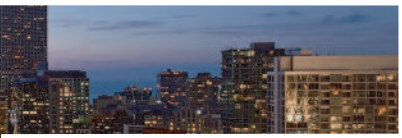
2012 ANS Annual Meeting

"Nuclear Science and Technology: Managing the Global Impact of Economic and Natural Events"

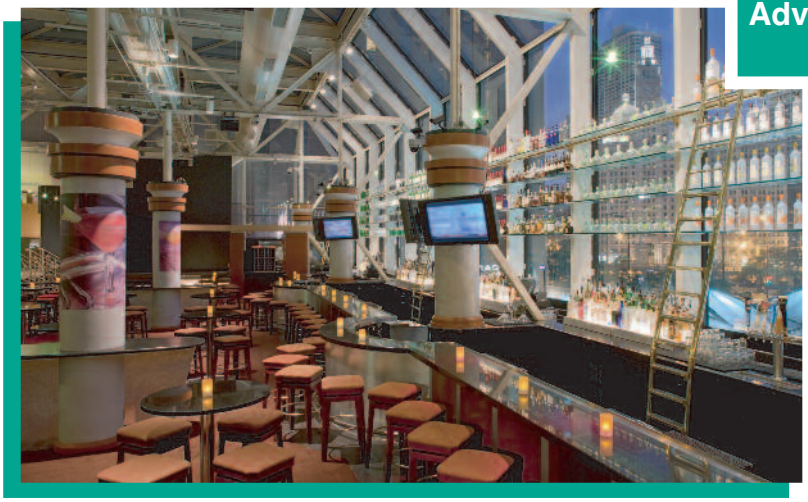


Professional Development Workshop:

Preparing for the Nuclear Engineering Professional Engineering Exam

Embedded Topical Meetings:

- Decommissioning, Decontamination and Reutilization (DD&R 2012)
- Nuclear Fuels & Structural Materials for the Next Generation Nuclear Reactors (NFSM 2012)
- International Congress on Advances in Nuclear Power Plants (ICAPP 2012)



Official Program

Chicago, IL

June 24-28, 2012·Hyatt Regency Chicago

our most sincere ***thanks***
to the ***following*** ***contributors***
for their support of the

2012 ANS Annual Meeting

"Nuclear Science and Technology: Managing the Global Impact of Economic and Natural Events"

and Embedded Topical Meetings:

Decommissioning, Decontamination and Reutilization (DD&R 2012)

Nuclear Fuels & Structural Materials for Next Generation Nuclear Reactors (NFSM 2012)

International Congress on Advances in Nuclear Power Plants (ICAPP 2012)

Platinum

Exelon Nuclear

Gold

EXCEL Services Corporation

Mitsubishi Heavy Industries, Ltd./
Mitsubishi Nuclear Energy Systems, Inc.

Tennessee Valley Authority

Westinghouse Electric Company

Silver

Babcock & Wilcox

Sargent & Lundy LLC

The Shaw Group, Inc.

Bronze

D.C. Cook Plant (AEP)

Florida Power & Light Company

Fluor Corporation

PPL Susquehanna, LLC

Thank You!

We would like to extend our sincerest gratitude to GE Hitachi for their generous sponsorship of the Global Leadership Reception on Saturday, June 23, 2012.

Table of Contents

Our most sincere THANKS to Natalie Zaczek for the design and creation of the 2012 ANS Annual Meeting logo. Natalie won the Chicago Local Section logo design competition.

Thank you, Natalie!

Meeting Highlights

Saturday, June 23, 2012

8:00 a.m. – 5:00 p.m.	Teachers' Workshop
5:00 p.m. – 6:30 p.m.	Professional Divisions Workshop

Sunday, June 24, 2012

8:30 a.m. – 5:00 p.m.	Professional Development Workshop: "Preparing for the Nuclear Engineering Professional Engineering Exam"
6:00 p.m. – 7:30 p.m.	DD&R '12 & ICAPP '12 Exhibit
1:00 p.m. – 1:30 p.m.	First-Time Attendee Orientation
4:00 p.m. – 5:00 p.m.	Student Assistant Training Session
4:00 p.m. – 5:30 p.m.	ICAPP 2012: Special Session
5:00 p.m. – 6:00 p.m.	Mentoring Program
6:00 p.m. – 7:30 p.m.	ANS President's Reception
6:00 p.m. – 7:30 p.m.	DD&R 2012: Poster Session
6:00 p.m. – 7:30 p.m.	DD&R '12 & ICAPP '12 Exhibit

Monday, June 25, 2012

8:00 a.m. – 10:00 a.m.	Spouse/Guest Hospitality
8:00 a.m. – 11:30 a.m.	2012 ANS Annual Meeting: Opening Plenary Session: "Nuclear Science and Technology: Managing the Global Impact of Economic and Natural Events"
11:30 a.m. – 1:00 p.m.	Attendee Luncheon in the Nuclear Technology Expo
11:30 a.m. – 4:30 p.m.	DD&R '12 & ICAPP '12 Exhibit.
1:00 p.m. – 2:30 p.m.	2012 ANS Annual Meeting: President's Special Session
1:00 p.m. – 4:00 p.m.	Spouse/Guest Tour: "Architectural River Cruise"
2:30 p.m. – 4:00 p.m.	DD&R 2012: Technical Sessions
2:30 p.m. – 4:00 p.m.	ICAPP 2012: Technical Sessions
2:45 p.m. – 5:00 p.m.	2012 ANS Annual Meeting: Technical Sessions
3:30 p.m. – 4:30 p.m.	ANS Business Meeting
4:30 p.m. – 6:30 p.m.	ICAPP 2012: Plenary I
6:00 p.m. – 11:00 p.m.	Evening Event: "Reception at the Museum of Science and Industry"

Tuesday, June 26, 2012

8:00 a.m. – 11:30 a.m.	2012 ANS Annual Meeting: Technical Sessions
8:00 a.m. – 10:00 a.m.	Spouse/Guest Hospitality
8:00 a.m. – 10:00 a.m.	ICAPP 2012: Technical Sessions
8:00 a.m. – 10:00 a.m.	NFSM 2012: Plenary Session
8:30 a.m. – 11:00 a.m.	DD&R 2012: Plenary Session
10:00 a.m. – 12:00 p.m.	ICAPP 2012: Technical Sessions
10:00 a.m. – 2:00 p.m.	DD&R '12 & ICAPP '12 Exhibit
10:30 a.m. – 11:40 a.m.	NFSM 2012: General Chairs' Special Session
11:00 a.m. – 4:30 p.m.	Spouse/Guest Tour: "Frank Lloyd Wright Home and Studio and Unity Temple in Oak Park"
11:45 a.m. - 1:00 p.m.	Operations and Power Division Luncheon
1:00 p.m. – 2:30 p.m.	ICAPP 2012: Technical Sessions
1:00 p.m. – 2:40 p.m.	NFSM 2012: Technical Sessions
1:00 p.m. – 3:00 p.m.	DD&R 2012: Technical Sessions
1:00 p.m. - 4:00 p.m.	2012 ANS Annual Meeting: Technical Sessions
2:30 p.m. – 4:00 p.m.	ICAPP 2012: Technical Sessions
3:00 p.m. – 4:40 p.m.	NFSM 2012: Technical Sessions
3:15 p.m. – 5:15 p.m.	DD&R 2012: Technical Sessions
4:15 p.m. – 6:15 p.m.	ICAPP 2012: Plenary II
5:30 p.m. – 10:30 p.m.	Evening Event: Dinner and Show at Tommy Gun's Garage

Wednesday, June 27, 2012

8:00 a.m. – 11:30 a.m.	2012 ANS Annual Meeting: Technical Sessions
8:00 a.m. – 10:00 a.m.	Spouse/Guest Hospitality
8:00 a.m. – 10:00 a.m.	DD&R 2012: Technical Sessions
8:00 a.m. – 10:00 a.m.	ICAPP 2012: Technical Sessions
8:30 a.m. – 9:50 a.m.	NFSM 2012: Technical Sessions
10:00 a.m. – 12:00 p.m.	ICAPP 2012: Technical Sessions
10:10 a.m. – 11:30 a.m.	NFSM 2012: Technical Sessions
10:15 a.m. – 11:45 a.m.	DD&R 2012: Technical Sessions
11:30 a.m. - 1:00 p.m.	MSTD Awards Luncheon
1:00 p.m. – 2:20 p.m.	NFSM 2012: Technical Sessions
1:00 p.m. – 2:30 p.m.	ICAPP 2012: Technical Sessions
1:00 p.m. – 3:00 p.m.	DD&R 2012: Technical Sessions
1:00 p.m. – 4:00 p.m.	2012 ANS Annual Meeting: Technical Sessions
2:30 p.m. – 4:00 p.m.	ICAPP 2012: Technical Sessions
2:40 p.m. – 4:00 p.m.	NFSM 2012: Technical Sessions
3:15 p.m. – 4:45 p.m.	DD&R 2012: Technical Sessions
4:15 p.m. – 6:15 p.m.	ICAPP 2012: Plenary III
4:30 p.m. – 6:30 p.m.	Public Information Workshop
6:00 p.m. – 8:00 p.m.	NFSM 2012: Poster Session
6:00 p.m. – 11:00 p.m.	Evening Event: Dinner Cruise on the Spirit of Chicago

Thursday, June 28, 2012

7:45 a.m. – 1:30 p.m.	DD&R Technical Tour: Zion Station
7:45 a.m. – 3:30 p.m.	Technical Tour: Exelon Dresden Station
8:00 a.m. – 11:30 a.m.	2012 ANS Annual Meeting: Technical Sessions
8:00 a.m. – 10:00 a.m.	ICAPP Technical Sessions
8:30 a.m. – 9:50 a.m.	NFSM 2012: Technical Sessions
10:00 a.m. – 12:00 p.m.	ICAPP 2012: Plenary IV (Closing)
10:10 a.m. – 11:30 a.m.	NFSM 2012: Technical Sessions
1:00 p.m. – 2:20 p.m.	NFSM 2012: Technical Sessions
2:40 p.m. – 4:00 p.m.	NFSM 2012: Technical Sessions

Friday, June 29, 2012

8:00 a.m. – 2:30 p.m.	Technical Tour: Argonne National Laboratory

2012 ANS Annual Meeting: Meeting Officials

GENERAL CHAIR:
Amir Shahkarami
CEO, Exelon Nuclear Partners
Senior VP, Exelon Generation

TECHNICAL PROGRAM CHAIR (TPC):
Raymond Klann
Argonne National Laboratory

ASSISTANT TPC:
Eric A. Burgett
Georgia Institute of Technology

ASSISTANT TPC:
Patrick J. Pinhero
University of Missouri/Columbia

STUDENT PROGRAM CHAIR:
Darius Lisowski
University of Wisconsin-Madison

STUDENT PROGRAM CHAIR:
Brandon Verhoff
Purdue University

STUDENT PROGRAM CHAIR:
Robert Geringer
University of Illinois at Urbana-Champaign

SPECIAL EVENTS/TECHNICAL TOUR CHAIR:
Natalie Zaczek
Exelon Corporation

SPOUSE/GUEST PROGRAM CHAIR:
Pamela Tilbrook

Meeting Information

Meeting Information

The 2012 ANS Annual Meeting and Embedded Topical Meetings: Decommissioning, Decontamination and Reutilization *(DD&R 2012)*, Nuclear Fuels and Structural Materials for the Next Generation Nuclear Reactors *(NFSM 2012)*, and International Congress on Advances in Nuclear Power Plants *(ICAPP 2012)* will be held June 24-28, 2012, in Chicago, IL. There will be a Professional Development Workshop: "Preparing for Nuclear Engineering Professional Engineering Exam" held in conjunction with the 2012 ANS Annual Meeting.

Accommodations/Hotel Information

The Hyatt Regency Chicago will be the location for the 2012 ANS Annual Meeting, where all activities, technical sessions and governance committee meetings will take place.

The Hyatt Regency Chicago is located at 151 East Wacker Drive, Chicago, Illinois, 60601.

DD&R '12 and ICAPP '12 Exhibit

The DD&R '12 and ICAPP '12 Exhibit will be held in conjunction with the 2012 ANS Annual Meeting in the Riverside Center West *(Purple Level, East Tower)* of the hotel. Please turn to page 74 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, June 24, 2012, in the Buckingham Room *(Bronze Level, West Tower)*.

Student Assistant Program

Attends at the 2012 ANS Annual 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, June 24, 2012, 4:00 - 5:00 p.m. in the Buckingham Room *(Bronze Level, West Tower)*.

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. Please refer to the ANS website for more information about the meeting.

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 Stetson E *(Purple Level, West Tower)*.

Mentoring Program

A special mentoring program will be held from 5:00 p.m. - 6:00 p.m. on Sunday, June 24, 2012, in the McCormick Room *(Silver Level, West Tower)*.

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.

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.

Conference Office

Location: Stetson G *(Purple Level, West Tower)*

ANS Media Center

Monday, June 25, 2012
7:45 a.m. - 4:00 p.m.

Tuesday, June 26, 2012
8:00 a.m. - 4:00 p.m.

Wednesday, June 27, 2012
8:00 a.m. - 4:00 p.m.

Location: Stetson F *(Purple Level, West Tower)*

ANS Registration

Meeting and workshop registration, speakers' & sessions chairs' desk and the message desk will be located at: the Regency Ballroom Registration Desk *(Gold Level, West Tower)* of the Hyatt Regency Chicago, Saturday, June 23, 2012 - Wednesday, June 27, 2012 and in the Crystal Foyer on Thursday, June 28, 2012. Meeting registration is required for all attendees and presenters. Badges are required for admission to all technical sessions, workshops and events.

Registration Hours:

Saturday, June 23, 2012
2:00 p.m. - 5:00 p.m.

Sunday, June 24, 2012
11:00 a.m. - 7:00 p.m.

Monday, June 25, 2012
7:30 a.m. - 5:00 p.m.

Tuesday, June 26, 2012
7:30 a.m. - 5:00 p.m.

Wednesday, June 27, 2012
7:30 a.m. - 5:00 p.m.

Thursday, June 28, 2012
7:30 a.m. - 2:00 p.m.

**** Sunday workshop attendees only***

Registration for the Sunday ANS Professional Development Workshops will take place at the Regency Ballroom Registration Desk (Gold Level, West Tower) of the Hotel on Sunday, June 24, 2012, from 7:30 a.m. until 9:00 a.m. Please note: only workshop information will be available; all other registrants see times and location above.

Focus on Communications Workshop

Wednesday, June 27, 2012 4:30p.m.- 6:30p.m.
Location: Crystal A *(Green Level, West Tower)*

Spouse/Guest Hospitality

Spouse/guest hospitality breakfast will be served from 8:00 a.m. - 10:00 a.m., Monday, June 25, 2012, through Wednesday, June 27, 2012, in Skyway 260 *(Blue Level, East Tower)*. 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, June 26, 2012, there will be a noncompetitive run starting at 6:00 a.m. from the front entrance of the hotel.

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

Professional Development Workshop

PLEASE NOTE: Registration for the workshop is separate from, and in addition to, the meeting registration fee.

"Preparing for the Nuclear Engineering Professional Engineering Exam"

Sunday, June 24, 2012
8:30 a.m. - 5:00 p.m.
Location: Toronto *(Gold Level, West Tower)*

Registration price for the workshop is $450 for ANS members and $550 for non-members.

This course is designed for individuals who have passed the Fundamentals of Engineering Exam *(formerly the EIT exam)* and who are preparing for the Professional Engineering Exam *(PE exam)* in Nuclear Engineering.

Instructors will provide details on registration and how it differs from state to state, plus an overview of the examination formats.

The four basic skill areas: nuclear power, nuclear fuel cycle, interaction of radiation, and nuclear criticality/kinetics/neutronics, will be discussed in detail. For each skill area, the instructor will describe the topics and the skills to be tested within each.

Examples of questions will be presented in depth, after which students will work other typical questions on their own.

Instructors will provide assistance, then review solutions with the group. Students will be provided with the revised ANS study guide including a sample exam and list of recommended resources for continued study.

SPECIAL EVENTS

LUNCHEON

Attendee Luncheon in the Nuclear Technology Expo*

Monday, June 25, 2012
11:30 a.m. - 1:00 p.m.
Location: Exhibit Hall *(Riverside Center West)*

One ticket to the ANS 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.

Operations and Power Division Luncheon

Tuesday, June 26, 2012
11:45 a.m. - 1:00 p.m.

The Operations and Power Division Luncheon will be held at McCormick & Schmick's, which is located within walking distance of the hotel *(two blocks)*, at One East Wacker Drive.
This Event is Currently Sold Out

MSTD Awards Luncheon

Wednesday, June 27, 2012
11:30 a.m. - 1:00 p.m.

Location: Skyway 260 *(Blue Level, East Tower)*
Tickets can be purchased on-site at the ANS Registration Desk for $71.00.

EVENING EVENTS

***Please Note:* Busses will leave promptly from the West Tower Lobby of the hotel.**

ANS President's Reception

Sunday, June 24, 2012
6:00 p.m. - 7:30 p.m.
Location: Exhibit Hall *(Riverside Center West)*

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.*

Reception at the Museum of Science and Industry

Monday, June 25, 2012
6:00 p.m. - 11:00 p.m.

The reception will take place in the Museum of Science and Industry on the Main Level.

Museum of Science and Industry

This is the heart of the Museum with a breathtaking 120-foot copper domed ceiling, antique locomotive, 727-jet plane and a 40-foot indoor tornado.

Science Storms Exhibit

While at the museum, visit the newest exhibit, Science Storms, and get up close and personal with a twister, while witnessing the awesome forces of nature. This two floor, 26,000 square foot, large-scale exhibit recreates seven iconic natural phenomena- lightning, fire, tornados, avalanches, tsunamis, sunlight and atoms in motion. Take the chance to explore 50 experiments, including 80 miles per hour wind tunnels, Newton's Cradle, and unleashing your own tsunami.

Tickets can be purchased on-site at the ANS Registration Desk for $80.

Dinner and Show at Tommy Gun's Garage

Tuesday, June 26, 2012
5:30 p.m. - 10:30 p.m.

Not long after the turn of the century, in a decade known as the Roaring Twenties, the manufacture and sale of alcoholic beverages was outlawed and strictly prohibited. Nevertheless, men like Alphonse Capone and his mafia family, refused to adhere to the law, opening illegal speakeasies across the city of Chicago, offering alcohol, gambling and hotbox entertainment. Tommy Gun's Garage is an Audience Interactive "Speakeasy" that offers a musical comedy review with the gangsters, the flappers and YOU! (that's audience participation!). After a delicious sit-down dinner, join "Vito", "Gloves", and the "gangsters" and the "flappers" for non-stop comedy and dangerous fun.

Special Events

The Mugs and Molls of Tommy Gun's

You will be transported back to the 1920's complete with the boss's 1928 Model "A" Ford, Roaring Twenties music and memorabilia from the Twenties. The mugs and the molls dance and sing the Charleston and other musical selections from Cole Porter to George Gershwin, Fats Waller, Duke Ellington and more… All played by Chicago's Sinfully Orchestra. Be ready to hide your hooch (alcohol) cause we could get raided by the coppers at anytime. Be careful, you could get pulled up on stage at any time to perform a sobriety test given by Officer Murphy.

This Event is Currently Sold Out

Dinner Cruise on the Spirit of Chicago

Wednesday, June 27, 2012
6:00 p.m. - 11:00 p.m.

Welcome aboard- You'll know you're in for a special evening the moment you step aboard and are escorted to your candlelit table. Order drinks, then feel free to explore the ship while the crew casts off for three fabulous hours along the Lakefront. Your waiter will invite you to the Grande Dinner Buffet, where you can sample a little bit of everything, or just select your favorite fare.

Spirit of Chicago

Savor the never-ending view of Chicago's breathtaking skyline seen through the huge panoramic windows. The Spirit's talented waitstaff will dazzle you with their vocal talents, performing popular songs from yesterday and today.

Relax on the largest outdoor patio deck in the city while Chicago's magnificent skyline spreads before you in all directions. You will also enjoy a fabulous fireworks show.

The Spirit's dinner cruises spotlight some of the hottest DJs in the city. For nearly two hours, we'll play top 40 hits from various genres and styles and let you rock 'til we dock - literally.

Tickets available on-site at the ANS Registration Desk for $85.

SPOUSE/GUEST TOURS

Architectural River Cruise

Monday, June 25, 2012
1:00 p.m. – 4:00 p.m.

Visitors and Chicagoans alike say that the best way to see the city's profile is on a Chicago River architectural cruise. As depicted by a specially trained architectural guide, learn how, in the 19th Century, the modern city grew from a trading post to become the world's fastest growing metropolis.

Travel on the same river route which Father Marquette, Louis Joliet and Jean Baptiste Point du Sable used in their exploration.

Marvel at how the early Chicago architects overcame forces of nature and technology to create the first modern buildings in the nineteenth century. See at least 50 world famous structures by architects, such as Louis Sullivan, Mies van der Rohe, Harry Weese, Helmut Jahn, Philip Johnson, Bertrand Goldberg, Ricardo Bofil, Kevin Roche, and other masters.

Chicago River

View an extraordinary palette of great structures including Lake PointTower, Wrigley Building, IBM Building, NBC Tower Tribune Tower, Civic Opera House, Sears Tower, Marina City, Board of Trade and scores more.

Tickets available on-site at the ANS Registration Desk for $85. Times listed are departure times and return times to and from the Hyatt Regency Chicago. Busses will leave promptly from the West Tower Lobby of the hotel.

Frank Lloyd Wright Home and Studio and Unity Temple in Oak Park

Tuesday, June 26, 2012
11:00 a.m. – 4:30 p.m.

In 1889, twenty-two year old Frank Lloyd Wright, lacking both formal training and an academic degree, began quite a movement in the Oak Park House he designed and built for a growing family.

As his fame grew, the movement became a revolution and the residence expanded into an office, then a workshop and studio in which to test the astonishing new style.

From this home, his imaginative art and daring designs became world famous. Wright called his movement the "Prairie School." More than a century later, it ranks as America's most influential architectural expression.

Frank Lloyd Wright Home & Studio

Each year the American Institute of Architects names Frank Lloyd Wright as "the most original architect the U.S. has ever produced- and more important- one of the most reactive architectural geniuses of all time." Now you can visit the place where it all began.

Specially trained architectural docents will conduct comprehensive, small group inspections of the residence, now fully restored to its original 1889 appearance.

A second visit will be made to a nearby Unity Temple. Wright called it "my little jewel box." The world celebrates it as one of his most daring works; a three-dimensional series of complex rectilinear solids cast in reinforced concrete, which remains virtually unchanged to this day.

Tickets available on-site at the ANS Registration Desk for $65.
(Lunch is not included.) Times listed are departure times and return times to and from the Hyatt Regency Chicago. Busses will leave promptly from the West Tower Lobby of the hotel

TECHNICAL TOURS

DD&R Technical Tour: Zion Station

Thursday, June 28, 2012
7:45 a.m. – 1:30 p.m.

Participants in this tour will have the opportunity to tour the first two-unit nuclear plant decommissioning project in the USA...at the time the Zion units were built, they were the largest PWR's ever built.

Preliminary itinerary:

a. Vertical Concrete Cask *(VCC)* manufacturing pad

b. ISFSI Pad under construction

c. Outside walk around of Containment Buildings, Fuel building, Turbine Building, and Crib House

d. Inside Turbine Building: Steam Tunnel, Emergency Diesel- Generators, Control Point *(with TV monitor of activities inside containment)*, Control Room, and Turbine Deck

At the conclusion on the tour, participants will pick up box lunch/drink to eat on the bus ride back.

This Event is Currently Sold Out

Zion Station

Please note the following requirements on the day of the tour:

- Each visitor must produce an official government ID at the gate; failure to do so will result in the participant not being allowed inside the protected area.
- Zion Solutions will provide each visitor with a hard hat and safety glasses; however, visitors are responsible for wearing "sturdy, serviceable shoes" *(Ie., no sneakers, no open toe sandals, etc.)*

Times listed are departure times and return times to and from the Hyatt Regency Chicago. Busses will leave promptly from the West Tower Lobby of the hotel.

Technical Tour: Exelon Dresden Station

Thursday, June 28, 2012
7:45 a.m. – 3:30 p.m.

Participants will enjoy a tour of Dresden Station, a dual-unit GE Mark I BWR site. In addition to seeing the station's operating units, you will get a glimpse of nuclear history as you visit Dresden Unit 1, the nation's first privately financed commercial nuclear power plant. You will also view Dresden's spent fuel pools, dry cask storage pads, the turbine and generator, the emergency diesel generators, the station blackout diesels and other safety systems.

This Event is Currently Sold Out

Exelon Dresden Station

Please note the following requirements on the day of the tour:

- Each visitor must produce an official government ID (or passport) at the gate; failure to do so will result in the participant not being allowed inside the protected area.
- Tour participants must be 18 years of age or older.
- Proper attire for a plant tour and other guidelines will be sent out after registration. Note that this is a walking plant tour and participants should expect to be on their feet for approximately an hour.
- Lunch is included. Please identify any dietary restrictions, if applicable, as part of your registration for the tour.
- Please provide your email address to receive information closer to the tour date.

Times listed are departure times and return times to and from the Hyatt Regency Chicago. Busses will leave promptly from the West Tower Lobby of the hotel.

Technical Tour: Argonne National Laboratory

Friday, June 29, 2012
8:00 a.m. – 2:30 p.m.

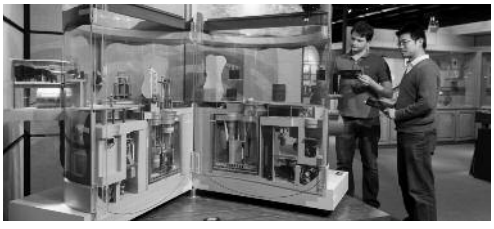
Participants will have the opportunity to:

- *Visit Argonne's Thermal Fluid Sciences Lab, the Advanced Photon Source, the Natural Convection Shutdown Heat Removal Test Facility, the Leadership Computing Facility data center, and other facilities*
- *Talk with Argonne experts about the many areas of nuclear energy research being pursued at Argonne;*
- *Tour Argonne's Nuclear Energy Exhibit to learn about the facilities and experiments at Argonne that were the foundation of the current commercial nuclear industry and of future advanced reactor designs.*

This Event is Currently Sold Out

Please note the following requirements on the day of the tour:

- *Each visitor must produce an official government picture ID (or passport) at the gate; failure to do so will result in the participant not being allowed inside the laboratory.*
- *US permanent residents must present their "green" card (legal permanent resident card) and passport.*
- *Non-US citizens who are not permanent residents must present a passport, visa, I-94, and any supporting documents, such as I-20 or DS-2019.*
- *Flat, closed toe shoes and long pants are required.*



Argonne National Laboratory

Times listed are departure times and return times to and from the Hyatt Regency Chicago. Busses will leave promptly from the West Tower Lobby of the hotel.

2012 ANS Annual Meeting Condensed Schedule

Special	Monday, June 25 2012	
	8:00 AM	1:00 PM
Regency Ballroom	**Opening Plenary:** Nuclear Science and Technology: Managing the Global Impact of Economic and Natural Events	**ANS President's Special Session:** Low-Level Radiation and Its Implications for Fukushima Recovery

Room	Monday, June 25 2012	Tuesday, June 26 2012			
	2:45-6:30 PM	8:00 AM-12:00 PM		1:00-5:00 PM	
Regency A	Solving The Spent Fuel Dilemma–Panel	Research by U.S. DOE NEUP-Sponsored Students		Science in Politics: Getting Scientists Elected–Panel	What do Women Want? How We Can Build Support for Nuclear Energy–Panel
Regency B	General Two-Phase Flow	Current Fire Research Activities: Strengthening Safety Through Research	New Nuclear Construction Around the World Status Report–Panel	Fukushima: Evaluation and Impacts–Panel	
Regency C	Current Issues in Computational Methods-Roundtable: Experiences with the Legalities of Software Development and Distribution	Transport Methods		Computational Methods and Mathematical Modeling	
Regency D	Health Effects of Radiation –Panel	Fast Nuclear Fission Technology—I: Past Experience and IFR–Panel		Fast Nuclear Fission Technology—II: IFR—the Path Forward –Panel	
Acapulco	Development of Advanced Fuel Recycle Methods	Extended Storage and Transportation of Spent Nuclear Fuel—I–Panel		Extended Storage and Transportation of Spent Nuclear Fuel—II–Panel	
Atlanta	Isotopes and Radiation: General	Modeling and Simulation of Brachytherapy Sources and Biology and Medicine: General	Accelerators and Detectors Used in Medical Therapy	Proton Imaging Technology for Proton Therapy	
Hong Kong	Nuclear Technician Education and Training–Panel			ENDF/B-VII.1: Data Measurements, Evaluation, Processing and Initial Experience	
Picasso	Current Capabilities, Issues in LWR Core Design and Reactor Engineering Support–Panel	Innovations in Radiation Detectors: New Designs, Improvements, and Applications		Nuclear Installations Safety: General	Irradiation Assisted Degradation of Reactor Vessel Internals/NRC-Sponsored Environmentally Assisted Fatigue Research Activities
Buckingham	Used Fuel Component Recycle and Off-Gas Issues	Computational Thermal Hydraulics—I		Next Generation Safety Analysis Code	Thermal Hydraulics in Severe Accidents
Columbian	Data Analysis in Nuclear Criticality Safety—I	Advancing Criticality Safety Capabilities in a Growing Nuclear World		Data Analysis in Nuclear Criticality Safety—II	
Haymarket	Emerging Issues in Nuclear Facility Safety	Radiation Protection and Shielding–Roundtable		Radiation Protection and Shielding: General	Computational Tools for Radiation Protection and Shielding
Toronto	Characterization and Applications of Advanced Reactors and Fuels	Reactor Analysis Methods—I		Reactor Physics Design, Validation, and Operating Experience	
Soldier Field					
Crystal A					
Crystal C					
Water Tower					

2012 ANS Annual Meeting Condensed Schedule

Room	Wednesday, June 27 2012			Thursday, June 28 2012
	8:00-9:20 AM	9:50 AM-12:00 PM	1:00 PM-6:00 PM	8:00 AM-12:00 PM
Regency Ballroom				
Regency A	Bridging the Gap Between Technology and Policy in Education and Training–Paper/Panel		Education, Training, and Workforce Development: General	
Regency B	Generic Issue 199, "Implications of Updated Probabilistic Seismic Hazard Estimates in Central and Eastern United States on Existing Plants"–Panel		Fuel Cycle and Waste Management: General—I	
Regency C	Transport and Computational Methods		Uncertainty Quantification, Sensitivity Analysis, and Reduced Order Modeling	
Regency D	Environmental Sciences: General		Update on Emergency Preparedness and Planning Post-Fukushima–Panel / SMR: Progression and Status	
Acapulco	Nuclear Nonproliferation Issues		Modeling and Simulation in the Fuel Cycle	
Atlanta	Accelerator Applications: General		University Research Reactors and Nuclear Science Programs—II	
Hong Kong	Operations and Power: General		Research Applications of Neutron Spectrometry and Dosimetry	
Picasso	University Research Reactors and Nuclear Science Programs—I		Update on NQA-1: Quality Assurance Requirements for Nuclear Facility Applications–Panel	
Buckingham	Computational Thermal Hydraulics—II	General Thermal Hydraulics—I	General Thermal Hydraulics—II	
Columbian	Benchmarking Experiments for Criticality Safety and Reactor Physics Applications—I–Panel		Benchmarking Experiments for Criticality Safety and Reactor Physics Applications—II–Tutorial	Nuclear Criticality Safety Standards–Forum
Haymarket	Reactor Pressure Vessel Neutron Exposure Monitoring–Tutorial		Robotics and Remote Systems: General	
Toronto	Experiences and Challenges in RERTR Core Redesign		Reactor Physics: General	
Soldier Field				Advanced Reactors
Crystal A				Fuel Cycle and Waste Management: General—II
Crystal C				MCNP/MCNPX Tutorial for Homeland Security
Water Tower				Reactor Analysis Methods—II

Technical Sessions by Division

(Asterisks indicate special sessions. Parentheses indicate cosponsorship)

Special Sessions

*Opening Plenary: Nuclear Science and Technology: Managing the Global Impact of Economic and Natural Events, *Mon. a.m.(8:00-11:30 a.m.)*

*ANS President's Special Session: Low-Level Radiation and Its Implications for Fukushima Recovery, *Mon. p.m. (1:00-2:30 p.m.)*

Accelerator Applications (AAD)

Accelerators and Detectors Used in Medical Therapy, *Tues. a.m.*

(Proton Imaging Technology for Proton Therapy, *Tues. p.m.*)

Accelerator Applications: General, *Wed. a.m.*

Biology and Medicine (BMD)

Modeling and Simulation of Brachytherapy Sources and Biology and Medicine: General, *Tues. a.m.*

(Accelerators and Detectors Used in Medical Therapy, *Tues. a.m.*)

(Innovations in Radiation Detectors: New Designs, Improvements, and Applications, *Tues. a.m.*)

Proton Imaging Technology for Proton Therapy, *Tues. p.m.*

(University Research Reactors and Nuclear Science Programs—I, *Wed. a.m.)*

(University Research Reactors and Nuclear Science Programs—II, *Wed. p.m.*)

Education, Training, and Workforce Development (ETWDD)

Nuclear Technician Education and Training–Panel, *Mon. p.m.*

Research by U.S. DOE NEUP-Sponsored Students, *Tues. a.m.*

Science in Politics: Getting Scientists Elected–Panel, *Tues. p.m.*

Communication Workshop on Nuclear Industry and Women's Issues–Panel, *Tues. p.m.*

Bridging the Gap Between Education and Policy in Education and Training–Paper/Panel, *Wed. a.m.*

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

Environmental Sciences (ESD)

Health Effects of Radiation–Panel, *Mon. p.m.*

Fast Nuclear Fission Technology—I: Past Experience and IFR–Panel, *Tues. a.m.*

Fast Nuclear Fission Technology—II: IFR—the Path Forward–Panel, *Tues. p.m.*

Environmental Sciences: General, *Wed. a.m.*

Fuel Cycle and Waste Management (FCWMD)

Development of Advanced Fuel Recycle Methods, *Mon. p.m.*

Used Fuel Component Recycle and Off-Gas Issues, *Mon. p.m.*

Extended Storage and Transportation of Spent Nuclear Fuel—I–Panel, *Tues. a.m.*

Extended Storage and Transportation of Spent Nuclear Fuel—II–Panel, *Tues. p.m.*

Nuclear Nonproliferation Issues, *Wed. a.m.*

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

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

Modeling and Simulation in the Fuel Cycle, *Wed. p.m.*

Isotopes and Radiation (IRD)

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

Innovations in Radiation Detectors: New Designs, Improvements, and Applications, *Tues. a.m.*

University Research Reactors and Nuclear Science Programs—I, *Wed. a.m.*

University Research Reactors and Nuclear Science Programs—II, *Wed. p.m.*

Mathematics and Computation (MCD)

Current Issues in Computational Methods–Roundtable: Experiences with the Legalities of Software Development and Distribution, *Mon. p.m.*

Transport Methods, *Tues. a.m.*

(Reactor Analysis Methods—I, *Tues. a.m.*)

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

Computational Methods and Mathematical Modeling, *Tues. p.m.*

Transport and Computational Methods, *Wed. a.m.*

Uncertainty Quantification, Sensitivity Analysis, and Reduced Order Modeling, *Wed. p.m.*

Nuclear Criticality Safety (NCSD)

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

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

Advancing Criticality Safety Capabilities in a Growing Nuclear World, *Tues. a.m.*

Benchmarking Experiments for Criticality Safety and Reactor Physics Applications—I–Panel, *Wed. a.m.*

Benchmarking Experiments for Criticality Safety and Reactor Physics Applications—II–Tutorial, *Wed. p.m.*

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

Nuclear Installations Safety (NISD)

Emerging Issues in Nuclear Facility Safety, *Mon. p.m.*

Current Fire Research Activities: Strengthening Safety Through Research, *Tues. a.m.*

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

Irradiation Assisted Degradation of Reactor Vessel Intervals/NRC-Sponsored Environmentally Assisted Fatigue Research Activities, *Tues. p.m.*

Generic Issue 199, "Implications of Updated Probabilistic Seismic Hazard Estimates in Central and Eastern United States on Existing Plants"–Panel, *Wed. a.m.*

Update on NQA-1: Quality Assurance Requirements for Nuclear Facility Applications–Panel, *Wed. p.m.*

Operations and Power (OPD)

Solving the Spent Fuel Dilemma–Panel, *Mon. p.m.*

New Nuclear Construction Around the World Status Report–Panel, *Tues. a.m.*

Fukushima: Evaluation and Impacts–Panel, *Tues. p.m.*

Operations and Power: General, W*ed. a.m.*

Update on Emergency Preparedness and Planning Post-Fukushima–Panel, *Wed. p.m.*

SMR: Progression and Status, *Wed. p.m.*

Advanced Reactors, *Thurs. a.m.*

Radiation Protection and Shielding (RPSD)

Radiation Protection and Shielding–Roundtable, *Tues. a.m.*

Radiation Protection and Shielding: General, *Tues. p.m.*

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

Reactor Pressure Vessel Neutron Exposure Monitoring–Tutorial, *Wed. a.m.*

(Research Applications of Neutron Spectrometry and Dosimetry, *Wed. p.m.*)

MCNP/MCNPX Tutorial for Homeland Security, *Thurs. a.m.*

Reactor Physics (RPD)

Current Capabilities, Issues in LWR Core Design and Reactor Engineering Support–Panel, *Mon. p.m.*

Characterization and Applications of Advanced Reactors and Fuels, *Mon. p.m.*

Reactor Analysis Methods—I, *Tues. a.m.*

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

ENDF/B-VII.1: Data Measurements, Evaluation, Processing, and Initial Experience, *Tues. p.m.*

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

Experiences and Challenges in RERTR Core Redesign, *Wed. a.m.*

Research Applications of Neutron Spectrometry and Dosimetry, *Wed. p.m.*

Reactor Physics: General, *Wed. p.m.*

Robotics and Remote Systems (RRSD)

Robotics and Remote Systems: General, *Wed. p.m.*

Thermal Hydraulics (THD)

General Two-Phase Flow, *Mon. p.m.*

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

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

Next Generation Safety Analysis Code, *Tues. p.m.*

Thermal Hydraulics in Severe Accidents, *Tues. p.m.*

General Thermal Hydraulics—I, *Wed. a.m.*

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

Young Members Group (YMG)

(Advancing Criticality Safety Capabilities in a Growing Nuclear World, *Tues. a.m.*)

(Reactor Pressure Vessel Neutron Exposure Monitoring–Tutorial, *Wed. a.m.*)

(MCNP/MCNPX Tutorial for Homeland Security, *Thurs. a.m.*)

Nuclear Non-Proliferation Technical Group (NNTG)

(Nuclear Nonproliferation Issues, *Wed. a.m.*)

Monday • June 25, 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 Annual Meeting: Opening Plenary Session:** "Nuclear Science and Technology: Managing the Global Impact of Economic and Natural Events"
11:30 a.m. – 1:00 p.m.	**Attendee Luncheon in the Nuclear Technology Expo**
1:00 p.m. – 2:30 p.m.	**2012 ANS Annual Meeting: President's Special Session:** "Low-Level Radiation and Its Implications for Fukushima Recovery"
1:00 p.m. – 4:00 p.m.	**Spouse/Guest Tour:** "Architectural River Cruise"
2:30 p.m. – 4:00 p.m.	**DD&R 2012: Technical Sessions** *(see page 36)*
2:30 p.m. – 4:00 p.m.	**ICAPP 2012: Technical Sessions** *(see page 49)*
2:45 p.m. – 5:00 p.m.	**2012 ANS Annual Meeting: Technical Sessions** • Solving the Spent Fuel Dilemma–Panel • General Two-Phase Flow • Current Issues in Computational Methods–Roundtable: Experiences with the Legalities of Software Development and Distribution • Health Effects of Radiation–Panel • Development of Advanced Fuel Recycle Methods • Isotopes and Radiation: General • Nuclear Technician Education and Training– Panel • Current Capabilities, Issues in LWR Core Design and Reactor Engineering Support– Panel • Used Fuel Component Recycle and Off-Gas Issues • Data Analysis in Nuclear Criticality Safety–I • Emerging Issues in Nuclear Facility Safety • Characterization and Applications of Advanced Reactors and Fuels
3:30 p.m. – 4:30 p.m.	**ANS Business Meeting**
4:30 p.m. – 6:30 p.m.	**ICAPP 2012: Opening Plenary: Economic Realities of New Nuclear Plants** *(see page 51)*
6:00 p.m. – 11:00 p.m.	**Evening Event:** "Reception at the Museum of Science and Industry"

Technical Sessions by Day: Monday

Monday, June 25, 2012, 8:00 A.M.

Opening Plenary: Nuclear Science and Technology: Managing the Global Impact of Economic and Natural Events

Chair: Amir Shahkarami *(Exelon Nuclear)*

Room: Regency Ballroom

Award Ceremony

Opening Remarks and Welcome:

- Eric Loewen *(President, ANS)*
- Amir Shahkarami *(General Chair, 2012 ANS Annual Meeting)*
- John W. Rowe *(Chairman and CEO, Exelon Corporation)*

SPEAKERS:

- Congressman Michael (Mike) K. Simpson *(U.S. Congress, Idaho)*
- Dr. Hans Wanner *(Director General, Swiss Federal Nuclear Safety Inspectorate ENSI)*
- Dr. Sylvain Costes *(Lawrence Berkeley National Laboratory)*
- Commissioner Kristine L. Svinicki *(U.S. Nuclear Regulatory Commission)*

Monday, June 25, 2012, 1:00 P.M.

ANS President's Special Session: Low-Level Radiation and Its Implications for Fukushima Recovery

Cochairs: Eric Loewen *(President, ANS)*, Theodore Rockwell *(MPR Assoc.)*

Room: Regency Ballroom

An update to the ongoing recovery efforts in the Fukushima evacuation area is the focus of this session. People were hurriedly evacuated from their homes and businesses. Most are fearful about potential adverse effects from exposure to the radioactivity that was released from the Fukushima site. They may not be allowed back for a long time because the radiation levels are said to be "dangerously high."

These radiation levels, however, are not "dangerously high" compared to those found naturally occurring in parts of Brazil, China, France, India, Iran, and Norway, where people have lived healthily for countless generations, being exposed to radiation levels in some cases many times higher than most of the Fukushima evacuation zone.

The radiation protection policies at Fukushima follow international practice, being based primarily on the LNT hypothesis that is said to be "prudent" but for which no scientific basis exists. The speakers will discuss the current Fukushima radiation levels and the potential health effects. It is suggested that early return of people into the evacuation area can be justified on the basis of available scientific information.

SPEAKERS:

- Kazuaki Matsui *(Inst of Appl. Energy)*
- Kiyohiko Sakamoto *(Tohoku Univ)*
- Jerry Cuttler *(Cuttler Assoc)*
- Ronald Mitchel *(AECL)*
- Douglas Boreham *(McMaster Univ)*

Monday, June 25, 2012 2:45 P.M.

Solving the Spent Fuel Dilemma–Panel, sponsored by OPD.

