, Teemu Reiman, Elina Pietikäinen, Nadezhda Gotcheva, Maria Ruuskanen, Kuapo Viitanen (*VTT – Technical Research Centre of Finland*)

8:40 a.m.

Hazard Analysis for Managing Risk in Nuclear Plant Digital Instrumentation and Control Systems, Ray Torok (*EPRI*), Bruce Geddes (*Southern Engineering Services, Inc.*)

9:00 a.m.

A New Approach to Risk Management and Safety Assurance of Digital Instrumentation and Control Systems, John Thomas, Nancy Leveson (*MIT*)

9:20 a.m.

Building Organizational Culture through Resilience, Jurate Liutvinskaite, Tom McDaniel (*Siemens Energy Inc*)

RETHINKING EMERGENCY PLANNING AND RESPONSE

Sponsored by NISD

Session Organizer: Vicki Marion Bier (*Univ of Wisconsin, Madison*)

Cochairs: Vicki Marion Bier (*Univ of Wisconsin, Madison*), Robert Goble (*Clark Univ*)

CALVERT ROOM

10:00 a.m.

Alternative Evacuation Strategies for Nuclear Power Accidents, Gregory D. Hammond (*Air Force Institute of Technology*), Vicki M. Bier (*Univ of Wisconsin, Madison*), invited

10:25 a.m.

Rethinking Nuclear Emergency Planning, Preparations, and Response, Rob Goble (*Clark Univ*), Vicki Bier (*Univ of Wisconsin, Madison*), invited

10:50 a.m.

The Relative Importance of Mitigation, Early Phase, Intermediate Phase, and Late Phase Response, Richard Denning, Douglas Osborn, Acacia Brunett, Tunc Aldemir (*Ohio State*)

11:15 a.m.

A Quantitative Significance Determination Process for Nuclear Plant EP, Randolph L. Sullivan (*NRC*)

NOTE: This session will immediately follow the preceding session, which will begin at 8:00 a.m.

WEDNESDAY, NOVEMBER 13, 2013, 1:00 P.M.

AVIATION SAFETY RISK ANALYSIS

Sponsored by NISD

Session Organizer: Sherry Borener (*FAA*)

Cochairs: Sherry Borener (*FAA*), Vicki Marion Bier (*Univ of Wisconsin, Madison*)

HAMPTON BALLROOM

1:00 p.m.

The Economics of Aviation Risk Management, Ashley Nunes, Ian Crook (*ISA Software*), Sherry Borener (*FAA*), invited

1:20 p.m.

Analysis of the Effects of Communication and Surveillance Facility Service Outages on Traffic Separations, Sherry Borener (*FAA*), Vitaly S. Guzhva (*MCR LLC*)

1:40 p.m.

Quantifying Risk in Commercial Aviation with Event Sequence Diagrams and Fault Trees, Robin L. Dillon (*Georgetown Univ*), Vicki M. Bier (*Univ of Wisconsin, Madison*), Sherry S. Borener, Mindy J. Robinson (*FAA*), Kandi K. Mitchell (*Crown Consulting, Inc.*), Poornima Balakrishna (*Saab Sensis Corporation*), Amanda Hepler (*Innovative Decisions, Inc.*), Aleta Best (*FAA*)

2:00 p.m.

Airport Collision Risk Assessment Using Operational Surveillance, Timothy P. Waldron, Andrew T. Ford (*Saab Sensis Corporation*)

RISK-INFORMED DECISION MAKING AND REGULATION—I

Sponsored by NISD

Session Organizer: Kevin A. Coyne (*NRC*)

Cochairs: Kevin A. Coyne (*NRC*), Justin T. Pence (*ANL, Univ of Illinois*)

HAMPTON BALLROOM

2:35 p.m.

Risk-Informed Significance Determination Process for New Reactors, C. J. Fong (*NRC*), Donald A. Dube (*NRC, retired*), Thomas J. Kozak (*NRC*)

3:00 p.m.

Use of Risk Information for Prioritizing Inspections, Tests, Analyses and Acceptance Criteria for Nuclear Power Plants Licensed Under 10 CFR Part 52, Mark Caruso, Tony Nakanishi, Christopher Welch (NRC)

3:25 p.m.

Challenges for New and Advanced Reactor Licensing and Risk-Informed Applications: A Regulatory Perspective, Donnie Harrison, Suzanne Schroer, Lynn Mrowca (NRC)

NOTE: This session will immediately follow the preceding session, which will begin at 1:00 p.m.

RISK ANALYSIS IN HEALTHCARE—PAPERS/PANEL

Sponsored by NISD

Session Organizer and Chair: Reza Kazemi (FDA)

GOVERNOR'S BOARDROOM

PAPERS

1:00 p.m.

A Bayesian Belief Network for Vascular Catheter-Associated Infection, Reza Kazemi (FDA), Meghan Dierks (Harvard Medical School), Ali Mosleh (Univ of Maryland)

1:25 p.m.

Quality Risk Management of Pharmaceuticals, H. Gregg Claycamp (US FDA)

1:50 p.m.

PANEL DISCUSSION

Despite efforts to provide safe, effective medical care, adverse events still occur with some regularity. Although risk cannot be entirely eliminated from healthcare activities, an important goal is to develop effective and durable mitigation strategies to render the system "safer." In order to do this, though, we must develop models that comprehensively and realistically characterize the risk. In the healthcare domain, this can be extremely challenging due to the wide variability in the way that healthcare processes and interventions are executed and also due to the dynamic nature of risk in this particular domain. This panel discusses the applicability of engineering systems' risk analysis methods in this healthcare domain and trends in risk analysis in this field.

PANELISTS:

- Reza Kazemi (USFDA)
- Gregg Claycamp (USFDA)
- Meghan Dierks (Harvard Medical School)
- Bradford Winters (Johns Hopkins University)
- Monifa Vaughn-Cooke (UMD)
- Yashika Rahaman (USFDA)
- James Battles (AHRQ)

HUMAN PERFORMANCE MODELING AND ANALYSIS

Sponsored by NISD

Session Organizer: Yung Hsien James Chang (NRC)

Cochairs: Yung Hsien James Chang (NRC), Luca Podofillini (Scherrer Inst)

GOVERNOR'S BOARDROOM

2:35 p.m.

PSA-Informed Review of Emergency Procedural Guidance, Luca Podofillini, Vinh N. Dang, Bernhard Reer (Scherrer Inst)

3:00 p.m.

IDHEAS—An Integrated Decision-Tree Human Event Analysis System for Human Reliability Analysis, G. W. Parry (ERIN Engineering & Research), J. A. Forester (INL), V. N. Dang (Paul Scherrer Inst), S. M. L. Hendrickson (SNL), M. Presley (EPRI), E. Lois, J. Xing (NRC)

3:25 p.m.

Overview of a Model-Based HRA Methodology, Nsimah J. Ekanem, Ali Mosleh (Univ of Maryland)

NOTE: This session will immediately follow the preceding session, which will begin at 1:00 p.m.

EXTERNAL EVENT MODELING FOR RISK ANALYSIS

Sponsored by NISD

Session Organizer: Ahmed E. Elbanna (Univ of Illinois)

Cochairs: Ahmed E. Elbanna (Univ of Illinois), Tatsuya Sakurhara (Univ of Illinois)

CALVERT ROOM

1:00 p.m.

The SCEC/USGS Dynamic Earthquake Rupture Code Comparison Exercise, Ruth A. Harris (USGS)

1:20 p.m.

Tsunami Probabilistic Risk Assessment (PRA) for Kashiwazaki-Kariwa Nuclear Power Station Unit 7, Yasunori Yamanaka, Shinichi Sugimoto (TEPCO)

1:40 p.m.

A New Integrated Framework to Advance Fire PRA for Nuclear Power Plants, Tatsuya Sakurahara, Zahra Mohaghegh (Univ of Illinois), Ernie Kee, Shawn Rodgers (South Texas Project Nuclear Operating Company), Mark Brandyberry (Univ of Illinois), Reza Kazemi (Soteria Consultants, LLC), Seyed A. Reihani (Univ of Illinois)

2:00 p.m.

Towards Physics-Based Seismic PRA, Ahmed Elbanna, Zahra Mohaghegh (Univ of Illinois), Ernie Kee (South Texas Project Nuclear Operating Company), Seyed A. Reihani (Univ of Illinois), Reza Kazemi (Soteria Consultants), Shawn Rodgers (South Texas Project Nuclear Operating Company)

PHYSICS-OF-FAILURE MODELS

Sponsored by NISD

Session Organizer: Stephen Dale Unwin (PNNL)

Cochairs: Stephen Dale Unwin (PNNL), Mohammad Modarres (Univ of Maryland)

CALVERT ROOM

2:35 p.m.

Agent Autonomy Approach to Probabilistic Physics-of-Failure Modeling of Complex Dynamic Systems with Interacting Failure Mechanisms, Katherine Gromek, Mohammad Modarres (Univ of Maryland)

2:55 p.m.

Probabilistic Risk Assessment for Anti Surge System API 672 Air Compressors During Operational Phase, Subhadip Sengupta (Det Norske Veritas)

3:15 p.m.

The Reliability Effects of Transient-Induced Degradation, Brittany L. Guyer, Michael W. Golay (MIT)

3:35 p.m.

A Proposed Method for Estimating Failure Rates of Degraded Passive Components in the NRC Significance Determination Process, Stephen D. Unwin, Kenneth I. Johnson, William J. Ivans, Peter P. Lowry (PNNL)

NOTE: This session will immediately follow the preceding session, which will begin at 1:00 p.m.

WEDNESDAY, NOVEMBER 13, 2013, 4:00 P.M.

RISK-INFORMED DECISION MAKING AND REGULATION—II

Sponsored by NISD

Session Organizer: Kevin Coyne (NRC)

Cochairs: Kevin A. Coyne (NRC), Justin T. Pence ((ANL/Univ of Illinois)

HAMPTON BALLROOM

4:00 p.m.

Normalized Core Damage Frequency as a Risk Metric, William J. (Bill) Galyean (NuScale Power)

4:20 p.m.

The Impact of Space Weather on NRC Licensed Facilities, Leroy Hardin (NRC)

4:40 p.m.

Development of a Department of Energy Standard for Probabilistic Risk Assessments at Nuclear Facilities, James O'Brien, Garrett Smith, Rama Sastry (DOE), Karl Fleming (KNF Consulting Services LLC), Steven Krahn (Vanderbilt Univ)

5:00 p.m.

Probabilistic Risk Management in Public Sector Construction Projects, Laurie E. Folden, John R. Eschenberg (DOE), Arthur G. Haugh (Longenecker and Associates), invited

5:20 p.m.

Risks from Emerging Technologies: Towards an Effective Public Management Response, Teri N. Leffer (Independent Researcher)

5:40 p.m.

You Don't Plan to Have an Accident, Richard E. Malenfant (LANL, retired)

6:00 p.m.

Risk Management Study of Aqueous Actinide Recovery and Recycle Capability Reconfiguration at the Los Alamos National Laboratory, L. Dale Sivils, Louis D. Schulte, J. Matthew Jackson, Robert Y. Parker, Jim Rubin, Keith W. Fife, Stephen L. Yarbrow (LANL)

HUMAN RELIABILITY AND PERFORMANCE IN NUCLEAR PLANT OPERATION

Sponsored by NISD

Session Organizer: Luca Podofillini (Scherrer Inst)

Cochairs: Luca Podofillini (Scherrer Inst), Yung Hsien James Chang (NRC)

GOVERNOR'S BOARDROOM

4:00 p.m.

SACADA Database for Human Reliability and Human Performance, Y. James Chang (NRC)

4:25 p.m.

Results and Insights from the US HRA Empirical Study, Huafei Liao (SNL), John Forester (INL), Vinh N. Dang (Scherrer Inst), Andreas Bye (OECD Halden Reactor Project, Institute for Energy Technology), Erasmia Lois, James Chang (NRC)

4:50 p.m.

An Empirical Investigation of Team Decision-Making with Emergency Procedures, Salvatore Massaiu, Lars Holmgren (OECD Halden Reactor Project)

5:15 p.m.

Modeling and Simulation of Operator Problem-Solving Styles, Yuandan Li, Ali Mosleh (Univ of Maryland)

5:40 p.m.

Automation, Cyber Security and Risk Assessment: HRA Where Art Thou?, David I. Gertman (INL)

THURSDAY, NOVEMBER 14, 2013

7:30 a.m. - 2:00 p.m. Meeting Registration

8:00 a.m. - 11:30 a.m. 2013 Risk Management: Technical Sessions

- Risk Management for Long-Term NPP Operation
- Perception of Risk-Informed Programs—Panel
- Fire PRA Lesson Learned—Panel
- Socio-Technical Systems Risk Modeling
- Safety Culture
- Complexity Sciences and Risk Management
- SMR PRA Advances and Challenges—Panel

1:00 p.m. - 4:30 p.m. 2013 Risk Management: Technical Sessions

- Expert Elicitation
- Radiation, Nanotechnology, and Risk: Building Understanding and Informatics Opportunities—Panel
- Risk-Informed Resolution of Generic Safety Issue 191—III
- Uncertainty Modeling and Analysis
- Closing Plenary—Risk Management: History and Perspectives

8:40 a.m.

A Bayesian Methodology for Power Plant Online System Health Monitoring, Masoud Pourali (*KimiaPower PLLC*), Ali Mosleh (*Univ of Maryland*)

9:00 a.m.

Asset Risk Management for Long Term Operation Using Principles of Complex Adaptive Systems, John Gaertner (*EPRI*)

9:20 a.m.

Integrated Life Cycle Management: A Degradation-Based Approach to Calculate the Likelihood of Failure of a Component or a Structure, Thomas Esselman, Paul Bruck, Srikanth Cherukuri (*Lucius Pitkin, Inc.*), Charles Mengers (*EPRI*)

PERCEPTION OF RISK-INFORMED PROGRAMS—PANEL

Sponsored by NISD

Session Organizer: Amir Afzali (*SNC*)

Cochairs: Amir Afzali (*SNC*), Enrique Droguett (*Federal University of Pernambuco*)

HAMPTON BALLROOM

10:00 a.m.

