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2004 ANS ANNUAL MEETING

A Golden Anniversary — A Golden Opportunity

EMBEDDED TOPICAL MEETING:

2004 International Congress on Advances in Nuclear Power Plants (ICAPP 2004)

June 13-17, 2004 • Pittsburgh, PA • Omni William Penn Hotel

Updated: May 19, 2004

NOTE: This is a preliminary listing. Times and locations are subject to change. The Official Program, distributed at the meeting, will contain the final meeting schedule.

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**Welcome
to the**

2004 ANS Annual Meeting: "A Golden

June 13-17, 2004

Omni William Penn Hotel

Pittsburgh, PA

The American Nuclear Society invites you to attend its 2004 Annual Meeting to be held in Pittsburgh, PA, June 13-17, 2004. The theme of the meeting is **"A Golden Anniversary - A Golden Opportunity."** To honor the Golden Anniversary of the American Nuclear Society, various tributes and events will take place throughout this meeting. The 50th Anniversary Banquet will kick-off the meeting. (Please see the adjacent page for more details.) A special plenary session will commence the technical program. (Details can be found on page 15.) Plus, there will be a myriad of special events and tours throughout the week. (Additional information can be found on pages 9-10.)

The "2004 International Congress on Advances in Nuclear Power Plants (ICAPP 2004)" will be held in conjunction with the 2004 Annual Meeting. ICAPP 2004 has a full schedule of technical presentations and a few special plenary sessions. Additional information on the ICAPP 2004 Topical Meeting can be found starting on page 26 of the program.

Two Professional Development Workshops will be held on Sunday: "Preparing for the Nuclear Engineering Professional Engineering Exam" and "Project Management in the Nuclear Industry." Additional information on the Professional Development Workshops can be found on pages 7 and 41-42 of this program.

Anniversary — A Golden Opportunity”

ANS 50TH ANNIVERSARY: 1954-2004

Commemorate our Past and Create our Future

50TH ANS ANNIVERSARY BANQUET
Sunday, June 13th, 7:00 p.m.

Pittsburgh, where so much of our early history occurred with Westinghouse, Shippingport and the Bettis Lab, is certainly an appropriate location for our celebration.

This memorable evening will commemorate the history of the Society and the remarkable accomplishments made by our members during the past half-century. Our celebration will also recognize the contributions of our past presidents, and set the stage to create our future.

The formation of ANS was stimulated by Dwight Eisenhower’s “Atoms for Peace” speech to the United Nations. One of the highlights of the evening will be a presentation by Susan Eisenhower, Chairman, Eisenhower Institute. John Simpson, Honorary Chair of this meeting and former President of Westinghouse Power Systems, will share his perspective on the past fifty years as well as his vision for the future of the industry.

Join us in thanking Westinghouse and First Energy for their generous contributions to the banquet and to the meeting.

One ticket to the ANS 50th Anniversary Banquet is included in the full meeting registration fee. Additional tickets can be purchased in advance or on-site at the ANS Registration Desk for \$65.

Join us for a special anniversary celebration!





City of Pittsburgh

Office of the Mayor

Dear American Nuclear Society Members:

I am delighted to welcome the participants and guests attending the American Nuclear Society Conference to the City of Pittsburgh. Our meeting includes friendly social activities and gives you an excellent opportunity to learn more about America's most innovative and exciting cities. Pittsburgh is the birthplace of radioactivity, the atomic submarine and the original Minuteman. It's 1964 wonder that we can also take credit as the birthplace of the commercial nuclear power industry.

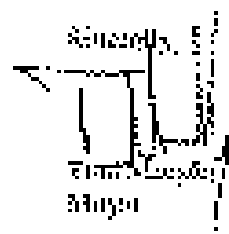
From the center of the sprawling Penn State Park University in the nation's first commercial nuclear power plant, Pittsburgh and Western Pennsylvania are synonomous with the rapidly expanding commercial nuclear power industry.

While you're here in Pittsburgh to celebrate the last 50 years of the advancement of nuclear energy technology and to plan for the future, I hope you will take some time to explore some of our many beautiful, recreational and sight opportunities in Pittsburgh. Our history includes our famous Washington Hotel a spectacular view of the City & Golden Triangle and an eclectic array of restaurants and entertainment venues in the historic Strip District and vibrant West Side Square with a relaxing atmosphere to socialize with colleagues.

Additionally, experience Culture District - the largest dining and arts district outside of New York's Broadway - offers spectacular Broadway shows and cutting-edge galleries. And, our best Pittsburgh suggestions offer visitors everything from historical to contemporary.

Just as the American Nuclear Society boasts a proud legacy of innovation and a drive to create the future, Pittsburgh is capitalizing on our rich heritage to embrace a new tomorrow.

I am confident that you will enjoy your stay in Pittsburgh and I hope that you will return again soon.



51 City-County Building, Pittsburgh, Pennsylvania 15219-3412 231-3232



Meeting Officials

John W. Simpson
Former President,
Westinghouse Power Systems;
and ANS Past President
HONORARY CHAIR



Stephen R. Tritch
Westinghouse Electric Company
GENERAL CO-CHAIR



Gary R. Leidich
First Energy Nuclear Operating
Company
GENERAL CO-CHAIR



Jeffrey L. Bradfute
Westinghouse Electric Company
ASSISTANT GENERAL CHAIR



Stephen H. Shepherd
Edison International
TECHNICAL PROGRAM CHAIR



Mike Zerkle
Bechtel Bettis, Inc.
ASSISTANT TECHNICAL PROGRAM CHAIR



Melissa Hunter
Bechtel Bettis, Inc.
ASSISTANT TECHNICAL PROGRAM CHAIR



Daniel S. Lipman
Westinghouse Electric Company
FINANCE CHAIR



Karen S. Fischetti
Westinghouse Electric Company
ASSISTANT FINANCE CHAIR



Alan H. Huey
Westinghouse Electric Company
EVENTS CHAIR



Della J. DeMaro
Westinghouse Electric Company
ASSISTANT EVENTS CHAIR



Vaughn H. Gilbert
Westinghouse Electric Company
MEDIA CHAIR



Meghan A. Firster
Westinghouse Electric Company
STUDENT PROGRAM CHAIR



Mark Urso
Westinghouse Electric Company
FUN RUN ORGANIZER



NOT PICTURED:
Thomas Kiess,
U.S. Department Of Energy,
ASSISTANT TECHNICAL PROGRAM CHAIR

Meeting Highlights

"Pittsburgh... Banked on all sides by tall, green hills, and cut by three mighty rivers. The birthplace of American history. Where British troops gained control of North America. Where a young soldier named George Washington joined the fight for freedom. Once the gateway to the West, the final stop in America's push into the unknown. Today, Pittsburgh is proud and new: America's Renaissance City. A city of modern glass cathedrals and Old World, neighborhood charms. Filled with fun and adventure. Take a closer look."

SATURDAY, JUNE 12, 2004

8:00 a.m. - 5:00 p.m. Teachers' Workshop
5:30 p.m. - 8:00 p.m. Professional Divisions Workshop (Location: Allegheny Room)

SUNDAY, JUNE 13, 2004

9:00 a.m. - 5:00 p.m. Professional Development Workshop #1 - Preparing for the Nuclear Engineering Professional Engineering Exam
9:00 a.m. - 5:00 p.m. Professional Development Workshop #2 - Project Management in the Nuclear Industry
1:00 p.m. - 1:30 p.m. First-Time Attendees Orientation
3:00 p.m. - 5:00 p.m. Student Assistant Training Session
5:00 p.m. - 6:00 p.m. Mentoring Program
7:00 p.m. - 10:00 p.m. ANS 50th Anniversary Banquet

MONDAY, JUNE 14, 2004

8:00 a.m. - 10:00 a.m. Spouse/Guest Hospitality Breakfast
8:30 a.m. - 11:30 a.m. Plenary Session: A Golden Anniversary - A Golden Opportunity
9:30 a.m. - 1:30 p.m. Spouse/Guest Tour: "Molly's Trolleys"
11:30 a.m. - 1:00 p.m. Operations & Power Division Luncheon
11:30 a.m. - 1:00 p.m. DDR and FCWM Divisions Luncheon
1:00 p.m. - 4:00 p.m. National Meeting Technical Sessions
1:00 p.m. - 4:00 p.m. ICAPP Technical Sessions
4:00 p.m. - 5:00 p.m. ANS Business Meeting
4:00 p.m. - 6:00 p.m. ICAPP Plenary #1: "Managing the Present to Secure the Future"
6:15 p.m. - 10:00 p.m. Evening Event: Reception at Heinz Field & Fireworks

TUESDAY, JUNE 15, 2004

8:00 a.m. - 10:00 a.m. Spouse/Guest Hospitality Breakfast
8:00 a.m. - 10:00 a.m. ICAPP Plenary #2: "The Next Steps to the Nuclear Renaissance"
8:30 a.m. - 11:30 a.m. National Meeting Technical Sessions
9:30 a.m. - 2:30 p.m. Spouse/Guest Tour: "Carnegie Museum of Natural History"
10:00 a.m. - 11:30 a.m. ICAPP Technical Sessions
11:30 a.m. - 1:00 p.m. ANS Honors and Awards Luncheon
1:00 p.m. - 2:30 p.m. ICAPP Plenary #3: "The Promise and Challenges of GEN-IV Nuclear Energy Systems"
1:00 p.m. - 4:00 p.m. National Meeting Technical Sessions
2:30 p.m. - 4:00 p.m. ICAPP Technical Sessions
4:00 p.m. - 6:00 p.m. ANS President's Special Session: Realism in Evaluating Nuclear Hazards
6:15 p.m. - 10:15 p.m. Multi-Division Mixer

WEDNESDAY, JUNE 16, 2004

8:00 a.m. - 10:00 a.m. Spouse/Guest Hospitality Breakfast
8:00 a.m. - 11:30 a.m. ICAPP Technical Sessions
8:30 a.m. - 11:30 a.m. National Meeting Technical Sessions
9:30 a.m. - 2:30 p.m. Spouse/Guest Tour: "John Heinz Pittsburgh History Center"
11:30 a.m. - 1:00 p.m. Nuclear Installations Safety Division Luncheon
1:00 p.m. - 2:30 p.m. ICAPP Plenary #4: "Strategies for Optimizing the Nuclear Fuel Cycle"
1:00 p.m. - 4:00 p.m. National Meeting Technical Sessions
2:30 p.m. - 4:00 p.m. ICAPP Technical Sessions
4:00 p.m. - 6:00 p.m. ICAPP Plenary #5: "Visions for Next Nuclear Era"
5:45 p.m. - 10:00 p.m. Evening Event: The Frick Art & Historical Center

THURSDAY, JUNE 17, 2004

8:00 a.m. - 12:00 p.m. (Noon) ICAPP Technical Sessions
8:30 a.m. - 11:30 a.m. National Meeting Technical Sessions
8:30 a.m. - 1:45 p.m. Technical Tour: U.S. Tool & Die, Inc.

FRIDAY, JUNE 18, 2004

8:00 a.m. - 4:30 p.m. DOE Nuclear Criticality Safety Program

NOTE: This is a preliminary listing. Times and locations are subject to change. The Official Program, distributed at the meeting, will contain the final meeting schedule.

Meeting Information

Spouse/Guest Hospitality

Spouse/guest hospitality breakfast will be served in the Terrace Loggia on the lobby level of the Omni William Penn Hotel from 8:00-10:00 a.m., Monday, June 14th through Wednesday, June 16th. 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 ANS 50th Anniversary Banquet and admittance to the spouse/guest hospitality breakfast only – it does not include technical sessions or other events. Spouse/guest tours are scheduled. Registration for the tours is separate from the spouse/guest meeting registration.

Workshop for Science Educators

A workshop for science educators will be held on Saturday, June 12th, 8:00 a.m. - 5:00 p.m., in conjunction with the 2004 ANS Annual Meeting. The ANS teacher workshop is supported by a grant from the U.S. Department of Energy, Office of Nuclear Energy, Science and Technology and through individual and organizational contributions to the ANS Public Education Program (PEP). The materials and information will help 7th through 12th grade educators incorporate nuclear science topics into classroom programs. Attendees will have a full day of hands-on activities, presentations, and discussion with nuclear science educators and professionals. Each attendee will receive curriculum materials, a radiation monitor and sources for classroom demonstrations. Help us announce the workshop by contacting teachers you may know in the Pittsburgh, PA, area. Details on location, speakers, and registration deadline are available from the ANS Outreach Department, 708-579-8251, outreach@ans.org.

ANS extends its appreciation to Entergy for their financial sponsorship of the ANS teacher workshop. Their support has greatly enhanced the workshop.

Please note: advance registration is required for ALL who wish to attend.

Professional Development Workshops

NOTE: Registration for the workshops is separate from, and in addition to, the meeting registration fee. Use the advance meeting registration form (beginning on page 47) to register for the workshops.

PROFESSIONAL DEVELOPMENT WORKSHOP #1
"Preparing for the Nuclear Engineering Professional Engineering Exam"
Sunday, June 13, 2004 • 9:00 a.m. - 5:00 p.m.
Location: Sky Room
Registration Price for Workshop #1:
\$450 – ANS Member • \$550 – Non-Member

PROFESSIONAL DEVELOPMENT WORKSHOP #2
"Project Management in the Nuclear Industry"
Sunday, June 13, 2004 • 9:00 a.m. - 5:00 p.m.
Location: Conference A Room
Registration Price for Workshop #2:
\$450 – ANS Member • \$550 – Non-Member

DOE Nuclear Criticality Safety Program

Friday, June 18, 2004 • 8:00 a.m. - 4:30 p.m.
Location: William Penn Ballroom

Student Assistants Program

Attendance at the 2004 ANS Annual Meeting is an exciting professional opportunity for college and graduate students. To help defray travel and living expenses, students can sign up to work as session chairs' assistants. Student assistants must attend the Student Training Session on Sunday, June 13th, 3:00-5:00 p.m. in Parlor E and F of the Omni William Penn Hotel. Student assistants receive free meeting registration and a copy of the meeting TRANSACTIONS. To apply for one of the 40 student assistant positions, complete and submit forms posted on the ANS web site. For more information, contact Meghan Firster at 412-374-6814 (phone) or firstema@westinghouse.com (email); or contact the ANS Meetings Department at 708-579-8287. All students are responsible for paying their own room, tax and incidentals. Please refer to the ANS web site, www.ans.org, for more information about the meeting.

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

The student headquarters will be located in the Conference E Room of the Omni William Penn Hotel.

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.

The session will be held from 1:00-1:30 p.m. on Sunday, June 13th, in the Parkview East Room of the Omni William Penn Hotel.

Mentoring Program

A special mentoring program will be held from 5:00-6:00 p.m. on Sunday, June 13th in the Parkview East Room of the Omni William Penn Hotel.

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

To participate in the Mentoring Program, use the Mentor Registration Form on page 46.

Attention Runners: ANS Fun Run

(organized by the NA YGN)

On Tuesday, June 15th, there will be a non-competitive run starting at 6:00 a.m. from the lobby of the hotel. We are looking forward to seeing you at the fun run in Pittsburgh, PA. Bring shoes and a big smile. We'll take care of the rest! For any further information, contact Mark Urso at phone number, 412-374-4349 or email, ursoma@westinghouse.com.

ANS Registration

ANS Registration will be located in the 17th Floor Foyer of the Omni William Penn Hotel, on Saturday, June 12th through Thursday, June 17th. Meetings and Workshop Registration, Speakers' and Session Chairs' Desk, and the Message Desk will also be located in the ANS Registration area.

Meeting registration is required for all attendees and presenters. Badges are required for admission to all technical sessions, workshops and events. An advance meeting registration form begins on page 47.

Registration Hours

Saturday, June 12th 2:00 p.m. - 5:00 p.m.
Sunday, June 13th 8:00 a.m. - 10:00 a.m.*
11:00 a.m. - 7:00 p.m.

Monday, June 14th 7:30 a.m. - 5:00 p.m.
Tuesday, June 15th 7:30 a.m. - 5:00 p.m.
Wednesday, June 16th 7:30 a.m. - 5:00 p.m.
Thursday, June 17th 7:30 a.m. - 10:00 a.m.
(*Registration for workshop participants only)

Message Information Desk

For those who wish to reach an attendee at the meeting, call the hotel phone number at 412-281-7100 and ask for the ANS Message Desk. To send a fax to a guest staying at the hotel, please use the following number, 412-553-5193.

Notice for Speakers

All speakers and session chairs must sign in at the "Speakers' Desk," located in the 17th Floor Foyer of the Omni William Penn Hotel (Sunday, June 13th through Thursday, June 17th).

A Speakers' Preview Room, the Churchill Room of the Omni William Penn Hotel, will be available on Sunday (June 13th) from 12:00 p.m. - 6:00 p.m., on Monday (June 14th) through Wednesday (June 16th) from 7:00 a.m. - 4:00 p.m., and on Thursday (June 17th) from 7:00 a.m. - 12:00 p.m. Audio/visual equipment will be set up; so that speakers may preview their presentation materials.

Conference Office

Location: Parlor D

ANS Secretariat

Location: Parlor G

ANS Media Center

Monday, June 14th 7:45 a.m. - 4:00 p.m.
Tuesday, June 15th 8:00 a.m. - 4:00 p.m.
Wednesday, June 16th 8:00 a.m. - 4:00 p.m.

Location: Carnegie II Room

Accommodations

Omni William Penn Hotel

The Omni William Penn Hotel will be the location for the 2004 Annual Meeting, where all meeting activities, technical sessions, and governance committee meetings will take place.

Since 1916, guests from John F. Kennedy to Lawrence Welk have been captivated by the opulence, striking beauty and charming presence of the Omni William Penn Hotel. Celebrated for its lavish guest quarters, award-winning cuisine and exquisite banquet space, this Pittsburgh landmark has been lavishly restored to its original grandeur. Add your name to a long list of luminaries who have graced these halls, and experience luxury at its finest.

LOCATION:

- Premier location in the heart of downtown, near corporate headquarters, Pittsburgh's cultural center, shopping, entertainment and sporting venues
- Located along the Grant Street Walking Tour route, which showcases some of Pittsburgh's most prominent historic and modern buildings
- 18 miles from Pittsburgh Int'l Airport
- 15 miles from Allegheny County Airport

TRANSPORTATION:

- Airport shuttle service available to and from both airports (fee)

- The "T," Pittsburgh's Metro System, which conveniently links all points of downtown Pittsburgh and Station Square
- Molly's Trolleys, custom-built 1920s style trolley-buses, provides customized tours and convention shuttles
- Waterways, Inc. provides water taxis and private charters within the "Strip District"

ACCOMMODATIONS:

Relax in the privacy of one of our 596 spacious guest rooms and suites, lavishly decorated with cherrywood furnishings and the most modern amenities. All guest rooms and suites are equipped with an iron and ironing board, hair dryer, coffee maker, terry bathrobes, large working desk, dual-line speaker phone with modem, voice mail, LodgeNet system featuring on-demand hit movies and Nintendo 64 video games.

BUSINESS CENTER:

Services are available Monday through Friday, 7:00 a.m. - 5:00 p.m. Services include: photocopying; fax machine; mail and packaging services; internet, computer and email access.

FITNESS:

24 hour executive fitness center, featuring cardiovascular and Keiser weight-training equipment, free weights and an aerobic area.

RESTAURANTS:

- **TERRACE ROOM**
(Breakfast, Lunch, and Dinner)
Experience the grand elegance of the Terrace Room, featuring an award-winning menu of Continental cuisine infused with the bold flavors of the Mediterranean.
- **TAP ROOM**
(Lunch, Dinner and Bar)
Stop in the Tap Room for a delicious bowl of the city's best chili. This English-style pub serves microbrewed beers, single-malt scotch, tavern-style sandwiches and delicious seafood gumbo.
- **THE PALM COURT**
(Afternoon Tea, Light Fare, and Cocktails)
Visit the elegant Palm Court for specialty cocktails and scrumptious deserts.
- **STARBUCKS COFFEE**
Located in the hotel lobby, Starbucks Coffee serves premium coffee, pastries and sandwiches.
- **BRUEGGER'S BAGELS**
Located in the hotel lobby, Bruegger's offers assorted bagels, sandwiches & soups.

