ANS 2014 Annual Meeting

The U.S. Role in a Global Nuclear Energy Enterprise

Official Program

- Decommissioning and Remote Systems (D&RS 2014)
- Nuclear Fuels & Structural Materials for the Next Generation Nuclear Reactors
- Advances in Thermal Hydraulics - 2014

Grand Sierra Resort • Reno, NV • June 15-19, 2014

ANS 2014 Annual Meeting

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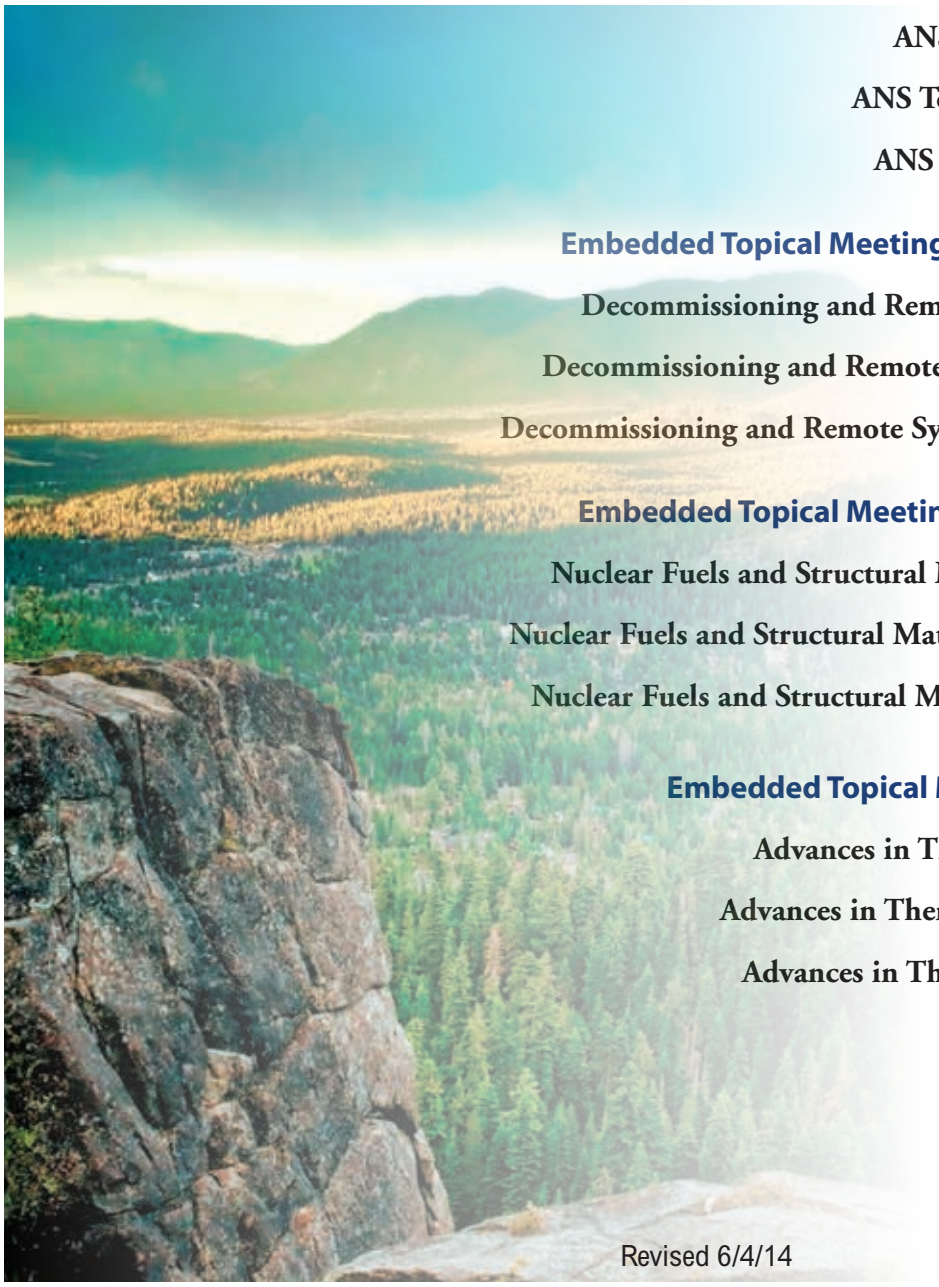

Revised 6/4/14

Meeting Highlights

SATURDAY, JUNE 14, 2014

8:00 a.m. – 5:00 p.m.	Teachers' Workshop
2:00 p.m. – 5:00 p.m.	Meeting Registration Hours

SUNDAY, JUNE 15, 2014

8:30 a.m. – 5:00 p.m.	Professional Development Workshop
11:00 a.m. – 7:00 p.m.	Meeting Registration Hours
1:00 p.m. – 1:30 p.m.	First-Time Attendee Orientation
4:00 p.m. – 5:00 p.m.	Student Program Q&A Meeting
6:00 p.m. – 8:30 p.m.	ANS President's Reception

MONDAY, JUNE 16, 2014

7:30 a.m. – 5:00 p.m.	Meeting Registration Hours
8:00 a.m. –10:00 a.m.	Spouse/Guest Hospitality
8:00 a.m. –11:30 a.m.	Opening Plenary: The Future of U.S. Influence in the Global Nuclear Enterprise—I
1:00 p.m. – 4:00 p.m.	2014 ANS Annual Meeting: Technical Sessions
1:00 p.m. – 4:00 p.m.	2014 Decommissioning and Remote Systems Opening Plenary
4:30 p.m. – 6:30p.m.	ANS President's Special Session: 60 Years of ANS—A Retrospective
7:00 p.m. –10:50 p.m.	Dinner and Tour at the National Automobile Museum

TUESDAY, JUNE 17, 2014

7:30 a.m. – 5:00 p.m.	Meeting Registration Hours
8:00 a.m. –10:00 a.m.	Spouse/Guest Hospitality
8:20 a.m. –10:00 a.m.	2014 Nuclear Fuels and Structural Materials Plenary Session
8:30 a.m. –11:30 a.m.	2014 ANS Annual Meeting: Technical Sessions
8:30 a.m. –11:30 a.m.	2014 Advances in Thermal Hydraulics Plenary: Legacy of Novak Zuber Memorial
8:30 a.m. –12:10 p.m.	2014 Decommissioning and Remote Systems:Technical Sessions
10:00 a.m. –12:00 p.m.	Special Session: Global Seismic Safety Issues After the Fukushima Daiichi Accident: On Identification and Treatment of Uncertainty about Seismic Issues-Practical Approach to Uncertainties on Seismic Issues and Availability of PRA
11:30 a.m. – 1:00 p.m.	OPD Luncheon at Charlie Palmer Steak
1:00 p.m. – 4:00 p.m.	2014 ANS Annual Meeting: Technical Sessions
1:00 p.m. – 4:40 p.m.	2014 Nuclear Fuels and Structural Materials: Technical Sessions
1:00 p.m. – 4:15 p.m.	2014 Decommissioning and Remote Systems:Technical Sessions
1:30 p.m. – 4:50 p.m.	2014 Advances in Thermal Hydraulics: Technical Sessions
4:00 p.m. – 6:00 p.m.	Chairman's Plenary: The Future of U.S. Influence in the Global Nuclear Enterprise—II
8:00 p.m. –10:00 p.m.	President Donald Hoffman's Special Event for all: An Evening with the Capitol Steps

WEDNESDAY, JUNE 18, 2014

7:30 a.m. – 5:00 p.m.	Meeting Registration Hours
8:00 a.m. –10:00 a.m.	Spouse/Guest Hospitality
8:20 a.m. –11:40 a.m.	2014 Nuclear Fuels and Structural Materials: Technical Sessions
8:30 a.m. –11:30 a.m.	2014 ANS Annual Meeting: Technical Sessions
8:30 a.m. –11:25 a.m.	2014 Advances in Thermal Hydraulics: Technical Sessions
8:00 a.m. –12:00 p.m.	2014 Decommissioning and Remote Systems:Technical Sessions
1:00 p.m. – 4:00 p.m.	2014 ANS Annual Meeting: Technical Sessions
1:00 p.m. – 4:50 p.m.	2014 Decommissioning and Remote Systems: Technical Sessions
1:00 p.m. – 4:20 p.m.	2014 Nuclear Fuels and Structural Materials Special Sessions: Special Session in Honor of Donald Olander—I, Special Session in Honor of Donald Olander—II
1:30 p.m. – 4:00 p.m.	2014 Advances in Thermal Hydraulics: Technical Sessions
4:30 p.m. – 6:30 p.m.	Focus on Communications Workshop
5:30 p.m. – 7:30 p.m.	Nuclear Fuels and Structural Materials Poster Session
6:30 p.m. – 9:30 p.m.	Dinner and Tour at the Nevada Museum of Art

THURSDAY, JUNE 19, 2014

7:30 a.m. – 2:00 p.m.	Meeting Registration Hours
8:20 a.m. –11:40 a.m.	2014 Nuclear Fuels and Structural Materials: Technical Sessions
8:30 a.m. –11:30 a.m.	2014 ANS Annual Meeting: Technical Sessions
8:30 a.m. –11:50 a.m.	2014 Advances in Thermal Hydraulics: Technical Sessions
1:00 p.m. – 4:00 p.m.	2014 ANS Annual Meeting: Technical Sessions
1:00 p.m. – 4:20 p.m.	2014 Nuclear Fuels and Structural Materials: Technical Sessions
1:30 p.m. – 4:00 p.m.	2014 Advances in Thermal Hydraulics: Technical Sessions

2014 ANS Annual Meeting: Meeting Officials

General Chair:
John J. Grossenbacher
Idaho National Laboratory

Assistant General Chair:
Jon Carmack
Idaho National Laboratory

Assistant General Chair:
Kathryn A. McCarthy
Idaho National Laboratory

Advisor:
Harold F. McFarlane
Idaho National Laboratory

Technical Program Chair:
Eric A. Burgett
Idaho State University

Assistant Program Chair:
Jeffery R. Brault
Consultant

Assistant Program Chair:
Martin B. Sattison
Idaho National Laboratory

Finance Chair:
Sue Newby
Idaho National Laboratory

Student Program Chair:
Mahima Gupta
Idaho National Laboratory

Meeting Information

The 2014 ANS Annual Meeting will be held June 15-19, 2014, in Reno, NV. There will be a Professional Development Workshop: "Preparing for the Nuclear Engineering Professional Engineering Exam" held in conjunction with the 2014 ANS Annual Meeting.

Accommodations/Hotel Information

The Grand Sierra Resort is the location for the 2014 ANS Annual Meeting, where all activities, technical sessions and governance committee meetings will take place.

The Grand Sierra Resort is located at 2500 East Second Street, Reno, NV 89595.

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 15, 2014, located in **N-6.**

Student Program

Attendance at the 2014 ANS Annual Meeting is an exciting professional opportunity for college and graduate students.

For information on the Student Program, see the Student Program Instructions document on the Annual Meeting web page. The Student Program Q&A Meeting will be held Sunday, June 15, 2014, 4:00-5:00 p.m. in **Crystal 3.**

Student headquarters room will be located in **N-12.**

Professional Development Hours

ANS is now offering Professional Development Hours (PDHs) to licensed members who attend technical sessions at conferences or who author papers, articles, or books that are published by the ANS. For more information, see the ANS Professional Development Hours Information document on the Annual Meeting web page.

ANS Conference Office

Sun., June. 15, through Thurs., June 19, 2014 from 8:00 a.m. - 5:00 p.m.
Location: **N-11**

ANS Member Business Office

Sun., June. 15, through Thurs., June 19, 2014 from 8:00 a.m. - 5:00 p.m.
Location: **N-9**

ANS Media Center

Monday, June 16, 2014
7:45 a.m. - 4:00 p.m.
Tuesday-Wednesday, June 17 & 18, 2014
8:00 a.m. - 4:00 p.m.
Location: **N-10**

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. The Speakers' Ready Room is located in **N-8.**

ANS Registration

Meeting and workshop registration, speakers' & session chairs' desk and the message desk will be located at the Nevada Registration Desk of the Grand Sierra Resort, Saturday, June 14, 2014 - Thursday, June 19, 2014. 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 14, 2014
2:00 p.m. - 5:00 p.m.
*Sunday, June 15, 2014
11:00 a.m. - 7:00 p.m.
Monday, June 16, 2014
7:30 a.m. - 5:00 p.m.
Tuesday, June 17, 2014
7:30 a.m. - 5:00 p.m.
Wednesday, June 18, 2014
7:30 a.m. - 5:00 p.m.
Thursday, June 19, 2014
7:30 a.m. - 2:00 p.m.

* Sunday workshop attendees only

Registration for the Sunday ANS Professional Development Workshop will take place at the Nevada Registration Desk of the Hotel on Sunday, June 15, 2014, from 7:00 a.m. until 8:30 a.m. Please note: only workshop information will be available; all other registrants see times and location above.

Discover ANS Professional Divisions

Did you realize you get membership in two professional divisions included with your national membership? Did you also know that you can join additional divisions? Professional divisions bring like-minded professionals together to foster knowledge sharing and networking. During the President's Reception, some professional divisions have chosen to staff an information table. A member of the division will be there to answer your questions and help you become more familiar with division activities. Look for them!

Focus on Communications Workshop

Moving Nuclear Energy Forward
Wednesday, June 18, 2014
4:30 p.m.- 6:30 p.m.
Location: **N-3 & N-4**

Center for Nuclear Science and Technology Information
An initiative of the American Nuclear Society

Our nuclear community has plenty of issues to address. Some nuclear plants are closing or under threat either because of economics, equipment, implacable opposition from activists or a combination of these factors. Nuclear science budgets are smaller and smaller due to federal budget cuts. Sanctions or pending sanctions on Russia are negatively affecting joint research projects between U.S. universities and Russian researchers, placing some of them in stasis. And export restrictions (and in some cases, bureaucracy) may compromise the ability of U.S. companies to compete and win in international tender offers and it compromises our seat at the table in international nonproliferation regimes. This workshop will address the role that ANS members can play in addressing these issues, including the messaging and outreach approaches that will be compelling and effective. Join ANS Washington Representative Craig Piercy and ANS Distinguished Service Award recipient and Potomac Communications Group Managing Partner Mimi Limbach for a lively discussion and a focus on the actions that each of us can take. Beer, wine and snacks will be served.

Spouse/Guest Hospitality

Spouse/guest hospitality breakfast will be served from 8:00 a.m. - 10:00 a.m., Monday, June 16, 2014, through Wednesday, June 18, 2014, in the Diplomat Suite. 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.

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 15, 2014
8:30 a.m. - 5:00 p.m.
Location: **Tahoe Ballroom**

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.

Attention Runners: ANS Fun Run

On Tuesday, June 17, 2014, 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 Reno, NV. Bring shoes and a big smile.

Special Events

ANS President's Reception

Sunday, June 15, 2014
6:00 p.m. - 8:30 p.m.
Location: **Grand Ballroom**

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

Additional tickets can be purchased on-site at the ANS Registration desk for **$85.00.**

Special Event: An Evening with the Capitol Steps Hosted by ANS President, Donald Hoffman

Tuesday, June 17th
8:00 p.m. – 10:00 p.m. – Grand Ballroom

ANS President, Donald Hoffman personally invites you to an evening with the Capitol Steps!

For more than twenty-five years, the Capitol Steps have recorded dozens of albums and appeared on *"Good Morning America," the "Today Show," "20/20," "Entertainment Tonight," "Nightline," CNN's "Inside Politics,"* and dozens of times on National Public Radio's *"All Things Considered."*

Dinner and Tour at the National Automobile Museum

Monday, June 16, 2014
7:00 p.m. - 10:00 p.m. (includes travel time)

Don't miss "One of America's Five Greatest Auto Museums." The National Automobile Museum (The Harrah Collection) has a "Wow!" factor you don't often find in a museum. You'll see more than 200 eye-popping cars, and authentic street scenes. The facades bring displays to life; a hardware store here, a movie theatre there which accompany artifacts from each era.

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

OPD Luncheon

Tuesday, June 17, 2014
11:30 a.m. - 1:00 p.m.
$32.00 (Seating is limited)
The Operations and Power Division Luncheon will be held at Charlie Palmer Steak, which is in the Grand Sierra Resort.

Guest Speaker,
The Honorable
Peter B. Lyons,
Assistant Secretary for
Nuclear Energy, U.S.
Department of Energy

Dinner and Tour at the Nevada Museum of Art

Wednesday, June 18, 2014
6:30 p.m. - 9:30 p.m. (includes travel time)

The Nevada Museum of Art serves as a cultural and educational resource for everyone. It is the only accredited art museum in the state of Nevada and is committed to continuous institutional improvement and change.

Doris Duke's Shangri La Architecture, Landscape, and Islamic Art

Doris Duke's Shangri La will be the first comprehensive exhibition of objects from Duke's remarkable collections, within the context of Shangri La, her extraordinary Hawaii residence. This exhibition brings together furnishings and objects from Shangri La, vintage photographs and films, documentation of the estate's construction, architectural drawings, and ephemera exploring the history and experience of this remarkable place.

Picturing Mexico Alfredo Ramos Martínez

Picturing Mexico: Alfredo Ramos Martínez marks the first comprehensive examination of the artist's work produced from 1929 to 1946. An artist of great significance, Ramos Martínez (1871–1946) developed his own distinctive contribution to modernism. The study of Ramos Martínez's work in Los Angeles provides a greater understanding of the myriad cultural contributions of artists living in the city during the first half of the twentieth century.

Tickets can be purchased on-site at the ANS Registration desk for **$95.00**.

(Asterisks indicate special sessions. Parentheses indicate cosponorship.)

Special Sessions

*Opening Plenary: "The Future of U.S. Influence in the Global Nuclear Enterprise—I," Mon. a.m.

*ANS President's Special Session, "60 Years of ANS—A Retrospective," Mon. p.m.

*Global Seismic Safety Issues After the Fukushima Daiichi Accident: On Identification and Treatment of Uncertainty about Seismic Issues—Practical Approach to Uncertainties on Seismic Issues and Availability of PRA, Tues. a.m.

*Chairman's Plenary: "The Future of U.S. Influence in the Global Nuclear Enterprise—II," Tues. p.m.

Aerospace Nuclear Science and Technology (ANST)

(Nuclear Criticality Safety and Space Technology Applications),Thurs. p.m.

Education, Training, and Workforce Development (ETWDD)

Focus on Communications: Communicating with Communities–Panel, Mon. p.m.

Focus on Communications: Promoting Building Policy Maker Support for Nuclear Facilities–Panel, Mon. p.m.

(NNSA Graduate Program: Past Experiences and Current Highlights–Panel), Tues. a.m.

Cyber Security in the Nuclear Age–Panel, Tues. p.m.

University Infrastructure Needs–Panel, Wed. a.m.

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

Fuel Cycle and Waste Management (FCWMD)

SRS Plutonium Disposition Projects Update–Panel, Mon. p.m.

Advanced Fuel Cycle Technology: Special Session in Honor of Dr. Michael Lineberry, Tues. a.m.

Experiments in Used Fuel Disposition, Storage, Transport, and Disposal, Tues. p.m.

Recycle and Reuse of Components from Used Nuclear Fuel, Tues. p.m.

Fuel Cycle Simulators and Systems Analysis, Wed. a.m.

Hybrid Energy: Combining Nuclear and Other Energy Sources, Wed. a.m.

(Plutonium Disposition—The Clear and Present Danger, 20 Years Later–Panel), Wed. a.m.

Pu Disposition Alternatives–Panel, Wed. p.m.

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

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

Human Factors, Instrumentation, and Controls (HFICD)

Human Factors, Instrumentation, and Controls: General, Tues. a.m.

Isotopes and Radiation (IRD)

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

Mathematics and Computation (MCD)

Current Issues in Computational Methods–Roundtable—Computational Human Phantoms, Mon. p.m.

Uncertainty Quantification and Sensitivity Analysis Methods, Mon. p.m.

Transport Methods and Mathematical Modeling, Tues. a.m.

Computational Methods: General, Wed. p.m.

Nuclear Criticality Safety (NCSD)

Data, Analysis, and Operations for Nuclear Criticality Safety, Mon. p.m.

(ANS Reactor Physics Division (RPD) Session in Memory of Richard (Dick) McKnight), Tues. a.m.

ANS Nuclear Criticality Safety Division (NCSD) Session in Memory of Richard (Dick) McKnight, Tues. p.m.

Critical and Subcritical Experiments, Wed. a.m.

Criticality Safety Program Metrics–Paper/Panel, Wed. p.m.

ANS 8 Standards Forum, Thurs. a.m.

Nuclear Installations Safety (NISD)

Fuel Cladding Behavior Under Accident Conditions, Tues. a.m.

Round Table on Organizing Special Sessions for ANS Meetings—Workshop, Tues. p.m.

Current Topics in Probabilistic Risk Analysis, Wed. a.m.

Nuclear Installations Safety: General, Thurs. a.m.

Nuclear Nonproliferation Technical Group (NNTG)

Nevada National Security Site (NNSS): Role and Contributions to the Nonproliferation and Global Security Community—Panel, Mon. p.m.

NNSA Graduate Program: Past Experiences and Current Highlights–Panel, Tues. a.m.

Human Reliability in Nuclear and Radiological Systems–Panel, Tues. p.m.

Plutonium Disposition—The Clear and Present Danger, 20 Years Later–Panel, Wed. a.m.

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

Operations and Power (OPD)

Small Modular Reactor Developments–Panel, Mon. p.m.

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

Advanced/Gen-IV Reactors, Tues. p.m.

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

Post Fukushima Technology Enhancements to Improve Safety Margins–Paper/Panel, Wed. p.m.

Radiation Protection and Shielding (RPSD)

History and Current State of Radiation Detection—A Review Session in Honor of Professor Nick Tsoulfanidis, Tues. a.m.

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

Radiation Protection and Shielding–Roundtable, Wed. a.m.

Advanced Tallies in MCNP–Tutorial, Thurs. a.m.

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

Reactor Physics (RPD)

Reactor Physics: General—I, Mon. p.m.

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

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

Reactor Physics: General–IV, Wed. p.m.

Reactor Physics: General—V, Thurs. a.m.

ANS Reactor Physics Division (RPD) Session in Memory of Richard (Dick) McKnight, Tues. a.m.

Nuclear Criticality Safety and Space Technology Applications, Thurs. p.m.

Thermal Hydraulics (THD)

Experimental Thermal Hydraulics, Mon. p.m.

Computational Thermal Hydraulics, Wed. p.m.

Thermal Hydraulics: General, Thurs. a.m.

Young Members Group (YMG)

(NNSA Graduate Program: Past Experiences and Current Highlights–Panel), Tues. a.m.

(Round Table on Organizing Special Sessions for ANS Meetings—Workshop), Tues. p.m.

Monday • June 16, 2014

(Asterisks indicate special sessions.)