Risk-informed programs are increasingly being used to improve plant safety, create flexibility, and reduce unnecessary burden. The available evidence from the operational experience indicates that the implementation of risk-informed programs, whether regulatory-driven or voluntarily adopted, have resulted in improvement in plant safety, increased effectiveness of regulatory oversight, and enhanced operational flexibility. Examples of such successful risk-informed programs include Maintenance Rule, the Significance Determination Process of the Reactor Oversight Program, and Risk-Informed Inservice Inspections. Yet, there is a predominant perception in some sectors of the regulatory body and organizations representing the nuclear industry as well as nuclear facilities that implementation of risk-informed programs is likely to result in the loss of safety margins. It is understood that how people and organizations react to programs impacting risk is affected by many factors including how risk information is perceived and communicated and how alternatives are structured. Therefore, for ensuring effective and timely transition to risk-informed programs, allowing for early realization of benefits of the transition, it is critical to address this erroneous perception of risk-informed programs. A couple of the first steps in this process are to develop an understanding of the factors that contribute to formation of this negative perception of risk-informed programs and to develop options for fostering sound consideration of these programs. The panelists in this session provide their opinion on how this perception is created and how it can be corrected through answering questions such as the following:

1. What factors have resulted in this negative perception being created?

THURSDAY, NOVEMBER 14, 2013, 8:00 A.M.

RISK MANAGEMENT FOR LONG-TERM NPP

OPERATION

Sponsored by NISD

Session Organizer: Stephen M. Hess (*EPRI*)

Cochairs: Stephen M. Hess (*EPRI*), H. S. Cullingford (*Risk Management Advocate*)

HAMPTON BALLROOM

8:00 a.m.

Investments Portfolio Optimal Planning, A Tool for an Integrated Life Cycle Management, Jérôme Lonchampt, Karine Fessart (*EdF*)

8:20 a.m.

MELCOR/MACCS2 Analysis for BWR Mark I Filtered Containment Venting, Douglas M. Osborn, Kyle W. Ross, Nathan E. Bixler, Jeffrey N. Cardoni, Matthew R. Denman (*SNL*)

2. To what extent are utilities and regulator contributing to these factors?
3. What are the implications of the way risk implications are communicated?
4. How can we intervene to prevent such adverse perceptions?

PANELISTS:

Stuart Lewis (*EPRI*)
Jim Chapman (*Sciencetech Curtiss Wright Flow Control*)
Donnie Harrison (*NRC*)
Victoria Anderson (*NEI*)

NOTE: This session will immediately follow the preceding session, which will begin at 8:00 a.m.

FIRE PRA LESSON LEARNED—PANEL

Sponsored by NISD
Session Organizer: Amir Afzali (*SNC*)
Cochairs: Amir Afzali (*SNC*), Seyed A. Reihani (*Univ of Illinois*)

GOVERNOR'S BOARDROOM

8:00 a.m.

Fire risk assessments have shown that fire is one of the most important risk contributors for nuclear power plants (NPPs). Moreover, operational experience has confirmed that fires are one of the most frequent hazards experienced by NPPs. On the other hand, it has been challenging to develop models and programs that can effectively predict and manage this significant hazard. As a result, there has been intense discussion around the tools, methods, and programs available to ensure adequate protection against the hazard. One of the tools/methods that is being extensively used to effectively and efficiently address the fire hazard is Fire Probabilistic Risk Assessment (FPPRA). However, the effectiveness of FPPRAs to provide adequate realistic insights for conservative decision making is being questioned. The purpose of this panel session is to discuss the value of FPPRAs by sharing the insights that have been gained from developing FPPRAs. For example, panelists will discuss the following questions: Do FPPRAs provide unique safety improving insights? If yes, what are they? Does the state-of-the-practice create siloed conservatisms that would result in nonconservative decision making? If yes, what are they, and how could they lead to nonconservative decision making?

PANELISTS:

- Kiang Zee (*Erin Engineering*)
- Jim Chapman (*Sciencetech Curtiss Wright Flow Control*)
- Young Jo (*Southern Nuclear Company*)
- Matt Landry (*Southern Nuclear Company*)
- Anil Julka (*Nextera Energy*)

SOCIO-TECHNICAL SYSTEMS RISK MODELING

Sponsored by NISD
Session Organizer: Justin T. Pence (*ANL/Univ of Illinois*)
Cochairs: Justin T. Pence (*ANL/Univ of Illinois*), Marzieh Abolhelm (*Univ of Illinois*)

GOVERNOR'S BOARDROOM

10:00 a.m.

A Methodology to Identify Organizational Interface Failures for Use in Risk and Reliability Assessments, Thiago Pires (*Univ of Maryland, College Park*), Ali Mosleh (*Univ of Maryland*)

10:20 a.m.

Considering Organizational Dependencies in a Multi-Unit PRA, Suzanne Schroer (*NRC*), Mohammad Modarres (*Univ of Maryland*)

10:40 a.m.

Understanding and Modeling Organizational Factors Within Probabilistic Risk Analyses, M. Gajdosz, T. Bedford, S. Howick (*Univ of Strathclyde*)

11:00 a.m.

Learning from Failures Using Decision Making Techniques, A. Labib (*Univ of Portsmouth*), invited

11:20 a.m.

A Sociotechnical Systems Design for High Reliability Multidisciplinary Teams, Eli Berniker (*Pacific Lutheran University -Emeritus*)

NOTE: This session will immediately follow the preceding session, which will begin at 8:00 a.m.

SAFETY CULTURE

Sponsored by NISD
Session Organizer: Justin T. Pence (*ANL/Univ of Illinois*)
Cochairs: Justin T. Pence (*ANL/Univ of Illinois*), Marzieh Abolhelm (*Univ of Illinois*)

COUNCIL ROOM

8:00 a.m.

Training Labs: A Way for Improving Safety Culture, Carlo Rusconi (*Sogin*)

8:30 a.m.

How to Elucidate and Judge Unknown Shadow of Nuclear Safety Culture, Gueorgui Petkov (*Tech Univ of Sofia*)

9:00 a.m.

An Exploration of the Correlations Between Industrial Fatal Accident Rates Across Nations and the Cultural Dimensions of Power Distance and Individuality, Fred A. Infortunio (*Atkins Global*)

COMPLEXITY SCIENCES AND RISK MANAGEMENT

Sponsored by NISD

Session Organizer: Mohamed Hibti (EDF)

Cochairs: Mohamed Hibti (EDF), Antoine Rauzy (Ecole Polytechnique)

COUNCIL ROOM

10:00 a.m.

Is the Complexity of Hazardous Socio-Technical Systems “Directly” Connected to Major Event Occurrence?, Yves Dien (EDF -R&D), Nicolas Dechy (IRSN), Michel Llory (IAO)

10:25 a.m.

Dynamic Learning of Latent Residuals for Diagnosing New Class Drifts in Wind Turbines, Roozbeh Razavi-Far, Enrico Zio (Politecnico di Milano)

10:50 a.m.

Resilience Metrics of Coupled Coastal-Energy Systems, Daniel A. Eisenberg, Matthew E. Bates (US Army Engineer R&D Center), Thomas P. Seager (Arizona State Univ), Igor Linkov (US Army Engineer R&D Center)

11:15 a.m.

An Andromeda Extension for Network Based Safety Assessment, D. Ait-Ferhat (Universite de Bordeaux), T. Friedlhuber (EF R&D and Ecole Polytechnique), M. Hibti (EdF & R&D)

Note: This session will immediately follow the preceding session, which will begin at 8:00 a.m.

SMR PRA Advances and Challenges–Panel

See SMR 2013, page 70.

THURSDAY, NOVEMBER 14, 2013, 1:00 P.M.

EXPERT ELICITATION

Sponsored by NISD

Session Organizer: Tim Bedford (Univ of Strathclyde)

Cochairs: Tim Bedford (Univ of Strathclyde), Ali Mosleh (Univ of Maryland)

FORUM ROOM

1:00 p.m.

A Meta-Data Informed Comparison of Expert Judgment Estimates for Probabilistic and Physical Quantities, Ellis Feldman, Ali Mosleh (Univ of Maryland)

1:25 p.m.

Dynamic Uncertainty Handling for Coherent Decision Making in Nuclear Emergency Response, Manuele Leonelli, James Q. Smith (Univ of Warwick)

1:50 p.m.

Validating Expert Judgment, Roger M. Cooke (Resources for the Future)

2:15 p.m.

Structured Expert Judgment for Evidence Based Decision Making, Tim Bedford (Univ of Strathclyde), invited

RADIATION, NANOTECHNOLOGY, AND RISK: BUILDING UNDERSTANDING AND INFORMATICS OPPORTUNITIES—PANEL

Sponsored by NISD

Session Organizer: Mark D. Hoover (NIOSH)

Cochairs: Mark D. Hoover (NIOSH), Ronald A. Knief (SNL)

GOVERNOR’S BOARDROOM

1:00 p.m.

Nanotechnology is the understanding and control of matter at the nanoscale, at dimensions between approximately 1 and 100 nanometers, where unique phenomena enable novel applications. Nano-engineered structural materials, metals, coatings, coolants, ceramics, sorbents, and sensors may be particularly enabling in radiation-related applications. This panel will consider issues for assessing and managing radiation and nano-associated risks including (1) how emerging applications of nanotechnology may affect radiation-related activities and (2) how established resources may provide a workable framework and process to anticipate, recognize, evaluate, control, and confirm mission success for such activities. The radiation protection community is fortunate that a significant body of information has been derived from studying radon decay products and other naturally occurring nanoparticles, ultrafine aerosols of actinides, and aerosols from atmospheric testing. For example, we understand that filtration of airborne nanoparticles is highly efficient, due to the effective collection of small airborne particles by diffusion. Collectively, we can advance a visionary “radnanoinformatics” approach in which we determine what information is relevant to the application and radiation safety aspects of nanotechnology and then collect, validate, store, share, mine, analyze, model, and apply that information.

PANELISTS:

- Mark D. Hoover (NIOSH)
- Ronald A. Knief (SNL)
- Terry Brock (NRC)
- John Boice (NCRP)
- Lisa Friedersdorf (OSTP-NNCO)
- Robert Pohanka (OSTP-NNCO)
- Tarek Fadel (OSTP-NNCO)
- Janet Carter (OSHA)
- Donald Cool (ISCORS)

RISK-INFORMED RESOLUTION OF GENERIC SAFETY

ISSUE 191—III

Sponsored by NSID

Session Organizer: Ernest John Lowry Kee (*STPNOC*)

Cochairs: Ernest John Lowry Kee (*South Texas Project Nuclear Power Plant*), Craig Sellers (*Enercon*)

SENATE ROOM

1:00 p.m.

Quantifying Chemical Effects Using the Risk Informed Method, Janet J. Leavitt, Bruce Letellier (*Alion Sci Technol*), Kerry J. Howe, Seung-Jun Kim (*Univ of New Mexico*), Seyed A. Reihani (*Univ of Illinois at Urbana-Champaign*), Ernie Kee (*South Texas Project Nuclear Operating Co.*)

1:25 p.m.

Temperature Effect on Small Size NUKON Fibrous Debris Settling Velocity, Saya Lee, Landon M. Brockmeyer, Shamsul A. B. Sulaiman, Yassin A. Hassan (*Texas A&M*)

1:50 p.m.

Rheological Characterization of Buffered Boric Acid Aqueous Solutions, Serdar Ozturk, Xinrui Ma, Yassin A. Hassan (*Texas A&M*)

UNCERTAINTY MODELING AND ANALYSIS

Sponsored by NISD

Session Organizer: Mohammad Modarres (*Univ of Maryland*)

Cochairs: Mohammad Modarres (*Univ of Maryland*), Enrique Droguett (*Federal University of Pernambuco*)

HAMPTON BALLROOM

1:00 p.m.

A RISMIC-Informed Metatheory of Theories of Nuclear Safety, Gangyang Zheng (*Harbin Engineering Univ/Texas A&M*), Paul Nelson (*Texas A&M*), Ernest Kee, Fatma Yilmaz (*South Texas Plant Nuclear Operating Co.*), Zhijian Zhang (*Harbin Engineering Univ*)

1:25 p.m.

Non-Standard Methods for Extremely Low Probability Assessments, Robert Kurth (*Engineering Mechanics Corp of Columbus*), Cedric Sallaberry (*SNL*), David Rudland (*NRC*)

1:50 p.m.

A Probabilistic Characterization of Simulation Model Uncertainties, V. Ontiveros, M. Modarres (*Univ of Maryland*)

2:15 p.m.

Unscented Transform for Approximating Mean and Covariance of Distributions in BEPU Methodologies, Douglas A. Fynan (*Univ of Michigan*), Kwang-Il Ahn (*KAERI*), John C. Lee (*Univ of Michigan*)

CLOSING PLENARY SESSION—RISK MANAGEMENT: HISTORY AND PERSPECTIVES

Sponsored by NISD

Session Organizer: Ronald A. Knief (*SNL*)

Cochairs: Ronald A. Knief (*SNL*), Mark Hoover (*Natl Inst Occupational Safety & Health*)

HAMPTON BALLROOM

3:00 p.m.

Nuclear industry interests with respect to “risk” have included defining, assessing, communicating, informing, and managing it. Dr. B. John Garrick has been a key player every step of the way. Now, Dr. Garrick would like to share with us his unique perspective on the history and evolution of nuclear risk management. This mini-plenary session will also include a pair of vignettes on risk management where the consequences, respectively, were (1) the individual’s own life and (2) the need to fundamentally reshaping an entire nuclear enterprise.

SPEAKERS:

- B. J. Garrick (*Pickard, Lowe & Garrick, ret.*)
“PRA-Based Risk Management: History & Perspectives”
- S. M. Gutierrez (*Sandia National Laboratories*)
“Risk Management from the Perspective of a Fighter Pilot, Test Pilot, and Astronaut”
- B. W. Mullins (*HQ USAF*)
“Leadership and Risk Management”

NOTE: This session will immediately follow the preceding session, which will begin at 1:00 p.m.

Visit The Avenue of History in the Expo

In commemoration of the 75th anniversary of the discovery of nuclear fission, The Avenue will feature 12 displays and a movie that highlight the milestones of the advancements in nuclear science and technology.





LANDIS PUBLIC COMMUNICATION & EDUCATION AWARD



presented to
William H. Miller

His partnership with nuclear industry has contributed a highly successful, significant model for collaborations between industry, government, and academic interactions that is revolutionizing Nuclear Technical education in the United States.