DRIVING DIRECTIONS:

From Pittsburgh Int'l Airport: Follow signs to I-279 North to Pittsburgh (Fort/Pitt Bridge and Tunnel); Continue through tunnel; Take Liberty Avenue Exit; Turn right onto Sixth Avenue; Turn right onto William Penn Place; Hotel is located on the left.

Pittsburgh Information

Located at the point where three mighty rivers meet, Pittsburgh is a city of many distinct neighborhoods, each with its own charm for you to discover.

DOWNTOWN:

You'll encounter great entertainment, outstanding shopping and inviting restaurants at every turn. As you wander our very walkable Downtown, you'll find a state park with a towering fountain, a thriving cultural district, a diverse sampling of architecture, shops of every description and the cleanest subway system in America.

THE STRIP DISTRICT:

A mile-long stretch alongside the Allegheny River that was once the site of the city's earliest iron foundries, manufacturing plants and factories, as well as the switching yards of the Pennsylvania Railroad. The Strip has been reclaimed to house a bustling marketplace and provide the perfect architectural setting for some of the city's hottest bars and clubs. The Strip is a feast for the senses—produce and flower markets spill a colorful array of fruits, vegetables and blooms onto busy sidewalks, while the aroma of roasting coffees, fresh cheeses and homemade pasta lures passers-by. Stop in at the Senator John Heinz Pittsburgh Regional History Center to gain unique insight into the

area's heritage, the seven-story structure preserves 300 years of the region's history.

THE NORTH SHORE:

You can easily spend an entire day on Pittsburgh's North Shore, beginning at The Priory – A City Inn. Elegantly restored, The Priory is really two historic landmarks – St. Mary's German Catholic Church, built in 1852, and the adjacent 1888 home for Bavarian Benedictine priests and brothers. Nearby, enjoy hearty German food and local brews. Take time to visit the Vietnam Memorial and the Korean War Veterans Memorial in Roberto Clemente Park along the Allegheny River. If you enjoy the arts, don't miss The Andy Warhol Museum and the Mattress Factory. For family fun, meet new feathered friends at The National Aviary, be both silly and studious at the Carnegie Science Center or let your kids loose at the Pittsburgh Children's Museum.

THE SOUTH SIDE:

Visit the South Side, a neighborhood along the Monongahela River. Stop at Station Square, a cluster of turn-of-the-century railroad buildings that houses retail shops, nightclubs and restaurants. Take a riverboat cruise. Head to the business district, where an eclectic mix of coffeehouses, antique dealers, thrift shops, nightclubs and ethnic restaurants captures the many flavors of Pittsburgh.

MOUNT WASHINGTON:

Be sure to bring along your camera when you ride the Duquesne Incline or Monongahela Incline to Grandview Avenue at the top. You'll enjoy the breathtaking view of the city skyline. The dining experience at the many restaurants on Grandview Avenue is exceptional.

OAKLAND:

Oakland is an education and cultural Mecca. Home to the University of Pittsburgh and Carnegie Mellon University, Oakland also boasts the Carnegie Museums of Art and Natural History. View some of the most spectacular stained glass windows in the world at Heinz Chapel. Next door in the Cathedral of Learning on the University of Pittsburgh campus, the Nationality Rooms eloquently tell the story of the city's cultural heritage. Nearby, is the Phipps Conservatory & Botanical Gardens, a century-old Victorian glasshouse that is home to a delightful array of plants and flowers, butterflies and bonsai.

SHADYSIDE & SQUIRREL HILL:

You'll find cozy restaurants and trendy, upscale shops in Shadyside. Explore nearby Squirrel Hill, stop at kosher delis, bakeries, bookstores, specialty shops and restaurants for a lovely afternoon or evening.

Special Events and Tours

PLEASE NOTE: The times listed are departure times and return times to/from the hotel. Busses will leave promptly from the William Penn Place Entrance (lobby level) of the Omni William Penn Hotel. Refunds can not be given for missing the bus.

Don't be disappointed! Pre-registration is required for special events and tours. Space is limited. Register today!

CONFERENCE LUNCHEONS

Operations and Power Division (OPD) Luncheon

Monday, June 14, 2004 • 11:30 a.m. - 12:45 p.m.
LOCATION: *Nick & Tony's Restaurant*

This year's OPD Luncheon will be located at Nick & Tony's Restaurant. It's within walking distance of the hotel. This year's recipient of the Walter H. Zinn Award will be featured at the luncheon. Established in 1976, this award is given by the OPD for outstanding contributions to the advancement of nuclear power. It honors the memory of Walter H. Zinn, the Society's first president. This award is granted to an individual for a notable and sustained contribution to the nuclear power industry that has not been widely recognized. It may be a technical contribution, one of leadership, or other notable service to the industry. Tickets can be purchased in advance or at the ANS Registration Desk for \$40.

DDR & FCWM Divisions Luncheon

Monday, June 14, 2004 • 11:30 a.m. - 12:45 p.m.
LOCATION: *Carlton Restaurant*

This year's DDR & FCWM Divisions Luncheon will be located at the Carlton Restaurant. It's within walking distance of the hotel. Tickets can be purchased in advance or at the ANS Registration Desk for \$40.

ANS Honors & Awards Luncheon

Tuesday, June 15, 2004 • 11:30 a.m. - 1:00 p.m.
LOCATION: *Grand Ballroom*

Plan to attend the Honors & Awards Luncheon held to recognize the outstanding efforts of the award winners and to celebrate their accomplishments. Tickets can be purchased in advance or at the ANS Registration Desk for \$40.

Nuclear Installations Safety Division Luncheon

Wednesday, June 16, 2004 • 11:30 a.m. - 1:00 p.m.
LOCATION: *Conference B Room*

Tickets can be purchased in advance or at the ANS Registration Desk for \$40.

EVENING EVENTS

ANS 50th Anniversary Banquet

(Sponsored by First Energy Nuclear Operating Company & Westinghouse Electric Company)

Sunday, June 13, 2004 • 7:00 p.m. - 10:00 p.m.
LOCATION: *Grand Ballroom*

The 2004 ANS Annual Meeting begins with a special ANS 50th Anniversary Banquet. Please see the details on page 3. This will be an opportunity to recall, in one gala evening, the history of the Society and its accomplishments. One ticket to the ANS 50th Anniversary Banquet is included in the full meeting registration fee. Additional tickets can be purchased in advance or on-site at the ANS Registration Desk for \$65.

Reception at Heinz Field & Fireworks
*(Sponsored by Exelon Generation Co., LLC and Mitsubishi Heavy Industries America, Inc.)
(Cosponsored by Bechtel Power Corp. and Constellation Generation Group)*

Monday, June 14th • 6:15 p.m. - 10:00 p.m.
LOCATION: *Heinz Field - Great Hall*

This evening begins in the Coca Cola Great Hall at Heinz Field, home of the Pittsburgh Steelers. Enjoy delicious hors d'oeuvres and cocktails as you browse the team memorabilia including displays devoted to Super Bowls IX, X, XIII, and XIV, along with personal mementos, uniforms, and equipment of Steeler Hall of Famers.

Save room to sample the chocolate fountain, then get ready for a toe-tapping, hand-clapping musical treat! Pittsburgh's own River City Brass Band will thrill you with its broad range of sounds from classical and opera to familiar favorites from the Broadway stage, the silver screen, the big band era, folk traditions and more.

And what better way to celebrate the American Nuclear Society's 50th anniversary, than a spectacular fireworks display from the famous Zambelli Fireworks Internationale. The magic of Zambelli pyrotechnics has been televised around the world. Watch the sky light up with a colorful array of sights and sounds!

Tickets can be purchased in advance or at the ANS Registration Desk for \$35.

Multi-Division Mixer

Tuesday, June 15th • 6:15 p.m. - 10:15 p.m.
LOCATION: *Penn Brewery*

The brewery and restaurant are located in the historic Eberhardt and Ober Brewery in Pittsburgh – an authentic German brewery in every detail.

You will feast upon a buffet menu featuring a variety of dishes, including some German favorites, such as: knackwurst, bratwurst and bockwurst in sauerkraut; spaetzle; hot German potato salad; potato pancakes with applesauce and sour cream; German sour-dough rye bread; and apple strudel. You can sample many other dishes and beverages in addition to the German fare. Your taste buds won't be disappointed at the Penn Brewery!

Tickets can be purchased in advance or at the ANS Registration Desk for \$40.

An Evening at the Frick Art and Historical Center

*(Sponsored by Curtiss-Wright Electro Mechanical Corporation and Doosan Heavy Industries & Construction Co., Ltd.)
(Cosponsored by AREVA & Electricite de France)*

Wednesday, June 16th • 5:45 p.m. - 10:00 p.m.

The Frick Art and Historical Center is a fascinating complex of museums and historical buildings located on over five acres of lawns and gardens in Pittsburgh's residential East End. The Center is devoted to the interpretation of the life and times of industrialist and art collector Henry Clay Frick.



Heinz Field

Along with a delectable array of fine foods, docent-guided tours will be given throughout the evening of the Frick Art Museum, the Car and Carriage Museum and Clayton, the turn-of-the-century Victorian residence of Henry Clay Frick.

FRICK ART MUSEUM

The Frick Art Museum houses Helen Clay Frick's personal collection of fine and decorative arts. Paintings are displayed with porcelains, bronzes, and rare examples of 17th and 18th-century furniture. Highlights of the permanent collection include a portrait by Rubens, a pastoral scene by Boucher, and Italian panel paintings by Giovanni de Paolo and Sassetta. A rare exhibition of Augustus Saint-Gaudens, known as the American Michelangelo, will also be on display.

CAR AND CARRIAGE MUSEUM

On display are some of the first horseless carriages to have an impact on Pittsburgh. Henry Clay Frick's 1914 Rolls Royce Silver Ghost touring car and Howard Heinz's 1898 Panhard (reputed to be the first car in Pittsburgh) are included, along with over 20 vintage automobiles which illustrate the story of Pittsburgh's place in automotive history.

CLAYTON

Clayton, a 23-room chateau-style mansion, is a triumph of restoration," wrote Susan Mary Alsop in *Architectural Digest*. It is also a triumph of preservation. When the Frick family moved to New York in 1905, after living at Clayton for 22 years, they left much of their Pittsburgh life behind. An astonishing 93% of the artifacts in the house are original, making Clayton a home more than a house, and an eloquent evocation of the lives of the family who lived there.

Tickets can be purchased in advance or at the ANS Registration Desk for \$40.



The Frick Art & Historical Center

Special Events and Tours



Duquesne Incline

SPOUSE/GUEST TOURS

"Molly's Trolleys"

Monday, June 14th • 9:30 a.m. – 1:30 p.m.

All aboard! Hop on one of Molly's Trolleys to begin your tour of the "Burgh". Relax and enjoy a narrated tour of Pittsburgh's magnificent array of museums, rivers and historic landmarks. The tour includes interesting facts about Pittsburgh's history, famous products, companies and people, as well as a ride on the historic Duquesne incline. You'll experience a spectacular view of the entire city as the incline carries you down 400 ft on Mt. Washington. Next, the trolley will take you to the Grand Concourse Restaurant. Savor fine American cuisine amidst the beautiful Tiffany windows and cathedral ceilings of this historic landmark which was formerly the P&LE Railroad Station.

Tickets can be purchased in advance or at the ANS Registration Desk for \$40.

Carnegie Museum of Natural History

Tuesday, June 15th • 9:30 a.m. - 2:30 p.m.

Spend a morning discovering Egyptian mummies, rare fossils, and the world-famous collection of dinosaurs at the Carnegie Museum of Natural History. This museum is one of the six largest natural history museums in the nation. After the tour, lunch is served at the beautiful University Club located in Oakland, the heart of Pittsburgh's academic, medical and cultural center. After lunch take a stroll through the Cathedral of Learning at the University of Pittsburgh and enjoy the architecture and décor of the Nationality Classrooms or you can stop by the beautiful, majestic Heinz Chapel.



Carnegie Museum of Natural History

Tickets can be purchased in advance or at the ANS Registration Desk for \$45.

John Heinz Pittsburgh History Center

Wednesday, June 16th • 9:30 a.m. - 2:30 p.m.

Your day begins with a docent-guided tour of the Senator John Heinz Pittsburgh History Center. Highlights include exhibits of the Pittsburgh-born food industry giant H.J. Heinz Company, and the Isaly's Dairy, creator of the famous "Klondike", America's best-selling novelty ice cream product. After the tour you will enjoy a delectable lunch at Lidia's Pittsburgh featuring Lidia's signature northern Italian cuisine. Lidia Matticchio co-owner of the restaurant can be seen on Lidia's Italian American Kitchen, shown nationwide on Public Television. After lunch, participants can enjoy browsing through the Three Rivers Arts Festival. Local and national artists contribute to this 44-year-old tradition which is a celebration of visual, dance and performance art. *Note: participants may skip the arts festival and return to the hotel.*

Tickets can be purchased in advance or at the ANS Registration Desk for \$45.

TECHNICAL TOUR

U.S. Tool & Die, Inc. (UST&D)

Thursday, June 17th • 8:30 a.m. - 1:45 p.m.

ENGINEERED EQUIPMENT FABRICATIONS FOR THE POWER GENERATION INDUSTRY

Founded in 1950, U.S. Tool & Die, Inc. (UST&D) has evolved into one of the preferred suppliers for engineered equipment and general fabrications to the nuclear industry. UST&D undertakes a wide range of design, fabrication and equipment testing projects for the handling, transportation and storage of nuclear materials. The UST&D fabrication plant is located in the 92 acre Keystone Commons Industrial Park near Pittsburgh, PA. The 150,000 square feet of heavy shop space features railroad sidings, bridge cranes and engineering and administrative offices.

The facility houses a variety of manufacturing related equipment including boring and milling machines, welding and cutting systems and forming and drilling tools. The robotic

welding systems are capable of "lights out" welding of complex assemblies with laser precision. UST&D personnel have experience in the fabrication of ASME code heat exchangers, pressure vessels, skid-mounted process systems, spent fuel racks, cask baskets and multi-purpose canisters, safety-related NUREG 612 lift rigs, high level waste containers, built to print safety related equipment and engineering prototypes.

On your tour, you will see the world's only fully automated assembly line for production of multipurpose canisters for storage and transport of nuclear fuel. Capable of producing 200 canisters per year, this assembly line features state-of-the-art welding systems and assembly fixtures. UST&D's spent fuel rack fabrication technique has been utilized on over 1,000 racks that store over 100,000 spent fuel assemblies world wide. UST&D has recently upgraded its metals joining capability with more efficient cutting and welding systems and installation of complementary computer controlled vertical and horizontal milling machines. The Computer Numerical Controlled (CNC) metal forming and cutting equipment works to exact standards of fit up, assembly and quality.

Other notable plant and process improvements include UST&D's expansion of the large capacity bridge cranes to handle up to 200 ton loads and U.S. NRC validation of processes for 10CFR72 and 10CFR50 requirements. UST&D personnel also support fabrication services such as engineering design and analysis, field services and material dedication. A quality assurance system utilizing paperless shop floor methods and systems that eliminate human error in quality documentation record keeping and dissemination provides support for these fabrication services. Also beneficial are UST&D's reverse engineering capabilities that upgrade existing plant equipment performance while exactly matching original plant equipment footprints.

Tickets can be purchased in advance or at the ANS Registration Desk for \$15.



U.S. Tool & Die, Inc.



Sessions by Track

(Asterisks mean special sessions.)

Track 1: A Golden Anniversary—A Golden Opportunity

*ANS Plenary Session: A Golden Anniversary—A Golden Opportunity, Mon. a.m. (8:30-11:30 a.m.)

*ANS President's Special Session: Realism in Evaluating Nuclear Hazards, Tues. p.m. (4:00-6:00 p.m.)

Track 2: Concepts and Visions

Licensing and Safety Aspects of Advanced Nuclear Systems—I, Mon. p.m.

Licensing and Safety Aspects of Advanced Nuclear Systems—II, Tues. a.m.

TMI-2: Twenty-Five Years After the Accident—What Are the Lessons We Need to Remember—Panel, Mon. p.m.

*Reactor Physics Advances for Design of Generation IV Nuclear Energy Systems, Tues. a.m.

*Research by U.S. Department of Energy-Sponsored Students, Thurs. a.m.

Advanced Nuclear Energy Systems—Policy Issues—Panel, Thurs. a.m.

Track 3: Knowing and Improving Resource Quality

*Spent Fuel Processing, Partitioning, and Transmutation, Tues. a.m.

Fuels and Materials Performance, Wed. p.m.

Reactor Pressure Boundary Penetration Degradation—Panel, Thurs. a.m.

Track 4: Establishing Design Criteria and Bases

Hot Topics and Emergent Issues—Containment Sump Clogging—Panel, Mon. p.m.

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

Data, Analysis, and Operations for Nuclear Criticality Safety—II, Tues. a.m.

*Thermal Hydraulics of Next-Generation Nuclear Reactors, Thurs. a.m.

Track 5: Regulation: Culture and Methods

Other (Nonnuclear) Proliferation Regimes—Panel, Mon. p.m.

*Safety Culture, Tues. p.m.

*Risk Communications, Wed. p.m.

Safety Hazard Experience in Design and Construction of Nonreactor Nuclear Facilities, Wed. p.m.

Track 6: Continuous Production and Safety Improvements

Demonstration of Sensitivity and Uncertainty Analysis Tools and Methodology (TSUNAMI) Within Scale5—Part I—Tutorial, Tues. p.m.

Demonstration of Sensitivity and Uncertainty Analysis Tools and Methodology (TSUNAMI) Within Scale5—Part II—Tutorial, Wed. p.m.

Monitoring and Control of Next Generation Reactor Systems, Tues. p.m.

Current Topics for Reactor Engineers—Panel, Wed. p.m.

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

Track 7: Environment, External Impacts, and Risk

Clearance of Solid Materials: Federal and Industry Update—Panel, Tues. a.m.

*Environmental Aspects of Nuclear Waste, Tues. p.m.

Environmental Sciences: General, Tues. p.m.

The Use of Nuclear Energy for Desalination—Panel, Wed. a.m.

Integrated Risk-Informed Decision Making—Paper/Panel, Wed. p.m.

Regulatory Interfaces—Panel, Wed. p.m.

Track 8: Applications: Research, Basic Science Concepts, and Development

*Nontraditional Applications of Transport Methods—I, Mon. p.m.

*Nontraditional Applications of Transport Methods—II, Tues. a.m.

*University Reactor Research and Applications, Mon. p.m.

*Accelerator Applications: General, Mon. p.m.

*Radiation Detector Physics and Applications, Tues. p.m.

Hot Topics and Emerging Issues—Panel, Wed. a.m.

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

New Opportunities for Cost Savings at Nuclear Power Plants—Papers/Panel, Wed. p.m.

Track 9: People: Commitment to Progress

*Good Practices in Outcomes Assessment Under EC200 and TC2K, Tues. a.m.

Human Factors: General, Tues. p.m.

Education and Training: General, Wed. a.m.

Training, Human Performance, and Workforce Development, Wed. a.m.

Track 10: Nuclear Science: Phenomena and Theories

Transport Methods: General, Tues. p.m.

Computational Methods: General, Wed. a.m.

MCNP Validation, Wed. p.m.

Thermal-Hydraulic Experimentation, Wed. p.m.

Track 11: Solutions, Tools, and Standards

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

*Coupled Neutronics/Thermal-Hydraulics Code Development and Application to Advanced Reactor Design, Tues. p.m.

Reactor Analysis Methods, Wed. a.m.

A Movement Toward Risk-Informed, Performance-Based Standards—A Shift in Philosophy—Panel, Wed. a.m.

Thermal Hydraulics: General, Wed. a.m.

Java Pros and Cons—Roundtable, Wed. p.m.

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

Reactor Physics: General, Thurs. a.m.

Condensed Schedule

Condensed Meeting Schedule -
will go on these 2 pages, soon!

Sessions by Division

(Asterisks mean special sessions.)
(Parentheses indicate cosponsorship.)

Special Sessions

*ANS Plenary Session: A Golden Anniversary—A Golden Opportunity, Mon. a.m. (8:30-11:30 a.m.)