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.	***Opening Plenary:** "The Future of U.S. Influence in the Global Nuclear Enterprise—I"
1:00 p.m.-4:00 p.m.	**2014 ANS Annual Meeting Technical Sessions** • Focus on Communications: Communicating with Communities–Panel • Focus on Communications: Building Policy Maker Support for Nuclear Facilities–Panel • Small Modular Reactor Developments–Panel • Experimental Thermal Hydraulics • SRS Plutonium Disposition Projects Update–Panel • Data, Analysis, and Operations for Nuclear Criticality Safety • Reactor Physics: General—I • Nevada National Security Site (NNSS): Role and Contributions to the Nonproliferation and Global Security Community—Panel • Current Issues in Computational Methods–Roundtable: Computational Human Phantoms • Uncertainty Quantification and Sensitivity Analysis Methods
4:30 p.m.-6:30 p.m.	***ANS President's Special Session** "60 Years of ANS—A Retrospective"
7:00 p.m. - 10:00 p.m.	**Dinner and Tour at the National Automobile Museum**

Monday, June 16, 2014, 8:30 a.m.

Opening Plenary: "The Future of U.S. Influence in the Global Nuclear Enterprise—I"

Session Organizer : Adm. John J. Grossenbacher *(INL)*

Summit Pavilion

For many years, the U.S. led the development and deployment of nuclear power worldwide. Technology developed in the U.S. is used throughout the globe. Can we expect this to continue and what forces in the U.S. impact this in the future? The world market is moving quickly, is the U.S being left behind and is its influence in jeopardy?

Speakers:

- John Ahearne *(Retired)*
- David G. McAlees *(TerraPower)*
- Paul Howarth *(NNL, UK)*
- Jiang Mianheng *(Chinese Academy of Science)*
- Dan Reicher *(Stanford Law School)*
- Sadler Rupprecht *(Westinghouse)*
- Neil Wilmshurst *(EPRI)*

Monday, June 16, 2014, 1:00 p.m.

Focus on Communications: Communicating with Communities–Panel

Sponsored by ETWDD

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

Carson 1

1:00 p.m.

It is very clear that community support is critical for ongoing successful operations of nuclear plants and other facilities. Case study after case study demonstrates that when community support erodes, anti-nuclear activists have seen success in shutting down some facilities. In this session, panelists will explore the strategies and tactics that work, along with those that don't, in building support for nuclear facilities and operations from local and regional communities. Panelists representing utilities, national labs and government production, and cleanup operations will discuss the challenges they face and how they overcome them.

Panelists:

- Mike Piola *(Energy Northwest)*
- Rick Zuercher *(Dominion)*
- Nicole Stricker *(INL)*

Focus on Communications: Building Policy Maker Support for Nuclear Facilities–Panel

Sponsored by ETWDD

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

Carson 1

2:30 p.m

In several states, policy makers are actively campaigning for the shutdown of nuclear power plants and government nuclear facilities. In this panel discussion, experts from utilities, national labs, and government nuclear facilities will discuss the specific challenges they face as well as the actions they are taking to reach out to and educate policy makers on the benefits of their local nuclear energy facilities.

Panelists:

- Mark Lewis *(Central Arizona Project)*
- Gary Barbour *(Barbour and Assoc)*
- Mark Kotek *(Gallatin Public Affairs)*
- Craig Piercy *(ANS Governmental Affairs Representative)*
- Harsh Desai *(ANS Congressional Fellow)*
- Chip Cameron *(Zero Gravity)*

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

Small Modular Reactor Developments–Panel

Sponsored by OPD
Session Organizer and Chair: Sandra M. Sloan *(B&W mPower, Inc.)*

Carson 2

1:00 p.m.
Small Modular Reactors (SMRs) have been a hot topic for several years, with designers planning to submit design certification applications to the USNRC beginning in mid-2014. Global interest continues for nuclear plant designs which expand the portfolio of currently offered designs to include those with power levels below 300 MWe. This session provides an update on recent developments in the design, licensing, and deployment of SMRs. Topics may include R&D activities, testing, licensing, modularization, and nth of a kind planning.

Panelists:

- Doug Lee *(B&W mPower)*
- Jose Reyes *(NuScale Power)*
- Stewart Magruder *(NRC)*
- Robin Rickman *(Westinghouse)*
- Fiona Rayment *(UK National Nuclear Lab)*

Experimental Thermal Hydraulics

Sponsored by THD
Session Organizer: Xiaodong Sun *(Ohio State)*
Cochairs: Piyush Sabharwall *(INL),* Paolo Ferroni *(Westinghouse)*

Carson 3

1:00 p.m.
Effects of pH and Electrical Conductivity on the Quantity of Fibrous Debris Bypass through a Containment Sump Strainer, Saya Lee, Rodolfo Vaghetto, Suhaeb Abdulsattar, Matthew Kappes, Yassin A. Hassan *(TAMU)*

1:25 p.m.
Experimental Study of Pressure Drop through a Fibrous Debris Bed Generated on a Perforated Plate with Embedded Mesh Screen, Suhaeb S. Abdulsattar, Saya Lee, Yassin A. Hassan *(TAMU)*

1:50 p.m.
Investigation of Abnormal Heat Transfer and Flow in a VHTR Reactor Core, Francisco I. Valentin, Jorge Pulido *(City College of New York),* Ryan Anderson *(Montana State Univ),* Masahiro Kawaji *(City College of New York/CUNY Energy Inst)*

2:15 p.m.
Enhancement of Boiling Performance on a Surface Modified by Micro/Millimeter-Posts and Nanoparticles, Hang Jin Jo, Jin Man Kim, Moo Hwan Kim,Hyun Sun Park *(POSTECH),* Hwasung Yeom,K. Sridharan, M. L. Corradini *(Univ of Wisconsin-Madison)*

2:40 p.m.
Development of Refractive-Index-Matching Technique for Transparent 3D Printing Models for Flow Visualization, Min Seop Song, Hae Yoon Choi, Jee Hyun Seong, Eung Soo Kim *(Seoul National Univ)*

3:05 p.m.
Experimental Observation of Forced Flow Mixing in Tight-Lattice Rod Bundle, Wang Kee In, Chang Hwan Shin, Chi Young Lee *(KAERI)*

3:30 p.m.
Turbulence Intensity and Pressure Drop Fluctuations Experienced Downstream of a Mixing Grid, N. C. Galegar, E. E. Dominguez-Ontiveros, Y. A. Hassan *(TAMU)*

SRS Plutonium Disposition Projects Update–Panel

Sponsored by FCWMD
Session Organizer and Chair: Carl Mazzola *(Shaw Project Services Group)*

CANCELED

Crystal 1

1:00 p.m.
Construction is progressing on the Mixed Oxide (MOX) Fuel Fabrication Facility and Waste Solidification Building (WSB) at Savannah River Site; WSB start-up testing has begun. The Surplus Plutonium Disposition program is focused on optimizing pit disassembly and conversion capability, obtaining irradiation services, expanding mission disposition requirements, and other key activities, which are being addressed in National Environmental Policy Act space. Programmatic integration of these comprehensive project elements poses significant management challenges requiring complex decisions to ensure cost-effective solutions. This session provides an update to these national security non-proliferation projects and discusses how emerging program integration issues are being effectively resolved.

Panelists:

- Scott Cannon *(NNSA-SR)*
- Tom Cantey *(NNSA-SR)*
- Kelly Trice *(CB&I Project Services Group)*
- Sue King *(CB&I Project Services Group)*
- Dealis Gwyn *(AREVA)*
- Deborah Seymour *(NRC)*

Data, Analysis, and Operations for Nuclear Criticality Safety

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

Crytal 2

1:00 p.m.
A Systems Engineering Approach for Implementing ANSI/ANS-8 Standards for CAAS and EP&R, Peter L. Angelo *(Y-12 Natl Security Complex)*

1:25 p.m.
COG Validation for Lead and Polyethylene Reflected SILENE Criticality Excursion Benchmark Experiments, Soon Sam Kim, David Heinrichs, Rich Buck,Ed Lent, Chuck Lee *(LLNL)*

1:50 p.m.
Comparison of Bounding and Realistic Models to Subcritical Measurements, J. Hutchinson, M. Mitchell, T. Cutler *(LANL),* J. Alwin *(PNNL)*

2:15 p.m.
Neutron Transmission Correction using Multiplicity Analysis, J. Hutchinson, M. Smith-Nelson *(LANL)*

2:40 p.m.
Unusual Behaviors Resulting from Unusual Control Schemes in Criticality Safety, Theresa E. Cutler, Mark V. Mitchell, Jesson D. Hutchinson *(LANL)*

Reactor Physics: General—I

Sponsored by RPD
Session Organizer: Alexander Stanculescu *(INL)*
Chair: Gianluca Longoni *(Westinghouse)*

Crystal 3

1:00 p.m.
Bias and Uncertainty Under-Prediction in MCNP6.1 Lattice Physics Calculations with Depletion, Alexander S. Bennett *(Penn State Univ),* Brian C. Kiedrowski, Forrest B. Brown *(LANL)*

1:25 p.m.
CRANE: A Prototypic SCALE Module for Reduced Order Modeling, Ugur Mertyurek *(ORNL),* Congjian Wang, Youngsuk Bang, Hany Abdel-Khalik *(NCSU)*

1:50 p.m.
Leakage-Corrected Discontinuity Factors for a Second-Generation Th-Pu Pressure-Tube SCWR, Katarzyna Carisse, Eleodor Nichita *(Univ of Ontario Inst of Technology)*

2:15 p.m.
Prediction on Underestimation of Variance for Fission Rate Distribution in Monte-Carlo Calculation, Akio Yamamoto, Kotaro Sakata, Tomohiro Endo *(Nagoya Univ)*

2:40 p.m.
Method of Characteristics Code Development at UNIST, Chidong Kong, Sooyoung Choi, Deokjung Lee *(UNIST)*

Nevada National Security Site (NNSS): Role and Contributions to the Nonproliferation and Global Security Community–Panel

Sponsored by NNTG
Session Organizers: Howard L. Hall (*Univ of Tennessee),* Harvey Clark *(NSTec)*
Chair: Raymond J. Juzaitis *(NSTec)*

Crystal 4

1:00 p.m.
Established in 1950, the Nevada National Security Site (NNSS, previously the Nevada Test Site) has long held a central role in the U.S. nuclear weapons program. Most of the US nuclear weapons tests from the testing era were conducted here. In addition to this, however, the NNSS has and continues to serve as a valuable resource to the nonproliferation community for efforts in treaty verification, emergency response, and various testing and evaluation activities. This session highlights the contributions of the Test Site to the nonproliferation community.

Panelists:

- Reflections on JVE, Negotiations and Threshold Nuclear-Test Ban Treaty by Video, Ambassador Paul Robinson *(U.S./USSR Nuclear Testing)*
- Joint Verification Experiment, Nelson Cochrane *(LANL)*
- Latent Proliferation Threats and Resistance, Ray Juzaitis *(NSTec)*
- Trends in Proliferation Technology, Steve Henry *(NSTec)*
- Research at NCNS, Phillip Cole *(NCNS)*
- Representative from the NNSA Office of Nonproliferation Research & Development to be determined.

Current Issues in Computational Methods–Roundtable: Computational Human Phantoms

Sponsored by MCD
Session Organizer and Chair: Forrest B. Brown *(LANL)*

Crystal 5

1:00 p.m.
Computational human phantoms are models of the human body used in radiation transport codes. Since the 1960s, these models have been used in both deterministic and Monte Carlo transport codes to determine organ doses for applications in shielding, health physics, and medical physics. As computer capabilities have evolved over the years, so have the detail and sophistication of phantoms. Early phantoms were simplified solid body models; today's phantoms include detailed voxels, non-uniform B-splines, and unstructured meshes, and have been extended to 4D (space+time) for simulations involving respiratory and cardiac motions. A very recent development is classes of deformable phantoms that can be tailored to body stature, age, pregnancy, height, obesity, and other individual characteristics. The phantom posture can be adjusted to simulate nuclear accidents and deep space exploration. While

about 10 phantoms were available prior to the 1980s, we now have more than 200. Phantoms developed over the last 5 years are extremely demanding of today's computer resources and transport codes. Even codes used for large-scale, detailed reactor analysis are pushed to or beyond their limits in terms of the type and size of the geometrical information in the latest and future phantoms. Many research groups worldwide are developing highly parallel GPU- or MIC-based transport codes for radiation treatment planning to analyze these phantoms in less than 1 minute, rather than the hours or days needed by conventional codes.

Panelist:

• George Xu *(RPI)*

Uncertainty Quantification and Sensitivity Analysis Methods

Sponsored by MCD
Session Organizer: Ryan G. McClarren *(Texas A&M)*
Chair: Cristian Rabiti *(INL)*

Crystal 5

2:30 p.m.

Uncertainty Quantification for Coupled Monte Carlo and Thermal-Hydraulics Codes, Xu Wu, Tomasz Kozlowski *(Univ of Illinois at Urbana-Champaign)*

2:55 p.m.

Employing Non-Converged Iterates for Reduced Order Modeling Basis Construction, Bassam A. Khuwaileh, Youngsuk Bang, Congjian Wang, Hany S. Abdel-Khalik *(NCSU)*

3:20 p.m.

Propagation of Error Bounds due to Active Subspace Reduction, Mohammad G. Abdo, Hany S. Abdel- Khalik *(NCSU)*

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

Monday, June 16, 2014, 4:30 p.m.

ANS President's Special Session: "60 Years of ANS—A Retrospective"

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

Summit Pavilion

Speakers:

• Donald R. Hoffman *(President, ANS)*
• Ronald Stinson *(President, ANS – 1987)*
• Edward L. "Ted" Quinn *(President, ANS – 1998)*
• James Lake *(President, ANS – 2000)*
• Eric P. Loewen (*President, ANS – 2011)*

Tuesday • June 17, 2014

(Asterisks indicate special sessions.)

7:30 a.m.-5:00 p.m.	**Meeting Registration**
8:00 a.m.-10:00 a.m.	**Spouse/Guest Hospitality**
8:30 a.m.-11:30 a.m.	**2014 ANS Annual Meeting Technical Sessions** • Fuel Cladding Behavior Under Accident Conditions • New Nuclear Construction Around the World–Panel • History and Current State of Radiation Detection—A Review Session in Honor of Professor Nick Tsoulfanidis • Advanced Fuel Cycle Technology:: Special Session in Honor of Dr. Michael Lineberry • ANS Reactor Physics Division (RPD) Session in Memory of Richard (Dick) McKnight • Human Factors, Instrumentation, and Controls: General • NNSA Graduate Program: Past Experiences and Current Highlights–Panel • Transport Methods and Mathematical Modeling
10:00 a.m.-12:00 p.m.	***Special Session: Global Seismic Safety Issues After the Fukushima Daiichi Accident: On Identification and Treatment of Uncertainty about Seismic Issues—Practical Approach to Uncertainties on Seismic Issues and Availability of PRA
11:30 a.m.-1:00 p.m.	**OPD Luncheon at Charlie Palmer Steak**
1:00 p.m.-4:00 p.m.	**2014 ANS Annual Meeting Technical Sessions** • Cyber Security in the Nuclear Age–Panel • Advanced/Gen-IV Reactors • Computational Tools for Radiation Protection and Shielding • Experiments in Used Fuel Disposition, Storage, Transport, and Disposal • Recycle and Reuse of Components from Used Nuclear Fuel • ANS Nuclear Criticality Safety Division (NCSD) Session in Memory of Richard (Dick) McKnight • Reactor Physics: General—II • Human Reliability in Nuclear and Radiological Systems–Panel • Round Table on Organizing Special Sessions for ANS Meetings—Workshop
4:00 p.m.-6:00 p.m.	***Chairman's Plenary:** The Future of U.S. Influence in the Global Nuclear Enterprise—II
8:00 p.m.-10:00 p.m.	***Special Event Hosted by ANS President, Donald Hoffman: An Evening with the Capitol Steps**

Tuesday, June 17, 2014, 8:30 a.m.

Fuel Cladding Behavior Under Accident Conditions

Sponsored by NISD
Session Organizer: Dana A. Powers *(SNL)*
Chair: Juan J. Carbajo *(ORNL)*

Carson 1

8:30 a.m.
The Turbine Trip Without Bypass Analysis of Kuosheng BWR/6 Using TRACE/FRAPCON/FRPATRAN, H. C. Chang, W. K. Lin, W. Y. Li, C. Shih *(Tsinghua Univ),* J. R. Wang, H. T. Lin *(Atomic Energy Council)*

8:55 a.m.
The Spent Fuel Pool Analysis of Chinshan BWR/4 using TRACE/CFD/FRAPTRAN, C. Shih, W. Y. Li, H. C. Chang *(Tsinghua Univ),* J. R. Wang *(Atomic Energy Council),* W. K. Lin, Y. S. Tseng, *(Tsinghua Univ),* H. T. Lin *(Atomic Energy Council)*

9:20 a.m.
Historical Review of Fuel Fragmentation and Dispersal Observations in Design Basis Loss-of-Coolant Accident Testing, P. Raynaud, M. Flanagan *(NRC)*

9:45 a.m.
Influence of Burnup on Fuel Rod Characteristics, and Implications for Loss-of-Coolant-Accident Behavior, M. Flanagan *(NRC)*

New Nuclear Construction Around the World–Panel

Sponsored by OPD
Session Organizer: Edward Quinn *(Technology Resources)*
Cochairs: Edward Quinn *(Technology Resources),* Corey K. McDaniel *(RSCC Nuclear Wire & Cable)*

Carson 2

8:30 a.m.
This panel provides the latest information on the status and progress in new nuclear construction around the world including government, regulatory, owner-operator, and vendor input. Speakers address the latest in key issues that have an impact on the selection of new designs and the status of construction activities.

Panelists:

- Lawrence Burkhart *(NRC)*
- John Kelly *(DOE)*
- Ambassador Al-Kaabi *(UAE)*
- Kannan Iyer *(IIT Bombay)*

History and Current State of Radiation Detection—A Review Session in Honor of Professor Nick Tsoulfanidis

Sponsored by RPSD
Session Organizer and Chair: X. George Xu *(RPI)*

Carson 3

8:30 a.m.
Confidence in LWR Instrumentation Data during a Severe Accident, Joy Rempe, Darrell Knudson *(INL)*

8:55 a.m.
Climate Change, Scaling Up Nuclear Power, and Closing the Fuel Cycle: An Assessment of Kr-85 Atmospheric Dose, Glenn Sjoden, Michael Chin,, Bojan Petrovic *(Georgia Tech)*

9:20 a.m.
Large Area Zero Bias Solid-State Neutron Detectors, Yaron Danon, Rajendra Dahal, Kuan-Chih Huang, James J.-Q. Lu, Adam Weltz,

9:45 a.m.
Gamma-Ray Detection: A Historical Overview, Sheldon Landsberger *(Univ of Texas at Austin)*

10:10 a.m.
Polaris 3-D Position-Sensitive CdZnTe Gamma-Ray Imaging Spectrometers, Zhong He *(Univ of Michigan)*

10:35 a.m.
A Brief History of Radiation Detectors for Homeland Security Applications, Raymond Klann *(ANL)*

Advanced Fuel Cycle Technology: Special Session in Honor of Dr. Michael Lineberry

Sponsored by FCWMD
Session Organizer and Chair: Jinsuo Zhang *(Ohio State)*

Crystal 1

8:30 a.m.
Introduction, Dr. Harold McFarlane *(INL)*

8:45 a.m.
An Efficient Electrorefining Mass Transport Model for Pyroprocessing Simulation, Riley M. Cumberland, Man-Sung Yim *(KAIST)*

9:10 a.m.
Transient Testing Plan for Accident Tolerant Fuels Program, D. M. Wachs, N. Woolstenhulme *(INL)*

9:35 a.m.
An Earthquake Modeling Result of a Pyroprocessed Waste Repository, Youn-Myoung Lee, Jongtae Jeong *(KAERI)*

10:00 a.m.
Three-Level Fuel-Cycle Strategy to Improve Fast Reactor Economics and Non-Proliferation Characteristics, Charles Forsberg *(MIT)*

10:25 a.m.
Effects of BeO Thermal Conductivity Degradation on LWR UO_2-BeO Fuel Performance, Yanin Sukjai, Alexander Mieloszyk, Mujid S. Kazimi *(MIT)*

10:50 a.m.
Commercial-Scale Pyroprocessing Failure Modes and Implications for Operations and Safeguards, Robert O. Hoover, Philip L. Lafreniere, Edward D. Blandford *(Univ of New Mexico)*

ANS Reactor Physics Division (RPD) Session in Memory of Richard (Dick) McKnight

Sponsored by RPD; cosponsored by NCSD
Session Organizer: Luiz C. Leal *(ORNL)*
Cochairs: Luiz C. Leal *(ORNL),* J. Blair Briggs *(INL)*

Crystal 2

8:30 a.m.
Dr. Richard McKnight's Technical Contributions to the Reactor Physics Community, Temitope A. Taiwo, Robert N. Hill, Hussein S. Khalil *(ANL)*, invited

8:55 a.m.
Review of the IFR Physics Analysis Database, T. Fei, B. Feng, T. K. Kim *(ANL)*

9:20 a.m.
Consistent Comparison of Sensitivity Coefficients Obtained with PERSENT and ERANOS Codes, Gerardo Aliberti, Micheal A. Smith *(ANL)*

9:45 a.m.
Improved ZPR Analysis with the Argonne Reactor Physics Codes, Micheal A. Smith, Richard M. Lell *(ANL)*

10:10 a.m.
Initial Verification and Validation Tests of the MC2-3 ENDF/B-VII.1 Library for Fast Reactor Systems, C. H. Lee *(ANL),* W. S. Yang *(Purdue Univ),* T. A. Taiwo *(ANL)*

10:35 a.m.
Role of Experiment Covariance in Cross Section Adjustments (Based on Seminal Work Performed by R. D. McKnight), Invited, G. Palmiotti, M. Salvatores *(INL)*, invited

Human Factors, Instrumentation, and Controls: General

Sponsored by HFICD
Session Organizer: Sacit M. Cetiner *(ORNL)*
Chair: Jamie Baalis Coble *(Univ of Tennessee, Knoxville)*

Crystal 3

8:30 a.m.
Estimation Method of Loss of Situation Awareness due to Automation in Nuclear Power Plants (NPPs), Seung Min Lee, Ho Bin Yim, Poong Hyun Seong *(KAIST)*

8:55 a.m.
Digital Systems Testability in the Context of Diversity, Steven A. Arndt *(NRC)*

9:20 a.m.
Human Factors Engineering Training Materials for the Nuclear Industry, Joseph Naser *(EPRI),* Lewis Hanes *(Independent Research Consultant),* Robert Fink *(CDF Services)*

9:45 a.m.
An Investigation into Causality of Operators' Noncompliance during EOP Simulation, Sun Yeong Choi, Wondea Jung *(KAERI)*

10:10 a.m.
Evaluation of the Time-Dependent Issues of Natural Circulation SMR Primary Circuit Parameters Definition for Design of Operational Procedures and Reactor Control Algorithms, Alexey Rezvoi *(NuCon. US),* Alexey I. Soldatov *(Oregon State Univ)*

NNSA Graduate Program: Past Experiences and Current Highlights–Panel

Sponsored by NNTG; cosponsored by ETWDD/YMG
Session Organizer: Rian M. Bahran *(LANL)*
Chair: Lenka Kollar *(ANL)*

Crystal 4

8:30 a.m.
The NNSA Graduate Program (NGP) combines the two previous NNSA post-graduate programs—the Nonproliferation Graduate Fellowship Program and the Future Leaders Program. Fellows have a 12-month, full-time, salaried fellowship that provides them with specialized training and practical experience on projects designed to detect, prevent, and reverse the proliferation of nuclear weapons.