MARY JANE OESTMANN PROFESSIONAL WOMEN'S ACHIEVEMENT AWARD



presented to
Kirsten Laurin-Kovitz

For distinguished achievement and commitment to nuclear nonproliferation, through inspired international outreach and engagement, development of innovative curriculums and institutions, and tireless leadership.

SEABORG MEDAL



presented to
Harold M. Agnew

Dr. Agnew is recognized for his many years of dedicated service and significant contributions to the nuclear research and development programs of the United States Government.

Thermal Hydraulics Division TECHNICAL ACHIEVEMENT AWARD



presented to
Chang Oh

In recognition of his exceptional contributions to enhancing thermal hydraulic technologies of advanced reactors, and for his impact as a researcher, practitioner, designer, and leader.

Nuclear Installations Safety Division THEOS J. "TOMMY" THOMPSON AWARD



presented to
Ali Mosleh

In recognition of his innovative research in improving probabilistic risk and reliability analysis of nuclear plants.

Young Members Group YOUNG MEMBERS ADVANCEMENT AWARD



presented to
Eric P. Loewen

In recognition for his significant contributions toward young members' advancement through his support of students and young professional in all levels of society and section governance, by advocating for next generation leaders, and by encouraging young members to actively participate in public policy.

Young Members Group YOUNG MEMBER EXCELLENCE AWARD



presented to
Piyush Sabharwall

For his work in development and application of heat utilization using innovative techniques in nuclear hybrid energy systems and active involvement in ANS Young Members Group activities.

STANDARDS SERVICE AWARD



presented to
Carl A. Mazzola

In recognition of his conscientious work to develop, maintain, and facilitate the issuance of numerous meteorological and natural phenomena standards for nuclear facilities and his outstanding service to the American Nuclear Society as chair of the Nuclear Facilities Standards Committee for the last seven years.

Decommissioning & Environmental Sciences Division W. BENNETT LEWIS AWARD



presented to
Charles E. Till

In recognition of his lifetime of pioneering contributions to the development of economic and sustainable energy supply systems as shown by his creative and persistent effort during the development of the Integral Fast Reactor Program.

Reactor Physics Division EUGENE P. WIGNER REACTOR PHYSICIST AWARD



presented to
Augusto Gandini

In recognition for his fundamental contribution in establishing a new field of Reactor Physics, the Generalized Perturbation Theory for non-conservative systems. His work opened new perspectives for the validation of simulation methods using experimental data, for uncertainty analyses and, in general, for a deeper understanding of the relationships between reactor parameters and nuclear data, and their uncertainties.



Nuclear Installations Safety Division GEORGE C. LAURENCE PIONEERING AWARD FOR NUCLEAR SAFETY



presented to
Adolf Birkhofer
In recognition of his dedication and perseverance in improving the safety of nuclear facilities throughout the world.

Radiation Protection and Shielding Division ROCKWELL LIFETIME ACHIEVEMENT AWARD



presented to
J. Kenneth Shultis
For numerous contributions over the last 50 years to the practice of shielding, shielding analyses, skyshine methodology and computer algorithms, the education of students through teaching and research, the training of professionals through short courses, the publication of textbooks and technical articles, and service to the profession.

PRESIDENTIAL CITATION



presented to
Michaela Brady Raap
In recognition of her deep commitment to improving the Society through better use of technology. With tenacity and strength of conviction, Mikey worked to secure the approval for major improvements to the organization's core technology systems. Her unwavering resolve and passionate leadership helped to galvanize staff and successfully foster support on the Board for this major initiative. Mikey's efforts have helped to position the Society for growth and success.

PRESIDENTIAL CITATION



presented to
William Corcoran
For assiduous efforts to improve nuclear operations through organizational learning. Through ANS professional development workshops, William has provided training on safety culture and the human performance oriented approach to event investigation. He has championed the consistent use of root cause analysis techniques to garner lessons learned in order to improve safety. He has left an indelible mark on nuclear operations.

PRESIDENTIAL CITATION



presented to
Audeen Fentiman
For her impressive leadership in helping to move ANS's strategic plan into action. Stepping forward when new leadership was needed, Audeen led the Planning Committee to develop a framework for the implementation of the ANS Strategic Plan. Her selfless efforts have resulted in an actionable plan that will allow the Society to measure progress and gauge success as it moves strategically into the future.

PRESIDENTIAL CITATION



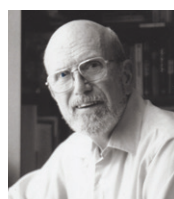
presented to
Eric Loewen
For his selfless dedication and unwavering determination as he managed ANS's transition to new senior leadership. His affable style together with firm resolve allowed him to gain Board support and modernize expectations for ANS's staff leadership. Eric ushered the Society through difficult discussions and critical decisions in recruiting and transitioning to a new Executive Director. His efforts have helped to promote a new culture at ANS headquarters with dynamic senior leadership that will guide the Society for years to come.

PRESIDENTIAL CITATION



presented to
David Matthews
In recognition of his significant contributions to the development of the ANS Operations & Power Division's Utility Working Conference. David has helped to make the UWC one of ANS's most highly regarded conferences. His efforts have helped to grow the conference into the top flight meeting within nuclear energy and to begin repositioning ANS as a leader within the nuclear energy arena.

PRESIDENTIAL CITATION



presented to
Theodore Rockwell
In special recognition of his service to the Society and for his lifelong commitment to advancing nuclear science and technology. His continuous efforts to promoting the profession and the field are evidenced by his enduring legacy of published works and other professional achievements. A passionate nuclear advocate, Ted was committed to honest debate about nuclear science and to truthful nuclear communication. He courageously confronted anti-nuclear sentiment as well as theories he believed faulty. His dedication to nuclear was an example for us all and the profession has benefited from his presence.



PRESIDENTIAL CITATION



presented to
Eugene P. Wilkinson

In special recognition of his service to the nuclear community. A true pioneer, his life was highlighted by a series of firsts, including first commander of a nuclear submarine, first commander of a nuclear surface ship, and first president and CEO of the Institute of Nuclear Power Operations. His leadership throughout his career and at INPO in particular helped to establish the levels of performance to which the industry now aspires.

FELLOW



presented to
Nam Truc Dinh

In recognition for his accomplished innovative research results which enabled the development and installation of severe accident mitigation devices for the GEN III LWRs. He achieved several results which improved understanding of complex thermal hydraulic phenomena important to reactor safety. He developed advanced models and computational methodology for simulation of two phase flow.

FELLOW



presented to
Won Sik Yang

Dr. Yang led the development of what has become the premier high fidelity reactor physics software package in the world today for fast reactor analysis. Under his technical leadership, the UNIC and MC2-3 code systems were developed under the DOE NEAMS program which have had a dramatic impact on the design and analysis of advanced GEN-IV fast reactor cores and the viability of closed fuel cycles for Transuranic and Minor Actinide Burning.

LOCAL SECTIONS MERITORIOUS AWARD



presented to
Connecticut Local Section
For small local section best public information and best section management award.

LOCAL SECTIONS MERITORIOUS AWARD



presented to
Northeastern New York Local Section
For small local section best meeting and programs award.

LOCAL SECTIONS MERITORIOUS AWARD



presented to
Pittsburgh Local Section
For small local section best membership award.

LOCAL SECTIONS MERITORIOUS AWARD



presented to
Idaho Local Section
For large local section best membership and best section management award.

LOCAL SECTIONS MERITORIOUS AWARD



presented to
Savannah River Local Section
For large local section best meeting and programs and best public information award.

Education, Training & Workforce Development Division MARK MILLS AWARD



presented to
Youngsuk Bang
For his work entitled
“Hybrid Reduced Order Modeling Algorithms for Reactor Physics Calculations”

Education, Training & Workforce Development Division ROBERT L. LONG TRAINING EXCELLENCE AWARD



presented to
Randy Edington
In recognition for instilling a commitment to knowledge and training supporting Palo Verde’s mission to safely and efficiently generate electricity for the long term.



DISTINGUISHED SERVICE AWARD



presented to

Mimi Holland Limbach

In recognition of exceptional dedication to changing the perception and prioritization of pronuclear communications as a responsibility of the American Nuclear Society and its members.

OCTAVE J. DUTEMPLE AWARD



presented to

Antoinette (Toni) I. Bishop

For more than 23 years, Toni Bishop has provided exemplary service to the American Nuclear Society. Toni is well respected by ANS members and staff, and she is instrumental in the ongoing success of the Communications and Outreach Department.

Toni has been successful at planning and working on outreach programs that build awareness and understanding of nuclear science and technology. She has improved the scholarship application review and award process by streamlining procedures and creating a more effective tracking system. Toni has worked effectively with division leadership and staff to improve division communications. Toni's upbeat manner and her conscientious work habits have greatly contributed to the ANS.

ALVIN M. WEINBERG AWARD



presented to

Pete Domenici

Senator Domenici is recognized for his many years of dedicated service and significant contributions to the nuclear programs of the United States Government.

NUCLEAR HISTORIC LANDMARK



presented to

ATALANTE

For successfully demonstrating its uninterrupted capacity to perform intense and innovative research for the development of the nuclear fuel cycle worldwide since 1992, thanks to its teams and hot laboratories.

NUCLEAR HISTORIC LANDMARK



presented to

NIST Center for Neutron Research

For the development of the first internationally competitive user facility for cold neutron research in the USA.

Congratulations to all 2013 ANS Award Recipients



Embedded Topical Meeting: 2nd ANS SMR 2013 Conference



GENERAL CHAIR:
Thomas L. Sanders
Savannah River National Laboratory



ASSISTANT GENERAL CHAIR:
Philip Moor
High Bridge Associates



TECHNICAL PROGRAM CHAIR:
Vince Gilbert
EXCEL Services Corporation



ASSISTANT TECHNICAL PROGRAM CHAIR:
Mark Campagna
McCarls, Inc.

TUESDAY, NOVEMBER 12, 2013

7:30 a.m. - 5:00 p.m.	Meeting Registration
8:00 a.m. - 10:00 a.m.	Spouse/Guest Hospitality
8:00 a.m. - 11:30 a.m.	2013 SMR Meeting Plenary I <ul style="list-style-type: none">• Meeting Overview and General Topics
1:00 p.m. - 6:05 p.m.	2013 SMR Meeting: Technical Sessions <ul style="list-style-type: none">• SMR iPWR Refueling Designs and Operations—Panel• SMR Research and Development—I• SMR Nonproliferation and Security—Panel• SMR Emergency Planning and Execution

TUESDAY, NOVEMBER 12, 2013, 8:00 A.M.

PLENARY I: MEETING OVERVIEW AND GENERAL TOPICS

Sponsored by OPD

Session Organizer and Chair: James (Vince) V. Gilbert (*EXCEL Services Corp*)

BLUE ROOM

SPEAKERS:

Welcome and ANS President's Remarks

- Donald R. Hoffman (*President and CEO, EXCEL Services Corporation*)

Chair Opening Remarks

- Thomas Sanders (*SRS*)

Technical Program Overview

- Philip Moor (*High Bridge*)

SMR Regulatory Perspectives

- Speaker to be determined

DOE SMR Status and Direction

- Dr. Peter B. Lyons (*Assistant Secretary for Nuclear Energy, US DOE*)
- Ron S. Faibish (*Senate Committee on Energy and National Resources*)

SMR Financial Perspectives

- Bruce Lacy (*Lacy Consulting Group*)

TUESDAY, NOVEMBER 12, 2013, 1:00 P.M.

SMR iPWR REFUELING DESIGNS AND OPERATIONS— PANEL

Sponsored by OPD

Session Organizer and Chair: Richard Browder (Duke Energy)

BLUE ROOM

1:00 p.m.

A critical component to operating and maintenance of any nuclear power plant, including small modular reactors, is safe, efficient refueling operations. This panel session will discuss the refueling designs and refueling operations associated with various SMR designs. Each panelist will present an overview of his respective company's refueling and fuel handling design followed by a Q&A session with session attendees.

PANELISTS:

- Frank Helin (*Generation mPower*)
- Ross Snuggerud (*NuScale Power*)
- Alex Harkness (*Westinghouse*)
- Russell Beckmeyer (*Holtec*)

SMR RESEARCH AND DEVELOPMENT—I

Sponsored by OPD

Session Organizer and Chair: Robert N. Hill (ANL)

BLUE ROOM

2:35 p.m.

Nuclear Oil Shale—Partnership Opportunity for an Expanded Domestic SMR Market, Daniel Curtis, Charles W. Forsberg (*MIT*)

3:00 p.m.

Cogeneration of Liquid Fuels and Electricity on Oahu, Michael W. Patterson (*INL*)

3:25 p.m.

Evaluation of Heat Exchanger Designs for Use with the Small Modular High Temperature Reactors, Caleb Robison, Fatih Aydogan (*Univ of Idaho*)

3:50 p.m.

Is a PWR SMR or a BWR SMR the Better Choice for the Future?, Koroush Shirvan, Mujid S. Kazimi (*MIT*)

Note: This session will immediately follow the preceding session, which will begin at 1:00 p.m.

SMR NONPROLIFERATION AND SECURITY—PANEL

Sponsored by OPD; cosponsored by the NNTG

Session Organizer and Chair: Robert A. Bari (BNL)

GOVERNOR'S BOARDROOM

1:00 p.m.

There is interest worldwide in the development and use of small modular reactors. Invited panelists will discuss issues for technology and policy related to nonproliferation and security of SMRs. A broad range of representative views will be given, including

national and international perspectives. Each panelist will present a short overview, and this will be followed by discussions with the conference attendees.

PANELISTS:

- Jeremy Whitlock (*AECL*)
- Matthew Bowen (*NNSA*)
- Jon Phillips (*IAEA*)
- Alex Burkart (*Department of State*)
- Paul Genoa (*NEI*)

SMR EMERGENCY PLANNING AND EXECUTION

Sponsored by OPD

Session Organizer and Chair: Daniel P. Stout (TVA)

GOVERNOR'S BOARDROOM

2:35 p.m.

Licenses must provide reasonable assurance that adequate Emergency Planning (EP) measures to protect public health and safety can be implemented in the event of a radiological emergency. Small modular reactors (SMRs) contain features that result in substantially reduced source terms and less off-site release during severe accidents. How will SMR designers demonstrate significantly reduced dose at the site boundary from postulated accidents? If the population at the site boundary is protected as well or better than the population 10 miles from a large reactor, what type of EP is appropriate? What regulatory policy shifts are necessary to adapt EP expectations to account for SMR safety improvements, and what are the implications for future site selection opportunities?