*ANS President's Session: Realism in Evaluating Nuclear Hazards, Tues. p.m. (4:00-6:00 p.m.)

Accelerator Applications (AAD)

*Accelerator Applications: General, Mon. p.m.

Decommissioning, Decontamination, and Reutilization (DDRD)

TMI-2: Twenty-Five Years After the Accident—What Are the Lessons We Need to Remember—Panel, Mon. p.m.

Clearance of Solid Materials: Federal and Industry Update—Panel, Tues. a.m.

Hot Topics and Emerging Issues—Panel, Wed. a.m.

Regulatory Interfaces—Panel, Wed. p.m.

Education and Training (ETD)

(*University Reactor Research and Applications, Mon. p.m.)

(TMI-2: Twenty-Five Years After the Accident—What Are the Lessons We Need to Remember—Panel, Mon. p.m.)

*Good Practices in Outcomes Assessment Under EC200 and TC2K, Tues. a.m.

Education and Training: General, Wed. a.m.

Training, Human Performance, and Workforce Development, Wed. a.m.

*Research by U.S. Department of Energy-Sponsored Students, Thurs. a.m.

Environmental Sciences (ESD)

*Environmental Aspects of Nuclear Waste, Tues. p.m.

Environmental Sciences: General, Tues. p.m.

The Use of Nuclear Energy for Desalination—Panel, Wed. a.m.

Fuel Cycle and Waste Management (FCWMD)

Other (Nonnuclear) Proliferation Regimes—Panel, Mon. p.m.

*Spent Fuel Processing, Partitioning, and Transmutation, Tues. a.m.

Human Factors Division (HFD)

Human Factors: General, Tues. p.m.

*Risk Communications, Wed. p.m.

Isotopes and Radiation (IRD)

*University Reactor Research and Applications, Mon. p.m.

*Radiation Detector Physics and Applications, Tues. p.m.

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

Materials Science and Technology (MSTD)

Fuels and Materials Performance, Wed. p.m.

Reactor Pressure Boundary Penetration Degradation—Panel, Thurs. a.m.

Mathematics and Computation (MCD)

*Nontraditional Applications of Transport Methods—I, Mon. p.m.

*Nontraditional Applications of Transport Methods—II, Tues. a.m.

Transport Methods: General, Tues. p.m.

Computational Methods: General, Wed. a.m.

JAVA Pros and Cons—Roundtable, Wed. p.m.

Nuclear Criticality Safety (NCSD)

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

Data, Analysis, and Operations for Nuclear Criticality Safety—II, Tues. a.m.

Demonstration of Sensitivity and Uncertainty Analysis Tools and Methodology (TSUNAMI) Within Scale5—Part I—Tutorial, Tues. p.m.

Demonstration of Sensitivity and Uncertainty Analysis Tools and Methodology (TSUNAMI) Within Scale5—Part II—Tutorial, Wed. p.m.

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

Nuclear Installations Safety (NISD)

Licensing and Safety Aspects of Advanced Nuclear Systems—I, Mon. p.m.

Licensing and Safety Aspects of Advanced Nuclear Systems—II, Tues. a.m.

*Safety Culture, Tues. p.m.

Safety Hazard Experience in Design and Construction of Nonreactor Nuclear Facilities, Wed. p.m.

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

Operations and Power (OPD)

Hot Topics and Emergent Issues—Containment Sump Clogging—Panel, Mon. p.m.

(TMI-2: Twenty-Five Years After the Accident—What Are the Lessons We Need to Remember—Panel, Mon. p.m.)

Monitoring and Control of Next Generation Reactor Systems, Tues. p.m.

A Movement Toward Risk-Informed, Performance-Based Standards—A Shift in Philosophy—Panel, Wed. a.m.

Integrated Risk-Informed Decision Making—Paper/Panel, Wed. p.m.

New Opportunities for Cost Savings at Nuclear Power Plants—Papers/Panel, Wed. p.m.

(Fuels and Materials Performance, Wed. p.m.)

Advanced Nuclear Energy Systems—Policy Issues—Panel, Thurs. a.m.

Radiation Protection and Shielding (RPSD)

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

MCNP Validation, Wed. p.m.

Reactor Physics (RPD)

*Reactor Physics Advances for Design of Generation IV Nuclear Energy Systems, Tues. a.m.

*Coupled Neutronics/Thermal-Hydraulics Code Development and Application to Advanced Reactor Design, Tues. p.m.

Reactor Analysis Methods, Wed. a.m.

Current Topics for Reactor Engineers—Panel, Wed. p.m.

Reactor Physics: General, Thurs. a.m.

Thermal Hydraulics (THD)

Thermal Hydraulics: General, Wed. a.m.

Thermal-Hydraulic Experimentation, Wed. p.m.

*Thermal Hydraulics of Next-Generation Nuclear Reactors, Thurs. a.m.

Sessions by Day

Monday • June 14, 2004

7:30 A.M. - 5:00 P.M.	MEETING REGISTRATION
8:00 A.M. - 10:00 A.M.	SPOUSE/GUEST HOSPITALITY BREAKFAST
8:30 A.M. - 11:30 A.M.	ANS ANNUAL MEETING OPENING PLENARY "A Golden Anniversary—A Golden Opportunity"
9:30 A.M. - 1:30 P.M.	SPOUSE/GUEST TOUR: "Molly's Trolleys"
11:30 A.M. - 1:00 P.M.	OPERATIONS & POWER DIVISION LUNCHEON DDR AND FCWM DIVISIONS LUNCHEON
1:00 P.M. - 2:30 P.M.	ICAPP '04 TECHNICAL SESSIONS (see page 29)
1:00 P.M. - 4:00 P.M.	NATIONAL MEETING TECHNICAL SESSIONS • Nontraditional Applications of Transport Methods—I • Hot Topics and Emergent Issues—Containment Sump Clogging—Panel • University Reactor Research and Applications • Licensing and Safety Aspects of Advanced Nuclear Systems—I • TMI-2: Twenty-Five Years After the Accident—What Are the Lessons We Need to Remember—Panel • Accelerator Applications: General • Data, Analysis, and Operations for Nuclear Criticality Safety—I
2:30 P.M. - 4:00 P.M.	ICAPP '04 TECHNICAL SESSIONS (see page 29)
4:00 P.M. - 5:00 P.M.	ANS BUSINESS MEETING
4:00 P.M. - 6:00 P.M.	ICAPP '04 OPENING PLENARY SESSION (see page 29)
6:15 P.M. - 10:00 P.M.	EVENING EVENT Reception at Heinz Field & Fireworks

MONDAY, JUNE 14, 2004 • 8:30 A.M.

Opening Plenary: A Golden Anniversary—A Golden Opportunity,
Chair: Larry R. Foulke (*President, American Nuclear Society*)

Grand Ballroom-Urban

8:30 a.m.

President's Remarks:

- Larry R. Foulke (*President, American Nuclear Society*)

Smythe Award Presentation:

- Joe Colvin (*Nuclear Energy Institute*)

Opening Remarks - General Cochair, ANS Annual Meeting:

- Stephen R. Tritch (*President and Chief Executive Officer, Westinghouse Electric Company*)

Moderator Kick-Off - General Cochair, ANS Annual Meeting:

- Gary R. Leidich (*President and Chief Nuclear Officer, First Energy Nuclear Operating Company*)

Plenary Session Speakers:

- Larry E. Craig (*U.S. Senate, R-Idaho*)
- Nils J. Diaz (*Chairman, U.S. Nuclear Regulatory Commission*)
- Admiral Frank L. Bowman (*Director, Naval Nuclear Propulsion Program, U.S. Navy*)
- Oliver D. Kingsley, Jr. (*Chief Operating Officer, Exelon*)
- Luis E. Echavarrri (*Director-General, OECD Nuclear Energy Agency*)

MONDAY, JUNE 14, 2004 • 1:00 P.M.

Nontraditional Applications of Transport Methods—I, sponsored by MCD. *Session Organizer:* Barry Ganapol (*Univ of Arizona*). *Chair:* Barry Ganapol

Monongahela

1:00 p.m.

Whence the Transport Equation? Noel Corngold (*Caltech*), invited

1:30 p.m.

Computer Algebra and Transport Theory, J. S. Warsa (*LANL*), invited

2:00 p.m.

Neutron Transport Theory Applied to Optical Oceanography, N. J. McCormick (*Univ of Washington*), invited

2:30 p.m.

Analytical Solution to Discrete Ordinate Time Dependent Transport Problems, Sandra Dulla, Piero Ravetto (*Politecnico di Torino*)

3:00 p.m.

A Regularized Boltzmann Collision Operator for Highly Forward Peaked Scattering, Anil K. Prinja (*Univ of New Mexico*), Brian C. Franke (*SNL*), invited

3:30 p.m.

Performance of PENTRAN Using a Heterogeneous Cluster for Selected Medical Physics Problems, Glenn E. Sjoden (*Univ of Florida*), invited

Hot Topics and Emergent Issues: Containment Sump Clogging—Panel, sponsored by OPD. *Session Organizer:* Steve Stamm (*The Shaw Group*). *Chair:* Steve Stamm

Alleghany

1:00 p.m.

The NRC has determined that the potential for containment sump plugging from debris accumulation as a result of a LOCA event has become an issue for PWR plants. This issue has stemmed from previous investigations and initiatives carried out on BWRs and lessons learned from the same as a result of the resolution of GL 96-03. The industry as a whole including NEI and research laboratories continue to work together to address the concerns that impact the PWR plants identified by the NRC. The NRC Generic Letter anticipated to be issued in the first or second quarter of 2004 will provide the basis of this issue and the expectations of the PWR utilities in addressing this issue. This session will briefly discuss the history of this issue; the ongoing efforts of the NRC and the industry; what might be expected, generally speaking, by the PWR utilities to resolve this issue; and the time line to accomplish the activities.

Panelists:

- John Butler (*NEI*)
- Ralph Architzel (*NRC*)
- Keith Jury (*Exelon*)
- Bill Rinkas (*Westinghouse*)
- Venkat Dasari Rao (*LANL*)

University Reactor Research and Applications, sponsored by IRD; cosponsored by ETD. *Session Organizer:* Kenan Ünlü (*Penn State*). *Chair:* Kenan Ünlü

Parlor E & F

1:00 p.m.

Neutronics Design of a Supercritical Water Neutron Radiolysis Loop, Eric Edwards, Paul Wilson, Mark Anderson (*Univ of Wisconsin-Madison*), Dave Bartels (*Notre Dame Radiation Lab*)

1:25 p.m.

Neutron Imaging of Two-Phase Transport in a Polymer Electrolyte Fuel Cell, N. Pekula, M. M. Mench, K. Heller, K. Ünlü, J. Brenizer (*Penn State*), invited

1:50 p.m.

Development of Time-of-Flight Neutron Depth Profiling at The Pennsylvania State University, S. M. Cetiner, K. Ünlü (*Penn State*), R. G. Downing (*R.G.D. Research*), invited

2:15 p.m.

Instrumentation and Flux Upgrade for the Epithermal Neutron Beam Facility at Washington State University, D. W. Nigg, J. R. Venhuizen, C. A. Wemple (*INEEL*), G. E. Tripard, S. Sharp, K. Fox (*Washington State Univ*)

2:40 p.m.

Development of a Protocol for Analyzing PM2.5 Filters by INAA Method, Andrew M. Casella, Joseph Kyger, Tushar K. Ghosh, J. David Robertson (*Univ of Missouri-Columbia*)

3:05 p.m.

Uses of NAA: Gold Concentrations in Dated Tree Rings, D. K. Hauck, K. Ünlü (*Penn State*), P. I. Kuniholm, J. J. Chiment (*Cornell Univ*), invited

3:30 p.m.

A Web-Based System for Access to Real-Time and Archival Research Reactor Data, John R. White, Areeya Jirapongmed, Leo M. Bobek (*Univ of Massachusetts Lowell*)

Sessions by Day

Licensing and Safety Aspects of Advanced Nuclear Systems—I, sponsored by NISD. *Session Organizers:* Douglas Crawford, Linda Hansen (ANL-West). *Cochairs:* Douglas Crawford, Linda Hansen

Sky

1:00 p.m.

Licensing of New Light Water Reactors, James E. Lyons (NRC)

1:30 p.m.

NRC's Advanced Reactor Research Program, John Flack (NRC)

2:00 p.m.

Principles and Benefits of Passive Safety Design Strategies, David C. Wade (ANL)

2:30 p.m.

Safety Aspects of the Gas-Cooled Fast Reactor (GFR), Kevan D. Weaver (INEEL), Thomas Y. C. Wei (ANL), Debu Majumdar (DOE)

3:00 p.m.

Safety and Licensing Aspects of Sodium-Cooled Fast Reactors, Jordi Roglans-Ribas, J. E. Cahalan (ANL)

3:30 p.m.

Standard Design Certification with Prototype Testing, Neil W. Brown (LLNL)

TMI-2: Twenty-Five Years After the Accident—What Are the Lessons We Need to Remember—Panel, sponsored by DDRD; cosponsored by ETD and OPD. *Session Organizer:* James Byrne (FENOC). *Chair:* Robert L. Long (Nuclear Stewardship, LLC)

Conference Room A

1:00 p.m.

Panelists:

- Robert L. Long (Nuclear Stewardship, LLC)
- Anthony Baratta (Penn State)
- Jane A. LeClair (Constellation Nuclear, LLC)
- Pete Sena (FENOC-Beaver Valley Power Station)
- Brian Sheron (NRC)

Accelerator Applications: General, sponsored by AAD. *Session Organizers:* Phillip Ferguson (ORNL), Michele Ferenci (Emory Univ). *Chair:* Phillip Ferguson

Conference Room D

1:00 p.m.

Overview of Accelerators for Clinical Fast Neutron Therapy, Arlene J. Lennox (Fermilab Neutron Therapy Facility), invited

1:20 p.m.

Field Assessment in BNCT Using a Structure-Segmented Head Phantom, Chenguang Li, Thomas E. Blue, Nilendu Gupta (Ohio State)

1:40 p.m.

MCNPX on Heterogeneous Clusters Using PVM and MPI, Daniel Lowe, William Culbreth, Trevor Wilcox (UNLV)

2:00 p.m.

Overview of the AFCI Reactor-Accelerator Coupling Experiments (RACE) Project, Denis E. Beller (Idaho Accelerator Center)

2:20 p.m.

Photo-Neutron Production for Accelerator-Driven Subcritical Systems, Suresh B. Sadineni, William G. Culbreth (UNLV), Frank Harmon (Idaho Accelerator Center)

2:40 p.m.

Electron Accelerator Target Design Optimization for Waste Transmutation, Yaxi Liu, Man-Sung Yim, David McNelis (NCSU)

3:00 p.m.

Radiation Measurements and Predictions for the First-Phase SNS-Linac Commissioning and Conditioning, F. X. Gallmeier, I. I. Popova, D. C. Gregory, P. Gonzalez (ORNL)

3:20 p.m.

Benchmarking Photo-Neutron Predictions from MCNPX, Suresh B. Sadineni, William G. Culbreth (UNLV), Frank Harmon (Idaho Accelerator Center)

Data, Analysis, and Operations for Nuclear Criticality Safety—I, sponsored by NCS. *Chair:* Maria LeTellier (CS Eng)

Frick

1:00 p.m.

A Declaration of Independence—What Is It Worth? Dennis Mennerdahl (EM Systems)

1:25 p.m.

Questions Raised by Application of Standards for Criticality Accident Alarm System—Proposal of a 'Most Credible Accident of Concern' Concept for Aqueous Media, Francis Barbry (CEA)

1:50 p.m.

Studies Contributing to Fission Number Estimates for Criticality Accidents in Solutions, Francis Barbry, Patrick Fouillaud, Pascal Grivot, Ludovic Reverdy (CEA)

2:15 p.m.

Development of Criticality Safety Evaluations for Deactivation and Decommissioning Activities, R. D. Harris (Safe Sites of Colorado), C. A. Cise (Frankie Friend & Assoc)

2:40 p.m.

Evolution of Criticality Safety Training at Westinghouse, UKFB Springfield, Deborah Hill (BNFL)

3:05 p.m.

Criticality Safety Training for Deactivation and Decommissioning Personnel, R. D. Harris (Safe Sites of Colorado), C. A. Cise (Frankie Friend & Assoc)

3:30 p.m.

Processing of Nuclear Ship Savannah Fuel, D. A. Reed, D. E. Mueller (ORNL), R. G. Taylor (Navarro Rsch Eng)

Tuesday • June 15, 2004

7:30 A.M. - 5:00 P.M.	MEETING REGISTRATION
8:00 A.M. - 10:00 A.M.	SPOUSE/GUEST HOSPITALITY BREAKFAST
8:00 A.M. - 10:00 A.M.	ICAPP PLENARY #2 (see page 31)
8:30 A.M. - 11:30 A.M.	NATIONAL MEETING TECHNICAL SESSIONS <ul style="list-style-type: none">• Nontraditional Applications of Transport Methods—II• Reactor Physics Advances for Design of Generation IV Nuclear Energy Systems• Radiation Protection and Shielding: General• Licensing and Safety Aspects of Advanced Nuclear Systems—II—Papers/Panel• Good Practices in Outcomes Assessment Under EC2000 and TC2K• Clearance of Solid Materials: Federal and Industry Update—Panel• Data, Analysis, and Operations for Nuclear Criticality Safety—II• Spent Fuel Processing, Partitioning and Transmutation
9:30 A.M. - 2:30 P.M.	SPOUSE/GUEST TOUR "Carnegie Museum of Natural History"
10:00 A.M. - 11:30 A.M.	ICAPP TECHNICAL SESSIONS (see page 31)
11:30 A.M. - 1:00 P.M.	ANS HONORS AND AWARDS LUNCHEON
1:00 P.M. - 2:30 P.M.	ICAPP PLENARY #3 (see page 31)
1:00 P.M. - 4:00 P.M.	NATIONAL MEETING TECHNICAL SESSIONS <ul style="list-style-type: none">• Demonstration of Sensitivity and Uncertainty Analysis Tools and Methodology (TSUNAMI) Within SCALE5—Part I—Tutorial• Coupled Neutronics/Thermal-Hydraulics Code Development and Application to Advanced Reactor Design• Environmental Aspects of Nuclear Waste• Environmental Sciences: General• Human Factors: General• Monitoring and Control of Next Generation Reactor Systems• Radiation Detector Physics and Applications• Transport Methods: General• Safety Culture
2:30 P.M. - 4:00 P.M.	ICAPP TECHNICAL SESSIONS (see page 31)
4:00 P.M. - 6:00 P.M.	ANS PRESIDENT'S SPECIAL SESSION: "Realism in Evaluating Nuclear Hazards"
6:15 P.M. - 10:15 P.M.	MULTI-DIVISION MIXER

TUESDAY, JUNE 15, 2004 • 8:30 A.M.

Nontraditional Applications of Transport Methods—II, sponsored by MCD. *Session Organizer:* Barry Ganapol (*Univ of Arizona*). *Chair:* Alireza Haghghat (*Univ of Florida*)

Monongahela

8:30 a.m.

Electron/Photon Transport—A Key to Radiation Physics? A Review, John C. Garth (*Retired*), invited

9:00 a.m.

Transport (Kinetic) Equations in Vehicular Traffic Flow, Paul Nelson (*Texas A&M*), invited

9:30 a.m.

Radiative Transfer Theory in Dense Plant Canopies: A Neural Network Application to Coffee Cherry Ripeness Estimation, Roberto Furfaro (*Univ of Arizona*), invited

10:00 a.m.

Monte Carlo Simulation of Nuclear Well Logging Devices on a 150-Node PC Cluster, Pingjun Guo (*Baker Hughes*)

10:30 a.m.

Direct Simulation Monte Carlo Aerosol Dynamics II—Role of Component Density Difference in Brownian Agglomeration, D. Rangaraj, S. K. Loyalka (*Univ of Missouri-Columbia*)

11:00 a.m.