Since the original program began in 1997, hundreds of alumni have continued to apply the knowledge and experience they gained at NNSA inside and outside of the organization with careers in foreign service, national laboratories, defense/intelligence agencies, industry, academia, and NGOs. This panel session will highlight the current NGP program and the experiences of fellows that are helping sustain national expertise in this vital area.

Panelists:

- Jana Fankhauser *(NGP)*
- Melissa Scholz *(NNSA),* past fellow
- Alicia Swift *(LANL),* past fellow
- Justin Clinton *(Air Force Inst. of Tech),* past fellow
- Alison Goodsell *(LANL),* past fellow
- David Vermillion *(ORNL),* past fellow

Transport Methods and Mathematical Modeling

Sponsored by MCD
Session Organizer: Ryan G. McClarren *(Texas A&M)*
Chair: Wei Ji *(RPI)*

Crystal 5

8:30 a.m.
Comparison of Iterative Time-Eigenvalue Methods with Discrete Ordinates and Monte Carlo, Brian C. Kiedrowski *(LANL)*

8:55 a.m.
Comparison of Prompt Kinetics Models Derived from Alternate Eigenvalues, Brian C. Kiedrowski *(LANL)*

9:20 a.m.
Mesh Generation for Transport Sweeps Using a Piece-Wise Linear Discontinuous Discretization, Tarek Ghaddar *(Univ of Michigan),* Jean C. Ragusa *(TAMU)*

9:45 a.m.
Acceleration of SN Power Iteration with Coarse Mesh Formulation Employing Angular Flux Discontinuity Factors, Chae Ho Lim, Han Gyu Joo *(Seoul National Univ)*

10:10 a.m.
Improved Monte Carlo Tallying of Multi-Group Scattering Moment Matrices, Adam G. Nelson, William R. Martin *(Univ of Michigan)*

10:35 a.m.
Geometry Navigation Acceleration Algorithm for Monte Carlo Radiation Simulation, Bin Wu *(Chinese Academy of Sciences),* Zhenping Chen, Jing Song *(Chinese Academy of Sciences/Univ of Science and Technology of China),* FDS Team

Tuesday, June 17, 2014, 10:00 a.m.

Special Session: Global Seismic Safety Issues After the Fukushima Daiichi Accident: On Identification and Treatment of Uncertainty about Seismic Issues—Practical Approach to Uncertainties on Seismic Issues and Availability of PRA

Summit Pavilion

This special session will focus on the following important issues that arose after the accident at the Fukushima Daiichi NPP:

- How to approach capable faults in NPP sites;
- How to practically incorporate source uncertainty to the ground motion on safe shutdown earthquake;
- The availability of PRA for seismic issues; and
- The global strategic direction for using PRA for seismic issues.

Moderator:
Neil Wilmshurst *(Vice President of Nuclear, EPRI)*

Panelists:
- Dr. Nilesh Chokshi *(Former Deputy Director, NRC)*
- Dr. Brittain E. Hill *(Senior Technical Advisor, NRC)*
- Dr. Pierre Labbe *(Senior Expert, EDF)*
- Prof. Koji Okumura *(Graduate School of Letters, Department of Geography, Hiroshima University)*
- Prof. Tsuyoshi Takada *(Graduate School of Engineering, Department of Architecture, University of Tokyo)*
- Prof. John Anderson *(Seismological Laboratory, University of Nevada, Reno)*
- Prof. Thomas K. Rockwell *(Department of Geological Sciences, San Diego State University)*

Tuesday, June 17, 2014, 1:00 p.m.

Cyber Security in the Nuclear Age–Panel

Sponsored by ETWDD
Session Organizer and Chair: Jane A. LeClair *(Excelsior Coll)*

Carson 1

Cyber security continues to be an ongoing issue in the nuclear community. Since the energy sector was the target of nearly 40% of all reported cyber attacks on critical infrastructure networks in 2012 according to the Department of Homeland Security, the nuclear community must be increasingly vigilant in protecting our digital systems against intrusions. Safety has, and will, continue to be the watchword in the nuclear industry. With that in mind, this panel discussion will highlight the current state of affairs regarding cyber security and what the nuclear industry may expect in the decade ahead.

Panelists:
- Gary Garett *(INPO)*
- Bob Eckman *(FirstEnergy)*
- Nathan L. Faith *(Exelon Generation)*
- Edward McGowan *(Entergy)*

Advanced/Gen-IV Reactors

Sponsored by OPD
Session Organizer: Gale Hauck *(Westinghouse)*
Chair: William Arthur Wharton III *(Westinghouse)*

Carson 2

1:00 p.m.
Efficiency of Nuclear and Conventional Air-Brayton Power Cycles, H. Andreades *(Univ of California, Berkeley),* C. W. Forsberg *(MIT),* P. F. Peterson *(Univ of California, Berkeley)*

1:20 p.m.
A Comparison of a Recuperated Open Cycle (Air) Brayton Power Conversion System with the Traditional Steam Rankine Cycle for the Next Generation Nuclear Power Plant, Bahman Zohuri, Patrick Mc-Daniel, Cassiano de Oliviera *(Univ of New Mexico)*

1:40 p.m.
Market for Hot Air from Salt-Cooled Reactors with Air-Brayton Power Cycles, C. W. Forsberg *(MIT)*

2:00 p.m.
Market Performance of the Mark 1 Pebble-Bed Fluoride-Salt-Cooled High-Temperature Reactor, Daniel Curtis, Charles Forsberg *(MIT)*

2:20 p.m.
Hybrid Molten Salt Reactor (HMSR) System Study, Robert D. Woolley *(Princeton Univ),* Laurence F. Miller *(Univ of Tennessee)*

2:40 p.m.
Chemical Compatibility of Containment and Other Materials with FHR Coolant Salts, John D. Stempien, Ronald G. Ballinger, Charles W. Forsberg *(MIT)*

3:00 p.m.
MSR On-line Reprocessing Technology and Nonproliferation Aspects, Jan Uhlíř *(Research Centre Řež)*

3:20 p.m.
Study of Neutronic-Thermohydraulic Coupled Calculation of SCWR, Shichang Liu, Zeguang Li, Kan Wang *(Tsinghua Univ)*

3:40 p.m.
Validation of AGREE with HTTR Control Rod Withdrawal Tests, Volkan Seker, Thomas J. Downar *(Univ of Michigan)*

Computational Tools for Radiation Protection and Shielding

Sponsored by RPSD
Session Organizer: Peter F. Caracappa *(RPI)*
Chair: Hatice Akkurt *(EPRI)*

Carson 3

1:00 p.m.
MCNP6 Cosmic and Terrestrial Background Particle Fluxes—Release 4, G. E. McMath, G. W. McKinney, T. A. Wilcox *(LANL)*

1:25 p.m.
Production of Energetic Light Fragments with Expanded Cascade Exciton Model (CEM), Leslie M. Kerby *(LANL/Univ of Idaho),* Stepan G. Mashnik *(LANL),* Akira T. Tokuhiro *(Univ of Idaho)*

1:50 p.m.
Analysis of the Scattering a Beam of Neutrons or Photons from Broad Rectangular Targets—Modeling and Compact Benchmark Tools for Quick Estimates and MC Verifications, E.V. Steinfelds, K. Andrew *(Western Kentucky Univ)*

2:15 p.m.
Development of a Neutron Spectroscopy Unfolding Suite Integrating Former- and Next-Generation Codes, Brycen L. Wendt, Emerald D. Ryan, Eric A. Burgett *(Idaho State Univ)*

2:40 p.m.
Establishment and Analysis of Mono-Energy Photon Specific Absorbed Fractions of Rad-HUMAN Phantom Using Monte Carlo Method, Wen Wang *(Chinese Academy of Science/Univ of Science and Technology of China),* Mengyun Cheng, Pengcheng Long *(Chinese Academy of Science),* Yican Wu *(Chinese Academy of Science/Univ of Science and Technology of China),* FDS Team

3:05 p.m.
Preliminary Analysis of Source Term for Primary Coolant System of China Lead-based Research Reactor (CLEAR-I), Tongqiang Dang, Lanfang Mao, Haixia Wang, Qian Guo, Yican Wu, FDS Team *(Chinese Academy of Science)*

3:30 p.m.
Testing of ARCHER-CT, A Fast Monte Carlo Code for CT Dose Calculation: Experiment versus Simulation, Tianyu Liu, Xining Du, Lin Su, Yiming Gao, Wei Ji *(RPI),* Da Zhang, Jim Q. Shi, Bob Liu, Mannudeep K. Kalra *(Mass General Hospital),* X. George Xu *(RPI)*

Experiments in Used Fuel Disposition, Storage, Transport, and Disposal

Sponsored by FCWMD
Session Organizer and Chair: Kathryn D. Huff *(Univ of California, Berkeley)*

Crystal 1

1:00 p.m.
Potential Effect of Interfacial Bonding on Used Nuclear Fuel Vibration Reliability, Jy-An Wang, Hao Jiang, Hong Wang *(ORNL)*

1:25 p.m.
Passive Optical Impurity Monitoring of Dry Storage Containers for Spent Fuel, Ryan M. Meyer, Andrew M. Casella, Jonathan D. Suter, Hong Qiao, Norm C. Anheier *(PNNL),* Mark A. Prelas *(Univ of Missouri- Columbia)*

1:50 p.m.
Surrogate Spent Nuclear Fuel Vibration Integrity Investigation, Jy-An Wang, Hong Wang, Bruce Bevard, Robert Howard *(ORNL),* Michelle Flanagan, Gordon Bjorkman *(NRC)*

Recycle and Reuse of Components from Used Nuclear Fuel

Sponsored by FCWMD
Session Organizer and Chair: Guillermo Daniel DelCul *(ORNL)*

Crystal 1

2:20 p.m.
Future Recycle of Used Nuclear Fuel in the United States—Resolution of Issues, Emory D. Collins, G. D. Del Cul *(ORNL)*

2:45 p.m.
Management of Recycled/Reprocessed Uranium, Paul Murray, Sven Bader *(AREVA)*

3:10 p.m.
Zeolite Membranes for the Separation of Radioactive Krypton and Xenon, Philip Crawford *(Georgia Tech),* Ramesh Bhave *(ORNL),* Sankar Nair *(Georgia Tech)*

3:35 p.m.
Options for a Sustainable MOX Fuel Cycle in PWRs for Rapid Utilization of Recycled Plutonium, Michael A. Perlin, Alexey I. Soldatov, Andrew C. Klein *(Oregon State Univ)*

4:00 p.m.
Maximizing the Value of the U.S. Depleted Uranium Inventory, Urairisa Phathanapirom, Erich Schneider *(Univ of Texas at Austin)*

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

ANS Nuclear Criticality Safety Division (NCSD) Session in Memory of Richard (Dick) McKnight

Sponsored by NCSD
Session Organizer: Michael E. Dunn *(ORNL)*
Cochairs: Michael E. Dunn *(ORNL),* Temitope A. Taiwo *(ANL)*

Crystal 2

1:00 p.m.
ICSBEP Criticality Calculations with ENDF/B-VII.1 Cross Sections, A. C. Kahler, R. E. MacFarlane *(LANL)*

1:25 p.m.
Three Analytic Benchmarks in COG, Edward M. Lent *(LLNL)*

1:50 p.m.
Results for the Intermediate-Spectrum ZEUS Benchmark Obtained with New ^{63,65}Cu Cross-Section Evaluations, Vladimir Sobes, Luiz Leal *(ORNL)*

2:15 p.m.
Revival of Criticality Safety Research in Japan Atomic Energy Agency, Kotaro Tonoike, Kazuhiko Izawa, Hiroki Sono, Miki Umeda, Yuichi Yamane *(JAEA)*

2:40 p.m.
A Tribute to Richard D. McKnight, J. Blair Briggs *(INL),* Robert W. Schaefer *(ANL/INL, retired)*

3:05 p.m.
Notes on Validation of Criticality Safety and Reactor Physics Calculations, Tatiana Ivanova *(IRSN)*

3:30 p.m.
Correlations of Error Sources and Associated Reactivity Influences, Dennis Mennerdahl *(E M Systems)*

Reactor Physics: General—II

Sponsored by RPD
Session Organizer: Alexander Stanculescu *(INL)*
Chair: Ronald J. Ellis *(ORNL)*

Crystal 3

1:00 p.m.
A Subgroup-Wavelet Coupling Method for Resonance Self-Shielding Calculation, Liangzhi Cao, Lei He, Hongchun Wu *(Xi'an Jiaotong Univ)*

1:25 p.m.
Feasibility of Nodal Equivalence Theory Using Functionalized Homogenized Parameters, Woosong Kim, Yonghee Kim *(KAIST)*

1:50 p.m.
Stabilization of Monte Carlo Fission Source Distribution in p-CMFD Acceleration Method Compared to Fission Matrix Method, YuGwon Jo, Nam Zin Cho *(KAIST)*

2:15 p.m.
An Improved CMFD Acceleration for SP3 Advanced Nodal Method, Tatsuya Sakamoto, Akio Yamamoto, Tomohiro Endo *(Nagoya Univ)*

2:40 p.m.
Legendre Moments of the Neutron Free-Gas Scattering Kernel Using Gauss-Kronrod Quadrature, Matthew Gonzales, Anil K. Prinja *(Univ of New Mexico),* Brian Kiedrowski *(LANL)*

Human Reliability in Nuclear and Radiological Systems–Panel

Sponsored by NNTG
Session Organizer: Joseph R. Stainback IV *(Univ of Tennessee)*
Chair: Richard Donovan *(DOE-HSS)*

Crystal 4

1:00 p.m.
Human Reliability in Nuclear and Radiological Systems including Reactor Construction, Reactor Operations, Nuclear Materials Custodianship (Nonproliferation), Radioactive Materials Research, and Medical Isotope use is an important challenge domestically and internationally. Human Reliability has taken a broader definition including elements of safety industrial safety including elements of human performance (health, attitude, performance), workplace violence prevention, and nuclear security culture. This panel is the first in a series envisioned to confront a wider and comprehensive view of Human Reliability in Nuclear and Radiological Systems.

Panelists:

- Joseph R. Stainback IV *(Univ of Tennessee)*
- Richard Donovan *(DOE-HSS)*
- Andrew Bringuel II *(FBI)*
- Howard Hall *(Univ of Tennessee)*

Round Table on Organizing Special Sessions for ANS Meetings–Workshop

Sponsored by NISD; cosponsored by YMG
Session Organizer: Matthew R. Denman *(SNL)*
Chair: Charles R. Martin *(DNFSB)*

Crystal 5

1:00 p.m.

This panel session provides an open platform to discuss how to successfully move a paper or panel session from an idea to implementation. It is intended to help new organizers succeed and provide "old hats" new ideas in an ever-changing world.

Tuesday, June 17, 2014, 4:00 p.m.

Chairman's Plenary: The Future of U.S. Influence in the Global Nuclear Enterprise—II

Chair: John J. Grossenbacher *(INL)*

Summit Pavilion

1:00 p.m.

For many years, the U.S. led the development and deployment of nuclear power worldwide. Technology developed in the U.S. is used throughout the globe. Can we expect this to continue and what forces in the U.S. impact this in the future? The world market is moving quickly, is the U.S being left behind and is its influence in jeopardy?

Speakers:

- Nathan Faith *(Exelon Generation)*
- Joachim Knebel *(Karlsruhe Institute of Technology)*
- John Kotek *(Gallatin Public Affairs)*
- Lara Pierpoint *(DOE)*
- John Welch *(USEC)*

Tuesday, June 17, 2014, 8:00 p.m.–10:00 p.m.

Special Event: An Evening with the Capitol Steps Hosted by ANS President, Donald Hoffman

Grand Ballroom

Wednesday • June 18, 2014

(Asterisks indicate special sessions.)

7:30 a.m.-5:00 p.m.	**Meeting Registration**
8:00 a.m.-10:00 a.m.	**Spouse/Guest Hospitality**
8:30 a.m.-11:30 a.m.	**2014 ANS Annual Meeting Technical Sessions** • University Infrastructure Needs–Panel • Operations and Power: General • Radiation Protection and Shielding–Roundtable • Fuel Cycle Simulators and Systems Analysis • Hybrid Energy: Combining Nuclear and Other Energy Sources • Critical and Subcritical Experiments • Reactor Physics: General—III • Plutonium Disposition—The Clear and Present Danger, 20 Years Later–Panel • Current Topics in Probabilistic Risk Analysis
1:00 p.m.-4:00 p.m.	**2014 ANS Annual Meeting Technical Sessions** • Education, Training, and Workforce Development: General • Post Fukushima Technology Enhancements to Improve Safety Margins–Paper/Panel • Computational Thermal Hydraulics • Isotopes and Radiation: General • Criticality Safety Program Metrics–Paper/Panel • Reactor Physics: General–IV • Computational Methods: General • Pu Disposition Alternatives–Panel
6:30 p.m.-9:30 p.m.	**Dinner and Tour at the Nevada Museum of Art**

Wednesday, June 18, 2014, 8:30 a.m.

University Infrastructure Needs–Panel

Sponsored by ETWDD
Session Organizer and Chair: John I. Sackett *(INL)*

Carson 1

The availability of test facilities to support research and development in nuclear science and technology is critically important. However, their high cost has led to the loss of many of the facilities once common at national laboratories, universities, and industry. This session will consider the state of existing facilities important for research, considerations for prioritizing them, the need for new facilities, and opportunities for international cooperation.

Panelists:

- Rory Kennedy *(INL/NSUF)*
- Ralph Butler *(Univ of Missouri/MURR)*
- Trevor Cook (*DOE-NE)*
- Mike Worley *(DOE-NE)*
- Per Peterson *(Univ of California, Berkeley)*

Operations and Power: General

Sponsored by OPD
Session Organizer: Gale Hauck *(Westinghouse)*
Chair: Donald R. Eggett *(Automated Engineering Services Corp.)*

Carson 2

8:30 a.m.

Correlation Between the Microstructure and Mechanical Properties of Irradiated Fe-9Cr ODS, M. Swenson, C. Dolph, J. Wharry *(Boise State Univ)*

8:55 a.m.

Thermal Annealing of Reactor Pressure Vessels: International Experience and U.S. Perspective, Mikhail A. Sokolov, Randy K. Nanstad *(ORNL),* William Server *(ATI Consulting)*

Radiation Protection and Shielding–Roundtable

Sponsored by RPSD
Session Organizer and Chair: Peter F. Caracappa *(RPI)*

Carson 3

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 first-come/first-serve basis. This session is meant to be fast, informal, and fun.

Fuel Cycle Simulators and Systems Analysis

Sponsored by FCWMD
Session Organizer: Paul P. Wilson *(Univ of Wisconsin, Madison)*
Chair: Jean-Francois Lucchini *(LANL)*

Crystal 1

8:30 a.m.

Expert Elicitation of Across-Technology Correlations for Reactor Capital Costs, Erich Schneider *(Univ of Texas at Austin),* Brent Dixon *(INL),* Francesco Ganda *(ANL),* T. Jay Harrison *(ORNL),* Ed Hoffman *(ANL),* Kent Williams *(Consultant),* Thomas Wood *(PNNL)*

8:55 a.m.

Fully Coupled Temperature Distribution, Plutonium and Oxygen Diffusion Simulation in (U, Pu)O_2 Fuels, Wenzhong Zhou, Rong Liu *(City Univ of Hong Kong)*

Hybrid Energy: Combining Nuclear and Other Energy Sources

Sponsored by FCWMD
Session Organizer and Chair: Charles W. Forsberg *(MIT)*

Crystal 1

9:20 a.m.

Challenges for Zero-Carbon Nuclear-Renewable Energy Futures, C. W. Forsberg, M. Golay *(MIT)*

9:45 a.m.

Increasing Baseload Light-Water Reactor Revenue with Heat Storage and Variable Electricity Output, C. W. Forsberg *(MIT),* E. Schneider *(Univ of Texas at Austin)*

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

Critical and Subcritical Experiments

Sponsored by NCSD
Session Organizer: Jesson D. Hutchinson *(LANL)*
Chair: Richard E. Malenfant *(Retired)*

Crystal 2

8:30 a.m.

Historical Critical Experiments, Richard E. Malenfant *(Retired)*

8:55 a.m.

Benchmark Specifications and Results for βeff in a HEU Metal System Using ORSphere, Margaret A. Marshall, John D. Bess *(INL)*

9:20 a.m.

Prompt Neutron Decay Constants in a Highly Enriched Uranium Copper Reflected System, George McKenzie, Travis Grove, Rene Sanchez, John Bounds *(LANL)*

9:45 a.m.
Joint LANL/CEA Measurements on Godiva IV, J. Hutchinson, M. Smith-Nelson, A. Sood, J. Goda, J. Bounds, T. Cutler *(LANL),* A. Chapelle, P. Casoli *(CEA)*

10:10 a.m.
Investigation of keff Versus Fraction of Critical Mass, J. Hutchinson, T. Cutler, R. Sanchez, M. Mitchell, D. Hayes *(LANL)*

Reactor Physics: General—III

Sponsored by RPD
Session Organizer: Alexander Stanculescu *(INL)*
Chair: Alberto Talamo *(ANL)*

Crystal 3

8:30 a.m.
Verification of the DEFENS Code through the CANDU Initial Core Problem, Eun Hyun Ryu, Yong Mann Song *(KAERI)*

8:55 a.m.
Validation of the WIMS9A/PARCS Code System for Power Density Calculations for the AP1000™ Reactor Core, Mohamed A. Elsawi, Amal S. Bin Hraiz *(Khalifa Univ of Science, Technology and Research)*

9:20 a.m.
Application of Microscopic Depletion Correction in COSINE Core Analysis Code, Su Wang, Xiaoyu Hu, Yuhang Yan, Changhui Wang, Feng Shen, Yixue Chen *(State Nuc Power Software Development Center)*

9:45 a.m.
Alternate Fast Neutron Burst Option with High-Flux, LEU-Based Neutron Source, Ross Radel, Eli Moll, David Ozburn *(Phoenix Nuclear Labs),* J. David Schneider *(TechSource)*

10:10 a.m.
A Novel Experimental Method for Validating Neutron Initiation Probability, Liu Xiaobo, Fan Xiaoqiang, Peng Xianjue, Du Jinfeng, Gao Hui *(China Academy of Engineering Physics)*

Plutonium Disposition—The Clear and Present Danger, 20 Years Later–Panel

Sponsored by NNTG; cosponsored by FCWMD
Session Organizer: Steven P. Nesbit *(Duke Energy)*
Cochairs: Carl A. Mazzola *(Shaw Environmental, Inc.),* Steven P. Nesbit *(Duke Energy)*

Crystal 4

8:30 a.m.
In 1994 the National Academy of Sciences' seminal study, "Management and Disposition of Excess Weapons Plutonium", referred to the presence of large stockpiles of separated weapons-grade plutonium as a "clear and present danger to national and international security."