Session Organizer & Chair: Steve Stamm *(Shaw Nuclear)*

Room: Regency A

The disposition of spent fuel is both a commercial and political issue. Currently, we continue to expand temporary dry fuel storage at plant sites in addition to making payments to the federal government for an ultimate solution. This is especially troubling for plants that have been decommissioned but must maintain a presence on site to provide security for the remaining spent fuel.The lack of an effective solution is also driving up the cost of new nuclear plants, which must incorporate site-specific long-term fuel storage. This session will explore the current U.S. Government directions with respect to long-term storage and processing, the related public opinion issues, proliferation issues, and other potential solutions including alternate fuel cycles. It is planned to draw speakers from the Department of Energy, Yucca Mountain area, public relations expert, decommissioned plant management, public utility commission, fuel cask fabricator, and universities.

PANELISTS:

- Ann Bisconti *(Bisconti Research)*
- Stefan Anton *(HOLTEC)*
- Adam Levin *(Exelon Nuclear)*
- Robert Capstick *(3Yankees)*
- Phillip Niedzielski-Eichner *(DOE/NNSA)*

General Two-Phase Flow, sponsored by THD.

Chair: Yassin Hassan *(Texas A&M)*

Room: Regency B

2:45 p.m.
Spectral Analysis of Turbulent Bubbly Flows Based on Direct Numerical Simulation, Nathan Sydlik, Igor A. Bolotnov *(NCSU)*

3:05 p.m.
An Experimental Study on Downward Flow Onset of Flow Instability for Narrow Rectangular Channels in a Pool, Ju Hyung Lee, Sub Lee Song, Soon Heung Chang *(KAIST)*

3:30 p.m.
3-D Simulation of Rising Bubble in a Viscous Liquid Using the Lattice Boltzmann Method, Junsoo Yoo, Shin K. Kang, Yassin A. Hassan *(Texas A&M)*

3:50 p.m.
PWR Core Analysis with COBRA-TF/PARCSv2.7 Coupled Code, A. Abarca, T. Barrachina, R. Miró, G. Verdú *(UPV)*

Current Issues in Computational Methods-Roundtable: Experiences with the Legalities of Software Development and Distribution, sponsored by MCD.

Session Organizer & Chair: Todd Urbatsch *(LANL)*

Room: Regency C

2:45 p.m.
C++, Python, or Fortran? Deterministic, Stochastic, or Hybrid? Jail, Fines, or Freedom? The issues of ownership, export control, open source, licensing, intellectual property, patents, copyright, etc., affect nearly everyone writing technical software. Navigating national laws and even institutional policy is daunting. Our panel members will share their knowledge and experiences in the legal realm of developing, using, and distributing software.

PANELISTS:

- Kathleen Herrera McDonald *(LANL)*
- Wayne Newhauser *(Louisiana State Univ)*
- Anthony Scopatz *(FLASH Center, Univ of Chicago)*
- Richard C. Martineau *(INL)*

Health Effects of Radiation–Panel, sponsored by ESD.

Session Organizer & Chair: J. Cuttler *(Cuttler Assoc)*
Session Organizers: T. Rockwell *(MPR Assoc)*, J. van Erp *(Consultant)*

Room: Regency D

2:45 p.m.
This session, which is complementary to the earlier President's session on Fukushima recovery, will provide further justification for an early return home of the inhabitants of the evacuation area.

A growing body of research data, involving large groups of people, supports the conclusion that low-level radiation does not cause cancer, and may actually reduce its incidence. These data sources may include (a) the British radiologists study; (b) the Nuclear Shipyard Workers Study; (c) the cumulative record since 1954 concerning workers in the U.S. Naval Reactors Program; (d) the evidence of the cancer patients in whom healthy tissue (e.g., surrounding a tumor) was heavily irradiated by high-intensity radiation; (e) children irradiated with radium or with X-rays for treating adenoids, skin diseases, etc. Follow-up studies of these irradiated population groups do not show increased cancer rates as would be predicted. In fact, contrary to expectations (as based on the LNT hypothesis), the opposite was found.

Oncologist Dr. Sakamoto, who has provided total-body, low-dose radiation treatments to about two hundred cancer patients in Japan, will describe the results and the basis for the long-term cures. A variety of experiments have shown that low doses or low levels of radiation result in "over repairing" of the spontaneously occurring DNA damage.

PANELISTS:

- Jerry Cuttler *(Cuttler Assoc.)*
- Kiyohiko Sakamoto *(Tohoku Univ.)*
- Wade Allison *(Oxford Univ.)*
- Ronald Mitchel *(AECL)*
- Douglas Boreham *(McMaster Univ.)*
- Myron Pollycove *(Univ. of California)*
- T. Donnell Luckey *(Univ. of Missouri)*
- Edward Calabrese *(Univ. of Massachusetts)*
- Jim Welsh *(Fermilab)*

Development of Advanced Fuel Recycle Methods,

sponsored by FCWMD.
Session Organizer: G. DelCul *(ORNL)*
Chair: Paul Wilson *(Univ of Wisconsin)*

Room: Acapulco

2:45 p.m.
A Model for Recovering Uranium From Scrap Monolithic Uranium Molybdenum Alloy by Electrorefining, M. Van Kleeck *(Purdue Univ/ANL)*, J. Figueroa, R. Blaskovitz, J. Willit, M. Williamson *(ANL)*, A. Fentiman *(Purdue Univ)*

3:10 p.m.
The Direct Dissolution and Electrochemical Study of U_3O_8 in Ionic Liquid, Janelle Droessler, Denis Beller, David Hatchett, Ken Czerwinski *(UNLV)*

3:35 p.m.
Possibility of Co-deposition of U and Pu at a Solid Cathode in Pyrochemical Processing, Jinsuo Zhang *(LANL)*

4:00 p.m.
Plutonium and Minor Actinide Transmutation Target Fuel Evaluation for PWRs, Jeremy Washington, Jeffrey King, Zeev Shayer *(CSM)*

4:25 p.m.
Increasing Inert Matrix Fuel Burnup, G. D. Recktenwald, M. R. Deinert *(Univ of Texas, Austin)*

Isotopes and Radiation: General, sponsored by IRD.

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

Room: Atlanta

2:45 p.m.
Development of a Neutron Evaporation Theory Code for U-235 Thermal Fission, T. J. Rosener *(Tasc, Inc.)*

3:05 p.m.
Experimental Verification of Wavelet Method of Analysis of Neutron Induced Gamma Spectra, Alexander Barzilov, Bruce Kessler, Phillip Womble *(Western Kentucky Univ)*

3:25 p.m.
Background Spectrum Estimation for Low Count Spectra Using Kernel-Modeled Gaussian Processes, Miltiadis Alamaniotis *(Purdue Univ)*, Alexander Heifetz, Apostolos C. Raptis *(ANL)*, Lefteri H. Tsoukalas *(Purdue Univ)*

3:45 p.m.
Enhancement of Nuclide Identification Using Transforms, Charles A. Sparrow, Chun Fu Su *(Mississippi State Univ)*

4:05 p.m.
Analysis of Lanthanum Bromide Spectra for Identification of Depleted Uranium, Chun Fu Su, Charles A. Sparrow, Ronald Unz *(Mississippi State Univ)*

Nuclear Technician Education and Training–Panel,

sponsored by ETWDD.
Session Organizer & Chair: Nancy Hebron-Isreal *(NRC)*

Room: Hong Kong

2:45 p.m.
This panel will discuss lessons learned from two-year institution/utility partnerships in the Nuclear Uniform Curriculum Program. Nuclear education and training two-year programs are meeting the current and future workforce needs of the nuclear industry. These needs have been identified by the industry and addressed by two-year programs that effectively prepare students for advanced placement in technician-level programs at U.S. nuclear power plants. Presentations will include such challenges as student retention and placement of graduates.

PANELISTS:

- Kevin Cooper *(Indian River State College)*
- Bruce Meffert *(Linn State Technical College)*
- Gloria N. Winn *(Lake Michigan College)*
- Debra Hagar *(Duke Energy)*
- James Rzepkowski *(Constellation Energy Nuclear Group, LLC)*

Current Capabilities, Issues in LWR Core Design and Reactor Engineering Support–Panel, sponsored by RPD.

Session Organizer & Chair: Moussa Mahgerefteh *(Exelon)*
Session Organizer: David Orr *(Duke Energy)*

Room: Picasso

2:45 p.m.
This panel session will consist of members invited from utilities and/or fuel vendors. The presentations will focus on sharing current core design capabilities, recent operating experience, and methods for addressing issues impacting core designs. Topics may include INPS SOER 96-02, INPO SOER 03-02, fuel performance (cladding failures, crud-induced power shift, distinctive crud pattern, etc.), management of competing code design interests (fuel cost, operating margin), refueling outage length and cycle length impacts to core design, multicycle optimization strategies, and new fuel design implementation strategies or experience.

PANELISTS:

- David Orr *(Duke Energy)*
- Brandon Catalanotto *(TVA)*
- James Tusar *(Exelon)*
- Kim Medved *(FirstEnergy)*
- Michael Blom *(Progress Energy)*

Used Fuel Component Recycle and Off-Gas Issues,

sponsored by FCWMD.
Session Organizer: G. DelCul *(ORNL)*
Chair: Emory D. Collins *(ORNL)*

Room: Buckingham

2:45 p.m.
Technology Advancement for Recycle of Zirconium from Used Nuclear Fuel Cladding, E. D. Collins, G. D. DelCul, B. B. Spencer, R. R. Brunson, J. A. Johnson *(ORNL)*

3:05 p.m.
Conceptual Design of a Simplified Head-End Process for the Recycling of Used Nuclear Fuel, Guillermo D. DelCul, Emory D. Collins, Barry B. Spencer, Robert T. Jubin *(ORNL)*

3:25 p.m.
Utilization of LWR Nuclear Waste Transuranium/Nat-Uranium Mixed Fuel in CANDU Reactors, Sümer Şahin *(ATILIM Univ)*, Rizwan Ahmed, Mohammad Javed Khan *(Pakistan Institute of Engineering and Applied Sciences)*

3:45 p.m.
Removal of ^{14}C from Irradiated Graphite for Waste Volume Reduction and Bulk Graphite Recycle: Thermal Treatment, Tara E. Smith, James Cleaver, Mary Lou Dunzik-Gougar *(Idaho State Univ)*

4:05 p.m.
Capture of Iodine by Metal-Organic Frameworks and Subsequent Long-Term Storage into Novel Waste Forms, Dorina F. Sava, Terry J. Garino, Tina M. Nenoff *(SNL)*, Karena W. Chapman, Peter J. Chupas *(ANL)*

4:25 p.m.
Novel Sorbent Development and Evaluation for the Capture of Krypton from Nuclear Fuel Reprocessing Off-Gas Streams, Troy G. Garn, Mitchell R. Greenhalgh, Kristi M. Christensen *(INL)*

Data Analysis in Nuclear Criticality Safety—I,

sponsored by NCSD.
Session Organizer: Allison D. Miller *(SNL)*
Chair: Sandi Larson *(Nuclear Safety Assoc)*

Room: Columbian

2:45 p.m.
The Zeus Copper/Uranium Critical Experiment at NCERC, Rene Sanchez, David Hayes, Joetta Goda, John Bounds, Kevin Jackman *(LANL)*

3:10 p.m.
Reverse Engineering the MOX International Standard, ISO/CD 11311, "Critical Values for Homogenous Plutonium-Uranium Oxide Fuel Mixtures (MOX) Outside of Reactors," Jason E. Huffer *(URS Corporation)*

3:35 p.m.
Criticality Safety Validation of SCALE 6.1 with ENDF/B-VII.0 Libraries, W. J. Marshall, B. T. Rearden *(ORNL)*

4:00 p.m.
Examination of Validation Outlier Cases Using the Sensitivity and Uncertainty Analysis Tools of SCALE 6.1, B. T. Rearden, W. J. Marshall *(ORNL)*

4:25 p.m.
Investigation of Potential Inadvertent CAAS Actuation at the Y-12 Nuclear Detection and Sensor Testing Center, Peter L. Angelo, James J. Yugo *(Y-12 NSC)*, Dennis A. Tollefson *(Navarro Research and Engineering)*

Emerging Issues in Nuclear Facility Safety, sponsored by NISD.

Session Organizer: Charles R. (Chip) Martin *(DNFSB)*
Chair: Kevin O'Kula *(URS-SMS)*

Room: Haymarket

2:45 p.m.
Reliability Modeling of Passive Systems Under Multiple Failure Processes, Luciano Burgazzi *(ENEA)*

3:10 p.m.
Short Term Analysis of MSLB for PWR Type Containment, Liang-Cheng Huang, Zhen-Yu Hung, Yuh-Ming Ferng, Chun-Kuan Shih, Bau-Shi Pei *(National Tsing Hua Univ)*

3:35 p.m.
Radionuclides for Unique Identification of Nuclear Fuel from Fabrication to Grave, Aaron Peterson, Ayodeji B. Alajo *(Missouri Univ Sci Tech)*

4:00 p.m.
A Mechanism of Concrete Degradation in Reactor Concrete Structures from Groundwater Infiltration, Brooke Traynham *(PricewaterhouseCoopers, LLC)*

Characterization and Applications of Advanced Reactors and Fuels, sponsored by RPD.

Session Organizers: Fausto Franceschini *(Westinghouse)*, Alexander Stanculescu *(INL)*
Cochairs: Alexander Stanculescu *(INL),* Susan Hogle *(Univ of Tennessee)*

Room: Toronto

2:45 p.m.
Challenges in HTGR Modeling and Simulation, Hans D. Gougar *(INL)*

3:10 p.m.
Improvement of DeCART Depletion Calculation for VHTR Fuel Elements, Hyun Chul Lee, Ser Gi Hong, Tae Young Han, Jin Young Cho, Chang Keun Jo, Jae Man Noh *(KAERI)*

3:35 p.m.
A Neutronics Feasibility Study of Using FCM on a LWR, Chang Keun Jo, Jongwha Chang *(KAERI)*, F. Venneri *(Ultra Safe Nuclear Corporation)*

4:00 p.m.
Preliminary Evaluation of Burnable Poisons in Uranium-Based Fully Ceramic Micro-Encapsulated Fuel for PWRs, Nathan George, G. Ivan Maldonado *(Univ of Tennessee)*, Kurt A. Terrani, Andrew Godfrey, Jess C. Gehin*(ORNL)*

4:25 p.m.
^{233}U Production by Fusion Driven Systems Using Slurry Fuel Carrier, Alberto Talamo, Yousry Gohar *(ANL)*

4:50 p.m.
Study of Space-Time Evolution of Flux in a Long-Life Traveling Wave Reactor, Rijan Shrestha, Rizwan-uddin *(Univ of Illinois)*

5:15 p.m.
A Large-Scale Sodium Loop for Coupling to the Sandia National Laboratories S-CO_2 Brayton Cycle, Bobby D. Middleton, Thomas M. Conboy *(SNL)*

Tuesday • June 26, 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. – 10:00 a.m.	**ICAPP 2012: Technical Sessions** *(see page 52)*
8:00 a.m. – 10:00 a.m.	**NFSM 2012: Plenary Session** *(see page 40)*
8:30 a.m. – 11:00 a.m.	**DD&R 2012: Plenary Session** *(see page 37)*
8:30 a.m. - 11:30 a.m.	**2012 ANS Annual Meeting: Technical Sessions** • Research by U.S. DOE NEUP-Sponsored Students • Current Fire Research Activities: Strengthening Safety Through Research • New Nuclear Construction Around the World Status Report– Panel • Transport Methods • Fast Nuclear Fission Technology—I: Past Experience and IFR– Panel • Extended Storage and Transportation of Spent Nuclear Fuel–I– Panel • Modeling and Simulation of Brachytherapy Sources and Biology and Medicine: General • Accelerators and Detectors Used in Medical Therapy • Reactor Analysis Methods—I • Computational Thermal Hydraulics—I • Advancing Criticality Safety Capabilities in a Growing Nuclear World • Radiation Protection and Shielding–Roundtable • Innovations in Radiation Detectors: New Designs, Improvements, and Applications
10:00 a.m. - 12:00 p.m.	**ICAPP 2012: Technical Sessions** *(see page 54)*
10:30 a.m. - 11:40 a.m.	**NFSM 2012: General Chairs' Special Session** *(see page 40)*
11:00 a.m. - 4:30 p.m.	**Spouse/Guest Tour:** "Frank Lloyd Wright Home and Studio and Unity Temple in Oak Park"
1:00 p.m. - 2:30 p.m.	**ICAPP 2012: Technical Sessions** *(see page 56)*
1:00 p.m. - 2:40 p.m.	**NFSM 2012: Technical Sessions** *(see page 40)*

Technical Sessions by Day: Tuesday

Tuesday • June 26, 2012 *continued*

1:00 p.m. - 3:00 p.m.
DD&R 2012: Technical Sessions
(see page 37)

1:00 p.m. - 4:00 p.m.
2012 ANS Annual Meeeting: Technical Sessions
- Science in Politics: Getting Scientists Elected–Panel
- What Do Women Want? How We Can Build Support for Nuclear Energy- Panel
- Fukushima: Evaluation and Impacts–Panel
- Computational Methods and Mathematical Modeling
- Fast Nuclear Fission Technology—II: IFR—the Path Forward–Panel
- Extended Storage and Transportation of Spent Nuclear Fuel—II–Panel
- Proton Imaging Technology for Proton Therapy
- ENDF/B-VII.1: Data Measurements, Evaluation, Processing, and Initial Experience
- Reactor Physics Design, Validation, and Operating Experience
- Next Generation Safety Analysis Code
- Thermal Hydraulics in Severe Accidents
- Data Analysis in Nuclear Criticality Safety—II
- Radiation Protection and Shielding: General
- Computational Tools for Radiation Protection and Shielding
- Nuclear Installations Safety: General
- Irradiation Assisted Degradation of Reactor Vessel Intervals/NRC–Sponsored Environmentally Assisted Fatigue Research Activities

2:30 p.m. - 4:00 p.m.
ICAPP 2012: Technical Sessions
(see page 57)

2:40 p.m. - 4:40 p.m.
NFSM 2012: Technical Sessions
(see page 41)

2:45 p.m. - 5:15 p.m.
DD&R 2012: Technical Sessions
(see page 37)

4:15 p.m. - 6:15 p.m.
ICAPP 2012: Plenary 2: Progress of New Reactors Design, Licensing and Deployment
(see page 58)

5:30 p.m. - 10:30 p.m.
Evening Event:
Dinner and Show at Tommy Gun's Garage

Tuesday, June 26, 2012, 8:00 or 8:30 A.M.

Research by U.S. DOE NEUP-Sponsored Students, sponsored by ETWDD.

Session Organizer: Marsha Lambregts *(INL)*
Chair: Greg Bala *(INL)*

Room: Regency A

8:30 a.m.
Visual Recognition of Objects with Sparse Texture and Specular Reflectivity, Brian O'Neil *(Univ of Texas, Austin)*

8:55 a.m.
Construction and Installation of the Colorado School of Mines Neuton Imaging Facility, Aaron E. Craft, Jeffrey C. King *(CSM)*

9:20 a.m.
A Laser-Based Method for Ultrasonic Characterization of Nuclear Grade Graphites, Lindsey R. Lindamood, James B. Spicer *(Johns Hopkins Univ)*

9:45 a.m.
Numerical and Experimental Studies of Heat Transfer Coefficients in a RCCS, D. D. Lisowski, M. H. Anderson, M. L. Corradini *(Univ of Wisconsin, Madison)*

10:10 a.m.
Boron Filling of Deep Holes for Solid-State Neutron Detector Application, Kuan-Chih Huang, Rajendra Dahal, James J.-Q. Lu, Yaron Danon, Ishwara B. Bhat *(RPI)*

10:35 a.m.
Precursor Derived Nanostructured Si-C-X Materials for Nuclear Applications, Shelly Arreguin, Rajendra K. Bordia *(Univ of Washington)*

11:00 a.m.
Effect of Anisotropy, SIA Orientation and One-Dimensional Migration on Dislocation Bias Calculations in Metals, Dariush Seif, Nasr M. Ghoniem *(UCLA)*

Current Fire Research Activities: Strengthening Safety Through Research, sponsored by NISD.

Session Organizer: Dennis Henneke *(GE)*
Chair: Charles R. (Chip) Martin (*DNFSB)*

Room: Regency B

8:30 a.m.
Analyses of Data from the KATE-FIRE Kerite® Cable Tests, Raymond H. Gallucci *(NRC)*

8:55 a.m.
Uncertainty Analysis of Input Parameters in Fire Modeling Using Fire Dynamic Simulator, Dae Il Kang, Kilyoo Kim *(KAERI)*, JongSeuk Park *(KINS)*

9:20 a.m.
Dynamic Considerations in the Performance of Fire PRA, Matthew Bucknor, Richard Denning, Tunc Aldemir *(Ohio State)*

New Nuclear Construction Around the World Status Report–Panel, sponsored by OPD.

Session Organizer & Chair: Edward Quinn *(Consultant)*

Room: Regency B

9:50 a.m.

This session will provide an overview of progress and planning for new reactor construction in the United States 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 NRC, energy companies, and industry consortiums that are supporting the growth of nuclear energy in the United States and around the world.

PANELISTS:

- Doug Walters *(NEI)*
- Jiang Hong *(China National Nuclear Corp)*
- Panelist from IAEA to be determined.
- Panelist from UAE to be determined.

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

Transport Methods, sponsored by MCD.

Session Organizer: Patrick Brantley *(LLNL)*
Chair: Dmitriy Anistratov *(NCSU)*

Room: Regency C

8:30 a.m.

A Residual Monte Carlo Method for Spatially Discrete, Angularly Continuous Radiation Transport, Ryan T. Wollaeger *(University of Wisconsin, Madison)*, Jeffery D. Densmore *(LANL)*

8:55 a.m.

Application of Chord Length Sampling to Analyzing Reactor Systems with Multi-type Multi-size Fuel Particles, Chao Liang, Yanheng Li, Wei Ji *(RPI)*

9:20 a.m.

Incorporation of a Modified Closure in a Monte Carlo Particle Transport Algorithm for Binary Stochastic Media, Patrick S. Brantley *(LLNL)*

9:45 a.m.

Efficient Monte Carlo Solution for Uncertainty Propagation with Stochastic Collocation, Brian C. Franke *(SNL)*, Anil K. Prinja *(Univ of New Mexico)*

10:10 a.m.

A New Source Biasing Approach in ADVANTG, Aaron M. Bevill, Scott W. Mosher *(ORNL)*

10:35 a.m.

Cross Section Recondensation as a Spectral Correction for Non-Fissionable Regions of VHTR Cores, Steven Douglass, Farzad Rahnema *(Georgia Tech)*

11:00 a.m.

An Homotopy Continuation Method Applied to S_N Transport, Nick T. Myers *(Univ of New Mexico)*, James S. Warsa *(LANL)*, Anil K. Prinja *(Univ of New Mexico)*

11:25 a.m.

A Moment-Preserving SN Discretization for the One-Dimensional Fokker-Planck Equation, J. S. Warsa *(LANL)*, A. K. Prinja *(Univ of New Mexico)*

Fast Nuclear Fission Technology—I: Past Experience and IFR–Panel, sponsored by ESD.

Session Organizer & Chair: Michael Lineberry *(Idaho State Univ)*
Session Organizers: William Hannum *(ANL-retired)*, Jan van Erp *(Consultant)*

Room: Regency D

8:30 a.m.

Enrico Fermi and Walter Zinn foresaw the need for fast nuclear-fission technology to make nuclear fission an inexhaustible energy source in the service of humanity. While a number of countries are actively engaged in pursuing this idea, commercial application of this technology has up to now proven to be difficult to materialize for a number of reasons, partly because of technical and economical reasons and partly because of political considerations.

The panelists will briefly review the rationale, past experience, and current status of the Integral Fast Reactor (IFR) concept, including its fuel and fuel cycle, its proliferation resistance, as well as its safety and operational characteristics. A follow-up session (Part II) will discuss considerations related to the development of the IFR concept.

Introductory statements by:

PANELISTS:

- Introduction, Michael Lineberry *(Idaho State Univ.)*
- The IFR, Charles Till *(ANL-retired, Coauthor of "Plentiful Energy")*
- Metal-Fuels and Pyro-Processing, Yoon Chang *(ANL-retired, Coauthor of "Plentiful Energy")*
- Nonproliferation and Safeguards, William Hannum *(ANL-retired)*
- IFR Safety and Operation, John Sackett *(Consultant)*
- Historical Perspective, Leonard Koch *(U.S. Acad. of Eng.)*

An open panel discussion with questions from the audience will follow the introductory statements.

Extended Storage and Transportation of Spent Nuclear Fuel—I–Panel, sponsored by FCWMD.

Session Organizer & Chair: Robert E. Einziger *(NRC)*

Room: Acapulco

8:30 a.m.

With the apparent demise of Yucca Mountain, it appears that extended storage and subsequent transportation (EST) of spent nuclear fuel (SNF) will become a real possibility. Plans to establish a technical basis for EST were discussed in two panel sessions at the 2011 ANS Annual Meeting by representatives of the U.S. Nuclear Regulatory Commission (NRC), U.S. Department of Energy (DOE), Nuclear Waste Technical Review Board (TRB), and International Atomic Energy Agency (IAEA). With participation from the audience, a number of pertinent assumptions in the plans to move forward with research and development to fill data gaps and to conduct a demonstration were

discussed. Two panels will discuss the progress made over 2011-2012 to address the technical issues. Additional topics to be discussed will be progress in the Environmental Impact Statement (EIS) for waste confidence being conducted by the NRC and reducing the mismatch between the storage (10 CFR Part 72) and transportation (10 CFR Part 71) regulations.

PANELISTS:

- Storage and Transportation Regulatory Revision for Current and Extended Use, Kris Banovic *(NRC)*
- Preparation of the EIS for the NRC Waste Confidence Decision, Christine Pineda *(NRC)*
- IAEA Cooperative Research Program for Very Long Term Storage and Transportation, Arturo Bevilacqua *(IAEA)*
- DOE-EM Used Fuel Storage and Transportation Programs, Brett W. Carlsen *(INL)*
- DOE Educational Research Grant–FAST, Sean McDeavitt *(TAMU)*
- Aging Management of DCSS/ISFSI for Extended Storage of Used Fuel, Yung Lui *(ANL)3*

Modeling and Simulation of Brachytherapy Sources and Biology and Medicine: General, sponsored by BMD; cosponsored by CMPWG.

Session Organizer & Chair: Firas Mourtada *(Christiana Care Health Systems)*

Room: Atlanta

8:00 a.m.
Review of Modern Dosimetric Modeling Methods of Bracytherapy Sources, Firas Mourtada *(Christiana Care Health Systems)*, *invited*

8:25 a.m.
Challenges in Clinical Brachytherapy Source Modeling: Going Beyond Schematics, Christopher S. Melhus, Mark J. Rivard *(Tufts Medical Center)*, *invited*

8:50 a.m.
Brachytherapy with a Grid-Based Boltzmann Solver: Sources, Boundaries, Applicators, Heterogeneities, Justin K. Mikell *(The University of Texas MD Anderson Cancer Center, Department of Radiation Physics)*, Firas Mourtada *(Christiana Care Health Systems)*, *invited*

9:15 a.m.
Investigation of Discrete Ordinates Code for Unsealed Sources in Brachytherapy, Justin K. Mikell *(The University of Texas MD Anderson Cancer Center, Department of Radiation Physics)*, Firas Mourtada *(ANL)*, *invited*

Accelerators and Detectors Used in Medical Therapy, sponsored by AAD; cosponsored by BMD.

Chair: Philip Cole *(Idaho State Univ)*

Room: Atlanta

9:45 a.m.
A Review of Radiation Protection of Patients Received Proton Radiotherapy, Wayne Newhauser, Rui Zhang, Jonas Fontenot *(Louisiana State Univ/Mary Bird Perkins Cancer Center)*, *invited*

10:10 a.m.
Advances in Accelerator Technology for Hadron Therapy, Carol J. Johnstone *(Fermilab)*

10:35 a.m.
Overview of Accelerator Advances in Particle Therapy, George Coutrakon *(Northern Illinois Univ)*

11:00 a.m.
Detection Techniques for Fast Neutron Spectroscopy, S. A. Pozzi, K. Ide, M. Becchetti, M. Hamel, J. Polack, A. Poitrasson-Riviere, M. Flaska, S. D. Clarke *(Univ of Michigan)*, *invited*

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

Reactor Analysis Methods—I, sponsored by RPD; cosponsored by MCD.

Session Organizers: Fausto Franceschini *(Westinghouse)*, Alexander Stanculescu *(INL)*
Cochairs: Won Sik Yang *(Purdue Univ)*, Piero Ravetto *(Polytechnic of Turin)*

Room: Toronto

8:05 a.m.
A Doppler Broadening and Monte Carlo Coupling Code for Temperature-Dependent Problems, Songyang Li, Kan Wang, Ganglin Yu *(Tsinghua Univ)*

8:30 a.m.
Progress with On-The-Fly Neutron Doppler Broadening in MCNP, Forrest B. Brown *(LANL)*, William R. Martin *(Univ of Michigan)*, Gokhan Yesilyurt *(ANL)*, Scott Wilderman *(Univ of Michigan)*

8:55 a.m.
Verification and Validation of Multigroup Cross Section Generation Code MC^2-3 for Fast Reactor System, C. H. Lee *(ANL)*, W. S. Yang *(Purdue Univ)*

9:20 a.m.
Analysis of Erbia-Loaded Critical Experiments in KUCA Using AEGIS Cross Section Library, Akio Yamamoto, Tomohiro Endo, Xiaofei Wu *(Nagoya Univ)*

9:45 a.m.
Comparison of Scattering Cross-Sections by MCNP5 and TRANSX/TWODANT Codes in the Sodium-Cooled Fast Reactor, Sunghwan Yun *(KAERI)*, Yonghee Kim *(KAIST)*, Jaewoon Yoo, Sang Ji Kim *(KAERI)*

10:10 a.m.
SCALE Continuous-Energy Monte Carlo Depletion with Parallel KENO in TRITON, S. Goluoglu, K. B. Bekar, D. Wiarda *(ORNL)*

10:35 a.m.
Integrated Radiation Transport and Thermo-Mechanics Simulation of a PWR Assembly, K. T. Clarno, S. P. Hamilton, B. Philip, R. Sampath, S. Allu, M. A. Berrill, P. Barai, J. E. Banfield *(ORNL)*

11:00 a.m.
Discrete Ordinate Calculation of the k-Eigenvalue of an IFBA Pin Using Unstructured Meshes in 2D, Massimiliano Rosa, James S. Warsa, Jae H. Chang, Randal S. Baker *(LANL)*

11:25 a.m.
Development and Comparison of High Flux Isotope Reactor Actinide Target Models, Susan Hogle, G. Ivan Maldonado *(Univ of Tennessee)*, Charles Alexander *(ORNL)*

Computational Thermal Hydraulics—I, sponsored by THD.

Cochairs: Brian Woods *(Oregon State Univ)*, Elia Merzari *(ANL)*

Room: Buckingham

8:30 a.m.
Temporal Convergence Criteria for the COBRA-TF Subchannel Analysis Code, Lewis J. Lloyd *(Univ of Wisconsin, Madison)*, D. L. Aumiller, Jr *(BAPL)*

8:55 a.m.
Use of RELAP5/MOD3.3 Code to Get Fluid Dynamic Stability Maps, M. De Salve, M. G. Giraudo, B. Panella *(Politecnico di Torino-Italy)*

9:20 a.m.
RELAP5-3D Simulations of the Reactor Cavity Cooling System Experimental Facility, Rodolfo Vaghetto, Wu Huali, Yassin A. Hassan *(Texas A&M)*

9:45 a.m.
A Sensitivity Analysis of the Safety Features in a 600 MWe Demonstration Fast Reactor, Kwilim Lee, Kwiseok Ha, Haeyong Jeong, Wonpyo Chang *(KAERI)*

10:10 a.m.
Space-Time Convergence Study Based on OECD Ringhals-1 Stability Benchmark, Ivan Gajev *(KTH)*, Tomasz Kozlowski *(Univ of Illinois)*, Wemin Ma *(KTH)*

10:35 a.m.
Assessment of Regularization Methods for the 1D Two-Fluid Model, W. D. Fullmer, V. H. Ransom, M. A. Lopez de Bertodano *(Purdue Univ)*

11:00 a.m.
Validation of Heat Transfer Predictions by Turbulence Models and Heat Transfer Correlations, Constantine P. Tzanos *(ANL)*

Advancing Criticality Safety Capabilities in a Growing Nuclear World, sponsored by NCSD; cosponsored by YMG.

Session Organizer: Brian Kiedrowski *(LANL)*
Chair: Peter Angelo *(Y-12 NSC)*

Room: Columbian

8:30 a.m.
Methods for Detector Placement and Analysis of Criticality Accident Alarm Systems, Douglas E. Peplow *(ORNL)*, Larry L. Wetzel *(Babcock & Wilcox, NOG-L)*

8:55 a.m.
Continuous-S(α,β) Capability in MCNP, Jeremy Lloyd Conlin, D. Kent Parsons, Forrest B. Brown, Robert E. MacFarlane, Robert C. Little, Morgan C. White *(LANL)*

9:20 a.m.
The Double Contingency Principle and Subcriticality Revisited, Christopher S. Tripp, Dennis C. Morey *(NRC)*

9:45 a.m.
Continuous-Estimator Representation for Monte Carlo Criticality Diagnostics, Brian C. Kiedrowski, Forrest B. Brown *(LANL)*

10:10 a.m.
Evaluation of Computing *c*-Eigenvalues with Monte Carlo, Brian C. Kiedrowski *(LANL)*

Radiation Protection and Shielding–Roundtable, sponsored by RPSD.

Session Organizer & Chair: F. Arzu Alpan *(Westinghouse)*

Room: Haymarket

8:30 a.m.
Everyone is invited to give a short presentation on any radiation protection and shielding topic of interest. Ten-minute time slots will be allotted on a first-come/first-serve basis. This session is meant to be fast, informal, and fun.

Innovations in Radiation Detectors: New Designs, Improvements, and Applications, sponsored by IRD; cosponsored by BMD.

Session Organizer & Chair: I. Jovanovic *(Penn State)*

Room: Picasso

8:30 a.m.
Plutonium Holdup Measurement Using Fast Neutron Signatures, Scott D. Kiff, Anagha S. Iyengar *(SNL)*

8:55 a.m.
Neutron Spectrometry Utilizing Neutron PODs and Source Location Determination, Sy Stange, Douglas R. Mayo, Gary D. Herrera, Anastasia D. McLaughlin, Charles M. Montoya, Becky A. Quihuis, Barbara Stevens, Julio B. Trujillo, Tracy R. Wenz *(LANL)*

9:20 a.m.
High Temperature SiC Alpha-Particle Detectors for Pyroprocessing, Timothy R. Garcia, Ben Reinke, Ashutosh Kumar, Alexandra Zelaski, Thomas E. Blue, Wolfgang Windl *(Ohio State)*

9:45 a.m.
Comparison of Traditional and Hybrid Dead Time Models for Radiation Detector, M.Yousaf, S. Usman *(Missouri Univ Sci Technol)*

10:10 a.m.
Development of Detector Response Functions for LaBr3 Scintillator, Fusheng Li *(Baker Hughes)*, Jiaxin Wang, Robin P. Gardner *(NCSU)*

Tuesday, June 26, 2012, 1:00 P.M.

Science in Politics: Getting Scientists Elected–Panel, sponsored by ETWDD.

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

Room: Regency A

1:00 p.m.
Judging from news reports, people seem to be sick of politics as usual. What should technical societies like ANS do to transform politics into a system in which decisions are made based on facts rather than ideology? This session will reflect on the role of science in government from the days of Thomas Jefferson and Benjamin Franklin to present day. Panelists will survey the scientific issues in today's current political landscape and look forward to the role science will play in solving the important challenges facing government in the future.

PANELISTS:

- Maggie DeCarlo *(Univ of Chicago)*
- Monica Metzler *(Illinois Science Council)*
- Chad J. Boyer *(ANS/AAAS Legislative Fellow)*
- Dick Simpson *(Univ of Illinois at Chicago)*

What Do Women Want? How We Can Build Support for Nuclear Energy–Panel, sponsored by ETWDD.

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

Room: Regency A

2:30 p.m.
Public opinion polling consistently shows that women support nuclear energy at far lesser levels than men do. In this session, the panelists will explore why women have concerns about nuclear energy, how the industry has failed to address those concerns, and what ANS members can do to help build support among women about nuclear energy.

PANELISTS:

- Ann Bisconti *(Bisconti Research Inc.)*
- Gwyneth Cravens *(author of Power to Save the World: The Truth About Nuclear Energy)*
- Margaret Harding *(4 Factor Consulting)*

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

Fukushima: Evaluation and Impacts–Panel, sponsored by OPD.

Session Organizer & Chair: Steve Stamm *(Shaw Nuclear)*

Room: Regency B

1:00 p.m.
Numerous regulatory bodies and plant owners are evaluating the events at Fukushima and 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) report is due in the early fall of this year. The U.K. evaluation report was issued in late 2011. The EU Plant Owners are evaluating plant susceptibilities using a stress test process. This session will explore the results from these and other evaluations. It is planned to draw speakers from U.S. NRC, U.K. Nuclear Installations Inspectorate, International Atomic Energy Agency (IAEA), and Institute of Nuclear Power Operations (INPO).

PANELISTS:

- Gary Pavis *(Constellation)*
- Philip Webster *(CNSC)*
- Gustavo Alonso *(ININ)*
- James Lyons *(IAEA)*
- Chuck Casto *(NRC)*

Computational Methods and Mathematical Modeling, sponsored by MCD.

Session Organizer: Patrick Brantley *(LLNL)*
Chair: Kevin Clarno *(ORNL)*

Room: Regency C

1:00 p.m.
On the Evaluation of Ray Effects in Multidimensional and Time-Dependent Transport Problems, A. Barbarino, S. Dulla, P. Ravetto *(Politecnico di Torino-Italy)*

1:25 p.m.
The Method of Manufactured Solutions for RattleSnake, A S_N Radiation Transport Solver Inside the MOOSE Framework, Frederick N. Gleicher II, Yaqi Wang, Derek Gaston, Richard Martineau *(INL)*

1:50 p.m.
GPU/CUDA-Ready Parallel Monte Carlo Codes for Reactor Analysis and Other Applications, Tianyu Liu, Lin Su, Aiping Ding, Wei Ji, Christopher Carothers, X. George Xu *(RPI)*, Forrest Brown *(LANL)*

2:15 p.m.
A Parallel Computational Approach to Nuclear Fuel Assembly Simulations, Bobby Philip, Rahul Sampath, Steven P. Hamilton, Mark A. Berrill, Srikanth Allu, Kevin T. Clarno *(ORNL)*

2:40 p.m.
Identification of Unknown Interface Locations in a Source/Shield System Using the Mesh Adaptive Direct Search Method, Jerawan C. Armstrong, Jeffrey A. Favorite *(LANL)*

3:05 p.m.
A Projection Approach for the Immersed Finite Element Method, Angelo Frisani, Yassin A. Hassan *(Texas A&M)*

3:30 p.m.
An Adaptive Natural Multigroup for Neutron Slowing Down, N. Terranova *(Univ di Bologna)*, B. D. Ganapol *(Univ of Arizona)*

Fast Nuclear Fission Technology—II: IFR—the Path Forward–Panel, sponsored by ESD.

Session Organizer & Chair: William Hannum *(ANL-retired)*
Session Organizers: Michael Lineberry *(Idaho State Univ)*, Jan van Erp *(Consultant)*

Room: Regency D

1:00 p.m.
Enrico Fermi and Walter Zinn foresaw the need for fast nuclear-fission technology to make nuclear fission an inexhaustible energy source in the service of humanity.

In a previous session (Part I), the panelists reviewed the current status of the IFR concept and its main characteristics. In this session the panelists will briefly discuss considerations related to the further development of the IFR concept, as well as some of its attractive characteristics.

Introductory statements by:

PANELISTS:

- A Path Forward, Ray Hunter *(DOE-retired)*
- Government Leadership, John Garamendi *(U.S. Rep.)* *invited*
- Why IFR Now, Steve Kirsch *(Inventor, philanthropist)*
- Environmental Considerations, Barry Brook *(Adelaide Univ)*
- International Considerations, Tom Blees *(SCGI, author of "Prescription for the Planet")*
- Economic Considerations, Joseph Shuster *(Engineer, entrepreneur, author of "Beyond Fossil Fools").*

An open panel discussion with questions from the audience will follow the introductory statements.

Extended Storage and Transportation of Spent Nuclear Fuel—II–Panel, sponsored by FCWMD.

Session Organizer & Chair: Robert E. Einziger *(NRC)*

Room: Acapulco

1:00 p.m.

With the apparent demise of Yucca Mountain, it appears that extended storage and subsequent transportation (EST) of spent nuclear fuel (SNF) will become a real possibility. Plans to establish a technical basis for EST were discussed in two panel sessions at the 2011 ANS annual meeting by representatives of the U.S. Nuclear Regulatory Commission (NRC), U.S. Department of Energy (DOE), Nuclear Waste Technical Review Board (TRB), and International Atomic Energy Agency (IAEA). With participation from the audience, a number of pertinent assumptions in the plans to move forward with research and development to fill data gaps and to conduct a demonstration were discussed. Two panels will discuss the progress made over 2011–2012 to address the technical issues. Additional topics to be discussed will be progress in the Environmental Impact Statement (EIS) for waste confidence being conducted by the NRC, and reducing the mismatch between the storage (10 CFR Part 72) and transportation (10 CFR Part 71) regulations.

PANELISTS:

- Successes in the EPRI ESCP, John Kessler *(EPRI)*
- Progress on NRC EST Research Programs, Darrell Dunn *(NRC)*
- Evaluation of Atmospheric Conditions in Canisterized Storage Systems, Bill Bracey *(Areva)*
- Hydride Reorientation Testing of High Burnup Irradiated Cladding, Mike Billone *(ANL)*
- Benefits of EST Demonstration Project, Yi-Ming Pan *(CNWRA)*
- Planning and Progress of the DOE Cast Demonstration Project, Ruth Weiner *(SNL)*

Proton Imaging Technology for Proton Therapy, sponsored by BMD; cosponsored by AAD, CMPWG.

Session Organizers & Cochairs: George Coutrakon *(Northern Illinois Univ)*, Reinhard Schulte *(Loma Linda Univ)*

Room: Atlanta

1:00 p.m.

Proton CT for Improved Stopping Power Determination in Proton Therapy, Reinhard W. Schulte *(Loma Linda University Medical Center)*, Scott N. Penfold *(Royal Adelaide Hospital)*, *invited*

1:25 p.m.

Overview of the LLUMC/UCSC/CSUSB Phase 2 Proton CT Project, R. W. Schulte *(Loma Linda University Medical Center)*, V. Bashkirov *(Loma Linda University)*, R. Johnson, H. F.-W. Sadrozinksi *(Santa Cruz Institute of Particle Physics)*, K. E. Schubert *(California State University San Bernardino)*, *invited*

1:50 p.m.

The Phase I Proton CT Scanner and Test Beam Results at LLUMC, R. F. Hurley, R.W. Schulte, V. A. Bashkirov *(Loma Linda University)*, G. Coutrakon *(Northern Illinois University)*, H. F.-W. Sadrozinski *(Univ of California, Santa Cruz)*, B. Patyal *(Loma Linda University)*, *invited*

2:15 p.m.

