2012

ANS Winter Meeting & Nuclear Technology Expo

"Future Nuclear Technologies: Resilience and Flexibility"

November 11-15, 2012 • Town & Country Resort • San Diego, CA

Embedded Topical Meetings:

- International Meeting on Severe Accident Assessment and Management: Lessons Learned from Fukushima Dai-ichi
- Advances in Thermal Hydraulics (ATH '12)

Professional Development Workshop:

"Facilitation Skills"

2012 Winter Meeting

Official Program

our most sincere ***thanks***
to the ***following contributors***
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2012 ANS Winter Meeting & Nuclear Technology Expo

"Future Nuclear Technologies: Resilience and Flexibility" & Embedded Topical Meetings:

International Meeting on Severe Accident Assessment & Management: Lessons Learned from Fukushima Dai-ichi

Advances in Thermal Hydraulics (ATH '12)

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1:30 P.M. – 6:05 P.M.	Advances in Thermal Hydraulics: Technical Sessions

2012 ANS Winter Meeting: Meeting Officials

HONORARY CHAIR:
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Levy & Associates

GENERAL CHAIR:
Prof. Per F. Peterson
University of California

ASSISTANT GENERAL CHAIR:
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Southern California Edison

TECHNICAL PROGRAM CHAIR (TPC):
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The Ohio State University

ASSISTANT PROGRAM CHAIR:
Dr. Sacit M. Cetiner
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University of Florida

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Mr. Ted Quinn
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STUDENT CHAIR:
Mr. Christopher Robinson
Southern California Edison

SPOUSE/GUEST CHAIR
Karen Seeland

TECHNICAL TOURS CHAIR:
Dr. Henry Chiu
General Atomics

Meeting Information

The 2012 ANS Winter Meeting and two Embedded Topical Meetings: Advances in Thermal Hydraulics (ATH '12), and International Meeting on Severe Accident Assessment and Management: Lessons Learned from Fukushima Daiichi will be held November 11-15, 2012, in San Diego, CA.

There will also be a Professional Development Workshop, "Facilitating Success" on Sunday from 8:00 a.m. – 10:00 a.m.

Accommodations/Hotel Information

The Town and Country Resort and Convention Center, located at **500 Hotel Circle North, San Diego, California, 92108**, will be the location for the 2012 Winter Meeting and Nuclear Technology Expo, where all meeting activities and technical sessions will take place.

ANS Nuclear Technology Expo

The ANS Nuclear Technology Expo will be held in conjunction with the 2012 ANS Winter Meeting in the Grand Exhibit Hall of the hotel. Please turn to page 55 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 11, 2012, in the **Royal Palm Salon 1**.

Student Assistant Program

Attendance at the 2012 ANS Winter Meeting is an exciting professional opportunity for college and graduate students.

To help defray travel and living expenses, students can sign up to work as session chairs' assistants. Student assistants must attend the student training session on Sunday, November 11, 2012, 4:00 - 5:00 p.m. in the **Royal Palm Salon 1**.

Student assistants receive free meeting registration and a copy of the meeting TRANSACTIONS.

All students are responsible for paying their own room, tax, and incidentals.

ANS student members who register for the meeting and/or work as session chairs' assistants should pick up a travel assistance form which can be found in the student headquarters room. Student travel assistance is provided through contributions from the ANS professional divisions.

The student headquarters room will be located in the **Esquire** room.

Notice for Speakers

All speakers and session chairs must sign in at the "Speakers' Desk," located in the ANS Registration Area of the hotel during registration hours.

ANS Registration

Meeting registration, speakers' & sessions chairs' desk and the message desk will be located in the **Atlas Foyer** of the Town & Country Resort, Sunday, November 11, 2012 - Thursday, November 15, 2012. 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 10, 2012
2:00 p.m. - 5:00 p.m.
*Sunday, November 11, 2012
11:00 a.m. - 7:00 p.m.
Monday, November 12, 2012
7:30 a.m. - 5:00 p.m.
Tuesday, November 13, 2012
7:30 a.m. - 5:00 p.m.
Wednesday, November 14, 2012
7:30 a.m. - 5:00 p.m.
Thursday, November 15, 2012
7:30 a.m. - 2:00 p.m.

**** Sunday workshop attendees only***

*Registration for the ANS Professional Development Workshops will take place at the **Atlas Foyer** Registration Desk of the hotel on Sunday, November 11, 2012, 7:00 A.M. - 8:00 A.M. Please note: only workshop information will be available; all other registrants see times and location above.*

ANS Conference Office

Location: **Terrace Salon 1**

ANS Secretariat

Location: **Terrace Salon 2**

ANS Media Center

Monday, November 12, 2012
7:45 A.M. - 4:00 P.M.
Tuesday, November 13, 2012
8:00 A.M. - 4:00 P.M.
Wednesday, November 14, 2012
8:00 A.M. - 4:00 P.M.
Location: **Terrace Salon 3**

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 and the conference proceedings (CD-Rom).
- The Student Registration Fee includes admission to all technical sessions and the conference proceedings (CD-Rom). A full-time student i.d. is required.

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 at least one day prior to their presentation.

Location: **Atlas Foyer**

Professional Development Workshop: Facilitating Success

Sunday November 11, 2012
8:00 A.M. – 10:00 A.M.

Location: **Pacific Salon 6**

PDW Organizer: Gale Hauck
Instructor: Dr. Audeen Fentiman

Facilitation Skills are extremely useful for any thought Leader in NS&T. This Workshop will overview facilitation skills for future leaders and will help current leaders to hone their skills.

Attendee registration fees: $25 (ANS member) and $30 (non-members)

Mentoring Program

A special mentoring program will be held from 5:00 p.m. - 6:00 p.m. on Sunday, November 11, 2012, in the **Royal Palm Salon 1**.

ANS Members who will 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 12, 2012
4:00 p.m. - 6:00 p.m.
Location: Garden Salon 1

Posters will be presented in the following categories:

Fuel Cycle and Waste Management:
Janelle Droessler

Human Factors, Instrumentation and Controls:
Kevin A. Makinson

Isotopes and Radiation:
Balazs J. Bene
Jordan L. Sabella/Ross Meyer

Materials Science and Technology:
Benjamin T. Reinke
Dariush Seif

Mathematics and Computation:
Ryan M. Bergmann

Nuclear Criticality Safety:
Brian McDermott

Nuclear Installations Safety:
Sabrina Tietze

Nuclear Nonproliferation:
Audrey R. Roman
Srisharan G. Govindarajan

Operations and Power:
Jacob D. DeWitte

Reactor Physics:
Anselmo Cisenros
Christian D. Di Sanzo
Christopher R. Herman
Amanda L. Lang
Travis J. Trahan

Thermal Hydraulics:
Imani Adams
Lindsey A. Gilman
Tae Kyu Ham
Lakshana Huddar
Darius D. Lisowski
Sarah Sarnoski
Raluca O. Scarlat
Ted S. Worosz

Best Practices for Student Sections:
Nicholas W. Thompson

Spouse/Guest Hospitality

Spouse/guest hospitality breakfast will be served from 8:00 a.m. - 10:00 a.m., Monday, November 12, 2012, through Wednesday, November 14, 2012, in **Tiki Pavilion**. 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. Spouse/guest tours are scheduled.

Registration for the tours is separate from the spouse/guest meeting registration.

Attention Runners: ANS Fun Run

On Tuesday, November 13, 2012, 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 San Diego, CA. Bring shoes and a big smile.

Standards Workshop:

Export Controls in a Global Nuclear Economy: A Workshop on the 810 Process

Tuesday, November 13, 2012
4:00 PM -5:30 PM

Location: **Garden 1**

GIF Symposium

Wednesday, November 14, 2012
8:30 AM – 5:00 PM

The Generation IV International Forum, an international collective of nations working cooperatively on development of 6 next generation reactor concepts, will hold its 2nd Symposium at the 2012 ANS Winter Meeting, Nov. 13-16, 2012.The opening day meetings will be split session in the morning consisting of an opening plenary hosted by the GIF Chairman, a panel discussion on development of Safety Design Criteria for Sodium Fast Reactors, and a panel discussion of the next ten years of GIF cooperation. The remainder of the meeting will focus on development of fast reactor systems, including research on other reactor concepts and areas where the countries can work together to advance nuclear energy.

Location: **California**

Focus on Communications Workshop

Wednesday, November 14, 2012
4:30 PM - 6:30 PM

Location: **California**

Export Controls in a Global Nuclear Economy: A Workshop on the 810 Process

Tuesday, November 13, 2012
4:00 PM -5:30 PM

Location: **Garden 1**

Global nuclear development is a reality, and almost every project requires multi-national cooperation. The U.S. Government supports industry participation in global nuclear markets, and has established an export control regime to assure exporters comply with international norms to prevent proliferation of technologies that could be used to develop nuclear weapons. This workshop, focusing on the Department of Energy's "Part 810" export control regulations, will offer practical guidance on:

- How DOE Part 810 and other export control programs work and how they may be changing
- How export managers from leading U.S. nuclear companies deal with export issues, the U.S government, and the customer's government
- The role of the U.S government as an advocate for US nuclear companies in global markets.

PANELISTS:

- Joyce Connery (Director, Nuclear Energy Policy National Security Council), Moderator
- Rich Goorevich (Senior Policy Advisor, DOE/NNSA Office of Nonproliferation and International Security)
- Rich Fruehauf (Westinghouse)
- Bryce MacDonald (GE Hitachi)
- Paul Longsworth (Fluor)
- Tom Brennan (Department of Commerce, Vienna)

Please see page 52 for additional info.

SAN DIEGO ZOO

www.elephantodyssey.com

Special Events & Tours

PLEASE NOTE:

- You must be registered for the meeting to attend evening events.
- Times listed are departure times and return times to/from the hotel.
- Buses will leave promptly from the Atlas Foyer Entrance (West) of the Town & Country Resort.

CONFERENCE LUNCHEONS

Attendee Luncheon in the Nuclear Technology Expo

MONDAY, NOVEMBER 12, 2012
11:30 A.M. – 1:00 P.M.
Location: Exhibit Hall (Grand Hall)

One ticket to the Attendee Luncheon in the Nuclear Technology Expo is included in the full meeting registration fee.

Additional tickets can be purchased on-site at the ANS Registration Desk for $65.00.

ANS President's Reception

SUNDAY, NOVEMBER 11, 2012
6:00 P.M. – 7:30 P.M.
Location: Exhibit Hall (Grand Hall)

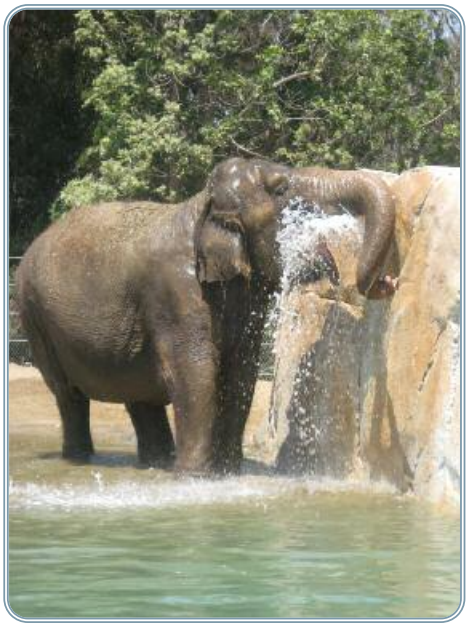
One ticket to the ANS President's Reception is included in the full meeting registration fee.

Additional tickets can be purchased on-site at the ANS Registration Desk for $85.00 per person.

Dinner at the San Diego Zoo

MONDAY, NOVEMBER 12, 2012
6:00 P.M. – 11:00 P.M.

A not to be missed event!



One of the Residents at the Elephant Odyssey

The Elephant Odyssey is the San Diego Zoo's most ambitious project yet combining animal species from all over the world into one shared exhibit. So what makes this Exhibit different from other exhibits at the zoo? Every member of the Elephant Odyssey, whether mammal, bird, reptile or insect, can have its origins traced back to the southern California region!

Learn about the Pleistocene epoch (the time of megafauna; i.e., large animals) and how creatures of a bygone era could become dispersed throughout the world through the use of ancient land bridges.

The large cat habitat will probably be the first location to catch your attention on your way to dinner. Lions and jaguars will be there to greet you.

Visit the jaguars and congratulate them on the new additions to their family. The new jaguar cubs need lots of care and attention so make sure to come by and see what kind of mischief they get into.

The stars of the exhibit, the elephants, are a mixture of Asian and Indian varieties. These park residents get premium service with spa services that they are able to schedule themselves!

At any time, these pampered pachyderms can mosey into the Elepant Care Center for a massive manicure and foot soak courtesy of the San Diego Zoo staff.

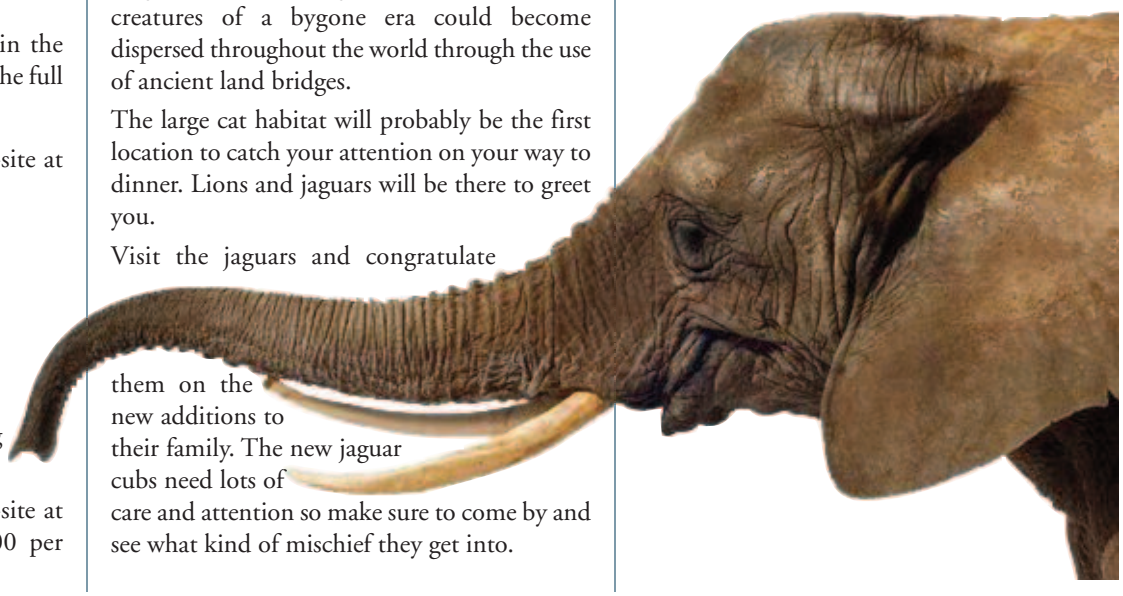
Prepare for this fantastic adventure by visiting the San Diego Zoo's website:

www.elephantodyssey.com

Here, you can learn the elephant's names and what the like to do. Also, try out the "Elephant Odyssey" game and prepare to be taken on a prehictoric adventure. Learn about mammoths from 200,000 years ago as well as the other animals in the exhibit like the world's larges rodent, the capybara and the California condor, a monstrous bird that nearly became extinct!

Tickets can be purchased or on-site at the ANS Registration Desk for $80.00 per person.

Polar Bear at the San Diego Zoo



Coral Display

Dinner at the Birch Aquarium in San Diego

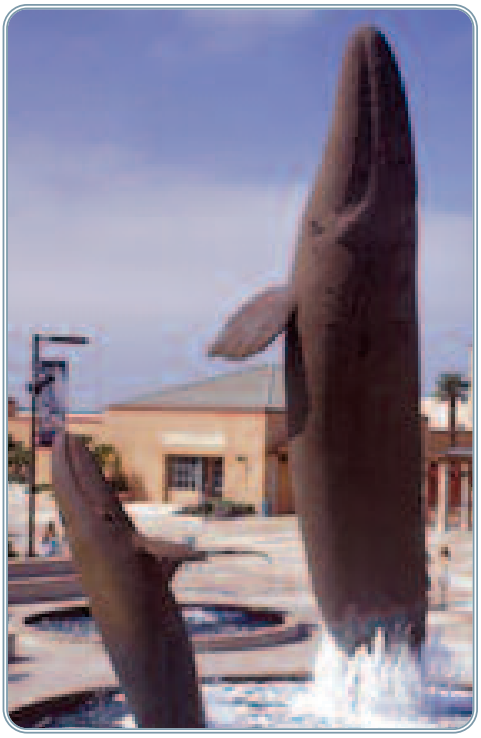
WEDNESDAY, NOVEMBER 14, 2012
6:00 P.M. – 10:00 P.M.

Visit the Birch Aquarium and celebrate 20 years of oceanography and education!

During the event, feel free to wander through the Birch's many exhibits including the Hall of Fishes, Shark Reef the Coral Displays.

The Hall of Fishes boast more than 60 habitats with fish ranging from the California coast, Mexico and the Caribbean! Among these exhibits is a 70,000 gallon kelp forrest tank. Here, you can observe the aquatic life that calls this submerged wilderness home!The Coral display houses many beautiful fish favorites including the lionfish, chambered nautilus, and giant clams! A new interactive display has been added that showcases the research that the Scripps Institute has been performing around the world. The coral reefs in the Pacific and Caribbean displays have been constructed through a technique very similar to that of plant propagation. By carefully dividing the spawning coral, the researchers at Scripps can grow new reef colonies. By understanding how the reef colonies work, more advanced steps can be taken to save coral reefs all over the world!

Bllue Whale



"Legacy" at the Birch Aquarium

Are you brave enough to visit the shark tank? You'll see blacktip and epaulette sharks in this 13,000 gallon exhibit!

Tickets can be purchased on-site at the ANS Registration Desk for $75.00 per person.

"Legacy" at the Birch Aquarium

SPOUSE/GUEST TOURS

Whistle While You Walk: A Walking Tour of Beautiful Coronado Island

MONDAY, NOVEMBER 12, 2012
1:00 P.M. – 5:00 P.M.

What better way to discover the magic of Coronado Island than on a leisurely guided walking tour?

Coronado, once the playground of Presidents and Princes, is an island rich with natural splendors and historical delights—truly one of San Diego's finest, most unspoiled gems. On this unique outing, guests will enjoy a strolling tour led by a knowledgeable and humorous guide, who will fill you in on anecdotes and little known facts along the way.

Your facinating day begins at the house of John D. Spreckles— San Francisco Sugar Baron who once owned most of the island—his summer house where the Prince of Wales was entertained, and his mansion, the largest home in Coronado with 17 bedrooms and 13 bathrooms.Following this "sweetest" of sights, guests will get an up-close-and-personal tour of the world famous Hotel del Coronado—the signature icon of the island. The charming, resplendent "Hotel Del" has reigned as monarch of the Pacific Coast resort hotels since its opening in 1888. No other hotel in North America, perhaps in the world, enjoys more fame than "The Del." In addition to The Del, guests will stroll past the Crown Manor mansion and even the Wizard of Oz house, once home of author L. Frank Baum.

Lace up your walking shoes and set yours sights on island delights as Destination Concepts brings you a sightseeing sojourn chock full of intriguing island strolling on the isle that embodies the beauty of San Diego—Coronado!

Tickets can be purchased on-site at the ANS Registration Desk at $57.00 per person.

Historic "Hotel Del"

Capturing the Culture: Balboa Park Museum Passport

TUESDAY, NOVEMBER 13, 2012
1:00 P.M. – 5:00 P.M.

Casa del Prado in Balboa Park

Nowhere is the allure of San Diego's countless eclectic charms capture quite as vividly as in the city's premier colonial landmark, Balboa Park. Stretching over 1,200 acres of flower-strewn landscape nestled in the hills of Downtown, this urban park it dotted by an array of intricate and antiquated Spanish architecture housing 85 cultural and recreational organizations, including sixteen museums. Recent additions include a recreation of the emblem of the 1915 Expo on the top of the new West Arcade and a bronze replica of a B24 Liberator, a centerpiece of the Veterans Memorial Garden recently unveiled in November.

The two World's Fairs, the Panama-California Exposition of 1915-1916 and the California Pacific International Exposition of 1935-36, transfomed Balboa Park into the cultural Mecca it is today, the largest concentration of museums and cultural institutions outside The Mall in Washington D.C.

Balboa Park countless wonders include:

- Museum of Man
- Natural History Museum
- Reuben H. Fleet Science Center
- Museum of Photographic Arts
- Mingei International Art Museum
- Aerospace Museum
- Centro Cultural de la Raza; WorldBeat Center
- Japanese Friendship Garden
- House of Pacific Relations
- Hall of Champions
- Midel Railroad Museum
- Automotive Museum
- Veteran's Memorial Center Museum

Tickets can be purchased on-site at the ANS Registration Desk at $78.00 per person.

Technical Tours:

Scripps Institute of Oceanography / General Atomics DIII-D Fusion Experiment

Interior of DIII-D Tokamak plasma reaction chamber

WEDNESDAY, NOVEMBER 14, 2012
12:30 P.M – 5:00 P.M.

We will have a tour on Wednesday, November 14, 2012 that will include the Scripps Institute of Oceanography and the DIII-D Tokamak Fusion ÏÏ

Research Vessel Roger Revelle

With more than a century of exploration and discovery in global sciences, Scripps Institute of Oceanography is the world's preeminent center for ocean and earth research, teaching, and public education. A department of University of California - San Diego, Scripps' leadership in many scientific fields reflects its continuing commitment to excellence in research, modern facilities and ships, distinguished faculty, and outstanding graduate and undergraduate students - and the horizons continue to expand.

Our tour will take participants into the ocean-front research labs at Scripps for explanations of their current research by the scientists leading that work.

Next, a tour will be given of the DIII-D National Fusion Research Facility, located at General Atomics. DIII-D is the largest magnetic fusion research device in the US.

The DIII-D Tokamak is a magnetic plasma confinement device used by teams of researchers from all over the US and around the world, and is developing the plasma physics knowledge needed to move forward on the International Thermonuclear Experimental Reactor (ITER) fusion demonstration project.

Submarine Tour

Navy Base Point Loma

WEDNESDAY, NOVEMBER 14, 2012
2:15 P.M. – 5:30 P.M.

THIS TOUR IS FOR U.S. CITIZENS, ONLY.

In 1959 Fort Rosecrans was turned over to the U.S. Navy. The Navy Submarine Support Facility was established in November 1963 on 280 acres of the land. On November 27, 1974 the base was re-designated a shore command, serving assigned submarines, Submarine Group Five, Submarine Squadron Three, Submarine Development Group One, the Submarine Training Facility and later, Submarine Squadron Eleven. On October 1, 1981 the base was designated as Naval Submarine Base.

Starting in April 1995, several commands were decommissioned or their homeports were changed to meet the down-sizing requirements of the Navy. Commands throughout San Diego were regionalized in an effort to provide equal or better base services while managing a reduced budget. The six naval installations on Point Loma were consolidated as Naval Base Point Loma on 1 October, 1998.

Thank You For Supporting ANS!

The American Nuclear Society would like to thank everyone who has pledged a gift to the ANS Center for Nuclear Science and Technology Information. These gifts help promote awareness and understanding of nuclear science and technology.

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The American Nuclear Society would like to thank everyone who has made a gift to ANS scholarship funds in 2012, including the following donors who have gone above and beyond the call to action.

ANS NCSD Nuclear Criticality Safety Pioneers Scholarship Fund

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Special Sessions

*Opening Plenary: "Future Nuclear Technologies: Resilience and Flexibility," Mon. a.m.

*ANS President's Special Session: "Ten Years Since the Generation IV Roadmap: Progress and Future Directions for New Reactor Technologies," Tues. p.m.

Accelerator Applications (AAD)

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

Accelerator Applications: General, Mon. p.m.

(Advances in Non-HEU ^{99}Mo/^{99m}Tc Production Technologies—III, Wed. a.m.)

Aerospace Nuclear Science and Technology (ANSTD)

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

(Physics Issues for Small, Compact Reactors, Thurs. p.m.)

Biology and Medicine (BMD)

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

Advances in Non-HEU ^{99}Mo/^{99m}Tc Production Technologies—I, Tues. a.m.

Advances in Non-HEU ^{99}Mo/^{99m}Tc Production Technologies—II, Tues. p.m.

Advances in Non-HEU ^{99}Mo/^{99m}Tc Production Technologies—III, Wed. a.m.

(Tritium in Fission and Fusion—I, Wed. p.m.)

(Tritium in Fission and Fusion—II, Thurs. a.m.)

Decommissioning, Decontamination, and Reutilization (DDRD)

Small Modular Reactors (SMR) Planning—Designing in Optimal Decommissioning Performance–Panel, Mon. p.m.

Education, Training, and Workforce Development (ETWDD)

Student Design Competition, Mon. p.m.

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

Becoming a Nuclear Spokesperson–Panel, Tues. p.m.

Telling the Nuclear Story Using Online Video and Broadcast–Panel, Tues. p.m.

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

Education, Training, and Workforce Development: General, Wed. p.m.

Environmental Sciences (ESD)

Environmental Sciences: General, Tues. p.m.

Fuel Cycle and Waste Management (FCWMD)

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

Creating a New Entity to Manage Used Fuel–Panel, Tues. a.m.

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

Development of Advanced Safeguards Monitoring for Industrial Scale Fuel Cycle Facilities, Tues. p.m.

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

Advances in Separation Methods for the Recycle of Used Fuels, Wed. p.m.

Fuel Cycle and Waste Management: General—I, Thurs. a.m.

Fuel Cycle and Waste Management: General—II, Thurs. p.m.

Human Factors, Instrumentation, and Controls (HFICD)

Highlights of NPIC & HMIT 2012—I, Wed. a.m.

Highlights of NPIC & HMIT 2012—II, Wed. p.m.

Human Factors, Instrumentation, and Controls: General, Thurs. p.m.

Isotopes and Radiation (IRD)

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

(Advances in Non-HEU ^{99}Mo/^{99m}Tc Production Technologies—I, Tues. a.m.)

(Advances in Non-HEU ^{99}Mo/^{99m}Tc Production Technologies—II, Tues. p.m.)

(Advances in Non-HEU ^{99}Mo/^{99m}Tc Production Technologies—III, Wed. a.m.)

Tritium in Fission and Fusion—I, Wed. p.m.

Tritium in Fission and Fusion—II, Thurs. a.m.

Materials Science and Technology (MSTD)

Nuclear Fuels and Materials: SiC and TRISO, Tues. a.m.

Discussion of Low-Energy Nuclear Reactions–Papers/Panel, Wed. a.m.

Materials Science and Technology: General, Wed. p.m.

Nuclear Fuels and Materials, Thurs. p.m.

Mathematics and Computation (MCD)

High Performance Computing (HPC) at All Scales: Implementation of Numerical Algorithms on Heterogeneous Hardware Ranging from Laptops to Supercomputers–Panel, Mon. p.m.

Transport Methods, Tues. a.m.

Transport and Computational Methods, Tues. p.m.

(Reactor Analysis Methods—I, Wed. a.m.)

(Reactor Analysis Methods—II, Thurs. a.m.)

Computational Methods, Wed. a.m.

Mathematical Modeling, Wed. p.m.

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

Winter Meeting Technical Sessions by Division

Nuclear Criticality Safety (NCSD)

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

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

FY2011 Nuclear Criticality Safety Program Technical Accomplishments—I, Tues. a.m.

FY2011 Nuclear Criticality Safety Program Technical Accomplishments—II, Tues. p.m.

Validation and Verification–Tutorial—I, Wed. a.m.

Validation and Verification–Tutorial—II, Wed. p.m.

Nuclear Criticality Safety Standards–Forum, Thurs. a.m.

Nuclear Installations Safety (NISD)

State-of-the-Art Reactor Consequence Analyses (SOARCA) Project: Overview, Insights, and Path Forward–Panel, Mon. p.m.

Nuclear Installations Safety: General—I, Tues. a.m.

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

Reactor Safety System and Containment Degradation Research, Thurs. a.m.

Nuclear Non-Proliferation Technical Group (NNTG)

Nuclear Nonproliferation, International Safeguards and Nuclear Security Challenges in the Middle East–Panel, Mon. p.m.