Deterministic Modeling of Radiation Exchange Within and Between 3-D Cloud Structures, Cassiano R. E. de Oliveira (*Georgia Tech*), Joanna Haigh (*Imperial College London*)

Reactor Physics Advances for Design of Generation IV Nuclear Energy Systems, sponsored by RPD. *Session Organizer:* Hussein Khalil (*ANL*). *Chair:* Jordi Roglans (*LANL*)

Alleghany

8:30 a.m.

VHTR Double-Heterogeneous and Homogenous Lattice Model Burnup Characteristics Comparison, Gray S. Chang (*INEEL*)

8:55 a.m.

Preliminary Assessment of Possibilities for Improving the Performance of SCWR Using Hydride Fuel, Z. Shayer, E. Greenspan (*Univ of California*)

9:20 a.m.

Spectrum-Dependent Transmutation Efficiency in Molten Salt Reactors, E. Rodriguez-Vieitez, M. Fratoni, E. Greenspan (*Univ of California, Berkeley*)

9:45 a.m.

A Generation IV Sodium-Cooled Fast Reactor Concept and Its R&D Program, M. Ichimiya, Y. Sagayama (*JNC*)

10:10 a.m.

Neutronic Designs for a Lead Cooled, Small Modular Reactor Fueled with TRU, M. A. Smith, W. S. Yang, T. A. Taiwo (*ANL*)

10:35 a.m.

Use of Minimally Processed Fast Reactor Fuel in Light Water Reactors, P. Yarksy, M. J. Driscoll, P. Hejzlar (*MIT*)

11:00 a.m.

Development of Advanced Multi-Dimensional Coupled-Code Computational Capability for Design and Safety Analysis of NGNP, T. Downar, D. Lee (*Purdue Univ*), K. Ivanov, B. Tyobeka, R. Mphahlele (*Penn State*)

Radiation Protection and Shielding: General, sponsored by RPSD. *Session Organizer:* Robert Hayes (*Washington TRU*). *Chair:* Robert Hayes

Parlor E & F

8:30 a.m.

SAFs for Internal Electrons Using a Tomographic Pregnant Woman Model, C. Y. Shi, X. G. Xu (*RPI*)

8:50 a.m.

Skin Dose Depth Profiles for Monoenergetic Point Gamma Sources, C. Y. Shi, X. George Xu (*RPI*)

9:10 a.m.

Effective Dose Equivalent for Co-60 Hot-Particles on Skin, X. George Xu (*RPI*)

9:30 a.m.

Generation of Spatial Weighting Functions for Ex-Core Neutron Detectors Using MCNP, C. Alan Ford (*Dominion Energy*)

9:50 a.m.

The Effect of Tooth Enamel Granule on EPR Dosimetry, Daeseok Hong, Daesik Yook, Kun Jai Lee (*KAIST*), Yunjong Kim (*Paichai Univ*)

10:10 a.m.

An Alternate Error Propagation Approach, Robert Hayes (*WIPP*)

10:30 a.m.

Shielding Requirements for Mission to Mars Nuclear Engines, Aaron Totemeier, Tatjana Jevremovic, Sean McDevitt (*Purdue Univ*)

10:50 a.m.

Repeatable Predictions for Shielding Using Analytical Transport Methods and MCNP, E. V. Steinfelds, M. A. Prelas (*Univ of Missouri-Columbia*)

Licensing and Safety Aspects of Advanced Nuclear Systems—II—Papers/Panel, sponsored by NISD. *Session Organizers:* Douglas Crawford, Linda Hansen (*ANL-West*). *Cochairs:* Douglas Crawford, Linda Hansen

Sky

PAPERS:

8:30 a.m.

Safety and Licensing Aspects of the SuperCritical Water Reactor (SCWR), Jacopo Buongiorno (*INEEL*)

9:00 a.m.

Safety and Licensing Aspects of the LFR/SSTAR, James J. Sienicki (*ANL*)

9:30 a.m.

Safety and Licensing Aspects of the Molten Salt Reactor, Charles Forsberg (*ORNL*)

10:00 a.m.

Compressed Gas Emergency Power Supply for GFR Service, M. J. Driscoll, P. Hejzlar, M. J. Delaney, W. C. Williams, C. Matos (*MIT*)

PANEL DISCUSSION:

10:30 a.m.

Panelists to be determined.

Good Practices in Outcomes Assessment Under EC2000 and TC2K, sponsored by ETD. *Session Organizer:* Mike Robinson (*BAPL*). *Chair:* Mike Robinson

Conference Room A

8:30 a.m.

Performance Based Assessment of Nuclear Programs in Academia and Industry, Mathew M. Panicker (*OPPD*), invited

9:00 a.m.

College Credit for Utility Accredited Programs—Coming Full Circle, Jo-Ann Rolle (*Excelsior Coll*), invited

9:30 a.m.

Observations Regarding Implementation of a Training Accreditation Process in the Nuclear Electric Power Industry, Joseph D. Kowalski (*Silver Fox Synergies*)

10:00 a.m.

Evaluation Methodology for Assessing Program Outcomes, Edward P. Naessens Jr., Brian E. Moretti (*U.S. Military Academy*)

10:30 a.m.

Nuclear Power Plant Training Program Accreditation—Reflections on the Past Twenty Years, Kent W. Hamlin (*INPO*)

Sessions by Day

11:00 a.m.

Outcome Assessment—Knowing When You Hit the Mark, Richard P. Coe (*Richard Stockton Coll.*), invited

Clearance of Solid Materials: Federal and Industry Update—Panel, sponsored by DDRD. *Session Organizers:* Jas Devgun (*Sargent & Lundy*), Art Desrosiers (*Bartlett Svc*). *Chair:* Jas Devgun

Conference Room D

8:30 a.m.

Panelists:

- Scott Moore (*NRC*)
- John Neave (*DOE*)
- Carl Pavetto (*EPA*)
- Kathleen McAllister (*CRCPD*)
- Rob Woodard (*TLG Svc*)
- Jeff Stevens (*BNFL*)
- Mark Price (*SCE*)
- Art Desrosiers (*Bartlett Svc*)
- Jas Devgun (*Sargent & Lundy*)

Data, Analysis, and Operations for Nuclear Criticality Safety—II, sponsored by NCS. *Chair:* Robert D. Busch (*Univ of New Mexico*)

Frick

8:30 a.m.

Criticality of a Neptunium-237 Sphere Surrounded with Highly Enriched Uranium Shells and an Iron Reflector, Rene Sanchez, David Loaiza, David Hayes, Robert Kimpland (*LANL*)

8:55 a.m.

Criticality Safety of Uranium Metal of Various Shapes and Sizes, J. J. Lichtenwalter (*Y-12 NSC*), A. W. Krass (*ORNL*)

9:20 a.m.

Parametric Study of LEU Particles in Water or a UO₂/Water Moderator, D. G. Erickson, H. Toffer (*Fluor Fed Svc Services*)

9:45 a.m.

An Automated Approach for Dry Fuel Transportation Criticality Qualification, Timothy M. Lloyd, James E. Hopf, Steven E. Sisley (*BNFL Fuel Solutions*)

10:10 a.m.

Criticality of a Neutron Absorbing Gd-Alloy to Be Used in the Storage and Transportation of Spent Nuclear Fuel, David Loaiza, Rene Sanchez (*LANL*), Gregg Wachs, William Hurt, Ronald Mizia (*INEEL*)

10:35 a.m.

Reactive Moderator and Reflector Materials in a Finite Plutonium System, Sandra L. Larson, Ron J. Green (*SAIC, Oak Ridge*)

11:00 a.m.

Use of Burnup Credit as a Safety Factor in Handling of Spent Fuel at SRS, Davoud A. Eghbali (*Westinghouse SMS*)

Spent-Fuel Processing, Partitioning and Transmutation, sponsored by FCWMD. *Chair:* Karen L. Howden (*ANL-West*)

Phipps

8:30 a.m.

Actinide Partitioning and Transmutation in Light-Water Reactors (LWRs), Emory D. Collins, John-Paul Renier (*ORNL*)

8:55 a.m.

Processing of Spent TRISO-Coated GEN IV Reactor Fuels, Barry B. Spencer, Guillermo D. Del Cul, Emory D. Collins (*ORNL*)

9:20 a.m.

Advanced Spent Fuel Processing Based on Fluorination and Volatility of Fluoride Species: The "Trufluor" Concept, Lee D. Trowbridge, Guillermo D. Del Cul, Barry B. Spencer, Emory D. Collins (*ORNL*)

9:45 a.m.

Advanced Head-End Processing of Spent Fuel, Guillermo D. Del Cul, Barry B. Spencer, Emory D. Collins (*ORNL*), Kenneth R. Bateman, Karen L. Howden, Brian R. Westphal (*ANL-West*)

10:10 a.m.

Initial Testing of the DEOX Process at ANL-W, B. R. Westphal, K. J. Bateman, R. P. Lind, K. L. Howden (*ANL-West*), G. D. Del Cul, B. B. Spencer, E. D. Collins (*ORNL*)

10:35 a.m.

Denatured Thorium in Fast Reactors Employing a Closed Fuel Cycle, Jeffrey C. Davis, John C. Lee, Ronald F. Fleming (*Univ of Michigan*)

11:00 a.m.

Estimation of Worldwide Minor Actinide Inventory Using Nuclear Fuel Cycle Simulation System (VISTA), M. Ceyhan (*IAEA*)

TUESDAY, JUNE 15, 2004 • 1:00 P.M.

Demonstration of Sensitivity and Uncertainty Analysis Tools and Methodology (TSUNAMI) Within SCALE5—I: Tutorial, sponsored by NCS. *Chair:* Sedat Goluoglu (*ORNL*)

Monongahela

1:00 p.m.

The use of TSUNAMI to determine areas of applicability of benchmarks will be demonstrated in two sessions in tutorial/demonstration format. TSUNAMI consists of several sensitivity and uncertainty analysis tools within SCALE5, which is planned to be publicly available by the summer of 2004. These tools allow analysis of critical experiments to assess applicability to the validation of a particular application through several integral parameters. The cross-section uncertainties are carried through the analysis and utilized in determining the applicability of benchmark experiments and assessing the penalty one must exert due to limited applicability of the existing critical experiments.

Coupled Neutronics/Thermal-Hydraulics Code Development and Application to Advanced Reactor Design, sponsored by RPD. *Session Organizer:* Kostadin Ivanov (*Penn State*). *Chair:* Kostadin Ivanov

Allegheny

1:00 p.m.

V1000CT-1 Benchmark: Exercise 3 Results Using Coupled Three-Dimensional Kinetics/Thermal Hydraulics, J. Vedovi, K. Ivanov (*Penn State*), F. D'Auria (*Univ of Pisa*)

1:25 p.m.

Coupled NEM/THERMIX-DIREKT Calculation Scheme for HTR Analysis, Bismark Tyobeka, Kostadin Ivanov (*Penn State*)

1:50 p.m.

Analysis of Cofrentes NPP SCRAM-61 Transient with Coupled Codes: TRAC-BF1/VALKIN and RETRAN-3D, R. Miró, A. M. Sánchez, O. Roselló, D. Ginestar, G. Verdu (*Univ Politècnica de Valencia*), A. Gómez (*Iberdrola Ingeniería*), P. Mata (*Iberdrola*)

2:15 p.m.

The Time-Dependent Neutronic and Thermal-Hydraulic Code TINTE for PBMR Analysis, Gerhard Strydom, Frederik Reitsma (*PBMR Pty*), invited

2:40 p.m.

PBMR Steady State and Coupled Kinetics Core Thermal-Hydraulics Test Problems, F. Reitsma (*PBMR Pty*), J. B. M. de Haas (*NRC*), B. Tyobeka, K. Ivanov (*Penn State*), D. F. Da Cruz (*NRC*), invited

3:05 p.m.

HTR Core Physics Analysis by the PANTHERMIX Code System, J. B. M. de Haas, J. C. Kuijper, J. Oppe (*NRC*), invited

3:30 p.m.

The Coupled Code System ATHLET-QUABOX/CUBBOX—Experience and Developments, S. Langenbuch, K. Velkov (*Gesellschaft für Anlagen- und Reaktorsicherheit*), invited

Environmental Aspects of Nuclear Waste, sponsored by ESD. *Session Organizer:* Robert Addis (*Westinghouse SRC*). *Chair:* Pete Fledderman (*Westinghouse SRS*)

Parlor E & F

1:00 p.m.

Risk-Based Performance Index for Nuclear Waste Transmutation System Optimization, Jun Li, Man-Sung Yim, David McNelis (NCSU)

1:20 p.m.

Removal of Strontium from Aqueous Solutions Using Fuller's Earth Beads, Veera R. Gutti, Shameem Hasan, Tushar K. Ghosh (Univ of Missouri-Columbia)

1:40 p.m.

Automatic Real-Time Model Calibration Tool for Groundwater Contaminant Transport, Juyoung Kim (UCLA), Thomas C. Harmon (Univ of California, Merced)

Environmental Sciences: General, sponsored by ESD. *Session Organizer:* Robert Addis (Westinghouse SRC). *Chair:* Kent B. Welter (NRC, Rockville)

Parlor E & F

2:05 p.m.

Monte Carlo Uncertainty Analysis of a Transmuting Fuel Cycle, Joshua G. Barratt, Erich A. Schneider (LANL)

2:25 p.m.

Adsorption on Aerosol Particles with Heterogeneous Surfaces, L. J. Willett, S. K. Loyalka (Univ of Missouri-Columbia)

2:45 p.m.

Comparison of the Predicted Efficiency Curves of a Real Impactor Obtained Using CFX-4.4 and CFX-5.6 Computer Programs, Sridhar Hari, Y. A. Hassan, A. R. McFarland (Texas A&M)

3:05 p.m.

Evacuation Time Estimate Analysis for the Fermi 2 Emergency Planning Zone, Rebecca L. Steinman, Greg M. Hostetter (Advent Eng Svc)

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

Human Factors: General, sponsored by HFD. *Chair:* Steven A. Arndt (NRC)

Sky

1:00 p.m.

Updated NRC Research Plan for Digital System Safety in Nuclear Power Plants and Other Facilities, Steven A. Arndt (NRC)

1:30 p.m.

Behavior-Based Corrective Actions for Results, Tyrone S. Tonkinson (Simple Approach)

2:00 p.m.

Nuclear Power Plant Control Room Modernization Guidance, Joseph Naser, Lewis Hanes (EPRI), John O'Hara (BNL), Robert Fink, Douglas Hill (MPR), Glenn Morris (DOE)

2:30 p.m.

An Application of the Dynamic Neural Network to Accident Diagnosis Systems for Nuclear Power Plants, Seung Jun Lee, Poong Hyun Seong (KAIST)

3:00 p.m.

Application of an Adaptive Neurofuzzy System in Transient Detection, X. Wang, L. H. Tsoukalas (Purdue Univ)

3:30 p.m.

A Practical Tool for Modeling Dependency Among Pre-Accident Human Errors, Raymond H. Gallucci (NRC)

Monitoring and Control of Next-Generation Reactor Systems, sponsored by OPD. *Session Organizer:* Belle Upadhyaya (Univ of Tennessee). *Chair:* Belle Upadhyaya

Conference Room A

1:00 p.m.

Data Reconciliation and Gross Error Detection for IRIS Helical Coil Steam Generators, K. Zhao, B. R. Upadhyaya (Univ of Tennessee), R. T. Wood (ORNL)

1:30 p.m.

Characteristics of Acoustic Emission from Check Valve Leaks at Nuclear Power Plants, Joon-Hyun Lee, Min-Rae Lee (Pusan Natl Univ), Jung-Taek Kim (KAERI)

2:00 p.m.

A Validation Methodology for Computerized Procedure System Based on Multi-Level Flow Modeling, Wei Qin, Poong Hyun Seong (KAIST)

2:30 p.m.

Displacement Monitoring of the Thinned U-Section Using Fiber-Optic Techniques, Jung T. Kim, Won M. Park, Cheol K. Lee, Sub Hur (KAERI), J. Weiss, V. Luk (SNL), S. J. Lee (Chung-Nam Natl Univ), I. S. Hwang (Seoul Natl Univ)

3:00 p.m.

HW/SW Interaction Testing for Digitalized Nuclear I&C System, Ahyoung Sung, Byoungju Choi (Ewha Univ), Jangsoo Lee (KAERI)

Radiation Detector Physics and Applications, sponsored by IRD. *Session Organizers:* Jack Brenizer (Penn State), Abdul Dullooo (Westinghouse). *Chair:* Abdul Dullooo

Conference Room D

1:00 p.m.

High Energy Resolution Fast-Neutron Spectrometers, Ionel D. Hau, Thomas Niedermayr (LLNL), Zane W. Bell, Vincent E. Lamberti (Y-12 NSC), Arnold Burger, Utpal Roy (Fisk Univ), Stephan Friedrich (LLNL)

1:25 p.m.

Study of the Radiation Resistance of Silicon Carbide Radiation Detectors, F. H. Ruddy, A. R. Dullooo, J. G. Seidel (Westinghouse), invited

1:50 p.m.

Analysis of Efficiency of Large Area Neutron Detector Arrays, Alexander Barzilov, Paul Sokol (Penn State)

2:15 p.m.

Simulation of a High Speed Counting System for SiC Neutron Sensors, Mehdi Reisi Fard, Thomas E. Blue, Don W. Miller (Ohio State), F. H. Ruddy, A. R. Dullooo, J. G. Seidel (Westinghouse)

2:40 p.m.

Polonium Distribution Analysis by Alpha-Ray Spectrum Unfolding Method, Toru Obara, Terumitsu Mirua, Hiroshi Sekimoto (Tokyo Inst of Technol)

3:05 p.m.

Neutron Measurements for Improved Soft Error Discrimination in Computer Systems, Aleksey Urmanov, Kenny Gross, Anton Bougaev (Sun Microsystems)

3:30 p.m.

X-Ray Autoradiography Measurements to Detect Tampered Fresh Light Water Reactor Fuel Assemblies, Frank H. Ruddy (Westinghouse), Hassan J. Ahmed (Westinghouse Nuclear Fuels), Jonathan B. Sanborn (U.S. Dept. of State), invited

Transport Methods: General, sponsored by MCD. *Session Organizer:* Anil Prinja (Univ of New Mexico). *Chair:* Tatjana Jevremovic (Purdue Univ)

Frick

1:00 p.m.

Variational Estimates of Interface-Location Perturbations in a Spherical Source Problem, Jeffrey A. Favorite (LANL)

1:20 p.m.

A Wavelet Expansion for Angular Approximations in Particle Transport, Paul Nelson, Aaron Watson (Texas A&M)

1:40 p.m.

Quadratic Finite Element Method for 1D Deterministic Transport, Danny R. Tolar Jr., James M. Ferguson (LLNL)

2:00 p.m.

Green's Function Analysis of Homogeneous Slab Time Eigenvalues, Drew E. Kornreich, D. Kent Parsons (LANL)

2:20 p.m.

Monte Carlo Simulation of Particle Microbeams Probing Cellular Radiation Response, Yu Liu, Tatjana Jevremovic, Lefteri H. Tsoukalas (Purdue Univ)

Sessions by Day

2:40 p.m.

Time Series Modeling and MacMillan's Formula for Monte Carlo Iterated-Source Methods, Taro Ueki (*Univ of New Mexico*)

3:00 p.m.

Forced Reaction Variance Reduction for Monte Carlo Isotopic Inventory Methods, Phiphat Phruksarajanakun, Paul P. H. Wilson (*Univ of Wisconsin-Madison*)

3:20 p.m.

Development of Nodal Integral Expansion Method (NIEM) to Burgers' Equation, Kyu Bok Lee (*KOPEC*), Chang Hyo Kim (*Seoul Natl Univ*)

Safety Culture, sponsored by NISD. *Session Organizer:* V. O. Uotinen (*Consultant*). *Chair:* V. O. Uotinen

Phipps

1:00 p.m.

What, If Anything, Do Nuclear Professionals 'Profess' To? Joseph P. Carson (*DOE*)

1:30 p.m.

Lessons to be Learned from Recent Events/Incidents, William R. Corcoran (*NSRC*), invited

2:00 p.m.

Upholding Professional Ethics in the Operation of Nuclear Facilities, Mano K. Nazar (*American Electric Power*)

2:30 p.m.