Overview of the NIU/Fermilab Phase 2 Proton CT project, Vishnu Zutshi *(Northern Illinois University)*, *invited*

2:40 p.m.

Theoretical Aspects of Image Reconstruction in Proton Computed Tomography, Bela Erdelyi *(Northern Illinois University)*, *invited*

3:05 p.m.

High-Performance Multiple-CPU/GPU Proton Computed Tomography, George Coutrakon, Kirk Duffin *(Northern Illinois Univ)*, Bela Erdelyi, Nicholas Karonis *(Northern Illinois Univ/ANL)*, Eric Olson *(ANL/Univ of Chicago)*, Caesar Ordoñez *(Northern Illinois Univ)*, Michael E. Papka, Thomas Uram *(ANL)*

3:30 p.m.

Fast Superiorization Using a Dual Perturbation Scheme for Proton Computed Tomography, R. Davidi *(Stanford Univ)*, R. W. Schulte *(Loma Linda University Medical Center)*, Y. Censor *(Univ of Haifa)*, L. Xing *(Stanford University)*, *invited*

3:55 p.m.

Measurements of the Prompt Gamma Signal in a Clinical Proton Therapy Environment, Kent J. Riley, Joao Seco *(Massachusetts General Hospital)*, Peter J. Binns *(Mount Auburn Hospital)*, *invited*

4:20 p.m.

Preliminary Results on Lung and Liver Tumor Tracking with Carbon and Proton Radiography, Joao Seco, Maria F. Spadea, Nicolas Depauw, Marta F. Dias, Michael Oumano, Rui Teixeira *(Harvard Medical School/Massachusetts General Hospital)*, *invited*

4:45 p.m.

Preliminary Results of a Scintillating Fibers Detector for Proton Radiography, Nicolas Depauw *(Massachusetts General Hospital/Univ of Wollongong)*, Joao Seco *(Massachusetts General Hospital)*, *invited*

ENDF/B-VII.1: Data Measurements, Evaluation, Processing, and Initial Experience, sponsored by RPD.

Session Organizers & Cochairs: A. C. (Skip) Kahler *(LANL)*, Richard McKnight *(ANL)*
Session Organizers: M. W. Herman *(BNL)*, L. C. Leal *(ORNL)*

Room: Hong Kong

1:00 p.m.
Release of the ENDF/B-VII.1 Evaluated Nuclear Data File, David A. Brown *(BNL), invited*

1:25 p.m.
Decay Data Sub-library developed for ENDF/B-VII.1, T. D. Johnson, E. A. McCutchan, A. Sonzogni *(BNL)*

1:50 p.m.
High Resolution and Accuracy Cross Section Measurements in the Energy Range 0.5 to 20 MeV at the RPI LINAC, Michael Rapp, Devin Barry, Robert Block, Greg Leinweber *(Bechtel Marine Propulsion Corporation, Knolls Atomic Power Laboratory)*, Yaron Danon *(RPI)*

2:15 p.m.
ORNL Resonance Evaluation for ENDF/B-VII.1, L. C. Leal, K. H. Guber, D. Wiarda, G. Arbanas, M. E. Dunn *(ORNL)*

2:40 p.m.
ICSBEP Criticality Benchmark Eigenvalues with ENDF/B-VII.1 Cross Sections, A. C. Kahler, R. E. MacFarlane *(LANL), invited*

3:05 p.m.
Benchmark Testing of the ENDF/B-VII.1 Nuclear Data Library, Timothy H. Trumbull *(KAPL)*

3:30 p.m.
Uncertainty Quantification in Monte Carlo Criticality Calculations with ENDF/B-VII.1 Covariance Data, Ho Jin Park *(KAERI–Korea)*, Hyung Jin Shim, Chang Hyo Kim *(Seoul Natl Univ–Korea)*

3:55 p.m.
Benchmarking ENDF/B-VII.1, JENDL-4.0 and JEFF-3.1.1 with MCNP6, Steven C. van der Marck *(Nuclear Research and Consultancy Group)*

4:20 p.m.
Analysis of Doppler Reactivity Defect Benchmarks with Subgroup Data Generation Procedure by Conserving Self-Shielded Cross Sections, Aung Tharn Daing, Myung-Hyun Kim *(Kyung Hee Univ)*, Han-Gyu Joo *(Seoul Natl Univ–Korea)*

4:45 p.m.
Role of Experimental Correlations for Validation of Neutron Cross-Sections Libraries, Evgeny A. Ivanov *(Institut de Radioprotection et de Sûreté Nucléaire)*

Reactor Physics Design, Validation, and Operating Experience, sponsored by RPD.

Session Organizers: Fausto Franceschini *(Westinghouse)*, Alexander Stanculescu *(INL)*
Cochairs: David Nigg *(INL)*, Germina Ilas *(ORNL)*

Room: Toronto

1:00 p.m.
Development of IDAT: IRPhE Database and Analysis Tool, Ian Hill, Jim Gulliford, Nicolas Soppera, Manuel Bossant, Akifumi Yamaji *(OECD/NEA)*

1:25 p.m.
Status of Validating Core-Reload and Safety Analysis of the Advanced Test Reactor Using HELIOS, Samuel Bays, Emily Swain, Douglas Crawford *(INL), invited*

1:50 p.m.
MCNP5 Version 1.60 Adjoint-Weighted Kinetics Parameters Option Validation in ATR, G. S. Chang *(INL)*

2:15 p.m.
A Preliminary Comparison of MCNP6 Delayed Neutron Emission from ^{235}U and Experimental Measurements, M. T. Sellers *(Royal Military College of Canada)*, J. T. Goorley *(LANL)*, E. C. Corcoran, D. G. Kelly *(Royal Military College of Canada)*

2:40 p.m.
Determination of Hot Channel of Missouri S&T Nuclear Reactor, K. O'Bryant, S. Sipaun, S. Usman, C. H. Castano, A. Alajo *(Missouri Univ Sci Technol)*

3:05 p.m.
Relicensing Analysis for the Geological Survey TRIGA Reactor, Nicolas Shugart, Jeffrey King *(CSM).*

3:30 p.m.
KIPT Neutron Source Facility Configuration Using Beryllium-Graphite Reflector, Zhaopeng Zhong, Yousry Gohar *(ANL)*

3:55 p.m.
Conceptual Design of a Small Nuclear Reactor for NTD-Si Using Short PWR Fuel Assemblies, Byambajav Munkhbat, Toru Obara *(Tokyo Inst Technol)*

4:20 p.m.
Traveling Wave Reactor Core Design Using Massively Parallel Precomputation, Robert Petroski, Jesse Cheatham, Pavel Hejzlar, Gary Povirk, Philip Schloss, Chuck Whitmer *(TerraPower LLC)*

4:45 p.m.
Preliminary Design of a FHR Test Reactor Core, Madicken Munk, Anselmo T. Cisneros, Ehud Greenspan, Per F. Peterson *(Univ of California, Berkeley)*

5:10 p.m.
Reconciliation of Anomalous TMI-1 Radiochemical Assays, Brian E. Mays *(AREVA Federal Services LLC)*, Claude W. Mays *[AREVA (Retired)]*, Joseph J. Sapyta *[Babcock & Wilcox (Retired)]*

Next Generation Safety Analysis Code, sponsored by THD.

Chair: Xiaodong Sun *(Ohio State Univ)*

Room: Buckingham

1:00 p.m.
SHARP Reactor Performance and Safety Analysis Simulation Suite, W. D. Pointer, M. Anitescu, T. H. Fanning *(ANL)*, R. M. Ferencz *(LLNL)*, P. F. Fischer, M. A. Smith, T. J. Tautges *(ANL), invited*

1:25 p.m.
Best-Estimate Plus Uncertainty Approach in Licensing of Current Reactors, Francesco D'Auria, Nikolaus Muellner *(Univ of Pisa)*

1:50 p.m.
Requirement Analysis and Primary Design of COSINE Code, Yan Hua Yang, Yixue Chen, Hao Zhang, Hui Yu, Guang Zhao, Xiaoliang Fu, Zhanquan Liu, Wentao Mo *[The State Nuclear Power Software Development Center (SNPSDC), State Nuclear Power Technology Corporation LTD],* *invited*

Thermal Hydraulics in Severe Accidents, sponsored by THD.

Cochairs: Fan-Bill Cheung *(Penn State)*, Eung Soo Kim *(Seoul Natl Univ–Korea)*

Room: Buckingham

2:20 p.m.
Correlation of Nucleate Boiling on a Downward Facing Surface under IVR-ERVC Conditions, M. P. Riley, F. B. Cheung *(Penn State)*

2:45 p.m.
Simulation of FARO Corium Coolant Interaction Experiment with TEXAS-VI, R. H. Chen *(Xi'an Jiaotong Univ/Univ of Wisconsin-Madison)*, M. L. Corradini *(Univ of Wisconsin-Madison)*, G. H. Su *(Xi'an Jiaotong Univ)*

3:10 p.m.
Prediction of Local Hydrogen Concentrations in PWR Containment Using GOTHIC Code, Davor Grgić *(Univ of Zagreb)*, Zdenko Šimić *(Northern Illinois Univ)*, Bruno Glaser *(Nuclear Power Plant Krško, Slovenia)*

3:30 p.m.
A Feasibility Study for MELCOR DB Construction and Uncertainty Analysis, S. H. Park, K. I. Ahn, Y. M. Song *(KAERI–Korea)*

3:55 p.m.
Study of CHF Characteristics with a Downward-Facing Plane for IVR, Huai-En Hsieh, Yuh-Ming Ferng, Mei-Shiue Chen, Bau-Shi Pei *(Natl Tsing Hua Univ)*

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

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

Session Organizer: Allison D. Miller *(SNL)*
Chair: Lon Paulson *(GE Hitachi Nuclear Energy)*

Room: Columbian

1:00 p.m.
Cross Section Data Benchmarking Using Automated Criticality Benchmarks in MCNP6 and Partisn, Eric Relson *(LANL/Univ of Wisconsin-Madison)*, Jeremy Lloyd Conlin, D. Kent Parsons *(LANL)*

1:25 p.m.
Benchmark Evaluation of GROTESQUE, a Complex Arrangement of HEU Metal Pieces, John D. Bess *(INL)*, Mackenzie L. Gorham *(Idaho State Univ)*

1:50 p.m.
Radiation Damage to Neutron Absorber Materials for Cask Spent Fuel Storage, Benjamin Baranko *(Nuclear Safety Associates)*

2:15 p.m.
Comparison Between GEMER and MCNP5 in Stochastic Geometry Modeling of Heterogeneous Fissile Media for Criticality Computations, Qi Ao *(GE Hitachi Nuclear)*

2:40 p.m.
Comparison of HEU Measurements Using Measured and Simulated Data, J. Hutchinson, A. Sood, W. Myers, M. Smith-Nelson, D. Dinwiddie *(LANL)*

3:05 p.m.
An Evaluation of Monte Carlo Simulations of Neutron Multiplicity Measurements of Plutonium Metal, John Mattingly *(NCSU)*, Eric Miller *(Univ of Michigan)*, C. J. Solomon *(LANL)*, Ben Dennis, Amy Meldrum, Shaun Clarke, Sara Pozzi *(Univ of Michigan)*

Radiation Protection and Shielding: General, sponsored by RPSD.

Session Organizer: Charlotta Sanders *(Sanders Eng)*
Chair: Nolan Hertel *(Georgia Tech)*

Room: Haymarket

1:00 p.m.
Verification of the Local Monte Carlo Modeling Approach for Fusion Neutronics Applications in ITER, A. Serikov, U. Fischer, D. Leichtle *(KIT)*, C. S. Pitcher, A. Suarez *(ITER)*

1:25 p.m.
Overview on SNS Beam Lines Shielding Analyses, I. Popova, P. D. Ferguson, F. X. Gallmeier, E. B. Iverson, Wei Lu, I. Remec *(ORNL/SNS)*

1:50 p.m.
A Database for Effective Dose from External Photon Exposures Using Voxel Phantoms and ICRP 103, Lin Su, X. George Xu *(RPI)*

2:15 p.m.
Transformational Nuclear Particle Sensors—Prediction of Detection Thresholds in Tensioned Metastable Fluids, T. F. Grimes, B. Archambault, J. A. Webster, A. Mosier, R. P. Taleyarkhan *(Purdue Univ)*

2:40 p.m.
Portable Neutron Sensors for Emergency Response Operations, Sanjoy Mukhopadhyay, Ryan Detweiler, Richard Maurer *(NSTec)*

Computational Tools for Radiation Protection and Shielding, sponsored by RPSD.

Session Organizer: Michael Fensin *(LANL)*
Chair: Joseph Christenson *(DOE-Idaho)*

Room: Haymarket

3:10 p.m.
Uncollided Surface and Cell Tallies in Monte Carlo Codes, Jeffrey A. Favorite *(LANL)*

3:35 p.m.
MCNP6 Cosmic-Source Option, G. W. McKinney, H. J. Armstrong, M. R. James *(LANL)*, J. M. Clem *(Univ of Delaware)*, P. Goldhagen *(National Urban Security Technology Laboratory)*

4:00 p.m.
MCNP6 Fission Multiplicity, T. Wilcox, M. Fensin, J. S. Hendricks, M. R. James, G. W. McKinney *(LANL)*

4:25 p.m.
Validating Scale6.1/MAVRIC with Two Reactor Pressure Vessel Dosimetry Benchmarks, Timothy Flaspoehler, Bojan Petrovic *(Georgia Tech)*

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

Nuclear Installations Safety: General, sponsored by NISD.

Session Organizer: Charles R. (Chip) Martin *(DNFSB)*
Chair: Totju L. Totev *(ANL)*

Room: Picasso

1:00 p.m.
I&C Modeling in SPAR Models, Zhegang Ma, John A. Schroeder *(INL)*

1:25 p.m.
MELCOR Model of the Spent Fuel Pool of Fukushima Dai-ichi Unit 4, Juan J. Carbajo *(ORNL)*

1:50 p.m.
MELCOR Sensitivity Study for a PWR Containment, Juan J. Carbajo *(ORNL)*

2:15 p.m.
Unreviewed Safety Question Analysis for the New Neutron Imaging Facility at the USGS TRIGA Reactor, Aaron E. Craft, Jeffrey C. King, Tim M. Debey *(CSM)*

2:40 p.m.
Fracture Toughness Analysis for Different Materials with Leak-Before-Break Applications, Odilon Rodrigues Filho, John C. Lee *(Univ of Michigan)*

Irradiation Assisted Degradation of Reactor Vessel Internals/NRC-Sponsored Environmentally Assisted Fatigue Research Activities, sponsored by NISD.

Session Organizer: Amy B. Hull *(NRC)*
Chair: Herbert Massie *(DNFSB)*

Room: Picasso

3:10 p.m.
Blackstone: An Irradiation Project for AGR Life Time Extension, S. C. van der Marck, O. Wouters *(Nuclear Research and Consultancy Group)*

3:35 p.m.
Ligament Rupture and Burst Pressures of Flawed SG U-bends, Chi Bum Bahn, Saurin Majumdar *(ANL)*

4:00 p.m.
Cracking Behavior of Irradiated 316-Ti Stainless Steel in Simulated LWR Environments, Y. Chen, B. Alexandreanu, K. Natesan *(ANL)*, A. S. Rao *(NRC)*

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

Wednesday • June 27, 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. – 10:00 a.m.	**DD&R 2012: Technical Sessions** *(see page 37)*
8:00 a.m. – 10:00 a.m.	**ICAPP 2012: Technical Sessions** *(see page 60)*
8:30 a.m. – 9:50 a.m.	**NFSM 2012: Technical Sessions** *(see page 41)*
8:30 a.m. – 11:30 a.m.	**2012 ANS Annual Meeting: Technical Sessions** • Bridging the Gap Between Technology and Policy in Education and Training–Paper/Panel • Generic Issue 199, "Implications of Updated Probabilistic Seismic Hazard Estimates in Central and Eastern United States on Existing Plants"–Panel • Transport and Computational Methods • Environmental Sciences: General • Nuclear Nonproliferation Issues • Accelerator Applications: General • Operations and Power: General • Experiences and Challenges in RERTR Core Redesign • Computational Thermal Hydraulics—II • General Thermal Hydraulics—I • Benchmarking Experiments for Criticality Safety and Reactor Physics Applications—I–Panel • Reactor Pressure Vessel Neutron Exposure Monitoring–Tutorial • University Research Reactors and Nuclear Science Programs—I
10:00 a.m. – 12:00 p.m.	**ICAPP 2012: Technical Sessions** *(see page 62)*
10:10 a.m. – 11:30 a.m.	**NFSM 2012: Technical Sessions** *(see page 41)*
9:45 a.m. – 11:45 a.m.	**DD&R 2012: Technical Sessions** *(see page 38)*
1:00 p.m. – 2:20 p.m.	**NFSM 2012: Technical Sessions** *(see page 41)*

Wednesday • June 27, 2012 *continued*

1:00 p.m. – 2:30 p.m.	**ICAPP 2012: Technical Sessions** *(see page 64)*
1:00 p.m. – 3:00 p.m.	**DD&R 2012: Technical Sessions** *(see page 38)*
1:00 p.m. – 4:00 p.m.	**2012 ANS Annual Meeting: Technical Sessions** • Education, Training, and Workforce Development: General • Fuel Cycle and Waste Management: General—I • Uncertainty Quantification, Sensitivity Analysis, and Reduced Order Modeling • Update on Emergency Preparedness and Planning Post-Fukushima–Panel • SMR: Progression and Status • Modeling and Simulation in the Fuel Cycle • Research Applications of Neutron Spectrometry and Dosimetry • Reactor Physics: General • General Thermal Hydraulics—II • University Research Reactors and Nuclear Science Programs—II • Benchmarking Experiments for Criticality Safety and Reactor Physics Applications—II–Tutorial • Robotics and Remote Systems: General • Update on NQA-1: Quality Assurance Requirements for Nuclear Facility Applications–Panel
2:30 p.m. – 4:00 p.m.	**ICAPP 2012: Technical Sessions** *(see page 65)*
2:40 p.m. – 4:00 p.m.	**NFSM 2012: Technical Sessions** *(see page 41)*
3:15 p.m. – 4:45 p.m.	**DD&R 2012: Technical Sessions** *(see page 39)*
4:15 p.m. – 6:15 p.m.	**ICAPP 2012: Plenary 3: Global Perspectives– Why Nuclear Makes Sense?** *(see page 67)*
4:30 p.m. – 6:30 p.m.	**Public Information Workshop**
6:00 p.m. – 8:00 p.m.	**NFSM 2012: Poster Session** *(see page 42)*
6:00 p.m. – 11:00 p.m.	**Evening Event:** Dinner Cruise on the Spirit of Chicago

Wednesday, June 27, 2012, 8:00 or 8:30 A.M.

Bridging the Gap Between Technology and Policy in Education and Training–Paper/Panel, sponsored by ETWDD.

Session Organizer: Lenka Kollar *(Purdue Univ)*
Chair: Lenka Kollar

Room: Regency A

PAPER
8:30 a.m.
The University of Tennessee Institute for Nuclear Security, Howard L. Hall *(Univ of Tennessee)*

PANEL DISCUSSION
9:00 a.m.
While the nuclear field is generally thought of as a technical field, there are often many political challenges and implications. It is important for scientists and engineers in nuclear-related fields to understand the role of policy in technology development and implementation. For example, in the nuclear energy industry, the Nuclear Regulatory Commission makes the final decision in design. In addition, technology development for nonproliferation is directed by national and international policies. This session of invited and contributed panelists will discuss efforts to educate and train scientists and engineers about policy and bridge the gap between technology and policy.

PANELISTS:

- Melissa Scholz *(NNSA)*
- Jeff Jay *(Shaw Power Group)*
- Howard Hall *(Univ of Tennessee)*
- Tanya Parwani-Jaimes *(NRC)*

Generic Issue 199, "Implications of Updated Probabilistic Seismic Hazard Estimates in Central and Eastern United States on Existing Plants"–Panel, sponsored by NISD.

Session Organizer & Chair: Robert J. Budnitz *(LBNL)*

Room: Regency B

8:30 a.m.
The U.S. Nuclear Regulatory Commission's (NRC's) Generic Issue 199, "Implications of Updated Probabilistic Seismic Hazard Estimates in Central and Eastern U.S. (CEUS) on Existing Plants," has been the subject of extensive research work for the past several years. The reason for GI-199 is that our understanding of certain features of the seismic ground motion that might occur in the CEUS has changed over the past decade. For some nuclear reactor sites, the ground motions are higher than was thought earlier, although this is highly site-dependent. This session, which will consist entirely of invited panelists, is intended to explain the current understanding of the science related to GI-199 and to explore the anticipated path forward for both the operating U.S. nuclear plants and the new plants now being planned, in terms of the NRC's regulatory requirements and the industry response to them.

PANELISTS:

- Jon Ake *(NRC)*
- Norman Abrahamson *(PG&E)*
- Gregory S. Hardy *(Simpson, Gumpertz, and Heger)*
- Kimberly A. Keithline *(NEI)*
- Robert J. Budnitz *(LBNL)*

Transport and Computational Methods, sponsored by MCD

Session Organizer: Brian Franke *(SNL)*
Chair: Massimiliano Rosa *(LANL)*

Room: Regency C

8:30 a.m.
A Multilevel Methodology for Coupling Neutronics with the Heat Transfer Equation, Apil Tamang, Dmitriy Y. Anistratov *(NCSU)*

8:55 a.m.
Comparison of Two *p* Preconditioned GMRES Algorithms for Variational Nodal Multigroup System, Yunzhao Li *(Xi'an Jiaotong Univ)*, E. E. Lewis *(Northwestern Univ)*, Micheal A. Smith *(ANL)*

9:20 a.m.
A Novel Krylov Adjoint Method for the Computation of Sensitivities in Eigenvalue Problems, R. T. Evans, D. G. Cacuci *(NCSU)*

9:45 a.m.
Preconditioning Multiple Right Sides for the Time Dependent Neutron Diffusion Equation, Sebastián González-Pintor, Damian Ginestar, Gumersindo Verdú *(Universidad Politecnica de Valencia)*

10:10 a.m.
Implementing a Discrete Maximum Principle for the IMC Equations, Paul W. Talbot *(Oregon State Univ)*, Allan B. Wollaber *(LANL)*, Todd S. Palmer *(Oregon State Univ)*

10:35 a.m.
Temporal Convergence of Coarse Mesh Finite Difference Accelerated Monte Carlo, M. A. Cleveland, T. S. Palmer, S. Apte *(Oregon State Univ)*

11:00 a.m.
Reduced Variance for Material Sources in Implicit Monte Carlo, Todd Urbatsch *(LANL)*

11:25 a.m.
A More Implicit Temperature Estimate for the IMC Method of Photon Transport, Alex R. Long *(Oregon State Univ)*, Nick Gentile *(LLNL)*, Todd Palmer *(LANL)*

11:50 a.m.
Using Source Biasing in Implicit Monte Carlo to Reduce Numerical Artifacts and Variance, Alex R. Long *(Oregon State Univ)*, Nick Gentile *(LLNL)*

Environmental Sciences: General, sponsored by ESD.

Cochairs: Gene Carpenter *(NRC)*, Eduardo Farfán *(SRNL)*

Room: Regency D

8:30 a.m.
A Comprehensive Radiological and Chemical Risk Assessment of the Open Nuclear Fuel Cycle, Bethany Smith, James H. Clarke, Steven Krahn *(Vanderbilt Univ)*

8:55 a.m.
A Model Addressing Effect of Growing Oxide Layer on Tritium Permeation in a High Temperature Gas-Cooled Reactor, Hyung Gon Jin, Hee Cheon No *(KAIST)*

9:20 a.m.
How Wind Stacks Up to Coal and Nuclear: A Comparison of Life-Cycle Assessments for Coal, Nuclear, and Wind Generation by Vattenfall AB Generation Nordic, Leah Spradley-Parks *(NRC)*, George S. Taylor *(Palmetto Energy Research)*

9:45 a.m.
Effect of the Synergistic Biomass-Nuclear Process on the Global Carbon Budget, Masao Hori *(Nuclear Systems Association)*

10:10 a.m.
Impact of Renewable Electricity Standards on Nuclear Generation, George S. Taylor *(Palmetto Energy Research)*

10:35 a.m.
Monitoring Plant Conditions with Radio Frequency Devices, Hanchung Tsai, Yung Y. Liu, James Shuler *(ANL)*

11:00 a.m.
Gamma Ray Mapping Systems for Ground Surface Characterization, Eduardo B. Farfán, Richard J. Abitz, J. Rusty Coleman *(SRNL)*

Nuclear Nonproliferation Issues, sponsored by FCWMD; cosponsored by NNTG.

Session Organizer & Chair: John E. Gunning *(ORNL)*

Room: Acapulco

8:30 a.m.
The United States Support Program: 35 Years of Safeguards Enhancements, Jay Disser, Tyler DeVries-Wallace, Andrew Gross, Jessica Cruz, Jade Patterson, Susan Pepper *(BNL)*

8:55 a.m.
Aboveground Antineutrino Detectors for Reactor Monitoring and Safeguards, Scott Kiff *(SNL)*, Adam Bernstein, Nathaniel Bowden *(LLNL)*, Belkis Cabrera-Palmer *(SNL)*, Steven Dazeley, Greg Keefer *(LLNL)*, David Reyna *(SNL)*

9:20 a.m.
Development of Path Search Toolkit for Nuclear Non-Proliferation Applications, Jason Young, Miltiadis Alamaniotis, Rong Gao, Lefteri H. Tsoukalas *(Purdue Univ)*

9:45 a.m.
Incentivizing Timely Detection: Game Theoretic Modeling of Trade-Offs, Rebecca Ward, Erich Schneider *(Univ of Texas, Austin)*

10:10 a.m.
Neuro-Fuzzy Methodology for Geospatial and Time Interpolation on Gamma Ray Spectroscopy Data, Austin Grelle, Jason Young, Rong Gao, Lefteri H. Tsoukalas *(Purdue Univ)*

10:35 a.m.
Fuzzy Logic Radio-Isotope Identifier for Gamma Spectra Analysis in Source Search Applications, Miltiadis Alamaniotis *(Purdue Univ)*, Alexander Heifetz, Apostolos C. Raptis *(ANL)*, Lefteri H. Tsoukalas *(Purdue Univ)*

Accelerator Applications: General, sponsored by AAD.

Chair: Bradley Micklich *(ANL)*

Room: Atlanta

8:30 a.m.
An Assessment of the Readiness of Accelerator and Spallation Target Technology for Accelerator Driven Systems: Report of the DOE ADS Whitepaper Working Group, Stuart Henderson *(Fermilab)*, Eric Pitcher *(LANL)*

9:00 a.m.
The Fermilab Project-X: Nuclear Energy Application, Shekhar Mishra *(Fermilab)*, Yousry Gohar *(ANL), invited*

9:25 a.m.
Reliability Analysis of a Proton Linac for ADS Applications, Sampriti Bhattacharyya *(Fermilab /Ohio State)*, Jim Kerby, Aseet Mukherjee *(Fermilab)*, Rama K. Yedavalli *(Ohio State)*

9:50 a.m.
US Spent Nuclear Fuel Inventory Disposal Utilizing Accelerator Driven Systems, Yousry Gohar, Yan Cao *(ANL)*

10:15 a.m.
Impact of Different Physics Models in MCNPX Code on the Neutron and Proton Heating in ADS, Başar Şarer *(Gazi Univ)*, Sümer Şahin *(ATILIM Univ)*, Mehtap Günay *(Inönü Univ)*

10:40 a.m.
Identifying the Elemental Composition of Dust Particles Using Photon Activation Analysis, Philip L. Cole *(Idaho State Univ/ Idaho Accelerator Center)*, Mayir Mamtimin *(Idaho State Univ)*, Christian Segebade *(Idaho Accelerator Center)*

11:05 a.m.
Preliminary Results of a Focusing Beamline for a PETtrace Cyclotron, M. S. Beumer, L. A. Saale, J. M. Gahl, P. J. Pinhero *(Univ of Missouri, Columbia)*

Operations and Power: General, sponsored by OPD.

Chair: Gale Hauck *(Westinghouse)*

Room: Hong Kong

8:30 a.m.
Analysis of Supercritical CO_2 Brayton Cycles for Pertinent Compressor Inlet Conditions, Woo Seok Jeong *(KAIST)*, Yong Hoon Jeong *(KAIST/KUSTAR)*

8:55 a.m.
A Three-Component Model on Gas Transport in a Defective Fuel Rod, Wenfeng Liu, Joe Rashid, Suresh Yagnik *(ANATECH)*

9:20 a.m.
Statistic Trend Analysis of Incidents and Failures Focused on Commissioning Stage of KSNP, Il S. Lee, Sang J. Kim, Dong W. Choi, Koo H. Bae, Durk H. Lee *(KINS)*

9:45 a.m.
The Advanced Test Reactor National Scientific User Facility, T. R. Allen *(Univ of Wisconsin, Madison)*, J. B. Benson, J. I. Cole, C. J. Knight, F. M. Marshall, M. C. Thelen *(INL)*

10:10 a.m.
Licensing and Design of Mixed Cores for US Light Water Cooled Reactors, Mathew M. Panicker *(NRC)*

10:35 a.m.
IRWST Elevation Design for Passive ECCS and IVR Strategy, Sang Ho Kim, Soon Heung Chang *(KAIST)*

Experiences and Challenges in RERTR Core Redesign, sponsored by RPD.

Session Organizers: Mark DeHart *(INL)*, Sean Morrell *(INL)*
Cochairs: Sean Morrell *(INL),* Pablo Adelfang *(IAEA)*

Room: Toronto

8:00 a.m.
IAEA Support of Research Reactor HEU to LEU Fuel Conversion, P. Adelfang, E. Bradley, R. Sollychin *(IAEA–Austria)*

8:25 a.m.
Design of a Low-Enriched Uranium Fuel for the High Flux Isotope Reactor—Reactor Physics Analyses, Germina Ilas *(ORNL)*, Trent Primm III *(Primm Consulting, LLC)*, David Renfro *(ORNL)*

8:50 a.m.
Neutronic Modeling of the MIT Reactor LEU Conversion, Erik H. Wilson *(ANL)*, Nicholas E. Horelik *(MIT)*, Aurélien Bergeron *(ANL)*, Thomas H. Newton, Jr. *(MIT)*, Floyd Dunn *(ANL)*, Lin-wen Hu *(MIT)*, John G. Stevens *(ANL)*

9:15 a.m.
Analysis of the Reactor Physics of Low-Enrichment Fuel for the INL Advanced Test Reactor in Support of RERTR, Mark DeHart, William Skerjanc, Sean Morrell *(INL)*

9:40 a.m.
Qualifying the Codes and Methodologies Used for the Evaluation of the BR2 Core Maximum Nominal Heat Flux, B. Dionne, C. P. Tzanos, A. P. Olson, J. G. Stevens *(ANL)*, S. Kalcheva, G. Van den Branden, E. Koonen *(SCK/CEN)*

10:05 a.m.
Additional Benchmark Evaluation of the NRAD Reactor LEU Core Conversion, John D. Bess, Margaret A. Marshall *(INL)*

10:30 a.m.
Prompt Neutron Lifetime for the NBSR Reactor, A. L. Hanson, D. J. Diamond *(BNL)*

10:55 a.m.
Effects of Advanced Test Reactor HEU to LEU Conversion on One-Group ORIGEN 2.2 Cross-Section Library, C. R. Glass, G. S. Chang *(INL)*

11:20 a.m.
Effect of Lateral Conduction on the Azimuthal Distribution of Heat Flux in the Hot Plate of a Research Reactor, Constantine P. Tzanos, John Stillman *(ANL)*

Computational Thermal Hydraulics—II, sponsored by THD.

Cochairs: Paolo Ferroni *(Westinghouse)*, Rui Hu *(ANL)*

Room: Buckingham

8:30 a.m.
CFD Analysis of Two-Group IATE Models for Bubbly-Cap Flows with the EAGLE Code, Van-Thai Nguyen, Byoung-Uhn Bae, Chul-Hwa Song *(KAERI)*

8:55 a.m.
Verification of COBRA-TF Boron Tracking Model with STAR-CD, O. E. Ozdemir, M. Avramova *(Penn State)*

9:20 a.m.
Assessment of a Computational Fluid Dynamic (CFD) Model for the IPR-R1 TRIGA Research Reactor, M. Martínez, R. Miró, G. Verdú *(UPV)*, C. Pereira *(UFMG)*, A. Z. Mesquita *(CDTN/CNEN)*, S. Chiva *(UJI)*

General Thermal Hydraulics—I, sponsored by THD.

Cochairs: Dave Aumiller *(BAPL)*, Piyush Sabharwall *(INL)*

Room: Buckingham

9:50 a.m.
Characterization of Turbine Stop Valve Closing Time, B. Rovagnati, J. H. Gray, R. M. Field *(Sargent & Lundy LLC)*

10:15 a.m.
Critical Heat Flux in Vertical Channels at Zero Flow Condition, Jun Yang, Matthew De Angelis, Michael Corradini *(Univ of Wisconsin, Madison)*

10:40 a.m.
Intermediate BLOCA Scenarios—Sensitivity Analysis with TRACE5, Andrea Querol, Sergio Gallardo, Gumersindo Verdú *(Universitat Politècnica de València)*

11:05 a.m.
Analysis of Reactor Water Level Fluctuations in BWRs, Bulent Alpay, Phillip G. Ellison, John S. Bennion *(GE-Hitachi Nuclear)*

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

Benchmarking Experiments for Criticality Safety and Reactor Physics Applications—I–Panel, sponsored by NCSD.

Session Organizer: John D. Bess *(INL)*
Chair: Adolf Garcia *(INL)*

Room: Columbian

8:30 a.m.
The International Criticality Safety Benchmark Evaluation Project (ICSBEP) and the International Reactor Physics Experiment Evaluation Project (IRPhEP) were established to identify and evaluate a comprehensive set of criticality safety and reactor physics related experimental data and preserve the data in a form that will be easily accessible to users. The projects provide a basis for recording, developing, and validating computational and analytical methods. Topics consist of the importance of quality experimental measurements, benchmark model development, uncertainty quantification, and utilization of these benchmarks in real-world applications.

PANELISTS:

- John Bess *(INL)*
- David Hayes *(LANL)*
- Dick McKnight *(ANL)*
- Jim Gulliford *(OECD/NEA)*
- Fitz Trumble *(WSMS)*
- Skip Kahler *(LANL)*

Reactor Pressure Vessel Neutron Exposure Monitoring–Tutorial, sponsored by RPSD.

Session Organizer & Chair: Arzu Alpan *(Westinghouse)*

Room: Haymarket

8:30 a.m.
This short seminar will provide information on reactor pressure vessel monitoring programs including in-vessel and ex-vessel neutron dosimetry. A new ASTM standard that was proposed recently on reactor pressure vessel neutron fluence monitoring will also be discussed.

University Research Reactors and Nuclear Science Programs—I, sponsored by IRD; cosponsored by BMD.

Session Organizer & Chair: K. Ünlü *(Penn State)*

Room: Picasso

8:30 a.m.
Production of ^{37}Ar Through the Irradiation of Ca-Containing Compounds, Christine Egnatuk, Steven Biegalski *(Univ of Texas, Austin)*

8:55 a.m.
Neutronic Analysis of the New Penn State Breazeale Reactor Core Design Using MCNP5 Code, D. Uçar, K. Ünlü *(Penn State)*

9:20 a.m.
Thermal-Hydraulics Analysis of the New Penn State Breazeale Reactor Core Design Using Ansys Fluent Code, D. Uçar, K. Ünlü *(Penn State)*

9:45 a.m.
Advances in Industrial Isotope Production at the Radiation Science and Engineering Center at Penn State University, B. Heidrich, A. Johnsen, K. Ünlü *(Penn State)*

10:10 a.m.
A Literature Review of Potential Low Enrichment U-10wt%Mo Fuel Failures, Z. R. Thacker, P. J. Pinhero *(Univ of Missouri, Columbia)*

10:35 a.m.
Development of Online Reactor Experiments Software at Penn State, D. Şahin, B. Heidrich, K. Ünlü *(Penn State)*

Wednesday, June 27, 2012, 1:00 P.M.

Education, Training, and Workforce Development: General, sponsored by ETWDD.

Session Organizer: John Bennion *(GEH)*
Chair: Peter Caracappa *(RPI)*

Room: Regency A

1:00 p.m.
Teaching Across and Through the Curriculum: Enhancing Student Performance in Online Education, Jane A. LeClair, Chriss R. Miller, James R. (Randy) Fromm *(Excelsior Coll)*

1:25 p.m.
Teaching Online Nuclear Engineering Courses Improves Your In-Class Teaching, Mark Pierson *(Virginia Tech)*

1:50 p.m.
The Continued Evolution of a Revolutionary Curriculum in Nuclear Environmental Engineering, Steven L. Krahn, James H. Clarke, David S. Kosson *(Vanderbilt Univ)*

2:15 p.m.
Nuclear Forensic Science Educational Needs—A Student Perspective, Matthew L. Baruzzini, Lily I. Crabtree, Howard L. Hall *(Univ of Tennessee)*

2:40 p.m.
Development of Web Based Thermal-Hydraulics Modules for Nuclear Engineering Minor, Ratan Kumar *(Univ of Texas at Arlington)*

3:05 p.m.
A Simple Educational Tool for In-Core Fuel Management, J. A. Roberts, N. A. Gibson, N. E. Horelik, K. S. Smith *(MIT)*

3:30 p.m.
Design of the U-PANTHER Desktop Nuclear Plant Simulator, Alex M. Schaefer, Samuel J. Dickerson, Larry R. Foulke, Daniel G. Cole, Steven P. Levitan *(Univ of Pittsburgh)*

3:55 p.m.
Novel Reactor Simulator Using Natural Interfacing, C. Peters, J. Waldman, P. Martin, P. Rua, M. Lui *(Drexel Univ)*

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

Session Organizer: Jack Law *(INL)*
Chair: Charles W. Forsberg *(MIT)*

Room: Regency B

1:00 p.m.
Report on a DOE Nuclear Separations Workshop and the Path Forward, Andrew Griffith *(DOE),* Steven Krahn *(Vanderbilt Univ)*, Charles Forsberg *(MIT)*

1:25 p.m.
Update on DOE's Safety and Regulatory Crosscut Work, Bobby D. Middleton, Shawn P. Burns *(SNL)*

1:50 p.m.
Arizona's Suitability as an Interim Recyclable Fuel Storage Facility Site, Keith E. Holbert *(Arizona State Univ)*, Sheldon L. Trubatch *(The Regulatory Strategy Group, L.L.C.)*

2:15 p.m.
Fuel Cycle Strategies Utilizing Single Isotope Separation, R. Flanagan, E. Schneider *(Univ of Texas, Austin)*

2:40 p.m.
A Comparative Study of CANDLE Reactor Based U.S. Nuclear Fuel Cycles, Joseph Graham, Kenneth Dayman, Urairisa B. Phathanapirom, Kristen McConnell, Brian Epping, Erich Schneider *(Univ of Texas, Austin)*

Uncertainty Quantification, Sensitivity Analysis, and Reduced Order Modeling, sponsored by MCD.

Session Organizer: Patrick Brantley *(LLNL)*
Chair: Alberto Talamo *(ANL)*

Room: Regency C

1:00 p.m.
Second-Order Sensitivity Analysis of Godiva and Jezebel Experimental Benchmarks, W. C. Proctor, R. T. Evans, D. G. Cacuci *(NCSU)*

1:25 p.m.
Revisiting Boundary Perturbation Theory for Inhomogeneous Transport Equations, Jeffrey A. Favorite *(LANL)*

1:50 p.m.
Reduced Order Approximations in Uncertainty Analysis of Nuclear Engineering Applications, Oleg Roderick, Mihai Anitescu *(ANL)*, Zhu Wang *(Virginia Tech)*

2:15 p.m.
Reduced Order Modeling of the Forward Eigenvalue Problem, Congjian Wang, Hany S. Abdel-Khalik *(NCSU)*

Update on Emergency Preparedness and Planning Post-Fukushima–Panel, sponsored by OPD.

Session Organizer & Chair: N. Prasad Kadambi *(Consultant)*

Room: Regency D

1:00 p.m.
The role of emergency preparedness and planning as an integral part of safety requirements is likely to evolve rapidly post-Fukushima. The new focus is likely to be on beyond-design-basis accidents and on defense-in-depth. There is also likely to be significant differences between what may be acceptable for existing plants versus designs under review and combined license applications. As more information becomes available from Japan, there is a need to have representatives from major stakeholder organizations speak about technical aspects of the changes and how they are affected.

PANELISTS:

- Kevin Williams *(NRC)*
- Carl Mazzola *(Shaw Environmental)*
- Jim Riley *(NEI)*

SMR: Progression and Status, sponsored by OPD.

Session Organizer & Chair: Kenneth Ferguson *(Hakari/Ascendent)*

Room: Regency D

2:30 p.m.
The Business Case for Islanded Small Modular Reactors, Charles W. Hess *(The Shaw Group)*

2:55 p.m.
Progress on Privately Funded Energy Multiplier Module (EM^2) Program, Hangbok Choi, Robert W. Schleicher, Christina Back, Puja Gupta *(General Atomics)*

3:20 p.m.
Westinghouse SMR Program Progress, Emily Tavrides *(Westinghouse)*

3:45 p.m.
Simulator Assisted Design for a Multi-Module Small Modular Reactor Plant, Charles Weaver, Connie Bazley, Steve Blomgren, Edward Wallace *(NuScale Power)*, David Leaver *(WorleyParsons Polestar)*

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

Modeling and Simulation in the Fuel Cycle, sponsored by FCWMD.

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

Room: Acapulco

1:00 p.m.
Agent Based Simulation of the Nuclear Fuel Cycle, A. M. Yacout *(ANL)*, G. Blanchard *(École Polytechnique)*, T. A. Taiwo *(ANL)*

1:25 p.m.
Modeling Spent Fuel Storage Options in Fuel Cycle Systems Simulation, Samuel Brinton, Mujid Kazimi *(MIT)*

1:50 p.m.
Transient Thermal Modeling of a Deep Borehole Repository, E. A. Bates, J. Buongiorno, E. Baglietto, M. J. Driscoll *(MIT)*

2:15 p.m.
Integrated Software Development for the LILW Evaluation of Management Risk and Radioactivity Inventory, Jong Kuk Lee, Kun Jai Lee *(KAIST)*, Byeong Soo Kim, Min Chul Song, Seung Young Joung *(KINS–Korea)*

2:40 p.m.
Numerical Calibration of an Analytical Generic Nuclear Repository Heat Transfer Model, Kathryn D. Huff *(Univ of Wisconsin, Madison)*, Theodore H. Bauer *(ANL)*

3:05 p.m.
U-Pu-Zr Fuel Properties and Thermal Performance Modeling for Sodium Fast Reactors, Wenzhong Zhou, Cetin Unal *(LANL)*

Research Applications of Neutron Spectrometry and Dosimetry, sponsored by RPD; cosponsored by RPSD.