Safeguards by Design—NNSA's Next Generation, Tues. p.m.

Nuclear Nonproliferation: General, Wed. a.m.

Operations and Power (OPD)

Fukushima—Evaluation and Impacts–Panel, Mon. p.m.

Standardization in a Nonstandard World–Panel, Mon. p.m.

SMR Activities, Progress, Challenges–Panel, Tues. a.m.

New Nuclear Construction Around the World–Panel, Tues. p.m.

Small Modular Reactors, Tues. p.m.

Generation IV International Forum: The Next Decade—I–Panel, Wed. a.m.

Generation IV International Forum: The Next Decade—II–Panel, Wed. p.m.

Operations and Power: General, Thurs. a.m.

Department of Energy—Light Water Reactor Sustainability Program, Thurs. a.m.

Advanced Reactors, Thurs. p.m.

Radiation Protection and Shielding (RPSD)

Computational Resources in Radiation Protection and Shielding, Tues. a.m.

Ethics in Engineering—Panel, Tues. p.m.

The DOE Russian Health Studies Program: Status and Future—Panel, Wed. p.m.

Radiation Protection and Shielding-Roundtable, Thurs. a.m.

RSICC: Celebrating 50 Years of Service to the Nuclear Research Community, Thurs. a.m.

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

Reactor Physics (RPD)

Reactor Physics: General—I, Mon. p.m.

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

Reactor Physics Design, Validation, and Operating Experience—I, Tues. a.m.

Reactor Physics Design, Validation, and Operating Experience—II, Tues. p.m.

Reactor Analysis Methods—I, Wed. a.m.

Reactor Analysis Methods—II, Thurs. a.m.

Hybrid Monte Carlo Deterministic Methods for Reactor Analysis, Wed. a.m.

"I Wonder If…" Special Session in Honor of John Rowlands, Wed. p.m.

IAEA Reactor Physics and Technology Development Activities—I, Thurs. a.m.

IAEA Reactor Physics and Technology Development Activities—II, Thurs. p.m.

Physics Issues for Small, Compact Reactors, Thurs. p.m.

Thermal Hydraulics (THD)

Computational Thermal Hydraulics—I, Mon. p.m.

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

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

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

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

Thermal Hydraulics: General—III, Thurs. a.m.

Monday • November 12, 2012

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. 2012 ANS Winter Meeting: Opening Plenary:

"Future Nuclear Technologies: Resilience and Flexibility"

1:00 p.m. – 4:00 p.m. 2012 ANS Winter Meeting: Technical Sessions

- State-of-the-Art Reactor Consequence Analyses (SOARCA) Project: Overview, Insights, and Path Forward—Panel
- Progress in DOE's Fuel Cycle Research and Development Program—Panel
- Student Design Competition
- Computational Thermal Hydraulics—I
- Nuclear Nonproliferation and International Safeguards and Nuclear Security Challenges in the Middle East–Panel
- Fukushima—Evaluation and Impacts–Panel
- Standardization in a Nonstandard World–Panel
- Reactor Physics: General—I
- Data Analysis in Nuclear Criticality Safety—I
- High Performance Computing (HPC) at All Scales: Implementation of Numerical Algorithms on Heterogeneous Hardware Ranging from Laptops to Supercomputers–Panel
- Biology and Medicine: General
- Accelerator Applications: General
- Isotopes and Radiation: General
- Small Modular Reactor (SMR) Planning—Designing in Optimal Decommissioning Performance–Panel

1:30 p.m. – 5:30 p.m. Fukushima 2012 Meeting: Technical Sessions

(see page 42)

Monday, November 12, 2012, 8:00 a.m.

Opening Plenary: "Future Nuclear Technologies: Resilience and Flexibility"

Chair: Per F. Peterson *(Univ of California)*

Honors and Awards Segment

Golden Ballroom

Speakers:

- Pete Dietrich *(SCE)*
- Commissioner George Apostolakis *(NRC)*
- Marv Fertel *(NEI)*
- Christine King *(EPRI)*
- Cheri Collins *(Southern Company)*

Monday, November 12, 2012, 1:00 p.m.

State-of-the-Art Reactor Consequence Analyses (SOARCA) Project: Overview, Insights, and Path Forward—Panel, sponsored by NISD

Session Organizer: Kevin O'Kula *(URS Safety Management Solutions)*
Chair: Karen Vierow *(Texas A&M)*

Pacific Salon 1

1:00 p.m.

Accident phenomena and off-site consequences of postulated severe accidents in nuclear power plants have been the subjects of considerable research programs over the last 25 years by the U.S. Nuclear Regulatory Commission (NRC) as well as other domestic and international agencies. As a consequence of this research focus, analyses of severe accidents at nuclear power plants are more detailed, integrated, and realistic than at any time in the past. By applying state-of-the-art computational analysis computer models and best modeling practices, along with the information gained from accident phenomena and progression research, the recently concluded State-of-the-Art Reactor Consequence Analyses (SOARCA) Project has developed an improved body of knowledge regarding the realistic outcome of severe accidents in nuclear power plants. Specifically, the SOARCA study's evaluation of accident progression, source term, and off-site consequences for selected scenarios in two currently operating plants, demonstrated in general, smaller, delayed off-site releases, with subsequent health effect risks lower than previously quantified. This panel session will discuss major features of the SOARCA Project from the perspectives of three groups of participants: NRC Staff, Sandia National Laboratories technical analysts, and independent peer review.

PANELISTS:

- Edward L. Fuller *(NRC)*
- Robert E. Henry [*Fauske & Associates LLC (retired)*]
- Randall O. Gauntt *(SNL)*
- Nathan E. Bixler *(SNL)*

PROGRESS IN DOE'S FUEL CYCLE RESEARCH AND DEVELOPMENT PROGRAM—PANEL, sponsored by FCWMD

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

PACIFIC SALON 2

1:00 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:

- Non-Ideal Solution Behavior in Liquid-Liquid Distribution Systems, Peter Zalupski *(INL)*
- Synthesis of Tc Waste Forms and Their Predicted Stability in Solution Using Polarization Techniques for Modeling Tc Release Behavior, Edward Mausolf *(UNLV)*
- Potentiometric Sensor for Real-Time Monitoring of Multivalent Ion Concentration in LiCl-Kcl, Natalie Gese *(INL)*
- Monitoring Systems for Advanced Fuel Cycle Facilities—Integrated Accountability, Process Monitoring, Operations, and Security, Felicia Durán
- TEM Analysis on the ACO-3 Duct Before and After Thermal Annealing, Osman Anderoglu *(LANL)*
- Thermochemistry of LWR Fuels and the Potential Implications of Cladding Changes During Off-Normal and Accident Conditions, Andy Nelson *(LANL)*

STUDENT DESIGN COMPETITION, sponsored by ETWDD

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

PACIFIC SALON 3

The following undergraduate entries have been selected by a panel of judges from industry as finalists in the 2012 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

1:00 P.M.

Badger Small Modular Reactor Technology: A Concept Reactor Design, Aidan Boyle, Mary Alice Cusentino, Matt King, Amanda Lang *(Univ of Wisconsin-Madison)*

1:30 P.M.

Trains Redesigned And Incorporating Nuclear Systems (TRAINS), Pavel Tsvetkov, Christopher Chance, Steven Smiley, James Tutt, Christopher Weber *(Texas A&M)*

2:00 P.M.

Production of Biodiesel and Biogasoline via Coupling a LBE-Cooled Reactor to Hydrogen and Biofuels Plants, R. R. MacDonald, A. Salazar, D. A. Sutherland, A. Verma, M. P. Short *(MIT)*

GRADUATE CATEGORY

2:30 P.M.

Simulation of a Novel Active Interrogation System Using MCNPX, Steven T. Brown, Alexis C. Kaplan, Joseph D. Karbowski *(Univ of Michigan)*

COMPUTATIONAL THERMAL HYDRAULICS—I, sponsored by THD

Cochairs: Donna Guillen *(INL)*, Wade Marcum *(Oregon State Univ)*

SAN DIEGO

1:00 P.M.

Evaluating Shear Induced Lift Force Using Interface Tracking Approach, Aaron M. Thomas, Igor A. Bolotnov *(NCSU)*

1:25 P.M.

CFD Predictions of Heat Transfer in a Rod Bundle, Constantine P. Tzanos *(ANL)*

1:50 P.M.

Preliminary CFD Studies of Bypass Flow and Crossflow in VHTR, Huhu Wang, Elvis Dominguez-Ontiveros, Yassin A. Hassan *(Texas A&M)*

2:15 P.M.
FLUENT Simulation of Nanofluid in Subchannel of a Typical PWR, Mohammad Nazififard *(Seoul Natl Univ-Korea)*, M. R. Nematollahi *(Shiraz Univ)*, Kune Y. Suh *(Seoul Natl Univ-Korea)*

2:40 P.M.
Numerical Analysis on Non-Condensable Gas Flow in Water-Filled Piping, Jung Kwon Yong, Hag Ki Youm, Chang Kyun Oh *(KEPCO Engineering & Construction Company, Inc.)*, Choeng Ryul Choi *(ELSOLTEC Inc.)*

3:05 P.M.
Preliminary CFD Calculations for OSU Air-Ingress Experimental Facility, Tae K. Ham, David J. Arcilesi, Xiaodong Sun, Richard N. Christensen *(Ohio State)*, Chang H. Oh, Eung S. Kim *(INL)*

3:30 P.M.
CFD Investigating Hydraulic Characteristics in a Triangular-Pitch Rod Bundle, Cheng-Han Yeh, Yuh-Ming Ferng *(National Tsing Hua Univ)*

NUCLEAR NONPROLIFERATION AND INTERNATIONAL SAFEGUARDS AND NUCLEAR SECURITY CHALLENGES IN THE MIDDLE EAST–PANEL, sponsored by NNTG

Session Organizer and Chair: Rian Bahran *(RPI)*

GOLDEN WEST

1:00 P.M.
The United Arab Emirates is set to become the first Arab country to adopt nuclear power to meet its growing domestic energy needs. Many other countries in the Middle East have publicly expressed interest in pursuing nuclear technology for generating electricity and water desalination purposes. These countries include the State of Bahrain, the Kingdom of Saudi Arabia, the Sultanate of Oman, the State of Qatar, the State of Kuwait, the United Arab Emirates, Turkey, Egypt, Algeria, Libya, Jordan, Morocco, and Yemen. This potential nuclear renaissance in the Middle East is happening at the same time as the "Arab Spring," which is changing the political topology of the region. This distinguished panel is aimed at exploring the political, technical, and market challenges to the development of nuclear power in a post "Arab Spring" Middle East in the context of nonproliferation, safeguards, and security. This topic is of utmost importance and tremendous interest to our community as it exemplifies the importance of flexibility and resilience in the approach to such challenges.

PANELISTS:

- Abdelmajid Mahjoub *(Arab Atomic Energy Agency)*
- Ayman Hawari *(NCSU)*
- Marilyn C. Kray *(Exelon Nuclear Partners)*
- Brian Boyer *(LANL)*

FUKUSHIMA—EVALUATION AND IMPACTS–PANEL, sponsored by OPD

Cochairs: Myron Kaczmarsky, Thomas L. Nauman *(Shaw Group)*

CALIFORNIA

1:00 P.M.
Numerous regulatory bodies and plant owners have performed evaluations of the events at Fukushima and are assessing changes in regulatory requirements and features needed for beyond-design-basis events due to the events at Fukushima. The U.S. Nuclear Regulatory Commission (NRC), U.K, China, and EU countries have issued reports detailing their findings and recommendations. This session will provide updates on the results from these and other evaluations. It is planned to draw speakers from the U.S. Nuclear Regulatory Commission, U.K. Nuclear Installations Inspectorate, IAEA, EU, and U.S. Utilities.

PANELISTS:

- David Skeen *(NRC)*
- Steve Meng *(INPO)*
- Andy Hall *(UK Health & Safety Executive)*
- Andrew Smart *(Atkins Energy, Japanese Earthquake Response Program)*

STANDARDIZATION IN A NONSTANDARD WORLD–PANEL, sponsored by OPD

Chair: Myron Kaczmarsky *(Shaw Group)*

CALIFORNIA

2:45 P.M.
The concept of standardization for new nuclear plant designs has significant roadblocks in a number of countries. Regulatory requirements, design requirements, codes, and standards differ substantially between countries that are considering new nuclear plants. This requires significant time and expenditures to develop the design and obtain regulatory approvals for plants that have already been fully developed and approved in the country of origin. This session will identify the impacts that such requirements have had on new plant development and discuss the efforts that are underway to develop international standardization. Planned speakers include key people from nuclear suppliers, architect engineer firms, international codes and standards committees, plant owners, and regulators.

PANELISTS:

- Larry Burkhart *(NRC)*
- Michel Debes *(EDF)*
- Martin Parece *(Areva)*
- Shinzo Inoue *(Hitachi-GE Nuclear Energy)*
- David Hamon *(GE Hitachi Nuclear Energy)*
- E. D. Cummins *(Westinghouse)*

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

REACTOR PHYSICS: GENERAL—I, sponsored by RPD

Session Organizers: Alexander Stanculescu *(INL)*, Fausto Franceschini *(Westinghouse)*
Chair: Stefano Monti *(IAEA)*

WINDSOR

1:00 P.M.
The "Virtual Density" Principle of Neutronics and Its Application to Geometric Perturbation Theory, Mark Reed, Kord Smith, Benoit Forget *(MIT)*

1:25 P.M.
Further GPT-Free Developments for Monte Carlo Models, Zeyun Wu, Hany S. Abdel-Khalik *(NCSU)*

1:50 P.M.
PyNE: Python for Nuclear Engineering, Anthony M. Scopatz *(Univ of Chicago)*, Paul K. Romano *(MIT)*, Paul P. H. Wilson, Kathryn D. Huff *(Univ of Wisconsin, Madison)*

2:15 P.M.
Effect of Homogenization and Group Condensation on Kinetics Parameters of Natural-Uranium-Fuelled CANDU Lattices, Eleodor Nichita *(Univ of Ontario Inst of Tech)*, Dumitru Serghiuta, Serguei Podobed *(Canadian Nucl Safety Comm)*

2:40 P.M.
Temperature Interpolation of Thermal Neutron Incoherent Inelastic Scattering Data in Monte Carlo Calculations, Timothy H. Trumbull, Thomas E. Fieno *(BMPC-Knolls Atomic Power Laboratory)*

3:05 P.M.
Pin Cell Benchmark Calculations of MICROX-2 Library, Jia Hou *(Penn State)*, Hangbok Choi *(General Atomics)*, Kostadin Ivanov *(Penn State)*

3:30 P.M.
MCNP and SCALE 6.1 Cross Section Evaluation for ATR-C Verification and Validation Applications, Jorge Navarro *(INL/Univ of Utah/Center for Space Nuclear Research)*, Mark D. DeHart *(INL)*

3:55 P.M.
Thermal Total Cross Sections of Europium from Neutron Capture and Transmission Measurements, G. Leinweber, D. P. Barry, R. C. Block, M. J. Rapp, J. G. Hoole *(Bechtel Marine Propulsion Corp., KAPL)*, Y. Danon, R. M. Bahran, D. G. Williams *(RPI)*, J. A. Geuther *(Kansas State Univ)*, F. J. Saglime III *(RPI)*

DATA ANALYSIS IN NUCLEAR CRITICALITY SAFETY—I, sponsored by NCSD

Session Organizer: Allison D. Miller *(SNL)*
Chair: Brian Kiedrowski *(LANL)*

HAMPTON

1:00 P.M.
Continuous-Energy Sensitivity Coefficient Capability in MCNP6, Brian C. Kiedrowski, Forrest B. Brown *(LANL)*

1:25 P.M.
Verification of MCNP5-1.60 and MCNP6-Beta2 for Criticality Safety Applications, Brian C. Kiedrowski, Forrest B. Brown, Jeffrey S. Bull *(LANL)*

1:50 P.M.
Comparison of MCNP-Based Transport Codes for Subcritical Calculations, Kimberly Clark *(LANL/UNLV)*, Avneet Sood, William Myers, Jesson Hutchinson *(LANL)*, Denis Beller *(UNLV)*

2:15 P.M.
Generation of an S(α,β) Covariance Matrix by Monte Carlo Sampling of the Phonon Frequency Spectrum, J. C. Holmes, A. I. Hawari *(NCSU)*

2:40 P.M.
Modeling Uranium Slurry Experiments with the MCNP5 Stochastic Geometry Card, A. Lang, J. J. Lichtenwalter, J. L. Carney *(Y-12 NSC)*

3:05 P.M.
Generating List-Mode Data for Simulated Subcritical Neutron Measurements Using MCNP II, Avneet Sood, J. D. Hutchinson, W. L. Myers, C. J. Solomon *(LANL)*, *invited*

3:30 P.M.
Data Adjustment Exercises for Fast Reactor Critical Benchmark Problems Using SCALE, Christopher M. Perfetti *(Univ of Michigan)*, Bradley T. Rearden *(ORNL)*

HIGH PERFORMANCE COMPUTING (HPC) AT ALL SCALES: IMPLEMENTATION OF NUMERICAL ALGORITHMS ON HETEROGENEOUS HARDWARE RANGING FROM LAPTOPS TO SUPERCOMPUTERS–PANEL, sponsored by MCD

Session Organizer: Tom Evans *(ORNL)*
Chair: Tom Evans *(ORNL)*

SHEFFIELD

PANELISTS:

- Andrew Seigel *(ANL)*
- Chris Baker *(ORNL)*
- Tim Kelley *(LANL)*

BIOLOGY AND MEDICINE: GENERAL,

sponsored by BMD; cosponsored by AAD
Session Organizer: Rolf Zeisler *(NIST)*
Chair: Bryan Bednarz *(Univ of Wisconsin)*

ROYAL PALM SALON 1

1:00 P.M.
Accelerator Applications, Carol J. Johnstone *(Fermilab/Particle Accelerator Corporation)*

1:25 P.M.
Proton and Light Ion Accelerators for Cancer Therapy, George Coutrakon *(Northern Illinois Univ)*, *invited*

1:50 P.M.
Investigation Using the Peak-to-Valley Method for Positron Emission Tomography, M. A. Alkhorayef, K. S. Alzimami *(King Saud Univ)*, M. P. W. Chin *(CERN)*, N. M. Spyrou *(Univ of Surrey)*, *invited*

ACCELERATOR APPLICATIONS: GENERAL, sponsored by AAD

Session Organizer and Chair: Erich Schneider *(The Univ of Texas at Austin)*

ROYAL PALM SALON 1

2:20 P.M.

Quasi-Differential Neutron Scattering Measurements of ^{238}U, A. M. Daskalakis, R. M. Bahran, E. J. Blain, B. J. McDermott, S. Piela, Y. Danon *(Gaerttner LINAC Center, RPI)*, D. P. Barry, G. Leinweber, R. C. Block, M. J. Rapp *(Bechtel Corp., KAPL)*

2:50 P.M.

Linear Accelerator Bremsstrahlung Source Modeling for Active Interrogation Systems, H. Armstrong, E. A. Schneider *(Univ of Texas, Austin)*

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

ISOTOPES AND RADIATION: GENERAL, sponsored by IRD

Session Organizer and Chair: Kenan Ünlü *(Penn State)*

ROYAL PALM SALON 2

1:00 P.M.

MCNP Estimation of Trace Elements in Lithium-Ion Batteries Subjected to Neutron Irradiation, Keith E. Holbert, Amy Kaczmarowski, Tyler Stannard *(Arizona State Univ)*, Erik B. Johnson *(Radiation Monitoring Devices Inc)*

1:20 P.M.

Minimum Identifiable Activity, W. Russ, B. Young, J. Kirkpatrick *(Canberra Industries, Inc.)*

1:40 P.M.

Design of a EJ-301 Spectrometer for Cosmic Neutron Measurement, William H. Miller *(Univ of Missouri, Columbia)*, Eliot R. Myers, Anthony N. Caruso *(Univ of Missouri– Kansas City)*, Chul S. Gwon, Mark S. Strickman *(Naval Rsch Lab)*

2:00 P.M.

Characterization of Spent Nuclear Fuel Using Multivariate Analysis, Kenneth Dayman *(Univ of Texas, Austin)*, Christopher Orton, Jamie Coble, Jon Schwantes *(PNNL)*

2:20 P.M.

The Evaluation of GaN for Neutron Detector with Cathodoluminescence Spectroscopy, Jie Qiu, Evan Katz, Lei R. Cao, Leonard J. Brillson *(Ohio State)*

2:40 P.M.

Radiative Capture Cross Section Measurement of Copper for EXFOR Database, Ekaterina Paramonova, Vladimir Sobes, Benoit Forget, Gordon Kohse *(MIT)*

3:00 P.M.

Development of Cross-Correlation Based Position Reconstruction Algorithm for Radioactive Particle Tracking Technique, Vaibhav Khane *(Missouri Univ Sci. Tech)*, Sfurti Ruge *(Independent Consultant)*, Muthanna H. Al-Dahhan *(Missouri Univ Sci Tech)*

3:20 P.M.

Development of Modular Robotic Design for Hot Cell Applications, A. Sherif El-Gizawy, Annemarie Hoyer, Shane Corl, Zhentao Xie *(Univ of Missouri, Columbia)*

SMALL MODULAR REACTOR (SMR) PLANNING—DESIGNING IN OPTIMAL DECOMMISSIONING PERFORMANCE–PANEL, sponsored by DD&RD

Session Organizer and Chair: Mark Campagna *(ABS Consulting-Nuclear Sector)*

ROYAL PALM SALON 3

1:00 P.M.

During the development of the 21st Century small modular reactors (SMRs), there is a requirement to ensure all the nuclear safety, security, and quality aspects are properly incorporated into the engineering designs and licensing documents/plans. With much emphasis being placed on the up-front business case and life cycle value proposition, certainly the element of decommissioning performance needs to be built into the design from the very start. Essentially, this aspect touches upon three of the four main "worries" typically expressed regarding nuclear power: high capital cost, nuclear fuel, nuclear waste, and security. By using modern materials/methods, defense-in-depth, and planning for a green field at the end of life, the overall value of SMRs becomes enhanced from the very beginning and is therefore a more attractive option.

PANELISTS:

- Mark Campagna *(ABS Consulting)*
- Vince Gilbert *(EXCEL)*
- Charles Hess *(Shaw Group)*
- Thomas Sanders *(SRNL)*

70th Anniversary of the start-up of Chicago Pile-1 (December 2, 1942)

The first nuclear reactor was erected in 1942 under the West Stands section of Stagg Field at the University of Chicago. On December 2, 1942, a group of scientists under the direction of Enrico Fermi achieved the first man-made self-sustaining nuclear chain reaction and thereby initiated the controlled release of nuclear energy. The reactor consisted of uranium metal and uranium oxide lumps spaced in a cubic lattice embedded in graphite. In 1943, CP-1 was dismantled and reassembled at a Palos Park location that was renamed the Argonne Laboratory, which was formally chartered as Argonne National Laboratory in 1946.

Shown Right: CP-1 scientists at the University of Chicago in 1946

Tuesday • November 13, 2012

7:30 A.M. – 5:00 P.M. Meeting Registration

8:00 A.M. – 10:00 A.M. Spouse/Guest Hospitality

8:30 A.M – 12:30 P.M. Fukushima 2012 Meeting: Technical Sessions
(see page 43)

8:30 A.M. – 12:00 P.M. 2012 ANS Winter Meeting: Technical Sessions
- Nuclear Installations Safety: General—I
- Creating a New Entity to Manage Used Fuel–Panel
- The Innovations in Fuel Cycle Research Awards Program—A Student Competition
- Young Professional Thermal-Hydraulics Research Competition
- Reactor Physics: General—II
- SMR Activities, Progress, Challenges–Panel
- Reactor Physics Design, Validation, and Operating Experience—I
- FY2011 Nuclear Criticality Safety Program Technical Accomplishments—I
- Transport Methods
- Computational Resources in Radiation Protection and Shielding
- Advances in Non-HEU ^{99}Mo/^{99m}Tc Production Technologies—I
- Aerospace Nuclear Science and Technology: General
- Nuclear Fuels and Materials: SiC and TRISO

1:00 P.M – 2:00 P.M. Advances in Thermal Hydraulics: Opening Plenary: SMR Programs: Status and Perspectives
(see page 48)

1:30 P.M – 5:30 P.M. Fukushima 2012 Meeting: Technical Sessions
(see page 43)

1:00 P.M. – 4:00 P.M. 2012 ANS Winter Meeting: Technical Sessions
- New Nuclear Construction Around the World–Panel
- Development of Advanced Safeguards Monitoring for Industrial Scale Fuel Cycle Facilities
- Nuclear Installations Safety: General—II
- Becoming a Nuclear Spokesperson–Paper/Panel
- Telling the Nuclear Story Using Online Video and Broadcast–Panel
- Thermal Hydraulics: General—I
- Safeguards by Design—NNSA's Next Generation
- Small Modular Reactors
- Reactor Physics Design, Validation, and Operating Experience—II
- FY2011 Nuclear Criticality Safety Program Technical Accomplishments—II
- Transport and Computational Methods
- Ethics in Engineering–Panel
- Advances in Non-HEU ^{99}Mo/^{99m}Tc Production Technologies—II
- Environmental Sciences: General

4:00 P.M. – 6:00 P.M. ANS President's Special Session: "Ten Years Since the Generation IV Roadmap: Progress and Future Directions for New Reactor Technologies"

Tuesday, November 13, 2012, 8:30 A.M.

Nuclear Installations Safety: General—I,

sponsored by NISD
Session Organizer: Charles (Chip) Martin *(DNFSB)*
Chair: Matt Denman *(SNL)*

Pacific Salon 1

8:30 A.M.
A New Method for Quantification of Risk Perception, Steven Arndt *(NRC)*

8:55 A.M.
Modeling Fire Induced Electrical Cable Failure in Cable Bundles, Matthew Bucknor, Richard Denning, Tunc Aldemir *(Ohio State)*

9:20 A.M.
A Method to Find the Importance of Piping Segments by Using a One-Shot Quantification Algorithm in Risk-Informed In-Service Inspection, Kilyoo Kim, Joon-Eon Yang *(KAERI-Korea)*

9:45 A.M.
A New Approach to Quantify Level 2 SPAR Models in SAPHIRE 8, Zhegang Ma, John Schroeder, Curtis Smith, Ted Wood, Martin Sattison *(INL)*

10:10 A.M.
Methodology for Incorporating Dynamic Behavior into Fault Trees Using System Dynamics, M. Denman, A. Ames *(SNL)*

Creating a New Entity to Manage Used Fuel–Panel,

sponsored by FCWMD
Session Organizer: Dan Stout *(TVA)*
Chair: Dan Stout *(TVA)*

Pacific Salon 2

8:30 A.M.

It has been about a year since the Blue Ribbon Commission recommended creating a new federal entity with focused responsibility to manage used nuclear fuel and with access to the nuclear waste fund fees. The election just happened. Can real progress be made now? What steps should be taken during the next couple of years? What are the opportunities, and what are the challenges? What should be in the scope of responsibility of the new entity? Can policy making (e.g., Nuclear Waste Policy Act Amendment) be separate from implementation performed by the new entity?