Professional Ethics and the ANS—A Summary of the Work of the ANS Special Committee on Ethics 2001-2004, V. O. Uotinen (*Consultant*), invited

3:00 p.m.

A Government Regulator's Perspective on Upholding Professional Ethics, H. D. Felsher (*NRC*)

1/2 Page Winter Expo Ad ~
coming soon!

• TUESDAY, JUNE 15, 2004 • 4:00 P.M.

• **ANS President's Special Session: Realism in Evaluating Nuclear Hazards**, *Session Organizer:* Ted Rockwell (*at the request of the ANS President*). *Chair:* Larry R. Foulke (*President, American Nuclear Society*)

• **Urban**

• 4:00 p.m.

• One of the goals of ANS is to be a credible source of information about nuclear science and technology. This special session is aimed at providing credible information that can be used to challenge the false premises that have led to "impending doom" consequences so often associated with descriptions of nuclear accidents. Senior engineering experts will provide scientific information to show that the consequences of a nuclear accident could not be catastrophic. There is relevant experimental and analytical work about the physical processes that limit how much radioactivity can be released and govern how far radioactive material can disperse as a public health threat. Overstating the consequences of nuclear accidents is not just conservative; it is simply wrong. False assessments of the consequences can lead to inappropriate actions by populations and public officials.

• **Panelists:**

- Dr. Edwin L. Zebroski, independent consultant; former director, Nuclear Safety Analysis Center; member of anti-terrorism panel, National Academy of Engineering
- Dr. Farouk Eltawila, Director, Division of Systems Analysis and Regulatory Effectiveness, U.S. Nuclear Regulatory Commission
- Mr. David Christian, Senior Vice President, Nuclear Operations and Chief Nuclear Officer, Dominion Generation
- Dr. Bernard Cohen, Professor Emeritus of Physics and Environmental and Occupational Health, University of Pittsburgh
- Dr. Ruth Weiner, senior staff scientist, Sandia National Laboratory; member, NRC's Advisory Committee on Nuclear Waste
- Dr. Theodore Rockwell, a founding officer of MPR Associates, Inc., and of Radiation, Science & Health, Inc.

Wednesday • June 16, 2004

7:30 A.M. - 5:00 P.M.	MEETING REGISTRATION
8:00 A.M. - 10:00 A.M.	SPOUSE/GUEST HOSPITALITY BREAKFAST
8:00 A.M. - 11:30 A.M.	ICAPP TECHNICAL SESSIONS (see page 34)
8:30 A.M. - 11:30 A.M.	NATIONAL MEETING TECHNICAL SESSIONS <ul style="list-style-type: none">• The Use of Nuclear Energy for Desalination—Panel• Reactor Analysis Methods• Computational Methods: General• A Movement Toward Risk-Informed, Performance-Based Standards—A Shift in Philosophy—Panel• Thermal Hydraulics: General• Education and Training: General• Training, Human Performance, and Workforce Development• Hot Topics and Emerging Issues—Panel• Isotopes and Radiation: General
9:30 A.M. - 2:30 P.M.	SPOUSE/GUEST TOUR "John Heinz Pittsburgh History Center"
11:30 A.M. - 1:00 P.M.	NISD LUNCHEON
1:00 P.M. - 2:30 P.M.	ICAPP PLENARY #4 (see page 34)
1:00 P.M. - 4:00 P.M.	NATIONAL MEETING TECHNICAL SESSIONS <ul style="list-style-type: none">• Demonstration of Sensitivity and Uncertainty Analysis Tools and Methodology (TSUNAMI) Within SCALE5—Part II—Tutorial• Integrated Risk-informed Decision Making—Paper/Panel• MCNP Validation• JAVA Pros and Cons—Roundtable• Current Issues in LWR Nuclear Fuel Performance and Reliability—Panel• Risk Communications• Thermal-Hydraulics Experimentation• New Opportunities for Cost Savings at Nuclear Power Plants—Papers/Panel• Fuels and Materials Performance• Regulatory Interfaces—Panel• Safety Hazard Experience in Design and Construction of Nonreactor Nuclear Facilities
2:30 P.M. - 4:00 P.M.	ICAPP TECHNICAL SESSIONS (see page 34)
4:00 P.M. - 6:00 P.M.	ICAPP PLENARY #5 (see page 34)
5:45 P.M. - 10:00 P.M.	EVENING EVENT The Frick Art & Historical Center

WEDNESDAY, JUNE 16, 2004 • 8:30 A.M.

The Use of Nuclear Energy for Desalination—Panel, sponsored by ESD. *Session Organizer:* Jan van Erp (*Consultant*). *Chair:* J. Roger Humphries (*Candesal*)

Monongahela

8:30 a.m.

Panelists:

- J. Roger Humphries (*Candesal*)
- Akira Omoto (*IAEA*)
- Si-Hwan Kim (*KAERI*)
- Ron S. Faibish (*ANL*)
- Hideaki Heki (*Toshiba*)

Reactor Analysis Methods, sponsored by RPD. *Chair:* J. L. François (*Univ Nacional Autónoma de México*)

Alleghany

8:30 a.m.

Determination of Reactivity for MUSE-4 SCO Configuration, Viktoriya V. Kulik, John C. Lee (*Univ of Michigan*), G. Aliberti, G. Imel, G. Palmiotti (*ANL*)

9:00 a.m.

Speedup of Monte Carlo k-Eigenvalue Calculations via p-CMFD Rebalance, Nam Zin Cho, Sunghwan Yun, Kyung Taek Lee, Gil Soo Lee (*KAIST*)

9:30 a.m.

Burnup-Dependent Rim-Effect Comparison of WG-MOX Fuel Pellet in ATR and PWR, Gray S. Chang, Robert C. Pedersen (*INEEL*)

10:00 a.m.

The Study of Rhodium Detector Life Extension by Analysis of the Detector Sensitivity, Jong S. Chung, Choon S. Yoo, T. Choi (*Korea Nuclear Fuel Co.*)

10:30 a.m.

Analysis of Ringhals 1 Stability Benchmark with TRACE/PARCS: Steady-State Initialization, J. Vedovi, K. Ivanov (*Penn State*), J. Gan, T. J. Downar (*Purdue Univ*), J. Staudenmier (*NRC*), invited

11:00 a.m.

Model for Transient and Stability Analysis of a BWR Core with Thorium-Uranium Fuel, A. Núñez-Carrera (*Univ Nacional Autónoma de México*), G. Espinosa-Paredes (*Univ Autónoma Metropolitana*), J. L. François (*Univ Nacional Autónoma de México*)

Computational Methods: General, sponsored by MCD. *Session Organizer:* Anil Prinja (*Univ of New Mexico*). *Chair:* Paul Wilson (*Univ of Wisconsin—Madison*)

Parlor E & F

8:30 a.m.

Monte Carlo Simulations of Patient X-Ray Images, Mark Winslow, X. George Xu (*RPI*), Walter Huda, Kent M. Ogden, Ernest M. Scalzetti (*SUNY Upstate Medical Univ*)

8:55 a.m.

Principal Component Analysis for Monte Carlo Criticality/Eigenvalue Calculations, Taro Ueki (*Univ of New Mexico*)

9:20 a.m.

Application of the Generalized Multigroup Method for a Continuous Gamma Spectrum Source, Ibrahim K. Attieh, Ronald E. Pevey (*Univ of Tennessee*)

9:45 a.m.

3-D Block Incomplete Preconditioner for the Primal and Mixed-Primal Finite Element Solvers of CRONOS-2, Jean C. Ragusa (*CEA*)

10:10 a.m.

Conditioning of the NIS Signals for Use in the SPDS and ERG Programs, Sergey S. Anikanov (*Westinghouse*)

10:35 a.m.

A Monte Carlo CT Model of the RANDO® Phantom, Brian Wang, X. George Xu (*RPI*), Chan-Hyeong Kim (*Hanyang Univ*)

11:00 a.m.

New MCNPX Capabilities, John S. Hendricks, Gregg W. McKinney, Laurie S. Waters (*LANL*), Franz X. Gallmeier (*ORNL*)

A Movement Toward Risk-Informed, Performance-Based Standards: A Shift in Philosophy—Panel, sponsored by OPD. *Chair:* Donald Eggett (*AES Corp*)

Sky

8:30 a.m.

Panelists:

- James Mallay (*Framatome*)
- Prasad Kadambi (*NRC*)
- Neil Brown (*LLNL*)
- Sheldon Trubatch (*Consultant*)
- Representative from the International Code Council: T/B/D

Thermal Hydraulics: General, sponsored by THD. *Session Organizer:* Martin Bertodano (*Purdue Univ*). *Co-chairs:* Karen Vierow (*Purdue Univ*), Kune Y. Suh (*Seoul Natl Univ*)

Conference Room A

8:30 a.m.

Thermal Evaluations of Advanced Fuel Cycle Irradiation of Metallic and Nitride Fuel, Richard G. Ambrosek, Debbie J. Utterbeck (*INEEL*)

9:00 a.m.

Air Test Facility for Simulation of Heat Transfer in Rod Bundles, D. W. Clayton, M. E. Conner (*Westinghouse*), M. V. Holloway, D. E. Beasley (*Clemson Univ*)

9:30 a.m.

On the Chen Saturated Convective Boiling Correlation, Y. Aounallah (*Paul Scherrer Inst*)

10:00 a.m.

Validation of COBRA-TF Critical Heat Flux Predictions for a Small Hydraulic Diameter Geometry Under Natural Boiling Conditions, Sule Ergun, Jason G. Williams, Lawrence E. Hochreiter (*Penn State*), Hergen Wiersema, Marcel Sloopman, Marek Stempniewicz (*NRC*)

Sessions by Day

10:30 a.m.

Turbulent Diffusivity Force for the Two-Fluid Model in the Cap Bubble Regime, Martin Lopez de Bertodano, Xiadong Sun, Mamoru Ishii (*Purdue Univ*), Asim Ulke (*Bechtel Bettis*)

11:00 a.m.

An Improved High-Re Number k-e Model for Heat Transfer Predictions in Liquid Metal Flows, Constantine P. Tzanos (*ANL*)

Education and Training: General, sponsored by ETD. *Session Organizer:* J. Wesley Hines (*Univ of Tennessee*). *Chair:* J. Wesley Hines

Conference Room D

8:30 a.m.

University-Industry Training—An Industry Perspective, Duncan Robinson, Larry Mayhue, Elliott Jackson (*Westinghouse*)

8:50 a.m.

Subcritical Reactor Experiments at the University of Cincinnati, Ned Xoubi, Shoaib Usman, G. Ivan Maldonado (*Univ of Cincinnati*)

9:10 a.m.

MANTIS: Teaching Reactor Physics Concepts with a Simple Monte Carlo Tool, Andrew T. Nelson, Paul P. H. Wilson, Gregory A. Moses (*Univ of Wisconsin-Madison*)

9:30 a.m.

A Regional Reactor Education and Research Concept, Joseph Kelley (*Westinghouse SRS*), Farzad Rahnema (*Georgia Tech*), M. R. Buckner (*Westinghouse SRS*)

Training, Human Performance, and Workforce Development, sponsored by ETD. *Session Organizer:* Jane LeClair (*Nine Mile Point Nuclear Station*). *Chair:* Jane LeClair

Conference Room D

9:55 a.m.

Monte Carlo Approach in Director MX for Distance Education Systems, Wenhsing Hsu, W. Dan Reece (*Texas A&M*)

10:15 a.m.

Incorporating Second Generation Human Reliability Analysis Methods into Current Probabilistic Safety Analysis, Man Cheol Kim, Poong Hyun Seong (*KAIST*)

10:35 a.m.

Training for Nuclear Power Plant Security Personnel—Application of a Graded Systematic Approach to Training, Kent W. Hamlin (*INPO*)

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

Hot Topics and Emerging Issues—Panel, sponsored by DDRD. *Session Organizer:* Joseph Carignan (*TLG svc*). *Chair:* Joseph Carignan

Frick

8:30 a.m.

Panelists:

- Decommissioning Regulatory Initiatives, Daniel Gillen (*NRC*)
- Decommissioning Policies, Strategies and Costs: An International Review by the OECD, Paul Woollam (*BNFL, Inc.*)
- Private Spent Fuel Storage—Issues and Status, John Parkyn (*Private Fuel Storage*)
- Decommissioning the Quehanna Facility, David J. Allard (*Pennsylvania Dept Environmental Protection*)
- RESRAD-MARSSIM: Bridging Dose Assessment with Field Surveillance, S. Y. Chen (*ANL*)
- Recent Innovations in the Rail Transportation of Low Level Radioactive Waste, Gene Gleason (*MHF Logistical Solutions*)

Isotopes and Radiation: General, sponsored by IRD. *Chair:* Leo Bobek (*Univ of Massachusetts Lowell*)

Phipps

8:30 a.m.

Generation and Characterization of Krypton and Argon Excimers from a Microwave Fluorescence Lamp, Michael Peck, Vanessa Velez, Tushar K. Ghosh, Mark A. Prelas (*Univ of Missouri-Columbia*)

9:00 a.m.

Conceptual Design of Nuclear Battery Using Semiconductor, Won Jun Chang, Soon Heung Chang (*KAIST*)

9:30 a.m.

Sensitivity of the Fixed Point Formulation to Density for Large Sample PGNA, Hatice Akkurt, James Paul Holloway (*Univ of Michigan*)

10:00 a.m.

Sensitivity of the Fixed Point Iteration to Neutron Source Spectrum for Large Sample PGNA, Hatice Akkurt, James Paul Holloway (*Univ of Michigan*)

10:30 a.m.

An Improved High Pressure Xenon Ambient Temperature Gamma-Ray Spectrometer, R. A. Sigg (*Westinghouse SRS*)

WEDNESDAY, JUNE 16, 2004 • 1:00 P.M.

Demonstration of Sensitivity and Uncertainty Analysis Tools and Methodology (TSUNAMI) Within SCALE5—II: Tutorial, sponsored by NCS. *Chair:* Sedat Coluoglu (*ORNL*)

Monongahela

1:00 p.m.

The use of TSUNAMI to determine areas of applicability of benchmarks will be demonstrated in two sessions in tutorial/demonstration format. TSUNAMI consists of several sensitivity and uncertainty analysis tools within SCALE5, which is planned to be publicly available by the summer of 2004. These tools allow analysis of critical experiments to assess applicability to the validation of a particular application through several integral parameters. The cross-section uncertainties are carried through the analysis and utilized in determining the applicability of benchmark experiments and assessing the penalty one must exert due to limited applicability of the existing critical experiments.

Integrated Risk-Informed Decision Making—Paper/Panel, sponsored by OPD. *Chair:* Mark Reinhart (*NRC*)

Alleghany

PAPER:

1:00 p.m.

Day-to-Day PRA Use at a Nuclear Power Plant, John F. Helfenberger (*Kewaunee NPP*)

PANEL DISCUSSION:

1:30 p.m.

Panelists:

- Mark Reinhart (*NRC*)
- Alan Hackerott (*OPPD*)
- Rick Grantom (*South Texas Nuclear Power Station*)
- John Helfenberger (*Kewaunee NPP*)

MCNP Validation, sponsored by RPSD. *Session Organizer:* Bernadette Kirk (*ORNL*). *Chair:* Bernadette Kirk

Parlor E & F

1:00 p.m.

Shielding Validation of MCNP5, Steven J. Nathan, Scott M. Lonchar (*WSMS*)

1:30 p.m.

Comparison of ENDF/B-VI and Preliminary ENDF/B-VII Results for the MCNP™ Criticality Validation Suite, Russell D. Mosteller (*LANL*)

2:00 p.m.

Comparison of MCNP5™ and Experimental Results on Neutron Shielding Effects for Materials, Daniel A. Torres, Russell D. Mosteller, Jeremy E. Sweezy (*LANL*)

JAVA Pros and Cons—Roundtable, sponsored by MCD. *Session Organizer:* Bernadette Kirk (*ORNL*). *Chair:* Bernadette Kirk

Parlor E & F

2:35 p.m.

This session will consist of panelists who have years of experience in JAVA programming. Discussion will center on the applicability of JAVA in scientific programming for nuclear applications, with emphasis on user interfaces.

Panelists:

- Ali Nouri (*OECD Nuclear Agency*)
- Terry Gitnick (*Information System Labs Inc.*)
- Douglas Peplow (*ORNL*)

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

Current Issues in LWR Nuclear Fuel Performance and Reliability–Panel, sponsored by RPD. *Session Organizer:* Ivan Maldonado (*Univ of Cincinnati*). *Chair:* Ivan Maldonado

Sky

1:00 p.m.

Panelists:

- Paul G. Edelmann (*Constellation Energy Group*)
- Ed Price (*Duke Energy*)
- Olga Correal-Pulver (*Westinghouse Electric*)
- Roger Reynolds (*Framatome*)
- John Schardt (*General Electric Company/Global Nuclear Fuel, LLC*)
- Bill Pearce (*First Energy Nuclear Operating Company*)

Other panelists to be determined.

Risk Communications, sponsored by HFD. All invited. *Chair:* J. J. Persensky (*NRC*)

Sky

2:35 p.m.

The NRC's External Risk Communication Guidelines, Shana R. Browde, Autumn Szabo, J. J. Persensky (*NRC*)

3:00 p.m.

Overview of Effective Risk Communication Principles and Practices for Application at the U.S. Nuclear Regulatory Commission, Leila K. Peterson (*WPI*)

3:25 p.m.

Internal Risk Communication Solutions at the United States Nuclear Regulatory Commission, Autumn J. Szabo (*NRC*)

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

Thermal-Hydraulics Experimentation, sponsored by THD. *Session Organizer:* Martin Bertodano (*Purdue Univ*). *Cochairs:* Yassin A. Hassan (*Texas A&M*), Fan-Bill Cheung (*Penn State*)

Conference Room A

1:00 p.m.

Flow Structure in a Two-Phase Planar Jet, Sung Won Choi, Shilp Vasavada, Seungjin Kim, Xiaodong Sun, Mamoru Ishii (*Purdue Univ*), Stephen G. Beus (*Bechtel Bettis*)

1:30 p.m.

Two-Phase Level Swell, Interfacial Drag Experiments in The Pennsylvania State University/U.S. Nuclear Regulatory Commission Rod Bundle Heat Transfer Facility, D. J. Miller, L. E. Hochreiter, F.-B. Cheung (*Penn State*), B. R. Lowery, T. F. Lin (*Applied Research Lab*), G. S. Rhee, S. M. Bajorek, J. E. Kelly (*NRC*)

2:00 p.m.

Correlation Modification in a Channel Flow by Microbubbles Injection, Claudia del C. Gutierrez-Torres, Yassin A. Hassan, Ling Zhen, Jose A. Jimenez Bernal (*Texas A&M*)

2:30 p.m.

Bubbly Flow Behavior Near Wall-Region of a Channel Flow, Jose A. Jimenez-Bernal, Yassin A. Hassan, Claudia del C. Gutierrez-Torres, Elvis Domingue-Ontiveros (*Texas A&M*)

New Opportunities for Cost Savings at Nuclear Power Plants, sponsored by OPD. *Session Organizer:* William Burchill (*Texas A&M*). *Chair:* William Burchill

Conference Room D

1:00 p.m.

Mockup Testing for Spent Fuel Storage Canister Accelerating Vacuum Drying, P. J. Babel, L. Harvey, M. L. Murphy, A. T. Vieira (*Bechtel Pwr*)

1:20 p.m.

Economic Viability of Nuclear Power Co-Generation with Hydrogen, Mark Anderson, Michael Corradini (*Univ of Wisconsin–Madison*), Rosa M. Bilbao y León (*Dominion Generation*)

1:40 p.m.

Near-Surface Alloying of Neutron Absorbing Elements into Zirconium-Alloy Fuel Clad Material, K. Sridharan (*Univ of Wisconsin–Madison*), T. J. Renk (*SNL*), S. P. Harrington (*Univ of Wisconsin–Madison*), E. J. Lahoda, R. J. Comstock (*Westinghouse Science and Technology*), M. L. Corradini (*Univ of Wisconsin–Madison*)

Fuels and Materials Performance, sponsored by MSTD; cosponsored by OPD. *Chair:* Robert Hanrahan (*LANL*)

Conference Room D

2:35 p.m.