Session Organizer: David W. Nigg *(INL)*, Arzu Alpan *(Westinghouse)*
Cochairs: Arzu Alpan *(Westinghouse)*, Pat Griffin *(SNL)*

Room: Hong Kong

1:00 p.m.
Selection and Application of Dosimetry Cross Sections for Nuclear Applications, Patrick J. Griffin, Curtis D. Peters, David W. Vehar *(SNL)*, *invited*

1:25 p.m.
The Role of the Prior Covariance Matrix in Least-Squares Neutron Spectrum Adjustment, John G. Williams *(Univ of Arizona)*, *invited*

1:50 p.m.
Best-Estimate Model Calibration Through First-Order Experimental Data Assimilation with Applications to Neutron Transport via Denovo, W. C. Proctor, R. T. Evans, D. G. Cacuci *(NCSU)*

2:15 p.m.
Neutron Dosimetry in Containment at the Dominion Kewaunee Power Station, N. E. Hertel, D. P. Blaylock, W. D. Kulp, T. Liang, T. Cahill *(Georgia Tech)*, C. Olson, R. Adams *(Dominion Energy Kewaunee Power Station)*, *invited*

2:40 p.m.
Validation Protocols to Support the Neutronics Modeling, Simulation, and V&V Upgrade for the Advanced Test Reactor, David W. Nigg, Joseph W. Nielsen, Gene K. Taylor *(INL)*

3:05 p.m.
The p-D_2O Generator Neutron Spectrum Determination by Multi-foil Activation Method, Milan Stefanik *(Nuclear Physics Institute of the ASCR/Czech Technical Univ in Prague)*, Pavel Bem *(Nuclear Physics Institute of the ASCR)*, Karel Katovsky *(Brno Univ of Technology)*

3:30 p.m.
Test Fidelity at Research Reactors, T. Michael Flanders, Mary Helen Sparks *(White Sands Missile Range)*, David W. Vehar, Patrick J. Griffin *(SNL)*, *invited*

Reactor Physics: General, sponsored by RPD.

Session Organizers: Fausto Franceschini *(Westinghouse)*, Alexander Stanculescu *(INL)*
Cochairs: Alberto Talamo, Bo Feng *(ANL)*

Room: Toronto

1:00 p.m.
Thermal Neutron Scattering Cross Sections for Reactor-Grade Graphite, A. I. Hawari, V. H. Gillette *(NCSU)*

1:25 p.m.
Beamline Model Validation Through Flux Profile and Neutron Activation Measurements at the Neutron Radiography (NRAD) Reactor, Sarah W. Morgan, Jeffrey C. King *(CSM)*, Chad L. Pope *(INL)*

1:50 p.m.
Particle Tracking Development for a Fission Time Projection Chamber, Verena Kleinrath *(Idaho State Univ)*

2:15 p.m.
An Analysis of the Antineutrino Rate During CANDU Reactor Startup, Topher Matthews, Todd S. Palmer *(Oregon State Univ)*

2:40 p.m.
Reconsideration of Inherent Neutron Sources in Liquid Fuel of Molten Salt Reactors, Walter Powell, Lei Cao *(Ohio State)*

3:05 p.m.
Numerical Simulation of the Two Phase Flow and Investigation of the Induced Neutron Noise, V. Dykin, I. Pázsit *(Chalmers Univ of Technology)*

3:30 p.m.
A Mechanistic Approach to Iodine-Influenced Stress Corrosion Cracking (ISCC), Matthew L. Rossi, Christopher D. Taylor *(LANL)*

3:55 p.m.
Heater Controller Module for Simulating Reactivity Feedback, David Ames, Tom Conboy *(SNL)*

4:20 p.m.
Development of Reactor Core Neutronics and Thermal Physics for the U-PANTHER Simulator, Jesse S. Randall, Venugopal M. P. Nair, Larry R. Foulke, Steven P. Levitan, Daniel G. Cole *(Univ of Pittsburgh)*

General Thermal Hydraulics—II, sponsored by THD.

Cochairs: Jovica Rizni *(CNSC)*, Brian Collins *(PNNL)*

Room: Buckingham

1:00 p.m.
Measurement of Whole Temperature Field in Refrigerant Using Two-Color/Single-Dye LIF, Saya Lee, Yassin A. Hassan *(Texas A&M)*

1:25 p.m.
Acoustic Analysis of Pump-Induced Vibrations in Reactor Recirculation Piping, Brian J. Voll *(Sargent & Lundy LLC)*

1:50 p.m.
Study of Thermal Mixing Characteristics with T-Junction Piping System, Mei-Shiue Chen, Yuh-Ming Ferng, Huai-En Hsieh, Bau-Shi Pei *(Natl Tsing Hua Univ)*

2:15 p.m.
Critical Heat Flux Under Natural and Forced Convection, Matthew De Angelis, Jun Yang, Scott M. Greenwood *(Univ of Wisconsin, Madison)*

2:40 p.m.
Design of a Scaled-Down Low-Temperature DRACS Test Facility for an AHTR, Q. Lv, X. Wang, I. Adams, X. Sun, R. N. Christensen, T. E. Blue *(Ohio State)*, G. Yoder, D. Wilson *(ORNL)*, P. Sabharwall *(INL)*

3:05 p.m.
Measurement of Velocity Profile in a Scaled-Down Facility for CANDU6 Moderator Tank Using Particle Image Velocimetry, Han Seo *(UNIST)*, Hyoung Tae Kim *(KAERI)*, In Cheol Bang *(UNIST)*

3:30 p.m.
Investigation on Hydrodynamic Cavitation of a Restriction Orifice on Crud-Like Deposits, Seong Man Kim, Seung Won Lee, Seong Dae Park, Sarah Kang, Han Seo, In Cheol Bang *(UNIST)*

3:55 p.m.
Heat Transfer Characterization of a Scaled-Down Air-Ingress Accident Test Facility, David J. Arcilesi, Tae Kyu Ham, Xiaodong Sun, Richard N. Christensen *(Ohio State)*, Chang Oh *(INL)*

4:20 p.m.
Effect of Fuel Assembly Grouping on Instability of Chinshan NPP, Guan-Yu Chen *(Natl Tsing Hua Univ)*, Hao-Tzu Lin, Jong-Rong Wang *(Institute of Nuclear Energy Research Atomic Energy Council)*, Chang-Lung Hsieh, Chunkuan Shih *(Natl Tsing Hua Univ)*

University Research Reactors and Nuclear Science Programs—II, sponsored by IRD; cosponsored by BMD.

Session Organizer & Chair: K. Ünlü *(Penn State)*

Room: Atlanta

1:00 p.m.
Electron Emission Following ^{157}Gd Neutron Capture, J. Ralston, P. Kandlakunta, L. Cao *(Ohio State)*

1:25 p.m.
Reactor Based Production and Purification of ^{64}Cu and ^{67}Cu, A. M. Johnsen, C. B. Durrant, B. J. Heidrich, K. Ünlü *(Penn State)*

1:50 p.m.
Neutronic Simulation of Penn State Breazeale Nuclear Reactor Core Using MURE, D. Şahin, K. Ünlü, K. Ivanov *(Penn State)*

2:15 p.m.
Modeling Transient Mechanisms for Penn State Breazeale Nuclear Reactor Core Neutronic Analysis, D. Şahin, K. Ünlü, K. Ivanov *(Penn State)*

2:40 p.m.
A Neutron Beam Monitor for a Neutron Depth Profiling Facility, Praneeth Kandlakunta, Danyal Turkoglu, Padhraic Mulligan, Lei Cao *(Ohio State)*

3:05 p.m.
Betavoltaic Batteries from Irradiated Lithium Intercalated Graphite, M. D. Sinclair, P. J. Pinhero *(Univ of Missouri, Columbia)*, A. K. Wertsching, T. J. Tranter *(INL)*

Benchmarking Experiments for Criticality Safety and Reactor Physics Applications—II–Tutorial, sponsored by NCSD.

Session Organizer: John D. Bess *(INL)*
Chair: Adolf Garcia *(INL)*

Room: Columbian

1:00 p.m.
The International Criticality Safety Benchmark Evaluation Project (ICSBEP) and the International Reactor Physics Experiment Evaluation Project (IRPhEP) were established to identify and evaluate a comprehensive set of criticality safety and reactor physics related experimental data and preserve the data in a form that will be easily accessible to users. The projects provide a basis for recording, developing, and validating computational and analytical methods. This tutorial will outline and discuss the benchmark process for the ICSBEP and IRPhEP. Attendees will also be provided with a brief demonstration of DICE (Database for the International Handbook of Evaluated Criticality Safety Benchmark Experiments), and receive a preliminary introduction to IDAT (International Reactor Physics Experiment Evaluation Database and Analysis Tool) prior to its release. Participants are encouraged to request their free copies of the handbooks at http://icsbep.inl.gov/ and http://irphep.inl.gov/. Questions can be addressed by e-mail: john.bess@inl.gov.

Robotics and Remote Systems: General, sponsored by RRSD.

Session Organizer & Chair: Timothy R. McJunkin *(INL)*

Room: Haymarket

1:00 p.m.
Stack Characterization System Development—Status and Path Forward, M. W. Noakes, R. F. Lind, P. D. Lloyd, J. C. Rowe *(ORNL)*

1:25 p.m.
COINS: A New Computer Assisted Method for Non Destructive Rod Analysis, Fabrice Rocchiccioli, Kristopher P. Zanotto *(GE-Hitachi Nuclear)*

1:50 p.m.
Statistics and Discrete-Event Modeling of Remote Operations with a TRU Pipe Connector, Reid Kress *(Y-12 NSC)*

2:15 p.m.
Needs for Robotic Assessments of Nuclear Disasters, Victor Walker, Derek Wadsworth *(INL)*

2:40 p.m.
Tube Sheet Runner (TSR) PWR Steam Generator Inspection Manipulator, Fran Jarnjak, Domagoj Liebl, Ivan Grga *(INETEC)*

3:05 p.m.
Advanced Manufacturing Concepts Using Hybrid Laser Welding, T. R. McJunkin *(Battelle Energy Alliance/INL)*, D. E. Clark, D. C. Kunerth *(INL)*

Update on NQA-1: Quality Assurance Requirements for Nuclear Facility Applications–Panel, sponsored by NISD.

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

Room: Picasso

1:00 p.m.
NQA-1 is an international class standard that reflects nuclear industry experience and current understanding of the quality assurance requirements necessary to achieve safe, reliable, and efficient utilization of nuclear energy, and management and processing of radioactive materials. It sets forth requirements for the establishment and execution of quality assurance programs during siting, design, construction, operation, and decommissioning of nuclear facilities. This standard is included by reference in the ASME Boiler and Pressure Vessel (BPV) Code and other national standards, such as ANS-3.2, Administrative Controls and Quality Assurance for the Operational Phase of Nuclear Power Plants. While NQA-1 can stand alone on its own merits as the definitive nuclear quality assurance standard, its use is promulgated principally through endorsement and adoption by others. As new nuclear construction, life-extension, decommissioning, and waste disposal projects continue to be initiated, NQA-1 is providing requirements that reflect not only lessons learned from 30 years of nuclear power experience, but also emergent issues such as increasing reliance on international suppliers, software quality assurance, increasing use of digital instrumentation and control systems, changes in the performance of commercial grade dedication, and performance-based auditing.

PANELISTS:

- Douglas A. Brown *(Sargent & Lundy)*
- Gustave (Bud) Danielson *(DOE)*
- Ronald C. Schrotke, Jr. *(PNNL)*
- Charles R. (Chip) Martin *(DNFSB)*

Thursday • June 28, 2012

7:30 a.m. – 2:00 p.m.	**Meeting Registration**
7:45 a.m. - 3:30 p.m.	**Technical Tour: Exelon Dresden Station**
8:00 a.m. – 10:00 a.m.	**ICAPP 2012: Technical Sessions** *(see page 67)*
8:30 a.m. – 9:50 p.m.	**NFSM 2012: Technical Sessions** *(see page 44)*
8:30 a.m. - 11:30 a.m.	**2012 ANS Annual Meeting: Technical Sessions** • Nuclear Criticality Safety Standards–Forum • Advanced Reactors • Fuel Cycle and Waste Management: General—II • MCNP/MCNPX Tutorial for Homeland Security • Reactor Analysis Methods—II
10:00 a.m. - 12:00 p.m.	**ICAPP 2012: Plenary 4: Rethinking the Nuclear Energy Role in a Carbon Constrained World** *(see page 69)*
10:10 a.m. - 11:30 a.m.	**NFSM 2012: Technical Sessions** *(see page 44)*
1:00 p.m. - 2:20 p.m.	**NFSM 2012: Technical Sessions** *(see page 44)*
2:40 p.m. - 4:00 p.m.	**NFSM 2012: Technical Sessions** *(see page 44)*

Thursday, June 28, 2012, 8:00 or 8:30 A.M.

Nuclear Criticality Safety Standards–Forum, sponsored by NCSD.

Session Organizer & Chair: Davis Reed *(ORNL)*

Room: Columbian

8:30 a.m.

Advanced Reactors, sponsored by OPD.

Chair: Art Wharton *(Westinghouse)*

Room: Soldier Field

8:30 a.m.
High Sensitive and Reliable FFDL Technique for Monju Using Laser Resonance Ionization Mass Spectrometry, Takafumi Aoyama *(JAEA/Univ of Fukui)*, Takashi Ishikawa, Chikara Ito, Yoshihiro Iwata *(JAEA)*, Hideki Harano *(NIAIST)*

8:50 a.m.
In-Situ Performance of Optical Fibers Heated to 600°C During Gamma Irradiation, David Hawn, Chris Petrie, Thomas E. Blue, Wolfgang Windl *(Ohio State)*

9:10 a.m.
In-Situ Performance of Silica Optical Fibers Heated to 1000°C, Chris Petrie, David Hawn, Thomas E. Blue, Wolfgang Windl *(Ohio State)*

9:30 a.m.
PARFUME Modeling Status Update, William F. Skerjanc, John T. Maki, David A. Petti *(INL)*

9:50 a.m.
ADS Windowless Spallation Target Design: An Experimental and Computational Approach, L. C. De Giorgi, M. De Salve, B. Panella *(Politecnico di Torino-Italy)*

10:10 a.m.
3D In-Core Monitoring in Advanced Reactor Environments, Pavel V. Tsvetkov, Shannon M. Bragg-Sitton, Jesse M. Johns, Matthew P. Johnson *(Texas A&M)*

10:30 a.m.
Simulations of Dynamics and Control of Advanced Reactor Systems Using Artificial Neural Networks, Pavel V. Tsvetkov *(Texas A&M)*, Milos Manic *(Univ of Idaho)*, Piyush Sabharwall *(INL)*

10:50 a.m.
Full-Core Coupled Neutronic/Thermal-Hydraulic Model of Innovative Lead-Cooled Fast Reactors, R. Bonifetto, S. Dulla, P. Ravetto, L. Savoldi Richard, R. Zanino *(Politecnico di Torino-Italy)*

11:10 a.m.
The Conceptual Design of Integrated Passive Safety System, Soon Heung Chang, Sang Ho Kim, Jae Young Choi, Ju Hyung Lee, Sung Yeop Joung *(KAIST)*

Fuel Cycle and Waste Management: General—II,

sponsored by FCWMD.
Session Organizer: Jack Law *(INL)*
Chair: Mary Lou Dunzik-Gougar *(Idaho State Univ)*

Room: Crystal A

8:30 a.m.
MR Reactor Decommissioning in NRC "Kurchatov Institute": Results of Preparatory Work Phase, V. G. Volkov, A. V. Lemus, S. G. Semenov *(NRC "Kurchatov Institute")*

8:55 a.m.
Irradiation Effects on Actinide Containing U-Pu-Zr Metallic Fuels at Several Burnups, D. Papaioannou, V. V. Rondinella *(European Commission, JRC)*, H. Ohta, T. Ogata *(CRIEPI)*, R. Nasyrow, N. Niagolova *(European Commission, JRC)*

9:20 a.m.
Building Confidence in LLW Performance Assessments Through Risk Evaluation Analysis, Joseph H. Rustick, Steven L. Krahn, James H. Clarke *(Vanderbilt Univ)*

9:45 a.m.
X-Ray Backscatter Imaging of Nuclear Fuel Rods, John E. Gunning, Jeffery A. Chapman, Larry J. Ott *(ORNL)*, Daniel F. Hollenbach *(Spectra Tech, Inc.)*, Daniel Shedlock *(NucSafe, Inc.)*

10:10 a.m.
Transformation Enthalpies of Uranium-Zirconium Alloy System, Sangjoon Ahn, Sean M. McDeavitt *(Texas A&M)*

10:35 a.m.
Bismuth Impurity Effects on Copper Nuclear Waste Containers, J. A. Neth, T. P. Freiling, P. J. Pinhero *(Univ of Missouri, Columbia)*

MCNP/MCNPX Tutorial for Homeland Security,

sponsored by RPSD; cosponsored by YMG.
Session Organizer & Chair: Eric Burgett *(ISU)*

Room: Crystal C

8:30 a.m.
This intermediate course will cover special topics of interest to homeland security applications. During this course the students will be taught more advanced features of the code. The topics to be focused on are active interrogation systems. Here, students will create models of active bremstrahlung imaging systems and pulsed X-ray induced fission sources. Topics such as time dependence, advanced geometry, and mesh tallies will be covered in this class as they apply to the homeland security setting. This class is designed for users of the MCNP code that already have an understanding of the code and can make materials, surfaces, and cells. Students who attend the introduction course should be prepared and be able to understand the content of this class. This class is taught in an interactive learning mode. Students are encouraged to bring their own laptops with the code already installed. No copies of the code will be distributed. Students should come with their own copies of the software. No computers with the code preinstalled will be provided.

To obtain the software, all users should register with RSICC to obtain copies of the software at www-rsicc.ornl.gov.

Reactor Analysis Methods—II, sponsored by RPD; cosponsored by MCD

Session Organizers: Fausto Franceschini *(Westinghouse)*, Alexander Stanculescu *(INL)*
Cochairs: Liangzhi Cao *(Xi'an Jiaotong Univ),* Robert Petroski (*Terra Power)*

Room: Water Tower

8:05 a.m.
A 3D Neutron Transport Calculation Method for ITER Test Blanket Module, Liangzhi Cao, Guangchun Zhang, Hongchun Wu, Youqi Zheng *(Xi'an Jiaotong Univ)*

8:30 a.m.
Kinetic Calculation Method in Space-Time Frame Using Characteristic Line, Kosuke Tsujita, Tomohiro Endo, Akio Yamamoto *(Nagoya Univ)*

8:55 a.m.
Calculation of Incremental Control Rod Reactivity Worth Using COMET, Kevin John Connolly, Farzad Rahnema *(Georgia Tech)*

9:20 a.m.
Parallel Iterative Method for Solving the Continuous Energy Slowing-Down Equations, Yuxuan Liu, Yunlin Xu, William R. Martin *(Univ of Michigan)*

9:45 a.m.
A Quadrature Set for a Characteristics-Based Response Matrix Method, J. A. Roberts, B. Forget *(MIT)*

10:10 a.m.
Evaluation of Indirect Effect in Sensitivity Coefficients by SAINT-II, Masahiro Kimura, Takanori Kitada *(Osaka Univ)*

10:35 a.m.
High-Order Response Moments for Model Uncertainty Quantification and Validation, C. Latten, D. G. Cacuci *(NCSU)*

11:00 a.m.
Application of GPT-Free Method to Sensitivity Analysis in Monte Carlo Models, Zeyun Wu, Chris B. Kennedy, Hany S. Abdel-Khalik *(NCSU)*

11:25 a.m.
Two-Block Decomposition of Nuclide Concentration Vector for Efficient and Accurate Depletion Calculations, Yoonhee Lee, Nam Zin Cho *(KAIST)*

Embedded Topical Meeting: DD&R '12

GENERAL CHAIR:
Pat Daly
Zion Solutions

TECHNICAL PROGRAM CHAIR (TPC):
Sue Aggarwal
NMNT International Inc.

ASSISTANT TPC:
James J. Byrne
Byrne & Associates, LLC

Decommissioning, Decontamination and Reutilization (DD&R 2012)

Sponsored by the Decommissioning, Decontamination, and Reutilization Division

Sunday, June 24, 2012, 6:00 P.M.

Poster Session

• *The student posters will be left up in the Exhibit Hall until Tuesday.*

Installation of a Single-Failure-Proof Crane at the Savannah River Site to Support Facility Deactivation, Joseph K. Santos, Mort Khazrai *(Savannah River Nuclear Solutions, LLC)*

Model for Correlating Real-Time Survey Results to Contaminant Concentrations, Stuart Walker *(EPA)*

Decommissioning of the University of Arizona TRIGA Research Reactor, Thomas Gilmore, Scott LaBuy *(LVI Services, Inc.)*, Corey DeWitt, Dustin Miller, Kurt Colborn *(ENERCON)*, Kevin Taylor *(AECOM)*

Pre-Decommissioning Cleanout—University at Buffalo, Dustin G. Miller, Kurt Colborn *(ENERCON)*

Cleansing and Dismantling of CEA-Saclay Nuclear Licensed Facilities; PROJECT PERIMETER, Michel Jeanjacques, Gilbert Fady, Jean Louis Martin *(CEA)*

Cleansing and Dismantling of CEA-Saclay Nuclear Licensed Facilities; LW PLANT PROGRAM, Michel Jeanjacques, Rebecca Glévarec *(CEA)*

Cleansing and Dismantling of CEA-Saclay Nuclear Licensed Facilities; LHA PROGRAM, Michel Jeanjacques, Isabelle Delaire *(CEA)*

EFCOG Best Practices and Lessons Learned, Heidi Henderson, Lee Brady, Peggy Shoffner, Leonel E. Lagos *(Florida International Univ)*

Service Oriented Architecture Based Framework for D&D Knowledge Management, Himanshu Upadhyay, Leonel Lagos, Walter Quintero *(Florida International Univ)*

Experience Gained in the Decommissioning of the Uranium Conversion Plant, Doo Seong Hwang, Sang Bum Hong, Jae Kwon Moon *(KAERI)*

D&D Plan: Objectives, Methodology and Results for APM, Daniel Seisson, Jean-Luc Gerber *(CEA)*

Deriving a Default Screening Value for Ag-108m, Dustin G. Miller *(ENERCON)*, Jim Berger *(DeNuke Contracting Services, Inc.)*

Autoradiography in Localization of Beta Contamination in Facilities Under Dismantling Process, Anumaija Leskinen, Pascal Fichet, Florence Goutelard *(CEA)*

Evaluation of Site Remediation After Decommissioning the Uranium Conversion Plant, Sang Bum Hong, Doo Seong Hwang, Ki Won Lee, Jae Kwon Moon *(KAERI)*

Monday, June 25, 2012, 2:30 P.M.

Technology Track—I

Cochairs: John Hays *(NRC)*, John Bowen *(Mega-Tech Services)*

Room: New Orleans

2:30 p.m.
Removal of Operational Waste from BUGEY 1 Gas-Cooled Reactor, Luc Lafanechere, Christophe Dorier, Thierry Balon, Antoine Delort *(EDF)*, Jean-Louis Quirante, Alain Gagnor *(AREVA/STMI)*

2:55 p.m.
Remote Decontamination of Ventilation Ducting Contaminated with Residual HLW, J. P. Cizel, F. Chambon *(AREVA)*

3:20 p.m.
Policy Document on Monitored Natural Attenuation of Metals and Radionuclides in Groundwater, Stuart Walker, Dave Bartenfelder, Matt Charsky, Ron Wilhelm *(EPA)*

Regulatory, Lessons Learned Track—I

Cochairs: Larry Boing *(ANL)*, Leonel Lagos *(Florida International Univ)*

Room: New Orleans

3:50 p.m.
Decommissioning Planning: Guidance and Subsequent Activities, James C. Shepherd *(NRC)*

4:15 p.m.
Dismantling and Replacement of a Lifting Unit in Hot Cell, F. Dominjon, C. Beretti, N. De Seroux, Herve Duport *(CEA)*

4:40 p.m.
National Regulatory Record Management System Design for the Low Level Radioactive Waste, I-Hsin Chou *(INER)*

NOTE: This session will immediately follow the preceding session, which will begin at 2:30 p.m.

Tuesday, June 26, 2012, 8:30 A.M.

DD&R Plenary Session

Room: New Orleans

8:30 a.m.
SPEAKERS:

- Bruce Watson *(Branch Chief, Reactor Decommissioning Branch)*
- Christine Gelles *(Director, Office of Disposal Operations, Department of Energy)*
- John Mathews *(Nuclear Decommissioning Authority)*
- Jorg Michels *(EnBW Kernkraft GmbH)*
- Val Christensen *(President and CEO, EnergySolutions, Inc.)*

Tuesday, June 26, 2012, 1:00 P.M.

Technology Track—II

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

Room: New Orleans

1:00 p.m.
Adapting Low-Cost Infrared Cameras for Use in Harsh Decommissioning Environments, Kevin L. Young, Mike Hart *(Communication Designs, Inc.)*, Kirk J. Dooley, Jeffrey D. Jones *(CWI)*

1:25 p.m.
Decontamination Experiment for Floor of Fukushima Daiichi Reactor Building, Fumihiko Kanayama, Takechiro Hayashi, Shinji Kawatsuma *(JAEA)*

1:50 p.m.
Evolution of Segmentation Tooling for Use in Radiologically Contaminated Facilities, Michael Anderson *(Siempelkamp Nuclear Services)*

2:15 p.m.
The Fall of Germany's Nuclear Program—Decontamination for Decommissioning, Christoph Stiepani *(AREVA GmbH)*, Kayla Harper *(AREVA Inc)*

Technology Track—III

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

Room: New Orleans

2:45 p.m.
Using ISOCS Mathematical Efficiency Calibration Software to Design a Versatile Sample Assay Geometry and to Compute the Efficiency Assay Uncertainty, Frazier Bronson *(Canberra)*

3:10 p.m.
Data Analysis and Sampling Optimization for Radiological Characterization: Geostatistical and Statistical Complementarity, Yvon Desnoyers *(GEOVARIANCES)*, Didier Dubot *(CEA)*

3:35 p.m.
Spectral Based Radiological Survey System for Depleted Uranium, Charles Jones, Jay McCown, Donna Rogers, Ronald Unz, Charles Waggoner *(Mississippi State Univ)*

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

Project Track—I

Cochairs: Stuart Walker *(EPA)*, Randall Ridgeway *(AECL)*

Room: San Francisco

1:00 p.m.
Zion Station Decommissioning Outreach Experience, Pauline Jones, Patrick Daly *(ZionSolutions)*

1:25 p.m.
ZionSolutions Dry Cask Storage Project Fuel Transfer Preparatory Activities, William J. Szymczak, Frederick N. Williams *(ZionSolutions LLC)*

1:50 p.m.
Zion Station D&D: The First Eighteen Months, D. M. Brown, R. C. Woodard *(ZionSolutions, LLC)*

2:15 p.m.
Heavy Lift System Requirements Development for the Zion Decommissioning Project, Kenneth Bentley *(ZionSolutions)*

Project Track—II

Cochairs: Stuart Walker *(EPA)*, Randall Ridgeway *(AECL)*

Room: San Francisco

2:45 p.m.
Segmentation of Zion Stations Reactor Vessel Internals, Michael Anderson *(Siempelkamp Nuclear Services)*, *invited*

3:10 p.m.
Decommissioning Projects at the Chalk River Laboratories Over the Next 5 Years, J. McKenna, K. Schruder, A. Winter *(AECL)*

3:35 p.m.
Decommissioning of the University of Illinois TRIGA Research Reactor, Thomas Gilmore, Scott LaBuy *(LVI Services, Inc.)*, Corey DeWitt, Kurt Colborn *(ENERCON)*, Kevin Taylor *(AECOM)*

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

Wednesday, June 27, 2012, 8:00 A.M.

Project Track—III

Cochairs: Mark Lewis *(Energy Solutions)*, Dustin Miller *(Enercon Services)*

Room: New Orleans

8:00 a.m.
CENDRILLON Decontamination and Dismantling of Transfer Systems for Radioactive Liquid Solutions, Michel Jeanjacques, Frederic Masure *(CEA)*

8:25 a.m.
From Concept to Reality: "In-Situ Decommissioning" of the P and R Reactors at the Savannah River Site (SRS), John C. Musall, John K. Blankenship, William B. Griffin *(Savannah River Nuclear Solutions)*

8:50 a.m.
Complex Sampling in French Gas-Cooled Reactors, Frédéric Tardy, Maud Sellier *(EDF/CIDEN)*

9:15 a.m.
New Materials Developed to Meet Regulatory and Technical Requirements Associated with In-situ Decommissioning of Nuclear Reactors and Associated Facilities, John K. Blankenship, Christine A. Langton, John C. Musall, William B. Griffin *(Savannah River Nuclear Solutions)*

Project Track—IV

Cochairs: Mark Lewis *(Energy Solutions)*, Dustin Miller *(Enercon Services)*

Room: New Orleans

9:45 a.m.
Development and Underwater Testing of a 12 Axis Heavy-Duty Cutting Machine, Jonathan D. Eder *(In-Place Machining Company, Inc.)*

10:10 a.m.
Decommissioning Project of JAEA Uranium Refining and Conversion Plant, Noritake Sugitsue, Nobuo Takahashi, Yasuyuki Morimoto *(JAEA)*

10:35 a.m.
Decommissioning Experience of Destroyed Nuclear Facilities and Sites in Iraq, Adnan Saleem Jarjies, Fouad Al-Musawi *(Ministry of Science and Technology)*

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

Regulatory, Lessons Learned Track—II

Cochairs: William Austin *(Savannah River Nuclear Solutions)*, Michel Jeanjacques *(CEA)*

Room: San Francisco

8:00 a.m.
State Regulatory Issues That Can Affect Decommissioning—A Utah Perspective, Sean J. McCandless *(EnergySolutions)*

8:25 a.m.
Radiological Emergency Response to Fukushima Daiichi Accident—Teleoperation and Robotics of JAEA, Mineo Fukushima, Shinji Kawatsuma, Takashi Okada *(JAEA)*

8:50 a.m.
Year One and the Toshiba "Core Team"— Successes in US Teamwork with Japan, William Franz *(Babcock & Wilcox International Technical Services, Inc.)*, Thomas L. Nauman *(Shaw Global Services, LLC)*, Pete Leombruni *(Westinghouse)*, David J. Carlson *(Exelon Nuclear)*

Regulatory, Lessons Learned Track—III

Cochairs: William Austin *(Savannah River Nuclear Solutions)*, Michel Jeanjacques *(CEA)*

Room: San Francisco

9:20 a.m.
French Atomic Energy Commission Decommissioning Programme and Feedback Experience, J. G. Nokhamzon, Ph. Guiberteau *(CEA)*

9:45 a.m.
Lessons Learned from Large Decommissioning Projects, Juan Luis Santiago, Alejandro Rodriguez *(ENRESA)*

10:10 a.m.
System Architecture Design for the Decommissioning Record Management System of Nuclear Power Plant, I-Hsin Chou, Chien-Liang Shih *(INER)*

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

Wednesday, June 27, 2012, 1:00 P.M.

Project Track—V

Cochairs: Dennis Reisenweaver *(Alion Science and Technology)*, Jean-Guy Nokhamson *(CEA)*

Room: New Orleans

1:00 p.m.
Dismantling of Jose Cabrera Nuclear Power Plant (Spain), Manuel Rodriguez Silva *(ENRESA)*

1:25 p.m.
Heavy Water Components Test Reactor Decommissioning, William E. Austin *(Savannah River Nuclear Solutions)*, Donald S. Brinkley *(Newport News Shipbuilding)*

1:50 p.m.
Bringing Project Management Institute Principles to Decommissioning Work, Ronald J. Richards *(ZionSolutions)*

2:15 p.m.
The Regulators View for the Successful Research Reactor Decommissioning, Bruce A. Watson, John B. Hickman, Theodore B. Smith *(NRC)*

Technology Track—IV

Cochairs: Dennis Reisenweaver *(Alion Science and Technology)*, Jean-Guy Nokhamson *(CEA)*

Room: New Orleans

2:45 p.m.
Monitoring Particulates in Process-Water Effluent from an Industrial Nuclear Installation, David R. Lee *(AECL)*, Michael Lloyd *(ChemIndustrial Systems)*

3:10 p.m.
Modelling of Contamination Migration in Concrete: Case of the French CEA/Grenoble's Site Decommissioning, M. A. Berton *(CEA)*

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

Technology Track—V

Cochairs: Douglas Davis *(DAD Solutions, LLC)*, Frazier Bronson *(Canberra Industries)*

Room: San Francisco

1:00 p.m.
Revisions to U.S. EPA Superfund Risk and Dose Assessment Models and Guidance, Stuart Walker *(EPA)*

1:25 p.m.
Treatment of Irradiated Graphite from French UNGG Reactor, Gérard Laurent *(EdF)*, Thomas Brown *(Studsvik)*

1:50 p.m.
RCRA Closure of the EBR-II Reactor Sodium Systems, Part II, Jeffrey Jones, Kirk Dooley, Dave Tolman, Rodney Campbell, Travis Stoor *(CH2M-WG Idaho, LLC)*

2:15 p.m.
Improvements in the Selectivity of Digital Autoradiography, Pascal Fichet, Anumaija Leskinen, Florence Goutelard *(CEA)*

Technology Track—VI

Cochairs: Douglas Davis *(Bechtel Marine Propulsion)*, Frazier Bronson *(Canberra Industries)*

Room: San Francisco

3:15 p.m.
Development of a Remote Platform for Remote Removal of Strippable Coatings—A Feasibility Study, Leonel E. Lagos, Peggy Shoffner *(Florida International University)*, Sam Maggio, Blake Fall-Conroy *(International Climbing Machines)*

3:40 p.m.
Electrokinetic Decontamination of Cementitious Materials, S. Ben Hadj Hassine *(Atomic Energy and Alternative Energies Commission/INSA/Bouygues Construction)*, H. Peycelon *(Atomic Energy and Alternative Energies Commission)*, M. Carcasses *(INSA)*, P. Gégout *(Bouygues Construction)*

4:05 p.m.
Analysis of Dismantling Activities of Rotary Kiln for Benchmark Tests, Mitsuo Tachibana, Sari Izumo, Noritake Sugitsue *(JAEA)*, Seung-Kook Park *(KAERI)*

Embedded Topical Meeting: NFSM '12

GENERAL CHAIR:
Todd Allen
University of Wisconsin-Madison

GENERAL CHAIR:
Lance Snead
Oak Ridge National Laboratory

TECHNICAL PROGRAM CHAIR (TPC):
Jacob Eapen
North Carolina State University

TECHNICAL PROGRAM CHAIR (TPC):
K.L. Murty
North Carolina State University

TECHNICAL PROGRAM CHAIR (TPC):
Heather MacLean Chichester
Nuclear Engineer

Nuclear Fuels and Structural Materials for the Next Generation Nuclear Reactors (NFSM 2012)

Sponsored by: • *Materials Science & Technology Division*
• *Fusion Energy Division*

Tuesday, June 26, 2012, 8:00 A.M.

Plenary Session

Chair: Todd R. Allen *(Univ of Wisconsin)*

Room: Comiskey

8:00 a.m.
SPEAKERS:

- Advanced Material Development for Reactors of Today and Tomorrow, J. Busby *(ORNL)*
- A European Roadmap on Materials for Nuclear Energy Technology, C. Fazio *(KIT)*
- Development of ODS Ferritic Steels for Na-Cooled Fast Reactors, S. Ukai *(Hokkaido Univ)*

General Chairs' Special Session

Chair: Lance L. Snead *(ORNL)*

Room: Comiskey

10:30 a.m.
SPEAKERS:

- Cladding Failure Resulting from Chloride-Induced Stress Corrosion Cracking in Dry Cask Storage System Canisters, R. E. Einziger *(NRC)*
- Microstructure and Property Evolution in Advanced Cladding and Duct: Materials Under Long-Term and Elevated Temperature, Gary Was *(Univ of Michigan)*

Tuesday, June 26, 2012, 1:00 P.M.

Advanced Fuel—I

Chair: Jeremy T. Busby *(ORNL)*

Room: Comiskey

1:00 p.m.
An Assessment of Nitride Test Data and its Use in SMRs, Susan S. Voss *(Global Nuclear Network Analysis, LLC)*

1:20 p.m.
Chemical Stabilization of Metallic Nuclear Fuels, Robert D. Mariani, Douglas L. Porter, Steven L. Hayes, J. Rory Kennedy *(INL)*, *invited*

1:40 p.m.
Development of Advanced Ultra-High Burnup SFR Metallic Fuel Concept—Project Overview, A. E. Wright *(ANL)*, S. L. Hayes *(INL)*, T. H. Bauer *(ANL)*, H. J. Chichester *(INL)*, G. L. Hofman *(ANL)*, J. R. Kennedy *(INL)*, T. K. Kim, Y. S. Kim *(ANL)*, R. D. Mariani *(INL)*, W. D. Pointer, A. M. Yacout, D. Yun *(ANL)*

2:00 p.m.
Fully Ceramic Microencapsulated Fuels for LWRs, Kurt A. Terrani, Lance L. Snead, Jess C. Gehin *(ORNL)*, *invited*

Advanced Clad/Fuel

Chair: Kurt Terrani *(ORNL)*

Room: Comiskey

2:40 p.m.
Mechanisms of Ag Diffusion in TRISO Coated Fuel Particles, Izabela Szlufarska, Dane Morgan, Todd Allen, Tyler Gerczak *(Univ of Wisconsin, Madison)*, *invited*

3:00 p.m.
Effects of Structure and Processing on the Thermal Conductivity of SiC-SiC Composites, C. P. Deck, H. E. Khalifa, C. A. Back *(General Atomics)*

3:20 p.m.
High Temperature Oxidation of Candidate Advanced Iron-Based Alloy Cladding Materials in Steam-Hydrogen Environments, James R. Keiser, Michael P. Brady, Bruce A. Pint, Kurt A. Terrani *(ORNL)*

Wednesday, June 27, 2012, 8:30 A.M.

Fast Reactor Materials

Chair: James F. Stubbins *(Univ of Illinois)*

Room: Comiskey

8:30 a.m.
Sodium Fast Reactor Fuels and Materials: Research Needs, M. Denman *(SNL)*, L. Walters *(Advanced Reactor Concepts)*, J. Lambert, K. Natesan, A. Wright, A. Yacout *(ANL)*, S. Hayes, D. Porter *(INL)*, L. Ott *(ORNL)*, F. Garner *(Radiation Effects Consulting)*

8:50 a.m.
HT9 Development for the Traveling Wave Reactor, M. J. Hackett, G. Povirk *(TerraPower, LLC)*, *invited*

9:10 a.m.
Corrosion of Zirconium Alloy in Flowing Sodium, Tomohiro Furukawa, Shoichi Kato, Masaya Yamamoto *(JAEA–Japan)*

9:30 a.m.
Burnup Predictions for Metal Fuel Tests in the Fast Flux Test Facility, David W. Wootan *(PNNL)*, Joseph V. Nelson *(Indian Eyes, LLC)*

High Temperature Materials—I

Chair: Yanwen Zhang *(Univ of Tennessee)*

Room: Comiskey

10:10 a.m.
Materials Performance for High Temperature Gas-Cooled Reactors, James Stubbins, Hsiao-Ming Tung, Xiang Chen, Yang Zhao *(Univ of Illinois)*, Kun Mo *(China Guangdong Nuclear Power Group)*, *invited*

10:30 a.m.
Oxidation Investigation of NBG-18 Nuclear-Grade Graphite, Joshua J. Kane, Chinnathambi Karthik, Rick Ubic *(BSU, CAES)*, William E. Windes *(INL, CAES)*, Darryl P. Butt *(BSU, CAES)*

10:50 a.m.
Effects Al Contents in the Surface Micro-Alloying Region on the High Temperature Oxidation Behaviors of Alloy 617, Ho Jung Lee, Injin Sah, Donghoon Kim, Changheui Jang *(KAIST)*

11:10 a.m.
Creep Behaviors of Alloy 617 in High Temperature Steam Environments, Donghoon Kim, Injin Sah, Jahyun Koo, Changheui Jang *(KAIST)*

Wednesday, June 27, 2012, 1:00 P.M.

Extreme Environment—I: Nanoscale Effects

Chair: Simon R. Phillpot *(Univ of Florida)*

Room: Comiskey

1:00 p.m.
The Center for Material Science of Nuclear Fuel, T. R. Allen *(Univ of Wisconsin, Madison)*, X. M. Bai *(INL)*

1:20 p.m.
Irradiation Effects in Nanocrystalline Ceria, Zirconia and Thoria, Yanwen Zhang *(ORNL/Univ of Tennessee)*, Haiyan Xiao *(Univ of Tennessee)*, Philip D. Edmondson *(ORNL)*, Fereydoon Namavar *(University of Nebraska Medical Center)*, William J. Weber *(Univ of Tennessee/ORNL)*, *invited*

1:40 p.m.
Thermal Stability and Radiation Tolerance of Ultrafine Grained Austenitic Stainless Steel, C. Sun *(Texas A&M)*, Y. Yang, X. Zhang *(Univ of Florida)*, *invited*

2:00 p.m.
Characterization of Nanocomposite Materials Using Synchrotron Radiation, Lynne E. Ecker, Simerjeet K. Gill, Avishai Ofan, Amit Misra, Stuart Maloy *(Brookhaven National Lab)*

Modeling—I: Thermomechanics and Transport

Chair: K. L. Murty *(NCSU)*

Room: Comiskey

2:40 p.m.
Multiscale Fuel Performance Modeling: Coupling Atomic, Meso and Continuum Level Simulations, Michael Tonks, Derek Gaston, Paul Millett *(INL)*, David Andersson, Chris Stanek *(LANL)*, *invited*

3:00 p.m.
Lattice Dynamics and Boltzmann Transport Equation Simulations of Thermal Conductivity in UO_2, A. Chernatynskiy, S. R. Phillpot *(Univ of Florida)*

3:20 p.m.
Thermo-Mechanical Modeling of U-Pu-Zr Metallic Fuel, D. Yun, A. M. Yacout, A. E. Wright *(ANL)*

3:40 p.m.
Issues in Modeling Metallic Fuel Systems with HT9 Clad, R. Latta, J. Vollmer, M. J. Hackett, G. Povirk *(TerraPower, LLC)*, *invited*

Wednesday, June 27, 2012, 6:00 P.M.