Panelists:
- Brew Barron *(Constellation)*
- Per Peterson *(Berkeley & BRC)*
- Debra Knopman *(Rand Corp)*
- Steve Nesbit *(Duke)*
- Lake Barrett *(Consultant)*

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

sponsored by ETWDD; cosponsored by FCWMD

Session Organizer: Cathy Dixon *(West Texas A&M Univ)*
Chair: Robert Price *(DOE)*

PACIFIC SALON 3

8:30 A.M.
Assessment of Radiological and Chemical Risks of the Once-Through U-235 Fuel Cycle, Bethany Smith, James H. Clarke, Steven Krahn *(Vanderbilt Univ)*, Albert Machiels, Andrew Sowder *(EPRI)*, *invited*

8:55 A.M.
Validation of $^{11}B(d,n)^{12}C$ Neutron Production Using MCUNED, Mark A. Norsworthy, Shaun D. Clarke, Cameron A. Miller, Sara A. Pozzi *(Univ of Michigan)*, Timothy A. Antaya *(Ionetix Corporation)*

9:20 A.M.
Recycling SFR Uranium Startup Fuel, Joshua G. Richard, T. Fei, M. J. Driscoll *(MIT)*

9:45 A.M.
Thermal Parameter Study for TRISO Fuel Particles Containing a Burnable Absorber Layer, J. Washington, J. King, Z. Shayer *(CSM)*

10:10 A.M.
Technetium Containing Waste Forms—An Innovator's Perspective, Edward Mausolf, Frederic Poineau, Janelle Droessler *(UNLV)*, Dave Kolman *(LANL)*, Patricia Paviet-Hartmann *(INL)*, Thomas Hartmann *(UNLV)*, Steve Frank *(INL)*, Edgar Buck, Denis Strachen *(PNNL)*, Jeff Fornter *(ANL)*, Ming Tang, Gordon Jarvinen *(LANL)*, William Ebert *(ANL)*, Kenneth Czerwinski *(UNLV)*, *invited*

10:35 A.M.
An Ab Initio Study of Ti-Y-O Nanocluster Energetics in Nanostructured Ferritic Alloys, L. Barnard *(Univ of Wisconsin, Madison)*, G. R. Odette *(Univ of California-Santa Barbara)*, I. Szlufarska, D. Morgan *(Univ of Wisconsin, Madison)*

11:00 A.M.
Computational Model of the Mark-IV Electrorefiner—2D Potential and Current Distributions, Robert O. Hoover, Supathorn Phongikaroon *(Univ of Idaho)*, Michael F. Simpson, Tae-Sic Yoo, Shelly X. Li *(INL)*

11:25 A.M.
Supported Liquid Membrane Extraction Studies on Separation of Used Nuclear Fuel, Ko Nee, Mikael Nilsson *(Univ of California, Irvine)*

YOUNG PROFESSIONAL THERMAL-HYDRAULICS RESEARCH COMPETITION, sponsored by THD

Cochairs: Elia Merzari *(ANL)*, Don Todd *(Washington State Univ)*

SAN DIEGO

8:30 A.M.
CFD Simulations of NSTF, A. Dave *(Univ of Michigan)*, R. Hu *(ANL)*, A. Manera *(Univ of Michigan)*, E. Merzari, W. D. Pointer *(ANL)*

8:55 A.M.
Impact of Crossflow on the Flow Field of Twin Jets Injecting into a Staggered Rod Bundle, Noushin Amini, Yassin A. Hassan *(Texas A&M)*

9:20 A.M.
Characteristics of Heat Transfer in a Packed Pebble-Bed Reactor, Rahman S. Abdulmohsin, Muthanna H. Al-Dahhan *(Missouri Univ Sci Tech)*

9:45 A.M.
Preliminary Investigation on Vortical Structure Influence of Trailing Plate in Axial Flow, R. B. Jackson, T. Howard, E. Mullin, W. R. Marcum *(Oregon State Univ)*

10:10 A.M.
CFD Analysis of Flow Through Expansions and Contractions in Pipes, B. M. Waite, D. R. Shaver, M. Z. Podowski *(RPI)*

10:35 A.M.
Analysis of Long-Term Cooling of a LOCA by Coupling RELAP5-3D and MELCOR, Rodolfo Vaghetto, Bradley A. Beeny, Yassin A. Hassan, Karen Vierow *(Texas A&M)*

11:00 A.M.
Analysis of Interfacial Forces on the Physics of Two-Phase Flow and Hyperbolicity of the Two-Fluid Model, Arthur Talpaert, Tomasz Kozlowski *(Univ of Illinois)*

11:25 A.M.
Research of a New Passive Instrument Density Lock, Shengfei Wang *(North China Electric Power Univ)*, Changqi Yan *(Harbin Engineering Univ)*, Yu Yu, Fenglei Niu *(North China Electric Power Univ)*

REACTOR PHYSICS: GENERAL—II, sponsored by RPD

Session Organizers: Alexander Stanculescu *(INL)*, Fausto Franceschini *(Westinghouse)*
Chair: Stefano Monti *(IAEA)*

GOLDEN WEST

8:30 A.M.
Propagation Velocity of a Fission Front in a Traveling Wave Reactor, A. G. Osborne, G. D. Recktenwald, M. R. Deinert *(Univ of Texas, Austin)*

8:55 A.M.
Effect of Neutron Moderator on Protected Plutonium Production in Fast Breeder Reactor Blanket, Koji Matsumoto, Hiroshi Sagara, Chi Young Han *(Tokyo Inst Technol)*, Takashi Ohnishi *(JAEA-Japan)*, Masaki Saito, Ippei Yamauchi *(Tokyo Inst Technol)*

9:20 A.M.
Neutronics Performance of Pebble Fuel for ^{233}U Production in Fusion Driven Systems, Alberto Talamo, Yousry Gohar *(ANL)*

9:45 A.M.
Effect of Particle Type Burnable Poisons in HTGR, Toru Obara, Taiki Onoe *(Tokyo Inst Technol)*

10:10 A.M.
Metal Matrix Microencapsulated (M3) Fuel Neutronics Performance in PWRs, Massimiliano Fratoni, Kurt A. Terrani *(Penn State)*

10:35 A.M.
Application of Multi-Target to Accelerator-Driven System Experiments in the Kyoto University Critical Assembly, Cheol Ho Pyeon, Takahiro Yagi, Tsuyoshi Misawa *(Kyoto Univ)*

11:00 A.M.
Cross-Power Spectral Analysis Between Beam Current and Neutron Detection Signals for a Thermal Accelerator-Driven System, Atsushi Sakon, Kengo Hashimoto *(Kinki Univ)*, Cheol Ho Pyeon *(Kyoto Univ)*

11:25 A.M.
Development and V&V Strategy of COSINE–LATC/CORE/KIND Code Package, Yixue Chen, Zhanquan Liu, Hui Yu, Bin Zhang *[State Nuclear Power Software Development Center (SNPSDC)]*

SMR ACTIVITIES, PROGRESS, CHALLENGES–PANEL, sponsored by OPD

Chair: Ken Ferguson *(Hukari Ascendent)*

CALIFORNIA

8:30 A.M.
The attention, interest, and potential advantages of the deployment of small modular reactors is a dynamic development with global possibilities including new types of owners and utilizations of nuclear power generation. A variety of actions are underway to address this possible significant expansion of nuclear plant deployment. This session includes coverage of how these possibilities are moving forward, technical and performance issues that need to be met, and other key elements of success. Representative topics include technology demonstrations and validations, regulatory matters, manufacturing, and economic success.

PANELISTS:

- Michael Anness *(Westinghouse)*
- Robert Schleicer *(General Atomics)*
- Peter Hastings *(Generation mPower)*
- Stewart Magruder *(NRC)*
- Ron Schroeder *(DOE/Savannah River Site)*

REACTOR PHYSICS DESIGN, VALIDATION, AND OPERATING EXPERIENCE—I, sponsored by RPD

Session Organizers: Alexander Stanculescu *(INL)*, Fausto Franceschini *(Westinghouse)*
Chair: Won Sik Yang *(Purdue Univ)*

WINDSOR

8:30 A.M.
New Reactor Physics Benchmark Data in the March 2012 Edition of the IRPhEP Handbook, John D. Bess, J. Blair Briggs *(INL)*, Jim Gulliford *(OECD/Nuclear Energy Agency)*

8:55 A.M.
Stationary Liquid Fuel Fast Reactor Concept for TRU Burning, W. S. Yang *(Purdue Univ)*, C. Grandy *(ANL)*

9:20 A.M.
Design of Small-Size Ultra-Long Cycle Fast Reactor UCFR-100, Taewoo Tak, Deokjung Lee *(UNIST)*

9:45 A.M.
Study on Core Concepts for Preventing Re-criticality Accidents Employing Duplex Pellets with Absorber, Tsugio Yokoyama *(Toshiba Nuclear Engineering Services Corp)*, Toshio Wakabayashi *(Tohoku Univ)*

10:10 A.M.
Restart of Transient Fuels Testing at the Annular Core Research Reactor (ACRR), William J. Martin, Edward J. Parma *(SNL)*

10:35 A.M.
Modernizing Computational Methods and Validation Protocols for Complex Research Reactor Operations—Turning the Aircraft Carrier, Emily T. Swain, Samuel E. Bays, David W. Nigg *(INL)*

11:00 A.M.
Hybrid Thorium Reactor for Safe, Abundant Power Generation, T. Kammash *(Univ of Michigan)*

FY2011 NUCLEAR CRITICALITY SAFETY PROGRAM TECHNICAL ACCOMPLISHMENTS—I, sponsored by NCSD

Session Organizer: Nichole Ellis *(Contractor)*
Chair: Jerry McKamy *(DOE)*

HAMPTON

8:30 A.M.
Revisiting the Level of Readiness for a Nuclear Criticality Accident Using an Event Timeline, B. S. Carlisle, A. W. Prichard *(PNNL)*

8:55 A.M.
US DOE Nuclear Criticality Safety Program Hands-On Subcritical and Critical Experiments Training and Education Course, Sedat Goluoglu *(Univ of Florida)*, Calvin Hopper *[ORNL(retired)]*

9:20 A.M.
New Hands-On Training and Research with the LLNL TACS, Catherine Percher *(LLNL)*

9:45 A.M.
Hands-On Criticality Safety Training at Sandia National Laboratories, Gary A. Harms, Ronald A. Knief, Allison D. Miller, John T. Ford *(SNL)*

10:10 A.M.
First Critical Experiment at National Criticality Experiment Research Center (NCERC), Rene Sanchez, David Hayes, Joetta Goda, William Myers *(LANL)*

10:35 A.M.
How to Design a Critical Experiment aka "CED-1 and CED-2", Richard D. McKnight *(ANL)*

TRANSPORT METHODS, sponsored by MCD

Session Organizer: Brian Franke *(SNL)*
Chair: Rachel Slaybaugh *(BAPL)*

SHEFFIELD

8:30 A.M.
Efficient Massively Parallel Transport Sweeps, W. Daryl Hawkins, Timmie Smith, Michael P. Adams, Lawrence Rauchwerger, Nancy Amato, Marvin L. Adams *(Texas A&M)*

8:55 A.M.
A Spatial Convergence Study on Unstructured Meshes, T. L. Becker *(Knolls Atomic Power Lab)*

9:20 A.M.
S2SA Preconditioning for the S_n Equations with Strictly Positive Spatial Discretization, Donald E. Bruss, Jim E. Morel, Jean C. Ragusa *(Texas A&M)*

9:45 A.M.
Kernel Density Estimators for Monte Carlo Tallies on Unstructured Meshes, Kerry L. Dunn, Paul P. H. Wilson *(Univ of Wisconsin, Madison)*

10:10 A.M.
Fission Matrix Capability for MCNP Monte Carlo, Sean Carney *(Univ of Michigan)*, Forrest Brown, Brian Kiedrowski *(LANL)*, William Martin *(Univ of Michigan)*

10:35 A.M.
The Method of Moments Applied to Spatially Continuous Transport Problems Involving Grids: Time-Dependent Problems, Jeffery D. Densmore *(LANL)*

11:00 A.M.
An Implicit Monte Carlo Method Based on BDF-2 Time Integration for Simulating Nonlinear Radiative Transfer, Ryan G. McClarren *(Texas A&M)*, Todd J. Urbatsch *(LANL)*

COMPUTATIONAL RESOURCES IN RADIATION PROTECTION AND SHIELDING, sponsored by RPSD

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

ROYAL PALM SALON 1

8:30 A.M.
A Green's Function Approach for Determining Dose Rates for Small Gram Quantities in Shipping Packagings, Steven J. Nathan *(Savannah River Nuclear Solutions)*, Joel M. Risner *(ORNL)*, Shiva Sitaraman *(LLNL)*

8:55 A.M.
A New Approach for Shielding Calculation on Clinac iX Linear Accelerator Vault Using Discrete Ordinates Radiation Transport Method, Mi Huang, Kevin Manalo, Glenn Sjoden *(Georgia Tech)*

9:20 A.M.
Automatic Mesh Adaptivity for Hybrid Monte Carlo/Deterministic Neutronics Modeling of Difficult Shielding Problems, Ahmad M. Ibrahim *(ORNL)*, Paul P. Wilson, Mohamed E. Sawan *(Univ of Wisconsin, Madison)*, Douglas E. Peplow, John C. Wagner, Scott W. Mosher, Thomas M. Evans *(ORNL)*

9:45 A.M.
Delayed Neutron and Photon Energy Biasing in MCNP6, H. Armstrong *(Univ of Texas, Austin)*, M. R. James, G. W. McKinney *(LANL)*

10:10 A.M.
MCNP6 Compton Image Tally Option, G. W. McKinney *(LANL)*

10:35 A.M.
Testing the Lawrence Livermore National Laboratory Multiplicity Capability in MCNPX 2.7.0, R. A. Weldon Jr. *(Penn State)*, M. L. Fensin, G. W. Mckinney *(LANL)*

ADVANCES IN NON-HEU ^{99}Mo/^{99m}Tc PRODUCTION TECHNOLOGIES—I, sponsored by BMD; cosponsored by IRD

Session Organizer: Dave Robertson *(Univ of Missouri)*
Chair: Ralph Butler *(Univ of Missouri)*

ROYAL PALM SALON 2

8:30 A.M.
GTRI'S Efforts to Minimize the Use of Highly Enriched Uranium in Molybdenum-99 Production, Parrish Staples, Rilla Hamilton, Joan Dix, Joseph Gintner, Laurence Lewis *(National Nuclear Security Administration)*, *invited*

8:55 A.M.
The Market Impacts of Converting to Low-Enriched Uranium Targets for Medical Isotope Production, Henri Paillère, Ron Cameron, Chad Westmacott *(OECD-Nuclear Energy Agency)*

9:20 A.M.
Experience from Routine Commercial Use of LEU-Produced Mo-99 in Technelite® Generators, Teresia Moller, Ira Goldman, Shannon Paltinavich *(Lantheus Medical Imaging)*

9:45 A.M.
Australian Experience with LEU Mo-99 Production, Michael Druce *(Australian Nuclear Science and Technology Organisation)*

10:10 A.M.
Radioisotopes Production for Medical Use: Jules Horowitz Reactor Facilities, Jean-Pierre Coulon, Jean-Pierre Chauvin, Gilles Bignan *(CEA DEN)*

AEROSPACE NUCLEAR SCIENCE AND TECHNOLOGY: GENERAL, sponsored by ANSTD

Session Organizer: Martin Sattison *(INL)*
Chair: Shannon Bragg-Sitton *(INL)*

ROYAL PALM SALON 3

8:30 A.M.
Developing an Alternative Radioisotopes Supply for Heat and Power Sources, Tim Tinsley, Mark Sarsfield *(National Nuclear Lab)*

8:55 A.M.
Cermet Nuclear Fuel Development for Space Applications, Shannon M. Bragg-Sitton, Jonathan A. Webb, Jason M. Harp *(INL)*

9:20 A.M.
Uncertainty Quantification for CFD Simulations of NTR Fuel Elements, Brad Appel *(Texas A&M)*

NUCLEAR FUELS AND MATERIALS: SiC AND TRISO, sponsored by MSTD

Session Organizer: Ken Geelhood *(PNNL)*
Chair: Jack Henderson *(NETZSCH)*

ROYAL PALM SALON 3

9:50 A.M.
Effect of Neutron Irradiation on Carbon Fiber Reinforced SiC Matrix Composite, Chunghao Shih, Yutai Katoh *(ORNL)*, J. Steinbeck *(Physical Sciences Inc)*

10:15 A.M.
Joining Silicon Carbide for Advanced LWR Fuel Cladding, Yutai Katoh, Lance L. Snead *(ORNL)*, Charles H. Henager, Jr. *(PNNL)*, Tatsuya Hinoki *(Kyoto Univ)*, Monica Ferraris *(Politecnico di Torino-Italy)*, Steve T. Gonczy *(Gateway Materials Technology, Inc.)*

10:40 A.M.
FE Modeling and Verification Experiments for TRISO Fuel Irradiation in a Research Reactor, Moon Sung Cho *(KAERI-Korea)*, Young Shin Lee *(Choongnam National Univ)*

11:05 A.M.
TRISO Fuel Thermal Conductivity Measurements, C. Folsom, C.

Xing, C. Jensen, H. Ban *(Utah State Univ)*, D. Marshall *(INL)*

NOTE: This session will immediately follow the preceding session, which will begin at 8:30 a.m.

TUESDAY, NOVEMBER 13, 2012, 1:00 P.M.

NEW NUCLEAR CONSTRUCTION AROUND THE WORLD–PANEL, sponsored by OPD

Cochairs: Edward Quinn *(Technology Resources)*, Paul Dickman *(ANL)*

PACIFIC SALON 1

1:00 P.M.

This session will provide an overview of progress and planning for new reactor construction in the U.S. and around the world. Key issues include the ability of the regulatory framework to address all aspects of licensing including siting, design certification and reference, and subsequent combined operating license (COL) issue. Speakers will be from the U.S. Nuclear Regulatory Commission (NRC), energy companies, and industry consortiums that are supporting the growth of nuclear energy in the U.S. and around the world.

PANELISTS:

- David Matthews *(NRC)*
- Russ Bell *(NEI)*
- Joyce Connery *(National Security Council, White House)*
- Edward Quinn *(Technology Resources)*
- Other panelists to be determined.

DEVELOPMENT OF ADVANCED SAFEGUARDS MONITORING FOR INDUSTRIAL SCALE FUEL CYCLE FACILITIES, sponsored by FCWMD

Session Organizer and Chair: Emory Collins *(ORNL)*

PACIFIC SALON 2

1:00 P.M.

Structural Health Monitoring with Piezoelectric Wafer Active Sensors Exposed to Irradiation Effects, Adrián E. Méndez Torres *(SRNL)*, Bin Lin, Matthieu Gresil, Victor Giurgiutiu *(Univ of South Carolina)*

1:20 P.M.

Optimization of the Uranyl Nitrate Calibration Loop Equipment (UNCLE) for Simulating Front-End Commercial Facility Conditions for Safeguards Instrumentation, D. L. Lee *(UT-Battelle)*, S. A. Dewji *(Georgia Tech)*, M. Ketron *(East Tennessee State Univ)*

1:40 P.M.

Electrical Characterization of High Temperature SiC Alpha-Particle Detectors for Pyroprocessing, Timothy R. Garcia, Ben Reinke, Ashutosh Kumar, Thomas E. Blue, Wolfgang Windl *(ORNL)*

NUCLEAR INSTALLATIONS SAFETY: GENERAL—II, sponsored by NISD

Session Organizer: Charles R. (Chip) Martin *(DNFSB)*

Chair: Diego Mandelli *(INL)*

PACIFIC SALON 2

2:05 P.M.

Failure Mode Analysis in Seismic Situation for PRHR in AP1000, Yu Yu, Shengfei Wang, Fenglei Niu *(North China Electric Power Univ)*

2:25 P.M.

Sodium Fast Reactor Research Plan, M. Denman, J. LaChance *(SNL)*, T. Sofu *(ANL)*, G. Flanagan *(ORNL)*, R. Wigeland *(INL)*, R. Bari *(BNL)*

2:45 P.M.

Adaptive Sampling Using Support Vector Machines, D. Mandelli, C. Smith *(INL)*

3:05 P.M.

Comprehensive Safety Assessment of HANARO Research Reactor, Hoansung Jung, Incheol Lim, Hyungkyu Kim *(KAERI-Korea)*

3:25 P.M.

A Basic Discussion on the Safety Improvement of Chinese Nuclear Equipment Design, Feiyun Zhao, Yangui Yao, Hao Yu, Yinbiao He, Lei Gao, Weida Yao *(Shanghai Nucl Eng Research Design Inst)*

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

BECOMING A NUCLEAR SPOKESPERSON–PANEL, sponsored by ETWDD

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

PACIFIC SALON 3

1:00 P.M.

Professionals in science and engineering often are trained to respond to questions with detailed information that ultimately proves their hypothesis or point. Working with the media and communicating with nontechnical audiences requires a somewhat different approach. Journalists and stakeholders want accurate information, but tend to remember and relate to it best when it is part of a clear, simple message-driven story that is relevant to their concerns. This panel, composed of ANS members, will discuss their experiences and lessons learned as they became effective nuclear spokespeople. This session will explore how professionals improve their abilities to assess what audiences want or need to know about nuclear science and technology and which tools they use to get their ideas across in those situations.

PANELISTS:

- Kathryn McCarthy *(INL)*
- Margaret Harding *(Four Factor Consulting)*
- Cassie Hagan *(AREVA)*

TELLING THE NUCLEAR STORY USING ONLINE VIDEO AND BROADCAST–PANEL, sponsored by ETWDD

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

PACIFIC SALON 3

2:45 P.M.

Improved consumer quality cameras and editing software have made video-based storytelling accessible to a new generation of amateur and professional storytellers. As a result, video-based storytelling has

become increasing popular with the growth of sharing sites like YouTube and Storify. Discover how ANS members and TV/Film professionals are using video as both a marketing and education tool.

PANELISTS:

- Kate McAlpine *(Large Hadron Collider rapper and artist formerly known as Alpinekat)*
- Paul Bowersox *(ANS)*
- Cara Santa Maria *(Host of "Talk Nerdy to Me")*
- Henry Reich *(Minute Physics)*

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

THERMAL HYDRAULICS: GENERAL—I, sponsored by THD

Cochairs: John Luxat *(McMaster Univ)*, Rui Hu *(ANL)*

SAN DIEGO

1:00 P.M.
Critical Heat Flux on Downward Hemisphere with APR1400 Thermal Insulation, Sang W. Noh, Kune Y. Suh *(Seoul Natl Univ-Korea)*

1:25 P.M.
Critical Heat Flux in Natural Convection Cooled TRIGA Reactors with 2x2 Bundle, Jun Yang, Matthew De Angelis, M. Scott Greenwood *(Univ of Wisconsin, Madison)*

1:50 P.M.
Experimental Measurement with CHF Characteristics on a Downward-Facing Plane, Huai-En Hsieh, Yuh-Ming Ferng, Mei-Shiue Chen, Bau-Shi Pei *(Natl Tsing Hua Univ)*

2:15 P.M.
Condensation Experiment of an Inclined Single-Tube for Passive Auxiliary Feedwater System of APR1400+, Chang Wook Shin, Hee Cheon No *(KAIST)*, Bong Yo Yun *(KAIST, KHNP)*, Byong Guk Jeon *(KAIST)*

2:40 P.M.
Experimental Study on the Effect of a Spacer Grid in Two-Phase Flow Through a 1x3 Rod Bundle, Ted Worosz, Chad R. Green, Xin Wang, Seungjin Kim *(Penn State)*

3:05 P.M.
Development, Testing and Validation of Multidimensional Model of Subcooled Boiling, D. R. Shaver, S. P. Antal, M. Z. Podowski *(RPI)*

SAFEGUARDS BY DESIGN—NNSA'S NEXT GENERATION, sponsored by NNTG

Session Organizer: John Gunning *(ORNL)*
Chair: Brian Boyer *(ORNL)*

GOLDEN WEST

1:00 P.M.
Implementing Safeguards by Design at Gas Centrifuge Enrichment Plants, Mark Laughter, Janie McCowan, Brent McGinnis *(ORNL)*, Jim Morgan *(InSolves Associates)*, Michael Whitaker, Ann Pederson *(ORNL)*

1:20 P.M.
Implementing Safeguards by Design at Natural Uranium Conversion Plants, Lisa Loden, John Begovich, Ann Pederson *(ORNL)*

1:40 P.M.
An Assessment of the NuScale SMR Design Using the Facility Safeguardability Assessment Methodology, M. Zentner, G. Coles, E. Gitau *(PNNL)*, J. Hockert *(XE Corporation)*, B. Boyer, E. Rauch *(LANL)*, D. Ingersoll *(NuScale Power)*

2:00 P.M.
NGSI Safeguards by Design: Where Are We and What's Next?, Karyn Durbin, Dunbar Lockwood *(U.S. National Nuclear Security Administration)*, *invited*

2:20 P.M.
Safeguards by Design for Research Reactors and Critical Assemblies, S. F. DeMuth, P. Pan, B. D. Boyer, C. Murphy *(LANL)*

2:40 P.M.
Safeguards-by-Design Guidance for Pebble Fuel HTGR, Philip Casey Durst *(Durst Nuclear)*, *invited*

3:00 P.M.
Safeguards-by-Design Guidance for Prismatic Fuel HTGR, Philip Casey Durst *(Durst Nuclear)*, *invited*

3:20 P.M.
Safeguards-by-Design Guidance for Independent Spent Fuel Storage Installations (ISFSI), Philip Casey Durst *(Durst Nuclear)*, *invited*

SMALL MODULAR REACTORS, sponsored by OPD

Chair: Ken Ferguson *(Hukari Ascendent)*

CALIFORNIA

1:00 P.M.
A System Optimization Study on MHR-50/100is Toward Establishing an Inherent Safety Feature, Isao Minatsuki, Yorikata Mizokami, Sunao Oyama, Hiroki Tsukamoto *(Mitsubishi Heavy Industries, Ltd)*

1:25 P.M.
The Frequency Response Analysis of the MHR-50is Core, Hiroki Tsukamoto, Isao Minatsuki, Sunao Oyama, Tatsuya Iyoku, Shigeaki Nakagawa *(Mitsubishi Heavy Industries, Ltd.)*

1:50 P.M.
A Simulink Nuclear Power Plant Simulator for EM2, David Ryan *(UCSD/General Atomics)*, Hangbok Choi *(General Atomics)*, Miroslav Krstic *(UC San Diego)*

2:15 P.M.
Energy Multiplier Module: Overcoming the Nuclear Economic Hurdle, Robert W. Schleicher, Puja Gupta, Timothy Bertch *(General Atomics)*

2:40 P.M.
In-situ Condition Monitoring of Components in Small Modular Reactors, B. R. Upadhyaya, C. Mehta, V. B. Lollar, J. W. Hines *(Univ of Tennessee)*, B. Damiano *(ORNL)*

3:05 P.M.
Integrated Passive Safety System and Security Design for SMART, Sung Yeop Joung, Sang Ho Kim, Sub Lee Song, Soon Heung Chang *(KAIST)*

REACTOR PHYSICS DESIGN, VALIDATION, AND OPERATING EXPERIENCE—II, sponsored by RPD

Session Organizers: Alexander Stanculescu *(INL)*, Fausto Franceschini *(Westinghouse)*
Chair: Won Sik Yang *(Purdue Univ)*

WINDSOR

1:00 P.M.
A Proposed Technique for 3-Dimensional Neutron Flux Mapping, William L. Myers, Timothy E. Beller, John A. Bounds, Joetta M. Goda, Evan A. Rose, Rene G. Sanchez *(LANL)*

1:25 P.M.
Implementation of a New Burnup Solver Based on the Krylov Subspace Method in SCOPE2, Masahiro Tatsumi *(Nuclear Fuel Industries Ltd.)*, Kento Yamamoto, Yasuhiro Kodama, Yasunori Ohoka *(Nuclear Fuel Industries Ltd.)*

1:50 P.M.
Uncertainty Assessment for the Experimental Validation of a Depletion Code, Wim Haeck, Bertrand Cochet *(IRSN)*

2:15 P.M.
Geometrical Data Generation Using SILENE GUI for FUBILA Experimental Program, Zarko Stankovski, Patrick Blaise *(CEA)*

2:40 P.M.
An Adaptive Scheme to Minimize Feed Fuel Assembly Enrichment in Reload Cycle Core Design of PWR, Tong Kyu Park *(Seoul Natl Univ-Korea, FNC)*, Han Gyu Joo, Chang Hyo Kim *(Seoul Natl Univ-Korea)*

FY2011 NUCLEAR CRITICALITY SAFETY PROGRAM TECHNICAL ACCOMPLISHMENTS—II, sponsored by NCSD

Session Organizer: Nichole Ellis *(Contractor)*
Chair: Jerry McKamy *(DOE)*. *All papers invited.*

HAMPTON

1:00 P.M.
Release of the ENDF/B-VII.1 Evaluated Nuclear Data File, David Brown *(BNL)*