Mechanistic Understanding of Primary Water Stress Corrosion Cracking of Alloy 600 in PWR Water, Ji Hyun Kim, Il Soon Hwang (*Seoul Natl Univ*)

2:55 p.m.

Development of Intraspecimen Method for the Application to Life Prediction, Hoi Su Choi, Ji Hyun Kim, Il Soon Hwang (*Seoul Natl Univ*)

3:15 p.m.

Assessment of the DUPIC Fuel Performance for the In-Core Fuel Management Strategy, Hangbok Choi, Ho Jin Ryu (*KAERI*)

3:35 p.m.

Investigation of Trace Hydrogen Uptake in Lithium-Ion Battery Using Prompt Gamma Activation Analysis, S. K. Aghara, S. Venkatraman, A. Manthiram (*Univ of Texas–Austin*)

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

Regulatory Interfaces–Panel, sponsored by DDRD. *Session Organizer:* Tracy Goble (*Consumers Energy*). *Chair:* Lynne Goodman (*Detroit Edison*)

Frick

1:00 p.m.

Panelists:

- Quehana and NARM Cleanup, David Allard (*Pennsylvania Dept Environmental Protection*)
- Differing Regulatory Criteria for Groundwater Contamination, Richard McGrath (*Connecticut Yankee*)
- Nonradiological Environmental Site Cleanups, Sam Harper (*Pennsylvania Dept Environmental Protection*)
- Decommissioning Estimate for the Michigan Public Service Commission, William Trubilowicz (*Big Rock Point Restoration Project*)
- Environmental Regulatory Interfaces During Decommissioning at Maine Yankee, Stephen Evans (*Maine Yankee*)

Safety Hazard Experience in Design and Construction of Nonreactor Nuclear Facilities, sponsored by NISD. *Session Organizer:* Herbert Massie (*DNFSB*). *Chair:* William Yencavich (*DNFSB*)

Phipps

1:00 p.m.

Safety Integration of Fire Protection and Earthquake Resistance for Building Ventilation for the Pit Disassembly and Conversion Facility, Herb Massie, Bill Shields, Roger Zavadoski (*DNFSB*)

1:30 p.m.

Design of Structures, Systems, and Components for External Hazards DOE Nuclear Weapons Complex, Paul C. Rizzo, Nish Vaidya (*Paul C. Rizzo Assoc*)

2:00 p.m.

Integrated Safety Management Principles in Construction of the Tritium Extraction Facility, Michael O. Hickman, Clay H. Ramsey, Robert P. Goehle (*DOE*)

2:30 p.m.

Testing the PCSA Tool for a Pre-Closure Safety Analysis of a Potential Yucca Mountain Repository, Anthony C. Ebaugh, David M. Dancer, Tae M. Ahn (*NRC*)

Sessions by Day

Thursday • June 17, 2004

7:30 A.M. – 10:00 A.M.	MEETING REGISTRATION
8:00 A.M. - NOON	ICAPP TECHNICAL SESSIONS (see page 38)
8:30 A.M. - 11:30 A.M.	NATIONAL MEETING TECHNICAL SESSIONS <ul style="list-style-type: none">• Nuclear Criticality Safety Standards–Forum• Reactor Physics: General• Research by U.S. Department of Energy–Sponsored Students• Advanced Nuclear Energy Systems: Policy Issues–Panel• Thermal Hydraulics of the Next Generation of Nuclear Reactors• Nuclear Installations Safety: General• Reactor Pressure Boundary Penetration Degradation–Panel• Early Site Permitting–Panel
8:30 A.M. - 1:45 P.M.	TECHNICAL TOUR U.S. Tool & Die, Inc.

THURSDAY, JUNE 17, 2004 • 8:30 A.M.

Nuclear Criticality Safety Standards–Forum, sponsored by NCSD.
Chair: Thomas McLaughlin (LANL)

Monongahela
8:30 a.m.

Reactor Physics: General, sponsored by RPD. *Chair:* Scott Thomas (Duke Energy)

Alleghany
8:30 a.m.

Coolant Void Reactivity Analysis of CANDU and ACR-700 Lattices, C. A. Cotton, D. Lee, T. J. Downar (Purdue Univ)

9:00 a.m.

LWR Lattice Physics Model for Equilibrium Fuel Cycle Analysis, Reuben T. Sorensen, John C. Lee (Univ of Michigan)

9:30 a.m.

Equilibrium Core Loading Pattern Generation System Using FINELOAD-3, Takashi Yoshii, Suetsugu Jagawa (TEPCO)

10:00 a.m.

A Sensitivity Analysis for the Environmental Effect of the DUPIC Fuel Cycle, Chang Joon Jeong, Hangbok Choi (KAERI), A. M. Yacout (ANL)

10:30 a.m.

Genetic Algorithm Development for In-Core Fuel Management, Fatih Alim, Kostadin Ivanov (Penn State)

11:00 a.m.

IRIS Pressurizer Design Studies, Emilian Popov, Graydon Yoder (ORNL), Luca Oriani, Larry Conway (Westinghouse Electric), invited

Research by U.S. Department of Energy–Sponsored Students, sponsored by ETD. *Session Organizer:* Brian Hajek (Ohio State). *Chair:* J. W. Hines (Univ of Tennessee, Knoxville)

Parlor E & F

8:30 a.m.

A Combined Tissue Kinetics and Dosimetric Model of an Airway, N. G. Ostrovskaya, J. R. Ford (Texas A&M), invited

9:00 a.m.

A Model Based Probabilistic Scheme for Flux/Power Shape Construction from Monitored Data, Mihaela Biro, Tunc Aldemir (Ohio State)

9:30 a.m.

Boron Concentration Fields Around a Vapor Bubble During Sub-Cooled Boiling in Boric Acid Solution, Qinyang Rao, Barclay G. Jones (Univ of Illinois)

10:00 a.m.

Feature Extraction from Lamb Wave Signals for Structural Flaw Classification, B. Lu, B. R. Upadhyaya, J. W. Hines (Univ of Tennessee, Knoxville)

10:30 a.m.

An Experimental Investigation of Hypervapotron Effect in Subcooled Boiling, Peipei Chen, Barclay G. Jones (Univ of Illinois)

11:00 a.m.

Novel X-Ray Imaging Opportunities for the RPI Linear Accelerator's Tunable, Quasi-Monochromatic X-Ray Source, B. Sones, Y. Danon, R. Block (RPI)

Advanced Nuclear Energy Systems: Policy Issues–Panel, sponsored by OPD, in collaboration with the North American Young Generation in Nuclear. *Session Organizer:* Jean-Marie LeCorre (Westinghouse). *Chair:* Jean-Marie LeCorre

Conference Room A

8:30 a.m.

Panelists:

- Tom Miller (DOE)
- Rob M. Versluis (DOE)
- Richard N. Smith (NEI)
- Kenan ünü (Penn State)
- Michael Scott (NRC)

Thermal Hydraulics of the Next Generation of Nuclear Reactors, sponsored by THD. *Session Organizer:* Martin Bertodano (Purdue Univ). *Cochairs:* Chang Oh (INEEL), Kune Y. Suh (Seoul Natl Univ)

Conference Room D

8:30 a.m.

Addition of Diffusion Model to MELCOR and Comparison with Data, B. J. Merrill, R. L. Moore, C. H. Oh (INEEL)

9:00 a.m.

Experimental Investigation of Mixed Convection in Large Passive Containment Volumes, Fenglei Niu, Haihua Zhao, Per F. Peterson (Univ of California, Berkeley)

9:30 a.m.

Advanced Computational Thermal Studies and Their Assessment for Supercritical Reactors, D. M. McEligot (INEEL), J. Y. Yoo, J. S. Lee (SNU), L. E. Hochreiter (Penn State), J. D. Jackson (Univ of Manchester), S. O. Park (KAIST), R. H. Pletcher (Iowa State), P. Vukoslavcevic, J. M. Wallace (Univ of Maryland)

10:00 a.m.

Key Thermal-Hydraulic Issues Associated with Gen IV Supercritical Water Reactor Development, Mark Anderson, Rachna Jain, Jeremy Licht, Guillaume Mignot, Kyoungwoo Seo, Michael Corradini (Univ of Wisconsin–Madison), invited

10:30 a.m.

Scaling of HELIOS Loop for Natural Circulation of Pb-Bi, Il S. Lee, Seung H. Jeong, Kune Y. Suh (Seoul Natl Univ)

11:00 a.m.

Convective Heat Transfer to Gas Mixtures for GFR Applications, Donald M. McEligot (INEEL), Maynard F. Taylor (Univ of Arizona) (Deceased)

Nuclear Installations Safety: General, sponsored by NISD. *Session Organizer:* Herbert Massie (DNFSB). *Chair:* Dana Powers (SNL)

Phipps

8:30 a.m.

Implementation of Methodology for Final Hazard Categorization of a DOE Nuclear Facility, Kevin R. O’Kula (Washington SMS), Jerry Hansen (Westinghouse SRC)

9:00 a.m.

Trial Application of a Peer Review Process for ASME PRA Standard, David J. Finnicum, Barry D. Sloane (Westinghouse), Michelle Carr (SCE)

9:30 a.m.

Compact Components for Cost-Effective Retrofitting, Winfried Reinsch (DYNAC Systems), Konstantin I. Soplentkov (VNIIAES)

10:00 a.m.

Hanford RPP-WTP Evaporator System Failure Modes and Effects Analysis, Stanley H. Levinson, Stephen M. Mazurkiewicz, Dennis G. Newton (Framatome ANP)

10:30 a.m.

A Modified Technique for Crack Formation on Steam Generator Tubing, Tae Hyun Lee, Young Jin Oh, Il Soon Hwang (*Seoul Natl Univ*), Han Sub Chung (*KEPRI*), Jang Yul Park (*ANL*)

11:00 a.m.

Development of Integrated Monitoring System for FAC Monitoring, Na Young Lee, Seung Gi Lee, Il Soon Hwang (*Seoul Natl Univ*), Jung Taek Kim (*KAERI*), Vincent K. Luk (*SNL*)

Reactor Pressure Boundary Penetration Degradation–Panel, sponsored by MSTD, in collaboration with the North American Young Generation in Nuclear. *Session Organizers:* Todd Allen (*Univ of Wisconsin*), Jean-Marie LeCorre (*Westinghouse*). *Chair:* Todd Allen

Frick

8:30 a.m.

Panelists:

- Steve Doctor (*PNNL*)
- Brian Sheron (*NRC*)
- John Grabnar (*FENOC*)
- Steve Fyfitch (*AREVA*)

Early Site Permitting–Panel, sponsored by NISD. *Session Organizer:* Anthony Barrata (*NRC*). *Chair:* William Burchill (*Texas A&M*)

Sky

8:30 a.m.

Panelists:

- Michael Scott (*NRC*)
- Kenneth Hughey (*Entergy*)
- Thomas Mundy (*Exelon*)
- Russ Bell (*NEI*)
- Joseph Hegner (*Dominion Energy*)
- B. P. Singh (*DOE*)

ICAPP 2004

Condensed Meeting Schedule -
will go on these 2 pages, soon!



ICAPP 2004

EMBEDDED TOPICAL MEETING:

2004 International Congress on Advances in Nuclear Power Plants (ICAPP 2004)

William Bohlke
Exelon-USA
HONORARY CHAIR



Joong-Jae Lee
KHNP-Korea
HONORARY CHAIR



F. Martínez Córcoles
Iberdrola-Spain
HONORARY CHAIR



Takuya Hattori
TEPCO-Japan
HONORARY CHAIR



Bernard Roche
EdF-France
HONORARY CHAIR



Bertrand Barré
Areva-France
GENERAL CHAIR



Ma Teresa Domínguez
EA-Spain
GENERAL CHAIR



Un-Chul Lee
KNS-Korea
GENERAL CHAIR



Yutaka Nakahara
Mitsubishi Heavy Ind.-Japan
GENERAL CHAIR



Atam Rao
GE Nuclear Energy-USA
GENERAL CHAIR



Michael Fütterer
JRC Petten-The Netherlands
TECHNICAL PROGRAM CHAIR



Dominique Greneche
COGEMA-France
TECHNICAL PROGRAM CHAIR



Pavel Hejzlar
MIT-USA
TECHNICAL PROGRAM CHAIR



Sun-Koo Kang
KOPEC-Korea
TECHNICAL PROGRAM CHAIR



Humberto Marta
W/BNFL-Spain
TECHNICAL PROGRAM CHAIR



Yoshiaki Oka
Univ of Tokyo-Japan
TECHNICAL PROGRAM CHAIR



Co-Sponsors of the 2004 International Congress on Advances in Nuclear Power Plants (ICAPP 2004):

Sociedad Nuclear Española (SNE), Société Française d'Énergie Nucléaire (SFEN), Atomic Energy Society of Japan (AESJ), Korean Nuclear Society (KNS) and OECD Nuclear Energy Agency

EMBEDDED TOPICAL MEETING:

2004 International Congress on Advances in Nuclear Power Plants (ICAPP 2004)

Monday • June 14, 2004

7:30 A.M. - 5:00 P.M.	MEETING REGISTRATION
8:00 A.M. - 10:00 A.M.	SPOUSE/GUEST HOSPITALITY BREAKFAST
8:30 A.M. - 11:30 A.M.	NATIONAL MEETING: OPENING PLENARY (see pg. 15)
9:30 A.M. - 1:30 P.M.	SPOUSE/GUEST TOUR "Molly's Trolleys"
11:30 A.M. - 1:00 P.M.	OPERATIONS & POWER DIVISION LUNCHEON DDR AND FCWM DIVISIONS LUNCHEON
1:00 P.M. - 2:30 P.M.	ICAPP '04 TECHNICAL SESSIONS • Improving Performance and Reducing O&M Costs • Nuclear Thermal Propulsion Concepts • Integral Systems Thermal Hydraulic Experiments • In-Vessel Retention—I • Innovations in Core Designs (1:00 p.m. - 3:00 p.m.) • Advances in Two-Phase Flow & Heat Transfer—I • HTR Fuels and Materials • Materials' Issues for Next Generation Plants
1:00 P.M. - 4:00 P.M.	NATIONAL MEETING TECHNICAL SESSIONS (see pg. 15)
2:30 P.M. - 4:00 P.M.	ICAPP '04 TECHNICAL SESSIONS • AP1000 • Non-classical Reactor Concepts • Information Technology Effect on Plant Operation • In-Vessel Retention—II • Advances in Two-Phase Flow & Heat Transfer—II • Innovative HTRs and Fuel Cycles • Structural and Materials Modeling and Analysis
4:00 P.M. - 5:00 P.M.	ANS BUSINESS MEETING
4:00 P.M. - 6:00 P.M.	ICAPP '04 PLENARY SESSION #1: "Managing the Present to Secure the Future"
6:15 P.M. - 10:00 P.M.	EVENING EVENT Reception at Heinz Field & Fireworks

MONDAY, JUNE 14, 2004 • 1:00 P.M. - 2:30 P.M.

Improving Performance and Reducing O&M Costs, Session Organizer and Chair: Donna Skay (US NRC-USA)

Oakmont (First Floor)

1:00 p.m.

Nuclear Plant Life Cycle Cost Analysis Considerations, S.C. Hall (Data Systems & Solutions-USA)

1:30 p.m.

Development of Permanent Reactor Cavity Seal Assembly for Operating Nuclear Power Plants, J.K. Hwang, I.Y. Kim, T.S. Choi (KOPECC-Korea)

2:00 p.m.

Delivering on Equipment Reliability Industry Goals, M.K. Coveney, H. Bailey (Data Systems & Solutions-USA), W. Parkinson (EPRI-USA)

Nuclear Thermal Propulsion Concepts, Session Organizer: Harold Gerrish (NASA/MSFC-USA); Co-Chairs: Harold Gerrish, Ron Porter (NASA/MSFC-USA)

Shadyside (First Floor)

1:00 p.m.

An Overview of Rover/NERVA Programs & Technical Accomplishments, S. Gunn (Consultant-USA)

1:20 p.m.

Evaluation of Cermet Fuels Test Data, S. Anghaie (Univ of Florida-USA), P. Harris (Harris Engineering-USA)

1:40 p.m.

Nuclear Thermal Propulsion Research, H. Gerrish (NASA MSFC-USA)

2:00 p.m.

CERMET Fuel Base Nuclear Thermal and Bimodal Systems, C.R. Joyner (Pratt & Whitney-USA)

• **Integral Systems Thermal Hydraulic Experiments**, Session Organizer and Chair: Seung-J. Oh (KHNP-Korea)

Panel/Oval (Mezzanine Level)

1:00 p.m.

Filmwise Condensation in the Presence of Non-Condensable Gases in the TOSQAN Vessel, J. Malet, E. Porcheron, P. Cornet, J. Vendel (IRSN-France)

1:30 p.m.

Experiments on the Heat Transfer and Natural Circulation Characteristics of the Passive Residual Heat Removal System for the Advanced Integral Type Reactor, H.S. Park, K.Y. Choi, S. Cho, C.K. Park, S.J. Lee, C.H. Song, M.K. Chung (KAERI-Korea), U.C. Lee (Seoul National Univ-Korea)

2:00 p.m.

Evaluation of the Scaling of the APEX-1000 Test Facility to AP1000 for Design Basis Events, R.F. Wright, A. Gagnon (Westinghouse-USA), J. Skinner, J. Groome (Oregon State Univ-USA)

In-Vessel Retention—I, Session Organizers and Co-Chairs: James H. Scobel (Westinghouse-USA), Sebastien Bachere (EDF-France)

Grant Suite (Mezzanine Level)

1:00 p.m.

Natural Convection in a Stable Multi Layer Stratified Melt Pool with Volumetric Heat Generation, B.R. Sehgal (Royal Institute of Technology-Sweden)

1:20 p.m.

In-Vessel Melt Coolability, B.R. Sehgal, A. Giri, U. Chikkanagoudar, A. Karbojian (Royal Institute of Technology-Sweden)

1:40 p.m.

Two-Phase Natural Circulation Flow in AP1000 In-Vessel Retention-Related ULPU-V Facility Experiments, T.N. Dinh, J.P. Tu, T.G. Theofanous (UC Santa Barbara-USA)

2:00 p.m.

Design and Evaluation of an Enhanced In-Vessel Core Catcher, K.G. Condie, J.L. Rempe, D.L. Knudson (INEEL-USA), K.Y. Suh (Seoul National Univ-Korea), F.B. Cheung (Penn State Univ-USA), S.B. Kim (KAERI-Korea)

Innovations in Core Designs (1:00 P.M. -3:00 P.M.), Session Organizer and Chair: Bojan Petrovic (Westinghouse-USA)

William Penn (William Penn Level)

1:00 p.m.

Effects of Burnup and Temperature Distributions to CANDLE Burnup of Block-Type High Temperature Gas Cooled Reactor, Y. Ohoka, H. Sekimoto (Tokyo Inst of Tech-Japan)

1:20 p.m.

A New Concept of Sodium Cooled Metal Fuel Core for High Core Outlet Temperature, K. Sugino, T. Mizuno (JNC-Japan)

1:40 p.m.

An Integrated Marine Propulsion System Utilizing TRIGA Fuel, G. Manach, J.P. Monnez (Ecole des Applications Militaires de l'Energie Atomique-France), M.J. Freeman, A. Newell, J.M. Brushwood, A. Thompson, C. Collins, N. Scholes, P.J. Hamilton, P.A. Beeley (HMS SULTAN-UK)

2:00 p.m.

Study on Internal Gap Lattice for Future BWR Fuel, M. Kuroki, K. Hiraiwa, Y. Yamamoto (Toshiba-Japan), H. Okada (TEPCO-Japan)

2:20 p.m.

MP98, An Innovative Reactivity Control System for LWR Tests Results on Prototype, M. Emin (MP98-France)

2:40 p.m.

Burn-up Analysis and Determination of Equilibrium Core Configuration for Tehran Research Reactor at 7.5 MW Power Level, E. Afshar, A. Shahidi, M. Zaker (AEOL-Iran)

Advances in Two-Phase Flow & Heat Transfer—I, Session Organizer and Chair: Pradip Saha (MIT-USA)

Three Rivers (William Penn Level)

1:00 p.m.