Poster Session

Room: Regency D

A European Roadmap on Materials for Nuclear Energy Technology, Concetta Fazio *(KIT)*, Derek Buckthorpe *(AMEC Limited)*, Liisa Heikinheimo *(TVO)*, Wolfgang Hoffelner *(PSI)*, Jaap van der Laan *(NRG)*, Karl-Fredrik Nilsson *(JRC)*, Frédéric Schuster *(CEA)*, *invited*

Hydrogen-Helium Synergy in Bubbles in BCC Iron, Erin Hayward, Chaitanya Deo *(Georgia Tech)*

An Atomistic Simulation Study of the Substitution of Pu and Am in UO_2 Lattice, R. K. Behera, C. S. Deo *(Georgia Tech)*

Formation of a Magnetic Phase in Irradiated Model Austenitic Alloys, M. N. Gussev, J. T. Busby, L. Tan *(ORNL)*

Simulation of Injection Casting for Metal Fuel Fabrication, Takanari Ogata *(CRIEPI)*

SiC Oxidation in Steam Environments at Elevated Temperature and Pressure, Ting Cheng, James R. Keiser, Michael P. Brady, Kurt A. Terrani *(ORNL)*

An Inter-Laboratory Comparison of Graphite Testing Procedures, W. David Swank *(INL)*, Joseph P. Strizak *(ORNL)*, Joseph R. Lord *(INL)*, Timothy D. Burchell *(ORNL)*, William E. Windes *(INL)*

Thermal and Oxygen Transport in UO_2 Fuel Elements: Impact of Thermal Conductivity, Bogdan Mihaila *(LANL)*, Marius Stan *(ANL)*, Justin Crapps *(LANL)*, Di Yun *(ANL)*

Thermal Properties of LiCl-KCl Molten Salt for Nuclear Waste Separation, Kumar Sridharan, Sean Martin, Mehran Mohammadian, Jacob Sager, Todd Allen *(Univ of Wisconsin, Madison)*, Michael Simpson *(INL)*

In-Situ TEM Study of Gas Bubble Formation in Xenon-Implanted CeO_2, Wei-Ying Chen *(Univ of Illinois)*, Mark A. Kirk *(ANL)*, James F. Stubbins *(Univ of Illinois)*

Effect of the Forming Conditions on the Mechanical and Physical Properties of Fuel Elements for HTGR, Chung-yong Lee, Seung-jae Lee, Jung-min Suh *(KEPCO Nuclear Fuel)*, Young-woo Lee, Moon-sung Cho *(KAERI–Korea)*

Neutron Irradiation Effects on the Tensile Properties of FBR Structural Materials, Shigeru Takaya, Yuji Nagae, Ryuichiro Ogawa *(JAEA–Japan)*

Thermal-Hydraulic Analysis of LWR Hydride Fuel Irradiation Experiment in MITR, S. J. Kim *(Hanyang Univ/MIT)*, D. Carpenter, G. Kohse *(MIT)*, K. Terrani *(Univ of California, Berkeley/ORNL)*, L. W. Hu *(MIT)*

Interaction Studies Between U-10wt.%Zr and Ceramic Plasma-Sprayed Coating on Nb Substrate at Elevated Temperature, K. H. Kim, S. J. Oh, S. K. Kim, C. B. Lee *(KAERI–Korea)*, R. S. Fielding *(INL)*

Behavior of Binder Materials in Graphite Matrix Powder for HTGR Fuel Compact, Young-Woo Lee, Joo Hyoung Kim, Ju Hee Kim, Moon-Sung Cho *(KAERI–Korea)*

Thermal Properties of U-Zr Alloys for SFR Fuel by Gravity Casting, S. K. Kim, K. H. Kim, S. J. Oh, C. T. Lee, C. B. Lee *(KAERI–Korea)*

Resintering Behavior of MnO-Al_2O_3-Doped UO_2 Annular Pellet for Dual Cooled Fuel, Dong-Joo Kim, Young Woo Rhee, Jae Ho Yang, Jang Soo Oh, Jong Hun Kim, Ik-Hui Nam, Keon Sik Kim *(KAERI–Korea)*

Resintering Behavior of Cr_2O_3-Doped UO_2 Pellets, Jang Soo Oh, Jae Ho Yang, Ik Hui Nam, Jong Hun Kim, Dong-Joo Kim, Young Woo Rhee, Keon Sik Kim *(KAERI–Korea)*

Compatibility of Welds and 12 Cr ODS with Oxygen Containing Liquid Pb, A. Heinzel, G. Müller, A. Weisenburger *(KIT)*

High Temperature Materials Testing Capsule for Irradiation Experiments in PULSTAR Reactor, T. K. Bhardwaj, K. C. Chitrada, Jason Hescheles, Jacob Eapen, K. L. Murty *(NCSU)*

Microstructure and High Temperature Mechanical Behaviour of UO_2 Fuel, A. Ndiaye *(CEA, DEN, SPUA, LCU)*, C. P. Carry *[Laboratory of Science and Engineering of Materials and Processes (SIMAP)]*, Ph. Sornay *(CEA, DEN, SPUA, LCU)*

Preliminary Evaluation of Fission Product Release from AGR-1 Coated Particles, Paul Demkowicz *(INL)*, John Hunn, Robert Morris *(ORNL)*, Jason Harp *(INL)*, Charles Baldwin *(ORNL)*, Philip Winston, Scott Ploger *(INL)*, Fred Montgomery *(ORNL)*

Clustering and Nucleation of Point Defects in Stoichiometric and Non-stoichiometric UO_2, Sarah Khalil *(Univ of Wisconsin-Madison)*, Xian-Ming Bai *(INL)*, Todd Allen *(Univ of Wisconsin-Madison)*

Study of Interfacial Interactions Using Thin Film Surface Modification, Alexander Mairov, Benjamin Hauch, Clarissa Yablinsky, Kumar Sridharan *(University of Wisconsin-Madison)*

Analysis of Nuclear Fuel Reliability Under Steam Generator Tube Rupture Accident Conditions, F. Burcu Tas *(Karamanoglu Mehmetbey Univ)*, Sule Ergun *(Hacettepe Univ)*

Towards Improving the Fracture Characteristics of Nanostructured Ferritic Alloys, Thak Sang Byun, David T. Hoelzer *(ORNL)*, Ji Hyun Yoon, Suk Hoon Kang, Yong Bok Lee *(KAERI–Korea)*, Stuart A. Maloy *(LANL)*

Microstructural Studies of Nuclear Graphite (NBG 18), Kalyan Chitrada, Ram Krishna, Jacob Eapen, K. L. Murty *(NCSU)*

Thermal Simulation Data Analysis for AGR Experiments, Binh T. Pham, Jeffrey J. Einerson *(INL)*

Multicomponent Diffusion in Molten LiCl-KCl Mixture, Brahmananda Chakraborty, Jin Wang, Jacob Eapen *(NCSU)*

Study the Mechanical Properties of Thin Films, Single Crystals of Uranium Dioxide Using Nanoindentation, Mohamed S. Elbakhshwan, Brent J. Heuser *(Univ of Illinois)*

Development of Experimental System for Materials Compatibility Test for Ultra-long Cycle Fast Reactor (UCFR), Sang Hun Shin, Jong Jin Kim, Ju Ang Jeong, Kyoung Joon Choi, Ji Hyun Kim *(UNIST)*

Modeling of Fission-Gas-Induced Swelling in U-Mo Alloy Fuels, Bei Ye, Jeffrey Rest, Di Yun *(ANL)*

In-situ Raman Spectroscopic Analysis of Ni-Base Alloy/LAS Dissimilar Metal Weld Interfaces, Jong Jin Kim, Kyoung Joon Choi, Ji Hyun Kim *(UNIST)*

Spatially Resolved Positron Annihilation Spectroscopy of Nuclear Fuels, Maria A. Okuniewski, Douglas W. Akers, Mark W. Drigert, Craig L. Shull, Lyle G. Roybal *(INL)*

Kinetic Parameters Influencing the Oxidation of Alloy 800H in Impure Helium at 850°C, G. Gulsoy, G. S. Was *(Univ of Michigan)*

Metal Matrix Microencapsulated Fuels for LWRs, Kurt A. Terrani, Jim O. Kiggans, Lance L. Snead *(ORNL)*

In-Pile Thermal Conductivity Measurement of Uranium-Zirconium Hydride Fuel, Kurt A. Terrani, Mehdi Balooch *(Univ of California, Berkeley)*, Gordon Kohse, David Carpenter, Lin-wen Hu *(MIT)*, Mitchell K. Meyer *(INL)*, Donald Olander *(Univ of California, Berkeley)*

A Study of Fuel Cladding Design Parameters for Ultra-Long Cycle Fast Reactors, Ju Ang Jung, Sang Hun Shin, Jong Jin Kim, Kyoung Joon Choi, Ji Hyun Kim *(UNIST)*

Graphite Crucible of Ceramic Plasma-Sprayed Coating Layer Evaluation, S. J. Oh, K. H. Kim, S. K. Kim, C.B. Lee *(KAERI–Korea)*, R. S. Fielding *(INL)*

Initial APT Analysis of Irradiated MA957, N. Bailey, E. Sterger *(Univ of California, Berkeley)*, M. Toloczko *(PNNL)*, P. Hosemann *(Univ of California, Berkeley)*

Fabrication and Characterization of Ferritic/Martensitic Steel Cladding Tubes for SFR, Sung Ho Kim, Jun Hwan Kim, Jong Hyuk Baek, Chan Bock Lee *(KAERI–Korea)*

Corrosion Behavior of Structural Alloys in Molten Fluoride Salts for Next Generation Nuclear Reactors, G. Zheng, R. S. Sellers, W. Cheng, B. Kelleher, K. Sridharan, M. Anderson, T. R. Allen *(Univ of Wisconsin, Madison)*

Cladding Failure Resulting from Chloride-Induced Stress Corrosion Cracking in Dry Cask Storage System Canisters, Sara DePaula, Matthew Gordon, Robert Einziger *(NRC)*, *invited*

In-Situ Characterization of NF616 Steel Using High Energy X-rays, Leyun Wang, Meimei Li, Jonathan Almer *(ANL)*

Experiment Design of UO_2 Irradiation in the Advanced Test Reactor, Mahima Gupta, Justin Sattler, Todd Allen *(Univ of Wisconsin, Madison)*

A Robust Powered Remote Manipulator for Use in Waste Sorting, Processing, and Packaging, Scott Martin *(S.A. Technology)*

Graphite Reactor Decommissioning, Matt Cole *(S.A. Technology)*

Use of Retrieval Manipulator Systems in Nuclear Decommissioning, Marc Rood *(S.A. Technology)*

Neutron Irradiation Effect on Mechanical Properties of NITE SiC/SiC Composites, T. Koyanagi, T. Hinoki *(Kyoto Univ)*, K. Ozawa *(JAEA–Japan)*, Y. Katoh *(ORNL)*

Microstructural Effect on Neutron Irradiation Response of Alloy 800H, L. Tan, J. T. Busby *(ORNL)*, H. J. MacLean Chichester *(INL)*, K. Sridharan, T. R. Allen *(Univ of Wisconsin, Madison)*

A Chemical Method to Immobilize Fission Product Lanthanides in Metallic Fast Reactor Fuel, Yeon Soo Kim, T. Wiencek, E. O'Hare, G. L. Hofman, J. Fortner, A. M. Yacout *(ANL)*

Porous Silicon Carbide Composites for LWR Cladding, Tatsuya Hinoki, Kazuya Shimoda *(Kyoto Univ)*

Microstructural Development in Silicon Carbide Composite During Neutron Irradiation, Peng Dou, Yutai Katoh, Lance Snead *(ORNL)*

Experimental Characterization of UO_2 Oxidation in Water Vapor, A. T. Nelson, K. J. McClellan *(LANL)*

Sintering and Final Microstructure of New UO_2 Model Powders, A. Ndiaye *(CEA, DEN, SPUA, LCU)*, J.-M. Chaix *[Laboratory of Science and Engineering of Materials and Processes (SIMAP)]*, Ph. Sornay *(CEA, DEN, SPUA, LCU)*

The Simulation Approach of the Dislocation Loop Nucleation and Growth Mechanism in Ceria Under Irradiation, Yinbin Miao, Wei-Ying Chen, Aaron Oaks, Brian Kleinfeldt, James F. Stubbins *(Univ of Illinois at Urbana-Champaign)*

Safety in the Synthesis of Nitride and Carbide Fuels, Ursula Carvajal Nuñez, Eddie López-Honorato, Joseph Somers *(European Commission, Joint Research Centre, Institute for Transuranium Elements)*

Irradiation Creep and Microstructure of F-M Steel T91, Cheng Xu, Gary S. Was *(Univ of Michigan Ann Arbor)*

Thermodynamic Modeling of the Spinel Phase in the Fe-Ni-Cr-Zn-O System, Dongwon Shin, Theodore M. Besmann *(ORNL)*

Advanced Metallic Fuel for Ultra-High Burnup: Irradiation Tests in ATR, Heather J. M. Chichester, Robert D. Mariani, Steven L. Hayes, J. Rory Kennedy *(INL)*, Arthur E. Wright, Yeon Soo Kim, Abdellatif M. Yacout, Gerard L. Hofman *(ANL)*

Properties of Nuclear-Grade Silicon Carbide Continuous Fiber Composites, Yutai Katoh, Kazumi Ozawa, Chunghao Shih, Lance Snead *(ORNL)*, Tatsuya Hinoki *(Kyoto Univ)*, Akira Hasegawa *(Tohoku Univ)*, Takashi Nozawa *(JAEA–Japan)*

Thermal Aging Effects in Advanced Ferritic-Martensitic and Austenitic Steels, Meimei Li, Ken Natesan, William K. Soppet *(ANL)*

Fluidity Testing of Molten Uranium Alloys, Randall Fielding, Paul Hansen *(INL)*

A Method for In-Situ Studies of Irradiation-Accelerated Corrosion, Stephen S. Raiman, Alexander Flick, Ovidiu Toader, Fabian U. Naab, Nassim A. Samad, Michael R. Hartman, David M. Bartels, Zhijie Jiao, Gary S. Was *(Univ of Michigan)*

Microstructure and Surface Analysis of SiC Ceramics Oxidized in Helium Environments, Daejong Kim, Weon-Ju Kim, Ji-Eun Jang, Ji Yeon Park *(KAERI–Korea)*

Development of Advanced Ultra-High Burnup SFR Metallic Fuel Concept—Impacts on Core Characteristics and Fuel Cycle Performance, T. K. Kim, A. E. Wright *(ANL)*

Neutron Powder Diffraction Study of Irradiated Reactor Grade Graphite, Q. Cai, A. I. Hawari *(NCSU)*

Post Irradiation Examination of FFTF Irradiated MFF-3 and MFF-5 Fuel Pins, W. J. Carmack, H. M. Chichester, D. L. Porter *(INL)*

Hot-Roll-Processing of 9CrODS Steels for Na-Cooled Fast Reactors, S. Ukai, X. Wu, R. Miyata, Y. Sugino, N. Oono, S. Hayashi *(Chalmers Univ of Technology)*, *invited*

Fission Gas Venting for Ultra-high Burnup SFR Metallic Fuel Pin Design, T. K. Kim, W. D. Pointer, T. H. Bauer, A. E. Wright *(ANL)*

Multiscale Simulation Models of Xe Bubble Formation in Irradiated Mo, Z. Insepov, S. V. Starikov, D. Yun, A. M. Yacout *(ANL)*

Status of Development of Metal Fuel Performance Code, PUMA, Jin Sik Cheon, Byoung Oon Lee, Chan Bock Lee *(KAERI–Korea)*

Investigation of the Effects of Alloying Additions to U-Zr Fuel via Atomistic Simulation, G. Bozzolo, A. M. Yacout, G. L. Hofman *(ANL)*, H. O. Mosca *(CNEA)*, A. E. Wright *(ANL)*

Vibrations and Anisotropic Heat Transport in Graphite, Anant Raj, Jacob Eapen *(NCSU)*

Computational Thermodynamics in the Advanced Multi-Physics Code, M. H. A. Piro, J. Banfield, S. Simunovic, T. M. Besmann, K. T. Clarno *(ORNL)*

Thursday, June 28, 2012, 8:30 A.M.

Modeling—II: Radiation Effects

Chair: Jon Carmack *(INL)*

Room: Comiskey

8:30 a.m.
A Continuum Thermodynamic Approach to Radiation Effects in Materials, Anter El-Azab *(Purdue Univ)*, *invited*

8:50 a.m.
Molecular Dynamics Simulations of Swift Heavy Ion Interactions in UO_2, J. L. Wormald, A. I. Hawari *(NCSU)*

9:10 a.m.
Calculation of the Displacement Energy in b.c.c. U at 800 K, Benjamin Beeler, Chaitanya Deo *(Georgia Tech)*, Michael Baskes *(Univ of California, San Diego/LANL)*, Maria Okuniewski *(INL)*

9:30 a.m.
Fast Radiation Tolerant Dynamics at Interfaces, Walid Mohamed, Xiaojun Mei, Jacob Eapen *(NCSU)*

Advanced Fuel—II

Chair: Anter El-Azab *(Purdue Univ)*

Room: Comiskey

10:10 a.m.
The EBR-II X447 High Temperature U-10Zr Metal Alloy Experiment, W. J. Carmack, D. L. Porter, S. L. Hayes *(INL)*

10:30 a.m.
Mg as a Matrix for Low-Enriched U-Mo Dispersion Fuel Plates, Dennis D. Keiser, Jr., Daniel M. Wachs, Mitch K. Meyer, Adam B. Robinson, Jan-Fong Jue, Jian Gan, Brandon D. Miller, Pavel Medvedev, Glenn A. Moore *(INL)*

10:50 a.m.
Irradiation Behavior of Oxide Ceramics for Inert Matrices, Donald T. Moore *(Univ of Florida)*, Brandon D. Miller, Cynthia A. Papesch, Pavel G. Medvedev *(INL)*, Juan C. Nino *(Univ of Florida)*

11:10 a.m.
Development and Properties of Uranium Nitride Fuels: Oxide Conversion and Thermochemistry, Theodore M. Besmann, Dongwon Shin, Stewart L. Voit *(ORNL)*

Thursday, June 28, 2012, 1:00 P.M.

High Temperature Materials—II

Chair: Heather J. M. Chichester *(INL)*

Room: Comiskey

1:00 p.m.
Microstructures and Deformation Mechanisms of a Nanostructured Ferritic Alloy at Various Temperatures, Jeoung Han Kim *(KIMS)*, Thak Sang Byun, David T. Hoelzer *(ORNL)*, Seong Woong Kim, Jong Taek Yeom, Jae Keun Hong *(KIMS)*

1:20 p.m.
Local Atomic Structure of Irradiated ZrC and ZrN, Daniel Olive, Hasitha Ganegoda, Tim McNamee, Jeff Terry *(Illinois Inst of Technology)*

1:40 p.m.
Creep-Fatigue Interaction in Advanced Ferritic-Martensitic Steels, Meimei Li, William K. Soppet, Saurin Majumdar, Ken Natesan *(ANL)*

2:00 p.m.
Relationship Between Grain Boundary Structure and Radiation Induced Segregation in Ferritic/Martensitic Steels, K. G. Field *(Univ of Wisconsin, Madison)*, C. M. Parish, J. T. Busby *(ORNL)*, T. R. Allen *(Univ of Wisconsin, Madison)*

Extreme Environment—II: Kinetics and Transport

Chair: Jacob Eapen *(NCSU)*

Room: Comiskey

2:40 p.m.
Radiation Enhanced Diffusion of Nd in Single Crystal Thin Film UO_2, Xiaochun Han, Brent J. Heuser *(Univ of Illinois)*

3:00 p.m.
Evaluation of Gas Release Behavior of Minor Actinide-Containing Metal Fuel, Hirokazu Ohta, Takanari Ogata *(CRIEPI)*, Dimitri Papaioannou, Ramil Nasyrow, Vincenzo V. Rondinella *(Institute for Transuranium Elements)*

3:20 p.m.
Oxidation of Candidate Ferritic LWR Cladding Materials at High Temperatures, A. T. Nelson, M. K. Patel, S. A. Maloy *(LANL)*

3:20 p.m.
A Comparison of Mass Spectrometry and Gamma Spectrometry Techniques to Simulation for the Evaluation of TRISO Fuel Burnup in the AGR-1 Experiment, J. M. Harp, P. A. Demkowicz, P. L. Winston *(INL)*

ICAPP 2012 Meeting Officals

HONORARY CHAIR:
Susan Landahl
Exelon Nuclear

HONORARY CHAIR:
Goon-Cherl Park
KEPCO International Nuclear Graduate School

HONORARY CHAIR:
Takuya Hattori
JAIF

HONORARY CHAIR:
Georges Servieré
EDF

GENERAL CHAIR:
Hernando A. Madroñero
GE-Hitachi Nuclear Energy

GENERAL CHAIR:
Soon Heung Chang
KNS

GENERAL CHAIR:
Kumiaki Moriya
Hitachi-GE

GENERAL CHAIR:
Jean-Claude Gauthier
ENELA

TECHNICAL PROGRAM CHAIR:
Luca Oriani
Westinghouse Electric Company

TECHNICAL PROGRAM CHAIR:
Sun Koo Kang
KEPCO E&C

TECHNICAL PROGRAM CHAIR:
Kyoichi Morimoto
JAEA

TECHNICAL PROGRAM CHAIR:
Frank Carré
CEA

STEERING COMMITTEE:
Samim Anghaie
Consultant

STEERING COMMITTEE:
Mujid Kazimi
MIT

STEERING COMMITTEE:
Atam Rao
Consultant

STEERING COMMITTEE:
Koji Nishida
Hitachi-GE

STEERING COMMITTEE:
Bernard Jolly
SFEN

STEERING COMMITTEE:
Hyun-Taek Park
KHNP

ICAPP 2012 Condensed Schedule

	Sunday, June 24 4:00-5:30 PM	Monday, June 25 2:30-4:00 PM	Monday, June 25 4:30-6:30 PM	Tuesday, June 26 8:00-10:00 AM	Tuesday, June 26 10:00 AM-12:00 PM
Special Sessions	Evidence of DNA Repair Mechanism and New Take on Impacts of Low Dose Radiation Room: (Regency B) **Gold**		**Opening ICAPP '12 Plenary:** Economic Realities of New Nuclear Plants Room: (Regency B) **Gold**		
Track 1- Water Cooled Reactor Programs and Issues		**1.02** Boiling Water Reactors Designs Room: (Field)		**1.01** Coping with Extended Station Blackout Room: (Field)	**1.03** Pressurized Water Reactors Designs Room: (Field)
Track 2- High Temperature Reactors				**2.03** HTGR Safety-I Room: (Wright)	**2.03** HTGR Safety-II Room: (Wright)
Track 3- Advanced Reactors		**3.02** Liquid Sodium-Cooled Fast Reactors: Safety and Licensing-V Room: (Burnham)		**3.02** Liquid Sodium-Cooled Fast Reactors: Safety and Licensing-I Room: (Burnham)	**3.02** Liquid Sodium-Cooled Fast Reactors: Safety and Licensing-II Room: (Burnham)
		3.07 Other Advanced Reactor Concepts-III Room: (DuSable)		**3.03** Liquid Salt Reactors-I Room: (DuSable)	**3.03** Liquid Salt Reactors-II Room: (DuSable)
Track 4- Operation, Performance & Reliability Management					
Track 5- Plant Safety Assessment and Regulatory Issues		**5.04** Risk Analysis and Risk Informed Applications Room: (Addams)		**5.05** Severe Accidents: Experiments Room: (Addams)	
Track 6- Reactor Physics and Analysis		**6.05** Reactor Physics General Room: (Horner)			**6.02** Reactor Physics Analysis Room: (Horner)
Track 7- Thermal Hydraulics Analysis and Testing		**7.01** Best Estimate Analysis Codes and Uncertainty Methodologies-I Room: (Ogden)		**7.04** Advanced Reactor Testing and Analysis-I Room: (Ogden)	**7.04** Advanced Reactor Testing and Analysis-II Room: (Ogden)
		7.07 Thermal Hydraulics Measurement and Modeling Fundamentals-I Room: (Wright)			**7.07** Thermal Hydraulics Measurement and Modeling Fundamentals-II Room: (McCormick)
Track 8- Fuel Cycle and Waste Management		**8.01** Water-cooled Reactor Fuel Cycle Room: (McCormick)		**8.02** Advanced Fuel Cycle Options and Technologies Room: (Horner)	
Track 9- Materials and Structural Issues				**9.01** Gen-IV Cladding/Structural Materials: Development and Characterization Room: (McCormick)	
Track 10- Nuclear Energy and Global Environment					**10.01** Hybrid Energy Systems: Coupling Nuclear, Renewables, and Fossil Energy Systems Room: (Addams)

(All rooms are located on the West Tower, Silver Level except if noted on Gold, Bronze or Blue Levels.)

ICAPP 2012 Condensed Schedule

	Tuesday, June 26 1:00-2:30 PM	Tuesday, June 26 2:30-4:00 PM	Tuesday, June 26 4:15-6:15 PM	Wednesday, June 27 8:00-10:00 AM	Wednesday, June 27 10:00 AM-12:00 PM
Special Sessions			**Plenary 2:** Progress of New Reactors Design, Licensing and Deployment Room: (Regency B) **Gold**		
Track 1- Water Cooled Reactor Programs and Issues	**1.04** Lessons Learned in Infrastructure Development, Deployment, Construction, and Licensing-I Room: (Field)	**1.04** Lessons Learned in Infrastructure Development, Deployment, Construction, and Licensing-II Room: (Field)		**1.05** Supercritical Water Reactors-I Room: (Field)	**1.05** Supercritical Water Reactors-II Room: (Field)
Track 2- High Temperature Reactors				**2.01** HTGR Thermal Hydraulics Room: (Wright)	**2.02** HTGR Design, Analysis and Component Testing Room: (Wright)
Track 3- Advanced Reactors	**3.02** Liquid Sodium-Cooled Fast Reactors: Safety and Licensing-III Room: (Burnham)	**3.02** Liquid Sodium-Cooled Fast Reactors: Safety and Licensing-IV Room: (Burnham)		**3.01** Liquid Sodium-Cooled Fast Reactors: Modeling and Design-I Room: (Burnham)	**3.01** Liquid Sodium-Cooled Fast Reactors: Modeling and Design-IV Room: (Burnham)
	3.07 Other Advanced Reactor Concepts-II Room: (DuSable)	**3.07** Other Advanced Reactor Concepts-I Room: (DuSable)		**3.05** Advanced Small Modular Reactors Room: (DuSable)	**3.04** Developing National Standards for Advanced Reactors Room: (Soldier Field) **Bronze**
Track 4- Operation, Performance & Reliability Management	**4.01** Improvements in Maintenance Room: (Wright)	**4.02** Potential Outage Impacts and Improvements Room: (Wright)			
Track 5- Plant Safety Assessment and Regulatory Issues		**5.09** Advances in Regulatory Issues Room: (Addams)		**5.06** Severe Accidents: Modeling-I Room: (Addams)	**5.06** Severe Accidents: Modeling-II Room: (Addams)
Track 6- Reactor Physics and Analysis	**6.01** Reactor Physics Methods-I Room: (Horner)	**6.01** Reactor Physics Methods-II Room: (Horner)		**6.03** Reactor Physics Data and Validation-I Room: (Horner)	**6.03** Reactor Physics Data and Validation-II Room: (Horner)
Track 7- Thermal Hydraulics Analysis and Testing	**7.01** Best Estimate Analysis Codes and Uncertainty Methodologies-II Room: (Ogden)	**7.01** Best Estimate Analysis Codes and Uncertainty Methodologies-III Room: (Ogden)		**7.05** Advances in Two-Phase Flow and Heat Transfer Fundamentals-I Room: (Ogden)	**7.05** Advances in Two-Phase Flow and Heat Transfer Fundamentals-II Room: (Ogden)
	7.07 Thermal Hydraulics Measurement and Modeling Fundamentals-III Room: (McCormick)				**7.06** Computational Fluid Dynamics (CFD) and Interface Tracking Methods (ITM) Applications to Water, Liquid Metal and Gas Reactors Room: (DuSable)
Track 8- Fuel Cycle and Waste Management				**8.04** Nuclear Waste Management Room: (McCormick)	
Track 9- Materials and Structural Issues		**9.02** LWR Materials and Issues Room: (McCormick)			**9.04** Fast Reactor Materials and Issues Room: (McCormick)
Track 10- Nuclear Energy and Global Environment					

(All rooms are located on the West Tower, Silver Level except if noted on Gold, Bronze or Blue Levels.)

ICAPP 2012 Condensed Schedule

	Wednesday, June 27 1:00-2:30 PM	Wednesday, June 27 2:30-4:00 PM	Wednesday, June 27 4:15-6:15 PM	Thursday, June 28 8:00-10:00 AM	Thursday, June 28 10:00 AM -12:00 PM
Special Sessions			**Plenary 3:** Global Perspectives - Why Nuclear Makes Sense? Room: (Regency B) **Gold**		**Plenary 4:** Rethinking the Nuclear Energy Role in a Carbon Constrained World Room: (Truffles) **Blue**
Track 1- Water Cooled Reactor Programs and Issues	**1.07** Component Design, Manufacture and In-Service Issues Room: (Field)	**1.06** I&C and HMI Room: (Field)			
Track 2- High Temperature Reactors					
Track 3- Advanced Reactors	**3.01** Liquid Sodium-Cooled Fast Reactors: Modeling and Design-III Room: (Burnham)	**3.01** Liquid Sodium-Cooled Fast Reactors: Modeling and Design-II Room: (Burnham)		**3.01** Liquid Sodium-Cooled Fast Reactors: Modeling and Design-V Room: (Burnham)	
		3.06 Liquid Lead- and Lead-Bismuth-Cooled Fast Reactors Room: (DuSable)			
Track 4- Operation, Performance & Reliability Management	**4.03** Human Interface Technologies Room: (Wright)	**4.04** Performance Room: (Wright)			
Track 5- Plant Safety Assessment and Regulatory Issues		**5.10** Advances in Uncertainty Methodology and Statistics Room: (Addams)		**5.02** LOCA and Non-LOCA Safety Analysis Room: (Addams)	
Track 6- Reactor Physics and Analysis				**6.04** Multi-physics Approach to Reactor Analysis Room: (Horner)	
Track 7- Thermal Hydraulics Analysis and Testing	**7.02** Integral and Separate Thermal Hydraulics Testing and Analysis-I Room: (Ogden)	**7.02** Integral and Separate Thermal Hydraulics Testing and Analysis-II Room: (Ogden)		**7.02** Integral and Separate Thermal Hydraulics Testing and Analysis-III Room: (Ogden)	
	7.03 System Simulation Models and Codes-I Room: (Horner)	**7.03** System Simulation Models and Codes-II Room: (Horner)		**7.03** System Simulation Models and Codes-III Room: (DuSable) **7.08** System Analysis and Assessment Room: (Wright)	
Track 8- Fuel Cycle and Waste Management				**8.05** Fuel Cycle Deployment Strategies and Analysis Room: (McCormick)	
Track 9- Materials and Structural Issues	**9.05** Materials Testing and Monitoring Room: (McCormick)	**9.03** Structural Analysis and Design Room: (McCormick)			
Track 10- Nuclear Energy and Global Environment				**10.02** Economics and Nuclear Energy Room: (Field)	

(All rooms are located on the West Tower, Silver Level except if noted on Gold, Bronze or Blue Levels.)

Embedded Topical Meeting: ICAPP '12 (Sunday/Monday)

Sunday • June 24, 2012

8:30 a.m. – 5:00 p.m.	**Professional Development** Workshop: "Preparing for the Nuclear Engineering Professional Engineering Exam" *(see page 70)*
1:00 p.m. – 1:30 p.m.	**First-Time Attendee Orientation** *(see page 6)*
4:00 p.m. – 5:00 p.m.	**Student Assistant Training Session** *(see page 6)*
4:00 p.m. – 5:30 p.m.	**ICAPP 2012: Special Session**
5:00 p.m. – 6:00 p.m.	**Mentoring Program** *(see page 6)*
6:00 p.m. – 7:30 p.m.	**ANS President's Reception** *(see page 7)*
6:00 p.m. – 7:30 p.m.	**DD&R 2012: Poster Session** *(see page 36)*
6:00 p.m. – 7:30 p.m.	**DD&R '12 & ICAPP '12 Exhibit** *(see page 74)*

International Congress on Advances in Power Plants (ICAPP 2012)

Sponsored by the Operations & Power Division

Sunday, June 24, 2012 at 4:00 pm – 5:30 pm

Special Session: Evidence of DNA Repair Mechanism and New Take on Impacts of Low Dose Radiation

Session Chair: Samim Anghaie *(Consultant)*

Room: Regency B (Gold)

A team of researchers led by Drs. Sylvain Costes and Mina Bissell at the U.S. Department of Energy (DOE)'s Lawrence Berkeley National Laboratory (Berkeley Lab), through a combination of time-lapse live imaging and mathematical modeling of a special line of human breast cells, have found evidence to suggest that for low dose levels of ionizing radiation, cancer risks may not be directly proportional to dose. This contradicts the standard model for predicting biological damage from ionizing radiation -- the linear-no-threshold hypothesis or LNT -- which holds that risk is directly proportional to dose at all levels of irradiation.

Keynote Speaker:

- Dr. Sylvain Costes (Lawrence Berkeley National Laboratory)

Monday • June 25, 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 Annual Meeting: Opening Plenary Session:** "Nuclear Science and Technology: Managing the Global Impact of Economic and Natural Events"
11:30 a.m. – 1:00 p.m.	**Attendee Luncheon in the Nuclear Technology Expo**
1:00 p.m. – 2:30 p.m.	**2012 ANS Annual Meeting: President's Special Session** "Low-Level Radiation and Its Implications for Fukushima Recovery"
1:00 p.m. – 4:00 p.m.	**Spouse/Guest Tour:** "Architectural River Cruise"
2:30 p.m. – 4:00 p.m.	**DD&R 2012: Technical Sessions** *(see page 36)*
2:30 p.m. – 4:00 p.m.	**ICAPP 2012: Technical Sessions** • 1.02 Boiling Water Reactors Designs • 3.02 Liquid Sodium-Cooled Fast Reactors: Safety and Licensing–V • 3.07 Other Advanced Reactor Concepts–III • 5.04 Risk Analysis and Risk Informed Applications • 6.05 Reactor Physics General • 7.01 Best Estimate Analysis Codes and Uncertainty Methodologies–I • 7.07 Thermal Hydraulics Measurement and Modeling Fundamentals–I • 8.01 Water-Cooled Reactor Fuel Cycle
2:45 p.m. – 5:00 p.m.	**2012 ANS Annual Meeting: Technical Sessions** *(see page 14)*
3:30 p.m. – 4:30 p.m.	**ANS Business Meeting**
4:30 p.m. – 6:30 p.m.	**ICAPP 2012: Opening Plenary: Economic Realities of New Nuclear Plants**
6:00 p.m. – 11:00 p.m.	**Evening Event:** "Reception at the Museum of Science and Industry"

Monday, June 25, 2012 at 2:30 pm – 4:00 pm

1.02 Boiling Water Reactors Designs

Session Chair: MD Alamgir (*GE-Hitachi Nuclear Energy*)

Room: Field (Silver)

2:30 pm

12445 ESBWR – Robust Design for Natural Circulation and Stability Performance Effectiveness, MD Alamgir, Wayne Marquino, Jake Yang, Pradip Saha, Larry Fennern, Mark Colby *(GE-Hitachi Nuclear Energy)*

2:50 pm

12402 Development of Advanced BWR Fuel Bundle with Spectral Shift Rod -BWR Core Characteristics with SSR, Tetsushi Hino, Takao Kondo, Masao Chaki, Yukiharu Ohga *(Hitachi-GE Nuclear Energy, Ltd.)*, Takeshi Makigami *(Tokyo Electric Power Company Inc.)*

3:10 pm
12356 ESBWR Enhanced Flow Distribution with Optimized Orificing and Related Fuel Cycle Performance, Gregory J. Pearson, Atul A. Karve, Russ M. Fawcett *(GNF)*

3.02 Liquid Sodium-Cooled Fast Reactors: Safety and Licensing-V

Session Chairs: Laural L. Briggs *(ANL),* Hae-yong Jeong *(KAERI)*

Room: Burnham (Silver)

2:30 pm
12354 Comparison of JSFR Design with EDF Requirements for Future SFR, Mari Marianne Uematsu *(Japan Atomic Energy Agency)*, Geard Prele, Patrik Mariteau, Jean-Francois Sauvage *(Electricite de France)*, Hiroki Hayafune, Yoshitaka Chikazawa *(Japan Atomic Energy Agency)*

2:50 pm
12152 Characterization of the Liquid Sodium Spray Generated by a Pipework Hole, Giuseppe Torsello, Flavio Parozzi, Leonardo Nericcio (RSE), Lucio Araneo, Fabio Cozzi *(Politecnico di Milano),* Marco Carcassi, Nicola Mattei *(Università di Pisa)*

3:10 pm
12048 LWR Codes Capability to Address SFR BDBA Scenarios: Modeling of the ABCOVE Tests, Luis E. Herranz, Mónica García *(CIEMAT)*, Sonia Morandi *(RSE)*

3:30 pm
12035 CATHARE Calculations of Phenix Ultimate Natural Convection Test, D. Pialla, D. Tenchine, P. Gauthé, A.Vasile *(CEA)*

3:50 pm
12021 Analysis of Phenix End-of-Life Natural Convection Test with the MARS-LMR Code, Hae-Yong Jeong, Kwi-Seok Ha, Kwi-Lim Lee, Won-Pyo Chang, Yeong-Il Kim *(KAERI)*

3.07 Other Advanced Reactor Concepts-III

Session Chair: Temitope Taiwo *(ANL)*

Room: DuSable (Silver)

2:30 pm
12229 GEN IV Reactors: Where We Are, Where We Should Go, Giorgio Locatelli *(University of Lincoln)*, Mauro Mancini, Nicola Todeschini *(Politecnico di Milano)*

2:50 pm
12044 Fuel Loading of PeBR for a Long Operation Life on Lunar Surface, Timothy M. Schriener, Mohamed S. El-Genk *(University of New Mexico)*

3:10 pm
12014 The Fast-spectrum Transmutation Experimental Facility FASTEF: Main Design Achievements *(Part 1: Core & Primary System)* Within The FP7-CDT Collaborative Project of the European Commission, Didier De Bruyn, Rafaël Fernandez *(SCK•CEN)*, Luigi Mansani *(ANSALDO)*, Antony Woaye-Hune *(AREVA)*, Massimo Sarotto *(ENEA)*, Evaldas Bubelis *(KIT)*

5.04 Risk Analysis and Risk Informed Applications

Session Chair: Jun Liao *(Westinghouse)*

Room: Addams (Silver)

2:30 pm
12141 Joint Probability Safety Assessment for NPP Defense Infrastructure Against Extreme External Natural Hazards, Guilin Liu, Defu Liu, Huajun Li, Fengqing Wang, Tao Zou *(Ocean University of China)*

2:50 pm
12113 Understanding the Nature of Nuclear Power Plant Risk, R.S. Denning *(The Ohio State University)*

3:10 pm
12089 Assessment of Core Damage Frequency Owing to Possible Fires at NP with RBMK Type Reactors, Bronislav Vinnikov *(National Research Center "Kurchatov Institute")*

3:30 pm
12046 Insights from the WGRISK Workshop on the PSA of Advanced and New Reactors, Gabriel Georgescu *(IRSN),* Kwang I.Ahn *(KAERI)*, Abdallah Amri *(OECD/NEA)*

6.05 Reactor Physics General

Session Chair: Hyung Jin Shim *(Seoul National University)*

Room: Horner (Silver)

2:30 pm
12341 RGG: Reactor Geometry *(and mesh)* Generator, Rajeev Jain, Tim Tautges *(ANL)*

2:50 pm
12208 Full 3D Visualization Toolkit for Monte Carlo and Deterministic Transport Codes, S. Frambati, M. Frignani *(Ansaldo Nucleare S.p.A.)*

3:10 pm
12164 MANCINTAP: Time and Space Dependent Neutron Activation Tool Algorithm Improvement and Analysis of a PWR Nozzle Gallery, S. Frambati, G. Firpo, M. Frignani *(Ansaldo Nucleare S.p.A.)*

7.01 Best Estimate Analysis Codes and Uncertainty Methodologies-I

Session Chair: Jeffrey Lane *(Bettis Atomic Power Laboratory)*

Room: Ogden (Silver)

2:30 pm
12095 Uncertainty Methodology for the Strongly Coupled Physical Phenomena Associated with Annular Flow, Jeffrey W. Lane, David L. Aumiller, Jr. *(Bettis Atomic Power Laboratory)*

2:50 pm
12057 Calculation of the PHENIX End-of-life Test in Natural Circulation with the CATHARE Code, Ludovic Maas, François Cochemé *(IRSN)*

3:10 pm
12040 The Developments and Verifications of TRACE Model on IIST LOCA Experiments, Wei-Xiang Zhuang *(National Tsing-Hua University)*, Jong-Rong Wang, Hao-Tzu Lin *(Institute of Nuclear Energy Research)*, Chunkuan Shih, Kai-Chun Huang *(National Tsing-Hua University)*

3:30 pm
12018 Identifying and Bounding Uncertainties in Nuclear Reactor Thermal Power Calculations, Joanna Phillips, Ernest Hauser, Herb Estrada *(Cameron)*

7.07 Thermal Hydraulics Measurement and Modeling Fundamentals-I

Session Chair: Seungjin Kim *(The Pennsylvania State University)*

Room: Wright (Silver)

2:30 pm
12139 Impact of Porous Medium on the High Cycle Temperature Fluctuations in a Mixing Tee, Lin Bu, Jiyun Zhao *(Nanyang Technological University)*

2:50 pm
12055 Cross Flow Characteristics in a Three Fuel Assemblies, J. H. Bae, D.J. Euh, C.K. Park, Y.J. Youn, T.S. Kwon *(KAERI)*

3:10 pm
12026 Results from a Scaled Reactor Cavity Cooling System with Water at Steady-State, D.D. Lisowski *(University of Wisconsin - Madison)*, S.M. Albiston, A. Tokuhiro *(University of Idaho)*, M.H. Anderson, M.L. Corradini *(University of Wisconsin - Madison)*

3:30 pm
12085 Supporting Qualified Database for Uncertainty Evaluation, A. Petruzzi, F. Fiori, A. Kovtonyuk, F. D'Auria *(University of Pisa)*

8.01 Water-cooled Reactor Fuel Cycle

Session Chair: Luc Van den Durpel *(AREVA)*

Room: McCormick *(Silver)*

2:30 pm
12284 Surveillance of PLUS7 Fuel for PWR Nuclear Power Plant, Young Ki Jang, Jae Ik Kim, Jung Cheol Shin, Jin Gon Chung, Sun Kyo Chung *(KEPCO Nuclear Fuel)*, Man Su Kim, Tae Hyoung Lee, Yong Bae Yoon, Tae Wan Kim *(KHNP)*

2:50 pm
12231 Improvements of Fuel Failure Detection in Boiling Water Reactors using Helium Measurements, Irina Larsson, Lembit Sihver *(Chalmers University of Technology)*, Anette Grundin, Jan-Ola Helmersson *(Forsmarks Kraftgrupp AB)*

3:10 pm
12116 Effects of Cooling Time on a Closed LWR Fuel Cycle, Ramsey P. Arnold, Charles W. Forsberg, Eugene Shwageraus *(MIT)*

Monday, June 25, 2012 at 4:30 pm – 6:30 pm

ICAPP '12 Opening Plenary: Economic Realities of New Nuclear Plants

Session Chairs: Susan Landahl *(Exelon Nuclear), Goon-Cherl Park (KEPCO International Nuclear Graduate School)*

Room: Regency B *(Gold).*

The Opening Plenary includes discussion on grid parity and the current economic realities that make nuclear practical in some places around the world like Asia and not so practical in other places. Exploring the impact of the growth or decline of power demand, comparative cost of power generation, disposal of nuclear plants generated high level waste, and Fukushima-Daiichi accident on the attractiveness of new nuclear plants in US and around the world.