1:25 P.M.
LANL Evaluation and Data Testing Support for ENDF/B-VII.1, A. C. Kahler, R. E. MacFarlane, R. D. Mosteller, B. C. Kiedrowski, M. B. Chadwick, P. Talou, T. Kawano, G. Hale, J. Lestone, M. MacInnes, D. K. Parsons, J. L. Conlin *(LANL)*

1:50 P.M.
ORNL Neutron Cross-Section Measurements Activities, K. H. Guber *(ORNL)*

2:15 P.M.
Nuclear Data for Criticality Safety and Reactor Applications at the Gaerttner LINAC Center, Y. Danon *(Gaerttner LINAC Center, RPI)*, R. M. Bahran, E. J. Blain, A. M. Daskalakis, B. J. McDermott, D. G. Williams *(RPI)*, D. P. Barry, G. Leinweber, M. J. Rapp, R. C. Block *(Bechtel Corp., KAPL)*

2:40 P.M.
MCNP Monte Carlo Progress— Nuclear Criticality Safety, Forrest B. Brown, Brian C. Kiedrowski, Jeffrey S. Bull *(LANL)*

3:05 P.M.
Evaluation of Measured and Simulated List-Mode Data for Subcritical Systems, J. Hutchinson, C. Solomon, A. Sood, W. Myers, M. Smith-Nelsen, D. Dinwiddie *(LANL)*

TRANSPORT AND COMPUTATIONAL METHODS, sponsored by MCD

Session Organizer: Brian Franke *(SNL)*
Chair: Ryan McClarren *(Texas A&M)*

SHEFFIELD

1:00 P.M.
Prediction of Pebble Motion in Pebble Bed Reactors Using Monte Carlo Molecular Dynamics Simulation, Kyoung O. Lee, Robin P. Gardner *(NCSU)*, Mark Mills Award winner, *invited*

1:25 P.M.
Comparison of Hybrid Methods for Global Variance Reduction in Shielding Calculations, Douglas E. Peplow *(ORNL)*

1:50 P.M.
A Constrained Sampling Methodology for TRISO Microspheres with Continuous Distributions of Diameters, Timothy Burke, Benjamin R. Betzler, John C. Lee, William R. Martin, Andrew Pavlou *(Univ of Michigan)*, Wei Li, Yangheng Li *(RPI)*

2:15 P.M.
Reducing Parallel Communication in Monte Carlo Simulations via Batch Statistics, Paul K. Romano, Benoit Forget *(MIT)*

2:40 P.M.
2D Mono-Energetic Monte Carlo Particle Transport on a GPU, Ryan M. Bergmann, Jasmina L. Vujić, Noah A. Fischer *(Univ of California, Berkeley)*

3:05 P.M.
A GPU-Based Local Acceleration Strategy for Monte Carlo Neutron Transport, Qi Xu, Ganglin Yu, Xiaofei Wu, Kan Wang *(Tsinghua Univ)*

ETHICS IN ENGINEERING–PANEL, sponsored by RPSD

Session Organizer: Arzu Arpan *(Westinghouse)*
Chair: Robert Hayes *(Nuclear Waste Partnership LLC)*

ROYAL PALM SALON 1

PANELISTS:

- Starting with Me, Ethics in Everything, Vic Uotinen *(Past Chair of ANS Ethics Committee)*
- Ethics in My Company, How to Improve It, Paul Lorenzi *(Nuscale)*
- Ethics in Industry, Robert Wilson *(DOE)*
- Are We Deceiving Ourselves?, John Metzger *(Univ of Pittsburgh)*
- When and Where is the Grey Area ok?, Paul Edelmann *(LANL)*
- Is Ethics the Only Way?, Nolan Hertel *(Georgia Tech)*
- Keynote, Promoting Ethics, Donald Hoffman *(ANS President-elect, Excel Services Corp)*

ADVANCES IN NON-HEU ^{99}Mo/^{99m}Tc PRODUCTION TECHNOLOGIES—II, sponsored by BMD; cosponsored by IRD

Session Organizer: Dave Robertson *(Univ of Missouri)*
Chair: Charlie E. Allen *(Univ of Missouri)*

ROYAL PALM SALON 2

1:00 P.M.
Brazilian Strategies to Overcome ^{99}Mo Supply Crisis, João A. Osso Jr., Carla R. B. R. Dias, Rodrigo Teodoro, Marcela F. Catanoso, Josiane Zini, Regina R. L. Bezerra, Luiz A. Villela, Jeremias L. Correia, Fatima M. S. Carvalho, Peterson L. Squair, Jair Mengatti *(IPEN-CNEN/SP)*

1:25 P.M.
Selective Gaseous Extraction for Low Waste LEU-Based Economic Isotope Production, T. C. Bertch, B. E. Russ, L. C. Brown *(General Atomics)*, C. S. Cutler, A. R. Ketring, S. S. Jurisson, J. D. Robertson, *(Univ of Missouri, Columbia)*

1:50 P.M.
Development Activities in Support of Accelerator Production of ^{99}Mo Production Through the γ/n Reaction on ^{100}Mo, Sergey Chemerisov, Peter Tkac, Charles Jonah, Bradley Micklich, Vakhtang Makarashvili, George Vandegrift *(ANL)*, Gregory Dale, Keith Woloshun, Michael Holloway, Frank Romero, Dale Dalmas *(LANL)*, James Harvey *(NorthStar Medical Technologies, LLC)*, *invited*

2:15 P.M.
Highly Efficient Production of ^{99}Mo Using a Non-Fission Technology, Yuriy Tsoglin *(Society of Sciences & Engineering of Dresden, Germany)*, Valery Shevel *[Institute for Nuclear Research (KINR) Kiev, Ukraine]*

2:40 P.M.
Development of the Mini-SHINE/MIPS Experiments at ANL, S. Chemerisov, A. J. Youker, A. Hebden, N. Smith, P. Tkac, J. Krebs, C. D. Jonah, J. Bailey, V. Makarashvili, B. Micklich, M. Kalensky, G. F. Vandegrift *(ANL)*, *invited*

3:05 P.M.
Manufacturing of Annular LEU Mo-99 Targets by Sputtering, Tobias Hollmer, Christian Steyer, Winfried Petry *[Forschungs-Neutronenquelle Heinz Maier-Leibnitz (FRM II)]*

ENVIRONMENTAL SCIENCES: GENERAL, sponsored by ESD

Chair: Eduardo B. Farfan *(SRNL)*

ROYAL PALM 3

1:00 P.M.
An International Assessment of the Role of Nuclear Energy in a Low Carbon Future, Henri Paillère, Ron Cameron *(OECD Nuclear Energy Agency)*

1:20 P.M.
Chernobyl and Fukushima: Differences and Similarities, a Biological Perspective, Timothy A. Mousseau *(Univ of South Carolina)*, Anders P. Møller *(Université Paris-Sud)*

1:40 P.M.
Environmental Study for a New Nuclear Unit in Armenia, Aram Gevorgyan *(Ministry of Energy and Natural Resources of the Republic of Armenia)*, Lief W. Erickson, Robert B. Samworth *(Scientech)*

2:00 P.M.
Key Processes and Parameters in a Generic Clay Disposal System Model, Kathryn D. Huff *(Univ of Wisconsin, Madison)*, Mark Nutt *(ANL)*

2:20 P.M.
Light-Water-Reactor Renewable Shale-Oil Systems for Variable Electricity Production and Liquid Fuels, Charles Forsberg *(MIT)*

2:40 P.M.
Research into the Public Perception of Nuclear Design [RESPPOND], Martin J. Goodfellow *(Univ of Manchester)*, Jonathan Wortley *(Rolls-Royce Plc)*, Adisa Azapagic *(Univ of Manchester)*

3:00 P.M.
The Effect of the Phase of the Moon on Variations in Background Radiation—An Interesting Occurrence, John E. Gunning, Alexander L. Enders *(ORNL)*

3:20 P.M.
Environmental Decontamination at Fukushima City, Arthur Desrosiers *(Perma-Fix Environmental Services, Inc.)*

TUESDAY, NOVEMBER 13, 2012, 4:00 P.M.

ANS PRESIDENT'S & GENERAL CHAIR'S SESSION: "TEN YEARS SINCE THE GENERATION IV ROADMAP: PROGRESS AND FUTURE DIRECTIONS FOR NEW REACTOR TECHNOLOGIES"

Chair: Michael L. Corradini *(President, ANS)*

GOLDEN BALLROOM

SPEAKERS:

- Commissioner William Magwood *(USA, NRC; former Chair, Gen IV Int'l Forum)*
- Jacques Bouchard *(France, CEA; former Chair, Gen IV Int'l Forum)*
- Christophe Behar *(France, CEA; Vice Chair of the Gen IV Int'l Forum)*
- Yutaka Sagayama *(Japan, MEXT; Chair of the Gen IV Int'l Forum)*

WEDNESDAY • NOVEMBER 14, 2012

7:30 A.M. – 5:00 P.M.	MEETING REGISTRATION
8:00 A.M. – 10:00 A.M.	SPOUSE/GUEST HOSPITALITY
8:30 A.M – 12:35 P.M.	ADVANCES IN THERMAL HYDRAULICS: TECHNICAL SESSIONS *(see page 49)*
8:30 A.M – 12:30 P.M.	FUKUSHIMA 2012 MEETING: TECHNICAL SESSIONS *(see page 45)*
8:30 A.M. – 12:00 P.M.	2012 ANS WINTER MEETING: TECHNICAL SESSIONS •Highlights of NPIC & HMIT 2012—I: Nuclear Plant I & C – Panel •Nuclear Fuel Cycle Resources, Sustainability, Reuse, and Recycle •Cutting Edge Techniques in Education, Training and Distance Learning •Computational Thermal Hydraulics—II •Nuclear Nonproliferation: General •Generation IV International Forum: The Next Decade—I–Panel •Reactor Analysis Methods—I •Validation and Verification–Tutorial—I •Computational Methods •Hybrid Monte Carlo Deterministic Methods for Reactor Analysis •Advances in Non-HEU ^{99}Mo/^{99m}Tc Production Technologies—III •Discussion of Low-Energy Nuclear Reactions–Papers/Panel
1:30 P.M – 6:30 P.M.	ADVANCES IN THERMAL HYDRAULICS: TECHNICAL SESSIONS *(see page 49)*
1:00 P.M – 5:30 P.M.	FUKUSHIMA 2012 MEETING: TECHNICAL SESSIONS *(see page 43)*
1:00 P.M. – 4:00 P.M.	2012 ANS WINTER MEETING: TECHNICAL SESSIONS •Highlights of NPIC & HMIT 2012—II: Human-Machine Interface Technologies–Panel •Advances in Separation Methods for the Recycle of Used Fuels •Education, Training, and Workforce Development: General •Thermal Hydraulics: General—II •Generation IV International Forum: The Next Decade—II–Panel •"I Wonder If ..." Special Session in Honor of John Rowlands •Validation and Verification–Tutorial—II •Mathematical Modeling •The DOE Russian Health Studies Program: Status and Future–Panel •Tritium in Fission and Fusion—I •Materials Science and Technology: General

WEDNESDAY, NOVEMBER 14, 2012, 8:30 A.M.

HIGHLIGHTS OF NPIC & HMIT 2012—I: Nuclear Plant I&C–Panel, sponsored by HFICD

Cochairs: Hashem M. Hashemian *(AMS)*, Sacit M. Cetiner *(ORNL)*

PACIFIC SALON 1

8:30 A.M.

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

PANELISTS:

FPGA-Based System's Impact on I&C Architectures, Stephen G. Seaman, Thomas W. Tweedle *(Westinghouse)*

Current Issues Associated with the Implementation of Field-Programmable Gate Arrays in the Nuclear Power Industry, Steven A. Arndt, Bernard F. Dittman *(NRC)*, Paul DaCruz *(Invensys Corp)*, Oszvald Glockler *(European Commission)*, Joseph A. Naser *(EPRI)*, Thuy Nguyen, Patrick Salaun *(EdF)*

Wireless Sensors for Condition Monitoring of Equipment within the Containment of Pressurized Water Reactors, C. J. Kiger, W. S. Johnson, H. M. Hashemian *(AMS)*, Ed Hudson *(Entergy)*

On-Line Condition Monitoring and Diagnostics for Rod Control and Rod Position Indication Systems in Nuclear Reactors, G. W. Morton, S. D. Caylor, J. R. McCulley, H. M. Hashemian *(AMS)*

Implementing Digital Technologies in Nuclear Utilities, Christopher M. Wiegand *(Invensys Nuclear)*, Michael Phillips *(Invensys)*

Development of a New IEC Standard—Requirements for Security Programs for Computer-Based Systems, Edward L. Quinn *(Technology Resources)*, Leroy Hardin *(NRC)*, Ludovic Pietre-Cambacedes *(EdF)*

Key Design Challenges in Next-Generation Instrumentation & Control *(I&C)* Systems for Small Modular Reactor Nuclear Power Plants, Troy V. Nguyen, Ken D. Leidy, David P. Keene *(Northrop Grumman Corp.)*, Brian K. Arnholt *(Babcock & Wilcox Nuclear Energy, Inc.)*

Top-Down Versus Bottom-Up: Failure Analysis Methods for Digital Systems, Ray Torok *(EPRI)*, Bruce Geddes *(Southern Engineering Serv.)*, David Blanchard *(Applied Reliability Eng.)*, Thuy Nguyen *(EdF)*

Insights Gained for Updating an Analog I&C System to a Digital System, M. D. Muhlheim, T. L. Wilson *(ORNL)*, L. A. Hardin, Jr., D. A. Hardesty, A. Adams, N. Carte *(NRC)*

NUCLEAR FUEL CYCLE RESOURCES, SUSTAINABILITY, REUSE, AND RECYCLE, sponsored by FCWMD

Session Organizer and Chair: Bill Del Cul *(ORNL)*

PACIFIC SALON 2

8:30 A.M.

Dry Pretreatment of Used Nuclear Fuel to Simplify Storage or Recycle—Shearing or Chemical Decladding and Voloxidation, G. D. DelCul, J. A. Johnson, B. B. Spencer, E. D. Collins, R. T. Jubin *(ORNL)*, J. C. Bresee *(U.S. DOE)*

8:50 A.M.

Kinetic Studies of NO2 Oxidation of Uranium Oxides by In Situ XRD and Neutron Diffraction, J. A. Johnson *(ORNL)*, C. J. Rawn *(Univ of Tennessee)*, G. D. DelCul, B. B. Spencer, E. D. Collins *(ORNL)*

9:10 A.M.
Dry Pretreatment of Used Nuclear Fuel to Simplify Storage of Recycling—Zirconium Recycling from Cladding, E. D. Collins, G. D. DelCul, B. B. Spencer, R. T. Jubin, R. R. Brunson, J. A. Johnson *(ORNL)*

9:30 A.M.
Dry Pretreatment of Used Nuclear Fuel to Simplify Storage or Recycling: Off-Gas Treatment and Volatile Radionuclide Capture, B. B. Spencer, R. T. Jubin, S. H. Bruffey, G. D. DelCul, E. D. Collins *(ORNL)*

9:50 A.M.
Material Compatibility Testing for BWR Fuel with Methanol Injection, M. G. Pop *(AREVA NP)*, H. J. Sell *(AREVA GmbH)*, M. J. Bell *(AREVA NP)*

10:10 P.M.
Electrical Conductivities of LiCl-KCl Molten Salts with Various Compositions of Uranium and Lanthanides, Jong-Yun Kim, Sang-Eun Bae, Yong Suk Choi, Jei-Won Yeon, Kyuseok Song *(KAERI-Korea)*

10:30 P.M.
Oxidation State Shift of Actinides and Lanthanides Ions During Potential Control in LiCl-KCl Melt, S.-E. Bae, D.-H. Kim, J. Y. Kim, Y. H. Cho, J.-W. Yeon, K. Song *(KAERI–Korea)*

10:50 P.M.
Energy Return on Investment—Fuel Recycle, Patrick R. Schwab *(U. S. Department of Energy)*, William Halsey, A. J. Simon, Massimiliano Fratoni, Clara Smith *(LLNL)*, Paul Murray *(AREVA Federal Services)*

11:10 P.M.
The Economic Feasibility of Multiple Mixed Oxide Fuel Recycling in Current Generation LWRs, Jason D. Williams, Mark A. Pierson, Robert E. Masterson *(Virginia Tech)*

11:30 P.M.
Once-Through Benchmarks with CYCLUS, a Modular, Open-Source Fuel Cycle Simulator, Matthew J. Gidden, Paul P. H. Wilson, Kathryn D. Huff, Robert W. Carlsen *(UW-Madison)*

CUTTING EDGE TECHNIQUES IN EDUCATION, TRAINING AND DISTANCE LEARNING,

sponsored by ETWDD
Session Organizer: John Bennion *(GEH)*
Chair: Jane LeClair *(Excelsior College)*

PACIFIC SALON 3

8:30 A.M.
Leveraging Simple and Universally Scalable Collaborative Models for Nuclear Engineering Education and Research, Rian Bahran, Matthew J. Riblett, Justin Vazquez, Melissa Urquhart *(RPI)*

9:00 A.M.
Teaching Experience on PTS Analysis for Safety Analysis of Nuclear Power Plants, M. Beghini, C. Sollima *(Univ of Pisa)*, J. F. Stubbins *(Univ of Illinois)*

9:30 A.M.
Development of a Web-Based Energy Industry Fundamentals Curriculum Supporting Workforce Development, William H. Miller, Gayla M. Neumeyer, I. Gelu Ionas, Matthew A. Easter *(Univ of Missouri, Columbia)*

10:00 A.M.
Incorporating Instructional Technology into a Distance Teaching Opportunity, Gregory Maxwell *(Iowa State Univ)*, Margaret E. Harding *(4 Factor Consulting)*

10:30 A.M.
Next Generation E-Education: Fully-Interactive Virtual Labs for Training and Education, Imran Haddish, Rizwan-uddin *(Univ of Illinois)*

11:00 A.M.
Android Mobile Computing Methods and Examples for the Nuclear Industry, Thomas R. Hubbard *(AMPS, LLC)*

COMPUTATIONAL THERMAL HYDRAULICS—II,

sponsored by THD
Chair: Igor Bolotnov *(NCSU)*

SAN DIEGO

8:30 A.M.
Extending a CAD-Based, Uniform, Cartesian Mesh Generator for Lattice Boltzmann Method, J. Nathan Cantrell *(Univ of Tennessee)*, Eric J. Inclan *(Florida International Univ)*, Abhijit S. Joshi, Emilian L. Popov, Prashant K. Jain *(ORNL)*

8:55 A.M.
PRATHAM: Parallel Thermal Hydraulics Simulations Using Advanced Mesoscopic Methods, Abhijit S. Joshi, Prashant K. Jain *(ORNL)*, Jaime A. Mudrich *(Florida International Univ)*, Emilian L. Popov *(ORNL)*

9:20 A.M.
TRACE/PARCS Analysis of Loss of Feedwater Heater ATWS for ABWR, Peter Yarsky, Scott Krepel *(NRC)*

9:45 A.M.
Reduce Numerical Diffusion in TRACE Using the High-Resolution Numerical Method ENO, Dean Wang *(ORNL)*

10:10 A.M.
Application of Upwind Scheme and Staggered Grid to COBRA Algorithm, Chong Kuk Chun, Jong Seon Lim, Kee Yil Nahm *(KEPCO NF)*

10:35 A.M.
Modeling the Flowing Characteristics and Corrosion Rates Using CFD Approach for the Piping Systems of Pressurized Water Reactor Power Plant, Shih-Feng Wen, Chih-Hung Lin, Yuh-Ming Ferng *(National Tsing Hua Univ)*

11:00 A.M.
Investigating the Thermal-Hydraulic Behavior of RHR Heat Exchanger by Realistic CFD Simulation, Ting-Kang Tseng, Yun-Ming Ferng *(National Tsing-Hua Univ)*

NUCLEAR NONPROLIFERATION: GENERAL,

sponsored by NNTG
Session Organizer and Chair: Susan Turner *(Y-12)*
GOLDEN WEST

8:30 A.M.
Sensitivity Analysis of Low-Volatile FPs and Cm-244 Inventory in Irradiated Nuclear Fuel for Special Nuclear Material Accountancy in Fuel Debris, Hiroshi Sagara , Hirofumi Tomikawa, Masaru Watahiki, Yusuke Kuno *(JAEA)*

8:55 A.M.
Comparative Analysis of Nuclear Nonproliferation Proliferation Resistance Approaches, Royal A. Elmore, William S. Charlton, Sunil Chirayath *(Texas A&M)*

9:20 A.M.
Fission Fragment Spectrometer Development in Support of Active Interrogation Data Needs, Adam Hecht, Rick Blakeley, Drew Mader *(Univ of New Mexico)*

9:45 A.M.
Computational Optimization of a Synthetic Aperture SNM Detector Array, Ce Yi, Christopher Edgar, Michael Chin, Jessica Paul, Matthew Molinar, Kevin Manalo, Mi Huang, Glenn Sjoden *(Georgia Tech)*

10:10 A.M.
Fuel Assembly Neutron Computed Tomography Using Monte Carlo Simulation, Chad L. Pope *(INL)*

GENERATION IV INTERNATIONAL FORUM: THE NEXT DECADE—I–PANEL, sponsored by OPD

Chair: Harold McFarlane *(INL)*
CALIFORNIA

8:30 A.M.
The Generation IV International Forum was created in 2000 to foster international collaboration at the working level on advanced nuclear energy systems. Over the last ten years, twelve countries and EURATOM have become members of the GIF, established a governance framework for joint R&D, and established joint R&D projects related to 6 advanced nuclear energy systems. This session looks back at the past 10 years of accomplishments, focusing on the achievements of three methodology working groups, the establishment of Safety Design Criteria for Sodium Fast Reactors (SFRs), and input from senior industry officials. The session then switches focus to the next ten years with thoughts from young professionals and a process for updating the strategic plan.

Session Chair: Christophe Behar, France, GIF Policy Group Vice Chair

The Generation IV International Forum Advancements and Objectives, Yutaka Sagayama, Japan, GIF Policy Group Chair

- Anselmo (Tommy) Cisneros, UC Berkeley
- Grant Helmreich, Texas A & M
- Staffan Qvist, UC Berkeley
- William Sames, Texas A & M
- Rodolfo Vaghetto, Texas A & M

Panel discussion on the Application Experience of Three Horizontal Working Groups

- Tim Leahy, USA, Risk and Safety Methodology Working Group
- Bob Bari, USA, Proliferation Resistance and Physical Protection Methodology Working Group
- Aliki van Heek, Netherlands, Economic Modeling Methodology Working Group

Safety Design Criteria for Sodium Fast Reactors, Ryodai Nakai, Japan

REACTOR ANALYSIS METHODS—I,

sponsored by RPD; cosponsored by MCD
Session Organizers: Alexander Stanculescu *(INL)*, Fausto Franceschini *(Westinghouse)*

Cochairs: Andrew Worrall *(ORNL)*, Fausto Franceschini *(Westinghouse)*
WINDSOR

8:30 A.M.
Depletion GPT-Free Sensitivity Analysis for Eigenvalue Problems, Christopher B. Kennedy, Hany S. Abdel-Khalik *(NCSU)*

8:55 A.M.
Perturbation and Sensitivity Tool Based on the VARIANT Option of DIF3D, M. A. Smith *(ANL)*, W. S. Yang *(Purdue Univ)*, A. Mohamed *(ANL)*, E. E. Lewis *(Northwestern Univ)*

9:20 A.M.
Mu-bar Sensitivities, Gerardo Aliberti, Richard D. McKnight *(ANL)*

9:45 A.M.
On the Possible Dependence of the Decay Ratio on the Void Reactivity Feedback, V. Dykin, C. Demazière, P. Vinai *(Chalmers Univ of Techn)*

10:10 A.M.
Higher Order Treatment on Temporal Derivative of Angular Flux for Time-Dependent MOC, Kosuke Tsujita, Tomohiro Endo, Akio Yamamoto *(Nagoya Univ)*, Yohei Kamiyama, Kazuki Kirimura *(Mitsubishi Heavy Industries, Ltd.)*

10:35 A.M.
Efficient Calculation Scheme with Preservation of Transmission Probabilities in the Method of Characteristics, Masato Tabuchi *(Nuclear Engineering Ltd.)*, Naoki Sugimura *(Nuclear Engineering, Ltd./Design Service Division)*, Akio Yamamoto, Tomohiro Endo *(Nagoya Univ)*

11:00 A.M.
SP3 Nodal Core Calculation with Alternating Direction One-Dimensional Semi-Analytic Nodal Solutions, Hee Jeong Jeong, Yeon Sang Jung, Dong Wook Lee, Un Chul Lee, Han Gyu Joo *(Seoul Natl Univ–Korea)*

11:25 A.M.
A New Semi-Implicit Direct Kinetics Method with Analytical Representation of Delayed Neutrons, J. E. Banfield *(Univ of Tennessee)*, S. P. Hamilton, K. T. Clarno *(ORNL)*, G. I. Maldonado *(Univ of Tennessee*

VALIDATION AND VERIFICATION–TUTORIAL—I,

sponsored by NCSD
Session Organizer and Chair: Katherin Goluoglu *(Univ of Florida)*

HAMPTON

8:30 A.M.
This tutorial session will discuss the requirements and techniques for a successful validation effort.

The tutorial will touch on several topics important to validating a code system. These topics include an overview of the requirements of ANS 8.24. The tutorial will discuss the use of a global validation versus process specific validations and the importance of defining an appropriate area of applicability for the validated code system. Statistical methods for determining a subcritical limit will be reviewed, as well as how much added margin is appropriate for a particular application. Appropriate sources of benchmarks will be discussed, and when it is appropriate to develop benchmark cases not currently available.