Full-field Velocity Correlation Coefficient of Turbulent Boundary Layer Flow with Microbubble Injection, C. del C. Gutierrez Torres, Y.A. Hassan, J.A. Jimenez-Bernal (Texas A&M Univ-USA)

1:20 p.m.

Drag Reduction Study by Wavelet Analysis of Differential Pressure Signals in Turbulent Flow, L. Zhen, Y.A. Hassan, D.O. Elvis (Texas A&M Univ-USA)

1:40 p.m.

Boiling Heat Transfer Performance and Phenomena of Al₂O₃-water Nanofluids from a Plain Surface in a Pool, I.C. Bang, S.H. Chang (KAIST-Korea)

2:00 p.m.

Wire-Mesh Tomography Measurements of Void Fraction in Rectangular Bubble Columns, B.N Reddy Vanga (Purdue Univ-USA), A. Zaruba, H.M. Prasser, E. Krepper (FZR-Germany), M.A Lopez de Bertodano (Purdue Univ-USA)

HTR Fuels and Materials, Session Organizer: Michael A. Fütterer (URC Petten-The Netherlands), Co-Chairs: Michael A. Fütterer (URC Petten-The Netherlands), Dominique Greneche (COGEMA-France)

Sternwheeler (William Penn Level)

1:00 p.m.

High Temperature Materials – Challenge for Future Advanced Gas Cooled Reactors, W. Hoffelner (PSI-Switzerland)

1:20 p.m.

Differences between the Oxidation Behaviour of A3 Fuel Element Matrix Graphites in Air and in Steam, K. Kühn, H.K. Hinssen, R. Moormann (FZJ-Germany)

1:40 p.m.

Effects of HTGR Core Transient Behaviour upon the Primary Recuperator, C.J. Grady, S.J. Dewson (Heatric-England)

2:00 p.m.

Advances in Automated QA/QC for TRISO Fuel Particle Production, R.L. Hockey, L.J. Bond, C.R. Batishko (PNNL-USA), J.N. Gray (Iowa State Univ-USA), J.J. Saurwein (General Atomics-USA), R.A. Lowden (ORNL-USA)

Materials' Issues for Next Generation Plants, Session Organizers: K. K. Panahi (GE Nuclear Energy-USA), Tae Eun Jin (KOPEC-Korea), Co-Chairs: Tae Eun Jin (KOPEC-Korea), Ram Srinivasan (BNFL Fuel Solutions-USA)

Riverboat (William Penn Level)

1:00 p.m.

Effects of Ce, Y and Mo Addition on Stress Accelerated Oxidation of Austenitic Stainless Steel in Oxygenated High Temperature Water, S. Wang, N. Kawaguchi, T. Shoji (Tohoku Univ-Japan)

1:20 p.m.

Microstructural Softening Creep of Cr-Mo Ferritic/Martensitic Steels, W.S. Ryu, S.H. Kim, B.J. Song, C.H. Chang (KAERI-Korea)

1:40 p.m.

Effect of Surface Roughness of Steels on Oxide Layer Formation in a Liquid Lead-bismuth Flow, M. Kondo, M. Takahashi, S. Yoshida, N. Sawada (Tokyo Inst of Tech-Japan)

2:00 p.m.

R&D of Oxide Dispersion Strengthening Steels for High Burn-up Fuel Claddings, A. Kimura, H.S. Cho, J.S. Lee, R. Kasada (IAE, Kyoto Univ-Japan), S. Ukai (JNC-Japan), M. Fujiwara (Kobelco-Japan)

MONDAY, JUNE 14, 2004 • 2:30 P.M. – 4:00 P.M.

AP1000, Session Organizers and Co-Chairs: James Winters (Westinghouse-USA), Gianfranco Saiu (Ansaldo-Italy)

Oakmont (First Floor)

2:30 p.m.

AP1000 Application Status, E. Cummins (Westinghouse-USA)

2:50 p.m.

AP1000 Design and Construction Integration, J.W. Winters, J.A. Clelland (Westinghouse-USA)

3:10 p.m.

Risk Informing PRA Success Criteria: Application to AP1000, S. Sancaktar, T. Schulz (Westinghouse-USA)

3:30 p.m.

AP1000 Features Prevent Potential Containment Recirculation Screen Plugging, T.S. Andreycheck, R.G. Anderson, T.S. Schulz (Westinghouse-USA)

3:50 p.m.

AP1000 Design Basis Event Simulation at the APEX-1000 Test Facility, R.F. Wright (Westinghouse-USA), J. Groome (Oregon State Univ-USA)

Non-classical Reactor Concepts, Session Organizer and Chair: Samim Anghale (Univ of Florida-USA)

Shadyside (First Floor)

2:30 p.m.

An Advanced Molten-Salt Reactor Using High-Temperature Reactor Technology, C.W. Forsberg (ORNL-USA), P.F. Peterson, H. Shao (UC Berkeley-USA)

2:50 p.m.

Production of Excess Heat Power on the Basis of Low Energy Nuclear Reactions (LERN) in the Solid Medium, A.B. Karabut (FSUE LUCH-Russia)

3:10 p.m.

ADS-Demo Fuel Rod Performance: Multivariate Statistical Analysis, F. Vettrano, R. Calabrese (ENEA-Italy), L. LUZZI (Politecnico di Milano-Italy)

3:30 p.m.

Transient Xenon Effect on Plant Control in MSRs - Validation of Simulation Model, K. Suzuki, Y. Shimazu (Hokkaido Univ-Japan)

Information Technology Effect on Plant Operation, Session Organizer:

Won Young Yun (KINS-Korea), Co-Chairs: Won Young Yun (KINS-Korea), Joel Woodcock (Westinghouse-USA)

Panel/Oval (Mezzanine Level)

2:30 p.m.

POWRTRAK for Information and Configuration Management, P.P. Majerle (Black & Veatch-USA)

2:50 p.m.

Failure Data Analysis of Electronic Modules in Operating Nuclear Power Plants, W.Y. Yun, C.S. Goo, B.R. Kim (KINS-Korea)

3:10 p.m.

Development of an Advanced Alarm System for SMART, G.S. Jang, S.M. Suh, J.B. Lee, G.O. Park, I.S. Koo, D.H. Seoung (KAERI-Korea)

3:30 p.m.

Real Time Water Quality and Inventory Measurements Trough Satellite Imagery, P. Duggan (IC Technologies-USA), J. Kotowski (Exelon-USA)

In-Vessel Retention—II, Session Organizers and Co-Chairs: James H. Scobel (Westinghouse-USA), Sebastien Bachere (EDF-France)

Grant Suite (Mezzanine Level)

2:30 p.m.

Enhancement of Corium Coolability with CRGTs in the Lower Head of a BWR, B.R. Sehgal, A. Jasiulevicius, M.J. Konovallkhin (Royal Institute of Technology-Sweden)

2:50 p.m.

Analysis of In-Vessel Retention and Likelihood of Lower Head Failure, H. Esmaili, M. Khatib-Rahbar (Energy Research-USA)

3:10 p.m.

CHF Enhancement by Vessel Coating for External Reactor Vessel Cooling, J. Yang, M.B. Dizon, F.B. Cheung (Penn State Univ-USA), J.L. Rempe (INEL-USA), K.Y. Suh (Seoul National Univ-Korea), S.B. Kim (KAERI-Korea)

3:30 p.m.

Thermal and Metallurgical Response of the In-Vessel Core Catcher According to the Gap Size with the Lower Head Vessel, K.H. Kang, R.J. Park, W.S. Ryu, S.B. Kim (KAERI-Korea), K.Y. Suh (Seoul National Univ-Korea), F.B. Cheung (Penn State Univ-USA), J.L. Rempe (INEL-USA)

Advances in Two-Phase Flow & Heat Transfer—II, Session Organizer and Chair: Pradip Saha (MIT-USA)

Three Rivers (William Penn Level)

2:30 p.m.

Experimental Investigation of Steam Condensation in a Horizontal Tube in the Presence of Noncondensable Gas, T. Wu (Purdue Univ-USA), H. Tokuma (TEPCO-Japan), K. Vierow (Purdue Univ-USA)

2:50 p.m.

Boiling Suppression in Convective Flow, Y. Aounallah (PSI-Switzerland)

3:10 p.m.

Analysis of Two-phase Flows Models with Two Momentum Equations, A.E. Kroshilin, V.E. Kroshilin (VNIIAES-Russia), P. Kohut (BNL-USA)

3:30 p.m.

Computational Analysis of Splash Occurring in the Deposition Process in Annular-Mist Flow, H. Xie, S. Koshizuka, Y. Oka (Univ of Tokyo-Japan)

Innovative HTRs and Fuel Cycles, Session Organizer: Michael A. Fütterer (JRC Petten-The Netherlands), Co-Chairs: Michael A. Fütterer (JRC Petten-The Netherlands), Dominique Greneche (COGEMA-France)

Sternwheeler (William Penn Level)

2:30 p.m.

Advanced Gas Cooled Fast Reactor Preliminary Design - 300 MWE Project Status and Trends for a Higher Unit Power Selection, C. Poette, J.C. Garnier, A. Conti, J.C. Bosq, B. Mathieu, J.P. Gaillard, C. Bassi (CEA/Cadarache-France)

2:50 p.m.

Enhancing the Sustainability of Nuclear Power: The Pebble Bed HTR in Deep Burn Mode, D.F. da Cruz, J.B.M. de Haas, A.I. van Heek (NRC-The Netherlands)

3:10 p.m.

The Reprocessing Issue for HTR Spent Fuel, D. Greneche (COGEMA-France), P. Brossard (CEA-France)

3:30 p.m.

GAS-PASS/H: A Simulation Code for Gas Reactor Plant Systems, U. Mertuyrek (Texas A&M Univ-USA), R. Vilim, J.E. Cahalan (Argonne-USA)

Structural and Materials Modeling and Analysis, Session Organizers: Korukonda L. Murty (N.C. State Univ-USA), Tetsuo Shoji (Tohoku Univ-Japan); Co-Chairs: J. Yan (N.C. State Univ-USA), Tetsuo Shoji (Tohoku Univ-Japan)

Riverboat (William Penn Level)

2:30 p.m.

Seismic Analysis of UGS in SMART-P Considering Contained Water Effect. Y.S. Cho, J.Y. Park, O.S. Kim (DOOSAN-Korea)

2:50 p.m.

Computational Chemistry Study on Accelerated Oxidation Mechanism of IGSCC of Structural Materials in LWR Environments and Theoretical Design of SCC Resistant Alloys, K. Suzuki, Y. Takeda, Z. Lu, T. Shoji (Tohoku Univ-Japan)

3:10 p.m.

Stress Corrosion Cracking Mechanisms of 316 Stainless Steels in Sub-Critical Liquid Water and Supercritical Water from a -Dielectric Constant of Water- Point of View, H. Abe, Y. Watanabe, K. Sue (Tohoku Univ-Japan)

3:30 p.m.

A Thermo-Mechanical Analysis for Nozzle Header on Once-Through Steam Generator Designed for an Integral Reactor, Y. W. Kim, D.O. Kim, J.S. Lee, J.I. Kim, S.Q. Zee (KAERI-Korea)

MONDAY JUNE 14, 2004 • 4:00 P.M. – 6:00 P.M.

ICAPP '04 Opening Plenary: Managing the Present to Secure the Future, Chair: Harold Ray (Former ANS President, Southern California Edison-USA)

William Penn (William Penn Level)

Speakers:

- Marvin Fertel (NEI-USA)
- Joong-Jae Lee (KHNP-Korea)
- Peter Lyons (US Senate Staff-USA)
- Bernard Roche (EDF-France)
- Hideaki Suzuki (JAPC-Japan)
- Andy White (GE Nuclear-USA)

Tuesday • June 15, 2004

7:30 A.M. – 5:00 P.M.	MEETING REGISTRATION
8:00 A.M. - 10:00 A.M.	SPOUSE/GUEST HOSPITALITY BREAKFAST
8:00 A.M. - 10:00 A.M.	ICAPP PLENARY #2: "The Next Steps to the Nuclear Renaissance"
8:30 A.M. - 11:30 A.M.	NATIONAL MEETING TECHNICAL SESSIONS (see pg. 16)
9:30 A.M. - 2:30 P.M.	SPOUSE/GUEST TOUR "Carnegie Museum of Natural History"
10:00 A.M. - 11:30 A.M.	ICAPP TECHNICAL SESSIONS • Test and Design Methods • Advances in CHF and Rod Bundle Thermal Hydraulics • Advances in Severe Accident Analysis • Development and Application of Severe Accident Analysis Code • Status of All New Water-Cooled Reactor Programs • Thermal Stripping and Thermal Stratification Studies • Very High Temperature Reactors—I • Nuclear Energy Sustainability and Desalination
11:30 A.M. - 1:00 P.M.	ANS HONORS AND AWARDS LUNCHEON
1:00 P.M. - 2:30 P.M.	ICAPP PLENARY #3: "The Promise and Challenges of GEN-IV Nuclear Energy Systems"
1:00 P.M. - 4:00 P.M.	NATIONAL MEETING TECHNICAL SESSIONS (see pg. 16)
2:30 P.M. - 4:00 P.M.	ICAPP TECHNICAL SESSIONS • Advanced BWRs—II • Status of Advanced Reactor Programs • Advances in Severe Accident Management • Technology Elements for NASA's Prometheus Program—Panel • Out of Core Fuel Cycle Issues • Natural Circulation Thermal Hydraulics • Very High Temperature Reactors—II • Testing and Analysis of Structures and Materials
4:00 P.M. - 6:00 P.M.	ANS PRESIDENT'S SPECIAL SESSION (see pg. 16)
6:15 P.M. - 10:15 P.M.	MULTI-DIVISION MIXER

TUESDAY JUNE 15, 2004 • 8:00 A.M. – 10:00 A.M.

ICAPP '04 Plenary 2: The Next Steps to the Nuclear Renaissance, Chairs: Marilyn Kray (Exelon-USA), Un-Chul Lee (KNS-Korea)

William Penn (William Penn Level)

Speakers:

- Jack Allen (Westinghouse-USA)
- Kyung Nam Chung (KOPEC-Korea)
- Dan Keuter (Entergy-USA)
- Akira Omoto (IAEA-Austria)
- Atam Rao (GE Nuclear Energy-USA)
- Ami Rastas (TVO-Finland)

TUESDAY, JUNE 15, 2004 • 10:00 A.M. – 11:30 A.M.

Test and Design Methods, Session Organizers and Co-Chairs: Melissa K. Van Dyke (NASA/MSFC-USA), Thomas Godfroy (LANL-USA)

Oakmont (First Floor)

10:00 a.m.

Design Development Analyses in Support of a Heatpipe-Brayton Cycle Heat Exchanger, B.E. Steeve (NASA MSFC-USA), R.J. Kapernick (LANL-USA)

10:20 a.m.

Application of a Virtual Reactivity Feedback Control Loop in Non-Nuclear Testing of a Fast Spectrum Reactor (NASA MSFC-USA), M. Forsbacka (NASA-USA)

10:40 a.m.

Thermally Simulated Direct-Drive Gas-Cooled Reactor for Near Term Space Fission Systems, T.J. Godfroy (NASA MSFC, Univ of Michigan-USA), R.J. Kapernick (LANL-USA), S.M. Bragg-Sitton (NASA MSFC, Univ of Michigan-USA)

11:00 a.m.

Non Nuclear Testing of Reactor Systems in the Early Flight Fission Test Facilities (EFF-TF), M. Van Dyke (NASA MSFC-USA)

11:20 a.m.

Technical Bases to Consider for Performance and Demonstration Testing of Space Fission Reactors, L.L. Hixson, M.G. Houts, S.D. Clement (LANL-USA)

Advances in CHF and Rod Bundle Thermal Hydraulics, Session Organizer and Chair: Cesare Frepoli (*Westinghouse-USA*)

Shadyside (First Floor)

10:00 a.m.

Development of Predictable Technology for Thermal/Hydraulic Performance of Reduced-Moderation Water Reactors (1) - Master Plan, A. Ohnuki, K. Takase, M. Kureta, H. Yoshida, H. Tamai, W. Liu, H. Akimoto (*JAERI-Japan*)

10:20 a.m.

Development of Predictable Technology for Thermal/Hydraulic Performance of Reduced-Moderation Water Reactors (2) - Large-scale Thermal/Hydraulic Test and Model Experiments, M. Kureta, W. Liu, H. Tamai, A. Ohnuki, T. Mitutake, H. Akimoto (*JAERI-Japan*)

10:40a.m.

Critical Heat Flux in Inclined Rectangular Narrow Gaps, J.J. Kim, Y.H. Kim, S.J. Kim, S.W. Noh, K.Y. Suh (*Seoul National Univ-Korea*), J.L. Rempe (*INEL-USA*), F.B. Cheung (*Penn State Univ-USA*), S.B. Kim (*KAERI-USA*)

11:00 a.m.

Lateral Flow Field Behavior Downstream of Mixing Vanes in a Simulated Nuclear Fuel Rod Bundle, M.E. Conner, L.D. Smith, III (*Westinghouse Nuclear Fuel-USA*), M.V. Holloway, D.E. Beasley (*Clemson Univ-USA*)

11:20 a.m.

The Effect of Swirl Flow on CHF by Various Spacer Grids in 2*2 Rod Bundle with R-134a, B.S. Shin, S.H. Chang (*KAIST-Korea*)

Advances in Severe Accident Analysis, Session Organizer and Chair: Christophe Journeau (*CEA Cadarache-France*)

Panel/Oval (Mezzanine Level)

10:00 a.m.

Development of Molten Corium Using An Exothermic Chemical Reaction for the Molten- Fuel Moderator-Interaction Studies at Chalk River Laboratories, T. Nitheanandan, D.B. Sanderson, G. Kyle (*AECL-Canada*), M. Farmer (*Argonne-USA*)

10:20 a.m.

Corium Physical Properties for Severe Accident R&D, C. Journeau, P. Piluso, K.N. Frolov (*CEA Cadarache-France*)

10:40 a.m.

New Experimental Results on the Interaction of Molten Corium with Reactor Vessel Steel, S.V. Bechta, V.B. Khabensky, V.S. Granovsky, E.V. Krushinov, S.A. Vitol (*Aleksandrov RIT-Russia*), V.V. Gusarov, V.I. Almiashhev (*ISC RAS-Russia*), D.B. Lopukh (*SPb SEU-Russia*), W. Tromm (*FZK-Germany*), D. Bottomley (*ITU EC-Germany*), M. Fischer (*Framatome ANP-Germany*), G. Cognet (*CEA-France*), O. Kymäläinen (*FORTUM-Finland*)

11:00 a.m.

Metallographical and Numerical Investigation of the EC-FOREVER-4 Test, H.C. Willschuetz, E. Altstadt (*FZR-Germany*), G. Mueller, B.R. Sehgal (*Royal Institute of Technology-Sweden*), J. Boehmert (*FZR-Germany*)

Development and Application of Severe Accident Analysis Code, Session Organizers: Karen Vierow (*Purdue Univ-USA*), Dong-Ha Kim (*KAERI-Korea*), **Chair:** Karen Vierow (*Purdue Univ-USA*)

Grant Suite (Mezzanine Level)

10:00 a.m.

FPTAN: A Volatile Fission Products and Structural Materials Transport Code for SCDAP/RELAP5, E. Honaiser (*Brazilian Navy Technological Center-Brazil*), S. Anghaie (*Univ of Florida-USA*)

10:20 a.m.

Periodic Safety Review on Safety Analyses of Kori Nuclear Units 3,4, J.W. Park, S.H. Han, B.H. Bae (*KHNP-Korea*)

10:40 a.m.

Analysis of In-Vessel Late Phase Melt Progression Using SCDAP/RELAP5/MOD3.3, R.J. Park, S.B. Kim, H.D. Kim (*KAERI-Korea*)

11:00 a.m.