In 2000 the United States and the Russian Federation entered into an agreement to dispose of 34 metric tons each of surplus weapons-grade plutonium. Time has passed and resources have been expended, but neither country has disposed of significant quantities of the material.

Panelists in this session will address the status of plutonium disposition in Russia and the United States and prospects for progress in both countries.

Panelists:

- Robert Budnitz *(LBNL)*
- Everett Redmond *(Nonproliferation and Fuel Cycle Policy)*
- Ken Canady *(MOX Services)*
- Dave Jones *(AREVA North America)*
- Representative from DOE to be determined.

Current Topics in Probabilistic Risk Analysis

Sponsored by NISD
Session Organizer: Tunc Aldemir *(Ohio State)*
Chair: Girija Shukla *(NRC)*

Crystal 5

8:30 a.m.
Branch-and-Bound Algorithm Applied to Discrete Dynamic Event Trees, Joseph Nielsen *(INL),* Akira Tokuhiro, Robert E. Hiromoto *(Univ of Idaho)*

8:55 a.m.
Event Tree Success Branch Modeling Approaches in SAPHIRE/SPAR, Zhegang Ma, John Schroeder *(INL)*

9:20 a.m.
Comparison of MELCOR and SAS4a for Dynamic Event Simulations, M. R. Denman, J. N. Cardoni, T. A. Wheeler *(SNL)*

9:45 a.m.
Introduction of Supervised Learning Capabilities of the RAVEN Code for Limit Surface Analysis, Cristian Rabiti, Diego Mandelli, Andrea Alfonsi, Joshua Cogliati, Robert Kinoshita *(INL)*

Wednesday, June 18, 2014, 1:00 p.m.

Education, Training, and Workforce Development: General

Sponsored by ETWDD
Session Organizer and Chair: John S. Bennion *(GE Hitachi Nuclear)*

Carson 1

1:00 p.m.
Development of the Graduate Certificate Program in Nuclear Security and Safeguards at UNLV, Alexander Barzilov, Denis Beller, William Culbreth *(UNLV)*

1:25 p.m.
Online Multidisciplinary Nuclear Power Generation Graduate Certificate Program, Keith E. Holbert *(Arizona State Univ)*

1:50 p.m.
Use of a Sub-Scale, See-Through PWR Operating Model for Nuclear Energy Engineering Education, T. P. Filburn, J. K. Smith *(Univ of Hartford),* R. A. Matzie *(RAMatzie Nuc Tech Consulting),* C. C. Yavuzturk *(Univ of Hartford)*

2:15 p.m.
Future Needs for Generation IV Reactors Education and Training, Petre Ghitescu, Gabriel Lazaro Pavel *(Univ "Politehnica" of Bucharest)*

2:405 p.m.
Virtual Verification Method for China Lead-Alloy Cooled Research Reactor Refueling System, Jinbo Zhao, Tao He, Zhihui Yang, Meihua Zeng, Yunqing Bai, Pengcheng Long *(Chinese Academy of Sciences/Univ of Science and Technology of China)*

Post Fukushima Technology Enhancements to Improve Safety Margins–Paper/Panel

Sponsored by OPD
Session Organizer: Ted Quinn *(Technology Resources)*
Cochairs: Edward Quinn *(Technology Resources),* James Gleason *(GLSEQ)*

Carson 2

Paper

1:00 p.m.
Fukushima Lessons Learned—Severe Accident Goals, Edward L. Quinn *(Technology Resources),* James Gleason *(GLSEQ, LLC),* Oliver Fritz *(Schott),* Claude Thibault *(GLSEQ, LLC)*

Panel Discussion

1:25 p.m.
This session provides an overview of technology enhancements that have been developed or are in progress of development to improve safety margins since the Fukushima event in March 2011. This session addresses lessons learned in the advancement in technology to address both inside the design basis and outside the design basis safety margins. Speakers are involved with supporting the technology advancements to improve safety margins in the U.S. and around the world.

Panelists:
- William Reckley *(NRC)*
- Doug Walters *(NEI)*
- James Gleason *(IEEE SC2.1)*
- Oliver Fritz *(Schott)*
- Claude Thibault *(ASME)*

Computational Thermal Hydraulics

Sponsored by THD
Session Organizer and Chair: Elia Merzari *(ANL)*

Carson 3

1:00 p.m.
3D Model of Evaporation/Condensation at Bubble/Liquid Interface using Level-Set Method, Hong Jiao, M. Z. Podowski *(RPI)*

1:25 p.m.
Computational Fluid Dynamics Analysis of NGNP Reactor Cavity Cooling System with Air, Huhu Wang, Shamsul Sulaiman, Yassin A. Hassan *(TAMU)*

1:50 p.m.
Implementing Fully Coupled Subchannel Model into the RELAP-7 Code, Hongbin Zhang, Ling Zou, Haihua Zhao, Richard Martineau *(INL),* Landon Brockmeyer *(TAMU)*

2:15 p.m.
Numerical Investigation on the Sensitivity of Permanent Magnet Probe Flowmeter to Velocity Profile, Uiju Jeong *(Hanyang Univ),* Ji-Young Jeong *(KAERI),* Sung Joong Kim *(Hanyang Univ)*

2:40 p.m.
Comparison of RELAP5-3D and TRACE Results for a Boiling/Condensing Experimental Facility, Juan J. Carbajo *(ORNL)*

3:05 p.m.
Preliminary Investigation of Turbulent Flow Behavior of 3-D Twin Jets using CFD Analysis, L. B. Carasik *(TAMU),* A. E. Ruggles *(Univ of Tennessee),* Y. A. Hassan *(TAMU)*

Isotopes and Radiation: General

Sponsored by IRD
Session Organizer: Kenan Unlu *(Penn State)*
Chair: Brenden J. Heidrich *(Penn State)*

Crystal 1

1:00 p.m.
TCAD Simulation of Charge Collection in GaN Schottky Diode Radiation Detector, Jinghui Wang, Padhraic L. Mulligan, Lei R. Cao *(Ohio State Univ)*

1:25 p.m.
Neutron-Gamma Separation in a Gadolinium Based Semiconductor Neutron Detector, Praneeth Kandlakunta *(Ohio State Univ/MP Machinery & Testing),* Lei R. Cao *(Ohio State Univ)*

1:50 p.m.
Development of a Semi-Automated Testing and Calibration System for Custom-Built TPC DAQ Hardware, Brycen L. Wendt, Eric A. Burgett *(Idaho State Univ)*

2:15 p.m.
Simulation of Ni-63 Nuclear Micro Battery Using Monte Carlo Modeling, Tae Ho Kim, Ji Hyun Kim *(UNIST)*

2:40 p.m.
An Investigation of a Logging Tool Based on Various Neutron Sources and Detectors for Measurements of Porosity and Density, Kyoung O. Lee *(NCSU),* Avneet Sood *(LANL),* Adan F. Calderón, Robin P. Gardner *(NCSU)*

3:05 p.m.
Measurements of Fast Neutron Flux using an Array of EJ-299-33A Scintillator Detectors, Alexander Barzilov, Jessica Hartman, Norman Richardson *(Univ of Nevada, Las Vegas)*

Criticality Safety Program Metrics–Paper/Panel

Sponsored by NCSD
Session Organizer and Chair: Robert E. Wilson *(Retired)*

Crystal 2

Paper

1:00 p.m.
Application of Performance Metrics in Assessing the LLNL Nuclear Criticality Safety Program, David Heinrichs, Song Huang *(LLNL),* Mark Lee *(The DOE/NNSA Livermore Site Office)*

Panel Discussion

1:25 p.m.
Most criticality safety organizations use various metrics to assess the health of their programs. This session will involve a submitted paper and presentations by panel members on what criticality safety related metrics their sites use, which ones have diagnostic benefits and which have led to safety program changes. The presentationswill be followed by a panel discussion on:
1. Whether metrics are worthwhile for the intended purpose
2. If worthwhile, who benefits?
3. How are metrics chosen?
4. Which metrics are of generic value?
5. Which metrics have not proven valuable?

Panelists:
- Kevin Kimball *(B&W Y-12)*
- Robert Malinoski *(URS/CH2M Hill)*
- David Erickson *(SRNS)*
- Dave Heinrichs *(LLNL)*
- Randy Shackelford *(Nuclear Fuel Services)*
- Todd Taylor *(INL)*
- David Kupferer *(DNFSB)*

Reactor Physics: General—IV

Sponsored by RPD
Session Organizer: Alexander Stanculescu *(INL)*
Chair: Stefano Monti *(IAEA)*

Crystal 3

1:00 p.m.
WPEC SG38: Designing a New Format for Storing Nuclear Data, C. M. Mattoon, B. R. Beck *(LLNL)*

1:25 p.m.
FUDGE: A Toolkit for Nuclear Data Management and Processing, B. R. Beck, C. M. Mattoon *(LLNL)*

1:50 p.m.
Parameterized Representation of Macroscopic Cross Section for PWR Reactor Considering with 12 Burnable Absorber Fuel Rods in the Fuel Element João Claudio B. Fiel *(Military Inst of Engineering),* Luiz Carlos Leal *(ORNL)*

2:15 p.m.
Prompt-Nubar Calculations for 27 Actinides, Richard Q. Wright *(ORNL, retired),* Michaele C. Brady-Raap *(PNNL),* Robert M. Westfall *(ORNL)*

2:40 p.m.
Alternative Approach for Importance Ranking of Nuclear Data, Congjian Wang, Bassam Khuwaileh *(NCSU),* Goran Arbanas *(ORNL),* Hany Abdel-Khalik *(NCSU)*

Computational Methods: General

Sponsored by MCD
Session Organizer: Ryan G. McClarren *(Texas A&M)*
Chair: Avneet Sood *(LANL)*

Crystal 5

1:00 p.m.
ICE-Based Preconditioning Method for Euler Equations, Ling Zou, Haihua Zhao, Hongbin Zhang *(INL)*

1:25 p.m.
Development of Quasi-Static Dynamic Simulation Capability in Monte Carlo Code RMC, Xu Qi, Wang Kan *(Tsinghua Univ)*

1:50 p.m.
A Temperature Dependence Study of Alpha/Beta Cumulative Distribution Functions Based on S(α,β) Data, Andrew T. Pavlou, Wei Ji *(RPI)*

2:15 p.m.
Energy Expansion in Response Matrix Methods Using the Karhunen-Loève Transform, Richard L. Reed, Jeremy A. Roberts *(Kansas State Univ)*

2:40 p.m.
A New Importance Measure for Reduced Order Modeling, Bassam A. Khuwaileh, Hany S. Abdel-Khalik *(NCSU)*

3:05 p.m.
Subspace Methods for Multi-Physics Reduced Order Modeling in Nuclear Engineering Applications, Bassam A. Khuwaileh, Hany S. Abdel-Khalik *(NCSU)*

Pu Disposition Alternatives–Panel

Sponsored by FCWMD
Chair: Phillip Finck *(INL)*

Crystal 4

1:00 p.m.

The objective of this panel is to assemble several world renowned experts to discuss the pros and cons of a number of technologies that have been developed to dispose of Plutonium. The discussions will start with a review of the various different criteria that have been proposed for the disposal tasks; this will be followed by reviews of the performances of a number of technologies, successively based on thermal reactors and fast reactors; the discussions will conclude with a review of direct disposal options.

Panelists:

- Massimo Salvatores *(CEA, retired)*
- Bill Halsey *(LLNL, retired)*
- Bob Hill *(ANL)*
- Phillip Finck *(INL)*

Thursday • June 19, 2014

7:30 a.m.-2:00 p.m.	**Meeting Registration**
8:30 a.m.-11:30 a.m.	**2014 ANS Annual Meeting Technical Sessions** • Nuclear Installations Safety: General • Advanced Tallies in MCNP–Tutorial • Thermal Hydraulics: General • Fuel Cycle and Waste Management: General—I • ANS 8 Standards Forum • Reactor Physics: General—V
1:00 p.m.-4:00 p.m.	**2014 ANS Annual Meeting Technical Sessions** • Fuel Cycle and Waste Management: General—II • Nuclear Criticality Safety and Space Technology Applications • Radiation Protection and Shielding: General

Thursday, June 19, 2014, 8:30 a.m.

Nuclear Installations Safety: General

Sponsored by NISD
Session Organizer and Chair: Edward D. Blandford *(Univ of New Mexico)*

Carson 1

8:30 a.m.

Effect of Seasonal Meteorological Variations on Radioactive Plume Dispersion—A Segmented Gaussian Approach, Mazzammal Hussain *(Intl Islamic Univ),* Salah Ud-Din Khan *(King Saud Univ),* Waqar Adel Syed *(Intl Islamic Univ)*

8:55 a.m.

The Analysis of Hydrogen Diffusion Behavior in Containment by Using GOTHIC Code and MAAP Code, Zhen-Yu Hung, Pin-Yu Yuan, Yuh-Ming Ferng, Wen-Sheng Hsu, Bau-Shei Pei *(National Tsinghua Univ)*

9:20 a.m.

Safety Assessment of HANARO Research Reactor in Light of FDA, Hyungkyoo Kim, Jinwon Shin, Hoansung Jung *(KAERI)*

9:45 a.m.

Feasibility of Reactor Emergency Power by Thermoelectric Waste Heat Recovery, Byeonghee Lee, Sung Won Lim, Young Jong Chung *(KAERI)*

Advanced Tallies in MCNP–Tutorial

Sponsored by RPSD
Session Organizer: Michael Lorne Fensin *(LANL)*
Chair: Michael R. James *(LANL)*

Carson 2

8:30 a.m.

There have been significant recent developments in the tally options in MCNP6 which can be useful for many applications, especially in Homeland Security. This tutorial will focus on tally features such as the pulse height tally, charged particle energy deposition, multi-fold coincidence, tally tagging, tally segmentation based on source contribution, tally fluctuation cards and other advanced tally treatments. This tutorial will also introduce advanced source features such as the background source capability, as well as advanced transport features such as the neutron capture ion algorithm, in order to generate ROC curves from actual particles depositing energy in a typical radiation detector.

MCNP6 is an export controlled software.
MCNP6, as well as computers running MCNP6, will NOT be provided by the instructors.

Participants should expect to bring their own computers with the latest version of MCNP6 installed.

Thermal Hydraulics: General

Sponsored by THD
Session Organizer: Elia Merzari *(ANL)*
Cochairs: David L. Aumiller *(BAPL),* Ling Zou *(INL)*

Carson 3

8:30 a.m.
Feasibility Studies on the Integration Concept of VHTR and Forward Osmosis Desalination Process, Min Young Park, Eung Soo Kim *(Seoul National Univ)*

8:55 a.m.
Orificing Strategy for Sodium-Cooled Fast Reactors, F. Heidet, T. K. Kim, T. A. Taiwo *(ANL)*

9:20 a.m.
Sensitivity Analysis of the Pressure Response of a Typical Large, Dry Containment during a Double-Ended Guillotine Break LOCA using RELAP5-3D and MELCOR, Rodolfo Vaghetto, Alessandro Vanni, Andrew Franklin, Yassin A. Hassan *(TAMU)*

9:45 a.m.
Numerical Simulation of Countercurrent Flow Limitation at Lower End of a Vertical Pipe, Michio Murase, Takayoshi Kusunoki *(Inst of Nuclear Safety System, Inc.),* Takashi Takata, Akira Yamaguchi *(Osaka Univ),* Akio Tomiyama *(Kobe Univ)*

10:10 a.m.
Design of TAMU Air-Cooled Reactor Cavity Cooling System Experimental Test Facility, Shamsul A. Sulaiman, Elvis E. Dominguez-Ontiveros, Huhu Wang, Yassin A. Hassan *(TAMU)*

10:35 a.m.
Temperature in a Fuel Rod with a Coated Clad and Temperature Dependent Thermal Conductivity, Min-Tsung Kao, Rizwan-Uddin *(Univ of Illinois at Urbana-Champaign)*

Fuel Cycle and Waste Management: General—I

Sponsored by FCWMD
Session Organizer and Chair: Jean-Francois Lucchini *(LANL)*

Crystal 1

8:30 a.m.
High-Level Nuclear Waste Redefined, James Conca *(UFA Ventures)*

8:55 a.m.
Surrogate Alloy Waste Components Impact on Composition and Corrosion, Luke Olson *(SRNL)*

9:20 a.m.
Influence of Boron Nitride Addition on Rod Internal Pressure of a High BU Fuel Rod, Gwan-yoon Jeong, Dong-seong Sohn *(UNIST),* Yong-sik Yang, Je-keun Bang *(KAERI)*

9:45 a.m.
Protective Coatings of Melting Crucible for Metal Fuel Slugs, J. H. Kim, H. Song, Y. M. Ko, K. H. Kim, C. B. Lee *(KAERI)*

ANS 8 Standards Forum

Sponsored by NCSD
Session Organizer and Chair: Lon E. Paulson *(GE Hitachi Nuclear)*

Crystal 2

Reactor Physics: General—V

Sponsored by RPD
Session Organizer: Alexander Stanculescu *(INL)*
Chair: Blair P. Bromley *(AECL)*

Crystal 3

8:30 a.m.
Explanation of Changes in CANDU Coolant Void Reactivity with Creep and Burnup, J. V. Donnelly *(AMEC NSS)*

8:55 a.m.
A Physics Study on Concave Long-Life Sodium-Cooled Fast Reactor, Donny Hartanto, Yonghee Kim *(KAIST)*

9:20 a.m.
Annular Type Sodium Cooled TRU Transmutation Reactor Cores Having Thorium Blankets and Central Non-Fuel Region, Wu Seung You, Ser Gi Hong *(Kyung Hee Univ)*

9:45 a.m.
Doppler Reactivity Coefficients for Gd Bearing UO_2 Fueled Rods with Consideration of Thermal Agitation Effect, Takanori Kitada, Kazuhiro Wada, Koudai Takeichi *(Osaka Univ)*

10:10 a.m.
A Burnable Absorber-Integrated Control Rod Guide Thimble for PWR, Mohd-Syukri Yahya, HwanYeal Yu, Yonghee Kim *(KAIST)*

10:35 a.m.
Finding a Near-Critical VHTR Configuration with a Coupled Neutronics/Thermal Hydraulics Method, Alexander J. Huning, Kevin John Connolly, Srinivas Garimella, Farzad Rahnema *(Georgia Tech)*

Thursday, June 19, 2014, 1:00 p.m.

Fuel Cycle and Waste Management: General—II

Sponsored by FCWMD
Session Organizer and Chair: Jean-Francois Lucchini *(LANL)*

Crystal 1

1:00 p.m.
A Comparison of Fuel Cycle Environmental Impact Estimates, Urairisa Phathanapirom, Erich Schneider, Margaret Flicker *(Univ of Texas at Austin)*

1:25 p.m.
Unconventional Uranium Resources and Production Costs, Erich Schneider, Harry Lindner *(Univ of Texas at Austin)*

1:50 p.m.
Simulation-based Investigation of Electric Power Generation by Using Gamma Radiation from Spent Nuclear Fuel, Hanoel Lee, Man-Sung Yim *(KAIST)*

2:15 p.m.
Preliminary Evaluation of Several Multi-Stage, Thermal-Spectrum Thorium Fuel Cycles, Steven Krahn *(Vanderbilt Univ),* Andrew Worrall *(ORNL),* Allen Croff, Timothy Ault *(Vanderbilt Univ)*

2:40 p.m.
Improving Inert Matrix Burnup Using a Linear Reactivity Model, David W. Harding *(Univ of Texas at Austin),* Geoffrey Recktenwald *(Michigan State Univ),* Mark Deinert *(Univ of Texas at Austin)*

3:05 p.m.
ACRSP Contributions to Actinide Chemistry in Brine under Subsurface Conditions, J. F. Lucchini, D. Cleveland, J. Swanson, M. K. Richmann, D. T. Reed *(LANL)*

Nuclear Criticality Safety and Space Technology Applications

Sponsored by RPD; cosponsored by ANST
Session Organizers: John Darrell Bess *(INL),* Blair P. Bromley *(Canadian Nuclear Society)*
Cochairs: Shannon M. Bragg-Sitton *(INL),* Gerado Aliberti *(ANL)*

Crystal 3

1:00 p.m.
Accelerator-Based Intense Fusion Neutron Source, Ross Radel, Greg Piefer, Chris Seyfert, Arne Kobernik, Logan Campbell, Casey Lamers, Tye Gribb, Evan Sengbusch *(Phoenix Nuclear Labs)*

1:25 p.m.
High Reliability, Long Lifetime, Continuous Wave H- Ion Source Design, Preston J. Barrows, Joseph D. Sherman, Arne V. Kobernik, Tye T. Gribb, Christopher M. Seyfert, Logan D. Campbell, Daniel J. Swanson, Eric D. Risley, Jin W. Lee, Kevin D. Meaney, Evan R. Sengbusch, Ross F. Radel *(Phoenix National Labs/Univ of Wisconsin-Madison, TechSource)*

1:50 p.m.
A Sensitivity and Feasibility Study on a Small Reactor with LEU Fuel for Space Applications, Hyun Chul Lee *(KAERI),* Stefan Cerba *(KAERI/Slovak Univ of Technology),* Hong Sik Lim, Jae Man Noh (*KAERI)*

2:15 p.m.
Benchmark Evaluation of HTR-PROTEUS Absorber Rod Worths (Core 4), John D. Bess, Leland M. Montierth *(INL)*

2:40 p.m.
The Impact of Water Saturation in Graphite Reflector Blocks on NRAD Benchmark Simulation, John D. Bess, Andrew T. Smolinski *(INL)*

Radiation Protection and Shielding: General

Sponsored by RPSD; cosponsored by NNTG
Chair: Rian Bahran *(LANL)*

Crystal 4

1:00 p.m.
Computational Benchmarks for Minimizing the Legacy Problem in Oil Well Logging Source Replacement, Robin P. Gardner *(NCSU),* Avneet Sood *(LANL),* Kyoung O. Lee *(NCSU)*

1:25 p.m.
Uranium and Plutonium Fission Product Gamma Intensity Measurements and MCNP6 Simulations, M. T. Andrews *(Royal Military College of Canada),* J. T. Goorley *(LANL),* E. C. Corcoran, D. G. Kelly *(Royal Military College of Canada)*

1:50 p.m.
Three Dimensional Phase Space Investigation of Aqueously Grown Zinc Oxide, Austin Tam, Daniel Isaacs, Eric Burgett *(Idaho State Univ)*

2:15 p.m.
Simulation of Electron Probe Microanalysis for the Purposes of Automated Material Identification—Initial Evaluation of Available Monte Carlo Tools, Thomas M. Miller, Bruce W. Patton, Charles F. Weber *(ORNL)*

Embedded Topical Meeting: *Decommissioning and Remote Systems*

Honorary Chair:
Thomas L. Sanders
Savannah River National Laboratory

General Chair:
David C. Moody
Department of Energy SRS

Technical Program Chair - Decommissioning
Sue Aggarwal
NMNT International

Technical Program Chair - Remote Systems:
Steven L. Tibrea
Savannah River National Laboratory

Monday • June 16, 2014

(Asterisks indicate special sessions.)