COMPUTATIONAL METHODS, sponsored by MCD

Session Organizer: Brian Franke *(SNL)*
Chair: Harsh Desai

SHEFFIELD

8:30 A.M.
Is Convergence Acceleration an Advantage for Neutron Transport Algorithms?, B. D. Ganapol *(Nuclear Consultants)*, Y. Wang, R. C. Martineau, F. N. Gleicher II *(INL)*

8:55 A.M.
Variational Nodal Method with Heterogeneous Nodes: Application to Reactor Analyses, Marco Marchetti, Andrei Rineiski *(KIT)*

9:20 A.M.
A Spectral Verification of the HELIOS-2 Lattice Physics Code, D. S. Crawford *(INL)*, B. D. Ganapol *(Nuclear Consultants)*, D. W. Nigg *(INL)*, C. A. Wemple *(Studvik)*

9:45 A.M.
Sparse Approximation of POD-Galerkin Generalized Polynomial Chaos, Shota Soga, Hany S. Abdel-Khalik *(NCSU)*

10:10 A.M.
A Scattering Correction Scheme for Image Reconstruction of Flash Radiography, Liangzhi Cao, Mengqi Wang, Hongchun Wu, Youqi Zheng *(Xi'an Jiaotong Univ)*

HYBRID MONTE CARLO DETERMINISTIC METHODS FOR REACTOR ANALYSIS, sponsored by RPD

Session Organizers: John C. Wagner *(ORNL)*, Hany Abdel-Khalik *(NCSU)*
Chair: Hany Abdel-Khalik

ROYAL PALM SALON 1

8:30 P.M.
Extending the SUBSPACE Hybrid Method for Eigenvalue Problems, Qiong Zhang, Hany S. Abdel-Khalik *(NCSU)*

8:55 A.M.
Response Expansion of Incident Angular Flux and Current for Transport Calculations, Kevin John Connolly *(Georgia Tech)*, Farzad Rahnema *(Naz Consulting LLC)*

9:20 A.M.
Global Variance Reduction for Monte Carlo Reactor Physics Calculations, Qiong Zhang, Hany S. Abdel-Khalik *(NCSU)*

9:45 A.M.
Multiset CMFD Acceleration of Source Convergence for Three-Dimensional Monte Carlo Reactor Calculations, Min Jae Lee, Han Gyu Joo *(Seoul Natl Univ-Korea)*, Deokjung Lee *(UNIST)*, Kord Smith *(MIT)*

10:10 A.M.
A Prototype for Coupling Deterministic DRAGON and Monte-Carlo MORET Codes for Criticality Calculations, Alexis Jinaphanh, Joachim Miss *(IRSN)*

10:35 A.M.
Multi-Physics Coupling Scheme in the Serpent 2 Monte Carlo Code, Jaakko Leppänen, Tuomas Viitanen *(VTT Technical Research Centre of Finland)*, Ville Valtavirta *(Aalto Univ, Finland)*

ADVANCES IN NON-HEU ^{99}MO/^{99m}TC PRODUCTION TECHNOLOGIES—III,

sponsored by BMD; cosponsored by AAD, IRD
Session Organizer and Chair: J. D. Robertson *(Univ of Missouri)*

ROYAL PALM SALON 2

8:30 A.M.
Thermal-Mechanical Analysis of a Low-Enriched Uranium Foil Based Annular Target for Molybdenum-99 Production, S. G. Govindarajan, G. L. Solbrekken *(Univ of Missouri, Columbia)*

8:55 A.M.
Robust Technology for Handling LEU-Foil Targets for Large Scale Production of Mo-99, A. Sherif El-Gizawy, Brian Graybill, Shane Corl, Annemarie Hoyer *(Univ of Missouri, Columbia)*

9:20 A.M.
Thermal-Mechanical Response of a Non-Uniformly Heated Nominally Flat and Curved Low Enriched Uranium Foil Based Molybdenum-99 Production Target, K. K. Turner, G. L. Solbrekken *(Univ of Missouri, Columbia)*

9:45 A.M.
Domestic Production of Mo-99: LEU Solution Technologies, A. J. Youker, D. C. Stepinski, S. Chemerisov, P. Tkac, M. Kalensky, D. Bowers, G. F. Vandegrift *(ANL)*

10:10 A.M.
Radioisotope Production Technology Demonstration Unit, Anatoly Blanovsky *(Westside Environmental Technol)*

10:35 A.M.
Test Plan for Qualification of Annular LEU Foil-Based Molybdenum-99 Production Targets, P. F. Makarewicz *(Univ of Missouri, Columbia)*, J. T. Creasy, J. S. Morrell *(B&W Y-12)*, L. J. Jollay *(Y-12 NSC)*

11:00 A.M.
Efficient and Timely Production of Valuable Radioisotopes, Alexander DeVolpi *(retired, former ANL)*, Itacil C. Gomes *(I.C. Gomes Consulting & Investment Inc.)*

DISCUSSION OF LOW-ENERGY NUCLEAR REACTIONS–PAPERS/PANEL, sponsored by MSTD

Session Organizer and Chair: Steven Krivit *(New Energy Times)*

ROYAL PALM SALON 3

PAPERS

8:30 A.M.

The Big Picture of Low-Energy Nuclear Reaction Research, Steven B. Krivit *(New Energy Times)*

8:55 A.M.

Electroweak Neutron Production via $e + p \rightarrow n + \nu$ and Capture During Lightning Discharges, Lewis G. Larsen *(Lattice Energy LLC)*

9:20 A.M.

Slow Neutron Generation by Plasma Excitation in Electrolytic Cell, Domenico Cirillo *(Cirillo_lab)*

9:45 A.M.

Transmutation Reactions Induced by Deuterium Permeation Through Nano-Structured Pd Multilayer Thin Film, Yasuhiro Iwamura, Takehiko Itoh *(Mitsubishi Heavy Industries, Ltd.)*, Y. Terada *(Japan Synchrotron Radiation Research Institute)*, T. Ishikawa *(Coherent X-ray Optics Laboratory, SPring-8/RIKEN)*

PANEL DISCUSSION

10:10 A.M.

This session will explore the surprising possibility that highly energetic nuclear reactions and elemental transmutations result from low-energy nuclear reactions (LENRs). Although the term was not used a century ago, examples of LENRs go back that far. LENRs are weak interactions and neutron-capture processes that occur in nanometer-to-micron scale regions on surfaces in condensed matter at room temperature. Although nuclear, LENRs are not based on fission or any kind of fusion, both of which primarily involve the strong interaction.

WEDNESDAY, NOVEMBER 14, 2012, 1:00 P.M.

HIGHLIGHTS OF NPIC & HMIT 2012—II: HUMAN-MACHINE INTERFACE TECHNOLOGIES–PANEL,

sponsored by HFICD

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

Cochairs: Ronald Boring *(INL)*, Joseph A. Naser *(EPRI)*

PACIFIC SALON 1

1:00 P.M.

PANELISTS:

Innovative Users of Advanced Technologies for Productivity Improvements, Joseph A. Naser *(EPRI)*

Multi-Unit Operations in Non-Nuclear Systems: Lessons Learned for Small Modular Reactors, John O'Hara, James Higgins *(BNL)*, Amy D'Agostino *(NRC)*

Human Factors Engineering Program Review Model *(NUREG-0711)* Revision 3: Update Methodology and Key Revisions, John O'Hara, James Higgins *(BNL)*, Stephen Fleger *(NRC)*

Beyond Integrated System Validation: Use of a Control Room Training Simulator for Proof-of-Concept Interface Development, Ronald Boring, Vivek Agarwal *(INL)*

Towards a Unified HFE Process for the Nuclear Industry, Jacques Hugo *(INL)*

A Main Control Room Simulation Facility for NPP Human Performance, Human Machine Interface Research, Carl Elks, Stephanie Guerlain, Nathan Lau, Barry Johnson *(Univ of Virginia)*, Bob Bailey *(CAER)*, Abbe Macbeth *(Noldus Technology)*, Robert Boire, Greg Zakaib *(L-3 Communication MAPPS Inc.)*

ADVANCES IN SEPARATION METHODS FOR THE RECYCLE OF USED FUELS, sponsored by FCWMD

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

PACIFIC SALON 2

1:00 P.M.

Nuclear Fuel Cycle R&D in the UK, Fiona Rayment, Tim Tinsley *(National Nuclear Lab)*

1:25 P.M.

Recovery of Americium and Curium from Mark-42 Materials for Heavy Actinide Production, Brad D. Patton, Dennis Benker, Emory D. Collins, Sharon M. Robinson *(ORNL)*

1:50 P.M.

An In-situ Alpha Radiolytic Study of Tributyl Phosphate, Jeremy Pearson, Oliver Jan, Alicia Wariner, George Miller, Mikael Nilsson *(Univ of California, Irvine)*

2:15 P.M.

Scale-Up Effect of Oil-Water Countercurrent Centrifugal Extractor on Extraction Performance, Masahiko Nakase, Kenji Takeshita *(Tokyo Inst Technology)*

2:40 P.M.

Kinetics of Fission Product Fluorination with Sulfur Hexafluoride, Ricardo D. Torres, Michael J. Martinez-Rodriguez, Joshua R. Gray, Paul S. Korinko, Thad M. Adams *(SRNL)*

3:05 P.M.

Alternate Fluorination Approaches for Reactive Gas Recycle of Used Nuclear Fuel, D. Inabinett *(SRNL)*, G. Cerefice *(UNLV)*, T. Knight *(Univ of South Carolina)*, T. Adams, J. Gray *(SRNL)*

3:30 P.M.

Smart Nanophase Extractors for Tailored Fission Product Sequestration, Ricardo D. Torres, Lindsay T. Sexton, Steven M. Serkiz *(SRNL)*, Silvia S. Jurisson *(Univ of Missouri, Columbia)*, Charles R. Martin *(Univ of Florida)*

EDUCATION, TRAINING, AND WORKFORCE DEVELOPMENT: GENERAL, sponsored by ETWDD

Session Organizer: John Bennion *(GEH)*
Chair: Bulent Alpay *(GE Hitachi Nuclear Energy)*

PACIFIC SALON 3

1:00 P.M.
Creative Writing on the History of Nuclear Technology, Mark Reed *(MIT)*

1:30 P.M.
Undergraduate Nuclear Science Programs at a Historically Black University, Dimitri Tamalis, Rose Stiffin, Ayivi Huisso *(Florida Memorial Univ)*, Sheldon Landsberger *(Univ of Texas, Austin)*

2:00 P.M.
Nuclear Engineering Master Thesis Projects at Politecnico di Torino, A. Barbarino, S. Dulla, P. Ravetto *(Politecnico di Torino-Italy)*

2:30 P.M.
Development of a UNLV Nuclear Criticality Safety Program in Conjunction with Support by URENCO USA, Charlotta E. Sanders *(UNLV)*, Richard R. Lehman *(URENCO USA)*

3:00 P.M.
Public Acceptance of Nuclear in Slovenia After the Fukushima Accident, Igor Jenčič *(Jožef Stefan Institute)*

3:30 P.M.
Developing an Educational and Experiential Pipeline for the Next Generation of Nuclear Security Professionals, Howard L. Hall, Bruce R. Shelander Jr. *(Univ of Tennessee)*, James N. Sumner, Alan Icenhour *(ORNL)*, Joseph Stainback, Chris Clark, Chris Robinson *(Y-12 NSC)*, Eric Abelquist, Cathy Fore, Arlene Garrison *(Oak Ridge Associated Universities)*, Steven E. Skutnik *(Univ of Tennessee)*, M. Dawn Eipeldauer *(ORNL)*

THERMAL HYDRAULICS: GENERAL—II, sponsored by THD

Cochairs: Brian Woods *(Oregon State Univ)*,
Hishashi Ninokata *(Politecnico di Milano)*

SAN DIEGO

1:00 P.M.
Development of CFD Models to Support LEU Conversion of ORNL's High Flux Isotope Reactor, Vaibhav Khane *(Missouri Univ Sci Technol)*, Prashant K. Jain, James D. Freels *(ORNL)*

1:25 P.M.
A MATLAB Code for the Thermal Performance Evaluation of a Low-Temperature DRACS Test Facility, Q. Lv, I. Adams, X. Wang, X. Sun, R. N. Christensen, T. E. Blue *(Ohio State)*, G. Yoder, D. Wilson *(ORNL)*, P. Sabharwall *(INL)*

1:50 P.M.
Development of VHTR Thermal Fluids PIRT and Identification of Demonstration Test Items, Seong Su Jeon, Su Hyun Hwang, Soon Joon Hong, Byung Chul Lee *(FNC Technology Co., Ltd.)*, Chang Wook Huh, Chang Yong Jin *(KINS)*

2:15 P.M.
Fluid to Fluid Modeling of Critical Heat Flux for SMART Rod Bundles, Seong Jin Kim, Kyong Won Seo, Hyuk Kwon, Dae Hyun Hwang *(KAERI-Korea)*

2:40 P.M.
Modeling on Hydrogen Diffusion at a Multi-Compartment in the Containment Building with Experimental Study, Hsun-Chia Lin, Chih-Hung Lin, Yuh-Ming Ferng *(National Tsing Hua Univ)*

3:05 P.M.
Study on Sea Salt Solution on Reflood Heat Transfer During LOCA in a Long Vertical Tube, Seung Won Lee, Seong Man Kim, In Cheol Bang *(UNIST)*

3:30 P.M.
A Mixed-Averaging Homogenization Method for Temperature Distribution in the Fuel Compact of HTGRs, Adji Achmad Jaka Bramantya, Hee Cheon No *(KAIST)*

GENERATION IV INTERNATIONAL FORUM: THE NEXT DECADE—II–PANEL, sponsored by OPD

Chair: Harold McFarlane *(INL)*

CALIFORNIA

Six advanced reactor concepts (systems) were chosen for further investigation and development in the original Gen IV selection process. GIF members engaged voluntarily and to various degrees in the collaborative R&D to address key challenges to deployment. This panel features an overview of each of the systems, the progress made, and challenges that remain as viewed by lead researchers from the international teams.

Moderator: Harold McFarlane, USA, GIF Technical Director

Sodium Fast Reactor, Dohee Hahn, Republic of Korea

Very High Temperature Reactor, Fu Li, China

Super Critical Water Cooled Reactor, Christina Koehly, Germany

Gas Fast Reactor, Didier Haas, Belgium

Lead Fast Reactor, Craig Smith, USA

Molten Salt Reactor, Jerome Serp, France

"I WONDER IF ..." SPECIAL SESSION IN HONOR OF JOHN ROWLANDS, sponsored by RPD

Session Organizers: Massimo Salvatores *(CEA)*, Giuseppe Palmiotti *(INL)*
Chair: Massimo Salvatores
All invited.

WINDSOR

1:00 P.M.
Reactor Physics Development from the Early Sixties to Yesterday: John Rowlands Contribution, J. Bouchard, M. Salvatores *(CEA France)*

1:20 P.M.
John Rowlands' Contribution to the Development of Nuclear Science and Engineering, Phillip J. Finck, David J. Hill *(INL)*

1:40 P.M.
The Ongoing Impact of the U.S. Fast Reactor Integral Experiments Program, John D. Bess *(INL)*, Michael A. Pope *(Battelle Energy Alliance)*, Harold F. McFarlane *(INL)*

2:00 P.M.
John Rowlands and the "Journey" to the Roots of Transport Equation Solvers, R. Dagan *(KIT Germany)*

2:20 P.M.
On Perturbation Components Correspondence Between Diffusion and Transport, G. Palmiotti *(INL)*

2:40 P.M.
Improvement of Reactivity Temperature Coefficient Calculation. Contribution of John Rowlands, A. Santamarina *(CEA)*

3:00 P.M.
I Wonder If the CADENZA Assemblies Can Resolve Pin-Plate Discrepancies, Richard D. McKnight *(ANL)*

3:20 P.M.
John L. Rowlands Contributions to Reactor Physics, G. Rimpault *(CEA, Cadarache)*

3:40 P.M.
Memories of John Rowlands and an Overview of His to the UK Reactor Programme, Jim Gulliford *(OECD/NEA)*

VALIDATION AND VERIFICATION–TUTORIAL—II, sponsored by NCSD

Session Organizer and Chair: Katherin Goluoglu *(Univ of Florida)*

HAMPTON

1:00 P.M.
This tutorial session will discuss the requirements and techniques for a successful validation effort.

The tutorial will touch on several topics important to validating a code system. These topics include an overview of the requirements of ANS 8.24. The tutorial will discuss the use of a global validation versus process specific validations and the importance of defining an appropriate area of applicability for the validated code system. Statistical methods for determining a subcritical limit will be reviewed, as well as how much added margin is appropriate for a particular application. Appropriate sources of benchmarks will be discussed, and when it is appropriate to develop benchmark cases not currently available.

MATHEMATICAL MODELING, sponsored by MCD

Session Organizer: Brian Franke *(SNL)*
Chair: Paul Hulse *(Sellafield)*

SHEFFIELD

1:00 P.M.
A Novel Extension of Chord Length Sampling Method for TRISO-Type Applications, Chao Liang, Wei Ji *(RPI)*

1:25 P.M.
A New Analytical Model to Evaluate Dancoff Factors in Stochastic Media, Elise N. Pusateri, Wei Ji *(RPI)*

1:50 P.M.
A Flux-Limited Diffusion Method for Simulating Radiative Shocks, Ryan G. McClarren, Taylor K. Lane *(Texas A&M)*

2:15 P.M.
Stochastic Optimization of Nuclear Fuel Cycle Deployment Scenarios Using VISION, Ross Hays, Paul J. Turinsky *(NCSU)*

2:40 P.M.
On Efficient Surrogate Model Construction for Criticality Problems, Shota Soga, Hany S. Abdel-Khalik *(NCSU)*

3:05 P.M.
Modeling Wall-Resolved Turbulent Flows Using Spectral Cascade-Transport Approach, Cameron S. Brown, Igor A. Bolotnov *(NCSU)*

3:30 P.M.
Scattered Photon Transport Simulation in X-ray Imaging System, Xin Liu *(Missouri University of S&T)*

THE DOE RUSSIAN HEALTH STUDIES PROGRAM: STATUS AND FUTURE–PANEL, sponsored by RPSD

Session Organizer: Arzu Arpan *(Westinghouse)*
Chair: Nolan Hertel *(Georgia Tech)*

ROYAL PALM SALON 1

The Department of Energy's (DOE) Russian Health Studies Program assesses worker and public health risks from radiation exposure resulting from nuclear weapons production activities in the former Soviet Union. U.S./Russian cooperation was initiated in 1994 under a bi-national agreement. The work is conducted under the management of Joint Coordinating Committee for Radiation Effects Research (JCCRER), of which DOE is the lead U.S. agency and the Federal Medical Biological Agency (FMBA) is the lead Russian agency. The goals of this program are to clarify the relationship between health effects and chronic, low-to-medium dose radiation exposures; estimate cancer risks from exposure to gamma, neutron, and alpha radiation; and provide information to the national and international organizations that determine radiation protection standards and practices. Presently, DOE supports epidemiologic studies, radiation dose reconstruction studies, and a tissue repository. All research is focused on workers at the Mayak Production Association (Mayak), which is Russia's first nuclear weapons production facility, and on the residents of the communities surrounding this facility. This session of invited panelists will discuss the present status of the Russian Health Studies Program dosimetry, epidemiological results, and their potential impact.

PANELISTS:

Overview of the DOE Russian Health Studies Program, Barrett Fountos *(DOE)*

Radiation Dosimetry for the Techa River Population and Radiation Dosimetry for the Mayak Production Association Workers, Bruce Napier *(PNNL)*

Techa River Population Cancer Morbidity, Faye Davis *(Univ of Alberta)*

TRITIUM IN FISSION AND FUSION—I,

sponsored by IRD; cosponsored by BMD
Session Organizer and Chair: Tom Voss *(Cybermesa)*. *All invited.*

ROYAL PALM SALON 2

1:00 P.M.
Discussion of Tritium Safety in Fusion Reactors, Satoshi Fukada *(Kyushu Univ)*, *invited*

1:25 P.M.
Commercial Light Water Production of Tritium: Update and Path Forward, Cheryl K. Thornhill *(PNNL)*

1:50 P.M.
Neutronics Experiments for the European ITER Test Blanket Modules, A. Klix *(KIT)*, P. Batistoni *(ENEA C.R. Frascati)*, D. Gehre *(Technical University of Dresden)*, W. Pohorecky *(AGH-University of Science and Technology Cracow)*

2:15 P.M.
The Standardization of Tritiated Water at NPL by Internal Gas Proportional Counting, Hilary Phillips, Lena Johansson *(National Physical Laboratory)*

MATERIALS SCIENCE AND TECHNOLOGY: GENERAL, sponsored by MSTD

Session Organizer: Ken Geelhood *(PNNL)*
Chair: Travis Knight *(Univ of South Carolina)*

ROYAL PALM SALON 3

1:00 P.M.
Characteristics of Liquidus Variations in the Low-Carbon Regime of the Uranium-Carbon System, N. R. Gubel, J. S. Morrell, A. C. Stowe *(Y-12 NSC)*

1:25 P.M.
Chemical Reactivity Suppression of Liquid Sodium by Suspended Nanoparticles, Jun-ich Saito, Kuniaki Ara *(JAEA-Japan)*

1:50 P.M.
Corrosion Resistance of Materials at High Temperature Under Gas Phase of Sulfuric Acid for IS Cycle, Young Soo Kim, Jin Young Choi, In Jin Sah, Hee Cheon No, Chang Heui Jang *(KAIST)*

2:15 P.M.
In-Situ Raman Spectroscopic Analysis of Surface Oxide Films on Ni-Base Alloy/LAS Dissimilar Metal Weld Interfaces, Jong Jin Kim, Kyoung Joon Choi *(Ulsan Natl Inst Sci Tech)*, Ji Hyun Kim *(UNIST)*

2:40 P.M.
Metal Corrosion Resistances in High Temperature Hydriodic Acid Gas Environment for SI Cycle, Jin Young Choi, Young Soo Kim, In Jin Sah, Hee Cheon No, Changheui Jang *(KAIST)*

3:05 P.M.
Simulation of the Aggressive Loading Influence on Increased Materials Durability, A. M. Agapov, A. I. Ksenofontov, E. I. Kurbatova *(National Research Nuclear Univ -Moscow Engineering Physics Institute)*, J. L. Regens *(Univ of Oklahoma Health Sciences Center)*

3:30 P.M.
Three-Dimensional Positron Annihilation Momentum Spectroscopy (3DPAMS) of Nuclear Detection Materials, Stefan B. Fagan-Kelly *(Air Force Institute of Technology)*, Christopher S. Williams *(SNL)*, Larry W. Burggraf *(Air Force Institute of Technology)*

Thursday • November 15, 2012

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

8:00 a.m – 12:30 p.m. Advances in Thermal Hydraulics: Technical Sessions
(see page 50)

8:30 a.m – 12:30 p.m. Fukushima 2012 Meeting: Technical Sessions
(see page 46)

8:30 a.m. – 12:00 p.m. 2012 ANS Winter Meeting: Technical Sessions
- Operations and Power: General
- Fuel Cycle and Waste Management: General—I
- Reactor Analysis Methods—II
- Thermal Hydraulics: General—III
- Department of Energy—Light Water Reactor Sustainability Program
- IAEA Reactor Physics and Technology Development Activities—I
- Nuclear Criticality Safety Standards–Forum
- Uncertainty Quantification, Sensitivity Analysis, and Computational Methods
- Radiation Protection and Shielding–Roundtable
- Tritium in Fission and Fusion—II
- Reactor Safety System and Containment Degradation Research
- RSICC: Celebrating 50 Years of Service to the Nuclear Research Community–Panel

1:30 p.m – 6:05 p.m. Advances in Thermal Hydraulics: Technical Sessions
(see page 48)

1:00 p.m. – 4:00 p.m. 2012 ANS Winter Meeting: Technical Sessions
- Advanced Reactors
- Fuel Cycle and Waste Management: General—II
- Human Factors, Instrumentation, and Controls: General
- IAEA Reactor Physics and Technology Development Activities—II
- Data Analysis in Nuclear Criticality Safety—II
- Physics Issues for Small, Compact Reactors
- Radiation Protection and Shielding: General
- Nuclear Fuels and Materials

Thursday, November 15, 2012, 8:30 a.m.

Operations and Power: General, sponsored by OPD

Chair: Gale Hauck *(Westinghouse)*

Pacific Salon 1

8:30 a.m.
RBWRs for Fissioning Almost All Uranium and Transuraniums, Renzo Takeda, Junichi Miwa *(Hitachi, Ltd., Hitachi Research Laboratory),* Kumiaki Moriya *(GE-Hitachi Nuclear)*

8:50 a.m.
A Combined Cycle Power Conversion System for the Next Generation Nuclear Power Plant, Patrick McDaniel, Cassiano R. de Oliveira, Bahman Zohuri, James Cole *(Univ of New Mexico)*

9:10 a.m.
Study of Pebbles Residence Time Distributions in a Pebble Bed Test Reactor, Vaibhav Khane, Muthanna Al-Dahhan *(Missouri Univ Sci Tech)*

9:30 a.m.
Development of Reliable In-Core Power Monitoring System, Yury Tsoglin *(Society of Sciences & Engineering of Dresden, Germany),* Anatoly Blanovsky *(Westside Environmental Technology)*

9:50 a.m.
Development of Functional Equipment Group for Phased On-Line Maintenance, Jung-Wun Kim, Tae-Young Song, Dong-Un Yeom *(KHNP Central Research Institute)*

10:10 a.m.
A Development Plan of 3rd Generation PRA Software (HAPS), Ji-Yong Oh, Jin-Woo Hyun, Ho-Rim Moon *(KHNP Central Research Institute)*

10:30 a.m.
Equipment/Procedure for Cleaning Remote Process Jumper Internal Passage, Jeffrey T. Coughlin *(SRNL)*

10:50 a.m.
Remote Robotic Installation of Fuel Guide Tube Standpipe Extension Collars, Edward Petit de Mange *(Diakont)*

Fuel Cycle and Waste Management: General—I, sponsored by FCWMD

Session Organizer: Jack Law *(INL)*
Chair: Alan Icenhour *(ORNL)*

Pacific Salon 2

8:30 a.m.
A Characteristics-Based Approach to Waste Classification in Advanced Nuclear Fuel Cycles Using the Fuel-Cycle Integration and Tradeoffs (FIT) Model, Denia Djokic *(Univ of California, Berkeley)*, Steven Piet, Layne Pincock, Nick Soelberg *(INL)*

8:55 a.m.
Plugging of Deep Boreholes Used for HLW Disposal, A. Salazar, E. A. Bates, M. J. Driscoll *(MIT)*

9:20 a.m.
What Should Be Collocated at Repository Sites for Once-Through

Fuel Cycles?, Charles Forsberg *(MIT)*

9:45 A.M.
Evaluation of Disposition Options for the Special Actinides in the Mark-42 and Mark-18A Target Materials, Sharon M. Robinson *(ORNL)*, Jeff S. Allender *(SRNL)*, Charles W. Alexander, Emory D. Collins, Brad D. Patton *(ORNL)*

10:10 A.M.
Separation of Ruthenium by Electro Oxidation Method Using Redox Catalyst, Pravati Swain, S. Annapoorani, R. Srinivasan, C. Mallika, U. Kamachi Mudali, R. Natarajan (*Indira Gandhi Centre for Atomic Rsch)*

10:35 A.M.
Separation Study of Spent Fuel Hull on Vol-Oxidizer Reactor in a Hotcell, Young Hwan Kim, Jae Won Lee, Han Soo Lee, Geun Il Park, Jung Won Lee, Kwang Hun Cho *(KAERI-Korea)*

REACTOR ANALYSIS METHODS—II,

sponsored by RPD; cosponsored by MCD
Session Organizers: Alexander Stanculescu *(INL)*, Fausto Franceschini *(Westinghouse)*
Cochairs: Andrew Worrall *(ORNL)*, Fausto Franceschini

PACIFIC SALON 3

8:30 A.M.
Overlapping Local/Global Iteration Method Applied to 2-D Whole-Core Transport Calculation, Seungsu Yuk, Nam Zin Cho *(KAIST)*

8:55 A.M.
On Pin-by-Pin Discontinuity Factors, G. Dante *(Univ of Michigan)*, R. Sanchez, I. Zmijarevic *(CEA)*

9:20 A.M.
On-the-Fly Generation of Differential Resonance Scattering PDF, Eva E. Sunny, William R. Martin *(Univ of Michigan)*

9:45 A.M.
Preliminary Assessment of Resonance Interference Consideration by Using 0-D Slowing Down Calculation in the Embedded Self-Shielding Method, Kang-Seog Kim, Mark L. Williams *(ORNL)*

10:10 A.M.
Eliminating Flux Updates from the Discrete Generalized Multigroup Method, Nathan A. Gibson, Benoit Forget *(MIT)*

10:35 A.M.
Modeling of BWR Control Blades to Capture Skin Effect, Walid A. Metwally *(GNF)*, Leonid Pogosbekyan *(Global Nuclear Fuel-Americas)*

11:00 A.M.
Effectiveness of the Nodal Equivalence Theory in CANDU Reactor, Yonghee Kim, Woo Song Kim, Donny Hartanto, Bum Hee Cho *(KAIST)*

11:25 A.M.
Correction of Spectral Interference Effect on Pin-by-Pin BWR Core Analysis, Tatsuya Fujita, Tomohiro Endo, Akio Yamamoto *(Nagoya Univ)*

THERMAL HYDRAULICS: GENERAL—III, sponsored by THD

Cochairs: Paolo Ferroni *(Westinghouse)*, DuWayne Schubring *(Univ of Florida)*

SAN DIEGO

8:30 A.M.
An Analysis of Multidimensional Models of Gas/Liquid Flows, Hong Jiao, M. Z. Podowski *(RPI)*

8:55 A.M.
First Validation of the FRENETIC Code Thermal-Hydraulic Model Against the ENEA Integral Circulation Experiment, R. Zanino, R. Bonifetto *(Politecnico di Torino-Italy)*, A. Ciampichetti, I. Di Piazza *(enea brasimone)*, L. Savoldi Richard *(Politecnico di Torino-Italy)*, M. Tarantino *(enea brasimone)*

9:20 A.M.
Analysis of Thermal-Hydraulic Safety Features for Ultra-Long Cycle Fast Reactor Using MATRA-LMR, Han Seo, Sarah Kang *(Ulsan Natl Inst Sci Tech)*, In Cheol Bang *(UNIST)*