Speakers:

- Susan Landahl *(Chief Operating Officer and Senior VP, Exelon Nuclear)*
- Takuyo Hattori *(President, Japan Atomic Industrial Forum)*
- Stephen Kuczynski *(President & CEO, Southern Nuclear Operating Company)*
- Hyun-Taek Park *(Executive Vice President, KHNP)*
- Rick Gabbianelli *(Senior VP, Westinghouse)*

Tuesday • June 26, 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. – 10:00 a.m.	**ICAPP 2012: Technical Sessions** • 1.01 Coping with Extended Station Blackout • 2.03 HTGR Safety–I • 3.02 Liquid Sodium-Cooled Fast Reactors: Safety and Licensing–I • 3.03 Liquid Salt Reactors–I • 5.05 Severe Accidents: Experiments • 7.04 Advanced Reactor Testing and Analysis–I • 8.02 Advanced Fuel Cycle Options and Technologies • 9.01 Gen-IV Cladding/Structural Materials: Development and Characterization
8:00 a.m. – 10:00 a.m.	**NFSM 2012: Plenary Session** *(see page 40)*
8:30 a.m. – 11:00 a.m.	**DD&R 2012: Plenary Session** *(see page 37)*
8:00 a.m. - 11:30 a.m.	**2012 ANS Annual Meeting: Technical Sessions** *(see page 18)*
10:00 a.m. - 12:00 p.m.	**ICAPP 2012: Technical Sessions** • 1.03 Pressurized Water Reactors Designs • 2.03 HTGR Safety–II • 3.02 Liquid Sodium-Cooled Fast Reactors: Safety and Licensing–II • 3.03 Liquid Salt Reactors–II • 6.02 Reactor Physics Analysis • 7.04 Advanced Reactor Training and Analysis–II • 7.07 Thermal Hydraulics Measurement and Modeling Fundamentals–II • 10.01 Hybrid Energy Systems: Coupling Nuclear, Renewables, and Fossil Energy Systems
10:30 a.m. - 11:40 a.m.	**NFSM 2012: General Chairs' Special Session** *(see page 40)*
11:00 a.m. - 4:30 p.m.	**Spouse/Guest Tour:** "Frank Lloyd Wright Home and Studio and Unity Temple in Oak Park"

Embedded Topical Meeting: ICAPP '12 (Tuesday)

Tuesday • June 26, 2012 *continued*

1:00 p.m. - 2:30 p.m.	**ICAPP 2012: Technical Sessions** • 1.04 Lessons Learned in Infrastructure Development, Deployment, Construction, and Licensing–I • 3.02 Liquid Sodium-Cooled Fast Reactors: Safety and Licensing–III • 3.07 Other Advanced Reactor Concepts–II • 4.01 Improvements in Maintenance • 6.01 Reactor Physics Methods–I • 7.01 Best Estimate Analysis Codes and Uncertainty Methodologies–II • 7.07 Thermal Hydraulics Measurement and Modeling Fundamentals–III
1:00 p.m. - 2:40 p.m.	**NFSM 2012: Technical Sessions** *(see page 40)*
1:00 p.m. - 2:40 p.m.	**DD&R 2012: Technical Sessions** *(see page 37)*
1:00 p.m. - 4:00 p.m.	**2012 ANS Annual Meeeting: Technical Sessions** *(see page 21)*
2:30 p.m. - 4:00 p.m.	**ICAPP 2012: Technical Sessions** • 1.04 Lessons Learned in Infrastructure Development, Deployment, Construction, and Licensing–II • 3.02 Liquid Sodium-Cooled Fast Reactors: Safety and Licensing–IV • 3.07 Other Advanced Reactor Concepts–I • 4.02 Potential Outage Impacts and Improvements • 5.09 Advances in Regulatory Issues • 6.01 Reactor Physics Methods–II • 7.01 Best Estimate Analysis Codes and Uncertainty Methodologies–III • 9.02 LWR Materials and Issues
2:40 p.m. - 4:40 p.m.	**NFSM 2012: Technical Sessions** *(see page 41)*
2:45 p.m. - 5:15 p.m.	**DD&R 2012: Technical Sessions** *(see page 37)*
4:15 p.m. - 6:15 p.m.	**ICAPP 2012: Plenary 2: Progress of New Reactors Design, Licensing and Deployment**
5:30 p.m. - 10:30 p.m.	**Evening Event:** Dinner and Show at Tommy Gun's Garage

Tuesday, June 26, 2012 at 8:00 am – 10:00 am

1.01 Coping with Extended Station Blackout

Session Chairs: MD Alamgir *(GE-Hitachi Nuclear Energy)*, Sumio Fujii *(MHI)*

***Room: Field** (Silver)*

8:00 am
12069 Experimental and Analytical Analyses of a Station Blackout Scenario for APR1400 with Test Facility ATLAS and MARS Code, Xin-Guo Yu, Yeon-Sik Kim, Ki-Yong Choi, Hyun-Sik Park, Seok Cho, Kyoung-Ho Kang, Nam-Yeon Choi *(KAERI)*

8:20 am
12159 Investigations on Optimization of Accident Management Measures following a Station Blackout Accident in a VVER-1000 Pressurized Water Reactor, Polina Tusheva, Frank Schäfer, Sören Kliem *(HZDR)*

8:40 am
12366 KERENA Safety Concept in the Context of the Fukushima Accident, Thomas Zacharias, Christian Novotny, Eberhard Bielor *(AREVA NP GmbH)*

9:00 am
12361 ESBWR Response to an Extended Station Blackout/Loss of All AC Power, Antonio J. Barrett, Wayne Marquino *(GE Hitachi Nuclear Energy)*

9:20 am
12063 The AP1000® Nuclear Power Plant Innovative Features for Extended Station Blackout Mitigation, Frank Vereb, Jim Winters, Terry Schulz, Ed Cummins, Luca Oriani *(Westinghouse Electric Company)*

2.03 HTGR Safety-I

Session Chair: Gerhard Strydom *(INL)*

Room: Wright ***(Silver)***

8:00 am
12290 RELAP5-3D Results for Phase I *(Exercise 2)* of the OECD/NEA MHTGR-350 MW Benchmark, Gerhard Strydom, Aaron S. Epiney *(INL)*

8:20 am
12123 A Study of Improved MHR 50/100 toward a Higher Level of Inherent Safety, Isao Minatsuki, Tomomi Otani, Katsusuke Shimizu, Sunao Oyama, Hiroki Tsukamoto *(Mitsubishi Heavy Industries, Ltd.)*, Kazuhiko Kunitomi *(Japan Atomic Energy Agency)*

8:40 am
12023 Comparison of Gasification Kinetics Parameters of Different Types of Nuclear Graphite, Mohamed S. El-Genk, Jean-Michel P. Tournier *(University of New Mexico)*

9:00 am
12022 Diffusion Velocity Correlation for Nuclear Graphite Gasification at High Temperature and Low Reynolds Numbers, Mohamed S. El-Genk, Jean-Michel P. Tournier *(University of New Mexico)*

3.02 Liquid Sodium-Cooled Fast Reactors: Safety and Licensing-I

Session Chairs: Justin Thomas *(ANL)*, Paul Gauthe *(CEA)*

Room: Burnham ***(Silver)***

8:00 am
12428 On the Use of Moderating Material to Enhance the Feedback Coefficients in SFR Cores with High Minor Actinide Content, Bruno Merk *(HZDR)*, Fran-Peter Weiß *(Gesellschaft für Anlagen- und Reaktorsicherheit)*

8:20 am
12416 Review of Fuel/Cladding Eutectic Formation in Metallic SFR Fuel Pins, Matthew Denman, Neil Todreas, Michael Driscoll *(MIT)*

8:40 am
12384 Evaluation of Earthquake and Tsunami on JSFR, Yoshitaka Chikazawa, Yasuhiro Enuma, Naoyuki Kisohara, Hidemasa Yamano, Shigenobu Kubo, Hiroki Hayafune *(JAEA)*, Hiroshi Sagawa, Shigeki Okamura, Yoshio Shimakawa *(MFBR)*

9:00 am
12358 GIF Sodium Fast Reactor Project - R&D on Safety and Operation, A. Vasile *(CEA)*, T. Sofu *(ANL)*, H.Y. Jeong *(KAERI)*, T. Sakai *(JAEA)*

9:20 am
12338 Validation of the Integration of CFD and SAS4A/SASSYS-1: Analysis of EBR-II Shutdown Heat Removal Test 17, J.W. Thomas, T.H. Fanning, R.B. Vilim, L.L. Briggs *(Argonne National Laboratory)*

3.03 Liquid Salt Reactors-I

Session Chairs: David E. Holcomb *(ORNL)*, Edward Blanford *(Stanford University)*

Room: DuSable *(Silver)*

8:00 am
12460 Development of Strong-sense Validation Benchmarks for the Fluoride Salt-cooled High-temperature Reactor, Edward D. Blanford *(Stanford University)*

8:20 am
12413 Pebble Fuel Design for the PB-FHR, Anselmo T. Cisneros, Raluca O. Scarlat, Micheal R. Laufer, Ehud Greenspan, Per F. Peterson *(University of California at Berkeley)*

8:40 am
12342 Current Status of the Advanced High Temperature Reactor, D.E. Holcomb, D. Ilas, A.L. Qualls, F.J. Peretz, V.K. Varma, E.C. Bradley, A.T. Cisneros *(ORNL)*

9:00 am
12190 Chemistry Control and Corrosion Mitigation of Heat Transfer Salts for the Fluoride Salt Reactor (FHR), B.C. Kelleher, S.R. Sellers, M.H. Anderson, K. Sridharan, R.D. Scheele (University of Wisconsin - Madison)

9:20 am
12025 The Preliminary Analysis on the Steady-state and Kinetic Features of the Molten Salt Pebble-bed Reactor, Bing Xia (*Tsinghua University)*, Yingzhong Lu *(Green Hi-Tek)*

5.05 Severe Accidents: Experiments

Session Chair: Micro Grosse *(KIT)*

Room: Addams *(Silver)*

8:00 am
12452 Impact of B_4C on the Stratification of Molten Steel and BWR-type Core Material under IVR Conditions, M. Fischer *(AREVA NP)*, A.A. Sulatsky, E.V. Krushinov *(A.P. Alexandrov Research Institute of Technology)*

8:20 am
12419 Hydrogen Combustion in a Flat Semi-Confined Layer with Respect to the Fukushima Daichii Accident, Mike Kuznetsov, Jorge Yanez *(Karlsruhe Institute of Technology (KIT))*, Joachim Grune, Andreas Friedrich *(Pro-Science)*, Thomas Jordan *(Karlsruhe Institute of Technology (KIT))*

8:40 am
12106 Effects of Molybdenum and Silver on Iodine Transport in Primary Circuit on Severe Nuclear Accidents, J. Kalilainen, P. Rantanen, T. Kärkelä, M. Lipponen, A. Auvinen *(VTT Technical Research Centre of Finland)*, J. Jokiniemi *(VTT Technical Research Centre of Finland, University of Eastern Finland)*

9:00 am
12072 Aerosol Retention during SGTR Meltdown Sequences: Experimental Insights of the Effect of Size and Shape of the Breach, Luis E. Herranz, Rosario D. Tardáguila, Claudia López *(CIEMAT)*

9:20 am
12049 Experimental Results of the QUENCH-16 Bundle Test on Air Ingress, J. Stuckert, M. Steinbrück *(Karlsruhe Institute of Technology (KIT))*

7.04 Advanced Reactor Testing and Analysis-I

Session Chair: Brian Wolf *(Purdue University)*

Room: Ogden *(Silver)*

8:00 am
12277 Multiscale Approach to the Modeling of Fission Gas Discharge during Hypothetical Loss-of-Flow Accident in Gen-IV Sodium Fast Reactor, F. Behafarid, D.R. Shaver *(Rensselaer Polytechnic Institute)*, I.A. Bolotnov *(North Carolina State University)*, K.E. Jansen *(University of Colorado)*, S.P. Antal, M.Z. Podowski *(Rensselaer Polytechnic Institute)*

8:20 am
12274 Multidimensional Mechanistic Modelling of Interfacial Heat and Mass Transfer, D.R. Shaver, S.P. Antal, M.Z. Podowski *(Rensselaer Polytechnic Institute)*

8:40 am
12217 Effect of Gaps on the Performance of the Vertically Installed Wet Thermal Insulator, Seong Hoon Kim, Young In Kim, Chun Tae Park, Suhn Choi, Juhyeon Yoon *(KAERI)*

9:00 am
12206 Experimental Study on the Operational and the Cooling Performance of the APR+ Passive Auxiliary Feedwater System, K.H. Kang, B.U. Bae, S. Kim, Y.J. Cho, Y.S. Park, B.D. Kim *(Korea Atomic Energy Research Institute)*

9:20 am
12155 Validation of CONTAIN-LMR Code for Accident Analysis of Sodium-cooled Fast Reactor Containments, S. Gordeev, W. Hering, M. Schikorr, R. Stieglitz *(Karlsruhe Institute of Technology)*

8.02 Advanced Fuel Cycle Options and Technologies

Session Chair: Luc Van den Durpel *(AREVA)*

Room: Horner *(Silver)*

8:00 am
12399 Development of Pyroprocessing Technology for Thorium-fuelled Molten Salt Reactor, Jan Uhlir, Martin Straka, Lorant Szatmary *(Nuclear Research Institute Rez plc)*

8:20 am
12142 Technical and Economical Impacts of the Transmutation of the Minor Actinides in a SFR, Guy-Marie Gautier, Franck Morin, Franck Dechelette, Emmanuel Sanseigne, Christine Chabert *(CEA)*

8:40 am
12054 Modelling of the Nitric Acid Reduction Process: Application to Materials Behavior in Reprocessing Plants, D. Sicsic, F. Balbaud-Célérier *(CEA)*, B. Tribollet *(Laboratoire Interfaces et Systèmes Electrochimiques)*

9:00 am
12042 Advanced Reprocessing Developments in Europe - Contribution of European Projects ACSEPT and ACTINET-I3, Stéphane Bourg, Christophe Poinssot *(CEA)*, Andreas Geist *(KIT-INE)*, Laurent Cassayre *(CIEMAT)*, Chris Rhodes *(NNL)*, Christian Ekberg *(CHALMERS)*

9:20 am
12097 Gaseous Fission Product Management for Molten Salt Reactors and Vented Fuel Systems, Stephen J. Messenger, Charles Forsberg, Mark Massie *(Massachusetts Institute of Technology)*

9.01 Gen-IV Cladding/Structural Materials: Development and Characterization

Session Chairs: Djamel Kaoumi *(University of South Carolina)*, T. Jayakumar *(Indira Gandhi Centre for Atomic Research)*, Kinkar Laha *(Indira Gandhi Centre for Atomic Research)*

Room: McCormick *(Silver)*

8:00 am
12276 Micromechanical Tests of Ion Irradiated Materials: Atomistic Simulations and Experiments, Chansun Shin, HyungHa Jin, Junhyun Kwon *(KAERI)*

8:20 am
12162 Ways of Improvement for the Materials of Sodium Cooled Fast Reactors, Emmanuel Horowitz *(EDF)*

8:40 am
12075 Improved Cladding Nano-structured Materials with Self-repairing Capabilities, Liviu Popa-Simil *(Consultant)*

9:00 am
12051 Characterization of High Performance Austenitic and ODS Alloys for SCWR Conditions, Sami Penttila, Aki Toivonen, Pertti Auerkari *(VTT)*, Radek Novotny *(JRC-IE)*

Tuesday, June 26, 2012 at 10:00 am – 12:00 pm

1.03 Pressurized Water Reactors Designs

Session Chairs: Matthew C. Evans *(Westinghouse)*, Sumio Fujii *(MHI)*

Room: Field *(Silver)*

10:00 am
12065 The Power of Simplification: Operator Interface with the AP1000® During Design-Basis and Beyond Design-Basis Events, Mark G. Williams, Michael R. Mouser, Jeffrey B. Simon *(Westinghouse)*

10:20 am
12378 Pool Scrubbing under Jet Injection Regime: An Enhancement of the SPARC90 Code, Luis E. Herranz *(CIEMAT)*, C. Berna, A. Escrivá, J. L. Muñoz-Cobo *(UPV)*

10:40 am
12133 A Study on the Effect of Various Design Parameters on the Natural Circulation Flow Rate of the Ex-Vessel Core Catcher Cooling System of EU-APR1400 , B.W. Rhee, K.S. Ha, R.J. Park, J.H. Song *(KAERI)*

11:00 am
12091 AP1000® Design Robustness against Extreme Events - Seismic, Flooding, and Aircraft Crash, Andrew Pfister, Christopher Goossen, Keith Coogler, Julie Gorgemans *(Westinghouse).*

11:20 am
12067 AP1000® Nuclear Power Plant Safety Overview for Spent Fuel Cooling, Julie Gorgemans, Luke Mulhollem, Jake Glavin, Andy Pfister, Larry Conway, Terry Schulz, Luca Oriani, Ed Cummins, Jim Winters *(Westinghouse)*

2.03 HTGR Safety-II

Session Chair: Hongbin Zhang *(INL)*

Room: Wright *(Silver)*

10:00 am
12373 Improvement Design Study on Steam Generator of MHR-50/100 Aiming Higher Safety Level after Water Ingress Accident, Sunao Oyama, Isao Minatsuki, Katsusuke Shimizu *(Mitsubishi Heavy Industries, Ltd.)*

10:20 am
12340 Development of a Coolant Channel Helium and Nitrogen Gas Ratio Sensor for a High Temperature Gas Reactor, Seth R. Cadell, Brian G. Woods *(Oregon State University)*

10:40 am
12329 Preliminary Analysis of Graphite Dust Releasing Behavior in Accident for HTR, Wei Peng, Xiao-yong Yang, Su-yuan Yu, Jie Wang *(Tsinghua University)*

11:00 am
12328 Granular Flow in Pebble Bed Reactors: Dust Generation and Scaling, Chris H. Rycroft *(University of California, Berkeley, Lawrence Berkeley National Laboratory)*, Terttaliisa Lind, Salih Güntay, Abdel Dehbi *(PSI)*

11:20 am
12301 Enhancing VHTR Passive Safety and Economy with Thermal Radiation Based Direct Reactor Auxiliary Cooling System, Haihua Zhao, Hongbin Zhang, Ling Zou *(Idaho National Laboratory)*, Xiaodong Sun *(Ohio State University)*

3.02 Liquid Sodium-Cooled Fast Reactors: Safety and Licensing-II

Session Chairs: Matthew Memmott *(Westinghouse)*, David Pialla *(CEA)*

Room: Burnham *(Silver)*

10:00 am
12456 New Investigations of the Phenix Negative Reactivity Events, P. Dumaz, N. Alpy, D. Broc, M. Bucci, J. Cardolaccia, C. Guenaut, E. Hourcade, L. Martin, J.A. Jolly, P. Masoni, V. Pascal, N. Simon, N. Schmidt *(CEA)*

10:20 am
12337 Analysis of the Phenix End-of-Life Natural Convection Test with SAS4A/SASSYS-1, J.W. Thomas, T.H. Fanning, F.E. Dunn, T. Sofu *(Argonne National Laboratory)*

10:40 am
12324 Use of Simplified PSA Studies in Support of the ASTRID Design Process, P. Gauthé, F. Curnier, F. Bertrand *(CEA)*, L. Vinçon, S. Jouve *(AREVA-NP)*, M. Balmain, V. Richkov *(EDF R&D)*, Y. Banchieri *(EDF SEPTEN)*

11:00 am
12323 The Phenix Ultimate Natural Convection Test, P. Gauthé, D. Pialla, D. Tenchine, A. Vasile, D. Rochwerger *(CEA)*

11:20 am
12292 Preliminary High-Fidelity Simulation of Duct Wall Deformation in the Sodium Fast Reactor Subassembly, Rui Hu, Abdellatif Yacout *(Argonne National Laboratory)*

11:40 am
12245 Dynamical Analysis of Innovative Core Designs Facing Unprotected Transients with the MAT5 DYN Code, G. Darmet, S. Massara *(EDF R&D)*

3.03 Liquid Salt Reactors-II

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

Room: DuSable *(Silver)*

10:00 am
12464 Preliminary Requirements for a Fluoride Salt-Cooled High-Temperature Test Reactor, Mark Massie, Charles Forsberg, Ben Forget, Lin-wen Hu *(Massachusetts Institute of Technology)*

10:20 am
12394 Progress in Development of MOSART Concept with Th Support, Victor Ignatiev, Olga Feynberg, Aleksandr Merzlyakov, Aleksandr Surenkov, Aleksandr Zagnitko *(NRC Kurchatov Institute)*, Valery Afonichkin, Andrei Bovet, Vladimir Khokhlov *(IHTE)*, Vladimir Subbotin, Rustam Fazilov, Maksim Gordeev, Aleksandr Panov, Andrei Toropov *(VNIITF)*

10:40 am
12189 Materials Corrosion in Molten LiF-NaF-KF Eutectic Salt under Different Reduction-oxidation Conditions, R.S. Sellers *(University of Wisconsin-Madison)*, W.J. Cheng, M.H. Anderson *(University of Wisconsin-Madison, National Taiwan University of Science and Technology)*, K. Sridharan *(University of Wisconsin-Madison)*, C.J. Wang *(National Taiwan University of Science and Technology)*, T.R. Allen *(University of Wisconsin-Madison)*

11:20 am
12019 Secondary Heat Exchanger Design and Comparison for Advance High Temperature Reactor, Piyush Sabharwall *(Idaho National Laboratory)*, Eung Soo Kim *(Seoul National University)*, Ali Siahpush, Michael McKellar, Mike Patterson *(Idaho National Laboratory)*

6.02 Reactor Physics Analysis

Session Chair: Christine Poinot-Salanon *(CEA)*

Room: Horner *(Silver)*

10:00 am
12050 Nuclear Analyses of Supercritical Water Cooled Reactor with Carbon Nanotube Cladding, Yuji Uenohara *(Consultant)*, Naoki Yamano *(University of Fukui)*

10:20 am
12016 A Survey of Alternative Once-Through Fast Reactor Core Designs, Tingzhou Fei, J.G. Richard, A.R. Kersting, S.M. Don, Curran Oi, M.J. Driscoll, E. Shwageraus *(Massachusetts Institute of Technology)*

10:40 am
12028 Impact of the Control Rod Consumption on the Reactivity Control of a SFR Break-even Core, David Blanchet, Bruno Fontaine *(CEA)*

11:00 am
12223 Core Loading Pattern Optimization of Thorium Fueled Heavy Water Breeder Reactor Using Genetic Algorithm, Christina Novila Soewono, Naoyuki Takaki *(Tokai University)*

11:20 am
12109 Potential of Pin-By-Pin SPN Calculations as an Industrial Reference, M. Fliscounakis, E. Girardi, T. Courau, D. Couyras *(EDF R&D/SINETICS)*

11:40 am
12093 Uncertainty Analysis on Reactivity and Discharged Inventory for a Pressurized Water Reactor Fuel Assembly Due to 235,238U Nuclear Data Uncertainties, D.F. da Cruz, D. Rochman, A.J. Koning *(NRG*

7.04 Advanced Reactor Testing and Analysis-II

Session Chair: Brian Wolf *(Purdue University)*

Room: Ogden *(Silver)*

10:00 am
12457 Major Results from Safety-Related Integral Effect Tests with VISTA-ITL for the SMART Design, Hyun-Sik Park, Byoung-Yeon Min, Yong-Chul Shin, Sung-Jae Yi *(KAERI)*

10:20 am
12443 LOFA and LOCA Analysis for CGNPC SCWR, Pan Wu, Junli Gou, Jianqiang Shan, Yang Jiang, Bo Zhang *(Xi'an Jiaotong University)*, Jue Yang *(China Nuclear Power Technology Research Institute)*

10:40 am
12440 An Analysis of the Sliding Pressure Start-up of SCWR, Fei Wang, Jue Yang, Hongbo Li, Yong Zhang *(China Nuclear Power Technology Research Institute)*, Jianqiang Shan, Junli Gou, Bo Zhang, Chao Chen *(Xian Jiaotong University)*

11:00 am
12408 Validation of a Radial-Inflow Turbine Model for Super-critical CO2 Applications, Richard B. Vilim *(ANL)*

11:20 am
12368 Experimental Study on Heat Transfer to Supercritical Water Flowing through Tubes, Meng Zhao, Hanyang Gu , Xu Cheng *(Shanghai Jiaotong University)*

11:40 am
12360 Condensation Model for the ESBWR Passive Condensers, S.T. Revankar *(Purdue University, Pohang University of Science and Technology)*, W. Zhou, B. Wolf, S. Oh *(Purdue University)*

7.07 Thermal Hydraulics Measurement and Modeling Fundamentals-II

Session Chair: Seungjin Kim *(The Pennsylvania State University)*

Room: McCormick *(Silver)*

10:00 am
12334 Condensation in Horizontal Heat Exchanger Tubes, Stephan Leyer, Thomas Zacharias, Fabian Maisberger, Matthias Lamm *(AREVA NP GmbH)*, Christop Vallee, M. Beyer, Uwe Hampel *(Helmholtz-Zentrum Dresden-Rossendorf e.V.)*

10:20 am
12306 Experimental Characterization of Pressure Drops and Channel Instabilities in Helical Coil SG Tubes, Marco Colombo, Antonio Cammi, Jacopo De Amicis, Marco. E. Ricotti *(Politecnico di Milano)*

10:40 am
12269 Benchmark Studies of Thermal Jet Mixing in SFRs Using a Two-Jet Model, Olumuyiwa A. Omotowa, Richard Skifton, Akira Tokuhiro *(University of Idaho)*

11:00 am
12235 Measurement of Interfacial Structures in Horizontal Air-Water Bubbly Flows, Justin D. Talley, Ted Worosz, Matthew R. Dodds, Seungjin Kim *(The Pennsylvania State University)*

11:20 am
12140 Critical Heat Flux on Micro-Structured Zircaloy Surfaces for Flow Boiling of Water at Low Pressures , C. Haas, A. Miassoedov, T. Schulenberg, T. Wetzel *(Karlsruhe Institute of Technology)*

10.01 Hybrid Energy Systems: Coupling Nuclear, Renewables, and Fossil Energy Systems

Session Chairs: Sama Bilbao y Leon *(Virginia Commonwealth University)*, Luc Van den Durpel *(AREVA)*

Room: Addams *(Silver)*

10:00 am
12335 Development of Advanced Off-Design Models for Supercritical Carbon Dioxide Power Cycles, John J. Dyreby, Sanford A. Klein, Gregory F. Nellis, Douglas T. Reindl *(University of Wisconsin-Madison)*

10:20 am
12108 Preliminary Studies on the Heat Exchanger for S-CO2 Power Conversion Cycle Coupled to Water Cooled SMR, Yoonhan Ahn, Jaekyoung Lee *(KAIST)*, Jeong Ik Lee *(KAIST, Khalifa University of Science, Technology & Research)*

10:40 am
12446 Gigawatt-Year Nuclear-Geothermal Energy Storage for Light-Water and High-Temperature Reactors, C. W. Forsberg, Y. Lee, M. Kulhanek, M.J. Driscoll *(Massachusetts Institute of Technology)*

11:00 am
12178 Life Cycle Assessment of Hydrogen Production from S-I Thermochemical Process Coupled to a High Temperature Gas Reactor, Mario R. Giraldi-Díaz, Juan-Luis Francois, Daniel Castro-Uriegas *(UNAM)*

11:20 am
12039 Preliminary Design Studies on a Nuclear Seawater Desalination System, Andhika Feri Wibisono, Yong Hun Jung, Jinyoung Choi, Ho Sik Kim, Jeong Ik Lee, Yong Hoon Jeong, Hee Cheon No *(KAIST)*

11:40 am
12006 A Nuclear Wind/Solar Oil-Shale System for Variable Electricity and Liquid Fuels Production, Charles Forsberg *(Massachusetts Institute of Technology)*

Tuesday, June 26, 2012 at 1:00 pm – 2:30 pm

1.04 Lessons Learned in Infrastructure Development, Deployment, Construction, and Licensing-I

Session Chair: Matthew C. Evans *(Westinghouse)*

Room: Field *(Silver)*

1:00 pm
12293 A Platform for Effective Requirements Management and Collaboration in Nuclear Compliance and Licensing, Paul Fechtelkotter *(IBM)*

1:20 pm
12043 Management and Integration of Engineering and Construction Activities: Lessons Learned from the AP1000 China Project, Michael C. McCullough, Derek Ebeling-Koning, Matthew C. Evans *(Westinghouse)*

1:40 pm
12032 Olkiluoto 1 and 2 - Plant Efficiency Improvement and Lifetime Extension-Project *(PELE)* Implemented During Outages 2010 and 2011, Mikko Kosonen, Mauri Hakola *(Teollisuuden Voima Oyj)*

3.02 Liquid Sodium-Cooled Fast Reactors: Safety and Licensing-III

Session Chair: Stefano Monti *(IAEA)*

Room: Burnham *(Silver)*

1:00 pm
12294 Validation of a Plant Dynamics Code for 4S - Test Analysis of Natural Circulation Behavior , Fumie Sebe, Hideki Horie, Hisato Matsumiya *(Toshiba Corporation)*, T.H. Fanning *(Argonne National Laboratory)*

1:20 pm
12287 Overall Results of and Lessons Learned from the IAEA CRP on Sodium Natural Circulation Test Performed during the PHENIX End-of-Life Experiments, S. Monti, A. Toti *(IAEA)*, D. Tenchine, D. Pialla *(CEA)*

1:40 pm
12266 Benchmark Specifications for EBR-II Shutdown Heat Removal Tests, Tanju Sofu, Laural L. Briggs *(Argonne National Laboratory)*

2:00 pm
12259 Parametric Analysis of Thermal Stratification during the MONJU Turbine Trip Test, Tanju Sofu *(Argonne National Laboratory)*

3.07 Other Advanced Reactor Concepts-II

Session Chair: Giorgio Locatelli *(University of Lincoln)*

Room: DuSable *(Silver)*

1:00 pm
12125 Fuel and Cladding Nano-technologies Based Solutions for Long Life Heat-pipe Based Reactors, Liviu Popa-Simil *(Consultant)*

1:20 pm
12168 Advantages and Applications of Megawatt Sized Heat Pipe Reactors, Patrick R. McClure, Robert S. Reid, David Dixon *(Los Alamos National Laboratory)*

1:40 pm
12047 Thermal-Hydraulics and Safety Analysis of Sectored Compact Reactor for Lunar Space Power, Timothy M. Schriener, Mohamed S. El-Genk *(University of New Mexico)*

4.01 Improvements in Maintenance

Session Chair: Natalie Zaczek *(Exelon Dresden Station)*

Room: Wright *(Silver)*

1:00 pm
12201 Acoustic Emission and Guided Ultrasonic Waves for Detection and Continuous Monitoring of Cracks in Light Water Reactor Components, R.M. Meyer, J. Coble, P. Ramuhalli, B. Watson *(PNNL)*, S.E. Cumblidge *(US NRC)*, S.R. Doctor, L.J. Bond *(PNNL)*

1:20 pm
12393 Application and Development of Technologies for Engine Condition Based Maintenance on Emergency Diesel Generators, Kwang-Hee Choi, Sang-Guk Lee, You-Sung Choi, Byung-Oh Lee *(KHNP)*

1:40 pm
12196 Refurbishment Program of HANARO Control Computer Systems, Hyung Kyoo Kim, Yeong San Choe, Min Woo Lee, Seung Kyoo Doo, Hoan Sung Jung *(KAERI)*

2:00 pm
12001 Keeping Cool While Planning a Major Cooling System Modification for a Large Base-Loaded Power Plant, Jeff Mallory, Raubin Randels, Jeri Penrose, Daniel Ludovisi *(Sargent & Lundy)*

6.01 Reactor Physics Methods-I

Session Chair: Ivan Maldonado *(University of Tennessee)*

Room: Horner *(Silver)*

1:00 pm
12195 Upgrades to Monteburns, Version 3.0, Jack D. Galloway, Holly R. Trellue *(LANL)*

1:20 pm
12107 Environment-Based Pin-Power Reconstruction Method for Homogeneous Core Calculations, H. Leroyer, C. Brosselard, E. Girardi *(EDF R&D/SINETICS)*

1:40 pm
12090 Automatic Treatment of the Variance Estimation Bias in TRIPOLI-4 Criticality Calculations, Eric Dumonteil, Fausto Malvagi *(CEA)*

2:00 pm
12083 Feasibility of a Wavelet Expansion Method to Treat Energy in Cell Calculations, W.F.G. van Rooijen *(University of Fukui)*

7.01 Best Estimate Analysis Codes and Uncertainty Methodologies-II

Session Chair: Jeffrey Lane *(Bettis Atomic Power Laboratory)*

Room: Ogden *(Silver)*

1:00 pm
12104 Calculation of Natural Convection Test at Phénix using the NETFLOW++ Code, Hiroyasu Mochizuki *(University of Fukui)*, Norihiro Kikuchi *(University of Fukui)*, Simon Li *(INSTN)*

1:20 pm
12261 Best-Estimate Plus Uncertainty Thermal-Hydraulic Stability Analysis Of BWR Using TRACG Code, J. Vedovi, J. Yang, L. Klebanov, D.G. Vreeland, J.F. Zino *(GE Hitachi Nuclear Energy Americas)*

1:40 pm
12247 TRACE and TRAC-BF1 Benchmark against Leibstadt Plant Data during the Event Inadvertent Opening of Relief Valves, Abdelkrim Sekhri, Peter Baumann *(KernkraftwerkLeibstadt AG)*, Damar Wicaksono *(Swiss Federal Institute of Technology Zurich ETH)*, Rafael Miro, Teresa Barrachina, Gumersindo Verdu *(Universitat Politècnica de València)*

2:00 pm
12179 Simulation of 1% Hot Leg SBLOCA with TRACE5, Sergio Gallardo, Andrea Querol, Gumersindo Verdú *(Universitat Politecnica de Valencia)*

7.07 Thermal Hydraulics Measurement and Modeling Fundamentals-III

Session Chair: Richard Vilim *(ANL)*

Room: McCormick *(Silver)*

1:00 pm
12264 Experimental Study Of Heat Transfer in a 7-Element Bundle Cooled With Supercritical Freon-12, G. Richards *(University of Ontario Institute of Technology)*, A.S. Shelegov, P.L. Kirillov *(Institute of Physics and Power Engineering)*, I.L. Pioro, G. Harvel *(University of Ontario Institute of Technology)*

1:20 pm
12260 Heat Transfer and Pressure Drop of Supercritical Carbon Dioxide Flowing in Several Printed Circuit Heat Exchanger Channel Patterns, Matt Carlson *(University of Wisconsin - Madison)*, Alan Kruizenga, Mark Anderson, Michael Corradini *(Sandia National Laboratory)*

1:40 pm
12242 Gas and Liquid Measurements in Air-water Bubbly Flows, X. Zhou, B. Doup, X. Sun *(The Ohio State University)*

Tuesday, June 26, 2012 at 2:30 pm – 4:00 pm

1.04 Lessons Learned in Infrastructure Development, Deployment, Construction, and Licensing-II

Session Chair: Matthew C. Evans *(Westinghouse)*

Room: Field *(Silver)*

2:30 pm
12448 AP1000® Licensing and Deployment in the United States , Robert P. Jordan, Paul A. Russ, Paul P. Filiak, Linda L. Castiglione *(Westinghouse)*

2:50 pm
12395 Infrastructure Development Assistance Modeling for Nuclear Power Plant, Jong-ho Park, Kyo Hwang, Kang-min Park, Sung-woo Kim, Soo-min Lee *(Korea Hydro & Nuclear Power (KHNP))*

3:10 pm
12353 Towards a Framework for Nuclear Competence, Petre Ghitescu *(University Politehnica Bucharest)*

3:30 pm
12333 The AP1000® China Projects Move Forward to Construction Completion and Equipment Installation, Grenville Harrop *(Westinghouse)*

3.02 Liquid Sodium-Cooled Fast Reactors: Safety and Licensing-IV

Session Chair: Hidemasa Yamano *(JAEA)*

Room: Burnham *(Silver)*

2:30 pm
12285 An Overview of the Activities Carried out by the IAEA Technical Working Group on Fast Reactors, S. Monti, A. Toti *(IAEA)*

2:50 pm
12216 Validation of Nuclear Design Method by Measured Data Obtained in the Physics Test at a Small Fast Reactor, A. Nagata, Y. Tsuboi, Y. Moriki, M. Kawashima *(Toshiba Corporation)*

3:10 pm
12213 Behavior of an Heterogeneous Annular FBR core during an Unprotected Loss of Flow Accident: Analysis of the Primary Phase with SAS-SFR, S. Massara, D. Schmitt, A. Bretault, D. Lemasson, G. Darmet, D. Verwaerde *(EDF)*, D. Struwe, W. Pfrang, A. Ponomarev *(KIT)*

3:30 pm
12158 Safety Design Approach for External Events in Japan Sodium-Cooled Fast Reactor, Hidemasa Yamano, Shigenobu Kubo *(Japan Atomic Energy Agency)*, Akihiro Tani *(Mitsubishi FBR Systems, Inc.)*, Hiroyuki Nishino, Takaaki Sakai *(Japan Atomic Energy Agency)*

3:50 pm
12100 Development of Integrated Core Disruptive Accident Analysis Code for FBR - ASTERIA-FBR , Tomoko Ishizu, Hiroshi Endo, Isao Tatewaki, Toshihisa Yamamoto *(JNES)*, Noriyuki Shirakawa *(The Institute of Applied Energy (IAE)).*

3.07 Other Advanced Reactor Concepts-I

Session Chair: David Poston *(Los Alamos National Laboratory)*

Room: DuSable *(Silver)*

2:30 pm
12279 A Search for Minimum Volume of Breed and Burn Cores, Christian D. DiSanzo, Ehud Greenspan *(University of California, Berkeley)*

2:50 pm
12280 Design and Analysis of Megawatt-Class Heat-Pipe Reactor Concepts, David I. Poston, Richard Kapernick *(Los Alamos National Laboratory)*

3:10 pm
12255 Core Design of Long Life-Cycle Fast Reactors Operating Without Reactivity Margin, E.N. Aristova, D.F. Baydin, V.Ya. Gol'din, G.A. Pestryakova, M.I. Stoynov *(Keldysh Institute of Applied Mathematics RAS)*

3:30 pm
12145 Feasibility Study on the Thorium Fueled Boiling Water Breeder Reactor, Petrus, Naoyuki Takaki *(Tokai University)*

4.02 Potential Outage Impacts and Improvements

Session Chair: Ryan M. Meyer *(Pacific Northwest National Laboratory)*

Room: Wright *(Silver)*

2:30 pm
12222 How Individual Traces and Interactive Timelines Could Support Outage Execution – Toward an Outage Historian Concept, Samuel Parfouru, Nathalie de-Beler *(EDF R&D)*

2:50 pm
12122 On-Line Maintenance Methodology Development and Its Applications, Jaeho Kim, Moosung Jae *(Hanyang University)*

3:10 pm
12385 Alternative Cooling Resource for Removing the Residual Heat of Reactor, H.C. Park, J.H. Lee, C.Y. Jung, D.S. Lee, K.Y. Choi *(KHNP)*

3:30 pm
12221 Design and Field Test of Collaborative Tools in the Service of an Innovative Organization, Nathalie De Beler, S. Parfouru *(EDF R&D)*

5.09 Advances in Regulatory Issues

Session Chair: Cesare Frepoli *(Westinghouse)*

Room: Addams *(Silver)*

2:30 pm
12453 Design Change Management in Regulation of Nuclear Fleets, Richard Swinburn *(Rolls-Royce plc)*, Irina Borysova, John Waddington *(WNA CORDEL)*, Jerald G Head *(GE-Hitachi Nuclear Energy)*, Zemdegs Raidis *(Candu Energy)*

2:50 pm
12370 Renovated Korean Nuclear Safety and Security System : A Review and Suggestions to Successful Settlement, Whan-Sam Chung, Sung-Won Yun, Dae-Sung Lee *(KAERI)*, Dae-Yoo Go *(Kyung Hee University)*

3:10 pm
12257 Enhancement of NRC Station Blackout Requirements for Nuclear Power Plants, Matthew W. McConnell *(US NRC)*

6.01 Reactor Physics Methods-II

Session Chair: Ivan Maldonado *(University of Tennessee)*

Room: Horner *(Silver)*

2:30 pm
12417 Generation of Bondarenko F Factors with MCNP5 for use in Scale Transport Codes, S. Hart, G.I. Maldonado *(University of Tennessee)*

2:50 pm
12359 Application of Fully Ceramic Microencapsulated Fuels in Light Water Reactors, Cole Gentry, Nathan George, Ivan Maldonado *(University of Tennessee Knoxville)*, Andrew Godfrey, Kurt Terrani, Jess Gehin *(Oak Ridge National Laboratory)*

3:10 pm
12305 The New MCNP6 Depletion Capability, Michael L. Fensin, Michael R. James, John S. Hendricks, John T. Goorley *(LANL)*

3:30 pm
12210 Examination of Temperature Dependent Subgroup Formulations in Direct Whole Core Transport Calculation for Power Reactors, Yeon Sang Jung, Un Chul Lee, Han Gyu Joo *(Seoul National University)*

7.01 Best Estimate Analysis Codes and Uncertainty Methodologies-III

Session Chair: Jeffrey Lane *(Bettis Atomic Power Laboratory)*

Room: Ogden *(Silver)*

2:30 pm
12444 Analysis of Phenix Natural Convection Test with the TRACE Code, A. Chenu *(PSI, EPFL)*, K. Mikityuk *(PSI)*, R. Chawla *(PSI, EPFL)*

2:50 pm
12401 APR1400 LBLOCA Uncertainty Quantification using Monte Carlo Method and Comparison with Wilks' Formula, Moonkyu Hwang, Sung Won Bae, Bub Dong Chung *(KAERI)*

3:10 pm
12377 Thermal Hydraulic Limits Analysis Using Statistical Propagation of Parametric Uncertainties, Keng-yen Chiang, Lin-wen Hu, Benoit Forget *(Massachusetts Institute of Technology)*

3:30 pm
12351 Use of Scaled BWR Lower Plenum Boron Mixing Tests to Qualify the Boron Transport Model used in TRACG, M.M. Cook, M. Straka, Yen-Chang Chu, C.L. Heck, J.G.M. Andersen, R.H. Jacobs *(GEH)*

3:50 pm
12267 Quantitative Phenomena Identification and Ranking Table *(QPIRT)* for Bayesian Uncertainty Quantification, Joseph P. Yurko, Jacopo Buongiorno *(MIT)*

9.02 LWR Materials and Issues

Session Chairs: Travis W. Knight *(University of South Carolina)*, Céline Cabet *(CEA)*

Room: McCormick *(Silver)*

2:30 pm
12265 Oxidation of SiC Under Loss of Coolant Accident *(LOCA)* Conditions in LWRs, Youho Lee, Chao Yue, Ramsey P. Arnold, Thomas J. McKrell, Mujid S. Kazimi *(Massachusetts Institute of Technology)*

2:50 pm
12218 Controlling RPV Embrittlement through Wet Annealing In Support of Life Attainment and Life Extension Decisions, E.A. Krasikov *(National Research Centre)*

3:10 pm
12192 An Improved Model for Pellet-Clad Interaction for FRAPCON, Alexander Mieloszyk, Mujid S. Kazimi *(MIT)*

3:30 pm
12175 Severe Accident Modeling of a PWR Core with Different Cladding Materials, Steven C. Johnson *(Westinghouse Electric Company LLC)*, Robert E. Henry, Chan Y. Paik *(Fauske & Associates, LLC)*

3:50 pm
12074 Uranium Mononitride as a Potential Commercial LWR Fuel, Peng Xu, Jin Yan, Edward J. Lahoda, Sumit Ray *(Westinghouse Electric Company, LLC)*

Tuesday, June 26, 2012 at 4:15 pm – 6:15 pm

ICAPP '12 Plenary 2: Progress of New Reactors Design, Licensing and Deployment.