7:30 a.m.-5:00 p.m.	Meeting Registration
8:00 a.m.-10:00 a.m.	Spouse/Guest Hospitality
1:00 p.m.-4:00 p.m.	*2014 Decommissioning and Remote Systems Opening Plenary

Monday, June 16, 2014, 1:00 p.m.

2014 Decommissioning and Remote Systems Opening Plenary

Session Organizers: Sue Aggarwal *(NMNT International),* Steven L. Tibrea *(SRNL)*
Chair: David C. Moody *(Department of Energy SRS)*

N-1 and N-2

1:00 p.m.
NRC Planning and Emergency Issues with the Recent Wave of Power Plant Retirements, Bruce Watson *(NRC)*

1:25 p.m.
French Decommissioning Program and Feedback Experience and Lessons Learned, Jean-Guy Nokhamzon *(CEA/SACLAY),* invited

1:50 p.m.
Fukushima Decommissioning Work, Kenji Tateiwa *(TEPCO)*

2:15 p.m.
Chernobyl Decommissioning, Al Sturm *(PAR Robotics)*

2:40 p.m.
SONGS Decommissioning, Tom Palmasino *(SONGS)*

3:05 p.m.
Establishing Final End-State for a Retired Nuclear Weapons Production Reactor; Collaboration Between Stakeholders, Regulators, and the Federal Government, Mary Flora, Christopher L. Bergren *(SRNS),* Angelia Adams *(DOE-Savannah River)*

Tuesday • June 17, 2014

(Asterisks indicate special sessions.)

7:30 a.m.-5:00 p.m.	Meeting Registration
8:30 a.m.-5:00 p.m.	2014 Decommissioning and Remote Systems Technical Sessions
8:30 a.m.-10:15 p.m.	• Capturing Best Practices and Other Lessons Learned
	• Robotics D&D
10:30 a.m.-12:00 p.m.	• International Decommissioning—I
10:30 a.m.-12:10 p.m.	• Remote Sensing and Robotic Platforms
1:00 p.m.-2:40 p.m.	• International Decommissioning—II
	• Remote Handling
2:45 p.m.-4:25 p.m.	• Robotics and Remote Operations in Hazardous Facilities
3:00 p.m.-4:15 p.m.	• Low-Level Radioacrive Waste Management

Tuesday, June 17, 2014, 8:30 a.m.–10:15 a.m.

Capturing Best Practices and Other Lessons Learned

Session Organizer: Sue Aggarwal *(NMNTI)*
Cochairs: Robert Woodard *(ZionSolutions),* Stuart Walker *(EPA)*

N-1

8:30 a.m.
The Key to Facility Hazard Identification, Paul G. Corrado *(Retired)*

8:55 a.m.
The Decommissioning of AECL's Heavy Water Upgrading Plant, Kerry Weisenberg, Roger Tremblay, Todd Willis *(AECL)*

9:20 a.m.
Decommissioning an Active Historical Reactor Facility at the Savannah River Site, Mary Flora, Chris L. Bergren, Tony Long, John K. Blankenship *(SRNS),* Karen M. Adams *(DOE-Savannah River)*

9:45 a.m.
Making Sure Things Don't Fall Apart—Lessons Learned in Long Term SAFSTOR, Lynne Goodman, Daniel Breiding, Barry Muller *(DTE Energy)*

Robotics D&D

Session Organizer: Steve Tibrea *(SRNL)*
Chair: Richard L. Minichan *(SRNS)*

N-2

8:30 a.m.
Basic Decontamination Methodology of Robots and Robot Control Vehicles, Shinji Kawatsuma *(JAEA),* Hajime Asama *(Univ of Tokyo)*

8:55 a.m.
Seamless Remote Dismantling System for Major Components of Korean NPP, Dongjun Hyun, Byung-Seon Choi, Jeikwon Moon (*KAERI)*

9:20 a.m.
Assessing the State-of-the-Art of Remote Systems Technology for D&D Applications in the U.S. and the UK, Laurie Judd, John Ritter *(NVE),* Ian Seed *(Cogentus Ltd.),* invited

9:45 a.m.
Remote Platform for the Performance of Deactivation and Decommissioning Tasks, Leonel E. Lagos, Peggy Shoffner, *(Florida Intl Univ),* Sam Maggio *(Intl Climbing Machine)*

Tuesday, June 17, 2014, 10:30 a.m.–12:00 p.m.

International Decommissioning—I

Session Organizer: James J. Byrne *(Byrne & Assoc)*
Cochairs: Nadia Glucksberg *(Haley & Aldrich, Inc),* Dustin Miller *(JGMS, Inc)*

N-1

10:30 a.m.
"Passage" A Major Project for CEA: The Entire Decommissioning of a Nuclear Research Centre in Grenoble, Jean Guy Nokhamzon *(CEA/Saclay)*

10:55 a.m.
Chooz A and Unterweser Decontamination for Decommissioning Results, Kayla Harper *(AREVA Inc),* Christian Topf *(AREVA GmbH)*

11:20 a.m.
Cleansing and Dismantling of CEA-Saclay Nuclear Licensed Facilities; PROJECT PERIMETER, Michel Jeanjacques, Corine Salmon, Lionel Mandard, Jean Louis Martin, John Gowman *(CEA/DEN/MAR/DPAD/CPSA)* Jouenne Patrick *(CEA-DEN-DANS-DRSN-SAGD)*

Tuesday, June 17, 2014, 10:30 a.m.–12:10 p.m.

Remote Sensing and Robotic Platforms

Session Organizer: Steve Tibrea *(SRNL)*
Chair: Mitch Pryor *(Univ of Texas, Austin)*

N-2

10:30 a.m.
Low-Cost Mobile Platform and Sensor Suite for Remote Radiation Surveying, Blake Anderson, Andrew Sharp, Mitch Pryor *(Univ of Texas, Austin)*

10:55 a.m.
Tactile MEMS-Based Sensor Element for Robotic Surgery, Young Soo Park, Nachappa Gopalsami *(ANL),* Mohan S. Gundeti *(Univ of Chicago Medicine)*

11:20 a.m.
Frequency-Based Visual Measurement of Suture Strain for Robotic Surgery, Young Soo Park *(ANL),* John Martell *(Univ of Chicago Medicine),* Pawel Dowrzanski, Thomas Elmer *(ANL)*

11:45 a.m.
Use of Remote Systems for Testing Radiation Detection Devices, Michael J. Dalmaso, Matthew Kesterson, David Premo, Carl "Jake" Jacobs *(SRNL)*

Tuesday, June 17, 2014, 1:00 p.m.

International Decommissioning—II

Session Organizer: Mr. James J. Byrne *(Byrne & Assoc)*
Cochairs: Lynn Goodman *(DTE Energy),* Leonel Lagos *(Florida Intl Univ)*

N-1

1:00 p.m.
Secondary Waste Treatment in the Decommissioning of German Nuclear Facilities, M. Brandauer *(KIT),* J. Starflinger *(IKE),* S. Gentes *(KIT)*

1:25 p.m.
Strategies for Decommissioning the Fuel Storage and Reprocessing Complex at Chalk River Laboratories, Nancy Margaret Greencorn, Daniel Grondin *(AECL),* Jim Byrne *(Byrne & Assoc)*

1:50 p.m.
Characterization of Facilities under Dismantling Process by Digital Autoradiography, Pascal Fichet, Anumaija Leskinen, Florence Goutelard *(CEA)*

2:15 p.m.
Cleansing and Dismantling of CEA-Saclay Nuclear Licensed Facilities; LHA PROGRAM, Michel Jeanjacques *(CEA-DENMAR-DPAD-CPSA),* Isabelle Delaire *(CEA-DEN-DANS-DRSN-SAGD)*

Remote Handling

Session Organizer: Steve Tibrea *(SRNL)*
Chair: James S. Tulenko *(Univ of Florida)*

N-2

1:00 p.m.
Target Transfer Arm Development, Testing, and Deployment, M. W. Noakes, D. R. Giuliano, E. C. Bradley *(ORNL)*

1:25 p.m.
Internal Cleaning of Remote Offgas Components, Jeffrey T. Coughlin *(SRNL)*

1:50 p.m.
Robots for Remote Handling of High-Activity Waste Filters, Celeste Peterson *(Duke Energy, McGuire Nuclear Station),* Kim S. Monti *(iRobot Corp)*

2:15 p.m.
A Gantry Robot System for Remote Handling of 3013 Inner and Outer Cans, Kurt D. Peterson, John R. Gordon, Joel D. Jones *(SRNL)*

Tuesday, June 17, 2014, 2:45 p.m.

Robotics and Remote Operations in Hazardous Facilities

Session Organizer: Steve Tibrea *(SRNL)*
Chair: Luke T. Reid *(SRNL)*

N-2

2:45 p.m.
Remote Inspection of the H-Canyon Air Exhaust Tunnel, Richard L. Minichan *(SRNL)*

3:10 p.m.
Saltstone Grout Process Remote Inspection/Evaluation, Athneal D. Marzolf, Richard L. Minichan *(SRNL)*

3:35 p.m.
Mercury Detection and Sampling of Waste Processing Tanks at the Savannah River Site, Kevin R. Hera, Athneal D. Marzolf *(SRNL)*

4:00 p.m.
Saltstone Leachate System Valve Boring System, John R. Gordon, Richard L. Minichan *(SRNS)*

Tuesday, June 17, 2014, 3:00 p.m.–4:15 p.m.

Low-Level Radioactive Waste Management

Session Organizer: Sue Aggarwal *(NMNTI)*
Cochairs: Jay Peters *(Haley & Aldrich, Inc),* Mark Lewis *(Energy Solutions)*

N-1

3:00 p.m.
U.S. EPA Superfund Policy Statements and Guidance Regarding Disposition of Radioactive Waste in Non-NRC Licensed Disposal Facilities, Stuart Walker *(EPA)*

3:25 p.m.
Methodology to Prepare the Decommissioning and the Radwaste Management of the ITER Test Blanket Systems, C. Decanis, K. Liger, J. Pamela, D. Canas *(CEA)*

3:50 p.m.
Cleansing and Dismantling of CEA-Saclay Nuclear Licensed Facilities; LW PLANT PROGRAM, Michel Jeanjacques *(CEA-DEN-MAR-DPAD-CPSA),* Roger Serrano *(CEA-DEN-MAR-DPADCP2A),* Rebecca Glévarec, Sandrine Graebling, Laurence de Manquillé, Jacques Seeman *(CEA-DEN-DANS-DRSN-SAGD)*

Wednesday • June 18, 2014

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.-12:00 p.m.	2014 Decommissioning and Remote Systems Technical Sessions • Nuclear Plants Decommissioning Projects • Robotics and Automation Research Topics • Final Status Survey and Radiation Measurement Technology • Remote Systems—I
1:00 p.m.-4:50 p.m.	2014 Decommissioning and Remote Systems Technical Sessions • Remote Systems—II • Remote Systems—III

Wednesday, June 18, 2014, 8:00 a.m.–9:15 a.m.

Nuclear Plants Decommissioning Projects

Session Organizer: Sue Aggarwal *(NMNTI)*
Cochairs: John Hayes *(NRC),* Jean-Guynokhamzon *(CEA/SACLAY)*

N-1

8:00 a.m.
SRNL Approach to Reducing Risk at 235-F, Jeffrey C. Griffin *(SRNL)*

8:25 a.m.
Segmentation and Packaging of Reactor Internals at Zorita Power Plant, Alejandro Rodriguez, Juan Luis Santiago *(ENRESA)*

8:50 a.m.
Options for Decontamination for Decommissioning: Immediate or Deferred?, Kayla Harper *(AREVA Inc),* Christian Topf *(AREVA GmbH)*

Wednesday, June 18, 2014, 8:30 a.m.

Robotics and Automation Research Topics

Session Organizer: Steve Tibrea *(SRNL)*
Chair: Mark W. Noakes *(ORNL)*

N-2

8:30 a.m.
3D Printing High Temperature Materials for Nuclear Industry Applications, William J. Sames *(ORNL/Texas A&M),* Ryan R. Dehoff *(ORNL),* Sean M. McDeavitt *(Texas A&M)*

8:55 a.m.
3D-Printed Hydraulic Manipulator Development, M. Noakes, B. Richardson, L. Love, R. Lind, P. Lloyd, B. Post *(ORNL)*

9:20 a.m.
Integration of Compliance and Collision Detection Algorithms for Industrial Systems, Andy Zelenak *(Univ of Texas, Austin),* Kyle Schroeder *(Arizona State Univ),* Mitch W. Pryor *(Univ of Texas, Austin)*

9:45 a.m.
3D Object Recognition and Pose Estimation for Remote Materials Handling, Brian E. O'Neil *(LANL),* Mitchell Pryor *(Univ of Texas, Austin)*

Wednesday, June 18, 2014, 9:30 a.m.–12:00 p.m.

Final Status Survey and Radiation Measurement Technology

Session Organizers: Sue Aggarwal *(NMNTI),* James J. Byrne *(Byrne & Assoc)*
Cochairs: James J. Byrne *(Byrne & Assoc),* Roger Trambley

N-1

9:30 a.m.
U.S. EPA Superfund Counts Per Minute (CPM) Electronic Calculator, Stuart Andrew Walker *(EPA)*

9:55 a.m.
Development of a Movable Laboratory for Clean-Up or Post-Accident Monitoring—SMaRT Project, Vincent Goudeau, Didier Dubot *(CEA)*

10:20 a.m.
Revision 2 to the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM), Kathryn K. Snead *(EPA),* David P. Alberth *(U.S. Army),* Nidal Azzam *(EPA),* Ramachandra Bhat *(U.S Air Force),* Steven Doremus *(U.S. Navy),* Mark Fuhrmann *(NRC),* W. Alexander Williams *(DOE)*

10:45 a.m.
U.S. EPA Superfund Radiation Risk Assessment: A Community Toolkit, Stuart Walker, Melissa Greer Dreyfus *(EPA),* Dain Thorpe *(Howard Univ)*

11:10 a.m.
The Optimization of Site Remediation and Final Status Survey of Decommissioning Project of KAERI, Sang Bum Hong, Bum Kyung Seo, Doo Seoung Hwang, Jei Kwon Moon *(KAERI)*

Wednesday, June 18, 2014, 10:15 a.m.

Remote Systems—I

Session Organizer: Steve Tibrea *(SRNL)*
Chair: Eric M. Kriikku *(SRNL)*

N-2

10:15 a.m.
IMU-Based Motion Capture System for Rehabilitation and Sport Activities, Andrzej Nycz, Ethan Farquhar, M. Nance Ericson, Randall F. Lind *(ORNL)*

10:40 a.m.
Development and Testing of a Glove Port Mounted Camera and Light, Daniel Krementz *(SRNL)*

11:05 a.m.
Integrated Remote Handling Design for CERN's MEDICIS Radioactive Isotope Facility, Keith Kershaw, Stefano Marzari, Jean-Louis Grenard *(CERN)*

11:30 a.m.
Spatial Interface for User-Centered Robotic Teleoperation, Jack L. Thompson, Mitch Pryor *(Univ of Texas, Austin)*

Wednesday, June 18, 2014, 1:00 p.m.

Remote Systems—II

Session Organizer: Steve Tibrea *(SRNL)*
Chair: Michael J. Dalmaso *(SRNL)*

N-2

1:00 p.m.
Shield-Plug Mounted Hot Cell Manipulator, G. Doebler, M. Close *(PaR Systems),* M. Noakes, E. Bradley *(ORNL)*

1:25 p.m.
Implementation of Flexible Automation for Neutron Radiography Applications, Joseph Hashem *(Univ of Texas, Austin/LANL),* Mitch Pryor, Sheldon Landsberger *(Univ of Texas, Austin),* James Hunter *(LANL)*

1:50 p.m.
Development of an Aerial Robotic Platform for Remote Sensing and Monitoring of Nuclear Power Facilities, G. Friesmuth, N. Richardson, A. Barzilov, W. Yim *(UNLV)*

2:15 p.m.
Evaluating Automation for Material Reduction in Gloveboxes Using Plutonium Surrogates, Clinton Peterson, Mitchell Pryor, Sheldon Landsberger *(Univ of Texas, Austin)*

Wednesday, June 18, 2014, 2:45 p.m.

Remote Systems—III

Session Organizer: Steve Tibrea *(SRNL)*
Chair: Thomas A. Nance *(SRNS)*

N-2

2:45 p.m.
Microcomputer Servomotor Positioning, J. D. Shewmaker *(Univ of Tennessee),* M. W. Noakes, A. M. Aaron *(ORNL)*

3:10 p.m.
Throughput Measures for Remote Handling Devices in PRIDE, Dongseok Ryu, Jonghui Han, Kiho Kim, Ilje Cho *(KAERI)*

3:35 p.m.
Vision-Based Self-Learning Teleoperation Control System, Andrzej Nycz *(ORNL),* William R. Hamel *(Univ of Tennessee)*

4:00 p.m.
Augmented Teleautonomy for Mobile Robot Navigation, Young Soo Park, Xiaorui Zhao *(ANL)*

4:25 p.m.
Simulation of Teleoperation Aided by Augmented Virtual Fixtures, Young Soo Park, Leighton Roberts *(ANL)*

Embedded Topical Meeting: *Nuclear Fuels and Structural Materials*

General Co-Chair:
Todd R. Allen
Idaho National Laboratory

General Co-Chair:
Lance Snead
Oak Ridge National Laboratory

Technical Program Co-Chair:
Heather MacLean Chichester
Idaho National Laboratory

Technical Program Co-Chair:
Kurt A. Terrani
Oak Ridge National Laboratory

Tuesday • June 17, 2014

(Asterisks indicate special sessions.)

7:30 a.m.-5:00 p.m.	Meeting Registration
8:00 a.m.-10:00 a.m.	Spouse/Guest Hospitality
8:20 a.m.-10:00 a.m.	*Plenary Session
10:00 a.m.-12:00 p.m.	2014 Nuclear Fuels and Structural Materials Technical Sessions
	• LWR Accident Tolerant Fuels—I
1:00 p.m.-3:10 p.m.	2014 Nuclear Fuels and Structural Materials Technical Sessions
	• Modeling—I: Fuel Behavior and Performance
3:20 p.m-4:20 p.m.	• Salt and Gas Reactor Fuels and Materials

Tuesday, June 17, 2014, 8:20 a.m.

Plenary Session

Chair: Todd Allen *(INL)*

S-2

8:20 a.m.
Advanced Fuels and Materials R&D at DOE Office of Nuclear Energy, Peter Lyons *(DOE-NE),* invited

8:50 a.m.
Modeling and Simulation Coordination at DOE Office of Nuclear Energy, Marius Stan *(ANL),* invited

Tuesday, June 17, 2014, 10:00 a.m.

LWR Accident Tolerant Fuels—I

Chair: Jon Carmack *(INL)*

S-2

10:00 a.m.
Status Update on U.S. DOE Accident Tolerant Fuel Development, Shannon M. Bragg-Sitton, Jon Carmack *(INL),* Frank J. Goldner *(DOE),* Steven L.Hayes *(INL)*

10:20 a.m.
Development of Advanced Oxidation Resistant Steel for ATF Clad Application, Lance L. Snead, Kurt A. Terrani, Yuki Tamamoto, Bruce A. Pint, Kevin Field *(ORNL)*

10:40 a.m.
What Should be the Objective of Accident Tolerant Fuel? Edward J. Lahoda *(Westinghouse),* Lars Hallstadius *(Westinghouse Electric Sweden AB),* Frank Boylan, Sumit Ray *(Westinghouse)*

11:00 a.m.
Creating an International Fuel R&D Capability, Fiona Rayment, Daniel Mathers *(National Nuclear Laboratory)*

11:20 p.m.
Oxidation Mitigation of Zircaloy in High Temperature Steam via FeCrAl Coatings, Brent J. Heuser, Weicheng Zhong, Peter A. Mouche, Mohamed S. Elbakhshwan *(Univ of Illinois)*

Tuesday, June 17, 2014, 1:00 p.m.

Modeling—I: Fuel Behavior and Performance

Chair: Brian Wirth *(UTK)*

S-2

1:00 p.m.
Fuels Performance Modeling Based on Microstructure Rather Than Burnup, Michael Tonks, Yongfeng Zhang, Xianming Bai, Derek Gaston, Richard Williamson, Steven Hayes *(INL)*

1:20 p.m.
Thermophysical Properties of Uranium Dioxide by First-Principles, Zhi-Gang Mei, Marius Stan, Abdellatif M. Yacout *(ANL)*

1:40 p.m.
Mechanistic Modeling of Metallic Fuel/Cladding Metallurgical Interactions, Aydın Karahan *(ANL)*

2:00 p.m.
Molecular Dynamics Calculations of Grain Boundary Mobility in UO_2, Yongfeng Zhang, Xianming Bai, Michael R Tonks *(INL)*

2:20 p.m.
Validation of Application of Dislocation Punching Condition to Estimating the HBS Pore Pressure, Lijun Gao *(Tsinghua Univ/Nuclear Power Inst of China),* Bingde Chen *(Nuclear Power Inst of China),* Shengyao Jiang *(Tsinghua Univ)*

2:40 p.m.
Advanced Pellet Cladding Interaction Modeling Using the U.S. DOE CASL Fuel Performance Code: Peregrine, Robert Montgomery *(PNNL),* Nathan Capps *(Univ of Tennessee),* Dion Sunderland, Wenfeng Liu *(ANATECH Corp),* Jason Hales *(INL),* Chris Stanek *(LANL),* Brian D. Wirth *(Univ of Tennessee)*

Tuesday, June 17, 2014, 3:20 p.m.

Salt and Gas Reactor Fuels and Materials

Chair: Jason Harp *(INL)*

S-2

3:20 p.m.
Results from the DOE Advanced Gas Reactor Fuel Development and Qualification Program, David A. Petti *(INL),* invited

3:40 p.m.
Performance Evaluation of the AGR-1 TRISO Fuel: Preliminary Post-Irradiation Examination Results Summary, Paul A. Demkowicz *(INL),* John. D. Hunn *(ORNL),* David A. Petti *(INL)*

4:00 p.m.
Fission Product Distribution in AGR-1 TRISO Fuel Particles with Varying Silver Retention, Tyler J. Gerczak, John D. Hunn, Charles A. Baldwin *(ORNL),* Robert N. Morris *(UT-Battelle, ORNL)*

Wednesday • June 18, 2014

(Asterisks indicate special sessions.)