PANELISTS:

- Paul Genoa (*NEI*)
- Steve Mirsky (*NuScale*)
- Sandra Sloan (*Generation mPower*)
- Trish Milligan (*NRC*)

NOTE: This session will immediately follow the preceding session which will begin at 1:00 p.m.

WEDNESDAY, NOVEMBER 13, 2013

7:30 a.m. - 5:00 p.m. Meeting Registration

8:00 a.m. - 10:00 a.m. Spouse/Guest Hospitality

8:00 a.m. - 11:30 a.m. 2013 SMR Meeting Plenary II:

- "SMR iPWR Owner-Operator Nth of a Kind Vision"
- "SMR iPWR Licensing-Generic Issues-Siting-Construction"

1:00 p.m. - 3:30 p.m. 2013 SMR Meeting: Technical Sessions

- SMR Site Suitability—Papers/Panel
- SMR Research and Development—II

4:00 p.m. - 7:30 p.m. 2013 SMR Meeting: Technical Sessions

- SMR Codes and Standards—Panel
- Department of Energy Investments in Advanced Nuclear Power—Panel

WEDNESDAY, NOVEMBER 13, 2013, 8:30 A.M.

PLENARY II: SMR iPWR OWNER-OPERATOR NTH OF A KIND VISION

Sponsored by OPD

Session Organizer and Chair: Sandra M. Sloan (Generation mPower)

BLUE ROOM

8:30 a.m.

Unique SMR design features, increased levels of standardization, and extensive multi-unit configurations necessitate a paradigm shift in the approach to operations as compared to one- or two-unit, large base-load plants. This panel will explore the vision for operations and maintenance associated with ownership of a set, or even fleet, of small modular reactors. Specific topics may include unique SMR staffing concepts, unique operational configurations such as load following and extended reduced power operations, adaptations to traditional operational programs and training programs, fleet-wide monitoring and data collection for performance improvement, and centralized maintenance and inventory control.

PANELISTS:

Opening Remarks

Vince Gilbert (*EXCEL Services Corporation*)

Speaker Introductions

Sandra Sloan (*Generation mPower*)

- Honorable Joe Wilson (*U.S. House of Representatives*)
- Dan Stout (*TVA*)
- Mike McGough (*NuScale*)
- Scott Bond (*AmerenUE*)

PLENARY II: SMR iPWR LICENSING-GENERIC ISSUES-SITING-CONSTRUCTION

Sponsored by OPD

Session Organizers and Cochairs: Stewart L. Magruder (NRC), Pareez Golub (EXCEL Services Corporation)

9:35 a.m.

This session will focus on the status and plans for designing and licensing small modular light water reactors (SMRs). The session will present the current status of NRC licensing activities related to SMRs including Commission papers, SMR design-specific guidance, etc. In addition, the presentations will summarize the licensing activities of several vendors, with particular attention to the ways in which SMR licensing, siting, and construction issues differ from larger reactors. The panel will discuss some of the potential issues related to how US NRC design certification integrates with the regulatory processes in international markets. It will explore how SMRs designed/certified/constructed in one country could be licensed/operated in another country

PANELISTS:

Opening Remarks and Speaker Introductions

Pareez Golub (*EXCEL Services Corporation*)

- Stewart Magruder (*NRC*)
- Peter Hastings (*Generation mPower*)
- Ed Wallace (*NuScale*)
- Rob Sisk (*Westinghouse*)
- Tom Marcille (*Holtec*)

NOTE: This session will immediately follow the preceding session, which will begin at 8:00 a.m.

WEDNESDAY, NOVEMBER 13, 2013, 1:00 P.M.

SMR SITE SUITABILITY-PAPERS/PANEL

Sponsored by OPD

Session Organizer and Chair: Kenneth L. Ferguson (Hukari-Ascendent)

REGENCY BALLROOM

PAPERS

1:00 p.m.

Factors to Consider for Repowering Existing Fossil Fuel Facilities with Small Modular Reactors, Dan Ervin (*Salisbury Univ*)

1:25 p.m.

Application of Spatial Data Modeling and Geographical Information Systems (GIS) for Identification of Potential Siting Options for Small Modular Reactors, G. T. Mays, R. J. Belles, O. A. Omitaomu, W. P. Poore, III (*ORNL*)

1:50 p.m.

PANEL DISCUSSION

The concept of small modular reactors (SMRs) has captured the imagination of vendors and the interest of potential users. Successful SMR projects will involve safe, reliable designs and suitable and available locations. This panel session will address types and examples of sites that can be considered, siting considerations included in designs, as well as regulatory factors and considerations. In addition, the panel will address siting considerations in which the SMR concept involves unique considerations, greater or less attention or similar attention compared to larger-sized nuclear power plants. Site sizes, repowering, public acceptance, underground siting, low population zone consideration, and details of site environmental analysis scopes are examples of content. Related status, recent progress, remaining issues, and related planning will be identified.

PANELISTS:

Opening Remarks by Chair and Speaker Introductions

Kenneth L. Ferguson (*Hukari-Ascendent*)

- Dan Stout (*TVA*)
- Steve Routh (*Bechtel*)
- Scott Bond (*AmerenUE*)
- Mark Notich (*NRC*)
- Robert Lambe (*GEI Consultants*)

SMR RESEARCH AND DEVELOPMENT—II

Sponsored by OPD

Session Organizers and Cochairs: Keith S. Bradley (*ANL*), Richard Barrett (*ASTM*)

BLUE ROOM

1:00 p.m.

Security Analysis and Response Force Modeling for iPWR SMRs, Benjamin B. Cipiti, Gregory D. Wyss, Felicia A. Durán, Luis A. Mendoza, Tom G. Lewis, Tam D. Le, Dean Dominguez, M. Jordan Sparks (*SNL*)

1:20 p.m.

Advanced Reactor Licensing Strategy—A Perspective on Principal Design Criteria, Thomas A. Kevern (*NRC*)

1:40 p.m.

Buoyant Systems for Refueling, David C. Vickerman (*E.K. Fox & Associates, Ltd*)

2:00 p.m.

Performance Evaluation of SMART Core Protection and Monitoring System for Simulator Coupling, BonSeung Koo, DaeHyun Hwang (*KAERI*)

2:20 p.m.

ELECTRA-FORTE, A Really Small SMR for the Canadian Market, Janne Wallenius (*KTH*), Sara Bortot (*KTH/PSI*), Erdenechimeg Suvdantsetseg (*KTH*)

2:40 p.m.

Modeling Issues in Small HLMC Fast Reactors: ELECTRA Case Study, Sara Bortot (*KTH/PSI*), Janne Wallenius (*KTH*), Erdenechimeg Suvdantsetseg (*KTH*), Sandro Pelloni (*PSI*)

3:00 p.m.

Automated Maintenance Technology to be Embedded in Small Modular Reactor Designs, H. M. Hashemian (*Analysis and Measurement Services Corporation*)

3:20 p.m.

Thermal-Hydraulic Design for the B&W mPower SMR, R. P. Martin, E. S. Williams, J. G. Williams (*Babcock & Wilcox mPower*)

3:40 p.m.

Simulation of a Syngas from Coal Production Plant Coupled to a High Temperature Reactor, Frikkie Botha, Robert Dobson, Thomas Harms (*Stellenbosch Univ*)

WEDNESDAY, NOVEMBER 13, 2013, 4:00 P.M.

SMR CODES AND STANDARDS—PANEL

Sponsored by OPD

Session Organizer and Chair: Don Spellman (*ORNL*)

REGENCY BALLROOM

4:00 p.m.

As the nuclear industry moves forward into new territory, the United States Voluntary Consensus Standards organizations must move with it. Many new designs are on the drawing boards including small modular reactors. Regulators, architect engineers, utilities, and ANSI are primary players in this anticipated need. Are available NCS adequate and appropriate for the many new design and operational challenges that will be presented by these new technologies? Today's panel will attempt to address the variety of issues that have come to light so far.

PANELISTS:

- Tom Boyce (*NRC*)
- Prasad Kadambi (*ANSI*)
- William Bell (*SCANA*)
- Steve Stamm (*Shaw*)
- Russell Wells (*Generation mPower*)

DEPARTMENT OF ENERGY INVESTMENTS IN ADVANCED NUCLEAR POWER—PANEL

Sponsored by OPD

Session Organizer and Chair: D. Craig Welling (*DOE*)

BLUE ROOM

4:00 p.m.

U.S. Department of Energy (DOE), Office of Nuclear Energy (NE) has engaged in an initiative to fund industry-led research on advanced reactor technologies. This effort could support longer-term deployment of designs with improved safety, security, and economic benefits. NE has selected four firms to receive grants under the Advanced Reactor Research and Development (R&D) Funding Opportunity Announcement issued in February 2013. The recipients will conduct cost-shared R&D on selected technology needs that were identified by the Advanced Reactor Concepts Technical Review Panel process. The panelists will speak on R&D that they will pursue.

PANELISTS

- Opening Remarks and Speaker Introductions, Craig Welling (*DOE*)
- Development of ASTM Standard for SiC/SiC Joint Testing, George Jacobsen (*General Atomics*)
- Next Generation Electromagnetic Pump: Analysis Tools and Insulation Materials Development, Eric Loewen (*GE Hitachi Nuclear Energy*)
- Lead Bismuth Eutectic Natural Circulation Fluid Dynamics Validation, Bob Prince, Dave Carlson (*Gen4 Energy*)
- Modeling and Validation of Sodium Plugging for Heat Exchangers in Sodium-Cooled Fast Reactor Systems, Paolo Ferroni, Matthew Memmott (*Westinghouse*)

THURSDAY, NOVEMBER 14, 2013

7:30 a.m. - 5:00 p.m. Meeting Registration

8:00 a.m. - 11:30 a.m. 2013 SMR Meeting: Technical Sessions

- SMR PRA Advances and Challenges—Panel
- US Government Stewardship of Public Lands/Hosting of SMR/Energy Security Services—Panel

1:00 p.m. - 4:30p.m. 2013 SMR Meeting: Technical Sessions

- SMR Simulators/Control Room Design/Staffing and Human Factors—Presentation/Panel
- SMR Manufacturing/Modular Construction Processes—Panel
- International SMR Development—Papers/Panel

THURSDAY, NOVEMBER 14, 2013, 8:00 A.M.

SMR PRA ADVANCES AND CHALLENGES—PANEL

Sponsored by OPD

Session Organizer and Chair: Mohammad Modarres (Univ of Maryland)

BLUE ROOM

8:00 a.m.

This session discusses risk assessment, insights and risk management processes into the design and licensing of SMRs. Designers and analysts will discuss their experiences associated with performing Probabilistic Risk Assessment (PRA) of the SMR designs and incorporating PRA process into designs, design and licensing activities. Challenges facing the use of PRA for SMRs include multi-module and site risk issues, reliability assessment of passive safety systems, SMR unique equipment and structures, relevance of failure and performance data from operating reactors, human reliability analysis, performance and reliability of in-vessel structures and equipment such as steam generators and control rod drive mechanisms, module-to-module interactions, and common cause failure.

PANELISTS:

- Overview of NRC Regulatory and Research Activities, L. Mrowca/K. Coyne (NRC)
- Overview of NEI Activities and Positions, Victoria Anderson/Biff Bradley (NEI)
- mPower PRA Experiences, Tom Morgan (Maracor)
- SMART PSA Experiences, Young-Ho Jin (KAERI)
- NuScale PRA Experiences, Bill Galyean (NuScale Power)
- Fukushima Lessons and Their Implications on SMRs, William Reckley (NRC)
- PRA Challenges with Multi-Module SMRs, M. Modarres (Univ of Maryland)

US GOVERNMENT STEWARDSHIP OF PUBLIC LANDS/ HOSTING OF SMR /ENERGY SECURITY SERVICES— PANEL

Sponsored by OPD; cosponsored by DESD

Session Organizer and Chair: Ron S. Faibish (ANL)

DIPLOMAT BALLROOM

8:00 a.m.

There have been calls for government agencies, such as the DOE and the DoD to explore power purchasing arrangements from SMRs to provide electricity to federal facilities (e.g., national lab complexes, military bases, supercomputer facilities, and other vital infrastructure), while also having the option of providing electricity to the surrounding communities through the grid. Some have also called for siting SMRs on federal lands for the same purposes. Proponents cite energy security and energy independence as reasons for doing so. Panelists will explore these options and specific design, licensing, construction, operation, and economic considerations.

PANELISTS:

Opening Remarks by Chair and Speaker Introductions
Ron Faibish (ANL)

- Matt Crozat (DOE)
- David Blee (NIC)
- Paul Roege (INL)
- Mark Campagna, (McCarl's Inc.)
- Mike Campbell (Logos Technologies)
- Maureen Koetz (Koetz-Duncan, LLC)

THURSDAY, NOVEMBER 14, 2013, 1:00 P.M.

SMR SIMULATORS/CONTROL ROOM DESIGN/ STAFFING AND HUMAN FACTORS—PRESENTATION/ PANEL

Sponsored by OPD

Session Organizer and Chair: Richard T. Wood (ORNL)

BLUE ROOM

1:00 p.m.

Control room staffing for SMRs is a significant technical and regulatory issue that has not been definitively resolved. At traditional staffing levels, personnel costs on a per megawatt basis for SMRs would be significantly higher than for existing large reactors. Timely development of SMR plant simulators is necessary to establish a comprehensive technical basis to justify reduced staffing levels. In addition, research, development, and demonstration is underway to ensure that technology is available to enable even more significant economic benefits for advanced SMRs through the economy of automation. This session will include an

overview of current RD&D activities, presentations on the status of simulator development for current iPWR designs, and a panel discussion of key control room design and staffing considerations.

PRESENTATION

Advanced Small Modular Reactor R&D Program: Instrumentation, Control and Human-Machine Interface Research, Richard Wood (ORNL)

PANELISTS:

- Mike Sontag (*Generation mPower*)
- Ross Snuggerud (*NuScale*)

SMR MANUFACTURING/MODULAR CONSTRUCTION

PROCESSES—PANEL

Sponsored by OPD

Session Organizers and Cochairs: Jim Moody (*General Dynamics Electric Boat*), Steven Tibrea (*SRNL*)

BLUE ROOM

3:05 p.m.