9:45 A.M.
Pressure Drop Correction Factor for a Tight Lattice Bundle, Hyuk Kwon, S. J. Kim, K. W. Seo, D. H. Hwang, W. J. Lee *(KAERI–Korea)*

10:10 A.M.
Investigate the Geometric Influence of Model for Thermal-Hydraulic Characteristics in Rod Bundle Simulation, Yung-Shin Tseng, Ting-Kang Tseng, Yuh-Ming Ferng *(National Tsing Hua Univ)*

10:35 A.M.
Experimental Observations of Thermal Mixing Characteristics in T-Junction Piping, Mei-Shiue Chen, Yuh-Ming Ferng, Huai-En Hsieh, Bau-Shi Pei *(Natl Tsing Hua Univ)*

DEPARTMENT OF ENERGY—LIGHT WATER REACTOR SUSTAINABILITY PROGRAM, sponsored by OPD

Session Organizer: Cindie Jensen *(INL)*
Chair: Kathryn McCarthy *(INL)*

CALIFORNIA

8:30 A.M.
Harvesting Materials from the Decommissioned Zion 1 & 2 Nuclear Power Plants for Aging Degradation Evaluation, Thomas M. Rosseel, Randy K. Nanstad, Dan J. Naus *(ORNL)*

8:55 A.M.
Current and Ongoing Cable Aging Research to Support Life Extension Decisions, Gregory Von White II, Robert Bernstein, Kenneth T. Gillen *(SNL)*

9:20 A.M.
Design and Validation of Control Room Upgrades Using a Research Simulator Facility, Ronald L. Boring, Vivek Agarwal, Jeffrey C. Joe, Julius J. Persensky *(INL)*

9:45 A.M.
Integrating Safety Assessment Methods Using the Risk Informed Safety Margins Characterization (RISMC) Approach, Curtis Smith, Diego Mandelli *(INL)*

10:10 A.M.
Engineering Challenges of LWR Advanced Fuel Cladding

Technology in Preparation for In-Reactor Demonstrations, K. E. Barrett, M. P. Teague, I. J. van Rooyen, S. M. Bragg-Sitton, K. D. Ellis, C. R. Glass, G. A. Roth, K. M. McHugh, J. E. Garnier, G. W. Griffith, M. C. Teague *(INL)*, G. L. Bell, L. L. Snead, Y. Katoh *(ORNL)*

IAEA Reactor Physics and Technology Development Activities—I, sponsored by RPD

Session Organizers: Danas Ridikas *(IAEA)*, Alexander Stanculescu *(INL)*
Chair: Danas Ridikas
All invited

Windsor

8:30 A.M.
Nuclear Data Needs in Nuclear Reactor Physics, Andrej Trkov *(Jožef Stefan Inst)*, Danas Ridikas *(IAEA-Austria)*

8:55 A.M.
RERTR Programme on Core Conversion of MNSR from HEU to LEU, Sunday A. Jonah *(Centre for Energy Research and Training, A.B.U., Zaria)*

9:20 A.M.
From Benchmarking to Core Conversion of Sub-Critical Assemblies in Belarus within the IAEA Coordinated Activities on ADS, Hanna Kiyavitskaya, Ch. Routkovskaya, Yu. Fokov *(Joint Institute for Power & Nuclear Research - SOSNY)*, Pablo Adelfang, Danas Ridikas *(IAEA-Austria)*

9:45 A.M.
Overview of the Recent IAEA Activities on Reactor Physics under Sub-programme Research Reactors, Danas Ridikas, Pablo Adelfang, Amgad Shokr *(IAEA-Austria)*

10:10 A.M.
IAEA Coordinated Research Project on Benchmarking of RR Experiments from 10 Facilities Worldwide, Alicia Doval *(INVAP)*, Pablo Adelfang, Danas Ridikas, Amgad Shokr *(IAEA)*

10:35 A.M.
Advanced Materials Research in Nuclear Energy Sector Using Neutron Beams, R. Coppola *(ENEA-Casaccia)*, D. Ridikas, V. Inozemtsev *(IAEA-Austria)*

Nuclear Criticality Safety Standards–Forum, sponsored by NCSD

Session Organizer: Davis Reed *(ORNL)*
Chair: Allison Miller *(LANL)*

Hampton

Uncertainty Quantification, Sensitivity Analysis, and Computational Methods, sponsored by MCD

Session Organizer: Brian Franke *(SNL)*
Cochairs: Jeremy Conlin *(LANL)*, Thomas Sutton *(KAPL)*

Sheffield

8:30 A.M.
Advanced Methods for Eigenvalue Sensitivity Coefficient Calculations, Christopher M. Perfetti, William R. Martin *(Univ of Michigan)*, Bradley T. Rearden, Mark L. Williams *(ORNL)*

8:55 A.M.
Subspace Methods for Markov-Chain Monte Carlo, Jason M. Hite, Hany S. Abdel-Khalik *(NCSU)*

9:20 A.M.
Pre-Processing of Cross-Sections Using Dimensionality Reduction Techniques, D. Mandelli, C. Rabiti, A. Alfonsi *(INL)*

9:45 A.M.
Reduced Order Modeling for Multi-Physics Problems, Youngsuk Bang, Hany S. Abdel-Khalik *(NCSU)*

10:10 A.M.
Immersed Finite Element Method Versus Immersed Finite Volume Method for the Simulation of Fluid Flow Problems, Angelo Frisani, Yassin A. Hassan *(Texas A&M)*

10:35 A.M.
Combining Projection Pursuit and Hybrid Subspace Methods for Reduced Order Modeling, Mohammad G. Abdo, Youngsuk Bang, Hany S. Abdel-Khalik *(NCSU)*

Radiation Protection and Shielding–Roundtable, sponsored by RPSD

Session Organizer: Arzu Alpan *(Westinghouse)*
Chair: Eric Burgett *(Idaho State Univ)*

Royal Palm Salon 1

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.

Tritium in Fission and Fusion—II, sponsored by IRD; cosponsored by BMD

Session Organizer and Chair : Tom Voss *(Cybermesa)*

Royal Palm Salon 2

8:30 A.M.
Tritium Fuel Cycle for Direct-Drive Inertial Fusion Reactors Using Microfluidics, W. T. Shmayda, D. R. Harding, T. B. Jones *(Univ of Rochester)*

8:55 A.M.
Dependence of Tritium Release from Stainless Steel on Temperature and Water Vapor, W. T. Shmayda, M. Sharpe, A. M. Boyce, R. Shea, B. Petroski *(Univ of Rochester)*

9:20 A.M.
Tritium Management in Fluoride-Salt-Cooled High-Temperature Reactors (FHRs), Nathan Andrews, Charles Forsberg *(MIT)*

9:45 A.M.
Retrospective Dose Estimate of Metallic Tritium Compounds, Robert Morris, Melton Chew, Samuel Chu, Leo Faust, Billy Smith, Eugene Potter *(M. H. Chew & Associates, Inc.)*

REACTOR SAFETY SYSTEM AND CONTAINMENT DEGRADATION RESEARCH, sponsored by NISD

Session Organizer: Charles (Chip) Martin *(DNFSB)*
Chair: Herbert Massie *(DNFSB)*

ROYAL PALM SALON 3

8:30 A.M.
ECCS Water Management Initiative at Catawba and McGuire Nuclear Stations, Eric Henshaw, Frederick J. Twogood *(Duke Energy)*

8:55 A.M.
Application of Modern CSAU to Reactor System Safety Analysis Using IET Data, Brian Hallee, Hu Luo, Jeffrey Luitjens, Qiao Wu *(Oregon State Univ)*

9:20 A.M.
Multi-Objective Optimization of Surveillance Requirements for Ageing Equipment, Duško Kančev *(Jozef Stefan Institute)*, Marko Čepin *(Univ of Ljubljana)*, Blaže Gjorgiev *(Jozef Stefan Institute)*

9:45 A.M.
Development of Aging Management Program for Tehran Research Reactor Concrete Containment, Mahsa Ebrahimi *(Seoul Natl Univ-Korea)*, Rahman Eghbali *(IKIU)*, Kune Y. Suh *(Seoul Natl Univ-Korea)*

RSICC: CELEBRATING 50 YEARS OF SERVICE TO THE NUCLEAR RESEARCH COMMUNITY–PANEL, sponsored by RPSD

Session Organizer and Chair: Timothy Valentine *(ORNL)*

GARDEN ONE

In celebration and recognition of the 50th anniversary of the Radiation Safety Information Computational Center (RSICC), this special session is being held to discuss the importance of information analysis centers such as RSICC as it relates to the acquisition, selection, storage, and retrieval of scientific information as well as the evaluation, analysis, and synthesis of the body of information that is critical for scientific debate and deliberation. Panelists will discuss the relevant codes, data, and benchmarks that are maintained by and made available from RSICC as well as the importance of collaborations between RSICC and similar international organizations to promote the exchange of scientific information and foster greater cooperation in the scientific community. All speakers are invited panelists.

PANELISTS:
- Tim Goorley *(LANL)*
- Brad Rearden *(ORNL)*
- Jim Gulliford *(OECD)*

THURSDAY, NOVEMBER 15, 2012, 1:00 P.M.

ADVANCED REACTORS, sponsored by OPD

Chair: Art Wharton *(Westinghouse)*

PACIFIC SALON 1

1:00 P.M.
FHR Direct Reactor Air Cooling System for Decay-Heat Removal Initiated by Salt Thawing and Warming, Charles Forsberg *(MIT)*

1:20 P.M.
Process Heat Characteristics of Fluoride-Salt-Cooled High-Temperature Reactors with Air-Brayton Combined-Cycle Power Systems, Charles Forsberg *(MIT)*

1:40 P.M.
Passive Decay Heat Removal Systems with Low-Temperature Shutdown for Fluoride-Salt-Cooled High-Temperature Reactors (FHR), Andira Ramos *(Florida International Univ)*, Charles Forsberg *(MIT)*

2:00 P.M.
Preventing Large Radionuclide Releases During Severe Accidents in Fluoride-Salt-Cooled High-Temperature Reactors, A. Maragh, M. J. Minck, Charles W. Forsberg *(MIT)*

2:20 P.M.
Fluoride-Salt-Cooled High-Temperature Reactor (FHR) with Silicon-Carbide-Matrix Coated-Particle Fuel, C. W. Forsberg *(MIT)*, K. A. Terrani, L. L. Snead, Y. Katoh *(ORNL)*

2:40 P.M.
Development of Risk Metrics for the Fluoride Salt-Cooled High Temperature Reactor, Edward D. Blandford *(Stanford)*, Michael R. Laufer, Per F. Peterson *(Univ of California, Berkeley)*

3:00 P.M.
Passive Decay Heat Removal Strategies for the Fluoride Salt-Cooled High-Temperature Reactor (FHR), E. D. Blandford *(Stanford)*, C. W. Forsberg *(MIT)*, P. F. Peterson *(Univ of California, Berkeley)*

3:20 P.M.
Chemical Separation of Primary and Intermediate Salts after Heat Exchanger Failures in Fluoride-Salt-Cooled High-Temperature Reactors, Mark Massie, Charles Forsberg *(MIT)*

FUEL CYCLE AND WASTE MANAGEMENT: GENERAL—II, sponsored by FCWMD

Session Organizer: Jack Law *(INL)*
Chair: Bill Del Cul *(ORNL)*

PACIFIC SALON 2

1:00 P.M.
U.S. Chemical Safety Board Reports and Relevant Guidance for Nuclear Chemical Facilities, Lyndsey Morgan *(Vanderbilt Univ)*, James A. Hutton *(DOE)*, James H. Clarke, Steven Krahn *(Vanderbilt Univ)*

1:25 P.M.
A Monte Carlo Approach to Uranium Front End Market Analysis, Erich Schneider, Urairisa Phathanapirom *(Univ of Texas, Austin)*, Roderick Eggert, Eric Segal *(CSM)*

1:50 P.M.
Practicable Performance Criteria for the Volatile Radionuclide Removal Efficiencies, R. T. Jubin *(ORNL)*, N. R. Soelberg *(INL)*, D. M. Strachan *(PNNL)*, G. Ilas *(ORNL)*

2:15 P.M.
CFD Heat Transfer Analysis and Scaling Law Development for the Air Passage of a Vertical Concrete Cask, Hyeun Min Kim, Hee Cheon No *(KAIST)*, Ki Seog Seo *(KAERI-Korea)*

2:40 P.M.
CFD Analysis of Effective Thermal Conductivity of a Spent Nuclear

Fuel Assembly in Vertical Dry Storage Casks, Hyeun Min Kim, Hee Cheon No *(KAIST)*, Ki Seog Seo *(KAERI-Korea)*

Human Factors, Instrumentation, and Controls: General, sponsored by HFICD

Cochairs: Ryan O'Hagan *(AMS)*, Sacit M. Cetiner *(ORNL)*

Golden West

1:00 p.m.
Analysis on Human and Organizational Factors Regarding Initial Responses of Shift Teams and Field Workers to the Fukushima Daiichi NPP Accident, Koike Hiroko, Takaya Hata, Ryuji Kubota *(Incorporated Administrative Agency Japan Nuclear Energy Safety Organization)*

1:20 p.m.
Extending Sensor Calibration Intervals in Nuclear Power Plants, Jamie Coble, Ryan Meyer, Pradeep Ramuhalli, Leonard Bond *(PNNL)*, Brent Shumaker (AMS), Hash Hashemian *(Analysis & Measurement Services Corp.)*

1:40 p.m.
Development of High Risk Inducible Task Evaluator, Seunghwan Kim, Jinkyun Park, Wondea Jung, Jaewhan Kim *(KAERI-Korea)*

2:00 p.m.
Operating Voltage Dependence of Detector Deadtime – GM Counter, T. Akyurek *(Missouri Univ Sci Tech)*, M. Yousaf *(University of Missouri/Rolla)*, S. Usman *(Missouri Univ Sci Tech)*

2:20 p.m.
RAVEN as Control Logic and Probabilistic Risk Assessment Driver for RELAP-7, C. Rabiti, A. Alfonsi, D. Mandelli, J. Cogliati, R. Martineau *(INL)*

2:40 p.m.
Hands-on HRA: Developing a Human Reliability Course, Atul Gupta, Rachel Benish, Brian Hajek, Carol Smidts *(Ohio State)*

3:00 p.m.
Validating THERP: An Approach to Experimentally Validating the Human Error Prediction Rates in the THERP Tables, Rachel Benish, Meng Li, Atul Gupta, Carol Smidts *(Ohio State)*

3:20 p.m.
Nuclear Structural Materials Degradation Assessment Using Advanced Nondestructive Examination Methods, Pradeep Ramuhalli, Ryan Meyer, Matt Prowant, Jacob Fricke, Tyler Kafentzis, Charles Henager, Jr. *(PNNL)*

IAEA Reactor Physics and Technology Development Activities—II, sponsored by RPD

Session Organizers: Danas Ridikas *(IAEA)*, Alexander Stanculescu *(INL)*
Chair: Danas Ridikas

Windsor

1:00 p.m.
IAEA CRP on HTGR Uncertainty Analysis: Benchmark Definition and Test Cases, Gerhard Strydom *(INL)*, Frederik Reitsma *(Calvera Consultants)*, Hans Gougar *(INL)*, Bismark Tyobeka *(IAEA)*, Kostadin Ivanov *(Penn State)*, *invited*

1:25 p.m.
Overview of the Recent IAEA Activities on Fast Reactor Physics Under Sub-programme on Technology Development of Advanced Reactors, S. Monti, A. Toti *(IAEA-Austria)*

1:50 p.m.
The IAEA CRPs Lessons for the Reactivity Insertion Accidents Analysis, E. Ivanov, S. Pignet, L. Maas, F. Ecrabet *(IRSN)*

2:15 p.m.
IAEA CRP on Reactivity Effect Uncertainties in BN-600 Type Cores with MOX Fuel, A. Rineiski *(KIT)*, M. Farakshin *(OKBM)*, R. Hill *(ANL)*, M. Ishikawa *(JAEA)*, Y. I. Kim *(KAERI)*, Z. H. Li *(CIAE)*, P. Mohanakrishnan *(IGCAR)*, T. Newton *(Serco, UK)*, G. Rimpault *(CEA)*, A. Stanculescu *(IAEA)*, V. Stogov *(IPPE)*

2:40 p.m.
The New IAEA Concept of International Centres of Excellence Based on Research Reactors: Example of European Strategy Around JHR Project, Gilles Bignan *(CEA)*, Kevin Alldred, Sandor Tozser *(IAEA)*, *invited*

3:05 p.m.
Education and Training in the Field of Reactor Physics and Technology Through Research Reactor Networks & Coalitions, Lubomir Sklenka, Jan Rataj *(Czech Technical Univ)*, *invited*

Data Analysis in Nuclear Criticality Safety—II, sponsored by NCSD

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

Hampton

1:00 p.m.
Updating the Format of ACE Data Tables, Jeremy Lloyd Conlin, Forrest B. Brown, A. C. Kahler, M. Beth Lee, D. Kent Parsons, Morgan C. White *(LANL)*

1:25 p.m.
Total Cross Section Measurements of Highly Enriched Isotopic Mo in the Resolved and Unresolved Energy Regions, R. M. Bahran, A. M. Dasklakis, B. J. McDermott, E. J. Blain, Y. Danon *(RPI)*, D. P. Barry, G. Leinweber, M. J. Rapp, R. C. Block *(KAPL)*, D. G. Williams *(US Military Academy)*

1:50 p.m.
Reproducibility of Subcritical Measurements: Five Years of Plutonium Sphere Data, J. Hutchinson, M. Smith-Nelson, D. Dinwiddie, W. Myers, B. Rooney *(LANL)*

2:15 p.m.
An Updated Analysis of Uranium Metal in Birdcage Storage, T. J. Zipperer, A. Lang, J. J. Lichtenwalter *(Y-12 NSC)*

2:40 p.m.
CAAS Detector Placement Using MAVRIC, Larry L. Wetzel, Brandon O'Donnell *(Babcock & Wilcox, NOG-L)*, William D. Newmyer

(Nuclear Safety Associates)

3:05 P.M.
Subcriticality Measurement by Neutron Source Multiplication Method with Detected-Neutron Multiplication Factor, Tomohiro Endo, Akio Yamamoto *(Nagoya Univ)*, Cheol Ho Pyeon, Takahiro Yagi *(Kyoto Univ)*

3:30 P.M.
Simulation of Criticality Accident Transients in Uranyl Nitrate Solution with COMSOL Multiphysics, Christopher J. Hurt, Ronald E. Pevey *(Univ of Tennessee)*, Peter L. Angelo *(Y-12 NSC)*

PHYSICS ISSUES FOR SMALL, COMPACT REACTORS,

sponsored by RPD; cosponsored by ANSTD
Session Organizers: Blair Bromley *(Canadian Nuclear Society)*, Shannon Bragg-Sitton *(INL)*
Cochairs: Blair Bromley *(Canadian Nuclear Society)*, John Bess *(INL)*

SHEFFIELD

1:00 P.M.
Burnup Concept of a Long Life Fast Reactor Using MCNPX, Thomas V. Holschuh, Edward J. Parma, Gary E. Rochau *(SNL)*

1:25 P.M.
Fission Product Effects of a High-Burnup Small Gas-Cooled Fast Reactor, Hangbok Choi, Robert W. Schleicher *(General Atomics)*

1:50 P.M.
Physics and Design Studies for a Small Breed-and-Burn Reactor, Donny Hartanto, Yonghee Kim *(KAIST)*

2:15 P.M.
Boron-Free Core Design for Innovative 4.5% and 8.0% Enriched MASLWR Fuel, Alexey I. Soldatov, Todd S. Palmer *(Oregon State Univ)*

2:40 P.M.
Effect of SiC Coating Over Graphite Structure in HTGR, Piyatida Trinuruk, Toru Obara *(Tokyo Inst Technol)*

3:05 P.M.
Graphite and Beryllium Reflected Critical Assemblies of UO_2 (Benchmark Experiments 2 and 3), Margaret A. Marshall *(INL)*, John D. Bess *(Battelle Energy Alliance)*

3:30 P.M.
Neutron Spectrometry for the University of Pavia TRIGA™ Thermal Neutron Source Facility, Nicoletta Protti, Silva Bortolussi, Michele Prata, Piero Bruschi, Saverio Altieri *(Univ of Pavia)*, David W. Nigg *(INL)*

RADIATION PROTECTION AND SHIELDING: GENERAL,

sponsored by RPSD
Session Organizer: Eric Burgett *(Idaho State Univ)*
Chair: Charlotta Sanders *(UNLV)*

ROYAL PALM SALON 1

1:00 P.M.
A Preliminary Study on the Use of Motion-Capture Technology and Computational Phantoms Towards Virtual-Reality-Based Nuclear Safety Simulations, Justin Vazquez, Ashley Rhodes, Peter F. Caracappa, X. George Xu *(RPI)*

1:20 P.M.
Characterization and Simulation of Thin Polymeric Films for Portal Monitors, M. J. Urffer, R. Uppal, A. Mabe, D. Penumadu, L. F. Miller *(Univ of Tennessee)*

1:40 P.M.
Krško Radiation Streaming Evaluation for Gamma-Ray Doses in Containment, Jianwei Chen *(Westinghouse)*, Arnold H. Fero *(Westinghouse NS)*

2:00 P.M.
Nuclear Incident Monitors Design Cost Savings, Derrick Faunce, Robert Eble *(Shaw AREVA MOX Services)*

2:20 P.M.
Scintillation Detector Integration with the Android Platform, Edward Norris, Xin Liu *(Missouri Univ Sci Tech)*

2:40 P.M.
Shielding Evaluations for Radioactive Material Packages at the Y-12 National Security Complex, Pran K. Paul *(BWXT Y-12)*, S. N. Cramer *(Navarro Research and Engineering, Inc.)*

3:00 P.M.
Long Duration, Deep Space Mission Radiation Engineering Analysis of Materials and Astronaut Protection, Robert Singleterry *(NASA, Langley)*

3:20 P.M.
Preliminary Comparative Shielding Analysis for Refabricating Different Fuel Vectors, Michael Wenner *(Univ of Florida)*, Fausto Franceschini, Joel Kulesza *(Westinghouse)*

NUCLEAR FUELS AND MATERIALS, sponsored by MSTD

Session Organizer: Ken Geelhood *(PNNL)*
Chair: Patrick Pinhero *(Univ of Missouri)*

ROYAL PALM SALON 3

1:00 P.M.
Consumable Material Compatibility Testing with Methanol Application in BWR Plants, M. G. Pop, M. J. Bell, B. H. Cyrus *(AREVA NP)*

1:25 P.M.
Effect of Neutron Irradiation on Ultra-Fine Grained Steel, A. H. Alsabbagh, K. L. Murty *(NCSU)*

1:50 P.M.
Friction Consolidation of an Oxide Dispersion Strengthened Steel, David Catalini, Djamel Kaoumi, Anthony Reynolds *(Univ of South Carolina)*, Glenn Grant *(PNNL)*

2:15 P.M.
Modeling of Irradiation Creep of U-Mo Alloy Fuel, Yeon Soo Kim *(ANL)*, J. S. Cheon *(KAERI-Korea)*, G. L. Hofman *(ANL)*

2:40 P.M.
Molecular Dynamics Simulation of Structure and Transport Properties of Molten LiF-ThF_4, Leslie Dewan *(MIT)*, Mathieu Salanne *(Universite Pierre et Marie Curie)*, Linn Hobbs *(MIT)*

3:05 P.M.
Creep Damage Analysis in Welded Joints of Modified 9Cr-1Mo Steel, M. Basirat, T. Shrestha, G. P. Potirniche, I. Charit, K. Rink *(Univ of Idaho)*

Embedded Topical Meeting: *International Meeting on Severe Accident Assessment and Management: Lessons Learned from Fukushima Daiichi*: Meeting Officials

GENERAL CO-CHAIR:
DR. MICHAEL CORRADINI
University of Wisconsin

TECHNICAL PROGRAM CHAIR (TPC):
PROF. JACOPO BUONGIORNO
MIT

TECHNICAL PROGRAM CHAIR (TPC):
DR. AKIRA TOKUHIRO
University of Idaho

MONDAY • TUESDAY • FUKUSHIMA

MONDAY, NOVEMBER 12, 2012, 1:30 P.M.

NEAR- AND LONG-TERM REGULATORY CHANGES AFTER FUKUSHIMA: DOES THE ACCIDENT IN JAPAN CALL FOR A MAJOR OVERHAUL OF NUCLEAR SAFETY REGULATIONS?–PANEL

Session Organizer and Chair: Jacopo Buongiorno *(MIT)*

SUNSET

PANELISTS:

- George Apostolakis *(NRC)*
- Masaya Yasui *(METI)*
- Nils Diaz *(U-Florida)*
- Giovanni Bruna *(IRSN, France)*

MONDAY, NOVEMBER 12, 2012, 4:00 P.M.

LESSONS LEARNED FROM FUKUSHIMA DAIICHI AND OTHER JAPANESE PLANTS (TOKAI, DAINI)—I

Session Organizers & Cochairs: Akira Tokuhiro *(U-Idaho)*, Jacopo Buongiorno *(MIT)*

SUNSET

4:00 P.M.
What Fukushima Taught Us About Nuclear Power Risks?, Bal Raj Sehgal *(KTH)*

4:20 P.M.
Facts and Lessons of the Fukushima Nuclear Accident, Shinichi Kawamura, Akira Kawano *(TEPCO)*

4:40 P.M.
How Fukushima Daiichi Severe Accidents Could Be Avoided, Salomon Levy *(Levy & Associates)*

5:00 P.M.
The Canary, the Ostrich, and the Black Swan: An Historical Perspective on Our Understanding of BWR Severe Accidents and Their Mitigation, Sherrell R. Greene *(EnergX, LLC)*

TUESDAY, NOVEMBER 13, 2012, 8:30 A.M.

SEVERE ACCIDENT PROGRESSION AND SCENARIO RECONSTRUCTION—I

Session Organizers: Luis Herranz *(CIEMAT)*, Kevin Robb *(ORNL)*, Kenji Tateiwa *(TEPCO)*
Cochairs: Luis Herranz *(CIEMAT)*, Kevin Robb *(ORNL)*

SUNSET

8:30 A.M.
The Accident Analysis for Unit 1-3 at Fukushima Dai-ichi Nuclear Power Station, Yasunori Yamanaka, Shinya Mizokami, Manabu Watanabe, Takeshi Honda *(TEPCO)*

8:50 P.M.
Simulation of the Core-Degradation Phase of the Fukushima Accidents Using the ASTEC Code, H. Bonneville *(IRSN)*, A. Luciani *(SOFREN)*

9:10 A.M.
Markov Model of Accident Progression at Fukushima Daichi, Arantxa Cuadra, Robert A. Bari, Lap-Yan Cheng, Theodore Ginsberg, John Lehner, Gerardo Martinez-Guridi, Vinod Mubayi, W. Trevor Pratt, Meng Yue *(BNL)*

9:30 A.M.
Termination of Extended Station Blackout Using Dynamic Natural Convection, A. Winfried Reinsch *(DYNAC Systems)*

COMMUNICATING AFTER FUKUSHIMA: WHAT WE LEARNED AND WHAT WE NEED TO CHANGE–PANEL

Session Organizer & Chair: Paul Dickman *(ANL)*

TOWNE

PANELISTS:

- Mimi Limbaugh *(Potomac Communications)*
- Scott Campbell *(The Howard Baker Forum)*
- Steve Kerekes *(NEI)*
- Barbara Culverhouse *(SCE)*

TUESDAY, NOVEMBER 13, 2012, 11:00 A.M.

TMI, CHERNOBYL, AND FUKUSHIMA: THREE ACCIDENTS IN PERSPECTIVE–PANEL

Session Organizer: Jacopo Buongiorno *(MIT)*
Chair: Tony Buhl *(EnergX)*

SUNSET

PANELISTS:

- Raj Sehgal *(KTH)*
- Lake Barrett *(Consultant)*
- Curt J. Robert *(GE)*

TUESDAY, NOVEMBER 13, 2012, 1:30 P.M.