7:30 a.m.-5:00 p.m.	Meeting Registration
8:00 a.m.-10:00 a.m.	Spouse/Guest Hospitality
8:20 a.m.-11:40 a.m.	2014 Nuclear Fuels and Structural Materials Technical Sessions • Core Structural Components—I • Fast Reactor Fuels and Materials
1:00 p.m.-4:20 p.m.	2014 Nuclear Fuels and Structural Materials Technical Sessions • Special Session in Honor of Donald Olander—I • Special Session in Honor of Donald Olander—II
5:30 p.m.-7:30 p.m.	Poster Session

Wednesday, June 18, 2014, 8:20 a.m.

Core Structural Components—I

Chair: Tarik Saleh *(LANL)*

S-2

8:20 a.m.
Development of Silicon Carbide Composite Technologies for Nuclear Applications, Y. Katoh, L. L. Snead, K. A. Terrani *(ORNL)*

8:40 a.m.
Characterization of Alloy 617 Properties to Support VHTR Intermediate Heat Exchanger Design, L. J. Carroll *(INL),* T. L. Sham *(ORNL),* J. K. Wright, R. N. Wright *(INL),* invited

9:00 a.m.
Inelastic Neutron Scattering Analysis of Reactor-Grade Graphite, A. I. Hawari *(NCSU),* A. I. Kolesnikov *(ORNL),* Q. Cai, J. C. Holmes *(NCSU),* P. D. Ferguson *(ORNL)*

9:20 a.m.
Permeability Measurements for SiC Ceramic Matrix Composites Relevant to LWR, O. Gutierrez, H. E. Khalifa, C. P. Deck, C. A. Back, R. Schleicher *(General Atomics)*

Wednesday, June 18, 2014, 10:00 a.m.

Fast Reactor Fuels and Materials

Chair: Abdellatif Yacout *(ANL)*

S-2

10:00 a.m.
Preliminary Post Irradiation Examination of AFC-3A and AFC-3B, Jason M. Harp, Heather J. M. Chichester *(INL)*

10:20 a.m.
Phase Characterization in Unirradiated and Irradiated Metallic Fuel for Minor Actinides Transmutation in Fast Reactor, Luca Capriotti *(EC-JRC-ITU),* K. Inagaki *(CRIEPI),* D. Papaioannou *(EC-JRC-ITU),* S. Bremier, H. Ohta, T. Ogata *(CRIEPI),* R. Eloirdi,F. Bocci, D. Bouexiere, V. V. Rondinella *(EC-JRCITU)*

10:40 a.m.
Characterization of High Energy Xe Ion Damage in U-10Mo Metallic Alloy Fuel with Depth Resolved Synchrotron Microbeam Diffraction, D. Yun, K. Mo, R. Xu, W. Mohamed, B. Ye, M. J. Pellin, A. M. Yacout *(ANL)*

11:00 a.m.
Distribution of Fuel Elements and Fission Product Elements in the Irradiated Metal Fuels, K. Inagaki *(CRIEPI),* L. Capriotti *(EC-JRC-ITU),* H. Ohta, T. Ogata *(CRIEPI),* S. Bremier, P. Pöml, D. Papaioannou, V. V. Rondinella *(EC-JRC-ITU)*

11:20 a.m.
Microstructural Evolution in a UZr Alloy Irradiated at Low Fluences, Maria A. Okuniewski *(INL),* Gary Bell, Joel McDuffee, Ron Ellis, Lance Snead, Bob Sitterson, Stewart Voit *(ORNL),* Lynne Ecker *(BNL),* Brandon Miller, Steven Hayes *(INL)*

Wednesday, June 18, 2014, 1:00 p.m.

Special Session in Honor of Donald Olander—I

Chair: Mehdi Balooch *(UCB)*

S-2

1:00 p.m.
Effects of Reactor Exposure on Nuclear Fuel Cladding, Arthur T. Motta *(Penn State)*

1:20 p.m.
Assessments of Pellet-Clad Gap Conductance and Irradiation Damage Recovery Due to In-Pile Annealing of UO_2: Planned IFA-744 Tests in Halden Test Reactor, S. Yagnik *(EPRI),* W. Wiesenack *(OECD Halden Reactor Project),* K. Terrani *(ORNL),* M.Balooch *(Univ of California, Berkeley)*

1:40 p.m.
EPRI Root Cause Evaluation of the Fukushima Daiichi Event, Rosa Yang *(EPRI)*

2:00 p.m.
Combustion of Zirconium-Based Alloys, Albert J. Machiels *(EPRI)*

2:20 p.m.
Mass Relocation by Fission-Induced Creep in U-Mo/Al Dispersion Fuel Meat, Yeon Soo Kim *(ANL),* G. Y. Jeong, D-S Sohn *(UNIST)*

Wednesday, June 18, 2014, 3:00 p.m.

Special Session in Honor of Donald Olander—II

Chair: Arthur Motta *(PSU)*

S-2

3:00 p.m.
Progress in Mechanistic Understanding of Nuclear Materials, Steven J. Zinkle *(Univ of Tennessee, ORNL)*

3:20 p.m.
Multiscale Modeling of Nanoscale Precipitate Stability in Irradiated Structural Materials, Brian D. Wirth, Donghua Xu *(Univ of Tennessee)*

3:40 p.m.
Performance of U-Mo Fuel at Low Temperatures, M. K. Meyer, J. Gan, D. D. Keiser, D. M. Wachs *(INL)*

4:00 p.m.
Oxidation of SiC in High-Temperature Water Vapor, Kurt A. Terrani *(ORNL)*

Wednesday, June 18, 2014, 5:30 p.m.

Poster Session

S-1

UN Kernel Development for Fully Ceramic Microencapsulated Fuels for LWRs, Chinthaka M. Silva *(ORNL/Univ of Tennessee),* Rodney D. Hunt, Kurt A. Terrani, Stewart R. Voit *(ORNL),* Terrence B. Lindemer *(Harbach Eng and Solutions),* Theodore M. Besmann, Lance L. Snead *(ORNL)*

Enhanced Thermal Conductivity of Metallic Network Reinforced Oxide-Based Composite Fuel, Ho Jin Ryu, Joon Hui Kim, Soon Hyung Hong *(KAIST)*

Thermodynamic Stability of ZrN as Diffusion Barriers for UMo/Al Fuel, Zhi-Gang Mei, Abdellatif M. Yacout, Yeon Soo Kim, Gerard L. Hofman, Marius Stan *(ANL)*

Oxidation Resistance of Uranium-Silicide Bearing Composites for Advanced Nuclear Reactor Applications, J. T. White, A. T. Nelson, J. T. Dunwoody, K. J. McClellan *(LANL)*

Synchrotron Radiation Study on Steam Oxidation Behavior of Zircaloy-2 with Advanced Coatings, Kun Mo, Di Yun, Walid Mohamed, Michael Pellin, Jonathan Almer, Abdellatif M. Yacout *(ANL)*

Oxide Electronic Conductivity and Hydrogen Pickup Fraction in Zr alloys, Adrien Couet, Arthur T. Motta *(Penn State),* Robert J. Comstock *(Westinghouse),* Antoine Ambard *(EdF)*

Superior Thermal Performance of SiC Cladding under Extreme Pool Boiling Conditions, Gwang Hyeok Seo, Gyoodong Jeun, Sung Joong Kim *(Hanyang Univ)*

Response of Oxide Particles to Externally Applied Stress in Austenitic ODS Alloys, Yinbin Miao *(Univ of Illinois),* Kun Mo *(ANL)*, Xiang Liu *(Univ of Illinois),* Zhangjian Zhou *(Univ of Science and Technology Beijing),* Jonathan Almer *(ANL)*, James F. Stubbins *(Univ of Illinois)*

Comparison of Nitronic-50 and Stainless Steel 316 for use in Supercritical Water Reactor Environments, Zachary Karmiol, Dev Chidambaram *(Univ of Nevada, Reno)*

Biaxial Thermal Creep-Fatigue of Inconel 617 at 950°C, Kuan-Che Lan *(Univ of Illinois),* Kun Mo *(ANL)*, James F. Stubbins *(Univ of Illinois)*

Reducing Agent Effects on Haynes-230 in Molten Halide Salts, Luke Olson, Roderick Fuentes, Michael Martinez-Rodriguez, Brenda Garcia-Diaz, Joshua Gray *(SRNL)*

Pressureless Joining of SiC by Transient Eutectic-Phase Method, T. Koyanagi, J. Kiggans, C. Shih, Y. Katoh *(ORNL)*

Qualification of Austenitic Steel 316L(N) and Welds for Use as Structural Material in Sodium-Cooled Fast Reactors, Celine Cabet, Laurent Forest, Maxime Sauzay, Yiting Cui, Jean-Louis Courouau *(CEA)*

Characterization of Non-irradiated Ti-Si-C and Ti-Al-C MAX Phase Materials, Chunghao Shih, Wallace Porter, Roberta Meisner, Yutai Katoh *(ORNL),* Steven Zinkle *(Univ of Tennessee)*

Impedance Response of Pre-Oxidized Ferrtic-Martensitic Steels in High Temperature Liquid Sodium Environment: UCFR Application, Sang Hun Shin, Jeong Hyun Lee, Ji Hyun Kim *(UNIST)*

Molecular Dynamics Study of Thermal Conductivity in Defective Uranium Dioxide, Zhi-Gang Mei, Marius Stan,, Abdellatif M. Yacout *(ANL)*

Modeling Irradiation Growth of Zirconium and Its Alloy in Nuclear Reactors, Sang Il Choi, Tae Ho Kim, Sang Hun Shin *(UNIST)*, Gyeong-Geun Lee, Junhyun Kwon *(KAERI),* Ji Hyun Kim *(UNIST)*

Characterization of High Energy Xe Ion Irradiation Effects in Single Crystal Molybdenum with Depth Resolved Synchrotron Microbeam Diffraction, D. Yun, K. Mo, R. Xu, W. Mohamed, B. Ye, M. J. Pellin, A. M. Yacout *(ANL)*

Irradiated Microsphere Gamma Analyzer for Examination of Particle Fuel, Charles A. Baldwin, Robert N. Morris, John D. Hunn *(ORNL),* Paul A. Demkowicz *(INL)*

Effects of Aging and Heavy Ion Irradiation on Microstructural Evolution in CF8 Cast Austenitic Stainless Steel, Wei-Ying Chen *(Univ of Illinois/ANL),* Meimei Li, Mark A. Kirk, Pete M. Baldo *(ANL)*, Tiangan Lian *(EPRI)*

Microstructure Evolution in a 9Cr Ferritic-Martensitic Steel under Ion Irradiation, Cem Topbasi, Arthur T. Motta *(Penn State),* Mark A. Kirk *(ANL)*

A Curtaining Removal Technique for Focused Ion Beam Milled U-Mo Fuels, Ryan Collette, Jeffrey King *(CSM)*, Dennis Keiser, Jr., Jason Schulthess *(INL)*

Phase Stability and Mechanical Properties of Nuclear Grade FeCrAl Under LWR-Relevant Neutron Irradiation, K. G. Field, Y. Yamamoto, L. L. Snead *(ORNL)*

In-Situ X-ray Reflectivity Study of Interfacial Structure Between the Pre-Oxidized Ni(110) Surface and Liquid, Jong Jin Kim, Tae Ho Kim, Seung Hyun Kim *(UNIST)*, Hongping Yan *(Carnegie Inst of Washington, HP-CAT),* Chi Bum Bahn *(Pusan National Univ),* Changyong Park *(Carnegie Inst of Washington, HP-CAT),* Ji Hyun Kim *(UNIST)*

Hydrogen Migration, Precipitation and Re-Orientation in Nuclear Spent Fuel Cladding in Dry Storage, Nicolas Silva, Yong Yang *(Univ of Florida)*

Kapitza Resistance of the Grain Boundaries in Ceria, Aleksandr Chernatynskiy *(Univ of Florida),* David Bai, Jian Gan *(INL)*

Simulation of Swelling and Stress State in Neutron Irradiated U-10Mo Monolithic Plate, Walid Mohamed, Y. S. Kim, G. L. Hofman, A. M. Yacout *(ANL)*

Simulation of U-Mo Fuel Swelling to High Burnup, Bei Ye, Yeon Soo Kim, Gerard Hofman, Jeff Rest *(ANL)*

Diffusion of Cs-137 in a Vented Metallic Fuel for SFR, Chihyung Kim, Yonghee Kim *(KAIST)*

Development of Advanced In-Pin Metallic Fuel Performance Models for SAS4A, Aydın Karahan *(ANL)*

Development of Enhanced Mechanistic Model for Metallic Fuel Constituent Redistribution, Aydin Karahan *(ANL)*

Atomistic Modeling of U_3Si_2 Electronic Structure and Properties, J. L. Wormald, A. I. Hawari *(NCSU)*

Modeling Constituent Redistribution in U-Pu-Zr Metallic Fuel Using the Advanced Fuel Performance Code BISON, Jack Galloway, Cetin Unal, Neil Carlson *(LANL)*, Douglas Porter, Steve Hayes *(INL)*

Obtaining Elastic Constants using Phase Field Crystal Modeling, Aaron Butterfield *(INL)*, Victor Chan, Susanta Ghosh, Katsuyo Thornton *(Univ of Michigan),* Michael Tonks, Yongfeng Zhang *(INL)*

Stress Analysis Study of Silicon Carbide Cladding Under Accident Conditions, V. Avincola *(MIT/KIT),* K. Shirvan, M. Kazimi *(MIT)*

Measurement of Hydrogen Generation during Steam Oxidation using Quadruple Mass Spectrometry LAUR 14-20443, A. J. Parkison, A. T. Nelson *(LANL)*

Effect of Neutron Irradiation on the Nd-Fe-B Rare-Earth Permanent Magnet, Jie Qui, Adib Samin *(Ohio State Univ),* Jason Hattrick-Simpers *(Univ of South Carolina),* Yuan F. Zheng, Lei Cao *(Ohio State Univ)*

Radiation Resistance of XLPE Nano-Dielectrics for Advanced Reactor Applications, Robert C. Duckworth, Georgios Polyzos, Parans Paranthaman, Tolga Aytug, Keith Leonard, Isidor Sauers *(ORNL)*

Experimental Validation of the Topological Sensitivity Approach to Elastic-Wave Imaging, Roman D. Tokmashev, Bojan B. Guzina *(Univ of Minnesota)*

Chromium Oxide Films Formed on Stainless Steel 316 in Molten LiCl-Li_2O, Augustus Merwin, Dev Chidambaram *(Univ of Nevada, Reno)*

Oxidation and Volatilization of SiC Layer in High Temperature Steam, Byung Ha Park, Cheon No *(KAIST)*

LightGauge Sensor Production and Verification on Nuclear Reactor Materials, Scott McBeath, Eric Burgett *(Idaho State Univ)*

Bulk Single Crystal Growth of Fuel Materials, Malwina Chaczko, Daniel Isaacs, Eric Burgett *(Idaho State Univ)*

The Constitutive Modeling of Fracture Toughness in Reactor Pressure Vessel Steel, Pritam Chakraborty, S. Bulent Biner *(INL)*

Advance the Understanding of the Phases' Distribution of Triso Fuel Coater using Gamma Ray Computed Tomography (CT), Neven Ali, Thaar Al-Juwaya, Muthanna Al-Dahhan *(Missouri Univ Sci Tech)*

Dynamical Recovery in UO2 Following Radiation Impact, V. Ajay Annamareddy, Xiaojun Mei, Jacob Eapen *(NCSU)*

Positron Characterization of Neutron Irradiated Reactor-Grade Graphite, M. Liu, A. I. Hawari *(NCSU)*

Thursday • June 19, 2014

(Asterisks indicate special sessions.)

7:30 a.m.-2:00 p.m.	**Meeting Registration**
8:20 a.m.-11:40 a.m.	**2014 Nuclear Fuels and Structural Materials Technical Sessions** • Modeling—II: Radiation Effects • LWR Accident Tolerant Fuels—II
1:00 p.m.-4:20 p.m.	**2014 Nuclear Fuels and Structural Materials Technical Sessions** • Core Structural Components—II • LWR Sustainability and Used Fuel Disposition

Thursday, June 19, 2014, 8:20 a.m.

Modeling—II: Radiation Effects

Chair: Robert Montgomery *(PNNL)*

S-2

8:20 a.m.
Radiation Response in FeCr Alloys: The State-of-the-Art, P. Olsson *(KTH),* L. Malerba *(SCK-CEN),* invited

8:40 a.m.
Thermochemical Assessment of Advanced LWR Fuel Cladding, T. M. Besmann, Y. Yamamoto, K. A. Unocic *(ORNL)*

9:00 a.m.
Computer Modeling of Transport of Oxidizing Species in Grain Boundaries during Zirconium Corrosion, Xian-Ming Bai, Yongfeng Zhang, Michael R. Tonks *(INL)*

9:20 a.m.
Modeling of Neutron Irradiation Hardening of Iron, X. Hu *(Univ of Tennessee/ORNL),* D. Xu *(Univ of Tennessee),* T. S. Byun *(ORNL),* K. A. Terrani *(ORNL),* B. D. Wirth *(Univ of Tennessee/ORNL)*

Thursday, June 19, 2014, 10:00 a.m.

LWR Accident Tolerant Fuels—II

Chair: Kurt Terrani *(ORNL)*

S-2

10:00 a.m.

Overview of Properties and Performance of Uranium-Silicide Compounds for Light Water Reactor Applications, A. T. Nelson, J. T. White, D. D. Byler, J. T. Dunwoody, J. A. Valdez, K. J. McClellan*(LANL)*

10:20 a.m.

Uranium Silicide Fabrication for use in LWR Accident Tolerant Fuel, Jason M. Harp, Paul A. Lessing, Rita E. Hoggan *(INL)*

10:40 a.m.

MAX Phase Coatings for Accident Tolerant Nuclear Fuel, Brenda Garcia-Diaz *(SRNL)*, Luke Olson *(SRNS),* Christopher Verst, Robert Sindelar, Elizabeth Hoffman *(SRNL)*, Ben Hauch, Ben Maier, Kumar Sridharan *(Univ of Wisconsin-Madison)*

11:00 a.m.

Safety of Silicon Carbide Cladding for Fail-Safe Simple Economical SMR (FASES), Youho Lee, Ho Sik Kim, Hee Cheon No *(KAIST)*

11:20 a.m.

Development of a High Density Uranium Nitride-Uranium Silicide Composite Accident Tolerant Fuel, Luis H. Ortega, Jordan Evans, Sean M. McDeavitt *(TAMU)*

Thursday, June 19, 2014, 1:00 p.m.

Core Structural Components—II

Chair: Kevin Field *(ORNL)*

S-2

1:00 p.m.

Strengthening of Irradiation-Induced Defects in AISI 304 and 316 Variants, Lizhen Tan, Jeremy T. Busby *(ORNL)*

1:20 p.m.

Irradiation Effects on LWR Accident Tolerant Fuels Cladding Materials, Tarik A. Saleh, Osman Anderoglu, Stuart A. Maloy *(LANL)*, G. Robert Odette *(Univ of California, Santa Barbara),* Tobias J. Romero *(LANL)*

1:40 p.m.

TEM, APT and Hardness Studies of Neutron-Irradiated Ferritic Fe-Cr Single Crystals, Wei-Ying Chen, Yinbin Miao, Carolyn A. Tomchik, Kun Mo *(Univ of Illinois),* Jian Gan, Maria A. Okuniewski *(INL)*, Y. Q. Wu *(Boise State Univ/Center of Advanced Energy Studies),* Stuart A. Maloy *(LANL)*, James F. Stubbins *(Univ of Illinois)*

2:00 p.m.

Nanoparticles Loading Behavior Before and After Matrix Necking: An In-Situ Synchrotron Radiation Study in a 9Cr ODS Alloy, Kun Mo *(Univ of Illinois/ANL),* Yinbin Miao *(Univ of Illinois),* Zhangjian Zhou *(Univ of Science and Technology Beijing),* Di Yun *(ANL)*, Xiang Liu *(Univ of Illinois),* Jonathan Almer *(ANL)*, James F. Stubbins *(Univ of Illinois)*

2:20 p.m.

A Study on Compatibility of Ferritic-Martensitic Steels with High-Temperature Sodium for SFR Application, Sang Hun Shin *(UNIST)*, Jun Hwan Kim *(KAERI),* Ji Hyun Kim *(UNIST)*

Thursday, June 19, 2014, 3:00 p.m.

LWR Sustainability and Used Fuel Disposition

Chair: Andy Nelson *(LANL)*

S-2

3:00 p.m.

Degradation of Concrete for Nuclear Structures: Identified Mechanisms and Knowledge Gaps, Yann Le Pape, Kevin G. Field, Jeremy Busby *(ORNL)*

3:20 p.m.

Analytical Model Methodology Development and Demonstration of Approach on Used Fuel Performance Characterization for Condition of Normal Transportation, Kenneth Geelhood, Harold Adkins *(PNNL)*

3:40 p.m.

Alloying and Grain Boundary Structure Effects on the Radiation Induced Segregation Response in Type 304 Variants Under Neutron Irradiation, K. G. Field, M. N. Gussev, J. T. Busby *(ORNL)*

4:00 p.m.

The Effect of Stress Biaxiality on Hydride Reorientation Threshold Stress, M. Nedim Cinbiz, Arthur T. Motta, Donald A. Koss *(Penn State)*

Embedded Topical Meeting: *Advances in Thermal Hydraulics*

General Co-Chair:
Kurshad Muftuoglu
GE Hitachi Nuclear Energy

General Co-Chair:
Jong H. Kim
Korea Advanced Institute of Science & Technology

Technical Program Co-Chair:
Donna Post Guillen
Idaho National Laboratory

Technical Program Co-Chair:
Horst-Michael Prasser
Paul Scherrer Institute

Assistant Progam Co-Chair:
Seungjin Kim
Pennsylvania State University

Assistant Progam Co-Chair:
Elia Merzari
Argonne National Laborotory

Tuesday • June 17, 2014

(Asterisks indicate special sessions.)

7:30 a.m.-5:00 p.m.	Meeting Registration
8:00 a.m.-10:00 a.m.	Spouse/Guest Hospitality
8:30 a.m.-11:30 a.m.	Advances in Thermal Hydraulics Plenary: • Legacy of Novak Zuber Memorial
1:30 p.m.-4:50 p.m.	2014 Advances in Thermal Hydraulics Technical Sessions • Research and Development Inspired by Novak Zuber • Computational Methods, Modeling, Verification/Validation—I

Tuesday, June 17, 2014, 8:30 a.m.