Fulfilling the promise of small modular reactor deployment will be highly dependent on the methods and processes used to design, manufacture, assemble, and construct the components and plants. This panel will explore issues associated with building initial units, building follow-on units, and the potential to reduce schedule, cost, and risk through area-based design and modularization. The panelists will represent companies involved in nuclear manufacturing and in academic research with the ability to share lessons learned and their thoughts of needed actions.

PANELISTS:

Opening Remarks by Cochair and Speaker Introductions
Jim Moody (*General Dynamics Electric Boat*)

- Garrick Solovey (*Precision Custom Components*)
- Nigel Town (*Rolls-Royce*)
- Tom Marcille (*Holtec*)
- Ron Beck (*Bechtel*)
- Jurie van Wyk (*Westinghouse*)
- Jeff Terry (*Illinois Inst of Technology*)

Note: This session will immediately follow the preceding session, which will begin at 1:00 p.m.

INTERNATIONAL SMR DEVELOPMENT—PAPERS/PANEL

Sponsored by OPD

Session Organizers and Cochairs: Pareez Golub (*EXCEL Services Corporation*), Stewart L. Magruder (*NRC*)

DIPLOMAT BALLROOM

PAPERS

1:00 p.m.

SMR Fast Reactors as a Solution for Future Small-Scale Nuclear Energy, A. Kudryavtseva, K. Danilenko (*Basic Element*)

1:25 p.m.

Use of Grading in Safety Cases for Reactor Facilities in Canada, Marcel de Vos (*Canadian Nucl Safety Commission*)

1:50 p.m.

Should Licensing Process Be Modified for SMRs? European Perspective, Kristiina Söderholm (*Fortum*)

2:15 p.m.

IAEA Safeguards in New Nuclear Facilities, J. K. Sprinkle, A. Catton, C. Ciuculescu (*IAEA*), K. Durbin (*DOE NNSA*), E. Martikka (*STUK*), R. Stevens, N. Tuley, S. Poirier (*IAEA*), J. Whitlock (*AECL Chalk River Laboratories*)

2:40 p.m.

PANEL DISCUSSION

International interest in SMRs is growing rapidly as evidenced by the number of designs that are complete or are under development. Many countries that do not have the electric grid infrastructure or capital to invest in large reactors have expressed interest in deploying SMRs. In addition, many countries with established nuclear power programs have expressed interest in deploying SMRs in locations that may not be suitable for large reactors or for economic reasons. The panel will explore some innovative designs being developed in other countries as well as new ideas for licensing SMRs. In addition, there will be a report on the results of the July 2013 IAEA meeting on licensing and safety issues for SMRs.

PANELISTS:

Opening Remarks by Chair and Speaker Introductions
Stewart Magruder (*NRC*)

- Anna Kudryavtseva (*Basic Element*)
- Zuoyi Zhang (*INET*)
- Kristiina Soderholm (*Fortum*)
- Marcel De Vos (*Canadian Nuclear Safety Commission*)
- James Kent Sprinkle (*IAEA*)
- Thomas Koshy (*IAEA*)

Embedded Topical Meeting: *Nuclear Nonproliferation – First Fission to the Future*



GENERAL CHAIR:
John E. Gunning
Oak Ridge National Laboratory



TECHNICAL PROGRAM CO-CHAIR:
Jeffrey A. Chapman
Oak Ridge National Laboratory



TECHNICAL PROGRAM CO-CHAIR:
R. Chris Robinson
Y-12 National Security Complex

TUESDAY, NOVEMBER 12, 2013

- 7:30 a.m. - 5:00 p.m. Meeting Registration**
- 8:00 a.m. - 10:00 a.m. Spouse/Guest Hospitality**
- 8:00 a.m. - 11:30 a.m. 2013 Nuclear Nonproliferation: Opening Plenary**
- First Fission to the Future: A Reflection and Projection on Nuclear Nonproliferation
- 1:00 p.m. - 4:30 p.m. 2013 Nuclear Nonproliferation: Technical Sessions**
- Nuclear Security Summit Process from 2010-2016–Panel

TUESDAY, NOVEMBER 12, 2013, 8:00 A.M.

OPENING PLENARY: FIRST FISSION TO THE FUTURE: A REFLECTION AND PROJECTION ON NUCLEAR NONPROLIFERATION

Sponsored by NNTG

Session Organizer and Chair: Joyce L. Connery (National Security Council)

PALLADIAN BALLROOM

INVITED SPEAKERS:

- Laura Holgate (*Senior Director, National Security Council*)
- Rose Gottemoeller (*Undersecretary for Arm Control and International Security*)
- Representative from the office of the (*Secretary of Defense for Nuclear, Chemical and Biological Defense*)

TUESDAY, NOVEMBER 12, 2013, 1:00 P.M.

NUCLEAR SECURITY SUMMIT PROCESS FROM 2010-2016–PANEL

Sponsored by NNTG

Session Organizer and Chair: Joyce L. Connery (National Security Council)

PALLADIAN BALLROOM

1:00 P.M.

In 2009 President Obama, in his groundbreaking Prague speech, called nuclear terrorism one of the greatest threats to international security. The chance of terrorists carrying out an attack with nuclear material is slight, but if it happened, the consequences would be enormous. For this reason the U.S. mounted a global four-year effort to secure vulnerable nuclear materials worldwide. With this in mind, the first Nuclear Security Summit (NSS) was organized in Washington, DC; a second summit followed in Seoul in 2012. The Netherlands will be hosting the NSS in The Hague on March 24 and 25, 2014, and President Obama announced on June 19 in Berlin his intention to host an NSS here in the U.S. in 2016. In conjunction with each NSS, the international NGO community and the international nuclear industry held parallel events to support the goals of the NSSs.

This panel will review the specific objectives of the last two NSSs, what was successfully accomplished, and what was not. A preview of the 2014 NSS will be presented and what its objectives will be, the challenges facing it, and how those challenges might be met. Finally, the panel will discuss the future of the NSS process and how to sustain the momentum on the issue of nuclear security.

Panelists include the following: National Security Council representative, Korean Embassy representative, Dutch Embassy representative, NGO representative, and Industry representative.

PANELISTS:

- Melissa Krupa (*National Security Council representative*)
- Corey Hinderstein (*NGO representative*)
- Jack Edlow (*Industry representative*)
- Korean Embassy representative to be determined
- Dutch Embassy representative to be determined

SMR Nonproliferation and Security

See SMR, page 57.

WEDNESDAY, NOVEMBER 13, 2013

7:30 a.m. - 5:00 p.m.	Meeting Registration
8:00 a.m. - 10:00 a.m.	Spouse/Guest Hospitality
8:00 a.m. - 11:30 a.m.	2013 Nuclear Nonproliferation: Technical Sessions <ul style="list-style-type: none"> • Isotopes and Radiation: Applications to Nuclear Security • The Role and Importance of Policy in Our Nuclear World—Panel
1:00 p.m. - 4:30 p.m.	2013 Nuclear Nonproliferation: Technical Sessions <ul style="list-style-type: none"> • Technical Challenges and Solutions—Panel
4:00 p.m. - 7:30 p.m.	<ul style="list-style-type: none"> • Nuclear Nonproliferation Student Showcase—Poster Session

WEDNESDAY, NOVEMBER 13, 2013, 8:00 A.M.

ISOTOPES AND RADIATION: APPLICATIONS TO NUCLEAR SECURITY

Sponsored by IRD; cosponsored by YMG
Session Organizer and Chair: Stephen P. LaMont (LANL)

REGENCY BALLROOM

8:00 a.m.

Nuclear Forensic Examination of Historic Materials from an Abandoned Uranium Rolling Mill, Lisa A. Meyers (*Univ of Cincinnati*), Ross W. Williams (LLNL), Samuel E. Glover, Apryll M. Stalcup, Henry B. Spitz (*Univ of Cincinnati*), Stephen P. LaMont (LANL), invited

8:20 a.m.

Uranium Contaminant Dissolution in Simulated Lung Fluid and Pulmonary Surfactant, Grant Spitler, Henry Spitz, James Bowen (*Univ of Cincinnati*), invited

8:40 a.m.

Environmental Mobility of Plutonium Particles, James Bowen, Samuel Glover, Henry Spitz (*Univ of Cincinnati*), Stephen LaMont (LANL), invited

9:00 a.m.

Affect of Emission Controls on the Elemental Concentration and Particle Size of Coal Ash, Todd Praechter, Henry Spitz (*Univ of Cincinnati*), invited

9:20 a.m.

Utilization of Wavelet Transforms for Denoising Fission Product Radionuclide Spectra, Steven Biegalski (*Univ of Texas, Austin*), invited

9:40 a.m.

Aerosol Filter Sample Inhomogeneity in Samples with Debris from the Fukushima Daiichi Nuclear Accident, Reynaldo Gomez, Steven Biegalski (*Univ of Texas, Austin*), invited

10:00 a.m.

Inverse Radiation Transport Problem Stability Analysis, David R. Anderson, John Mattingly (NCSU)

10:20 a.m.

Passive Gamma Spectrometry of Low-Volatile FPs for Accountancy of Special Nuclear Material in Molten Core Material of Fukushima Daiichi Nuclear Power Plant—Numerical Simulation of Leakage Gamma-Ray from Molten Core Materials in Hypothetical Canister, Hiroshi Sagara, Tomooki Shiba (*Tokyo Inst Technol*), Hirofumi Tomikawa, Akihiro Ishimi, Kei-ichiro Hori (JAEA), Masaki Saito (*Tokyo Inst Technol*)

10:40 a.m.

Special Nuclear Material Resources at INL to Support Nuclear Nonproliferation R&D, D. L. Chichester, J. Sanders, J. A. Turnage, J. D. West, M. A. Willmore, C. K. Wise (INL)

THE ROLE AND IMPORTANCE OF POLICY IN OUR NUCLEAR WORLD—PANEL

Sponsored by NNTG
Session Organizer: James W. Behrens (*U.S. Navy, retired*)
Chair: Gene Carpenter (NRC)

PALLADIAN ROOM

8:00 a.m.

The ANS Nuclear Nonproliferation Technical Group (NNTG) was established in mid-2011. Prior to that date, it existed as an ANS Special Committee. Though separate, policy and technology are, in fact, complementary, and both are necessary to ensure our nation's success in matters of energy supply, national security, and international relations. Panelists will discuss the various ways in which policy and technology walk hand-in-hand in forming a safer and secure world in which to live. Specific topics of interest to the ANS membership will include, but will not be limited to, matters of nuclear safety and security, nuclear safeguards, nuclear arms control and international negotiations (including nuclear nonproliferation), and matters regarding the nuclear fuel cycle.

PANELISTS:

- Steve Nesbit (*Duke Energy*)
- Craig Piercy (*ANS Washington Representative*)
- John C. Browne (*LANL, retired*)
- James W. Behrens (*U.S. Navy, retired*)
- Gene Carpenter (NRC)
- Doug Shaw (*GW*)
- John Brown (*UPA*)

WEDNESDAY, NOVEMBER 13, 2013, 1:00 P.M.

TECHNICAL CHALLENGES AND SOLUTIONS—PANEL

Sponsored by NNTG

Session Organizer and Chair: Alan S. Icenhour (ORNL)

PALLADIAN BALLROOM

1:00 p.m.

Nuclear nonproliferation efforts face a wide range of challenges. These efforts must be able to address proliferation concerns emerging from individual actors, transnational networks, and nation states, and they must be sustained into the future. Technology development and deployment play a vital role in the implementation of nuclear nonproliferation requirements and agreements. However, technology must be applied in the context of a policy framework. This panel session will explore technical challenges and solutions in terms of policy implementation.

Representatives of government, national laboratories, and academia will provide insights from different perspectives, which will include policy development, the identification of technology requirements, development and deployment of technology, and the long-term sustainment of nonproliferation objectives.

PANELISTS:

- Julie A. Bentz (*National Security Staff*)
- Cindy Atkins-Duffin (*Office of Science and Technology Policy*)
- Rhys Williams (*NNSA*)
- Larry Satkowiak (*ORNL*)
- Nancy Jo Nicholas (*LANL*)
- Howard Hall (*UTK*)

WEDNESDAY, NOVEMBER 13, 2013, 4:00 P.M.

STUDENT SHOWCASE—POSTER SESSION

Sponsored by NNTG; cosponsored by IRD/YMG

Session Organizer: Oluwatomi Akindele (*TAMU*), Howard L. Hall (*Univ of Tennessee*)

PALLADIAN BALLROOM

A Bayesian Approach to the Broad-Area Search for Nuclear/Radiological Sources, Sam Willmon, Howard Hall (*UTK*)

Actinide Cross-Section Measurements Using Novel Diamond-Based Systems, Eric Lukosi, Jennifer Littell, and Hannah Hale (*UTK*)

Adapting Hybrid K-Edge Densitometry for Assay of Pyrochemical Salt Solutions, Matthew Cook, Steven Skutnik, Howard Hall (*UTK*)

Alpha/Gamma Coincidence Spectrometer for Rapid Post-Detonation Debris Analysis, Madeline C. Basile (*Univ of Iowa*), George S. King III (*SRNL*), Tad Whiteside (*SRNL*), Tori Z. Forbes (*Univ of Iowa*), James R. Cadieux (*SRNL*)

Analysis of Advanced UO₂ Annular Fuel with Thoria Core Fabricated Through Spark Plasma Sintering, Jitesh Kuntawala (*UFL*)

Bayesian Environment Framework for Nuclear Proliferation Agent Based Modeling Analysis, Royal Elmore, William S. Charlton, Corey Freeman, Michael Mella (*TAMU*)

Benchmarking of the RPI Lead Slowing Down Spectrometer for Spent Fuel Assay, Adam Weltz, Yaron Danon (*RPI*)

Comparisons of Hand-Held and Pager Radionuclide Identification Systems for Inspections, John Koglin (*University of Michigan/LLNL*), Samuele Sangiorgio (*LLNL*), Luc Murphy (*DHS*)

Development of Nuclear Debris Surrogates for Forensics Methods Development in the Academic Community, Joshua Molgaard, Howard Hall, Joseph Birdwell (*UTK*)

Directional Moderation for Neutron Imaging of SNM, Eric Lukosi, Allan Rowan, Jennifer Littell, and Hannah Hale (*UTK*)

DNAA at the NIST Center for Neutron Research: Current Status and Future Work, John J. Goodell, A. C. Mignerey, K. P. Grogan, D. J. O'Kelly (*Univ of Maryland*)