Session Chair: JoEllen Burns-Muntz *(Exelon Nuclear)*

Room: Regency B *(Gold)*

Lead experts will address the Progress made in design licensing, deployment, and start-up operation of several new Light Water Reactors in US, Europe and Asia. Speakers will share their respective experiences in implementation of new design features, licensing practices, construction accomplishments and challenges, and early stage of operation of the new power reactors around the world.

Speakers:

- Hernando A. Madroñero *(Senior VP, GE-Hitachi)*
- Kiyoshi Yamauchi *(President & CEO, MHI)*
- Glenn Tracy *(Director of the Office of New Reactors, US NRC)*
- Georges Servière *(Senior Advisor to CEO, EDF)*
- Charles R. (Chuck) Pierce *(Regulatory Affairs Director, Southern Nuclear Company)*

Embedded Topical Meeting: ICAPP '12 (Wednesday)

Wednesday • June 27, 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. – 10:00 a.m. — **DD&R 2012: Technical Sessions**
(see page 37)

8:00 a.m. – 10:00 a.m. — **ICAPP 2012: Technical Sessions**
- 1.05 Supercritical Water Reactors–I
- 2.01 HTGR Thermal Hydraulics
- 3.01 Liquid Sodium-Cooled Fast Reactors: Modeling and Design–I
- 3.05 Advanced Small Modular Reactors
- 5.06 Severe Accidents: Modeling–I
- 6.03 Reactor Physics Data and Validation–I
- 7.05 Advances in Two-Phase Flow and Heat Transfer Fundamentals–I
- 8.04 Nuclear Waste Management

8:30 a.m. – 9:50 a.m. — **NFSM 2012: Technical Sessions**
(see page 41)

8:00 a.m. – 11:30 a.m. — **2012 ANS Annual Meeting: Technical Sessions**
(see page 27)

10:00 a.m. – 12:00 p.m. — **ICAPP 2012: Technical Sessions**
- 1.05 Supercritical Water Reactors–II
- 2.02 HTGR Design, Analysis and Component Testing
- 3.01 Liquid Sodium-Cooled Fast Reactors: Modeling and Design–IV
- 3.04 Developing National Standards for Advanced Reactors (Panel)
- 5.06 Severe Accidents: Modeling–II
- 6.03 Reactor Physics Data and Validation–II
- 7.05 Advances in Two-Phase Flow and Heat Transfer Fundamentals–II
- 7.06 Computational Fluid Dynamics (CFD) and Interface Tracking Methods (ITM) Applications to Water, Liquid Metal and Gas Reactors
- 9.04 Fast Reactor Materials and Issues

10:10 a.m. – 11:30 a.m. — **NFSM 2012: Technical Sessions**
(see page 41)

9:45 a.m. – 11:45 a.m. — **DD&R 2012: Technical Sessions**
(see page 38)

1:00 p.m. – 2:20 p.m. — **NFSM 2012: Technical Sessions**
(see page 41)

1:00 p.m. – 2:30 p.m. — **ICAPP 2012: Technical Sessions**
- 1.07 Component Design, Manufacture and In-Service Issues
- 3.01 Liquid Sodium-Cooled Fast Reactors: Modeling and Design–III
- 4.03 Human InterfaceTechnologies
- 7.02 Integral and Separate Thermal Hydraulics Testing and Analysis–I
- 7.03 System Simulation Models and Codes–I
- 9.05 Materials Testing and Monitoring

1:00 p.m. – 3:00 p.m. — **DD&R 2012: Technical Sessions**
(see page 38)

1:00 p.m. – 4:00 p.m. — **2012 ANS Annual Meeting: Technical Sessions**
(see page 30)

2:30 p.m. – 4:00 p.m. — **ICAPP 2012: Technical Sessions**
- 1.06 I&C and HMI
- 3.01 Liquid Sodium-Cooled Fast Reactors: Modeling and Design–II
- 3.06 Liquid Lead- and Lead-Bismuth-Cooled Fast Reactors
- 4.04 Performance
- 5.10 Advances in Uncertainty Methodology and Statistics
- 7.02 Integral and Separate Thermal Hydraulics Testing Analysis–II
- 7.03 System Simulation Models and Codes–II
- 9.03 Structural Analysis and Design

2:40 p.m. – 4:00 p.m. — **NFSM 2012: Technical Sessions**
(see page 41)

3:15 p.m. – 4:45 p.m. — **DD&R 2012: Technical Sessions**
(see page 39)

4:15 p.m. – 6:15 p.m. — **ICAPP 2012: Plenary 3: Global Perspectives– Why Nuclear Makes Sense?**

4:30 p.m. – 6:30 p.m. — **Public Information Workshop**

6:00 p.m. – 8:00 p.m. — **NFSM 2012: Poster Session**
(see page 42)

6:00 p.m. – 11:00 p.m. — **Evening Event:**
Dinner Cruise on the Spirit of Chicago

Wednesday, June 27, 2012 at 8:00 am – 10:00 am

1.05 Supercritical Water Reactors-I

Session Chair: Sama Bilbao y Leon *(Virginia Commonwealth University)*

Room: Field *(Silver)*

8:00 am
12268 Progress on the Development of New Correlations under the Framework of the IAEA Coordinated Research Programme on Heat Transfer in SCWR's, J.D. Jackson *(University of Manchester)*, M. Anderson *(University of Wisconsin – Madison)*, X. Cheng *(Shanghai Jiao Tong University)*, H. Zahlan *(The University of Ottawa)*, Y.Y. Bae *(KAERI)*, K. Yamada *(IAEA)*

8:20 am
12182 Summary on the Depressurization from Supercritical Pressure Conditions, Mark Anderson *(University of Wisconsin Madison)*, Chen Yuzhou *(China Institute of Atomic Energy)*, Luca Ammirabile *(JRC)*, David Novog *(McMaster University)*, Katsumi Yamada *(IAEA)*

8:40 am
12165 IAEA Coordinated Research Project on Thermal-Hydraulics of Supercritical Water-Cooled Reactors *(SCWRs)*, K. Yamada, S. Nusret Aksan *(IAEA)*

9:00 am
12160 International Contributions to IAEA-NEA Heat Transfer Databases for Supercritical Fluids, L.K.H. Leung *(Atomic Energy of Canada Limited)*, K. Yamada *(International Atomic Energy Agency)*

9:20 am
12084 Effect of Property Variations on the Mixing of Turbulent Supercritical Water Streams in a T-junction, Lin Bu, Jiyun Zhao *(Nanyang Technological University)*

2.01 HTGR Thermal Hydraulics

Session Chair: Eung Soo Kim *(Seoul National University)*

Room: Wright *(Silver)*

8:00 am
12363 Shape Optimization of a Printed-Circuit Heat Exchanger to Enhance Thermal-Hydraulic Performance, Sang-Moon Lee, Kwang-Yong Kim *(Inha University)*

8:20 am
12215 Development of Flow Network Analysis Code for Block Type VHTR Core by Linear Theory Method, Jeong Hun Lee, Su Jong Yoon *(Seoul National University)*, Jong Woon Park *(Dongguk University)*, Goon Cherl Park *(Seoul National University)*

8:40 am
12124 Effects of Turbulence Model on Convective Heat Transfer of Coolant Flow in a Prismatic Very High Temperature Reactor Core, Sung Nam Lee, Nam-il Tak, Min-Hwan Kim, Jae Man Noh *(KAERI)*

9:00 am
12061 An Effective Thermal-Hydraulics Methodology of a Prismatic Core HTGR and VHTR, Boyce W. Travis, Mohamed S. El-Genk *(University of New Mexico)*

3.01 Liquid Sodium-Cooled Fast Reactors: Modeling and Design-I

Session Chairs: Christian Latge *(CEA)*, Christian DiSanzo *(University of California at Berkeley)*

Room: Burnham *(Silver)*

8:00 am
12391 Design Study and Comparative Evaluation of JSFR Failed Fuel Detection System, Kosuke Aizawa, Yoshitaka Chikazawa, Nobuyuki Ishikawa *(Japan Atomic Energy Agency)*, Shigeyuki Kubo *(Japan Atomic Power Company)*, Hitoshi Okazaki, Makoto Mito *(Mitsubishi FBR Systems, Inc.)*, Katsuhiro Tozawa *(Fuji Electric Co., Ltd.)*, Masateru Hayashi *(Mitsubishi Electric Corporation)*

8:20 am
12390 Evaluation and Improvement on External-hazard Proof of JSFR Fuel Handling System, Atsushi Katoh, Yoshitaka Chikazawa *(JAEA)*, Masayuki Uzawa *(MFBR)*

8:40 am
12383 Design Study on Safety Protection System of JSFR, Nobuyuki Ishikawa, Yoshitaka Chikazawa, Kaoru Fujita *(Japan Atomic Energy Agency (JAEA))*, Yumi Yamada, Hitoshi Okazaki *(Mitsubishi FBR Systems (MFBR))*, Shinichi Suzuki *(Japan Atomic Power Company (JAPC))*

9:00 am
12129 Integrity Assessment of the Ferritic / Austenitic Dissimilar Weld Joint between Intermediate Heat Exchanger with Steam Generator in Fast Reactor, T. Jayakumar, K. Laha, K. S. Chandravathi, P. Parameswaran, Sunil Goyal, J. Ganesh Kumar, M. D. Mathew *(Indira Gandhi Centre for Atomic Research)*

9:20 am
12344 ADRIANA Project: Identification of Research Infrastructures for the SFR, within the Frame of European Industrial Initiative for Sustainable Nuclear Fission, Christian Latgé, Olivier Gastaldi *(CEA)*, Ladislav Vala *(CV-REZ)*, Gunter Gerbeth *(FZD)*, Christoph Homann *(KIT)*, Philippe Benoit *(SCK-Mol)*, Joelle Papin, Nathalie Girault *(IRSN)*, Ferry Roelofs *(NRG)*, Imants Bucenieks *(IPUL)*, Elena Paffumi *(JRC Petten)*, Andrea Ciampichetti *(ENEA)*

3.05 Advanced Small Modular Reactors

Session Chair: Daniel Ingersoll *(Nuscale Power)*

Room: DuSable *(Silver)*

8:00 am
12248 Westinghouse Small Modular Reactor Nuclear Steam Supply System Design, Matthew J Memmott, Alexander W. Harkness, Jurie Van Wyk *(Westinghouse)*

8:20 am
12253 Westinghouse Small Modular Reactor Balance of Plant and Supporting Systems Design, Matthew J Memmott, Cory Stansbury, Creed Taylor *(Westinghouse)*

8:40 am
12250 Overview of the Westinghouse Small Modular Reactor Building Layout, Johan M. Cronje, Jurie Van Wyk, Matthew J Memmott *(Westinghouse)*

9:00 am
12157 Westinghouse Small Modular Reactor Passive Safety System Response to Postulated Events, Matthew C. Smith, Richard F. Wright *(Westinghouse)*

9:20 am
12094 AFR-100 Safety Analyses, Tyler Sumner, Anton Moisseytsev, T.Y.C. Wei *(Argonne National Laboratory)*

5.06 Severe Accidents: Modeling-I

Session Chair: T. (Nithy) Nitheanandan *(AECL)*

Room: Addams *(Silver)*

8:00 am
12325 The EU-ROSATOM ERCOSAM-SAMARA Projects on Containment Thermal-Hydraulics of Current and Future LWRs for Severe Accident Management, D. Paladino, S. Guentay, M. Andreani *(Paul Scherrer Institut)*, I. Tkatschenkos, J. Brister, F. Dabbene *(CEA)*, S. Kelm, H.-J. Allelein *(Forschungszentrum Juelich)*, D.C. Visser *(Nuclear Research and Consultancy Group,)*, S. Benz, T. Jordan *(Karlsruher Institut für Technologie)*, Z. Liang *(Atomic Energy of Canada Limited)*, J. Malet, A. Bentaib *(Institut de Radioprotection et de Sûreté Nucléaire,)*, A. Kiselev, T.Yudina, A. Filippov *(Nuclear Safety Institute of the Russian Academy of Sciences)*, A. Khizbullin, M., Kamnev *(JSC "Afrikantov OKB Mechanical Engineering")*, A. Zaytsev, A. Loukianov *(SSC RF-IPPE).*

8:20 am
12281 CFD Modeling of Debris Melting Phenomena during Late Phase CANDU 6 Severe Accident, Stefan Nicolici, Daniel Dupleac, Ilie Prisecaru *(Politehnica University Bucharest)*

8:40 am
12012 BWR Ex-Vessel Steam Explosion Analysis with MC3D Code, Matjaz Leskovar *(Jozef Stefan Institute)*

9:00 am
12052 Evaluation of In-Vessel Corium Retention through External Reactor Vessel Cooling for Integral Type Reactor , Rae-Joon Park, Jae Ryong Lee, Sang-Baik Kim, Youngho Jin, Hwan Yeol Kim *(KAERI)*

6.03 Reactor Physics Data and Validation-I

Session Chair: Anne Nicolas *(CEA)*

Room: Horner *(Silver)*

8:00 am
12128 Application of the Modified Neutron Source Multiplication Method To the Prototype FBR Monju, Guillaume Truchet *(Institut National des Sciences et Techniques Nucléaires - CEA)*, W.F.G. van Rooijen, Y. Shimazu *(Research Institute of Nuclear Engineering, University of Fukui)*

8:20 am
12087 100%MOX BWR Experimental Program Design Using Multi-parameter Representativity, Patrick Blaise, Philippe Fougeras, Stephane Cathalau *(CEA)*

8:40 am
12086 Interpretation of 3D Void Measurements with TRIPOLI4.6/JEFF3.1.1 Monte Carlo Code, Patrick Blaise, Alessandra Colomba *(CEA)*

9:00 am
12077 Burnup Estimation of Fuel Sourcing Radioactive Material Based on Monitored Cs and Pu Isotopic Activity Ratios in Fukushima N. P. S. Accident, Toru Yamamoto, M. Suzuki, Y. Ando *(JNES)*

9:20 am
12027 Main Results of Phenix Final Core Physics Tests, V. Pascal, G. Prulhière, M. Vanier, B. Fontaine *(CEA)*

7.05 Advances in Two-Phase Flow and Heat Transfer Fundamentals-I

Session Chair: Xiaodong Sun *(The Ohio State University)*

Room: Ogden *(Silver)*

8:00 am
12131 A Scaling Study of the Natural Circulation Flow of the Ex-Vessel Core Catcher Cooling System of EU-APR1400 for Designing a Scale-Down Test Facility for Design Verification, B.W. Rhee, K.S. Ha, R.J. Park, J.H. Song (KAERI), S.T. Revankar *(POSTECH)*

8:20 am
12036 A Three-Fluid Model for the Simulation of Counter-Current Stratified Flows in the Hot Leg of a Pressurized Water Reactor, A. Ben Hadj Ali, E. Laurien *(University of Stuttgart, Institute for Nuclear Technology and Energy Systems (IKE))*

8:40 am
12033 Critical Heat Flux in Natural Convection Cooled TRIGA Reactors with Hexagonal Bundle, Jun Yang, Michael Avery, Matthew De Angelis, Mark Anderson, Michael Corradini *(University of Wisconsin Madison)*, Earl E. Feldman, Floyd E. Dunn, James E. Matos *(Argonne National Laboratory)*

9:00 am
12004 Supercritical Carbon Dioxide Tubular Flow under Temporally Varying Thermal Boundary Condition, Hyung M. Son, B. Halimi *(Seoul National University)*, Kune Y. Suh *(Seoul National University, PHILOSOPHIA)*

8.04 Nuclear Waste Management

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

Room: McCormick *(Silver)*

8:00 am
12202 Thermal Analysis for Ion-Exchange Column System, Si Y. Lee, William D. King *(Savannah River National Laboratory)*

8:20 am
12343 Role of Alkyl Alcohol on Viscosity of Silica-Based Chemical Gels for Decontamination of Highly Radioactive Nuclear Facilities, Byung-Seon Choi, Suk Bon Yoon, Chong-Hun Jung, Kune-Woo Lee, Jei-Kwon Moon *(KAERI)*

8:40 am
12313 Modeling Analysis for Grout Hopper Waste Tank, Si Y. Lee *(Savannah River National Laboratory)*, Jason M. Ryans *(Mercer University)*

9:00 am
12230 Radioactive Waste Management Treatments: A Selection for the Italian Scenario, Giorgio Locatelli *(University of Lincoln)*, Mauro Mancini, Matteo Sardini *(Politecnico di Milano)*

Wednesday, June 27, 2012 at 10:00 am – 12:00 pm

1.05 Supercritical Water Reactors-II

Session Chair: Sama Bilbao y Leon *(Virginia Commonwealth University)*

Room: Field ***(Silver)***

10:00 am
12442 Subchannel Analysis on CGNPC SCWR, Bo Zhang *(Xi'an Jiaotong University)*, Jue Yang *(China Nuclear Power Technology Research Institute(CNPRI), China Guandong Nuclear Power Corporation (CGNPC))*, Chao Chen, Jianqiang Shan, Junli Gou *(Xi'an Jiaotong University)*

10:20 am
12429 On the Correlation of Buoyancy-influenced Turbulent Convective Heat Transfer to Fluids at Supercritical Pressure, J.D. Jackson *(University of Manchester)*, P.X. Jiang, B. Liu *(Tsinghua University)*

10:40 am
12425 Heat Transfer Deterioration in Tubes Caused by Bulk Flow Acceleration due to Thermal and Frictional Influences, J.D. Jackson *(University of Manchester)*

11:00 am
12296 On the Multidimensional Modeling of Fluid Flow and Heat Transfer in SCWRs, Tara Gallaway, Steven P. Antal, Michael Z. Podowski *(RPI)*

11:20 am
12295 Numerical Simulation of Supercritical Heat Transfer under Severe Axial Density Gradient in a Narrow Vertical Tube, Y.Y. Bae, S.S. Hong, Y.W. Kim *(KAERI)*

2.02 HTGR Design, Analysis and Component Testing

Session Chair: Yassin Hassan *(Texas A & M University)*

Room: Wright ***(Silver)***

10:00 am
12415 Nuclear Design of Small-sized High Temperature Gas-cooled Reactor for Developing Countries, Minoru Goto, Yasuyoshi Seki, Yoshitomo Inaba, Hirofumi Ohashi, Hiroyuki Sato, Yuji Fukaya, Yukio Tachibana *(JAEA)*

10:20 am
12379 Effective Thermal Conductivity of Binary Mixed Materials With and Without Heat Generation—An Empirical Approach, Rabie A. Abu Saleem, Rizwan-uddin *(University of Illinois at Urbana Champaign)*

10:40 am
12352 Coupled Field-Structural Analysis of HGTR Fuel Brick Using ABAQUS, Subhasish Mohanty, Rajeev Jain, Saurin Majumdar, Timothy J.Tautges *(Argonne National Laboratory)*, Srinivasan Makuteswara *(US NRC)*

11:00 am
12119 The Effects of Temperatures on the Pebble Flow in a Pebble Bed High Temperature Reactor, R. Sonat Sen, Joshua J. Cogliati, Hans D. Gougar *(INL)*

11:20 am
12111 Daily Thermal Predictions of the AGR-1 Experiment with Gas Gaps Varying with Time, Grant Hawkes, James Sterbentz, John Maki, Binh Pham *(INL)*

3.01 Liquid Sodium-Cooled Fast Reactors: Modeling and Design-IV

Session Chairs: George Flanagan *(ORNL)*, Manuel SAEZ *(CEA)*

Room: Burnham ***(Silver)***

10:00 am
12173 Pre-conceptual Design Study of ASTRID Core, Frédéric Varaine, Philippe Marsault, Marie-Sophie Chenaud, Bruno Bernardin, Alain Conti, Pierre Sciora, Christophe Venard, Bruno Fontaine, Nicolas Devictor, Laurent Martin *(CEA)*, Anne-Claire Scholer, Denis Verrier *(AREVA)*

10:20 am
12163 Innovative Technologies on Fuel Assembly Cleaning for Sodium Fast Reactors: First Considerations on Cleaning Process, N. Simon, H. Lorcet, F. Beauchamp, E. Guigues *(CEA Cadarache)*, P. Lovera, J-L. Fleche *(CEA Saclay)*, M. Lacroix *(CEA Cadarache)*, O. Carra *(AREVA)*, F. Dechelette *(CEA Cadarache)*, G. Prele *(EDF/SEPTEN)*, G. Rodriguez *(CEA Cadarache)*

10:40 am
12098 Performance of Supercritical CO2 Brayton Cycle with Additive Gases at Varying Critical Points for SFR Application, Woo Seok Jeong *(KAIST)*, Yong Hoon Jeong *(KAIST and KUSTAR)*

11:00 am
12070 The Pre-conceptual Design of the Nuclear Island of ASTRID, Manuel Saez *(CEA)*, Sylvain Menou, Benoit Uzu *(AREVA)*

3.04 Developing National Standards for Advanced Reactors (Panel)

Session Chair: Donald J. Spellman *(Oak Ridge National Laboratory)*

Room: Soldier Field ***(Bronze)***

One of the 2011 national disasters was the result of simultaneous design basis accidents at the Fukushima Nuclear Facility in Japan due to concurrent earthquake and tsunami much larger than anticipated for the site. International reaction was immediate to evaluate other nuclear plants for continued operational confidence in safety of the plant and the public. After greater than a year of lessons learned coming from this incident, many actions have been taken by the various international regulatory and national standards development organizations *(SDOs)*. This panel will discuss some of those responses that have been taken by the United States SDOs directly associated with nuclear facility siting, design, construction, operations, emergency planning, severe accident response, radioactive protection, and waste management.

Panelists:
- Dr. Donald J. Spellman *(ORNL)*
- Dr. Bryan Erler *(ASME)*
- Dr. Prasad Kadambi *(ANSI)*
- Dr. Ambler Thompson *(NIST)*

5.06 Severe Accidents: Modeling-II

Session Chair: T. (Nithy) Nitheanandan *(AECL)*

Room: Addams *(Silver)*

10:00 am
12447 Diffusive Deposition of Aerosols in Phebus Containment During FPT-2 Test, A. Kontautas, E. Urbonavicius *(Lithuanian Energy Institute)*

10:20 am
12350 AP1000® Severe Accident Features and Post-Fukushima Considerations, James H. Scobel, T.L. Schulz, M.G. Williams *(Westinghouse Electric Co. LLC)*

10:40 am
12348 Modeling of Melt Retention in EU-APR1400 Ex-Vessel Core Catcher, V.S. Granovsky, A.A. Sulatsky, V.B. Khabensky, M.B. Sulatskaya *(Alexandrov Research Institute of Technology (NITI))*, V.V. Gusarov, V.I. Almyashev, A.A. Komlev *(Saint Petersburg State Technology University)*, S. Bechta *(KTH)*, Y.S. Kim *(KHNP)*, R.J. Park, H.Y. Kim, J.H. Song *(KAERI)*

6.03 Reactor Physics Data and Validation-II

Session Chair: Anne Nicolas *(CEA)*

Room: Horner *(Silver)*

10:00 am
12331 Detection Rate Evaluation of Ex-Core Detectors in the Subcritical OPR-1000 Reactor, Byung-Hee Won, Chang-Ho Shin, Song Hyun Kim, Hong-Chul Kim *(Hanyang University)*, Jung-Jin Park *(Doosan Heavy Industries Co)*, Jong Kyung Kim *(Hanyang University)*

10:20 am
12289 Development of 3D Full-core ERANOS-2.2/MCNPX-2.7.0 Models and Neutronic Analysis of the BFS-2 Zero-power Facility, Gaetan Girardin, Alonso Mercedes *(EPFL)*, Konstantin Mikityuk *(PSI)*

10:40 am
12176 Calculation of the PHENIX end-of-life Test "Control Rod Withdrawal" with the ERANOS Code, Vincenzo Tiberi *(IRSN)*

11:00 am
12136 Application of the JENDL-4.0 Nuclear Data Set for the Uncertainty Analysis of the Prototype FBR Monju, P. Tamagno *(Institut National des Sciences et Techniques nucléaires)*, W.R.G. van Rooijen, T. Takeda *(Research Institute of Nuclear Engineering, University of Fukui)*, M. Konomura *(Japan Atomic Energy Agency)*

7.05 Advances in Two-Phase Flow and Heat Transfer Fundamentals-II

Session Chair: Xiaodong Sun *(The Ohio State University)*

Room: Ogden *(Silver)*

10:00 am
12317 Study on Critical Heat Flux Enhancement in Flow Boiling of SiC Nanofluids under Low Pressure and Low Flow Conditions, Seung Won Lee, Sung Dae Park, Sarah Kang, Seong Man Kim, Han Seo *(Ulsan National Institute of Science and Technology (UNIST))*, Dong Won Lee *(Korea Atomic Energy Research Institute (KAERI))*, In Cheol Bang *(Ulsan National Institute of Science and Technology (UNIST))*

10:20 am
12237 On the Prediction of Horizontal Bubbly Flows Using the Interfacial Area Transport Equation, Justin D. Talley, Seungjin Kim *(The Pennsylvania State University)*

10:40 am
12199 Effect of Rolling Motion on Critical Heat Flux for Subcooled Flow Boling in Vertical Tube, Jin-S. Hwang, Il-U Park, Min-Y. Park, Goon-C. Park *(Seoul National University)*

11:00 am
12166 Velocity and Void Distribution in a Counter-current Two-phase Flow, S. Gabriel, T. Schulenberg *(KIT)*, E. Laurien *(University of Stuttgart)*

7.06 Computational Fluid Dynamics (CFD) and Interface Tracking Methods (ITM) Applications to Water, Liquid Metal and Gas Reactors

Session Chair: Kazuyuki Takase *(JAEA)*

Room: DuSable *(Silver)*

10:00 am
12174 Application of the CFD CONV Code to the Analysis of LIVE L-6 Test, A. Palagin, F. Kretzschmar, A. Miassoedov *(Karlsruhe Institute of Technology)*, V. Chudanov *(IBRAE (Nuclear Safety Institute))*

10:20 am
12071 Development of One- dimensional Computational Fluid Dynamics Code "GFLOW" For Gorund Water Flow and Containment Transport Analysis, P.S.Rahatgaonkar, D. Datta, P.K. Malhotra, S.G. Ghadge *(Nuclear Power Corporation of India Limited)*

10:40 am
12437 CFD Study of Natural Convection Mixing in a Steam Generator Mock-Up: Comparison between Full Geometry and Porous Media Approaches, A. Dehbi, H. Badreddine *(Paul Scherrer Institut)*

11:00 am
12349 Numerical Study on Interaction of Local Air Cooler with Stratified Hydrogen Cloud in a Large Vessel, Z. Liang *(Atomic Energy of Canada Limited)*, M. Andreani *(Paul Scherrer Institut)*

11:20 am
12184 Stability and Error Analysis of Nodal Expansion Method for the Convection-Diffusion Equation, Zhihong Deng *(Tsinghua University)*, Rizwan-uddin *(University of Illinois at Urbana-Champaign)*, Fu Li, Yuliang Sun *(Tsinghua University)*

9.04 Fast Reactor Materials and Issues

Session Chairs: T. Jayakumar *(Indira Gandhi Centre for Atomic Research)*, Kinkar Laha *(Indira Gandhi Centre for Atomic Research)*

Room: McCormick *(Silver)*
10:00 am
12272 Reliability of Thickness of Oxide Layer of Stainless Steels with Chromium Using Cellular Automaton Model, Kuan-Che Lan, Yitung Chen *(University of Nevada, Las Vegas)*, Ge-Ping Yu *(National Tsing Hua University)*, Tzu-Chen Hung *(National Taipei University of Technology)*

10:20 am
12314 Assessment of a Mechanistic Model in U-Pu-Zr Metallic-alloy Fuel Fission-gas Behavior Simulations, Di Yun, Jeffrey Rest, Abdellatif M. Yacout *(Argonne National Laboratory)*

10:40 am
12151 Microstructure Analysis for Chemical Interaction between Cesium and SUS 316 Steel in Fast Breeder Reactor Application, Koei Sasaki, Ken-ich Fukumoto, Tomohiro Oshima, Takanori Tanigaki, Uno Masayoshi *(Fukui University)*

11:00 am
12053 Selection of Materials for Sodium Fast Reactor Steam Generators, S. Dubiez-le Goff, S. Garnier, O. Gelineau *(AREVA)*, F. Dalle *(CEA)*, M. Blat-Yrieix, J.M. Augem *(EDF)*

Wednesday, June 27, 2012 at 1:00 pm – 2:30 pm

1.07 Component Design, Manufacture and In-Service Issues

Session Chair: John Sulley *(Rolls Royce)*

Room: Field *(Silver)*
1:00 pm
12389 The Application of Plant Reliability Data Information System *(PRINS) to CANDU Reactor)*, Seok-Won Hwang, Yeong-Hwa Lim, Hyun-Chul Park *(Korea Hydro & Nuclear Power Co., Ltd)*

1:20 pm
12270 Assessment of Different Fuel Design Options with SiC Cladding for Light Water Reactors, Sheng Xu, Mujid S. Kazimi *(Massachusetts Institute of Technology)*

1:40 pm
12024 Application of Systems Engineering Techniques to Component Design — Capturing Functionality and Linking Part 'Critical to Quality' Features to Requirements, Chetan M. Patel, James S. Moorby, John L. Sulley *(Rolls-Royce UK)*

3.01 Liquid Sodium-Cooled Fast Reactors: Modeling and Design-III

Session Chair: Sandra Poumérouly *(EDF)*

Room: Burnham *(Silver)*
1:00 pm
12300 Innovative Power Conversion System for the French SFR Prototype, ASTRID, L. Cachon, Ch. Biscarrat, F. Morin, D. Haubensack, E. Rigal, I. Moro, F. Baque, S. Madeleine, G. Rodriguez, G. Laffont *(CEA)*

1:20 pm
12214 Optimization of a Heterogeneous Fast Breeder Reactor Core with Improved Behavior during Unprotected Transients, S. Poumérouly, D. Schmitt, S. Massara, B. Maliverney *(EDF)*

1:40 pm
12205 Use of Freeze-Casting in Advanced Burner Reactor Fuel Design, A.L. Lang, Clarissa A. Yablinsky, T.R. Allen *(University of Wisconsin Madison)*, Joan Burger, Philipp M. Hunger, Ulrike G.K. Wegst *(Dartmouth College)*

4.03 Human Interface Technologies

Session Chairs: Adrian Mendez Torres *(Savannah River National Laboratory)*, Kirby Woods *(InnoTech Engineering Solutions)*

Room: Wright *(Silver)*
1:00 pm
12304 A Preliminary User-friendly, Digital Console for the Control Room Parameters Supervision in Old-generation Nuclear Power Plants, Fabrizio Memmi, Luca Falconi, Mauro Cappelli, Mario Palomba, Emilio Santoro, Rocco Bove, Massimo Sepielli *(UTFISST, ENEA)*

1:20 pm
12117 Innovative Applications of Technology for Nuclear Power Plant Productivity Improvements, Joseph A. Naser *(Electric Power Research Institute)*

1:40 pm
12197 Fatigue Monitoring Desktop Guide, Kirby Woods *(InnoTech Engineering Solutions, LLC)*, Kenneth Thomas *(Nebraska Public Power District)*

7.02 Integral and Separate Thermal Hydraulics Testing and Analysis-I

Session Chair: Genevieve Geffraye *(CEA)*

Room: Ogden *(Silver)*
1:00 pm
12143 Analysis of the KROTOS KFC Test by Coupling X-Ray Image Analysis and MC3D Calculations, Claude Brayer, Antoine Charton, Dmitry Grishchenko, Pascal Fouquart, Yves Bullado, Frédéric Compagnon, Patricia Correggio, Nathalie Cassiaut-Louis, Pascal Piluso *(CEA)*

1:20 pm
12130 Contribution to Modeling of the Reflooding of a Severely Damaged Reactor Core Using PRELUDE Experimental Results, A. Bachrata, F. Fichot, G. Repetto *(IRSN)*, M. Quintard *(Université de Toulouse, CNRS)*, J. Fleurot *(IRSN)*

1:40 pm
12060 The MAX Facility for CFD Code Validation, S. Lomperski, E. Merzari, A. Obabko, W.D. Pointer, P. Fischer *(Argonne National Laboratory)*

2:00 am
12380 Implementation of Non-Condensable Gases Condensation Suppression Model into the WCOBRA/TRAC-TF2 LOCA Safety Evaluation Code, Jun Liao, Katsuhiro Ohkawa, Cesare Frepoli *(Westinghouse Electric Company)*

7.03 System Simulation Models and Codes-I

Session Chair: Matthew Memmott *(Westinghouse)*

Room: Horner *(Silver)*
1:00 pm
12204 Study on the Well-posednes, Convergence and the Stability of the Semi-implicit Upwind Numerical Solver for the Multi-fluid Model, Sang Yong Lee, Chan Eok Park *(KEPCO-E&C)*, Takashi Hibiki, Mamoru Ishii, Victor H. Ransom *(Purdue University)*

1:20 pm
12127 Improvement of Three-Field Based Safety Analysis Code, SPACE, through Verification & Validation, Jin-Hwa Yang, Ji-Hun Kim, Goon-Cherl Park *(Seoul National University)*

1:40 pm
12099 Coupled Simulation of the Reactor Core Using CUPID/MASTER, Jae Ryong Lee, Hyoung Kyu Cho, Han Young Yoon *(KAERI)*, Jae Jun Jeong *(Pusan National University)*

2:00 pm
12008 Evaluation of Anticipatory Signal to Steam Generator Pressure Control Program for 700MWe Indian Pressurized Heavy Water Reactor , Santanu Pahari, S. Hajela, H.P. Rammohan, P.K. Malhotra, S.G. Ghadge *(Nuclear Power Corporation of India Ltd.)*

9.05 Materials Testing and Monitoring

Session Chairs: Fanny Balbaud *(CEA)*, Céline Cabet *(CEA)*

Room: McCormick *(Silver)*
1:00 pm
12017 Design and Development of a High-Temperature Sodium Compatibility Materials Testing Facility, M.G. Hvasta, B.K. Nollet, M.H. Anderson *(University of Wisconsin-Madison)*

1:20 pm
12015 The Fast-spectrum Transmutation Experimental Facility FASTEF: Main Design Achievements *(Part 2 : Reactor Building Design & Plant Layout)* within the FP7-CDT Project of the European Commission, Didier De Bruyn, Jeroen Engelen *(SCK•CEN)*, Alfredo Orden, Manuel Perezagua Aguado *(EA)*

1:40 pm
12096 Flow Accelerated Erosion-Corrosion *(FAC)* Considerations for Secondary Side Piping in the AP1000® Nuclear Power Plant Design, John F. Vanderhoff, Gutti V. Rao *(Westinghouse Electric Co.)*, Arthur Stein *(Shaw Power Nuclear)*

2:00 pm
12150 German Experiences in Local Fatigue Monitoring, Elodie Abib, Steffen Bergholz, Jürgen Rudolph *(AREVA NP GmbH)*

Wednesday, June 27, 2012 at 2:30 pm – 4:00 pm

1.06 I&C and HMI

Session Chair: John Sulley *(Rolls Royce)*

Room: Field *(Silver)*
2:30 pm
12463 Human Factor Engineering Based Design and Modernization of Control Rooms with New I&C Systems, Javier Larraz, Luís Rejas, Fernando Ortega *(Tecnatom s.a.)*

2:50 pm
12455 Mitsubishi Experience on Digital I&C and Modernization, Hiroshi Shirasawa, Richard P. Samples *(Mitsubishi Nuclear Energy Systems Inc.)*

3:10 pm
12346 Digital I&C System Upgrade Integration Technique, Hui-Wen Huang *(INER)*, Chunkuan Shih *(National Tsing Hua University)*, Tsu-Mu Kao, Mao-Sheng Tseng *(INER)*

3:30 pm
12312 Cyber Security Best Practices for the Nuclear Industry, Irv Badr *(IBM Corporation)*

3:50 pm
12398 Reliability Enhancement of APR+ Diverse Protection System Regarding Common Cause Failures, Yang Gyun Oh, Yong Mok Kim, Hyeong Soon Yim *(KEPCO E&C)*, Sang Jeong Lee *(Chungnam National University)*

3.01 Liquid Sodium-Cooled Fast Reactors: Modeling and Design-II

Session Chair: Chris Grandy *(ANL)*

Room: Burnham *(Silver)*
2:30 pm
12387 Conceptual Design Study of JSFR Reactor Building, Tomohiko Yamamoto, Atsushi Katoh, Yoshitaka Chikazawa *(Japan Atomic Energy Agency (JAEA))*, Takeaki Ohya, Mikinori Iwasaki, Hiroyuki Hara, You Akiyama *(Mitsubishi FBR Systems Inc. (MFBR))*

2:50 pm
12316 Study on Natural Convection Capability of Liquid Gallium for Passive Decay Heat Removal System *(PDHRS)*, Sarah Kang *(UNIST)*, Kwi-Seok Ha *(KAERI)*, Seung Won Lee, Sung Dae Park, Seong Man Kim, Han Seo, Ji Hyun Kim, In Cheol Bang *(UNIST)*

3:10 pm
12309 Inherent Safety of Minimum Burnup Breed & Burn Reactors, Staffan Qvist, Ehud Greenspan *(University of California Berkeley)*

3.06 Liquid Lead- and Lead-Bismuth-Cooled Fast Reactors

Session Chair: Didier De Bruyn *(SCK•CEN)*

Room: DuSable *(Silver)*
2:30 pm
12246 Development of an Object-Oriented Dynamics Simulator for a LFR DEMO , R. Ponciroli, S. Bortot, S. Lorenzi, A. Cammi *(Politecnico di Milano)*

2:50 pm
12423 SILER: Seismic-Initiated Events Risk Mitigation in LEad-cooled Reactors, Massimo Forni (ENEA), Silvia De Grandis *(SINTEC)*

3:10 pm
12144 The GUINEVERE Experiment: First PNS Measurements in a Lead Moderated Sub-critical Fast Core, H.-E. Thyebault *(CNRS)*, P. Baeten *(SCK.CEN)*, A. Billebaud, S. Chabod *(CNRS)*, A. Kochetkov *(SCK.CEN)*, F.-R. Lecolley, J.-L. Lecouey, G. Lehaut , N. Marie *(CNRS)*, F. Mellier *(CEA/DEN)*, W. Uyttenhove, G. Vittiglio, J. Wagemans *(SCK.CEN)*, G. Ban *(CEA/DEN)*, P. Dessagne, M. Kerveno *(Institut de Physique Hubert Curien)*, J.-C. Steckmeyer *(CEA/DEN)*

3:30 pm
12332 Self-Protected Fast Reactor with Passive Safety for the Future Nuclear Power, G.I. Toshinsky *(FSUE State Scientific Center Institute for Physics and Power Engineering)*, O.G. Komlev *(FSUE State Scientific Center Institute for Physics and Power Engineering)*, I.V. Tormyshev *(FSUE State Scientific Center)*, V.V. Petrochenko *(JSC "AKME-Engineering")*

4.04 Performance

Session Chairs: Adrian Mendez Torres *(Savannah River National Laboratory)*, Rasha Ghazy *(Politecnico di Milano)*

Room: Wright *(Silver)*
2:30 pm
12303 A Decision Support System Prototype Including Human Factors Based on the TOGA Meta-theory Approach, Mauro Cappelli, Fabrizio Memmi *(UTFISST, ENEA)*, Adam Maria Gadomski *(ECONA)*, Massimo Sepielli *(UTFISST, ENEA)*

2:50 pm
12302 Cognitive Decision Errors and Organization Vulnerabilities in Nuclear Power Plant Safety Management: Modeling Using the TOGA Meta-Theory Framework, Mauro Cappelli *(UTFISST, ENEA)*, Adam Maria Gadomski (ECONA), Massimo Sepielli *(UTFISST, ENEA)*, Marta Weronika Wronikowska *(The Poznan School of Social Sciences, UTFISST, ENEA)*

3:10 pm
12262 Regression Analysis of Technical Parameters Affecting Nuclear Power Plant Performances, Rasha Ghazy, Marco Enrico Ricotti, Paolo Trucco *(Politecnico di Milano)*

3:30 pm
12198 Development of an Equipment Management Model to Improve Effectiveness of the Processes, Hee-Seung Chang, Tae-Young Ju, Tae-Young Song *(Korea Hydro & Nuclear Power Co.)*

5.10 Advances in Uncertainty Methodology and Statistics

Session Chair: MD Alamgir *(GE-Hitachi Nuclear Energy)*

Room: Addams *(Silver)*
2:30 pm
12238 The Use of Latin Hypercube Sampling for the Efficient Estimation of Confidence Intervals, Dave Grabaskas, Richard S. Denning, Tunc Aldemir *(Ohio State University)*, Marvin Nakayama *(New Jersey Institute of Technology)*

2:50 pm
12112 BWR Transient Analysis Using Neutronic / Thermal Hydraulic Coupled Codes Including Uncertainty Quantification, Ch. Hartmann *(Westinghouse)*, V. Sanchez *(Karlsruhe Institute of Technology)*, W. Tietsch *(Westinghouse)*, R. Stieglitz *(Karlsruhe Institute of Technology)*

3:10 pm
12315 Development of the IPRO-ZONE for Fire PSA and Its Applications, Dae Il Kang, Sang-Hoon Han *(KAERI)*

3:30 pm
12283 Prediction of Number of Breached Rods following a LBLOCA of CANDU Plants Using a BEPU Approach, Young Seok Bang, Kap Kim, Kwang Won Seul, Sweng Woong Woo *(KINS)*, Byoung Sub Han *(ENESYS Co. Ltd.)*

7.02 Integral and Separate Thermal Hydraulics Testing and Analysis-II

Session Chair: Genevieve Geffraye *(CEA)*

Room: Ogden *(Silver)*
2:30 pm
12339 Experiments on Large Scale Plume Interaction with a Stratified Gas Environment Resembling the Thermal Activity of Autocatalytic Recombiner, Guillaume Mignot, Ralf Kapulla, Domenico Paladino, Robert Zboray *(PSI)*

2:50 pm
12319 An Experimental Study of External Reactor Vessel Cooling Strategy on the Critical Heat Flux using the Graphene Oxide Nanofluid, Sung Dae Park, Seung Won Lee, Sarah Kang, Seong Man Kim, Han Seo, In Cheol Bang *(UNIST)*

3:10 pm
12318 Simulation of the Passive Condensation Cooling Tank of the PASCAL Test Facility using the Component Thermal-hydraulic Analysis Code CUPID, Hyoung Kyu Cho, Seung Jun Lee, Kyung-Ho Kang, Han Young Yoon *(KAERI)*

3:30 pm
12185 PWR Internal Flow Modeling With Fuel Assemblies Details, Emilian Popov *(ORNL)*, Jin Yan, Zeses Karoutas *(Westinghouse)*, Jess Gehin *(ORNL)*, Robert Brewster, Emilio Baglietto *(Cd-Adapco)*

7.03 System Simulation Models and Codes-II

Session Chair: Matthew Memmott *(Westinghouse)*

Room: Horner *(Silver)*
2:30 pm
12286 PHISICS Multi-group Transport Neutronics Capabilities for RELAP5, Aaron Epiney, Cristian Rabiti, Andrea Alfonsi, Yaqi Wang, Joshua Cogliati, Gerhard Strydom *(INL)*

2:50 pm
12273 Theoretical and Computational Analysis of Flow Oscillations in S-CO2 Natural Circulation Loop, Walter C. Smith, Michael Z. Podowski *(Rensselaer Polytechnic Institute)*

3:10 pm
12263 Predictions of One-Group Interfacial Area Transport in TRACE, Ted Worosz, Justin D. Talley, Seungjin Kim *(The Pennsylvania State University)*, Stephen M. Bajorek, Andrew Ireland *(US NRC)*

3:30 pm
12177 Simulation of the PBF-CANDU Test with Coupled Thermal-Hydraulic and Fuel Thermo-Mechanical Responses, J.J. Baschuk *(Atomic Energy of Canada Limited)*

9.03 Structural Analysis and Design

Session Chairs: Ram Srinivasan *(AREVA)*

Room: McCormick *(Silver)*

2:30 pm
12372 Seismic Fragility Evaluation of a Piping System in a Nuclear Power Plant by Shaking Table Test and Numerical Analysis, Min Kyu Kim, Jung Han Kim, In-Kil Choi *(KAERI)*

2:50 pm
12438 Evaluation of Irradiation Effects on Concrete Structure, Osamu Kontani, Akihiro Ishizawa *(Kajima Corporation)*, Ippei Maruyama *(Nagoya University)*, Masayuki Takizawa, Osamu Sato *(Mitsubishi Research Institute Inc.)*

3:10 pm
12412 Analysis of Flexible Structures under Lateral Impact, D.F. Ramirez *(Paul C. Rizzo and Associates Inc)*, H. Razavi *(AREVA)*

3:30 pm
12120 Element Based Concrete Design with Three-dimensional Finite Element Models, Michael O'Leary, Kevin Huberty, Scott Winch *(Sargent & Lundy)*

3:50 pm
12371 Seismic Margin Assessment and Reinforcement of Safety-Related Equipment Considering Its Anchorage Degradation, Ho-Sam Choi, Bong-Sub Kim *(Korea Hydro & Nuclear Co. Ltd)*

Wednesday, June 27, 2012 at 4:15 pm – 6:15 pm

ICAPP '12 Plenary 3: Global Perspectives - why Nuclear makes sense?