Advances in Thermal Hydraulics Plenary: Legacy of Novak Zuber Memorial

Cochairs: Kurshad Muftuoglu *(GE Hitachi Nuclear Energy),* Jong H. Kim *(KAIST)*

N-6

Dr. Novak Zuber 1922-2013

The opening plenary session is dedicated to late Dr. Novak Zuber's contributions to thermal-hydraulics. Dr. Zuber, as a pioneer in two-phase flow and heat transfer, has made significant contributions to all aspects of thermal-hydraulics. His major contributions include the Drift Flux model, studies on critical heat flux, review and guidance on NRC's best-estimate computer code development, Code Scaling, Applicability and Uncertainty (CSAU) methodology, formulation of Hierarchical 2-Tiered Scaling (H2TS) methodology. In this memorial session, the distinguished speakers will present short lectures on different parts of his numerous contributions. The session will cover the highlights from five decades of thermal-hydraulics research that has formed the foundation of modern nuclear reactor safety.

Speakers:

- Prof. Ivan Catton *(UCLA)*
- Prof. Mamoru Ishii *(Purdue U)*
- Dr. Pradip Saha *(GEH)*
- Dr. Steve Bajorek *(U.S. NRC)*
- Prof. Jose Reyes *(NuScale)*
- Dr. Wolfgang Wulff *(BNL, retired)*

Tuesday, June 17, 2014, 1:30 p.m.

Research and Development Inspired by Novak Zuber

Chair: Pradip Saha *(General Electric)*

N-6

1:30 p.m.

Physical Systems for Regulatory Investigation: Part I—Logical Organizational of Observation and Reason, Robert P. Martin *(B&W Nuclear Energy),* James E. O'Brien *(INL)*

1:55 p.m.
Physical Systems for Regulatory Investigation: Part II— Evaluation Methodology, Robert P. Martin *(B&W Nuclear Energy),* Cesare Frepoli *(FpoliSolutions)*

2:20 p.m.
Quantified PIRT Using Characteristic Time Ratios, Hu Luo, Qiao Wu *(Oregon State Univ)*

2:45 p.m.
Experimental Studies of Spacer Grid Thermal Hydraulics in the Dispersed Flow Film Boiling Regime, M. P. Riley, L. Mohanta, F. B. Cheung *(Penn State),* S. M. Bajorek, K. Tien, C. L. Hoxie *(NRC)*

3:10 p.m.
Experimental Investigation of Inverted Annular Film Boiling in a Rod Bundle During Reflood Transient, L. Mohanta, M. P. Riley, F. B. Cheung *(Penn State),* S. M. Bajorek, J. M. Kelly, K. Tien, C. L. Hoxie *(NRC)*

3:35 p.m.
Drift-Flux Correlation for a Rod Bundle Geometry, C. Clark, M. Griffith, S. W. Chen, J. P. Schlegel, T. Hibiki, M. Ishii *(Purdue Univ),* T. Ozaki *(Nuclear Fuel Industries),* I. Kinoshita, Y. Yoshida *(Inst of Nuclear Safety System)*

4:00 p.m.
Heater Width Effect on Critical Heat Flux and Instability, Jae Young Lee, Woo Ram Lee *(Handong Global Univ)*

Computational Methods, Modeling, Verification/ Validation—I

Chair: Igor Bolotnov *(NCSU)*

N-7

1:30 p.m.
Quantification of Uncertainty of Reflood-Related Models of RELAP5 MOD3.3 Code, A. Kovtonyuk, A. Petruzzi, F. D'Auria *(Univ of Pisa)*

1:55 p.m.
Development of a Subchannel Analysis Code for Liquid Metal Cooled Fuel Assemblies, N. Scarpelli *(Shanghai Jiao Tong Univ/Univ of Turin),* X. J. Liu *(Shanghai Jiao Tong Univ)*

2:20 p.m.
Coupled Thermal-Hydraulics and Neutronics Calcuations with COBRA-TF and MPACT, Brendan Kochunas, Daniel Jabaay, Benjamin Collins, Thomas Downar *(Univ of Michigan)*

2:45 p.m.
The Modeling of Advanced BWR Fuel Designs with the U.S. NRC Fuel Depletion Codes PARCS/PATHS, A. Wysocki *(Univ of Michigan),* J. March-Leuba *(ORNL),* C. Thurston, N. Hudson, A. Ireland *(NRC),* A. Ward, A. Manera, Y. Xu, T. Downar *(Univ of Michigan)*

3:10 p.m.
A Fully-Coupled Finite Element Formulation for One-Dimensional Incompressible Thermally Expandable Flow, Rui Hu *(ANL)*

3:35 p.m.
Analysis on Thermal-Hydraulics of UTSG by STAF Code, Tenglong Cong, Wenxi Tian, Guanghui Su, Suizheng Qiu *(Xi'an Jiaotong Univ)*

4:00 p.m.
Benchmark and Preliminary Validation of the Thermal-Hydraulic Module of the Frenetic Code Against EBR-II Data, R. Zanino, R. Bonifetto, L. Savoldi Richard *(Politecnico di Torino),* A. Del Nevo *(ENEA)*

4:25 p.m.
Application of RELAP5/MOD4.0 Code in a Fluoride Salt-Cooled High-Temperature Test Reactor, Kai Wang, Zhaozhong He, Kun Chen *(SINAP)*

Wednesday • June 18, 2014

7:30 a.m.-5:00 p.m.	**Meeting Registration**
8:00 a.m.-10:00 a.m.	**Spouse/Guest Hospitality**
8:30 a.m.-11:25 a.m.	**2014 Advances in Thermal Hydraulics Technical Sessions** • Thermal Fluids and Heat Transfer Applications—I • Two-Phase Flow—I
1:30 p.m.-4:00 p.m.	**2014 Advances in Thermal Hydraulics Technical Sessions** • Thermal Fluids and Heat Transfer Applications—II • Two-Phase Flow—II

Wednesday, June 18, 2014, 8:30 a.m.

Thermal Fluids and Heat Transfer Applications—I

Cochairs: Si Young Lee *(SRNL),* Donald Todd *(Numerical Applications, Inc.)*

N-5

8:30 a.m.
Thermal Evaluation of Alternate Shipping Cask for GTRI Experiments, Donna Post Guillen *(INL)*

8:55 a.m.
Development of Scoping Method for Natural Circulation Lead Cooled Small Modular Reactor, Hyung M. Son *(KAERI),* Kune Y. Suh *(Seoul Natl Univ)*

9:20 a.m.
Verification and Validation of a Natural Circulation Loop Model for FHRs, Zhangpeng Gao *(Univ of California, Berkeley/Xi'an Jiaotong Univ),* Raluca O. Scarlat, Lakshana Huddar, Nicholas Zweibaum, Per F. Peterson *(Univ of California, Berkeley),* Suizheng Qiu, Guanghui Su *(Xi'an Jiatong Univ)*

9:45 a.m.
Experimental and Numerical Investigation of Joule-Heating Flow in a Square Cavity—Effect of Cold Cap Condition, Thanh Tung Duong, Hiromasa Tanaka, Nobuyoshi Tsuzuki *(Tokyo Inst of Technol),* Hideki Kawai *(Muroran Inst of Technol),* Hiroshige Kikura *(Tokyo Inst of Technol)*

10:10 a.m.
Development of an Ammonia-Water Mixture Property Code (AWProC) for Kalina Cycle, Mingjun Wang *(Xi'an Jiaotong Univ/Univ of Michigan),* Annalisa Manera *(Univ of Michigan),* Suizheng Qiu *(Xi'an Jiaotong Univ)*

Two-Phase Flow—I

Cochairs: Seungjin Kim *(Penn State),* Xiaodong Sun *(Ohio State)*

N-6

8:30 a.m.
Estimation of Shear-Induced Lift Force in Laminar and Turbulent Flows, Aaron M. Thomas, Jun Fang, Igor A. Bolotnov *(NCSU)*

8:55 a.m.
Experiments on the Effects of a Spacer Grid in Air-Water Two-Phase Flow, J. Wheeler, T. Worosz, S. Kim *(Penn State)*

9:20 a.m.
Experiments in Cap-Bubbly Two-Phase Flows for Two-Group IATE Development, T. Worosz, S. Kim *(Penn State)*

9:45 a.m.
Experimental and Analytical Study of Exponential Power Excursion in Plate-Type Fuel, Lucia Sargentini, Matteo Bucci *(CEA),* Guanyu Su, Jacopo Buongiorno, Thomas McKrell *(MIT)*

10:10 a.m.
CHF Enhancement by Nanoparticles-Coated Surface in FC-72 Flow Boiling, Seok Bin Seo, Han Seo, Kyung Mo Kim, In Cheol Bang *(UNIST)*

10:35 a.m.
Lift Force of Large Bubble in High Reynolds Condition, Jae Young Lee, Yun Seok Choi *(Handong Global Univ)*

11:00 a.m.
Bubble Growth, Transport, and Collapse in Subcooled Flow Boiling, Eyitayo James Owoeye, DuWayne Schubring *(Univ of Florida)*

Wednesday, June 18, 2014, 1:30 p.m.

Thermal Fluids and Heat Transfer Applications—II

Chair: Wade Marcum *(Oregon State Univ)*

N-5

1:30 p.m.
One-Row SCWR Design Analysis Using Coupled RP/TH Analysis, Christopher R. Hughes, Oswaldo Pelaez, DuWayne Schubring, Kelly A. Jordan *(Univ of Florida)*

1:55 p.m.
Hydrodynamically Developing and Fully-Developed Laminar Flows in a Semicircular Duct: Analytical and Computational Analyses, Sai K. Mylavarapu, Xiaodong Sun, Richard N. Christensen *(Ohio State Univ)*

2:20 p.m.
Design and Scaling of the Natural Convection Shutdown Heat Removal Test Facility, D. Lisowski, C. Gerardi, N. Bremer, M. Farmer *(ANL)*

2:45 p.m.
Thermal Predictions of the AGR-2 Experiment with Variable Gas Gaps, Grant L. Hawkes, James W. Sterbentz, Binh Pham *(INL)*

3:10 p.m.
Comparison of UVP and PIV Measurements of the Mixing of Parallel Vertical Jets, Cody Wiggins, Arthur Ruggles *(Univ of Tennessee)*

3:35 p.m.
Experimental and Numerical Investigation of Time Dependent Natural Convection Boundary Layer Flow Over Spheres in Fluoride Salts, Lakshana Huddar, Per F. Peterson *(Univ of California, Berkeley)*

Two-Phase Flow—II

Cochairs: Yang Liu *(Virginia Tech),* Seungjin Kim *(Penn State)*

N-6

1:30 p.m.
Interface Tracking Simulation of Two-Phase Bubbly Flow in a PWR Subchannel, Jun Fang, Anand V. Mishra, Igor A. Bolotnov *(NCSU)*

1:55 p.m.
Considerations in the Practical Application of the Multi-Sensor Conductivity Probe for Two-Phase Flow, M. Bernard, T. Worosz, S. Kim *(Penn State)*

2:20 p.m.
Image Processing of Bubbly Flow in a Rectangular Channel, Yucheng Fu, Yang Liu *(Virginia Tech)*

2:45 p.m.
Effects of SiC and Graphene-Oxide Nanoparticles-Coated Surfaces on Quenching Performance, Kyung Mo Kim, Seung Won Lee, In Cheol Bang *(UNIST)*

3:10 p.m.
Enhanced Pool Boiling Critical Heat Flux of Water Using Carbon Nanotubes Adhesion on a Stainless Steel Heaters, Gwang Hyeok Seo, Jongwoong Yoon, Sung Joong Kim *(Hanyang Univ),* Hayoung Hwang, Taehan Yeo, Woonjoon Choi *(Korea Univ)*

3:35 p.m.
Numeric Study of Void Drift Under PWR Conditions with CFD Approach, Bo Pang, Xu Cheng *(KIT)*

Thursday • June 19, 2014

7:30 a.m.-2:00 p.m.	**Meeting Registration**
8:30 a.m.-11:50 a.m.	**2014 Advances in Thermal Hydraulics Technical Sessions** • Computational Methods, Modeling, Verification/ Validation—II • Nuclear Reactor Plant Safety and Accident Management—I
1:30 p.m.-4:00 p.m.	**2014 Advances in Thermal Hydraulics Technical Session** • Nuclear Reactor Plant Safety and Accident Management—II

Thursday, June 19, 2014, 8:30 a.m.

Computational Methods, Modeling, Verification/ Validation—II

Chair: Maria Avramova *(Penn State)*

N-6

8:30 a.m.
A Study on Numerical Modeling of Supercritical CO_2 Flow in Centrifugal Compressors, Farhad Behafarid, Michael Z. Podowski *(RPI)*

8:55 a.m.
Modeling Transient Power Time-Lag Due to Heterogeneity Within the Treat Fuel Matrix Using MOOSE/BISON, A. X. Zabriskie, W. R. Marcum *(Oregon State Univ),* D. M. Wachs *(INL)*

9:20 a.m.
Implementation of Two-Group Interfacial Area Transport in a One-Dimensional Computational Environment, J. P. Schlegel, T. Hibiki, M. Ishii *(Purdue Univ),* X. Shen *(Kyoto Univ),* S. Appathurai *(Chevron Energy Technol)*

9:45 a.m.
Application of Hydra-TH, the CASL T-H Code, for Computing Nuclear Reactor Spacer Grids, Emilian L. Popov *(ORNL),* Mark A. Christon, Jozef Bakosi *(LANL)*

10:10 a.m.
Characterizing Virtual Mass Effects of a Submersed Body Using Pseudo-Fluid Elements, T. K. Howard, W. R. Marcum *(Oregon State Univ),* W. F. Jones *(INL)*

10:35 a.m.
Deflection of a Heterogeneous Wide-Beam Under Uniform Pressure Load, T. V. Holschuh, T. K. Howard, W. R. Marcum *(Oregon State Univ)*

11:00 a.m.
Application of RELAP5/MOD4.0 Code in a Fluoride Salt-Cooled High-Temperature Test Reactor, Kai Wang, Zhaozhong He, Kun Chen *(SINAP)*

11:25 a.m.
Numerical Verification of the RELAP-7 Core Channel Single-Phase Model, Haihua Zhao, Ling Zou, Hongbin Zhang, Richard Martineau *(INL)*

Nuclear Reactor Plant Safety and Accident Management—I

Chair: John Luxat *(McMaster Univ)*

N-7

8:30 a.m.
Natural Circulation in Heat Removal System During Loss-of-Pump Accident Based on Initial Conceptual Design, S. Y. Lee, L. L. Hamm, F. G. Smith III *(SRNL)*

8:55 a.m.
Development of Phenomena Identification Ranking Table for a Station Blackout Accident of the Pressurized Water Reactor, Kyoung-Ho Kang, Byoung-Uhn Bae, Jong-Rok Kim, Yu-Sun Park, Seung-Wook Lee, Chul-Hwa Song, Ki-Yong Choi *(KAERI)*

9:20 a.m.
Uncertainty and Sensitivity Analysis of SBLOCA for the ACME Test Facility, Chengcheng Deng *(Tsinghua Univ),* Huajian Chang *(Tsinghua Univ/State Nuclear Power Technol R&D Center),* Lian Chen *(State Nuclear Power Technol R&D Center),* Qiao Wu *(Oregon State Univ)*

9:45 a.m.
Characterization Tests of the SMART-ITL Facility for an Integral Type Reactor SMART, Hyun-Sik Park, Hwang Bae, Dong-Eok Kim, Sung-Uk Ryun, Sung-Jae Yi *(KAERI)*

10:10 a.m.
Transient Safety Analysis for Accelerator Driven System with Gas-Lift Pump, Zuo Juanli, Tian Wenxi, Qiu Suizheng, Guanghui Su, Xuenong Chen, Wu Yingwei *(Xi'an Jiaotong Univ)*

Thursday, June 19, 2014, 1:30 p.m.

Nuclear Reactor Plant Safety and Accident Management—II

Chair: David Aumiller *(BMPC)*

N-6

1:30 p.m.
Safety Analysis for Radioactive Material Processing Facility, Si Young Lee *(SRNL)*

1:55 p.m.
Application of Steady State Versus Transient DNB Prediction Approaches to a PWR Rod Ejection Accident, Giancarlo Lenci, Neil E. Todreas, Kord S. Smith *(MIT)*

2:20 p.m.
Analysis of Accident Progression with the SAMPSON Code in the Fukushima Dai-Ichi Nuclear Power Plant Considering Debris Flow Paths from the Core, Hiroaki Suzuki, Hideo Mizouchi, Yoshihiro Morita, Masanori Naitoh *(The Inst of Applied Energy)*

2:45 p.m.
Trace Simulation of BWR Anticipated Transient Without Scram Leading to Emergency Depressurization, Lap-Yan Cheng, Joo-Seok Baek, Arantxa Cuadra, Arnold Aronson, David Diamond *(BNL)*, Peter Yarsky *(NRC)*

3:10 p.m.
Analysis of Influence of Zirconium Content in Oxidic Corium on Steam Explosion Energetics, Matjaž Leskovar, Vasilij Centrih *(Jožef Stefan Inst)*

3:35 p.m.
Investigation of the Iodine Behavior During Severe Accident in VVER-440 Confinement, H. Hovhannisyan, T. Malakyan, A. Amirjanyan *(NRSC)*

FELLOW

Presented to
Rizwan Uddin
For his seminal contributions to advance our understanding of density wave oscillations, nuclear-coupled density wave oscillations, and boiling water reactor stability. For his significant contributions to advance coarse mesh nodal methods and to relax the limitations on coarse mesh methods to make them applicable to a much larger class of engineering problems.

ARTHUR HOLLY COMPTON AWARD IN EDUCATION

Presented to
Michael Podowski
For his exceptional dedication to the education of nuclear engineers, and for his pioneering initiative to establish a degree program for Navy personnel that has been critical to the future of nuclear engineering education at Rensselaer Polytechnic Institute and beyond.

SPECIAL AWARD

Presented to
Mitchell T. Farmer
For major internationally recognized contributions to the understanding and modeling of severe accident phenomena in LWR plants, and for undertaking technical assistance to Japan following the Fukushima accident.

LANDIS YOUNG MEMBER ENGINEERING ACHIEVEMENT AWARD

Presented to
Elia Merzari
In recognition of Dr. Merzari's pacesetting contributions to simulation of complex turbulent flows and multi-scale/multi-physics simulations of nuclear reactor designs.

DON MILLER AWARD

Presented to
Hidekazu Yoshikawa
In Recognition of Outstanding Accomplishments in the Field of Instrumentation, Control, and Human-Machine Interface Technologies.

DON MILLER AWARD

Presented to
Douglas M. Chapin
In Recognition of Outstanding Accomplishments in the Field of Instrumentation, Control, and Human-Machine Interface Technologies.

MISHIMA AWARD

Presented to
Tatsuo Shikama
For his sustained and impactful contributions to the field of irradiation materials science and his leadership and guidance of the next generation of researchers.

W. BENNETT LEWIS AWARD

Presented to

Marcel Boiteux
In recognition of a lifetime of pioneering contributions to sustainable energy, in particular his leadership role in building a large fleet of nuclear power plants, enhancing energy independence and replacing the use of carbon intensive fuels, with reliable, economical, and clean nuclear energy.

HENRY DEWOLF SMYTH NUCLEAR STATESMAN AWARD

Presented to
Luis E. Echavarri
For outstanding statesmanship and leadership in the global nuclear arena, including directing the OECD/NEA activities, promoting the development of safe and economic commercial nuclear power.

WALTER H. ZINN AWARD

Presented to
Kyle H. Turner
He has dedicated over 30 years to activities advancing the United States' nuclear industry. During that time he led 19 site selection studies for new nuclear plants in the U.S. and served as primary author for key document references for siting and new plant deployment. The documents and studies he led encompass key contributions to the new reactor deployment process and supported the establishment of a predictable regulatory approval path for the new reactor deployment process. His work also supported the establishment of a predictable regulatory approval path for both site permits and combined licenses under Part 52.

PRESIDENTIAL CITATION

Presented to

Richard W. Borchardt

In recognition of his strong leadership of the Nuclear Regulatory Commission as the Executive Director of Operations. Bill led the day to day activities of the NRC during challenging times, including the response of the US regulators to the Fukushima Daiichi accident. During his time at the NRC he also supported the ANS Utility Working Conference and helped make this a top-flight meeting where industry and regulators could share information and find common ground.

PRESIDENTIAL CITATION

Presented to

Sama Bilbao y Leon

For her strong leadership throughout the activities of the Society. She has served two terms on the Board, was chair of the Environmental Sciences Division, and was treasurer of the Young Members Group. She has provided valuable input to ANS programs through knowledge of utilities and the education process.

PRESIDENTIAL CITATION

Presented to

Peter Caracappa

For his dedicated leadership in developing a revised membership plan and structure for the Society. He and his committee have reached out to diverse constituent units to develop this plan. This work will allow the Society to seek members in new areas and to assist in the growth of the Society's membership for years to come.

PRESIDENTIAL CITATION

Presented to

Mary Lou Dunzik-Gougar

For her visionary leadership as chair of the Communications Committee. She has helped the Society to improve communication processes and reach out to new sectors. Mary Lou has demonstrated her commitment to improving the Society through her involvement as a member of the Board of Directors, chair of the Fuel Cycle and Waste Management Division, and chair of the Accreditation Policy and Procedures Committee.

PRESIDENT CITATION

Presented to

Marvin S. Fertel

For his leadership of the nuclear power industry as President and Chief Executive Officer of the Nuclear Energy Institute. Marv has served the industry in a variety of positions at the U.S. Council for Energy Awareness and subsequently NEI since their formation. He has been instrumental in formulating and communicating the industry position on a number of critical issues from nuclear waste to the response to the Fukushima Daiichi accident. In his position Marv has addressed these issues not just with the regulators, but also with legislators, the financial sector, and the American public. His leadership has been instrumental in the industry successfully responding to these issues.

PRESIDENTIAL CITATION

Presented to

Michael J. Lineberry

For his distinguished, dedicated, enthusiastic, and sustained service to ANS in numerous capacities within the Society, and for being an articulate, passionate, and effective communicator for the benefits of nuclear technology and the ANS. Mike was an active member throughout his career, including leadership in the Reactor Physics and Fuel Cycle and Waste Management Divisions. He was recognized for his technical excellence as a Fellow of ANS. He was active in organizing meetings in various capacities, including general chair and technical program chair. He will be long remembered for his leadership as the ANS Treasurer.

PRESIDENTIAL CITATION

Presented to

Peter B. Lyons

In recognition of his long and dedicated service to the nuclear industry. Pete has served the industry in a variety of roles over the years. From his almost 30 years of work at the Los Alamos National Laboratory to his service as Science Advisor to U.S. Senator Pete Domenici and the Senate Committee on Energy and Natural Resources he was tireless in his support of nuclear issues. This support continued as he demonstrated leadership in his role as a Commissioner of the Nuclear Regulatory Commission. While at the NRC he focused on the safety of operating reactors and improving partnerships with international regulatory agencies. He also emphasized active and forward-looking research programs and was a strong proponent of science and technology education. Pete has continued this focus on education in his current position as the Assistant Secretary for Nuclear Energy where he has championed funding for nuclear research and specifically the Nuclear Energy University Program.