LESSONS LEARNED FROM FUKUSHIMA DAIICHI AND OTHER JAPANESE PLANTS (TOKAI, DAINI)—II

Session Organizers & Cochairs: Akira Tokuhiro *(U-Idaho)*, Jacopo Buongiorno *(MIT)*

SUNSET

1:30 P.M.
EPRI Fukushima-Related Research Activities, B. Clark, J. Hamel, J. Heishman, K. Huffman, S. Lewis, J. P. Sursock, R. Wachowiak, R. Yang, K. Kim, N. Muthu, A. Sowder, K. Canavan, C. Mengers, B. Schimmoller *(EPRI)*

1:50 P.M.
IDCOR Lessons from Long Ago: The Leaping Black Swans, Anthony R. Buhl, Mario Fontana *(EnergX, LLC)*

2:10 P.M.
Finding Purpose in the Aftermath of Fukushima Dai-ichi, Kathryn A. Higley *(Oregon State Univ)*, *invited*

2:30 P.M.
Fukushima Insights: Public Risks from Nuclear Accidents Grossly Overstated, Vojin Joksimovich *(Consultant)*

KEY SEVERE ACCIDENT PHENOMENA IN FUKUSHIMA (H2, POOL SCRUBBING, CORIUM, RPV FAILURE...)—I

Session Organizers: Randy Gauntt *(SNL)*, Susan Pickering *(SNL)*, Jesse Phillips *(SNL)*, Christophe Journeau *(CEA)*, Phil Ellison *(GE)*
Cochairs: Randy Gauntt *(SNL)*, Jeffrey Cardoni *(SNL)*

TOWNE

1:30 P.M.
Post-Accident Analysis of Hydrogen Explosion During Fukushima Daiichi Accident, M. Kuznetsov, J. Yanez, T. Jordan *(KIT)*

1:50 P.M.
Impact of Radiolysis on Hydrogen Production in a BWR Severe Accident, Flavio Parozzi, Edoardo Corsetti *(RSE)*

2:10 P.M.
Fuel-Coolant-Interaction Analysis for Corium Molten Materials, R. H. Chen *(Xi'an Jiaotong Univ)*, M. L. Corradini *(Univ of Wisconsin, Madison)*

2:30 P.M.
Material Effect in the Nuclear Fuel—Coolant Interaction: Analyses of Prototypic Melt Fragmentation and Solidification in the KROTOS Facility, Václav Tyrpekl *(Nuclear Research Institute Rez plc, Nuclear Safety and Reliability Division)*, Pascal Piluso *(CEA, Cadarache)*, Snejana Bakardjieva *(ASCR)*, Olivier Dugne *(CEA, Marcoule)*

2:50 P.M.
Prospects for In-Containment Cesium Capture for Light Water Reactors, John D. Stempien, Charles W. Forsberg *(MIT)*

3:10 P.M.
Severe Accident Research at ITU, Karlsruhe: A Review of Past Experience and Its Application to Future Challenges, P. D. W. Bottomley, D. Papaioannou, C. T. Walker, J-P Glatz, S. Bremier, P. Pöml, S. van Winckel, B. Christiansen, P. van Uffelen, D. Manara, V. V. Rondinella *(European Commission)*

TUESDAY, NOVEMBER 13, 2012, 4:00 P.M.

SAFETY SYSTEM AND CONTAINMENT PERFORMANCE AND IMPROVEMENT

Session Organizer & Chair: Charles Martin *(DNFSB)*

SUNSET

4:00 P.M.
A Reassessment of Low Probability Containment Failure Modes, Acacia Brunett, Richard Denning, Tunc Aldemir *(Ohio State)*

4:20 P.M.
Applicability and Effects on Safety Improvement of Containment Filtered Vent System in OPR1000, Sang Won Lee, Mi Ro Seo, Hyeong Taek Kim, Chan Kook Moon *(KHNP CRI)*

4:40 P.M.
TMI, LOFT, and Fukushima Loss-of-Coolant: Lessons Not Learned, Alexander DeVolpi *(Retired)*, Itacil C. Gomes *(IC Gomes Consulting & Investment Inc.)*

5:00 P.M.
Combined Photovoltaic-Wave Power Generation During Complete Station Blackout, Kyung-Ho Cha, Jae-Chang Park, Jung-Taek Kim *(KAERI)*

EMERGENCY AND SEVERE ACCIDENT RESPONSE, PROCEDURES, AND ANALYSES: EOPS, SAMGS, SAMA, SAMDA

Session Organizers: Shawn St. Germain *(INL)*, Dennis Bley *(Buttonwood Consulting)*, Frank Rahn *(EPRI)*, Nam Dinh *(INL)*

Cochairs: Shawn St. Germain *(INL)*, Frank Rahn *(EPRI)*

TOWNE

4:00 P.M.
Insights and Perspectives on Severe Accident Regulatory Decisions, Hossein P. Nourbakhsh *(NRC)*

4:20 P.M.
The Nuclear Power Plant Accident Handbook, A CNSC Emergency Operations Centre Tool, C. J. P. Cole *(Canadian Nucl Safety Comm)*, T. Nitheanandan, M. J. Brown, S. M. Petoukhov, A. Wood *(AECL)*

4:40 P.M.
Severe Accident Management Guidelines—Technical Basis Report, J. R. Gabor *(ERIN Eng & Rsch)*, R. E. Henry *(Fauske & Assoc)*, S. R. Lewis *(EPRI)*, D. L. Luxat *(ERIN Eng & Resch)*

5:00 P.M.
Successful Cold Shutdown of Onagawa: The Closest NPS to the 3/11/'11 Epicenter, Akiyoshi Obonai, Takao Watanabe *(Tohoku ElectricPower Co., Inc.)*, *invited*

WEDNESDAY, NOVEMBER 14, 2012, 8:30 A.M.

SEVERE ACCIDENT PROGRESSION AND SCENARIO RECONSTRUCTION—II

Session Organizers: Luis Herranz *(CIEMAT)*, Kevin Robb *(ORNL)*, Kenji Tateiwa *(TEPCO)*
Cochairs: Luis Herranz *(CIEMAT)*, Kevin Robb *(ORNL)*

SUNSET

8:30 A.M.
MELCOR Simulations of the Severe Nuclear Accident at the Fukushima 1F1 Reactor, Randall Gauntt, Donald Kalinich, Jeffrey Cardoni, Jesse Phillips *(SNL)*

8:50 A.M.
Analysis of Accident Progression of Fukushima Daiichi NPP with SAMPSON Code—(1) Unit 1, Masanori Naitoh, Hiroaki Suzuki, Hidetoshi Okada *(The Institute of Applied Energy)*

9:10 A.M.
Estimation of the Depressurization Process of Fukushima Daiichi NPP Unit 1 with SAMPSON, Maolong Liu, Yuki Ishiwatari, Koji Okamoto *(Univ of Tokyo)*

9:30 A.M.
From a LOOP to a Fukushima-like SBO: Assessment of the Effect of BWR3-MarkI Safety Systems, Luis E. Herranz, Claudia López, Mónica García *(CIEMAT)*

9:50 A.M.
EPRI Fukushima Technical Evaluation Project MAAP5 Fukushima Dai-ichi Accident Simulations, D. L. Luxat *(ERIN Eng and Rsch)*, F. Rahn, R. Yang *(EPRI)*, J. R. Gabor *(ERIN Eng & Resch)*

PREDICTION OF EXTERNAL EVENTS AND SEVERE ACCIDENTS—I

Session Organizers: Randy Gauntt *(SNL)*, Susan Pickering *(SNL)*
Cochairs: Nathan Bixler *(SNL)*, Jesse Phillips *(SNL)*

TOWNE

8:30 A.M.
Post Fukushima—Establishing a Systematic Approach to Characterize Natural Hazards, Badi-Uz-Zaman Khan, Mark Gerchikov *(AMEC NSS)*, Paul Lawrence *(OPG)*

8:50 A.M.
Expert Advice for External Hazard Assessment, A. J. Donaldson, Andrew Hillesdon *(Rolls-Royce Civil Nuclear)*

9:10 A.M.
Past Tsunami Evaluation and Tsunami of March 11th at Fukushima Daiichi NPS, Makoto Takao *(TEPCO)*

9:30 A.M.
MAAP5 Enhancements Related to Fukushima Events, Chan Paik, Martin Plys, Robert Henry *(Fauske & Assoc)*

WEDNESDAY, NOVEMBER 14, 2012, 11:00 A.M.

ECONOMIC IMPACTS OF FUKUSHIMA ON NUCLEAR INDUSTRY–PANEL

Session Organizer & Chair: Brooke Traynham *(PricewaterhouseCoopers LLP)*

SUNSET

PANELISTS:

- Tom Magette *(Energysolutions)*
- Lake Barrett *(consultant)*
- Mark Rauckhorst *(Vogtle)*
- Daryl Walcroft *(PWC)*

WEDNESDAY, NOVEMBER 14, 2012, 1:00 P.M.

KEY SEVERE ACCIDENT PHENOMENA IN FUKUSHIMA (H2, POOL SCRUBBING, CORIUM, RPV FAILURE...)—II

Session Organizers: Randy Gauntt *(SNL)*, Susan Pickering *(SNL)*, Jesse Phillips *(SNL)*, Christophe Journeau *(CEA)*, Phil Ellison *(GE)*

Cochairs: Jesse Phillips *(SNL)*, Matthew Denman *(SNL)*

SUNSET

1:00 P.M.
Evaluations of MCCI Risks for the Fukushima Events; Related IRSN R&D Strategy on Corium Retention and Coolability, M. Cranga, K. Chevalier-Jabet, C. Marchetto, C. Mun *(IRSN)*

1:20 P.M.
Corium Erosion of Concrete: Dependence on Concrete Composition, M. T. Farmer, S. W. Lomperski, C. Gerardi *(ANL)*

1:40 P.M.
Main Lessons Learnt from Fission Product Release Analysis, for the Understanding of Fukushima Dai-ichi NPP Status, G. Ducros, Y. Pontillon, R. Eschbach, J. M. Vidal, G. Le Petit, G. Douysset, C. Poinssot *(CEA)*

2:00 P.M.
Evaluation of Aerosol Pool Scrubbing Efficiencies in Fukushima Daiichi Unit 1, Sonia Morandi, Ada Del Corno, Flavio Parozzi *(RSE)*

2:20 P.M.
Counter-Intuitive Nitrogen Occupancy in Tetragonal Zirconia, Ping Wu *(Singapore Univ of Technology and Design/Inst of High Performance Computing)*, Zhi Gen Yu, Jia Zhang *(Inst of High Performance Computing)*

WEDNESDAY, NOVEMBER 14, 2012, 4:00 P.M.

PREDICTION OF EXTERNAL EVENTS AND SEVERE ACCIDENTS—II

Session Organizers: Randy Gauntt *(SNL)*, Susan Pickering *(SNL)*
Cochairs: Donald Kalinich *(SNL)*, Susan Pickering *(SNL)*

SUNSET

4:00 P.M.
NRC's Significance Determination Process: Current Status and Future Trends in Assessing Risks Attributed to External Events, Sunil D. Weerakkody *(NRC)*

4:20 P.M.
MAAP Parametric Sensitivity and Uncertainty Analysis for Level 1 and Level 2 Probabilistic Risk/Safety Assessment, Eugene van Heerden, Michael Chai, Keith Dinnie *(AMEC)*

4:40 P.M.
Simulation Technology for Severe Accidents Training, Assessment and Management, Elena Gill, Pablo Rey, Norberto Rivero, José Antonio Ruiz *(TECNATOM)*

THURSDAY, NOVEMBER 15, 2012, 8:30 A.M.

SEVERE ACCIDENT PROGRESSION AND SCENARIO RECONSTRUCTION—III

Session Organizers: Luis Herranz *(CIEMAT)*, Kevin Robb *(ORNL)*, Kenji Tateiwa *(TEPCO)*

Cochairs: Luis Herranz *(CIEMAT)*, Kenji Tateiwa *(TEPCO)*

SUNSET

8:30 A.M.
MELCOR Simulations of the Severe Accident at the Fukushima 1F2 Reactor, Jesse Phillips, Jeffrey Cardoni, Randall Gauntt, Donald Kalinich *(SNL)*

8:50 A.M.
Analysis of Accident Progression of Fukushima Dai-ichi with SAMPSON Code—(2) Unit 2, H. Suzuki, M. Naitoh, H. Okada *(The Institute of Applied Energy)*

9:10 A.M.
MELCOR Simulations of the Severe Accident at the Fukushima 1F3 Reactor, Jeffrey Cardoni, Randall Gauntt, Donald Kalinich, Jesse Phillips *(SNL)*

9:30 A.M.
Fukushima Daiichi Unit 3 MELCOR Investigation, Kevin R. Robb, Matthew W. Francis, Larry J. Ott *(ORNL)*

9:50 A.M.
Investigation on Thermal-Hydraulics and Core Degradation Issues of Fukushima Accident by RELAP5-ScDAP Code, Francesco Lino Venturi, Guido Mazzini, Marino Mazzini *(Univ of Pisa)*

10:10 A.M.
Analysis of Accident Progression of Fukushima Dai-ichi with SAMPSON Code—(3) Unit 3, M. Pellegrini, H. Suzuki, H. Mizouchi, M. Naitoh *(Inst of Applied Energy)*

JAPANESE AND INTERNATIONAL PERSPECTIVES ON THE FUKUSHIMA ACCIDENT–PANEL

Session Organizer and Chair: Akira Tokuhiro *(U-Idaho)*

TOWNE

PANELISTS:

- Hisashi Ninokata *(Politecnico Milano)*
- Woody Epstein *(Consultant)*
- Peter Yanev *(Consultant)*

One more panelist to be determined.

THURSDAY, NOVEMBER 15, 2012, 11:00 A.M.

INTERNATIONAL RESPONSE AND IMPACTS

Session Organizer: Rich Denning *(OSU)*

Cochairs: Rich Denning *(OSU)*, Christophe Journeau *(CEA)*

SUNSET

11:00 A.M.
Session Chair Introduction and Summary of the Various Regulatory and Policy Actions Taken by Different Countries

11:20 A.M.
A Teutonic Paradigm Shift: Will the Fukushima Disaster and the Merkel Government Lead Europe to a Non-Nuclear Future?, Nadra Hashim *(Jindal Global Univ)*

11:40 A.M.
Local Response to the Fukushima Dai-ichi Nuclear Accident at Tokyo: Technical Support to the French Embassy and Risk Communication to the French Community Living in Japan, O. Isnard, O. Chabanis, Ph. Dubiau *(IRSN)*

12:00 P.M.
United States Nuclear Regulatory Commission Actions as a Result of the Fukushima Dai-ichi Accident, David L. Skeen, David D. Brown *(NRC)*

12:20 P.M.
The Fukushima Daiichi Accident Study Information Portal, Shawn St. Germain, Curtis Smith, David Schwieder, Cherie Phelan *(INL)*

ENVIRONMENTAL MODELING AND SITE CLEANUP

Session Organizers & Cochairs: Dana Powers *(SNL)*, Ron Baskett *(LLNL)*

TOWNE

11:00 A.M.
Atmospheric Dispersion Modeling and Analysis of the Fukushima Dai-ichi Nuclear Power Plant Accident, J. S. Nasstrom, G. Sugiyama, B. Pobanz, K. T. Foster, M. Simpson, P. Vogt, F. Aluzzi, M. Dillon, S. Homann *(LLNL)*

11:20 A.M.
Using Gamma Dose Rate Observations with Inverse Modelling Techniques to Estimate the Atmospheric Release of a Nuclear Power Plant Accident: Application to the Fukushima Case, O. Saunier, A. Mathieu, D. Didier, M. Tombette, D. Quélo *(IRSN)*, V. Winiarek, M. Bocquet *(CEREA)*

11:40 A.M.
Reconstruction of Airborne Activity Concentrations from Radiation Exposure Records, Peter F. Caracappa *(RPI)*

12:00 P.M.
Evaluation of Prospective Dosimetry for Members of the Public Following the Fukushima Accident, Peter F. Caracappa *(RPI)*

12:20 P.M.
Severe Accident Cleanup: The Continental-Shelf Seabed Disposal Option, Charles Forsberg *(MIT)*

Embedded Topical Meeting: *Advances in Thermal Hydraulics (ATH '12)*: Meeting Officials

HONORARY CHAIR:
BAL-RAJ SEHGAL
Royal Institute of Technology

GENERAL CO-CHAIR:
DR. YASSIN A. HASSAN
Texas A&M University

GENERAL CO-CHAIR:
DR. HISASHI NINOKATA
Tokyo Institute of Technology

GENERAL CO-CHAIR:
PROF. FRANCESCO D'AURIA
University of Pisa

TECHNICAL PROGRAM CHAIR:
DR. KURSHAD MUFTUOGLU
GE Hitachi Nuclear Energy

TECHNICAL PROGRAM CHAIR:
PROF. S. H. CHANG
Korea Advanced Institute of Science and Technology

TECHNICAL PROGRAM CHAIR:
PROF. HENRYK ANGLART
Royal Institute of Technology

ASSISTANT TECHNICAL PROGRAM CHAIR:
DR. DONNA P. GUILLEN
Idaho National Laboratory

ASSISTANT TECHNICAL PROGRAM CHAIR:
DR. BRIAN G. WOODS
Oregon State University

TUESDAY, NOVEMBER 13, 2012, 1:00 P.M.

OPENING PLENARY:
SMR PROGRAMS: STATUS AND PERSPECTIVES
Chair: Yassin Hassan *(Texas A&M)*

SUNRISE

Opening Remarks
Honorary Chair's Address
Emeritus Prof. Bal Raj Sehgal *(KTH)*

"Role of Thermal Hydraulics in Delineation and Resolution of LWR Safety Issues"

Invited Speakers:

Prof. Xu Cheng *(Karlsruhe Institute of Technology)*
"Thermal-Hydraulics of Innovative Nuclear Systems (THINS) – European Commission Consortium Grant"

Dr. Douglas Kothe *(ONRL)*
"CASL Program"

Prof. Francesco D'Auria *(University of Pisa)*
"Using Best Estimate Plus Uncertainty for Licensing Applications"

2011 Thermal Hydraulics Technical Award presentation,
Prof. John Luxat *(McMaster Univ)*

PANEL DISCUSSION: SMR Programs: Status and Perspectives

- Robert Martin *(B&W)*
- Jose Reyes *(NUSCALE)*
- Chul-Hwa Song *(KAERI)*
- Pierre Oneid *(Holtec)*
- Kevan Weaver *(Terra Power)*
- Matthew Memmott *(Westinghouse)*

55th Anniversary of the first large commercial nuclear generation station (December 2, 1957)

The Shippingport Atomic Power Station was the first commercial nuclear generation station to be ordered in the United States. With the Pressurized Water Reactor (PWR) as its heat source, it was the nation's first large-scale nuclear power plant to generate electricity for civilian purposes. The current widespread use of the light water reactor design is, in part, attributable to the success of Shippingport.

WEDNESDAY, NOVEMBER 14, 2012, 8:00 A.M.

FUNDAMENTAL RESEARCH IN TWO-PHASE FLOW AND HEAT TRANSFER

Chairs: Donna P. Guillen *(INL)* and Donald R. Todd *(NAI)*

SUNRISE

8:00 A.M.
Mechanistic Modeling of Boiling Heat Transfer, Michael Z. Podowski *(RPI)*

8:25 A.M.
Validation of Experimental Measurement Using Infrared Thermometry for the Subcooled Flow Boiling Experiment, Junsoo Yoo, Carlos E. Estrada-Perez, Yassin A. Hassan *(Texas A&M)*

8:50 A.M.
Comparative Study on Condensation Model in Horizontal Tube, Seong-Su Jeon, Byung-Chul Lee *(FNC Technol)*, Ju-Yeop Park, Young-Seok Bang *(KINS)*

9:15 A.M.
Numerical Research on Turbulent Mixing and Crossing Flow Characteristics Under Supercritical Fluid Conditions, Kazuyuki Takase, Takeharu Misawa, Hiroyuki Yoshida *(JAEA)*

9:40 A.M.
Informing the Development of the Turbulence Models for Bubbly Gas/Liquid Flows Using Interface Tracking Simulations, Igor A. Bolotnov *(NCSU)*, Michael Z. Podowski *(RPI)*

10:05 A.M.
Effects of Turbulence Modeling on Coupled CFD-Neutronics Calculations, Christopher R. Hughes, Matthew Marzano, DuWayne Schubring *(Univ of Florida)*

10:30 A.M.
Direct Numerical Simulation of Debris Sedimentation Using the Immersed Boundary-Lattice Boltzmann Method, Shin K. Kang, Yassin A. Hassan *(Texas A&M)*

10:55 A.M.
Dynamic Simulation and Control of the S-CO_2 Cycle: From Full Power to Decay Heat Removal, Anton Moisseytsev, James J. Sienicki *(ANL)*

WEDNESDAY, NOVEMBER 14, 2012, 1:00 P.M.

NUMERICAL APPLICATIONS AND REACTOR OPERATION/SAFETY

Chairs: Brian Collins *(PNNL)* and Si Lee *(SRNL)*

SUNRISE

1:00 P.M.
Calculation of LSSS Limits for Use of LEU Fuel in the MITR-II Reactor, Floyd E. Dunn *(ANL)*, Lin-Wen Hu, Keng-yen Chiang *(MIT)*, Erik H. Wilson *(ANL)*, Thomas H. Newton, Jr. *(MIT)*, John G. Stevens *(ANL)*

1:25 P.M.
Scaling and Developmental Analysis of a Scaled-Down, High-Temperature Test Facility for the Experimental Investigation of the Initial Stages of a VHTR Air-ingress Accident, David J. Arcilesi, Tae Kyu Ham, Xiaodong Sun, Richard N. Christensen *(Ohio State)*, Chang Oh *(INL)*

1:50 P.M.
Analysis of the Steady-State Phase of the Reactor Cavity Cooling System Experimental Facility, Rodolfo Vaghetto, Saya Lee, Yassin A. Hassan *(Texas A&M)*

2:15 P.M.
Uncertainty Analysis for Two-Layer and Three-Layer IVR Model in Passive PWR, Xu Hong, Gang Zhi *(SNPTRD)*, Zhou Zhiwei, Chang Huajian *(SNPTRD/Inst of Nuclear and New Energy Technol)*

2:40 P.M.
Unified Analysis of Sodium Oxide Deposit Growth and Sodium Plugging, James J. Sienicki *(ANL)*

THERMAL-HYDRAULICS OF WASTE MANAGEMENT AND NON-POWER SYSTEMS

Chair: Si Young Lee *(SRNL)*

SUNRISE

3:10 P.M.
Blending Analysis for Radioactive Salt Waste Processing Facility, Si Y. Lee, Robert A. Leishear *(SRNL)*

3:35 P.M.
Waste Heat Recovery from the Advanced Test Reactor Secondary Coolant Loop, Donna Post Guillen *(INL)*

4:00 P.M.
Axial Thermal Conduction Effects upon Local Heat Flux in the High Flux Isotope Reactor, James J. Sienicki *(ANL)*

4:25 P.M.
Development of Dedicated Nuclear Heat Only Desalination System for UAE, Yong Hun Jung, Yong Hoon Jeong *(KAIST)*

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

THURSDAY, NOVEMBER 15, 2012, 8:00 A.M.

CODE DEVELOPMENTS AND SIMULATION APPLICATIONS

Chairs: Kurshad Muftuoglu *(GEH)* and Marco Pellegrini *(NUPEC)*

SUNRISE

8:00 A.M.
BWRCO—A Computational Approach for Monitoring Carryover/Carryunder, Bulent Alpay, Phillip G. Ellison, John S. Bennion *(GE Hitachi Nuclear Energy)*, James J. Tusar *(Exelon Nuclear)*

8:25 A.M.
Westinghouse Small Modular Reactor Small Break LOCA Phenomena Identification and Ranking Table, Richard F. Wright, Ramsey P. Arnold *(Westinghouse)*

8:50 A.M.
Effect of Vacuum Breaker on Passive Containment Cooling System During a Small Break LOCA, Jun Yang *(Univ of Wisconsin, Madison)*

9:15 A.M.
Analysis of Long-Term Cooling of a LOCA by Coupling RELAP5-3D and MELCOR, Rodolfo Vaghetto, Bradley A. Beeny, Yassin A. Hassan, Karen Vierow *(Texas A&M)*

9:40 A.M.
ATLAS Direct Vessel Injection (DVI) Line Break: Comparison to Experimental Data, Implications for Advanced PWR TRACE Calculations, and the Value of 3D Modeling, Scott T. Krepel, Ronald J. Harrington *(NRC)*

10:05 A.M.
Simulations of Small Break LOCA Tests at the Multiloop Integral System Test (MIST) Facility: Applicability of TRACE for Babcock and Wilcox PWR Facilities, Scott T. Krepel *(NRC)*

10:30 A.M.
Analysis of the OSU-MASLWR-003A Natural Circulation Test by Using the TRACE Code, Fulvio Mascari, Maria Lorena Richiusa, Giuseppe Vella *(UNIPA)*, Brian G. Woods *(Oregon State Univ)*, Kent Welter *(NuScale Power Inc)*, Francesco D'Auria *(Univ of Pisa)*

10:55 A.M.
Computational Fluid Dynamics Analysis of the Reactor Cavity Cooling System for Very High Temperature Gas-Cooled Reactors, Angelo Frisani, Yassin A. Hassan *(Texas A&M)*

11:20 A.M.
PIV Accuracy and Extending the Field of View for Validation of Multi-Scale CFD Tools, S. Lomperski, C. Gerardi, D. W. Pointer *(ANL)*

11:45 P.M.
Coupling of Thermal-Hydraulics and I&C for Licensing Analyses, F. D'Auria, N. Muellner, M. Lanfredini *(Univ of Pisa)*, O. Mazzantini *(NA_SA Argentina)*

12:10 P.M.
A Better Turbulent Flow Structure Behind Spacer Grids to Enhance CHF in Fuel Rod Bundles, T. H. Chun, C. H. Shin, W. K. In, D. S. Oh, S. K. Moon, S. Y. Chun, S. K. Chang *(KAERI)*

THURSDAY, NOVEMBER 15, 2012, 1:30 P.M.

EXPERIMENTAL THERMAL HYDRAULICS

Chairs: Brian Woods *(Oregon State)* and Yassin Hassan *(TAMU)*

SUNRISE

1:30 P.M.
Proof-of-Concept: Method for Identifying Fuel Plate Plastic Deformation in Real Time, T. Holschuh, A. Weiss, P. Jensen, W. R. Marcum *(Oregon State Univ)*

1:55 P.M.
Enclosure Thermal Stratification within a Twin Jet Mixing Facility, L. B. Carasik, A. E. Ruggles *(Univ of Tennessee)*

2:20 P.M.
Boundary Layer Laminarization by Convex Curvature and Acceleration Effects, R. Brian Jackson, Brian G. Woods, Wade R. Marcum *(Oregon State Univ)*

2:45 P.M.
Experimental Study of the Key Factors of Improving CHF to Support CAP1400 IVR Strategy, Hu Teng, Pei Jie *(SNPTRD)*, Hua Jian Chang *(SNPTRD/Inst of Nuclear and New Energy Technol)*

3:10 P.M.
The Metal Layer Heat Transfer Behavior Experiment to Support CAP1400 IVR Strategy, Ma Li, Hu Teng, Ji Shui *(SNPTRD)*, Hua Jian Chang *(SNPTRD/Inst of Nuclear and New Energy Technol)*

3:35 P.M.
A New Integral Test Facility ACME for Passive Safety PWR, HuaJian Chang *(SNPTRD/Inst of Nuclear and New Energy Technol)*, Yuquan Li *(SNPTRD)*, Qiao Wu *(Oregon State Univ)*, Zishen Ye *(INET, Tsinghua Univ)*, Lian Chen *(SNPTRD)*

4:00 P.M.
Pressure and Magnetic Field Effects on CHF of Magnetic Nanofluids, Taeseung Lee, Jong Hyuk Lee, Yong Hoon Jeong *(KAIST)*

4:25 P.M.
Experimental Study of Fibrous Debris Head Loss Through Sump Strainer, Saya Lee, Suhaeb Abdulsattar, Rodolfo Vaghetto, Yassin A. Hassan *(Texas A&M)*

4:50 P.M.
Local Measurements in Air-Water Two-Phase Turbulent Flows, Xinquan Zhou, Ben Doup, Xiaodong Sun *(Ohio State)*

5:15 P.M.
Rod-to-Rod Thermal Radiation Heat Transfer Contribution Under Post CHF Conditions, Fatih Aydogan *(Univ of Idaho)*, Cesare Frepoli *(Westinghouse)*

Facilitating Success

Sunday November 11, 2012
8:00 a.m. – 10:00 a.m.
Location: Pacific Salon 6

Workshop Organizer: Gale Hauck

Workshop Instructors: Dr. Audeen Fentiman

Description:

If you've ever had the pleasure of attending a meeting, then you know the importance of effective facilitation skills. Nothing is more painful than sitting through an endless meeting with no direction, no clear decisions, and no action items - except the realization that yet another hour or two of your life is gone forever. You wish that there could be a better way. Fortunately, there is.