Early Performance Results from a Novel Neutron Multiplicity Counter, Alexandria Asghari (*UC Berkeley*)

Estimation of Nuclear Proliferation Capacity of Test Reactors, Thomas Holschuh, Matthew MacDougall, Kristofer Zieb, William Moore (*OSU*)

Forensics Case Study of the Former Rancho Seco Nuclear Power Plant and the Use of Noble Gas Ratios in the Verification of the CTBT, John Warren, Howard Hall (*UTK*)

Improved Sample Utilization in TIMS Isotopic Ratio Measurements: Refined Development and Application of Porous Ion Emitters, Matthew Baruzzini (*UTK/LANL*), Floyd Stanley (*LANL*), Khalil Spencer (*LANL*), Howard Hall (*UTK*)

Measurement of Short-Lived Fission Product Yields, Kenneth Dayman, Steven Biegalski (*Univ of Texas*)

Metal Chronometry, Edward Peskie, Amanda Loveless, Greg Schaaff, Howard Hall (*UTK*)

Neutron Activation of Common Elements for Post-Detonation Nuclear Forensics, Jordan Sabella, Ross Meyer, Keenan Thomas, Eric Norman (*UC Berkeley*)

Novel High-Specificity Separation and Trace-Level Detection of Actinide Species, Jennifer Charlton (*Y12/UTK*), Nick Lavrik (*ORNL*), Micheal Sepaniak (*UTK*), James Bradshaw (*Y12*)

Radiation Detector Using Integrated Circuits, Manit Shah, Craig Marianno, Sunil Khatri (*TAMU*)

Revisiting Nuclear Winter: Implications for Nonproliferation, David Gribble (*UC Davis*), Charles Ferguson (*Federation of American Scientists*)

The Sensitivity of Fallout Fraction Models to Weapon Yield, Soil Material, Fission Type, and Particle Size, William Cook (*TAMU*), David A. Hopper (*ORNL*)

Special Nuclear Material Characterization via Delayed Neutron and Gamma Temporal Signatures, Madison Andrews, D.G. Kelly, E.C. Corcoran (*Royal Military College of Canada*)

Spent Fuel Characterization with the Differential Die-Away Self-Interrogation Instrument, Alexis Kaplan (*Univ of Michigan/LANL*)

Vehicle Velocity Algorithm Development for the Enhanced Radiological Nuclear Inspection and Evaluation Tool, Timothy Jacomb-Hood (*TAMU*), Bruno G. Dueno (*LLNL*), Simon Labov (*LLNL*)

THURSDAY, NOVEMBER 14, 2013

- 7:30 a.m. - 2:00 p.m. Meeting Registration**
- 8:00 a.m. - 10:00 a.m. Spouse/Guest Hospitality**
- 8:00 a.m. - 11:30 a.m. 2013 Nuclear Nonproliferation: Technical Sessions**
- University Programs for Nuclear Security Education—I: General—Panel
 - University Programs for Nuclear Security Education—II: Highlighting the International Nuclear Security Education Network—Panel
 - Uranium Management and Impending Conversion Needs in the U.S.—Panel
 - Holistic Nuclear Security: Culture at Every Level—Panel
- 1:00 p.m. - 4:30 p.m. 2013 Nuclear Nonproliferation: Technical Sessions**
- University Programs in Nuclear Nonproliferation: Curriculum Development, Research, and Careers—Panel
 - Tools for Nuclear Nonproliferation—Panel
 - Nuclear Energy Development in the Middle East and North Africa: Strategies for Security, Safeguards, and Nonproliferation—I—Panel
 - Nuclear Energy Development in the Middle East and North Africa: Strategies for Security, Safeguards, and Nonproliferation—II—Panel

THURSDAY, NOVEMBER 14, 2013, 8:00 A.M.

UNIVERSITY PROGRAMS FOR NUCLEAR SECURITY EDUCATION—I: GENERAL—PANEL

Sponsored by NNTG

Session Organizer: Rian M. Bahran (LANL)

Chair: Howard Hall (Univ of Tennessee)

CAPITOL ROOM

8:00 a.m.

This past decade of global nuclear energy expansion has led to a revival of nuclear engineering education domestically and internationally. In the United States alone, enrollment in nuclear engineering departments has almost tripled over the past half

decade. This resurgence in nuclear engineering education has been accompanied by a widespread increase of nuclear security educational programs and partnerships. This session will provide an overview of the current status of different nuclear security university programs in the United States and abroad.

PANELISTS:

- Shaheen Dewji (ORNL)
- Steve Skutnik (Univ of Tennessee)
- Adam Hecht (Univ of New Mexico)
- Masaki Saito (Tokyo Inst of Technology)
- Oum Keltoum Bouhelal (National School of Mineral Industry of Morocco)
- Jim Doyle (LANL)

UNIVERSITY PROGRAMS FOR NUCLEAR SECURITY EDUCATION—II: HIGHLIGHTING THE INTERNATIONAL NUCLEAR SECURITY EDUCATION NETWORK—PANEL

Sponsored by NNTG

Session Organizer: Rian M. Bahran (LANL)

Chair: Jason Harris (ISU)

CAPITOL ROOM

9:35 a.m.

Nuclear security is an important global issue with many universal challenges and solutions. The International Nuclear Security Network is in an international program that aims to enhance global nuclear security by developing, sharing, and promoting excellence in nuclear security education. This session will explore the successes of the international nuclear security education network and highlight best practices.

PANELISTS:

- Chris Hobbs (King's College of London)
- Oum Keltoum Hakam (Univ of Tofail in Morocco)
- James Larkin (Univ of Witwatersrand in South Africa)
- Khammar Mrabit (IAEA)
- Alexander Solodov (Khalifa Univ in UAU)
- Oum Keltoum Bouhelal (National School of Mineral Industry of Morocco)

Note: This session will immediately follow the preceding session, which will begin at 8:00 a.m.

URANIUM MANAGEMENT AND IMPENDING CONVERSION NEEDS IN THE U.S.—PANEL

Sponsored by NNTG

Session Organizer: R. Chris Robinson (Y-12 NSC)

Chair: Morris Hassler (Y-12 NSC)

CALVERT ROOM

8:00 a.m.

A large majority of the emerging advanced reactor designs (Gen IV reactors) require uranium with enrichments between 10% and 20%. Although classified as low enriched uranium (LEU), there is not a commercial supply chain available to provide uranium with enrichments above 5%. These reactor designers are struggling to identify investors just to support the design, licensing, and initial construction of their reactor concepts. With the significant projected cost to build and license the facilities needed to enrich the uranium to the levels required to fabricate their fuel, their costs could be such that it would be prohibitive to ever build the first advanced reactor. A common belief is these needs can and will be met through the U.S. Surplus Highly Enriched Uranium Disposition Program; however, as the demand rises for high assay (>5%) LEU, the current allocated supply for all national security requirements will not be sufficient long term. Additional material could be designated for down-blending; however, this impacts other national security programs and is only a short term solution. Panelists will discuss all aspects of this complicated and highly important issue for advanced reactors and the impacts on national security. Both private and government experts will be represented on the panel.

PANELISTS:

- Morris Hassler (*Y-12 NSC*)
- Kirk Schnoebelen (*Urenco*)
- Xavier Ascanio (*NNSA*)
- Tom Sanders (*SRNL*)
- William Szymanski (*Uranium Management and Policy, Office of Nuclear Energy, NE-54*)
- Richard Goorevich (*NNSA*)
- Roger Reynolds (*TerraPower*)
- Representative from DOE to be determined

HOLISTIC NUCLEAR SECURITY: CULTURE AT EVERY

LEVEL—PANEL

Sponsored by NNTG

Session Organizer: Scott Bruce (*CDF Global*)

Chair: Jennifer Reichert (*CDF Global*)

EMBASSY ROOM

8:00 a.m.

Protecting nuclear and radioactive materials is a responsibility shared by everyone in the nuclear industry, from policymakers and regulators to facility managers and the general workforce. A robust nuclear security culture requires buy-in at every level.

To develop a holistic understanding and approach to the subject, this panel discussion will feature views on nuclear security culture from industry, international organizations, and government. Specifically, panelists will describe their experiences developing, incorporating, and maintaining nuclear security culture at facilities

in industry and in government, both in the U.S. and abroad, and in promoting nuclear security culture internationally. The dialogue will emphasize the need to build and reinforce a culture of nuclear security throughout the breadth and depth of the nuclear community.

PANELISTS:

- Ruth Duggan (*SNL*)
- Sunday Jonah (*Abmadu Bello Univ*)
- Joseph Rivers (*NRC*)
- Joseph Stainbeck (*Y-12 NSC*)
- U.S. Department of State Representative (Partnership for Nuclear Security) to be determined

THURSDAY, NOVEMBER 14, 2013, 1:00 P.M.

UNIVERSITY PROGRAMS IN NUCLEAR

NONPROLIFERATION: CURRICULUM DEVELOPMENT, RESEARCH, AND CAREERS—PANEL

Sponsored by NNTG

Session Organizer and Chair: Craig Williamson (*SCUREF*)

CAPITOL ROOM

1:00 p.m.

The Next Generation Safeguards Initiative has generated support for the development of a highly educated, knowledgeable, and skilled workforce in enhancing existing technologies and developing new ones for nuclear nonproliferation. This movement has created new and revised courses at several universities throughout the United States. In addition, it has necessitated the development of stronger collaborative ties between the universities and the nation's laboratories engaged in nonproliferation. This session will provide an overview of these developments.

PANELISTS:

- Richard Lanza (*MIT*)
- Sara Pozzi (*Univ of Michigan*)
- John Mattingly (*NCSU*)
- Kathryn A. Higley (*Oregon State Univ*)
- William S. Charlton (*Texas A&M*)
- Howard Hall (*Univ of Tennessee*)
- Mark A. Pierson (*Virginia Tech*)
- Tim DeVol (*Clemson Univ*)
- Steven Biegalski (*Univ of Texas*)
- John Gahl (*Univ of Missouri*)
- Kenan Ünlü (*Penn State*)

TOOLS FOR NUCLEAR NONPROLIFERATION—PANEL

Sponsored by NNTG

Session Organizers and Cochairs: Steve Skutnik (*Univ of Tennessee*), Matthew J. Gidden (*Univ of Wisconsin, Madison*)

CALVERT ROOM

1:00 p.m.

The complex challenges inherent to safeguarding the nuclear fuel cycle reflect its diverse nature, spanning a wide range of activities from initial mining to enrichment, irradiation, storage, reprocessing, and disposal, each requiring unique tools for verification. This panel session brings together experts from a broad range of expertise to discuss the development and use of modern tools for nuclear nonproliferation, including technology, inspections, and intelligence, and in particular their combined application to advance global nonproliferation goals.

PANELISTS:

- Brian Boyer (*LANL*)
- Michael Whitaker (*ORNL*)
- Young Ham (*LLNL*)
- Stephen Croft (*ORNL*)
- Bill Charlton (*TAMU*)
- Kris Wheaton (*Merryhurst*)
- David Chichester (*INL*)

NUCLEAR ENERGY DEVELOPMENT IN THE MIDDLE EAST AND NORTH AFRICA: STRATEGIES FOR SECURITY, SAFEGUARDS, AND NONPROLIFERATION—I—PANEL

Sponsored by NNTG

Session Organizer and Chair: Rian M. Bahran (*LANL*)

EMBASSY ROOM

1:00 p.m.

In order to meet its fast-growing domestic energy needs, the United Arab Emirates has positioned itself to become the first Arab country (by the end of the decade) to deliver electricity to its national grid by means of nuclear power. The Kingdom of Saudi Arabia also plans to construct 16 nuclear power reactors over the next 20 years. Other countries in the Middle East including the State of Bahrain, the Sultanate of Oman, the State of Qatar, the State of Kuwait, Turkey, Egypt, Algeria, Libya, Jordan, Morocco, and Yemen have publicly expressed interest in pursuing nuclear technology for generating electricity and water desalination purposes. This nuclear renaissance in the Middle East and North Africa (MENA) is coinciding with sweeping reforms and changes in the political topology of the region. This panel is aimed at exploring the political, technical, and market challenges to the development of nuclear power in MENA in the context of nonproliferation, safeguards, and security.

PANELISTS:

- Khammar Mrabit (*IAEA*)
- Laban Coblentz (*Former Communications Adviser to IAEA Director General ElBaradei*)
- Amir H. Mohagheghi (*SNL*)
- Osama AlShehhi (*UAE Federal Authority Nuclear Regulation*)

NUCLEAR ENERGY DEVELOPMENT IN THE MIDDLE EAST AND NORTH AFRICA: STRATEGIES FOR SECURITY, SAFEGUARDS, AND NONPROLIFERATION—II—PANEL

Sponsored by NNTG

Session Organizer and Chair: Rian M. Bahran (*LANL*)

EMBASSY ROOM

3:05 p.m.

PANELISTS:

- Ambassador Thomas Graham, Jr. (*Lightbridge UAE Nuclear Energy International Advisory Board*)
- Abdulmajid Mahjoub (*Arab Atomic Energy Agency*)
- Maryam Qasem (*UAE ENEC*)
- Ayman I. Hawari (*Jordan Atomic Energy Commission/NCSU*)

Note: This session will immediately follow the preceding session, which will begin at 1:00 p.m.

Embedded Topical Meeting: *Young Professionals Congress 2013*



GENERAL CHAIR:
Gale Hauck
Westinghouse Electric Company



PROGRAM CHAIR:
Peter Shaw
Westinghouse Electric Company

SATURDAY, NOVEMBER 9, 2013

8:30 a.m. - 11:30 a.m. **Young Professionals Congress 2013: Technical Sessions**

- Exchanging Ideas: How to Communicate Effectively
- Work-Life Balance
- Must be the Money

1:00 p.m. - 6:00p.m. **Young Professionals Congress 2013: Technical Sessions**

- Project Management - It's Just Common Sense, Right?
- Going It Alone: The Path to an Independent Energy Policy
- First Steps: A Management Crash Course
- There and Back Again
- Getting the Most Out of ANS
- Voice of the Young Generation

EXCHANGING IDEAS: HOW TO COMMUNICATE EFFECTIVELY

Session Organizer: Peter Shaw (Senior Licensing Engineer, Westinghouse)

AMBASSADOR BALLROOM

Young members are coming to ANS from many different parts of the nuclear science and technology community. These perspectives mean that there are different approaches to communication among these individuals. This session centers around giving young members the tools they need to communicate with each other effectively.