PRESIDENTIAL CITATION

Presented to
Robert F. Penn
For his dedicated leadership in building a strong relationship between local sections, divisions, and ANS headquarters. Bob has spent considerable effort to improve communications between local sections and with other ANS constituent units. ANS is set up for stronger local section involvement in the future as a result of his activities.

PRESIDENTIAL CITATION

Presented to
Amir Shahkarami
For his outstanding leadership of the utility sector of the American Nuclear Society and his overall support of the goals and mission of the Society. Amir stepped up to take the leadership of the Utility Integration Committee and assisted in involving industry executives in the Utility Working Conference. His other activities have included energizing the Chicago Local Section, serving on the Board of Directors, and chairing the National meeting in Chicago and the Utility Working Conference in Florida.

PRESIDENTIAL CITATION

Presented to
Rachel N. Slaybaugh
For her leadership in a variety of roles within ANS, including support of the student and young member programs. She served on the Board as a Student Director and has continued that leadership as the chair of NEED and vice-chair of the Professional Divisions Committee. She has also supported ANS as chair of the Student Sections and Professional Women in ANS Committees.

PRESIDENTIAL CITATION

Presented to
Roger W. Tilbrook
For his dedication and work to transition the Society through a difficult period by serving as the interim Executive Director. Roger worked tirelessly to move ANS forward by keeping focus on the strategic plan and service to the membership. Roger's leadership set up the Society to be successful for many years to come.

SCHOLARSHIP RECIPIENTS - 2014-2015

•INCOMING FRESHMAN CATEGORY•

Presented to graduating high-school seniors who are pursuing science, mathematics and/or technical courses with an interest in working in nuclear science and technology.

Lauren Nicole Hindrichs – Fort Zumwalt South High School
Dillon Reed Kanada – Granite Bay High School
Sara Rose Peterson – Mundelein High School
Chloe Anais Scroggins – Granbury High School

•UNDERGRADUATE CATEGORY•

Presented to undergraduate students of nuclear science and engineering in recognition of outstanding efforts and academic achievements in pursuit of a college education.

SOPHOMORE UNDERGRADUATE

Anna Marie Malcom – Georgia Institute of Technology
Kathryn Ann Mummah – University of Illinois
Colton Jacob Oldham – University of Tennessee
Keeton Ross Thayer – Univeristy of California-Berkeley

UNDERGRADUATE (JUNIOR/SENIOR)

Mallory Elaine Carson – Texas A&M University
Thomas Jonathan Chrobak – University of Wisconsin-Madison
Landon Wayman Hillyard – Utah State University
Ann Marie Hopkins – Pennsylvania State University
Derek Man Hon Hung – University of Michigan
Christopher Andrew Kuprianczyk – University of Illinois
Kirk Constantine Liberty – University of Michigan
Keith Wayne Means - Pennsylvania State University
Andrew Nigh - University of Wisconsin-Madison
John Ross Palfreyman – University of California-Berkeley
Jonathan David Rolland - University of Illinois
Tyrel Christian Rupp – Utah State University
Mikah Ray Rust – University of Tennessee
Shrey Satpathy – North Carolina State University
Anant Singhal - North Carolina State University
Casey L. Stocking - North Carolina State University
Braydon Jean Williams – Utah State University
Kevin Guangxi Xu – University of Michigan

Angelo F. Bisesti Memorial Scholarship
Robert Noel Pinkston – Texas A&M University

Joseph R. Dietrich Memorial Scholarship
Louis John Chapdelaine – University of Illinois

Raymond DiSalvo Memorial Scholarship
Travis James Labossiere-Hickman – University of Tennessee

William R. & Mila Kimel Nuclear Engineering Scholarship
Rachel Sophia Bielajew – University of Michigan

Human Factors, Controls, and Instrumentation Division Scholarship
Michael Edward Moore – Pennsylvania State University
Robert G. Lacy Memorial
Cody Joe Gilbert – North Carolina State University

John R. Lamarsh Memorial Scholarship
Kelsa Marie Benensky – Pennsylvania State University

Robert T. (Bob) Liner Memorial Scholarship
Jessica Marie Gee – Pennsylvania State University

Accelerator Applications Division Scholarship
Logan Michael Turk – Missouri University of Science & Technology

Decommissioning and Environmental Sciences Division Undergraduate Scholarship
Richard William Rolland, III – University of Wisconsin-Madison

Operations and Power Division Scholarship
Alyxandria Lorraine Wszolek – University of Tennessee

Operations and Power Division Robert L. Long Memorial Scholarship
Dylan James Robideaux – Georgia Institute of Technology

Charles (Tommy) Thomas Memorial
Kazi Kausik Ahmed – University of Wisconsin-Madison

•GRADUATE CATEGORY•

For academic excellence and outstanding achievements to a full-time graduate student in the field of nuclear science and engineering.

Ross W. Barnowski – University of California, Berkeley
Lauren M. Boldon – Rensselaer Polytechnic Institute
Gregory M. Borza – Pennsylvania State University
David M. Frazer – University of California, Berkeley
Konor L. Frick – North Carolina State University
Jesse P. Jones – North Carolina State University
Benjamin C. Lilley – North Carolina State University
Christopher P. Pannier – Texas A&M University
Richard M. Vega – Texas A&M University

Everitt P. Blizard Scholarship
Brianne Johannah Heisinger – University of Michigan

Robert A. Dannels Memorial Scholarship
Matthew James Marcath – University of Michigan

Decommissioning & Environmental Sciences Division Graduate Scholarship
Daniel David Wooten – University of California, Berkeley

Alan F. Henry/Paul A. Greebler Memorial Scholarship
Ryan Patrick Kelly – Texas A&M University

Saul Levine Memorial Scholarship
Nicolas Zweibaum – University of California, Berkeley

Walter Meyer Memorial Scholarship
William J. Sames – Texas A&M University

Nuclear Criticality Safety Pioneers Scholarship
Timothy Patrick Burke – University of Michigan

Fuel Cycle and Waste Management Division John D. Randall Scholarship
Danny Permar – University of Florida

James F. Schumar Scholarship
Kalin Rose Kiesling – University of Wisconsin-Madison

Vogt Radiochemistry Scholarship
Megan Elizabeth Deeds – University of Cincinnati

•NEED SCHOLARSHIP AWARDS•

For disadvantaged students who have both exceptional financial needs and demonstrated academic potential for success in fields related to nuclear science and engineering.

John and Muriel Landis Scholarships
Molly Jean Glass – North Carolina State University
Neil A. Herman – University of Michigan
Aaron A. Kendall – Rensselaer Polytechnic Institute
Leslie M. Kerby – University of Idaho
Megan Ardella LoMonaco – North Carolina State University
Nina Colby Sorrell – North Carolina State University
Molly Rose Ulrich – University of Michigan

•LOCAL SECTION SCHOLARSHIP AWARDS•

Pittsburgh Local Section Undergraduate Scholarship
Miriam Anne Rathbun – University of Pittsburgh

Pittsburgh Local Section Graduate Scholarship
Gagan Srivastava – Carnegie Mellon University

Washington, DC Local Section Undergraduate Scholarship
Slaton Griffin Bitting – North Carolina State University

•COMMUNITY COLLEGE/TRADE SCHOOL SCHOLARSHIP AWARDS•

Kent Hamlin Memorial Scholarship
Kelsey Marie Amundson – University of Wisconsin-Madison

NEED Scholarship for Community College/Trade
Jennifer Christine Bergeron – Chattanooga State Community College

"Preparing for the Nuclear Engineering Professional Engineering Exam"

Sunday, June 15, 2014 • 8:30 a.m. - 5:00 p.m. • Location: Grand Sierra Resort, Tahoe Ballroom

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. The 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 instructors 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. The 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 a.m. - 8:45 a.m.	Introduction	
8:45 a.m. - 9:00 a.m.	Intro to Exam and Registration	
9:00 a.m. - 10:15 a.m.	Interaction of Radiation with Matter	Brian Collins, *PNNL*
10:15 a.m. - 10:25 a.m.	Break	
10:25 a.m. - 11:30 a.m.	Nuclear Power Skills	Gerald Loignon, *SCANA*
11:30 a.m. - 1:00 p.m.	Lunch	
1:00 p.m. - 1:40 p.m.	PRA Skills	Gerald Loignon, *SCANA*
1:40 p.m. - 1:50 p.m.	Break	
1:50 p.m. - 3:05 p.m.	Nuclear Fuel Cycle Skills	Robert Busch, *UNM*
3:05 p.m. - 3:15 p.m.	Break	
3:15 p.m. - 4:30 p.m.	Nuclear Criticality, Neutronics, Kinetics	Robert Busch, *UNM*
4:30 p.m. - 4:45 p.m.	Wrap-up	

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

NATIONAL COMMITTEES

Accreditation, Policies & Procedures
Sunday, 11:00 a.m. - 12:00 p.m.
Location: Crystal 4

Board of Directors
Professional Division Reports
Wednesday, 4:00 p.m. - 5:30 p.m.
Location: Tahoe Ballroom
ANS Board of Directors
Thursday, 7:30 a.m. - 4:00 p.m.
Location: Tahoe Ballroom
Annual Business Meeting
Wednesday, 5:45 p.m. - 6:30 p.m.
Location: Carson 4

Bylaws & Rules
Sunday, 4:00 p.m. - 5:30 p.m.
Location: Crystal 1

Communications
Sunday, 4:00 p.m. - 6:00 p.m.
Location: Carson 1

Finance Meeting
Tuesday, 2:00 p.m. - 6:00 p.m.
Location: Carson 4

Honors & Awards
Monday, 4:00 p.m. - 6:00 p.m.
Location: N-5

International
Sunday, 11:30 a.m. - 2:30 p.m.
Location: N-5

Local Section Workshop
Sunday, 8:00 a.m. - 12:00 p.m.
Location: N-3

Membership
Sunday, 10:00 a.m. - 12:00 p.m.
Location: N-6

National Program
NPC Screening & International
Sunday, 10:00 a.m. - 12:00 p.m.
Location: N-7
NPC National Meeting Sub Committee
Wednesday, 11:30 a.m. - 1:00 p.m.
Location: N-7
NPC Program
Wednesday, 4:00 p.m. - 6:30 p.m.
Location: N-7

NEED
Sunday, 7:30 p.m. - 9:30 p.m.
Location: Carson 1

Professional Engineering Exam
PEEC Item Writers Group
Saturday, 5:00 p.m. - 10:00 p.m.
Location: Crystal 1
PEEC Single Reference Development
Sunday, 12:30 pm -2:30 pm
Location: Summit Pavilion Office
PEEC Committee Meeting
Sunday, 4:00 p.m. - 6:00 p.m.
Location: N-5

Planning
Sunday, 2:00 p.m. - 6:00 p.m.
Location: N-4

President's Meeting w/ Committee Chairs
Sunday, 8:00 a.m. - 9:00 a.m.
Location: Crystal 1

President's Meeting w/ Division Chairs
Sunday, 9:00 a.m. - 10:00 a.m.
Location: Crystal 1

Professional Development Coordination Committee
Tuesday, 4:00 p.m. - 5:00 p.m.
Location: N-4

Professional Divisions
Training Workshop
Saturday, 5:00 p.m. - 6:30 p.m.
Location: Crystal 5
Committee Meeting
Wednesday, 5:30 p.m. - 7:00 p.m.
Location: Tahoe Ballroom

Professional Women In ANS
Monday, 4:00 p.m. - 6:00 p.m.
Location: N-4

Public Policy
Wednesday, 11:30 a.m. - 1:30 p.m.
Location: Carson 4

Publications Steering
Meetings, Proceedings & Transactions
Sunday, 9:00 a.m. - 10:00 a.m.
Location: Crystal 2
Book Publishing
Sunday, 11:00 a.m. - 12:30 p.m.
Location: Carson 3
Technical Journals
Sunday, 1:00 p.m. - 4:00 p.m.
Location: Crystal 1
Nuclear News Editorial Advisory
Sunday, 4:00 p.m. - 5:30 p.m.
Location: Carson 2
Publications Steering Committee
Monday, 4:30 p.m. - 6:30 p.m.
Location: N-6

Scholarship Policy & Coordination
Monday, 12:00 p.m. - 1:00 p.m.
Location: S-2

Student Sections
Executive
Monday, 6:00 p.m. - 7:00 p.m.
Location: N-5
Reports
Monday, 7:00 p.m. - 8:00 p.m.
Location: N-5

SPECIAL COMMITTEES

Special Committee on Integration Oversight
Tuesday, 9:00 a.m. - 11:00 a.m.
Location: N-4

Special Committee on Government Relations
Tuesday, 1:30 p.m. - 3:00 p.m.
Location: N-4

OTHER COMMITTEES

8iCi Organizing
Monday, 4:00 p.m. - 5:30 p.m.
Location: N-3

20th PBNC 2016
Sunday, 2:30 p.m. - 4:00 p.m.
Location: Summit Pavilion Office

CNF Meeting
Monday, 7:00 p.m. - 10:00 p.m.
Location: N-3

Congressional Fellowship
Tuesday, 3:30 p.m. - 4:30 p.m.
Location: N-7

Eagle Alliance BOD
Sunday, 1:00 p.m. - 3:00 p.m.
Location: N-1

INEA
Monday, 12:00 p.m. - 2:00 p.m.
Location: N-3

KNS US
Monday, 4:30 p.m. - 6:30 p.m.
Location: S2

Mathematics & Computation/Reactor Physics/ Radiation Protection & Shielding
Joint Benchmark Meeting
Sunday, 11:00 a.m. - 1:00 p.m.
Location: Crystal 2

NEDHO
Sunday, 4:00 p.m. - 6:00 p.m.
Location: N-2

NURETH-16
Tuesday, 6:00 p.m. - 8:00 p.m.
Location: N-5

PSA 2015 Planning Meeting
Monday, 5:30 p.m. - 7:30 p.m.
Location: S-3

Subcommittee on Retaining Students
Tuesday, 12:00 p.m. - 1:00 p.m.
Location: N-4

UWC 2014 Planning Committee
Sunday, 12:30 p.m. - 1:30 p.m.
Location: Crystal 5

DIVISION COMMITTEES

Accelerator Applications
Executive
Monday, 11:30 a.m. - 1:30 p.m.
Location: N-6

Aerospace Nuclear Science & Technology
Sunday, 12:00 p.m. - 2:00 p.m.
Location: N-2

Biology and Medicine
Computational Medical Physics Working Group
Sunday, 10:00 a.m. - 11:00 a.m.
Location: Carson 4
Joint Program Committee-I&R/BM
Sunday, 1:30 p.m. - 2:30 p.m.
Location: N-3
Committee of the Whole
Sunday, 4:00 p.m. - 5:30 p.m.
Location: N-3

Decommissioning and Environmental Sciences
Program
Sunday, 3:30 p.m. - 4:30 p.m.
Location: N-1
Executive
Sunday, 4:30 p.m. - 5:30 p.m.
Location: N-1

Education, Training & Workforce Development
University/Industry/Government Relations
Sunday, 1:30 p.m. - 2:00 p.m.
Location: N-4
Program
Sunday, 10:30 a.m. - 12:00 p.m.
Location: N-4
Alpha Nu Sigma
Sunday, 1:00 p.m. - 2:00 p.m.
Location: Carson 3
Executive/Membership/Honors & Awards
Sunday, 2:00 p.m. - 4:00 p.m.
Location: N-7

Fuel Cycle & Waste Management
Program
Sunday, 12:00 p.m. - 1:00 p.m.
Location: Carson 1
Executive
Sunday, 1:00 p.m. - 2:30 p.m.
Location: Carson 1
Technical Operating & Standards Committee
Sunday, 2:30 p.m. - 3:30 p.m.
Location: Carson 1

Fusion Energy
Executive
Sunday, 3:00 p.m. - 5:00 p.m.
Location: Carson 3

Human Factors, Instrumentation, and Controls
Program
Sunday, 11:00 a.m. - 12:00 p.m.
Location: Carson 2
Executive
Sunday, 12:00 p.m. - 2:30 p.m.
Location: Carson 2

Isotopes and Radiation
Joint Program Committee-I&R/BM
Sunday, 1:30 p.m. - 2:30 p.m.
Location: N-3
Executive
Sunday, 2:30 p.m. - 4:00 p.m.
Location: N-2

Materials Science & Technology
Executive
Monday, 7:00 p.m. - 9:00 p.m.
Location: Carson 4

Mathematics & Computation
Computational Medical Physics Working Group
Sunday, 10:00 a.m. - 11:00 a.m.
Location: Carson 4
Program
Sunday, 1:00 p.m. - 2:00 p.m.
Location: Carson 4

Executive
Sunday, 2:00 p.m. - 4:00 p.m.
Location: Carson 4

Nuclear Criticality Safety
Education Meeting
Sunday, 1:00 p.m. - 2:00 p.m.
Location: Crystal 4
Program
Sunday, 2:00 p.m. - 3:00 p.m.
Location: Crystal 4
Executive
Sunday, 3:00 p.m. - 4:30 p.m.
Location: Crystal 4

Nuclear Installations Safety
Program
Sunday, 4:00 p.m. - 6:00 p.m.
Location: N-7
Executive
Sunday, 7:30 p.m. - 9:30 p.m.
Location: Crystal 3

Nuclear Nonproliferation (TG)
Program
Sunday, 1:00 p.m. - 2:30 p.m.
Location: N-6
Governance
Sunday, 2:30 p.m. - 4:00 p.m.
Location: N-6

Operations & Power
Program
Sunday, 2:30 p.m. - 4:00 p.m.
Location: Crystal 5
Executive
Sunday, 4:00 p.m. - 6:00 p.m.
Location: Crystal 5

Radiation Protection & Shielding
Program
Sunday, 12:30 p.m. - 1:30 p.m.
Location: Crystal 3
Shielding Standards
Sunday, 12:00 p.m. - 12:30 p.m.
Location: Crystal 3
Executive
Sunday, 1:30 p.m. - 3:30 p.m.
Location: Crystal 3

Reactor Physics
Honors & Awards
Sunday, 10:00 a.m. - 11:00 a.m.
Location: S-3
Goals & Planning
Sunday, 1:00 p.m. - 2:00 p.m.
Location: S-3
Program
Sunday, 2:00 p.m. - 4:00 p.m.
Location: S-3
Executive
Sunday, 4:00 p.m. - 6:00 p.m.
Location: S-3

Robotics & Remote Systems
Executive
Sunday, 12:00 p.m. - 4:00 p.m.
Location: S-2

Thermal Hydraulics
Program
Sunday, 2:30 p.m. - 4:30 p.m.
Location: Crystal 2
Executive
Sunday, 4:30 p.m. - 6:00 p.m.
Location: Crystal 2

Young Members Group (TG)
Executive Committee
Monday, 11:30 a.m. - 1:00 p.m.
Location: Carson 4

STANDARDS COMMITTEES

ANS-8.12 Working Group
Tuesday, 4:30 p.m. - 6:30 p.m.
Location: S-3

ANS-8.1 Working Group
Tuesday, 7:00 a.m. - 8:30 a.m.
Location: S-3

ANS-8.20
Sunday, 9:00 a.m. - 12:00 p.m.
Location: N-2

ANS-8.3 Working Group
Sunday, 8:00 a.m. - 11:00 a.m.
Location: Carson 1

ANS-8.26 Working Group
Wednesday, 7:00 a.m. - 8:30 a.m.
Location: Carson 4

ANS-10.8
Tuesday, 1:00 p.m. - 3:00 p.m.
Location: S-3

ANS-20.1
Saturday, 5:00 p.m. -9:00 p.m.
Location: Crystal 2

ANS Standards Board
Tuesday, 8:00 a.m. - 6:00 p.m.
Location: N-3

LLWRCC
Wednesday, 7:00 a.m. - 4:00 p.m.
Location: N-4

Reactor Physics Standards (ANS-19)
Monday, 8:30 a.m. - 10:30 a.m.
Location: N-5

RP3C
Monday, 1:00 p.m. - 4:00 p.m.
Location: N-5

ANS Organization Membership

The American Nuclear Society salutes the following industry leaders currently demonstrating their endorsement of ANS programs and efforts by subscribing as Organization Members, aiding our mission of supporting the advancement of nuclear science and technology:

AECL

Alaron Nuclear Services (Veolia)

Alpiq Suisse SA

Altran Solutions Corp.

Ameren-UE

American Electric Power Service Corp.

American Nuclear Insurers

AREVA

Arizona Public Service Co.

ATC Nuclear

Babcock & Wilcox Company

Barnhart Nuclear Services

Battelle Memorial Institute

Bechtel Power Corp.

Black & Veatch

Boron Products LLC, a Ceradyne Co.

Burns & McDonnell

CB & I

Dade Moeller & Associates

Diakont

Duke Energy Corporation

Electric Power Research Institutes (EPRI)

Energy Future Holdings Corp. (Luminant)

Energy Northwest

EXCEL Services Corporation

Exelon Nuclear Co.

First Energy Nuclear Operating Co. (FENOC)

Five Star Products

Fluor

Hagley Museum & Library

Indiana Michigan Power Co. D.C. Cook Nuclear Power Plant

Integrated Power Services

ISO-Q Consulting (Pty) Ltd.

Kernkraftwerk Leibstadt AG

Kinectrics, Inc.

Kinemetrics Inc.

Korea Atomic Industrial Forum, Inc.

Korea Electric Power Corporation

KSB, Inc.

L-3 Communications MAPPS Inc.

Lawrence Livermore National Laboratory

MarShield - Division of Mars Metal Company

McCallum-Turner, Inc.

Mega-Tech Services, LLC

Mitsubishi Nuclear Energy Systems, Inc.

Navarro Research & Engineering

Nebraska Public Power District

Newport News Shipbuilding

Nexus Technical Services Corporation

NGNP Industry Alliance

Nuclear Energy Institute (NEI)

Nuclear Fuel Services, Inc.

Nuclear Plant Journal

Pakistan Atomic Energy Commission

PaR Nuclear (Westinghouse)

PaR Systems, Inc.

PPL Susquehanna, LLC

R. Brooks Associates, Inc.

Reef Industries, Inc.

Sarens/Rigging International

Sargent & Lundy

Savannah River National Laboratory

Southern California Edison

Southern Nuclear Operating Co.

Techcellent Inspectorate

Thermo Fisher Scientific

Toshiba America Nuclear Energy Corporation

TradeTech

TW Metals

UR-Energy USA Inc.

URS Energy

USEC Inc.

ValvTechnologies

Westinghouse Electric Company

Wolf Creek Nuclear Operating Company

Casino Floor Plan

Casino Level

Spa Level

775.789.2000
GrandSierraResort.com

GSR GRAND
SIERRA RESORT AND CASINO

ANS Meetings

2014

ANS Winter Meeting and Nuclear Technology Expo

Disneyland Hotel • Anaheim, CA

November 9-13, 2014

ANS Annual Meeting

Grand Hyatt San Antonio • San Antonio, TX

June 7-11, 2015

2015

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