Session Chairs: Atam Rao *(Consultant)*, Georges Servière *(EDF)*

Room: Regency B *(Gold)*

A panel of international leaders will provide a global view of the opportunities and challenges for nuclear power penetration in different geo-economical regions. The speakers will address country and regional variations across the globe from the point of view of economics, electricity demand and growth, energy security and diversity, grid performance, waste handling and public opinion.

Speakers:

- Padraic Riley *(Advisor, Emirates Nuclear Energy Corporation (ENEC)-UAE)*
- J.K. Park *(Director Nuclear Power, IAEA-Austria)*
- Jamal Khaer Ibrahim *(Malaysia Nuclear Power Corporation-Malaysia)*
- Ravi Grover *(Director, HBNI, and Principal Adviser, Department of Atomic Energy-India)*

Thursday • June 28, 2012

7:30 a.m. – 2:00 p.m.	**Meeting Registration**
7:45 a.m. - 3:30 p.m.	**Technical Tour: Exelon Dresden Station**
8:00 a.m. – 10:00 a.m.	**ICAPP 2012: Technical Sessions** • 3.01 Liquid Sodium-Cooled Fast Reactors: Modeling and Design–V • 5.02 LOCA and Non-LOCA Safety Analysis • 6.04 Multi-Physics Approach to Reactor Analysis • 7.02 Integral and Separate Thermal Hydraulics Testing and Analysis–III • 7.03 System Simulation Models and Codes–III • 7.08 System Analysis and Assessment • 8.05 Fuel Cycle Deployment Strategies and Analysis • 10.02 Economics and Nuclear Energy
8:30 a.m. – 9:50 p.m.	**NFSM 2012: Technical Sessions** *(see page 44)*
8:00 a.m. - 11:30 a.m.	**2012 ANS Annual Meeting: Technical Sessions** *(see page 34)*
10:00 a.m. - 12:00 p.m.	**ICAPP 2012: Plenary 4: Rethinking the Nuclear Energy Role in a Carbon Constrained World**
10:10 a.m. - 11:30 a.m.	**NFSM 2012: Technical Sessions** *(see page 44)*
1:00 p.m. - 2:20 p.m.	**NFSM 2012: Technical Sessions** *(see page 44)*
2:40 p.m. - 4:00 p.m.	**NFSM 2012: Technical Sessions** *(see page 44)*

Thursday, June 28, 2012 at 8:00 am – 10:00 am

3.01 Liquid Sodium-Cooled Fast Reactors: Modeling and Design-V

Session Chairs: Jess C. Gehin *(Oak Ridge National Laboratory)*, Naoyuki Kisohara *(JAEA)*

Room: Burnham *(Silver)*

8:00 am
12291 A Resting Bottom Sodium Cooled Fast Reactor, Didier Costes *(Consultant)*

8:20 am
12220 Evaluation on Double-wall-tube Residual Stress Distribution of Sodium-heated Steam Generator by Neutron Diffraction and Numerical Analysis, Naoyuki Kisohara, Hiroshi Suzuki, Koichi Akita *(JAEA)*, Naoto Kasahara *(University of Tokyo)*

8:40 am
12029 Transmutation Abilities of the SFR Low Void Effect Core Concept CFV 3600 MWth, L. Buiron, B. Fontaine, L. Andriolo *(CEA)*

9:00 am
12020 Analysis & Methodology for Measuring Oxygen Concentration in Liquid Sodium with a Plugging Meter, Billy K Nollet, Mike Hvasta, Mark Anderson *(University of Wisconsin-Madison)*

9:20 am
12013 A Vented Inverted Fuel Assembly Design for an SFR, F. Vitillo, N.E. Todreas, M.J. Driscoll *(Massachusetts Institute of Technology)*

5.02 LOCA and Non-LOCA Safety Analysis

Session Chair: Peipei Chen *(SNTPC)*

Room: Addams *(Silver)*

8:00 am
12347 Preliminary LOCA Analysis of the Westinghouse Small Modular Reactor Using the WCOBRA/TRAC-TF2 Thermal-Hydraulics Code, Jun Liao, Vefa N. Kucukboyaci, Luyen Nguyen, Cesare Frepoli *(Westinghouse Electric Company)*

8:20 am
12405 Experimental Study of Siphon Breaker about Size Effect in Real Scale Reactor Design, Soon Ho Kang, Ho Seon Ahn, Ji Min Kim *(POSTECH)*, Hyeong Min Joo *(Hanyang University)*, Kwon-Yeong Lee, Kyoungwoo Seo *(KAERI)*, Dae Young Chi *(KAERI)*, Moo Hwan Kim *(POSTECH)*

8:40 am
12134 Analysis of the Absorbed Hydrogen in Cladding Tubes Applied in the QUENCH-LOCA Tests, Mirco Grosse, Conrad Rössger, Juri Stuckert, Martin Steinbrueck, Mario Walter, Michael Klimenjov *(Karlsruhe Institue of Technology)*, Anders Kaestner *(Paul Scherrer Institute Villigen)*

9:00 am
12421 Effect of Spray Parameter on Containment Depressurization during LOCA in KAPP 3&4 700 MWe IPHWR, Sanjeev Kr. Sharma, D.K. Bhartia, N. Mohan, P.K. Malhotra, S.G. Ghadge *(NPCIL)*

9:20 am
12011 Radiological Impact Assessment *(RIA)* Following a Postulated Accident in PHWRs, Niharika Soni, Manoj Kansal, H.P. Rammohan, P.K. Malhotra *(Nuclear Power Corporation of India Ltd.)*

9:40 am
12374 Experimental Investigation on the Chemical Precipitation Generation under the Loss of Coolant Accident of Nuclear Power Plants, Chang Hyun Kim, Je Jung Sung *(KHNP)*, Young Wook Chung *(FNC Technology Co., LTD.)*

10:00 am
12321 Identification between Local Wall Thinning and Turbulent Velocity Components by Flow Acceleration Corrosion Inside Elbow of Pipe System , Kyung Hoon Kim *(Kyung Hee University)*

6.04 Multi-physics Approach to Reactor Analysis

Session Chair: Han Gyu Joo *(Seoul National University)*

Room: Horner *(Silver)*

8:00 am
12411 Benchmarking of Software and Methods for Use in Transient Multi-Dimensional Fuel Performance with Spatial Reactor Kinetics, J.E. Banfield *(University of Tennessee)*, K.T. Clarno, S.P. Hamilton *(Oak Ridge National Laboratory)*, G.I. Maldonado *(University of Tennessee)*, B. Philip, M.L. Baird *(Oak Ridge National Laboratory)*

8:20 am
12110 Uncertainties Propagation in the Framework of a Rod Ejection Accident Modeling Based on a Multiphysics Approach, J.C. Le Pallec, N. Crouzet, V. Bergeaud, C. Delavaud *(CEA)*

8:40 am
12080 The Harmony between Nuclear Reactions and Nuclear Reactor Structures and Systems, Liviu Popa-Simil *(Consultant)*

7.02 Integral and Separate Thermal Hydraulics Testing and Analysis-III

Session Chair: Genevieve Geffraye *(CEA)*

Room: Ogden *(Silver)*

8:00 am
12365 The Impact Assessment of Eccentric Installation and Roughness Change in Piping on the Orifice Flow Measurement, Yosihihsa Nishi, Yuzuru Eguchi, Takashi Nishihara, Taizo Kanai, Masahiro Kondo *(CRIEPI)*

8:20 am
12435 Heat Transfer Research on Supercritical Water Flow Upward in Tube, Hongbo Li, Jue Yang *(China Nuclear Power Technology Research Institute)*, Hanyang Gu, Meng Zhao *(Shanghai Jiao Tong University)*, Donghua Lu, Jianmin Zhang, Fei Wang, Yong Zhang *(China Nuclear Power Technology Research Institute)*

7.03 System Simulation Models and Codes-III

Session Chair: Matthew Memmott *(Westinghouse)*

Room: DuSable *(Silver)*

8:00 am
12458 SPACE Code Simulation of Cold Leg Small Break LOCA in the ATLAS Integral Test, Byoung Jae Kim, Hyoung Tae Kim *(KAERI)*, Jungwoo Kim *(Seoul National University of Science and Technology)*, Kyung Doo Kim *(KAERI)*

8:20 am
12422 CATHARE Thermal-Hydraulic System Code for HLM Preliminary Validation in Natural Convection Tests, Massimiliano Polidori, Paride Meloni, Calogera Lombardo, Giacomino Bandini *(ENEA)*, Genevieve Geffraye, Dominique Kadri *(CEA)*

8:40 am
12392 MARS-KS Code Validation Activity through the ATLAS Domestic Standard Problem, Ki-Yong Choi, Yeon-Sik Kim, Kyoung-Ho Kang, Hyun-Sik Park, Seok Cho *(KAERI)*

9:00 am
12376 IJS Procedure for RELAP5 to TRACE Input Model Conversion using SNAP, Andrej Prošek, Ovidiu-Adrian Berar *(Jožef Stefan Institute)*

9:20 am
12375 Scalable Three-Dimensional Thermal-Hydraulic Best-Estimate Code BAGIRA, V.A. Vasenin, M.A. Krivchikov *(Moscow State University)*, V.E. Kroshilin, A.E. Kroshilin, V.A. Roganov *(All-Russian VNIIAES Institute)*

7.08 System Analysis and Assessment

Session Chair: Luca Oriani *(Westinghouse)*

Room: Wright *(Silver)*

8:00 am
12326 Steady State RANS Simulations of Temperature Fluctuation in a Single Phase Turbulent Mixing, John Kickhofel *(ETH Zürich)*, Jürren Fokken, Ralf Kapulla (*Paul Scherrer Institute)*, Horst-Michael Prasser *(ETH Zürich)*

8:20 am
12226 Turbulence Analysis of Rough Wall Channel Flows Based on Direct Numerical Simulation, Anand V. Mishra, Igor A. Bolotnov *(North Carolina State University)*

8:40 am
12200 Analysis of BWR OPRM Plant Data and Detection Algorithms with DSSPP, J. Yang, J. Vedovi, A.K. Chung, J.F. Zino *(GE Hitachi Nuclear Energy)*

9:00 am
12114 Semi-Analytic Prediction of Hydraulic Resistance and Heat Transfer for Pipe and Channel Flows of Water at Supercritical Pressure, Eckart Laurien *(University of Stuttgart)*

9:20 am
12002 Programmable AC Power Supply for Simulating Power Transient Expected in Fusion Reactor, B. Halimi *(Seoul National University),* Kune Y. Suh *(Seoul National University, PHILOSOPHIA)*

8.05 Fuel Cycle Deployment Strategies and Analysis

Session Chair: Paul Murray *(AREVA)*

Room: McCormick *(Silver)*

8:00 am
12369 Path to a Commercial Fast Reactor Option in the United States, Paul Murray *(AREVA Federal Services LLC)*, Rodney McCullum *(NEI)*, Steve Nesbit *(Duke Energy)*, Andrew Sowder *(EPRI)*, Daniel Stout *(TVA)*

8:20 am
12327 Impact of the Deployment Schedule of Fast Breeding Reactors in the Frame of the French Act for Nuclear Materials and Radioactive Waste Management, Joel Le Mer, Claude Garzenne, David Lemasson *(EDF R&D)*

8:40 am
12115 Sensitivity Analysis and Optimization of the Nuclear Fuel Cycle, Stefano Passerini, Mujid S. Kazimi, Eugene Shwageraus *(MIT)*

9:00 am
12030 Assessment of Transition Fuel Cycle Performance with and without Modified-Open Fuel Cycle, Bo Feng, Taek K. Kim, Temitope A. Taiwo *(Argonne National Laboratory)*

9:20 am
12007 Integrating Repositories with Fuel Cycles: The Airport Authority Model, Charles Forsberg *(Massachusetts Institute of Technology)*

10.02 Economics and Nuclear Energy

Session Chair: Brian Mays *(AREVA)*

Room: Field *(Silver)*

8:00 am
12010 OECD/NEA Study on the Economics of the Long-term Operation of Nuclear Power Plants, Alexey Lokhov, Ron Cameron *(OECD/NEA)*

8:20 am
12233 Using Real Options to Evaluate the Flexibility in the Deployment of SMR, Giorgio Locatelli *(University of Lincoln)*, Mauro Mancini *(Politecnico di Milano)*, Felipe Ruiz, Pablo Solana *(Universidad Politécnica de Madrid)*

8:40 am
12322 Investment in Different Sized SMRs: Economic Evaluation of Stochastic Scenarios by INCAS Code, Silvia Barenghi, Sara Boarin, Marco E. Ricotti *(Politecnico di Milano)*

9:00 am
12005 Carbon Pricing, Nuclear Power and Electricity Markets, Ron Cameron, Jan Horst Keppler *(OECD NEA)*

Thursday, June 28, 2012 at 10:00 am – 12:00 pm

ICAPP '12 Plenary 4: Rethinking the Nuclear Energy Role in a Carbon Constrained World

Session Chair: Luca Oriani *(Westinghouse)*

Room: Truffles *(Blue)*

The role of nuclear energy in a carbon-constrained world can be much larger than its current role in supplying 15% of the World electricity. Because nuclear plants can provide effective baseload, stable electricity, unlike renewables, the nuclear share of electricity supply can grow without massive investments in energy storage infrastructure, and in fact nuclear power plants can be a necessary component to grid stability as renewable generation increases. Given the energy resources from uranium and thorium, nuclear energy can be the backbone of a cleaner transportation sector as well, providing heat and hydrogen for cleaner refinery operations, supplying the hydrogen for liquid biofuels, and supplying the electricity needed for an electric transportation section. The opportunities and challenges in expansion of nuclear energy to meet the aspirations for a cleaner energy future are the focus of this panel of experts.

Speakers:

- Steve Aumeier *(Associate Lab Director, INL)*
- Charles Forsberg *(Executive Director MIT Nuclear Fuel Cycle Study, MIT)*
- Fred Moore *(Director Manufacturing & Technology, Energy, Dow Chemical)*
- Mark Ruth *(Hydrogen Program Integrator, National Renewable Energy Laboratory)*

Professional Development Workshop

Please note: Registration for the workshop is separate from, and in addition to, the meeting registration fee. Use the advance meeting registration form (page 89) to register for the workshop.

"Preparing for the Nuclear Engineering Professional Engineering Exam"

Sunday, June 24, 2012 • 8:30 a.m. - 5:00 p.m. • Location: Toronto

Registration price for the workshop is $450 for ANS members and $550 for non-members.

Purpose of Workshop:

This course is designed for individuals who have passed the Fundamentals of Engineering Exam (formerly the EIT exam) and who are preparing for the Professional Engineering Exam (PE exam) in Nuclear Engineering. Instructors will provide details on registration and how it differs from state to state, plus an overview of the examination formats. The four basic skill areas: nuclear power, nuclear fuel cycle, interaction of radiation, and nuclear criticality/kinetics/neutronics, will be discussed in detail. For each skill area, the instructor will describe the topics and the skills to be tested within each.

Examples of questions will be presented in depth, after which students will work other typical questions on their own. Instructors will provide assistance, then review solutions with the group. Students will be provided with the revised ANS study guide including a sample exam and list of recommended resources for continued study.

Schedule

8:30	8:45	Introduction	
8:45	9:00	Intro to Exam and Registration	
9:00	10:15	Interaction of Radiation with Matter	Brian Collins, PNNL
10:15	10:25	Break	
10:25	11:30	Nuclear Power Skills	Gerald Loignon, SCANA
11:30	1:00	Lunch	
1:00	1:40	PRA Skills	Gerald Loignon, SCANA
1:40	1:50	Break	
1:50	3:05	Nuclear Fuel Cycle Skills	Arielle Miller, AREVA
3:05	3:15	Break	
3:15	4:30	Nuclear Criticality, Neutronics, Kinetics	Robert Busch, UNM
4:30	4:45	Wrap-up	

NATIONAL COMMITTEES

Accreditation Policies and Procedures
Sunday, 11:00 A.M. – 12:00 P.M.
Location: Addams *(Silver Level, West Tower)*

ANS Business Meeting
Monday, 3:30 P.M. – 4:30 P.M.
Location: Skyway 260 *(Blue Level, East Tower)*

Board of Directors
Professional Division Reports
Wednesday, 4:00 P.M. – 5:30 P.M.
Location: Crystal B *(Green Level, West Tower)*

Board of Directors
Thursday, 8:30 A.M. – 3:00 P.M.
Location: Crystal B *(Green Level, West Tower)*

Bylaws and Rules
Sunday, 4:30 P.M. – 6:00 P.M.
Location: Burnham *(Silver Level, West Tower)*

Finance
Tuesday, 2:00 P.M. – 7:00 P.M.
Location: Stetson B/C *(Purple Level, West Tower)*

Honors and Awards
Monday, 4:00 P.M. – 6:00 P.M.
Location: Stetson B/C *(Purple Level, West Tower)*

International
Sunday, 11:30 A.M. – 2:30 P.M.
Location: Acapulco *(Gold Level, West Tower)*

Local Sections/Workshop
Sunday, 8:00 A.M. -12:00 P.M.
Location: Comiskey *(Bronze Level, West Tower)*

Membership
Sunday, 11:00 A.M. – 12:00 P.M.
Location: Field *(Silver Level, West Tower)*

National Program Committee (NPC)
Program
Wednesday, 4:15 P.M. – 5:30 P.M.
Location: Truffles *(Blue Level, West Tower)*

Screening and International
Sunday, 10:00 A.M. – 12:00 P.M.
Location: Truffles *(Blue Level, West Tower)*

NEED
Sunday, 7:30 P.M. – 9:30 P.M.
Location: Du Sable *(Silver Level, West Tower)*

Planning
Sunday, 2:00 P.M. – 6:00 P.M.
Location: Soldier Field *(Bronze Level, West Tower)*

President's Meeting with Committee Chairs
Sunday, 8:00 A.M. – 9:00 P.M.
Location: Acapulco *(Gold Level, West Tower)*

President's Meeting with Division Chairs
Sunday, 9:00 A.M. – 10:00 P.M.
Location: Acapulco *(Gold Level, West Tower)*

Professional Development Workshop
Tuesday, 7:30 A.M. – 8:30 A.M.
Location: San Francisco *(Gold Level, West Tower)*

Professional Divisions
Committee Meeting
Wednesday, 5:30 P.M. – 7:00 P.M.
Location: Crystal B *(Green Level, West Tower)*

Training Workshop
Saturday, 5:00 P.M. – 6:30 P.M.
Location: Toronto *(Gold Level, West Tower)*

Professional Engineering Exam
Committee Meeting
Sunday, 3:00 P.M. – 5:00 P.M.
Location: Horner *(Silver Level, West Tower)*

Exam Writers Group
Saturday, 6:00 P.M. – 10:00 P.M.
Location: Columbian *(Bronze Level, West Tower)*

Professional Women in ANS
Monday, 11:30 A.M. – 1:00 P.M.
Location: Stetson B/C *(Purple Level, West Tower)*

Public Information
Sunday, 4:00 P.M. – 6:00 P.M.
Location: Du Sable *(Silver Level, West Tower)*

Public Policy
Wednesday, 11:30 A.M. – 1:30 P.M.
Location: Stetson B/C *(Purple Level, West Tower)*

Publications Steering
Book Publishing
Sunday, 11:00 A.M. – 12:30 P.M.
Location: Ogden *(Silver Level, West Tower)*

Meetings, Proceedings and Transactions
Sunday, 9:00 A.M. – 10:00 A.M.
Location: Ogden *(Silver Level, West Tower)*

Nuclear News Editorial Advisory
Sunday, 4:00 P.M. – 5:30 P.M.
Location: Ogden *(Silver Level, West Tower)*

NS&E Editorial Advisory
Sunday, 11:00 A.M. – 12:00 P.M.
Location: Du Sable *(Silver Level, West Tower)*

NT Editorial Advisory
Sunday, 4:30 P.M. – 5:30 P.M.
Location: Haymarket *(Bronze Level, West Tower)*

Publications Steering
Monday, 4:30 P.M. – 6:00 P.M.
Location: San Francisco *(Gold Level, West Tower)*

Technical Journals
Sunday, 1:00 P.M. – 4:00 P.M.
Location: Ogden *(Silver Level, West Tower)*

Scholarship Policy and Coordination
Monday, 12:00 P.M. – 1:00 P.M.
Location: Du Sable *(Silver Level, West Tower)*

Student Sections
Executive
Monday, 6:00 P.M. – 7:00 P.M.
Location: Hong Kong *(Gold Level, West Tower)*

Reports & Roundtable Discussion
Monday, 7:00 P.M. – 8:00 P.M.
Location: Hong Kong *(Gold Level, West Tower)*

SPECIAL COMMITTEES

Congressional Fellow Committee
Sunday, June 24, 2012
3:00 PM - 6:00 PM
Location: Sandburg *(Silver Level, West Tower)*

ANS Special Committee on Fukushima
Monday, 11:45 A.M. – 12:45 P.M.
Location: New Orleans *(Gold Level, West Tower)*

Integration Oversight
Tuesday, 9:00 A.M. – 11:00 A.M.
Location: Hong Kong *(Gold Level, West Tower)*

OTHER COMMITTEES

ATR NSUF/NEUP Workshop
Tuesday, 6:00 P.M. – 7:00 P.M.
Location: New Orleans *(Gold Level, West Tower)*

ATR NSUF User Organization Meeting
Tuesday, 7:00 P.M. – 8:00 P.M.
Location: New Orleans *(Gold Level, West Tower)*

Committee Meetings

CNF
Monday, 7:30 P.M. – 10:00 P.M.
Location: New Orleans *(Gold Level, West Tower)*

CSSG
Thursday, 1:00 P.M. – 4:00 P.M.
Location: Haymarket *(Bronze Level, West Tower)*

Eagle Alliance Board of Directors
Sunday, 1:00 P.M. – 3:00 P.M.
Location: Picasso *(Bronze Level, West Tower)*

INSC – Lunch
Tuesday, 1:15 P.M. – 2:30 P.M.
Location: Skyway 260 *(Blue Level, East Tower)*

INSC
Tuesday, 3:00 P.M. – 6:00 P.M.
Location: Skyway 260 *(Blue Level, East Tower)*

Joint Benchmark Committee Workshop
Saturday, 6:00 P.M. – 9:00 P.M.
Location: San Francisco *(Gold Level, West Tower)*

Mathematics and Computation/ Reactor Physics/Radiation Protection & Shielding Joint Benchmark Meeting
Sunday, 11:00 A.M. – 1:00 P.M.
Location: McCormick *(Silver Level, West Tower)*

NEDHO
Sunday, 4:00 P.M. – 6:00 P.M.
Location: Acapulco *(Gold Level, West Tower)*

19th PBNC Organizing Meeting
Monday, 4:00 P.M. – 5:00 P.M.
Location: Comiskey *(Bronze Level, West Tower)*

RCNET – Steering Committee
Tuesday, 4:30 P.M. – 7:30 P.M.
Location: Soldier Field *(Bronze Level, West Tower)*

UWC 2012 Planning Committee
Sunday, 12:00 P.M. – 1:00 P.M.
Location: Addams *(Silver Level, West Tower)*

DIVISION COMMITTEES

Accelerator Applications
Executive
Monday, 11:30 A.M. – 1:30 P.M.
Location: San Francisco *(Gold Level, West Tower)*

Aerospace Nuclear Science and Technologies
Sunday, 12:00 P.M. – 2:00 P.M.
Location: Du Sable *(Silver Level, West Tower)*

Biology and Medicine
Committee of the Whole
Sunday, 4:00 P.M. – 5:30 P.M.
Location: San Francisco *(Gold Level, West Tower)*

Computational Medical Physics Working Group
Sunday, 10:00 A.M. – 11:00 A.M.
Location: Burnham *(Bronze Level, West Tower)*

Joint Program Committee – I&R and B&M
Sunday, 1:30 P.M. – 2:30 P.M.
Location: San Francisco *(Gold Level, West Tower)*

Decommissioning, Decontamination and Reutilization
Executive Committee Meeting
Sunday, 4:30 P.M. – 5:30 P.M.
Location: Hong Kong *(Gold Level, West Tower)*

Program Committee Meeting
Sunday, 3:30 P.M. – 4:30 P.M.
Location: Hong Kong *(Gold Level, West Tower)*

Education, Training, and Workforce Development
Alpha Nu Sigma
Sunday, 1:00 P.M. – 2:00 P.M.
Location: Soldier Field *(Bronze Level, West Tower)*

Executive/Membership/Honors and Awards
Sunday, 1:30 P.M. – 4:00 P.M.
Location: Wright *(Silver Level, West Tower)*

Program
Sunday, 10:30 A.M. – 12:00 P.M.
Location: Wright *(Silver Level, West Tower)*

University/Industry/Government Relations
Sunday, 9:30 A.M. – 10:30 A.M.
Location: Wright *(Silver Level, West Tower)*

Environmental Sciences
ESD Special Committee on Sustainability of Nuclear Energy
Sunday, 1:00 P.M. – 3:00 P.M.
Location: Horner *(Silver Level, West Tower)*

Executive
Sunday, 10:00 A.M. – 12:00 P.M.
Location: Horner *(Silver Level, West Tower)*

Nuclear Production of Hydrogen Working Group
Sunday, 12:00 P.M. – 1:00 P.M.
Location: Horner *(Silver Level, West Tower)*

Program
Sunday, 8:30 A.M. – 10:00 A.M.
Location: Horner *(Silver Level, West Tower)*

Fuel Cycle and Waste Management
Executive
Sunday, 1:00 P.M. – 2:30 P.M.
Location: Hong Kong *(Gold Level, West Tower)*

Program
Sunday, 12:00 P.M. – 1:00 P.M.
Location: Hong Kong *(Gold Level, West Tower)*

Technical Operating and Standards Committee
Sunday, 2:30 P.M. – 3:30 P.M.
Location: Hong Kong *(Gold Level, West Tower)*

Fusion Energy
Executive
Sunday, 3:00 P.M. – 5:00 P.M.
Location: Picasso *(Bronze Level, West Tower)*

Human Factors, Instrumentation, and Controls
Executive
Sunday, 12:00 P.M. – 2:30 P.M.
Location: Burnham *(Silver Level, West Tower)*

Program
Sunday, 11:00 A.M. – 12:00 P.M.
Location: Burnham *(Silver Level, West Tower)*

Isotopes and Radiation
Executive
Sunday, 2:30 P.M. – 4:00 P.M.
Location: San Francisco *(Gold Level, West Tower)*

Joint Program Committee – I&R and B&M
Sunday, 1:30 P.M. – 2:30 P.M.
Location: San Francisco *(Gold Level, West Tower)*

Materials Science and Technology
Executive
Monday, 7:00 P.M. – 9:00 P.M.
Location: Comiskey *(Bronze Level, West Tower)*

Mathematics and Computation
Computational Medical Physics Working Group
Sunday, 10:00 A.M. – 11:00 A.M.
Location: Addams *(Silver Level, West Tower)*

Executive
Sunday, 2:00 P.M. – 4:00 P.M.
Location: Addams *(Silver Level, West Tower)*

Program
Sunday, 1:00 P.M. – 2:00 P.M.
Location: Addams *(Silver Level, West Tower)*

Nuclear Criticality Safety
Education Meeting
Sunday, 1:00 P.M. – 2:00 P.M.
Location: Truffles *(Blue Level, West Tower)*

Executive
Sunday, 3:00 P.M. – 4:30 P.M.
Location: Truffles *(Blue Level, West Tower)*

Program
Sunday, 2:00 P.M. – 3:00 P.M.
Location: Truffles *(Blue Level, West Tower)*

Nuclear Installation Safety
Executive
Sunday, 7:30 P.M. – 9:30 P.M.
Location: New Orleans *(Gold Level, West Tower)*

Program
Sunday, 4:00 P.M. – 6:00 P.M.
Location: New Orleans *(Gold Level, West Tower)*

Nuclear Nonproliferation (TG)
Governance
Sunday, 3:00 P.M. – 4:00 P.M.
Location: Haymarket *(Bronze Level, West Tower)*

Program
Sunday, 2:00 P.M. – 3:00 P.M.
Location: Haymarket *(Bronze Level, West Tower)*

Special Advisory Committee
Sunday, 1:00 P.M. – 2:00 P.M.
Location; New Orleans *(Gold Level, West Tower)*

Operations and Power
Executive
Sunday, 4:00 P.M. – 6:00 P.M.
Location: Comiskey *(Bronze Level, West Tower)*

Nuclear Construction Working Group
Sunday, 12:30 P.M. – 2:30 P.M.
Location: Comiskey *(Bronze Level, West Tower)*

Program
Sunday, 2:30 P.M. – 4:00 P.M.
Location: Comiskey *(Bronze Level, West Tower)*

Radiation Protection and Shielding
Executive
Sunday, 1:30 P.M. – 2:30 P.M.
Location: New Orleans *(Gold Level, West Tower)*

Program
Sunday, 12:30 P.M. – 1:30 P.M.
Location: New Orleans *(Gold Level, West Tower)*

Shielding Standards
Sunday, 12:00 P.M. – 12:30 P.M.
Location: New Orleans *(Gold Level, West Tower)*

Reactor Physics
Executive
Sunday, 4:00 P.M. – 6:00 P.M.
Location: Field *(Silver Level, West Tower)*

Goals and Planning
Sunday, 1:00 P.M. – 2:00 P.M.
Location: Field *(Silver Level, West Tower)*

Honors and Awards
Sunday, 10:00 A.M. – 11:00 A.M.
Location: Field *(Silver Level, West Tower)*

Program
Sunday, 2:00 P.M. – 4:00 P.M.
Location: Field *(Silver Level, West Tower)*

Robotics and Remote Systems
Executive
Sunday, 12:00 P.M. – 4:00 P.M.
Location: Columbian *(Bronze Level, West Tower)*

Thermal Hydraulics
Executive
Sunday, 4:30 P.M. – 6:00 P.M.
Location: Atlanta *(Gold Level, West Tower)*

Program
Sunday, 2:30 P.M. – 4:30 P.M.
Location: Atlanta *(Gold Level, West Tower)*

Young Member Group (TG)
Executive Committee
Monday, 11:30 A.M. – 1:00 P.M.
Location: Comiskey *(Bronze Level, West Tower)*

STANDARDS COMMITTEES

ANS Standards Board
Tuesday, 9:00 A.M. – 5:00 P.M.
Location: Truffles *(Blue Level, West Tower)*

ANS-8.1
Sunday, 8:00 A.M. – 12:00 P.M.
Location: Buckingham *(Bronze Level, West Tower)*
Tuesday, 7:00 A.M. – 8:00 A.M.
Location: Stetson B/C *(Purple Level, West Tower)*

ANS-8.12
Tuesday, 4:30 P.M, – 6:30 P.M.
Location: Ogden *(Silver Level, West Tower)*

ANS-8.20
Sunday, 9:00 A.M. - 12:00 P.M.
Location: Stetson B/C *(Purple Level, West Tower)*

ANS-8.21
Thursday, 7:00 A.M. – 8:30 A.M.
Location: Picasso *(Bronze Level, West Tower)*

ANS-8.29
Monday, 7:00 A.M. – 8:00 A.M.
Location: Stetson B/C *(Purple Level, West Tower)*

ANS-10.7
Saturday, 8:30 A.M. – 4:30 P.M.
Location: Haymarket *(Bronze Level, West Tower)*

ANS-19
Monday, 8:30 A.M. – 10:30 A.M.
Location: Stetson B/C *(Purple Level, West Tower)*

ANS-19.1
Monday, 10:30 A.M. – 11:30 A.M.
Location: Stetson B/C *(Purple Level, West Tower)*

ANS 54.X
Sunday, 7:30 P.M. – 10:00 P.M.
Location: Haymarket *(Bronze Level, West Tower)*

ANS-54.1
Thursday, 8:00 A.M. – 5:00 P.M.
Location: Stetson B/C *(Purple Level, West Tower)*

NFSC
Monday, 8:30 A.M. – 5:00 P.M.
Location: Truffles *(Blue Level, West Tower)*

DD&R ’12 & ICAPP ’12 Exhibit

DD&R and ICAPP EXHIBIT 2012 Hyatt Regency Chicago (Riverside Center West) • June 24-26, 2012

Sunday, June 24
6:00 p.m. – 7:30 p.m.
(ANS President’s Reception)

Monday, June 25
11:30 a.m. – 4:30 p.m.
(ANS Attendee Luncheon)

Tuesday, June 26
10:00 a.m. – 2:00 p.m.
(Dessert Reception)

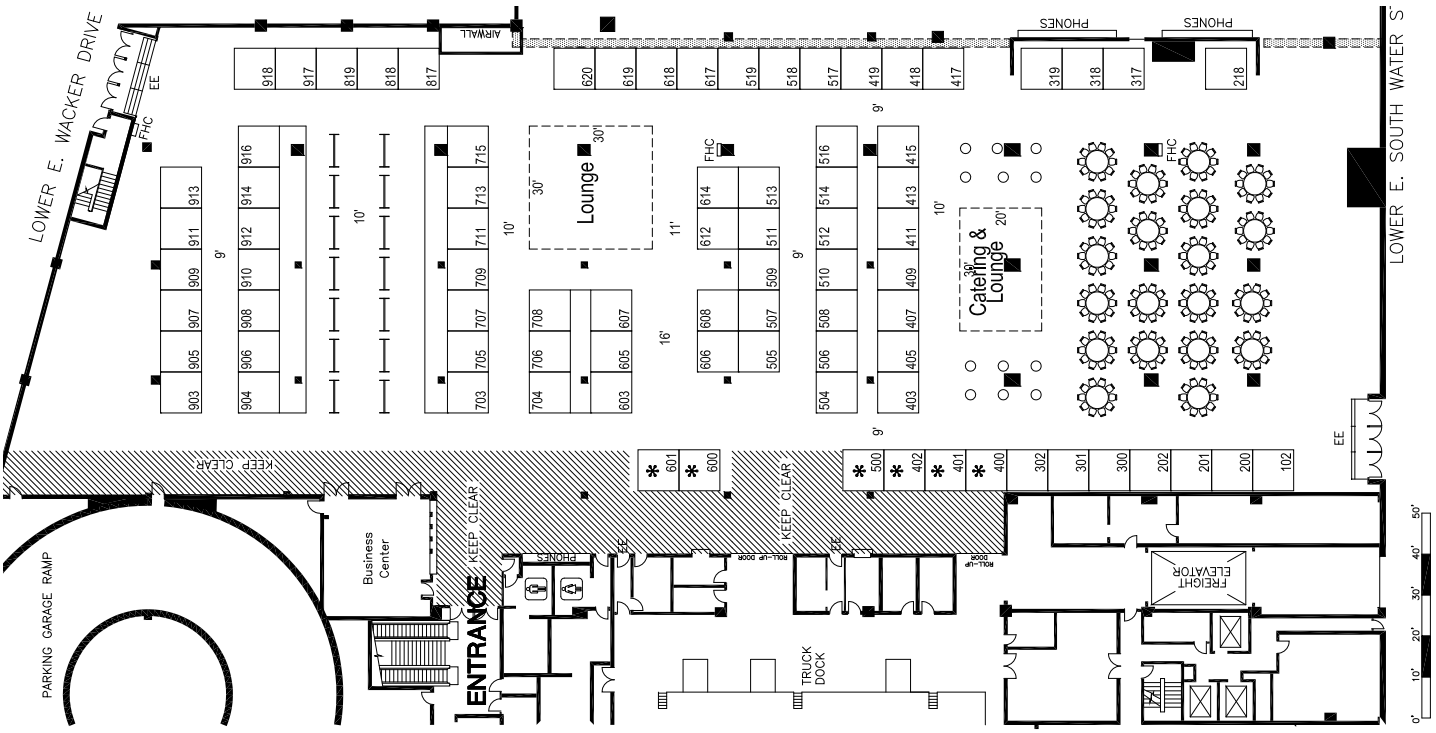
The DD&R and ICAPP Exhibit will be held June 24-26, 2012 at the Hyatt Regency Chicago, Riverside Center West. The Exhibit will be open Sunday-Tuesday with many special events taking place there. Exhibitors will be on hand to discuss their state-of-the-art displays, and a list of exhibitors follows:

American Nuclear Society	403, 405, 407, 409
Argonne National Laboratory	617, 618
Atomexpo, LLC/Rosatom	703, 705, 707
Bechtel Power Corporation	708
Canberra	504
Candu Energy, Inc.	508
ENERCON Services, Inc.	606, 608
EnergySolutions	711, 713
EXCEL Services Corporation	619, 620
FIU – Applied Research Center	506
Getinge LaCalhene USA	614
The Heritage Foundation	510
HukariAscendent, Inc.	512
IAEA Careers/Argonne National Laboratory	704
Idaho National Laboratory	715
Korea Atomic Energy Research Institute (KAERI)	513
KSB, Inc.	706
Mega-Tech Services, LLC	612
Mitsubishi Heavy Industries, Ltd. Mitsubishi Nuclear Energy Systems, Inc.	505, 507
Nuclear Plant Journal	709
NuScale Power, LLC	519
PricewaterhouseCoopers	514
Radwaste Solutions	403
Siempelkamp Nuclear Services, Inc.	411
State Nuclear Power Technology Corporation (SNPTC)	517, 518
University of Maryland A.James Clark School of Engineering	516
Westinghouse Electric Company	603, 605, 607

Exhibit space and sponsorship opportunities are still available. For more information, contact Sharon Bohlander at 1-800-250-3678 x227 or visit www.earlbeckwith.com.

We thank the following companies for their generous support of the DD&R and ICAPP Special Events:

Bechtel Power Corporation
Westinghouse Electric Company



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 and Rigging Co.
BKW FMB Energie Ltd.
Black & Veatch
R. Brooks Associates, Inc.
Burkhalter Rigging, Inc.

Central Research Laboratories
Ceradyne, Inc.
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

Hayward Tyler, Inc.

Indiana Michigan Power Co./
D.C. Cook Nuclear Power Plant
Institute of Nuclear Safety Systems, Inc.

Kernkraftwerk Leibstadt AG
Kinectrics Inc.
Kinemetrics Inc.
Korea Atomic Industrial Forum, Inc.
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
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.
Rigging International

S.A. Technology
Sandia National Laboratories
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.

HYATT REGENCY CHICAGO GUIDE

- 11 151-Bistro, Bar & Club — East Tower, Green Level
- 25 Acapulco — West Tower, Gold Level
- 1 Addams — West Tower, Silver Level
- 25 Atlanta — West Tower, Gold Level
- 7 Bell Desk — East Tower, Blue Level
- 6 BIG Bar — East Tower, Blue Level
- 19 Buckingham — West Tower, Bronze Level
- 1 Burnham — West Tower, Silver Level
- 29 Business Center — East Tower, Purple Level
- 19 Columbian — West Tower, Bronze Level
- 20 Columbus Hall (Rooms A-L) — East Tower, Gold Level
- 19 Comiskey — West Tower, Bronze Level
- 3 Concierge — East Tower, Blue Level
- 15 Crystal Ballroom — West Tower, Green Level
- 5 DaddyO's Irish Pub — West Tower, Blue Level
- 1 DuSable — West Tower, Silver Level
- 14 East Tower Main Entrance — East Tower, Green Level
- 23 East Tower Parking — East Tower, Gold Level
- 1 Field — West Tower, Silver Level
- 18 Fitness Center — East Tower, Bronze Level
- 4 Front Desk — East Tower, Blue Level
- 13 Gift Shop — East Tower, Green Level
- 19 Gold Coast — West Tower, Bronze Level
- 4 Gold Passport — East Tower, Blue Level
- 22 Grand Ballroom — East Tower, Gold Level
- 21 Grand Ballroom, Registration — East Tower, Gold Level
- 24 Grand Suites — East Tower, Gold Level
- 19 Haymarket — West Tower, Bronze Level
- 16 Hertz — East Tower, Bronze Level
- 25 Hong Kong — West Tower, Gold Level
- 1 Horner — West Tower, Silver Level
- 12 J's Express — East Tower, Green Level
- 1 McCormick — West Tower, Silver Level
- 25 New Orleans — West Tower, Gold Level
- 1 Ogden — West Tower, Silver Level
- 28 Package Pick-up — East Tower, Purple Level
- 19 Picasso — West Tower, Bronze Level
- 10 Plaza Ballroom — East Tower, Green Level
- 26 Regency Ballroom — West Tower, Gold Level
- 27 Riverside Center — East Tower, Purple Level
- 17 Sales, Catering & Convention Services Departments — East Tower, Bronze Level
- 25 San Francisco — West Tower, Gold Level
- 1 Sandburg — West Tower, Silver Level
- 2 Skyway Conference Center — East Tower, Blue Level
- 19 Soldier Field — West Tower, Bronze Level
- 30 Stetson Conference Center — West Tower, Purple Level
- 9 Stetson's Chop House & Bar — East Tower, Green Level
- 25 Toronto — West Tower, Gold Level
- 8 Truffles — West Tower, Blue Level
- 19 Water Tower — West Tower, Bronze Level
- 31 West Tower Parking — West Tower, Purple Level
- 1 Wright — West Tower, Silver Level
- 19 Wrigley — West Tower, Bronze Level