Facilitation skills are like the special effects in a movie. They help tell the story, and if handled properly, they aren't even noticeable. However, they also have the potential to be terribly distracting. This interactive workshop will provide you with the tools needed to successfully lead your team by holding effective meetings.

The first module in this workshop will focus on how to build a winning team. It is crucial to have a clear vision and direction for your team even before you begin scheduling a barrage of meetings. The second module will delve into the mechanics of effectively running a meeting.

You are welcome and encouraged to bring questions and share your experiences, as we learn together how to facilitate success.

Committee Meetings

National Committees

Accreditation, Policies & Procedures
Sunday, 11:00 AM – 12:00 PM
Crescent

Board of Directors
Professional Division Reports
Wednesday, 4:00 PM – 5:00 PM
Towne & Counrty Ballroom

ANS BOD
Thursday, 8:00 AM – 2:00 PM
Towne & Counrty Ballroom

Bylaws & Rules
Sunday, 4:30 PM – 6:00 PM
Royal Palm Salon 5

Finance Committee Meeting
Tuesday, 2:00 PM – 7:00 PM
Eaton

Honors & Awards
Monday, 4:00 PM – 6:00 PM
Clarendon

International Committee
Sunday, 11:30 AM – 2:30 PM
Garden 1

Local Sections Workshop
Sunday, 8:00 AM – 12:00 PM
Royal Palm Salon 1

Membership
Sunday, 11:00 AM – 12:00 PM
Ascot

National Program Committee
National Meeting Sub Committee
Wednesday, 11:30 AM – 1:00 PM
Garden 1

Program
Wednesday, 4:00 PM – 6:30 PM
Garden 1

Screening and International
Sunday, 10:00 AM – 12:00 PM
Royal Palm Salon 3

NEED Committee
Sunday, 7:30 PM – 9:30 PM
Pacific Salon 7

PEEC Business Meeting
Sunday, 3:00 PM – 5:00 PM
Crescent

Planning Committee
Sunday, 2:00 PM – 6:00 PM
Le Sommet

Public Information Committee
Sunday, 4:00 P.M. – 6:00 P.M.
Pacific Salon 6

President's Meeting with Committee Chairs
Sunday, 8:00 AM – 9:00 AM
Garden 1

President's Meeting with Division Chairs
Sunday, 9:00 AM – 10:00 AM
Garden 1

Professional Development Coordination Committee
Tuesday, 7:30 AM – 8:30 AM
Brittany

Professional Divisions
Committee Meeting
Wednesday, 5:30 PM – 7:00 PM
Towne & Counrty Ballroom

Training Workshop
Saturday, 5:00 PM – 6:30 PM
Garden 1

Professional Engineering Exam
Committee Meeting
Sunday, 3:00 PM – 4:30 PM
Garden 2

Item Writers Group
Saturday, 5:00 PM – 10:00 PM
Crescent

Professional Women in ANS
Monday, 11:30 AM – 12:30 PM
Ascot

Public Policy
Wednesday, 11:30 AM – 1:30 PM
Ascot

Publications Steering
Book Publishing
Sunday, 11:00 AM – 12:30 PM
Golden West

Meetings, Proceedings and Transactions
Sunday, 9:00 AM – 10:00 AM
Golden West

Nuclear News Editorial Advisory
Sunday, 4:00 PM – 5:30 PM
Golden West

NS & E Editorial Advisory
Sunday, 11:00 AM – 12:00 PM
Royal Palm Salon 6

NT Editorial Advisory
Sunday, 4:30 PM – 5:30 PM
Pacific Salon 2

Publication Steering Committee
Monday, 4:30 PM – 6:30 PM
Fairfield

Technical Journals
Sunday, 1:00 PM – 4:00 PM
Golden West

Scholarship Policy & Coordination
Monday, 12:00 PM – 1:00 PM
Pacific Salon 7

Student Sections
Executive
Monday, 6:00 PM – 7:00 PM
Pacific Salon 6

Reports
Monday, 7:00 PM – 8:00 PM
Pacific Salon 6

Special Committees

Congressional Fellow Committee Meeting
Sunday, 3:00 P.M. – 4:30 P.M.
Pacific Salon 5

Special Committee Integration Oversight
Tuesday, 9:00 AM – 11:00 AM
Pacific Salon 7

Special Committee on Government Relations
Tuesday, 1:30 PM – 3:00 PM
Fairfield

Other Committees

19th PBNC Organizing Meeting
Monday, 4:00 PM – 5:00 PM
Pacific Salon 5

2013 UWC Planning Committee
Sunday, 11:30 AM – 12:30 PM
Royal Palm Salon 2

CNF Meeting
Monday, 7:00 PM – 10:00 PM
Dover

Eagle Alliance BOD
Sunday, 1:00 PM – 3:00 PM
Windsor

INSC Business Meeting
Saturday, 3:00 pm – 6:00 pm
Royal Palm Salon 1

Joint Benchmark Committee Workshop
Saturday, 6:00 pm – 9:00 pm
Royal Palm Salon 2

KNS Meeting
Monday, 4:30 p.m. – 6:00 p.m.
Pacific Salon 4

Mathematics & Computation/Reactor Physics/Radiation Protection & Shielding Joint Benchmark Meeting
Sunday, 11:00 am – 1:00 pm
Royal Palm Salon 4

NEDHO
Sunday, 4:00 pm – 6:00 pm
Garden 1

Pacific Nuclear Council (PNC)
Sunday, 8:30 am – 5:00 pm
Clarendon

PSA 2013 Planning Meeting
Monday, 5:30 pm – 7:00 pm
Pacific Salon 7

Risk Management 2013 Organizing Committee
Monday, 6:30 p.m. – 8:30 p.m.
Clarendon

Division Committees

Accelerator Applications
Executive
Monday, 11:30 am – 1:30 pm
Fairfield

Aerospace Nuclear Science and Technologies
Sunday, 12:00 pm – 2:00 pm
Crescent

Biology and Medicine
Committee of the Whole
Sunday, 4:00 pm – 5:30 pm
Hampton

Joint Program Committee – I&R and B&M
Sunday, 1:30 pm – 2:30 pm
Hampton

Computational Medical Physics Working Group
Sunday, 10:00 am – 11:00 am
Royal Palm Salon 5

Decommissioning, Decontamination and Reutilization
Executive Committee Meeting
Sunday, 4:30 pm – 5:30 pm
Sheffield

Program Committee Meeting
Sunday, 3:30 pm – 4:30 pm
Sheffield

Education, Training and Workforce Development
Alpha Nu Sigma
Sunday, 1:00 pm –z 2:00 pm
California

Executive/Membership/Honors and Awards
Sunday, 1:30 pm – 4:30 pm
San Diego

Program
Sunday, 10:30 am – 12:00 am
California

University/Industry/ Government Relations
Sunday, 9:30 am – 10:30 am
California

Environmental Sciences
Special Committee on Sustainability of Nuclear Energy
Sunday, 1:00 pm – 3:00 pm
Garden 2

Executive
Sunday, 10:00 am – 12:00 am
Garden 2

Nuclear Production of Hydrogen Working Group
Sunday, 12:00 pm – 1:00 pm
Garden 2

Program
Sunday, 8:30 am – 9:30 am
Garden 2

Fuel Cycle and Waste Management
Executive
Sunday, 1:00 pm – 2:30 pm
Royal Palm Salon 3

Program
Sunday, 12:00 pm – 1:00 pm
Royal Palm Salon 3

Technical Operating and Standards Committee
Sunday, 2:30 pm – 3:30 pm
Royal Palm Salon 3

Human Factors, Instrumentation, and Controls
Executive
Sunday, 12:00 pm – 2:30 pm
Royal Palm Salon 5

Program
Sunday, 11:00 am – 12:00 am
Royal Palm Salon 5

Isotopes and Radiation
Executive
Sunday, 2:30 pm – 4:00 pm
Hampton

Joint Program Committee – I&R and B&M
Sunday, 1:30 pm – 2:30 pm
Hampton

Materials Science and Technology
Executive
Monday, 7:00 pm – 9:00 pm
Pacific Salon 5

Mathematics and Computation
Computational Medical Physics Working Group
Sunday, 10:00 am – 11:00 am
Royal Palm Salon 4

Executive
Sunday, 2:00 pm – 4:00 pm
Royal Palm Salon 4

Program
Sunday, 1:00 pm – 2:00 pm
Royal Palm Salon 4

Nuclear Criticality Safety
Executive
Sunday, 3:00 pm – 4:30 pm
Pacific Salon 3

Program
Sunday, 2:00 pm – 3:00 pm
Pacific Salon 3

Committee Meetings

Program – Education Meeting
Sunday, 1:00 PM – 2:00 PM
Pacific Salon 3

Nuclear Installation Safety

Executive
Sunday, 7:30 PM – 9:30 PM
Pacific Salon 1

Program
Sunday, 4:00 PM – 6:00 PM
Pacific Salon 1

Nuclear Nonproliferation (TG)

Governance
Sunday, 3:00 PM – 4:00 PM
Pacific Salon 2

Program
Sunday, 2:00 PM – 3:00 PM
Pacific Salon 2

Special Advisory Committee
Sunday, 1:00 PM – 2:00 PM
Pacific Salon 2

NURETH-15

Tuesday, 6:00 PM – 8:00 PM
Dover

Operations and Power

Executive
Sunday, 4:00 PM – 6:00 PM
Royal Palm Salon 2

Nuclear Construction Working Group
(Canceled)

Radiation Protection and Shielding

Executive
Sunday, 1:30 PM – 3:30 PM
Windsor Rose

Program
Sunday, 12:30 PM – 1:30 PM
Windsor Rose

Shielding Standards
Sunday, 12:00 PM – 12:30 PM
Windsor Rose

Reactor Physics

Executive
Sunday, 4:00 PM – 6:00 PM
Brittany

Goals and Planning
Sunday, 1:00 PM – 2:00 PM
Brittany

Honors & Awards
Sunday, 10:00 AM – 11:00 AM
Brittany

Program
Sunday, 2:00 PM – 4:00 PM
Brittany

Robotics and Remote Systems

Executive
Sunday, 12:00 PM – 4:00 PM
Royal Palm Salon 6

Thermal Hydraulics

Executive
Sunday, 4:30 PM – 6:00 PM
Pacific Salon 4

Program
Sunday, 2:30 PM – 4:30 PM
Pacific Salon 4

Young Member Group (TG)

Executive Committee
Monday, 11:30 AM – 1:00 PM
Pacific Salon 5

Standards Committees

ANS-8.1

Sunday, 8:00 AM – 12:00 PM
Le Sommet

ANS-8.1

Tuesday, 7:00 AM – 8:30 AM
Fairfield

ANS-8.12

Tuesday, 4:30 PM – 6:30 PM
Brittany

ANS-8.20

Sunday, 9:00 AM – 12:00 PM
Eaton

ANS-8.26

Wednesday, 7:00 AM – 8:30 AM
Dover

ANS-10.7

Wednesday, 7:00 AM – 8:30 AM
Galleria 2

ANS-19

Monday, 8:30 AM – 10:30 AM
Ascot

ANS-19.1

Monday, 10:30 AM – 11:30 AM
Ascot

ANS-19.5

Monday, 1:00 PM – 5:00 PM
Ascot

ANS-50.1

Tuesday, 8:00 AM – 5:00 PM
Ascot

ANS-54.1

Thursday, 8:00 A.M. – 5:00 P.M.
Brittany

ANS-57.2/57.3

Thursday, 9:00 AM – 11:00 AM
Lexington

ANS-58.16

Tuesday, 8:00 AM – 5:00 PM
Lexington

ANS-58.16

Wednesday, 8:00 AM – 5:00 PM
Stratford

ANS-58.16

Thursday, 8:00 AM – 5:00 PM
Stratford

ANS Standards Board

Tuesday, 9:00 AM – 5:00 PM
Clarendon

N16

Monday, 1:00 PM – 4:30 PM
Dover

N17

Wednesday, 7:30 AM – 8:30 AM
Lexington

NFSC

Monday, 8:30 AM – 6:30 PM
Brittany

Sunday, November 11
6 – 7:30 pm
(ANS President's Reception)

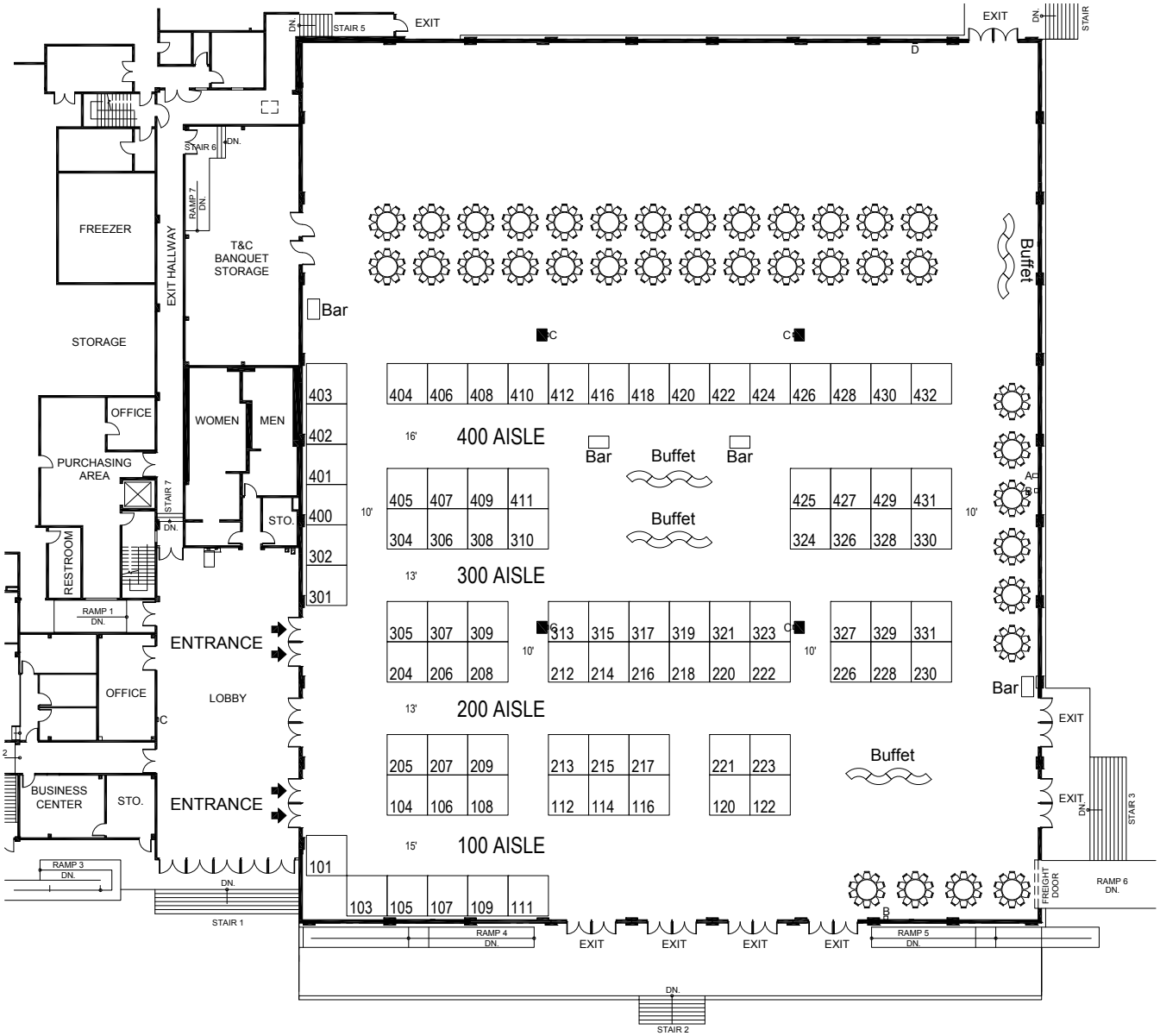
Monday, November 12
11:30 am – 5:30 pm
(ANS Attendee Luncheon • Prizes)

Tuesday, November 13
10 am – 2 pm
(Dessert Reception • Prizes)

The ANS Nuclear Technology Expo will be held November 11-13, 2012 in the Grand Exhibit Hall of the Town & Country Resort. The ANS Expo will be open Sunday-Tuesday with many special events taking place in the Exhibit Area.

Floor Plan

Grand Exhibit • Town & Country Resort • San Diego, CA



We thank the following companies for their generous support of the ANS Expo Special Events:

Bechtel Nuclear Power

(Attendee Prizes)

EXCEL Services Corporation

(Grand Prizes)

INVAP

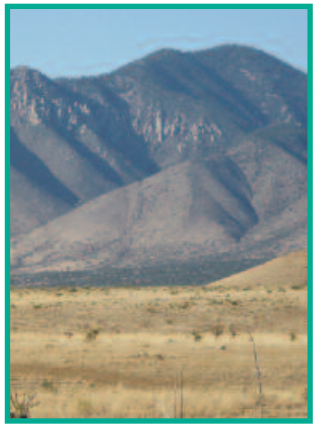
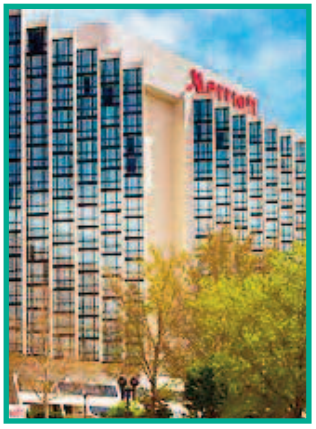
Consulate General of Argentina in Los Angeles

(ANS Expo Fest)

For more information, contact Sharon Bohlander on 1-800-250-3678 x227. Visit our Web site at www.earlbeckwith.com.

2013 International High-Level Radioactive Waste Management

April 28 - May 2, 2013 • Albuquerque Marriott • Albuquerque, NM


Visit the ANS home page
www.ans.org
for future meetings and additional information.

Mark your calendars! Plan to attend!

2013 Utility Working Conference & Vendor Technology Expo

"Nuclear Power – Teaming for the Future"

Hollywood, Florida • Westin Diplomat • August 11–14, 2013

ANS Organization Members

AECL
Alaron Corporation
Alpiq Suisse SA
Altran Solutions Corp.
Ameren-UE
American Electric Power Service Corp.
Amer Industrial Technologies
American Nuclear Insurers
AREVA NP
Arizona Public Service Co.
AT&F Nuclear, Inc.
ATC–Nuclear
AXPO AG/Nuclear Energy
Beznau Nuclear Power Plant

Babcock & Wilcox Company
Barnhart Nuclear Services
Battelle Memorial Institute
Bechtel Power Corp.
Bigge Crane & Rigging Co.
BKW FMB Energie Ltd.
Black & Veatch
Boron Products LLC, a Ceradyne Co.
R. Brooks Associates, Inc.
Burkhalter Rigging, Inc.

Central Research Laboratories
CP&L and Florida Power-Progress
Energy Companies

Dade Moeller & Associates
Del Mar Avionics
Detroit Edison Company
Dominion Generation
DuBose National Energy Service
Duke Energy Corporation

Energy Future Holdings Corp.
(Comanche Peak Nuclear Power Plant)
EnergySolutions
Energy Northwest
Entergy Operations Inc.
EPRI
EXCEL Services Corporation
Exelon Nuclear Co.

FENOC
Five Star Products
Florida Power & Light
Fluor

General Atomics
GE Hitachi Nuclear Energy
GSE Power Systems Inc.

Hayward Tyler, Inc.

Indiana Michigan Power Co./
D.C. Cook Nuclear Power Plant
Institute of Nuclear Safety Systems, Inc.

Kernkraftwerk Leibstadt AG
Kiewit Power Nuclear Co.
Kinectrics Inc.
Kinemetrics Inc.
Korea Atomic Industrial Forum, Inc.
Korea Electric Power Corp.
Krsko Nuclear Power Plant
KSB, Inc.

Lawrence Livermore National
Laboratory
Los Alamos National Laboratory
L-3 Communications MAPPS Inc.

Major Tool & Machine, Inc.
Marshield - Div. of Mars Metal Company
McCallum-Turner, Inc.
Mega-Tech Services, LLC
MetalTek Energy Products
Mitsubishi Nuclear Energy Systems, Inc.

Navarro Research & Engineering
Nebraska Public Power District
NEI
Newport News Shipbuilding
Nexus Technical Services Corporation
NFT
NGNP Industry Alliance
Nuclear Fuel Services, Inc.
Nuclear Plant Journal

Omaha Public Power District
Ontario Power Generation
Overly Manufacturing Company

Pacific Gas & Electric Co.
Pakistan Atomic Energy Commission
PaR Nuclear, Inc.
PaR Systems, Inc.
Phoenix Contact Inc.
PPL Susquehanna, LLC
Private Fuel Storage, LLC
PSEG Nuclear, LLC

Reef Industries, Inc.

S.A. Technology
Sandia National Laboratories
Sarens/Rigging International Co.
Sargent & Lundy
Southern California Edison
Southern Carolina Alliance
Southern Nuclear Operating Co.
Stone & Webster Engineering Inc./
The Shaw Group

Terra Power, LLC
Thermo Fisher Scientific
Toshiba America Nuclear Energy
Corporation
TradeTech, LLC
TVA Nuclear Power Group
TW Metals

UR-Energy USA Inc.
URS Washington Division
USEC Inc.

Waste Control Specialists
Westinghouse Electric Corp.
Wolf Creek Nuclear Operating Corp.
Wyle Laboratories

About the American Nuclear Society

The American Nuclear Society (ANS) is an international, not-for-profit, scientific and educational organization consisting of about 11,600 individual members, 1,500 organizations, 90 Organization Members, 20 professional divisions/technical groups, 51 U.S. and 9 non-U.S. local sections/affiliated societies, 14 plant branches, and 45 student sections. ANS also maintains about 30 formal agreements for cooperation with international organizations.

The Society's main objectives are the advancement of engineering and science relating to the atomic nucleus, and to the integration of the science and management disciplines constituting nuclear science and technology. Other purposes are to encourage research, establish scholarships, disseminate information, inform the general public about nuclear-related activities, conduct meetings at which scientific and technical papers are presented, and cooperate with government agencies, educational institutions, and other organizations having similar purposes.


Town and Country
RESORT & CONVENTION CENTER
FASHION VALLEY
RESTAURANTS
MEETING ROOMS
GUESTROOMS
POOLS
ICE
SOFT DRINKS
ELEVATORS
ACCESSIBLE SPACES
ACCESSIBLE RESTROOMS
ACCESSIBLE GUEST ROOM LOCATIONS ROYAL PALM TOWER 3500 ROOMS
ATM AUTOMATED TELLER MACHINE
FASHION VALLEY TROLLEY STATION
SAN DIEGO RIVER
BRIDGE TO FASHION VALLEY SHOPPING CENTER
Parking
Parking Gate
GOLDEN PACIFIC DRIVE
ROYAL PALM DRIVE
FASHION VALLEY ROAD
ROYAL PALM TOWER
1000 - 1016 10th Floor 1017 - 1033
1900 - 1916 9th Floor 1917 - 1933
1834 1801 - 1816 8th Floor 1817 - 1833
1700 - 1716 7th Floor 1717 - 1733
1600 - 1616 6th Floor 1617 - 1633
1500 - 1516 5th Floor 1517 - 1533
1400 - 1416 4th Floor 1417 - 1433
1300 - 1316 3rd Floor 1317 - 1333
1200 - 1216 2nd Floor 1217 - 1233
1100 - 1116 1st Floor 1118 - 1133
GAZEBO
VAN
GOLDEN BALLROOM
PACIFIC SALON ONE
PACIFIC SALON TWO
PACIFIC SALON THREE
GOLDEN PACIFIC BALLROOM
2nd Floor PACIFIC SALON FOUR
PACIFIC SALON FIVE
PACIFIC SALON SIX
PACIFIC SALON SEVEN
LOWER LEVEL PARKING
PACIFIC BALLROOM
FOYER
CONVENTION CENTER
LION FOUNTAIN COURT
TERRACE SALON ONE
TERRACE SALON TWO
TERRACE SALON THREE
MEETING SERVICES (2ND FLOOR)
CONVENTION SERVICES
ACCESSIBLE LIFT
Package Room
ATLAS BALLROOM
TOWN & COUNTRY
ATLAS FOYER
SAN DIEGO
GOLDEN WEST
CALIFORNIA
Lower Level
Convention Sales (2nd floor)
Catering Sales
Business Center
The Boardroom
Grand Hall Foyer
ROYAL PALM BALLROOM
ROYAL PALM SALON ONE
ROYAL PALM SALON TWO
ROYAL PALM SALON THREE
ROYAL PALM SALON FOUR
ROYAL PALM SALON FIVE
ROYAL PALM SALON SIX
ROYAL PALM WAY
ROSE PARK LANE
ATM
WHIRLPOOL
POOL
Terrace Deli
Terrace Cafe
FOOD COURT
GIFT SHOP
TIKI PAVILION
ROSE GARDEN
DOVER
STRATFORD
SUNSET
MEETING HOUSE
SUNRISE
ESQUIRE
TOWNE
DEVONSHIRE
3580 3571
3540 3531
3530 3570
3541 - 3543
3500 - 3502
3544 - 3546
3503 - 3505
3517 3557
3506 3516
3547 3556
3450 3462
3400 3414
REGENCY LANE
REGENCY TOWER
LE PAVILLON
LE SOMMET
WINDSOR ROSE
LE CHANTECLER
2800 - 2831
2700 - 2731
2600 - 2631
2500 - 2531
2400 - 2431
2300 - 2331
2200 - 2231
2100 - 2131
9th Floor
8th Floor
7th Floor
6th Floor
5th Floor
4th Floor
3rd Floor
2nd Floor
1st Floor
Parking Structure
3749 - 3783
3735 - 3769
3756 - 3789
3742 - 3775
REGENCY BALLROOM
REGENCY COURTYARD
SHEFFIELD
HAMPTON
WINDSOR
ACCESSIBLE LIFT
3722
3733
3710
ASCOT
BRITTANY
CLARENDON
GARDEN BALLROOM
GARDEN SALON ONE 2nd Floor
GALLERIA ONE
GARDEN SALON TWO
GALLERIA TWO 2nd Floor
3711
3723
3700
EATON
FAIRFIELD
CRESCENT
Charlie's Trolley
REGENCY ROAD
TIFFANY ROOM
Trellises Garden Grille
GRAND EXHIBIT HALL
TRELLISES COURTYARD
3209
3219
3150
3145
3202
3212
3200-01
3210-11
3265 - 3268
3260 - 3263
3258
3227
3237
3247
3257
3222
3232
3243
3253
3220-21
3230-31
3240-42
3250-52
3331
3383
3325
3375
3364
3374
3305
3316
3350 - 3354
3300 - 3304
3600 - 11
3612 - 23
3624
3661
3651
3689
3634
3671
3660
3699
ROYAL WAY
REGENCY DRIVE
Security
Human Resources
GIFT SHOP
AVIS
LEXINGTON
LOBBY
Registration Area
LOBBY TERRACE COURT
FLAG
SPA COURTYARD
BELLA TOSCA DAY SPA & SALON
INNER SANCTUARY ROOM
Kelly's STEAKHOUSE