PANELISTS:

- Steve Nesbit (*Nuclear Policy and Support, Duke Energy*)
- Rita Baranwal (*Director Core Engineering, Westinghouse*)
- Liz Ramsay (*Nuclear Energy Policy Advisor, Department of Energy*)

WORK-LIFE BALANCE

Session Organizer: Allison Miller (Nuclear Engineer Member of Technical Staff, Sandia National Lab)

AMBASSADOR BALLROOM

When first entering your professional career, the balance between work and personal life is difficult. The panelists will be providing tips and perspective to find a strong work-life balance while still achieving your career goals.

PANELISTS:

- Allison Miller (*Nuclear Engineer Member of Technical Staff, Sandia National Lab*)
- Lenka Kollar (*Nonproliferation Technical Associate, Argonne National Laboratory*)
- Rian Bahran (*Post-Doctoral Research Associate, Los Alamos National Laboratory*)
- Shaheen Dewji (*Safeguards and Security Technology, Oak Ridge National Laboratory*)

MUST BE THE MONEY

Session Organizer: Bristol Hartlage (Manager Obsolescence Programs, Curtiss Wright)

AMBASSADOR BALLROOM

Does the idea of approaching your manager for approval to attend a conference or training course make you queasy? Although it may seem like it's determined by random chance, getting company approval to further your professional development is within your control. This session will show you how to make your case.

PANELISTS:

- Julio Adame (*West Regional Director of Sales, Enertech*)
- Heather Daniel (*Manager Business Development, Lockheed Martin*)

PROJECT MANAGEMENT—IT'S JUST COMMON SENSE, RIGHT?

Session Organizer: Bristol Hartlage (Manager Obsolescence Programs, Curtiss Wright)

CABINET ROOM

You've been assigned as a technical lead or coordinator on a project. Surprise! You're now a project manager. You have two options: learn it the hard way, or get yourself some PM training. This panel will cover the basics, help you apply the knowledge at work and home, and will provide information on professional licensure.

PANELISTS:

- Jamie Lehto (*EMALS Test Manager, General Atomics*)
- Nicholas Wyckoff (*TO16 Project Lead, Boeing*)
- Laura Farrell (*Equipment Obsolescence Project Lead, Constellation*)

GOING IT ALONE: THE PATH TO AN INDEPENDENT ENERGY POLICY

Session Organizer: Cory Stansbury (Senior Engineer, Westinghouse)

CALVERT ROOM

Do you watch the news and shake your head at the “independent energy solutions” thrust upon us by politicians and lobbyists? Do you think to yourself, “I could do so much better than that!”? Well now is your chance. Come join the National Energy Policy Panel Discussion at YPC 2013 and let your voice be heard.

PANELISTS:

- Ben Heard (*Director, Think Climate Consulting*)

FIRST STEPS: A MANAGEMENT CRASH COURSE

Session Organizer: Ben Holtzman (Senior Engineer, Westinghouse)

CABINET ROOM

Are you interested in becoming a manager, or a new manager? Westinghouse is looking to make some improvements. Resource management requires a different set of skills than other professional positions and often raises new challenges for first-time managers. This session will cover “everything I wish knew before I became a manager.”

PANELISTS:

- Duncan Robinson (*Engineering Supervisor, Constellation*)
- Liz McAndrew-Benavides (*Manager, NEI*)

THERE AND BACK AGAIN

Session Organizer: Peter Shaw (Senior Licensing Engineer, Westinghouse)

AMBASSADOR BALLROOM

As young members enter the industry, they are faced with difficulty communicating their ideas and goals effectively with people from an older generation. Without effective communication, there is the potential for useful information to be lost from both sides of the discussion. Young members often have new ideas and approaches to problems, while more senior individuals have perspective from their experience. This session will offer techniques and strategies for effective communication.

PANELISTS:

- Angie Howard (*President, Howard – Johnson Associates*)
- David Pointer (*Technical Lead, Oak Ridge National Laboratory*)
- Laura Hermann (*Sr Vice President, Potomac Communications Group*)
- Andy Cook (*Senior VP OE and Innovation, Areva*)

GETTING THE MOST OUT OF ANS

Session Organizer: Art Wharton (Project Manager, Westinghouse)

AMBASSADOR BALLROOM

ANS meetings can be very large and busy. As a young professional it can be daunting showing up at your first ANS meeting, or even your fifth. This panel will go over the organizational structure of ANS, what typically happens at an ANS meeting, and how you can get the most out of attending an ANS conference.

PANELISTS:

- Gale Hauck (*Product Manager, Westinghouse*)
- Eric Loewen (*Chief Engineer General Electric*)

VOICE OF THE YOUNG GENERATION

Session Organizer: Gale Hauck (Product Manager, Westinghouse)

AMBASSADOR BALLROOM

This is your chance to bring up topics of concern, discuss the future, and make your voice heard.

COMMITTEE MEETINGS

NATIONAL COMMITTEES

ACCREDITATION, POLICES & PROCEDURES

SUNDAY, 11 AM - 12 PM
PARLOR #315

BOARD OF DIRECTORS

PROFESSIONAL DIVISION REPORTS
WEDNESDAY, 4 PM - 5:30 PM
REGENCY BALLROOM

ANS BOD
THURSDAY, 7:30 AM - 2:30 PM
REGENCY BALLROOM

BYLAWS & RULES

SUNDAY, 4:30 PM - 6 PM
SENATE ROOM

COMMUNICATIONS

SUNDAY, 4 PM - 6 PM
PALLADIAN BALLROOM

FINANCE MEETING

TUESDAY, 2 PM - 7 PM
PARLOR #268

HONORS & AWARDS

MONDAY, 4 PM - 6 PM
PARLOR #415

INTERNATIONAL

SUNDAY, 11:30 AM - 2:30 PM
EMPIRE ROOM

LOCAL SECTION WORKSHOP

SUNDAY, 8 AM - 12 PM
CABINET ROOM

MEMBERSHIP

SUNDAY, 10 AM - 12 PM
PARLOR #215

NATIONAL PROGRAM

NPC SCREENING & INTERNATIONAL
SUNDAY, 10 AM - 12 PM
DIPLOMAT BALLROOM

NPC NATIONAL MEETING SUB
COMMITTEE
WEDNESDAY, 11:30 AM - 1 PM
PARLOR #400

NPC PROGRAM
WEDNESDAY, 4 PM - 6:30 PM
PARLOR #400

NEED COMMITTEE

SUNDAY, 7:30 PM - 9:30 PM
PARLOR #368

PROFESSIONAL ENGINEERING EXAM

PEEC ITEM WRITERS GROUP
SATURDAY, 5 PM - 10 PM
PARLOR #400

PEEC COMMITTEE MTG
SUNDAY, 3 PM - 5:00 PM
PARLOR #368

PLANNING

SUNDAY, 2 PM - 6 PM
CABINET ROOM

PRESIDENT'S MEETING w/ COMMITTEE CHAIRS

SUNDAY, 8 AM - 9 AM
HAMPTON BALLROOM

PRESIDENT'S MEETING w/ DIVISION CHAIRS

SUNDAY, 9 AM - 10 AM
HAMPTON BALLROOM

PROFESSIONAL DEVELOPMENT COORDINATION

TUESDAY, 4:00 PM - 5:00 PM
PARLOR #100

PROFESSIONAL DIVISIONS

TRAINING WORKSHOP
SATURDAY, 5 PM - 6:30 PM
PARLOR #168

COMMITTEE MEETING
WEDNESDAY, 5:30 PM - 7 PM
REGENCY BALLROOM

PROFESSIONAL WOMEN IN ANS

MONDAY, 11:30 AM - 12:30 PM
PARLOR #300

PUBLIC POLICY

WEDNESDAY, 11:30 AM - 1:30 PM
PARLOR #215

PUBLICATIONS STEERING

MEETINGS, PROCEEDINGS &
TRANSACTIONS
SUNDAY, 9 AM - 10 AM
PARLOR #200

BOOK PUBLISHING
SUNDAY, 11 AM - 12:30 PM
PARLOR #200

NS&E EDITORIAL ADVISORY
SUNDAY, 11 AM - 12 PM
PARLOR #400

TECHNICAL JOURNALS
SUNDAY, 1 PM - 4 PM
PARLOR #215

NT EDITORIAL ADVISORY
SUNDAY, 4:30 PM - 5:30 PM
PARLOR #215

NUCLEAR NEWS EDITORIAL ADVISORY
SUNDAY, 4 PM - 5:30 PM
PARLOR #400

PUBLICATION STEERING COMMITTEE
MONDAY, 4:30 PM - 6:30 PM
PARLOR #300

SCHOLARSHIP POLICY & COORDINATION

MONDAY, 12 PM - 1 PM
PARLOR #400

STUDENT SECTIONS

EXECUTIVE
MONDAY, 6 PM - 7 PM
BLUE ROOM PRE-FUNCTION

REPORTS
MONDAY, 7 PM - 8 PM
BLUE ROOM PRE-FUNCTION

SPECIAL COMMITTEES

SPECIAL COMMITTEE INTEGRATION
OVERSIGHT
TUESDAY, 9 AM - 11 AM
PARLOR #215

SPECIAL COMMITTEE ON
GOVERNMENT RELATIONS
TUESDAY, 1:30 PM - 3 PM
PARLOR #215

OTHER COMMITTEES

8iCi ORGANIZING

MONDAY, 4 PM - 5:30 PM
PARLOR #200

19TH PBNC ORGANIZING

MONDAY, 4 PM - 5 PM
PARLOR #400

CNF MEETING

MONDAY, 7 PM - 10 PM
PARLOR #368

EAGLE ALLIANCE BOD

SUNDAY, 1 PM - 3 PM
PARLOR #500

FELLOWS POLICY ROUNDTABLE

WEDNESDAY, 8 AM - 11:30 AM
PARLOR #200

INSC BUSINESS MEETING

TUESDAY, 4 PM - 7 PM
PARLOR #400

INEA

TUESDAY, 12PM - 2PM
PARLOR #400

KNS MEETING

MONDAY, 4:30 PM - 6 PM
PARLOR #215

MATHEMATICS & COMPUTATION/ REACTOR PHYSICS/RADIATION PROTECTION & SHIELDING

JOINT BENCHMARK MEETING
SUNDAY, 11 AM - 1 PM
PARLOR #500

NEDHO

SUNDAY, 4 PM - 6 PM
PARLOR #168

NURETH-15

TUESDAY, 6 PM - 8 PM
PARLOR #215

PACIFIC NUCLEAR COUNCIL

SUNDAY, 8:30 AM - 5 PM
BLUE ROOM PRE-FUNCTION

PSA 2014 PLANNING MEETING

MONDAY, 5:30 PM - 7:30 PM
PARLOR #600

RISK MANAGEMENT 2014 ORGANIZING

MONDAY, 6:30 PM - 8:30 PM
PARLOR #500

UWC 2014

PLANNING COMMITTEE
SUNDAY, 11:30 AM - 12:30 PM
HAMPTON BALLROOM

DIVISION COMMITTEES

ACCELERATOR APPLICATIONS - EXECUTIVE

MONDAY, 11:30 AM - 1:30 PM
PARLOR #215

AEROSPACE NUCLEAR SCIENCE & TECHNOLOGIES

SUNDAY, 12 PM - 2 PM
PARLOR #268

BIOLOGY AND MEDICINE

COMPUTATIONAL MEDICAL PHYSICS
WORKING GROUP
SUNDAY, 10 AM - 11 AM
PARLOR #400

JOINT PROGRAM COMMITTEE-
I&R/BM

SUNDAY, 1:30 PM - 2:30 PM
EMBASSY ROOM

COMMITTEE OF THE WHOLE
SUNDAY, 4 PM - 5:30 PM
PARLOR #468

DECOMMISSIONING AND ENVIRONMENTAL SCIENCE

NUCLEAR PRODUCTION OF HYDROGEN
WORKING GROUP
SUNDAY, 12 PM - 1 PM
SENATE ROOM

SPECIAL COMMITTEE ON SUSTAINABILITY
OF NUCLEAR ENERGY
SUNDAY, 1 PM - 3 PM
COUNCIL ROOM

PROGRAM
SUNDAY, 3:30 PM - 4:30 PM
PARLOR #268

EXECUTIVE
SUNDAY, 4:30 PM - 5:30 PM
PARLOR #268

EDUCATION, TRAINING & WORKFORCE DEVELOPMENT

UNIVERSITY/INDUSTRY/GOVERNMENT
RELATIONS
SUNDAY, 9:30 AM - 10:30 AM
PARLOR #300

PROGRAM
SUNDAY, 10:30 AM - 12 PM
PARLOR #300

ALPHA SIGMA NU
SUNDAY, 1 PM - 2 PM
PARLOR #415

EXECUTIVE/MEMBERSHIP/HONORS &
AWARDS
SUNDAY, 1:30 PM - 4:00 PM
PARLOR #300

FUEL CYCLE & WASTE MANAGEMENT

PROGRAM
SUNDAY, 12 PM - 1 PM
PALLADIAN BALLROOM

EXECUTIVE
SUNDAY, 1 PM - 2:30 PM
PALLADIAN BALLROOM

TECHNICAL OPERATING & STANDARDS
COMMITTEE
SUNDAY, 2:30 PM - 3:30 PM
PALLADIAN BALLROOM

FUSION ENERGY

EXECUTIVE
SUNDAY, 3 PM - 5 PM
COUNCIL ROOM

HUMAN FACTORS, INSTRUMENTATION, AND CONTROLS

PROGRAM
SUNDAY, 11 AM - 12 PM
PARLOR #368

EXECUTIVE
SUNDAY, 12 PM - 2:30 PM
PARLOR #368

ISOTOPES AND RADIATION

JOINT PROGRAM COMMITTEE- I&R/BM
SUNDAY, 1:30 PM - 2:30 PM
EMBASSY ROOM

EXECUTIVE
SUNDAY, 2:30 PM - 4 PM
SENATE ROOM

MATERIALS SCIENCE & TECHNOLOGY

EXECUTIVE
MONDAY, 7 PM - 9 PM
PARLOR #400

MATHEMATICS & COMPUTATION

COMPUTATIONAL MEDICAL PHYSICS
WORKING GROUP
SUNDAY, 10 AM - 11 AM
PARLOR #400

COMMITTEE MEETINGS

PROGRAM
SUNDAY, 1 PM - 2 PM
PARLOR #468

EXECUTIVE
SUNDAY, 2 PM - 4 PM
PARLOR #468

NUCLEAR CRITICALITY SAFETY

EDUCATION MEETING
SUNDAY, 1 PM - 2 PM
DIPLOMAT BALLROOM

PROGRAM
SUNDAY, 2 PM - 3 PM
DIPLOMAT BALLROOM

EXECUTIVE
SUNDAY, 3 PM - 4:30 PM
DIPLOMAT BALLROOM

NUCLEAR INSTALLATIONS SAFETY

PROGRAM
SUNDAY, 4 PM - 6 PM
CALVERT ROOM

EXECUTIVE
SUNDAY, 7:30 PM - 9:30 PM
CALVERT ROOM

NUCLEAR NONPROLIFERATION (TG)

SPECIAL ADVISORY COMMITTEE
SUNDAY, 1 PM - 2 PM
PARLOR #600

PROGRAM
SUNDAY, 2 PM - 3 PM
PARLOR #600

GOVERNANCE
SUNDAY, 3 PM - 4 PM
PARLOR #600

OPERATIONS & POWER

NUCLEAR CONSTRUCTION WORKING
GROUP
SUNDAY, 12:30 PM - 2:30 PM
HAMPTON ROOM

PROGRAM
SUNDAY, 2:30 PM - 4 PM
HAMPTON ROOM

EXECUTIVE
SUNDAY, 4 PM - 6 PM
HAMPTON ROOM

RADIATION PROTECTION & SHIELDING

PROGRAM
SUNDAY, 12:30 PM - 1:30 PM
PARLOR #315

SHIELDING STANDARDS
SUNDAY, 12 PM - 12:30 PM
PARLOR #315

EXECUTIVE
SUNDAY, 1:30 PM - 3:30 PM
PARLOR #315

REACTOR PHYSICS

HONORS & AWARDS
SUNDAY, 10 AM - 11 AM
PARLOR #200

GOALS & PLANNING
SUNDAY, 1 PM - 2 PM
PARLOR #200

PROGRAM
SUNDAY, 2 PM - 4 PM
PARLOR #200

EXECUTIVE
SUNDAY, 4 PM - 6 PM
PARLOR #200

ROBOTICS & REMOTE SYSTEMS

EXECUTIVE
SUNDAY, 12 PM - 4 PM
PARLOR #400

THERMAL HYDRAULICS

PROGRAM
SUNDAY, 2:30 PM - 4:30 PM
PARLOR #415

EXECUTIVE
SUNDAY, 4:30 PM - 6 PM
PARLOR #415

YOUNG MEMBER GROUP (TG)

EXECUTIVE COMMITTEE
MONDAY, 11:30 AM - 1 PM
PARLOR #315

STANDARDS COMMITTEES

ANS - 3.14
MONDAY, 1 PM - 4 PM
PARLOR #315

ANS - 6.1.1
WEDNESDAY, 12 PM - 1 PM
PARLOR #168

ANS - 8.1
SUNDAY, 9 AM - 12 PM
TUESDAY, 7 AM - 8:30 AM
PARLOR #168

ANS - 8.26 WORKING GROUP
WEDNESDAY, 7 AM - 8:30 AM
PARLOR #100

ANS-8.28 WORKING GROUP
WEDNESDAY, 4 PM - 6 PM
PARLOR #315

ANS - 10.8
SATURDAY, 3 PM - 5 PM
PARLOR #168

ANS - 19
MONDAY, 8:30 AM - 10:30 AM
PARLOR #168

ANS - 19.1
MONDAY, 10:30 AM - 11:30 AM
PARLOR #168

ANS - 57.11
TUESDAY, 8 AM - 5 PM
PARLOR #468

WEDNESDAY, 8 AM - 5 PM
PARLOR #468

ANS STANDARDS BOARD
TUESDAY, 9 AM - 5 PM
BLUE ROOM PRE-FUNCTION

FWCC
MONDAY, 2:00 PM - 4:00 PM
PARLOR #268

LLWRDOCC
WEDNESDAY, 1 PM - 4 PM
PARLOR #168

N16
MONDAY, 1 PM - 4:30 PM
PARLOR #100

NRNF
WEDNESDAY, 8:30 AM - 12 PM
PARLOR #315

RARCC
MONDAY, 4 PM - 6 PM
BLUE ROOM PRE-FUNCTION

RP3C
MONDAY, 10 AM - 12 PM
PARLOR #100

SESC
WEDNESDAY, 8:30 AM - 12 PM
PARLOR #168

SRACC
WEDNESDAY, 7 AM - 8 AM
PARLOR #168



ANS Technology Expo

Exhibiting at the ANS Nuclear Technology Expo provides an opportunity to display your technology and services to industry leaders. This premier American Nuclear Society expo provides the potential to learn, interact, and make face-to-face connections with the expected 1,500 plus attendees.

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Idaho National Laboratory	606, 608	University of Tennessee Department of Nuclear Engineering	308
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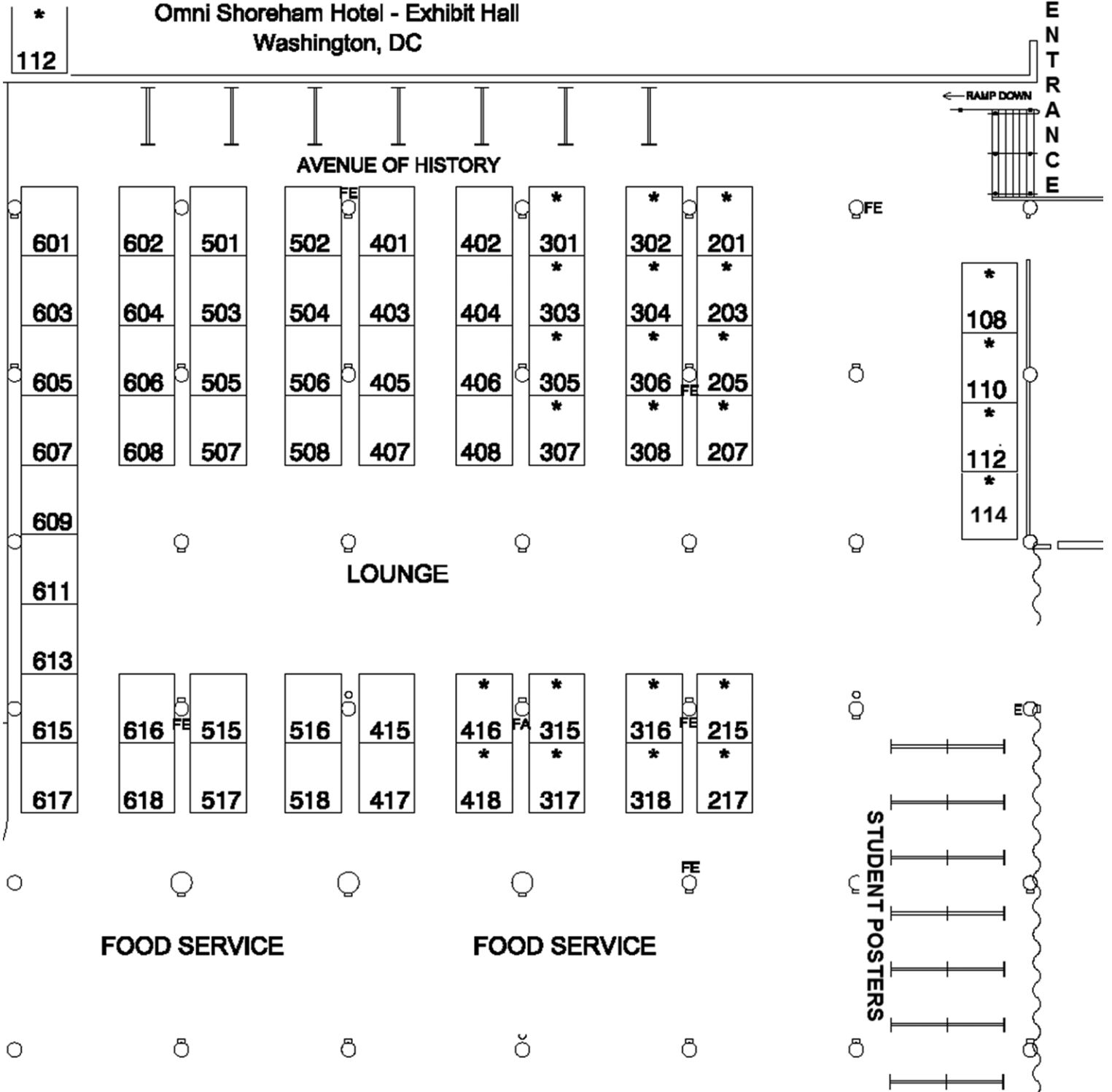
FLOOR PLAN

OMNI Shoreham Hotel • Exhibit Hall • Washington, DC
November 10-12, 2013

ANS 2013 EXPO

November 10 -12, 2013

Omni Shoreham Hotel - Exhibit Hall
Washington, DC





ANS Conference

2013 Winter Meeting & Technology Expo

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NEBRASKA PUBLIC POWER DISTRICT
NEI
NEWPORT NEWS SHIPBUILDING
NEXUS TECHNICAL SERVICES CORPORATION
NGNP INDUSTRY ALLIANCE

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ONTARIO POWER GENERATION

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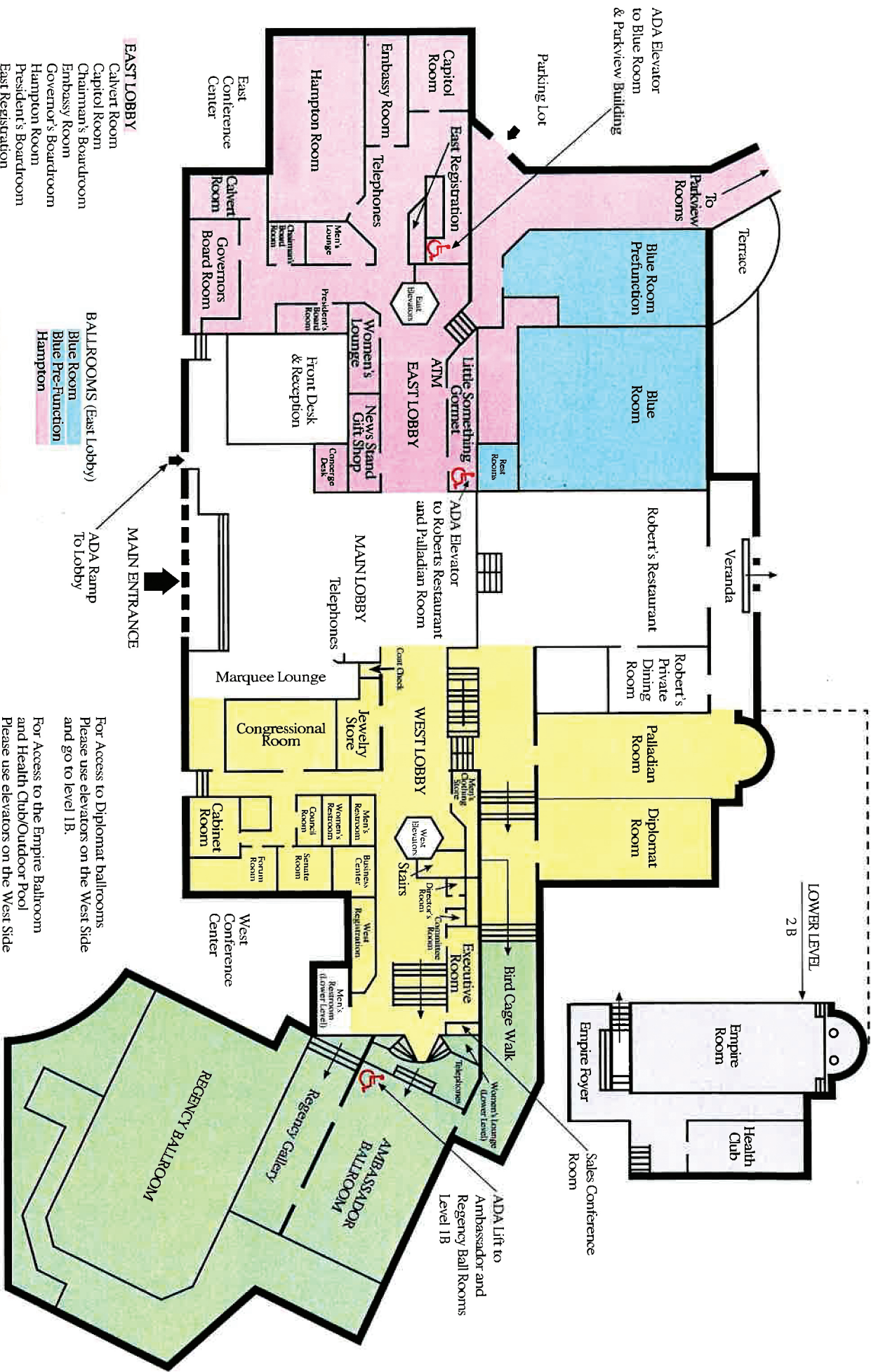
WASTE CONTROL SPECIALISTS

WESTINGHOUSE ELECTRIC CORP.
WOLF CREEK NUCLEAR OPERATING CORP.
WYLE LABORATORIES

About the American Nuclear Society

The American Nuclear Society (ANS) is a professional society of engineers, scientists, and other professionals devoted to the peaceful applications of nuclear science and technology. We have more than 11,000 individual members, nearly 100 organization members, 20 professional technical divisions, more than 60 local sections (including nine outside the U.S.), more than 30 student sections, and liaison agreements with 30 non-U.S. nuclear societies. ANS represents the full range of engineering disciplines as well as the physical and biological sciences within the nuclear field.

We are advancing the application of nuclear technologies to improve the lives of the world community through national and international enterprise within government, academia, research laboratories and private industry. The Society's main objectives are the advancement of nuclear science and technology through supporting scientific exchange, scholarship, and dissemination of information to the general public. ANS conducts meetings at which scientific and technical papers are presented, and cooperates with government agencies, educational institutions, and other organizations having similar purposes.



OMNI SHOREHAM HOTEL