Analysis of RELAP/SCDAPSIM/MOD3.2 Computer Code Using QUENCH Experiments, E. Honaiser (*Brazilian Navy Technological Center-Brazil*), S. Anghaie (*Univ of Florida-USA*)

Status of All New Water-Cooled Reactor Programs, Session Organizer and Chair: J. P. Py (*Framatome ANP-France*)

William Penn (William Penn Level)

10:00 a.m.

European Utility Requirements (EUR) Volume 3 Assessment for AP1000, K.J. Demetri (*Westinghouse-USA*), G. Saiu (*Ansaldo Nucleare-Italy*)

10:30 a.m.

European Utility Requirements: Common Rules to Design Next LWR Plants in an Open Electricity Market, P. Berbey (*EDF-France*), K.F. Ingemarsson (*Vattenfall-Sweden*)

11:00 a.m.

Contract Specifications for Olkiluoto 3 Nuclear Power Plant, E. Patrakka (*TVO-Finland*)

Thermal Striping and Thermal Stratification Studies, Session Organizer and Chair: Lin-Wen Hu (*MIT-USA*)

Three Rivers (William Penn Level)

10:00 a.m.

A Study on the Fluid Mixing Analysis for Predicting Shell Wall Thinning of a Feedwater Heater, K.M. Hwang, T.E. Jin (*KOPEC-Korea*), K.H. Kim (*Kyunghee Univ-Korea*)

10:20 a.m.

A Simplified Method for Determination of High Cycle Thermal Fluctuations Caused by Thermal Striping, L.W. Hu, M.S. Kazimi (*MIT-USA*)

10:40 a.m.

A Parametric Study of High Cycle Thermal Fatigue Caused by Thermal Striping, J.I. Lee, P. Saha, M.S. Kazimi (*MIT-USA*)

11:00 a.m.

Numerical Investigations of Thermal Striping Characteristics in the Use of Various Coolants for Fast Breeder Reactors, T. Muramatsu, A. Yamaguchi (*JNC-Japan*)

Very High Temperature Reactors—I, Session Organizer and Chair: Phil MacDonald (*INEL-USA*)

Sternwheeler (William Penn Level)

10:00 a.m.

The Framatome-ANP Indirect-Cycle Very High-Temperature Reactor, B. Copsey (*Framatome-ANP-USA*), M. Lecomte (*Framatome-ANP-France*), G. Brinkmann (*Framatome-ANP-Germany*), A. Capitaine, N. Deberne (*EDF-France*)

10:20 a.m.

Maximizing Temperatures of Delivered Heat from the Advanced High-Temperature Reactor, C.W. Forsberg (*ORNL-USA*), P.F. Peterson (*UC Berkeley-USA*), P. Pickard (*Sandia-USA*)

10:40 a.m.

The Effect of Operating Temperature on Depressurized Conduction Cooled for a High-Temperature Reactor, B. Mays (*Framatome-ANP-USA*), A. Woaye-Hune, J.-P. Simoneau, T. Gabeloteau, F. Lefort (*Framatome-ANP-France*), H. Haque (*Framatome-ANP-Germany*), L. Lommers (*Framatome-ANP-USA*)

11:00 a.m.

Validation of Core Dynamics Analytical Model of HTGR through Safety Demonstration Test, S. Nakagawa, E. Takada, S. Shimakawa (*JAERI-Japan*)

Nuclear Energy Sustainability and Desalination, Session Organizer and Chair: Tim J. Abram (*BNFL-United Kingdom*)

Riverboat (William Penn Level)

10:00 a.m.

Strategic Environments (SWOT) for the Nuclear Energy Innovation in the 21st Century, T.J. Lee, K.-B. Oh (*KAERI-Korea*)

10:20 a.m.

Scenarios for the Expanded Use of Nuclear Energy, A.M. Yacout, L. Van Den Durpel, D.C. Wade, H. Khalil (*Argonne-USA*)

10:40 a.m.

Development of Systems Engineering Model for Spent Fuel Extraction Process, L. Sun, H. Royyuru, H.T. Hsieh, Y. Chen, R. Clarksean (*Univ of Nevada, Las Vegas-USA*), G. Vandegrift, J. Copple, J. Laidler (*ANL-USA*)

11:00 a.m.

Water Desalination as a Possible Opportunity for the GT- and H2-MHR, S.L. Bogart (*Energy Applications & Systems-USA*), K. Schultz (*General Atomics-USA*)

11:20 a.m.

A Study on Cost Allocation in Nuclear Power Coupled with Desalination, M.K. Lee, S.S. Kim, K.H. Moon, C.Y. Lim (*KAERI-Korea*)

TUESDAY JUNE 15, 2004 • 1:00 P.M. – 2:30 P.M.

ICAPP Plenary 3: The Promise and Challenges of GEN-IV Nuclear Energy Systems, Chairs: Neil Todreas (*MIT-USA*), Yoshiaki Oka (*Univ of Tokyo-Japan*)

William Penn (William Penn Level)

Speakers:

- William Magwood IV (*DOE-USA*)
- Mamoru Akiyama (*Institute of Applied Energy-Japan*)
- Patrice Bernard (*CEA-France*)
- Chung-Won Cho (*MOST-Korea*)

TUESDAY, JUNE 15, 2004 • 2:30 P.M.– 4:00 P.M.

Advanced BWRs—II, Session Organizers and Co-Chairs: Eero Patrakka (*TVO-Finland*), Greg Hudson (*Framatome*)

Oakmont (First Floor)

2:30 p.m.

Simplified Compact Containment BWR Plant, H. Heki, M. Nakamaru, M. Tsutagawa, K. Hiraiwa, K. Arai (*Toshiba-Japan*), T. Hida (*JAPC-Japan*)

2:50 p.m.

SWR 1000: The Innovative Boiling Water Reactor, W. Brettschuh (*Framatome ANP-Germany*), G. Hudson (*Framatome ANP-USA*)

3:10 p.m.

The Safety Concept of the SWR 1000, D. Pasler (*Framatome ANP-Germany*)

3:30 p.m.

Experimental Verification of SWR 1000 Passive Components and Systems, J. Meseth (*Framatome ANP-Germany*)

Status of Advanced Reactor Programs, Session Organizer: Kazuaki Matsui (*Institute of Applied Energy-Japan*), **Chair:** Rob M. Versluis (*U.S. DOE-USA*)

Shadyside (First Floor)

2:30 p.m.

The IAEA International Project on Innovative Nuclear Reactors and Fuel Cycles (INPRO): Status, Ongoing Activities and Outlook, J. Kupitz, F. Depisch, O. Azpitarte (*IAEA-Austria*)

2:50 p.m.

Safety of Evolutionary and Innovative Nuclear Reactors: IAEA Activities and World Efforts, T. Saito, M. Gasparini (*IAEA-Austria*)

3:10 p.m.

Safety of New Generation Concepts in Reference to Present Reactors, J.L. Rouyer (*EDF-France*), F. Vitton (*Consultant-France*), B. Carluuc, S. Ehster (*AREVA/Framatome ANP-France*)

3:30 p.m.

Research and Education on Innovative Nuclear Engineering in 21st Century COE Program in Japan (COE-INES), H. Sekimoto (*Tokyo Institute of Technology-Japan*)

Advances in Severe Accident Management, Session Organizers and Co-Chairs: Christophe Journeau (*CEA Cadarache-France*), Hho Jung Kim (*KINS-Korea*)

Panel/Oval (Mezzanine Level)

2:30 p.m.

Criteria for Successful Core Reflood under Severe Accident Conditions, W. Hering, Ch. Homann (*FZK-Germany*)

2:50 p.m.

Analysis of Typical WWER-1000 Severe Accident Scenarios, Yu.S. Sorokin, V.V. Shchekoldin, L.N. Borisov, N.S. Fil (*EDO Gidropress-Russia*)

3:10 p.m.

Role of Passive Safety Systems in Severe Accidents Prevention for Advanced WWER-1000 Reactor Plants, N.V. Bukin, N.S. Fil, A.M. Shumsky (*EDO Gidropress-Russia*)

3:30 p.m.

Development of the Severe Accident Management Guidelines (SAMG) for Ulchin Nuclear Power Plant Unit 3, 4, 5 & 6, H.T. Kim, H. Yoo, H.S. Lim, J.W. Park, W. Lim, S.J. Oh (*KHNP-Korea*), C.H. Chung (*Seoul National Univ-Korea*), B.C. Lee (*Future & Challenges*)

3:50 p.m.

The Lower Head Creep Rupture Failure Analysis Associated with Alternative Accident Sequences of The Three Mile Island Unit 2, S.L. Chan (*Swiss Federal Institute of Technology and Swiss Federal Nuclear Safety Inspectorate-Switzerland*)

Technology Elements for NASA's Prometheus Program-Panel, Session Organizer: Matt Forsbacka (*NASA HQ-USA*); **Co-Chairs:** Matt Forsbacka (*NASA HQ-USA*), Melissa K. Van Dyke (*NASA/MSFC-USA*)

Grant Suite (Mezzanine Level)

Panelists:

- Matt Forsbacka (*NASA HQ-USA*)
- Jay Polk (*NASA JPL-USA*)
- Ron Porter (*NASA MSFC-USA*)

Out of Core Fuel Cycle Issues, Session Organizer: Takamasa Mori (*JAERI-Japan*), **Chair:** Charles Forsberg (*ORNL-USA*)

William Penn (William Penn Level)

2:30 p.m.

Framatome-ANP France UO2 Fuel Fabrication – Feedback Criticality Safety Analysis in the Light of the 1999 Tokay Mura Accident, M. Doucet, S. Zheng, J. Mouton, R. Porte (*Framatome ANP-France*)

3:00 p.m.

A Multifunction Cask for At-Reactor Storage of Short-Cooled Spent Fuel, Transport, and Disposal, C.W. Forsberg (*ORNL-USA*)

3:30 p.m.

Transmutation of Radioactive Nuclear Waste: Present Status and Requirement for the Problem – Oriented Nuclear Data Base, Yu. Korovin, G. Pilnov, V. Artisyuk, A. Stankovsky (*Obninsk Univ-Russia*), A. Shmelev (*MPEI-Russia*), Yu. Titarenko (*IITEP-Russia*)

Natural Circulation Thermal Hydraulics, Session Organizer and Chair: Akira Ohnuki (*JAERI-Japan*)

Three Rivers (William Penn Level)

2:30 p.m.

PSB-VVER Natural Circulation Experiment, V.N. Blinkov, O.I. Melikhov, G.I. Dremin, I.A. Lipatov, S.A. Galchanskaya, A.V. Kapustin (*EREC-Russia*), I.V. Elkin (*RRC-Russia*)

2:50 p.m.

A Non-Heating Experimental Study on the Two-Phase Natural Circulation through Annular Gap between Reactor Vessel and Insulation under External Vessel Cooling, K.S. Ha, R.J. Park, Y.R. Cho, S.B. Kim, H.D. Kim (*KAERI-Korea*), H.M. Kim, K.Y. Kim (*Inha Univ-Korea*)

3:10 p.m.

Performance of Liquid Metals in Natural Circulation Cooled Nuclear Reactors, C. Ceballos, D. Lathouwers, A. Verkooijen (*Technische Univ Delft-The Netherlands*)

3:30 p.m.

Stability of a Natural Circulation Loop with a Fluid Heated through the Thermodynamic Pseudo Critical Point, S. Lomperski, D. Cho (*Argonne-USA*), R. Jain, L. Corradini (*Univ of Wisconsin-Madison-USA*)

Very High Temperature Reactors—II, Session Organizer and Chair: Phil MacDonald (*INEEL-USA*)

Sternwheeler (William Penn Level)

2:30 p.m.

The Next Generation Nuclear Plant – Insights Gained from the INEEL Point Design Studies, P.E. MacDonald, P.D. Bayless, H.D. Gougar, R.L. Moore, A.M. Ougouag, R.L. Sant, J.W. Sterbentz, W.K. Terry (*INEEL-USA*)

3:00 p.m.

Characteristics of a New Pebble Bed Core with Horizontal Flow and Comparison with the Existing Vertical Flow Core, Y. Kato, Y. Muto, W. Nakazato, R. Udagawa (*Tokyo Inst of Tech-Japan*)

3:30 pm.

Approaches for Achieving Very High Core Outlet Temperatures in Prismatic Modular Helium Reactors, M. LaBar, M. Richards, A. Shenoy (General Atomics-USA)

Testing and Analysis of Structures and Materials, Session Organizer and Chair: R. Y. Lu (Westinghouse-USA), Yong Won Kim (KAERI-Korea)

Riverboat (William Penn Level)

2:30 p.m.

Application of SP Test to Evaluate Embrittlement of Duel Phase Stainless Steel Caused by Sigma Phase and Neutron Irradiation, J.S. Lee, I.S. Kim (KAIST-Korea), A. Kimura (Kyoto Univ-Japan)

3:00 p.m.

Nondestructive Characterization of Thermal Aging Effects on Mechanical and Fracture Properties of 1Cr1Mo0.25V Steel, C.S. Seok, J.P. Kim (Sungkyunkwan Univ-Korea), K.L. Murty (NC State Univ-USA)

3:30 p.m.

Nondestructive Testing Qualification of Main Circulatory Tube Pipes Du 500, B.M. Tabakova (Technical Univ-Bulgaria), P. Tzokov (NPP Kozloduy-Bulgaria)

Wednesday • June 16, 2004

7:30 A.M. - 5:00 P.M.	MEETING REGISTRATION
8:00 A.M. - 10:00 A.M.	SPOUSE/GUEST HOSPITALITY BREAKFAST
8:00 A.M. - 10:00 A.M.	ICAPP TECHNICAL SESSIONS <ul style="list-style-type: none">Advanced PWRs: Basic Design StageMaterial/Corrosion Issues of Supercritical Pressure Water Reactors—PanelPRA and Risk-informed Decision Making: Methodology—ILOCA and non-LOCA – Plant AnalysesUpdate on Advanced High Temperature Gas-Cooled Reactor Designs—PanelSodium and Gas Fast ReactorsAdvanced Fuel Cycles, Recycling, and Actinide TransmutationSpace Nuclear Power and Propulsion Systems
8:30 A.M. - 11:30 A.M.	NATIONAL MEETING TECHNICAL SESSIONS (see pg. 21)
9:30 A.M. - 2:30 P.M.	SPOUSE/GUEST TOUR "John Heinz Pittsburgh History Center"
10:00 A.M. - 11:30 A.M.	ICAPP TECHNICAL SESSIONS <ul style="list-style-type: none">Advanced PWRs: Developmental Stage—ISupercritical Pressure Water Reactors—IPRA and Risk-informed Decision Making: Methodology—IILOCA and non-LOCA – Analysis MethodologiesPebble Bed Modular ReactorsCFD Applications to Water, Liquid Metal, and Gas ReactorsMaterials for Space Reactor ConceptsNuclear Energy Application—Hydrogen—I
11:30 A.M. - 1:00 P.M.	NISD LUNCHEON
1:00 P.M. - 2:30 P.M.	ICAPP PLENARY #4: "Strategies for Optimizing the Nuclear Fuel Cycle"
1:00 P.M. - 4:00 P.M.	NATIONAL MEETING TECHNICAL SESSIONS (see pg. 21)
2:30 P.M. - 4:00 P.M.	ICAPP TECHNICAL SESSIONS <ul style="list-style-type: none">Economics, Regulation, Licensing and ConstructionSupercritical Pressure Water Reactors—IIInstrumentation for Space Nuclear ReactorsUse of CFD in Plant Safety Assessment and Related Regulatory IssuesPlant Modernization and RetrofitsNuclear Energy Application—Hydrogen—IIFuel Design and Irradiation Issues for Next Generation Plants
4:00 P.M. - 6:00 P.M.	ICAPP PLENARY #5: "Visions for Next Nuclear Era"
5:45 P.M. - 10:00 P.M.	EVENING EVENT: The Frick Art & Historical Center

WEDNESDAY, JUNE 16, 2004 • 8:00 A.M. – 10:00 A.M.

Advanced PWRs: Basic Design Stage, Session Organizer and Chair: Pierre Berbey (EDF SEPTEN-France)

Oakmont (First Floor)

8:00 a.m.

Design Features on APR 1400 Steam Generator, T.J. Park, J.S. Park, M.Y. Kim (DOOSAN-Korea)

8:20 a.m.

Westinghouse AP1000 Advanced Passive Plant, W.E. Cummins, T.L. Schulz (Westinghouse-USA)

8:40 a.m.

The Delta 125 Steam Generator Design for the AP1000, R.F. Condrac, R.P. Waszink, C.G. Pankiewicz-Nohr (Westinghouse-USA)

9:00 a.m.

EPR Severe Accident Threats and Mitigation, G. Azarian, H.M. Kursawe, M. Nie, M. Fischer, J. Eyink (Framatome ANP-France), R.H. Stoudt (Framatome ANP-USA)

9:20 a.m.

EPR: an Advanced Evolutionary Design, J. Czech (Framatome ANP-Germany), F. Bouteille (Framatome ANP-France), G. Hudson (Framatome ANP-USA)

9:40 a.m.

Development and Design Characteristics of the Advanced Power Reactor 1400 (APR1400), K.H. Min (KHNP-Korea)

Material/Corrosion Issues of Supercritical Pressure Water Reactors—Panel, Session Organizer and Chair: Todd Allen (University of Wisconsin-USA)

Shadyside (First Floor)

Panelists:

- Overview SCWR Design and Technology Requirements, Y. Oka (Univ of Tokyo-Japan)
- Gen IV SCWR Technology and Design Requirements, S. Bushby (AECL-Canada)
- Significant Results from US SCWR Materials Program, G. Was (Univ of Michigan-USA)
- Significant Results from Japanese SCWR Materials Program, F. Kano (Toshiba-Japan)
- Significant Results from Korean SCWR Materials Program, J. Jang (KAERI-Korea)
- Significant Results from European SCWR Materials Program, L. Heikinheimo (VTT-Finland)

PRA and Risk-informed Decision Making: Methodology—I, Session Organizers and Co-Chairs: Robert E. Gamble (GE Nuclear Energy-USA), Nam Dinh (UC Santa Barbara-USA)

Panel/Oval (Mezzanine Level)

8:00 a.m.

A Probabilistic Analysis of General Design Criterion 35 for a Gas-Cooled Fast Reactor, M.J. Delaney, G.E. Apostolakis (MIT-USA)

8:30 a.m.

Safety at the End of a Nuclear Facility's Life, J.A. Geis (Kaiser-Hill-USA), P. McEahern, B. Evans (Strategic Management Initiatives-USA)

9:00 a.m.

Integration of the Reliability of Passive System in Probabilistic Safety Assessment, M. Marquès, J.F. Pignatelli, P. Saignes, N. Devictor (CEA-France), V. La Lumia, S. Mercier (TECHNICATOME)

9:30 a.m.

Enhanced Defenses against Common Cause Failures for an Advanced Auxiliary Feedwater System, Y.G. Jo (Southern Nuclear-USA)

LOCA and non-LOCA - Plant Analyses, Session Organizer: JinHo Song (KAERI-Korea), **Chair:** B.W. Rhee (KAERI-Korea)

Grant Suite (Mezzanine Level)

8:00 a.m.

Simulation of Accident Sequences Including Emergency Operating Procedures, C. Queral, A. Expósito (Univ Politécnica de Madrid-Spain), J.A. Quiroga, A. Ibarra (Departamento de Óptica UCM-Spain), J. Hortal (CSN-Spain)

8:20 a.m.

The Modeling and Evaluation of NSSS Control Systems of KSNP Using RETRAN-3D, D.Y. Lee, Y.S. Kim, J.H. Kim, J.I. Yun (*FNC Technology-Korea*), J.Y. Lee, D.H. Lee (*Korea Electric Power Research Institute-Korea*)

8:40 a.m.

Development of SGTR Recovery Strategy, J.H. Lee, S.C. Kim, J.J. Sohn, J.T. Seo (*KOPEC-Korea*)

9:00 a.m.

Improvement of Post-Blowdown Fuel Channel Analysis Model of CANDU for 35% RIH Break LOCA without ECC, B.W. Rhee, H.S. Kang, B.-J. Min (*KAERI-Korea*)

9:20 a.m.

Analysis of BWR High Burnup Fuel in LOCA Conditions, P. Garcia Sedano, I. J.M. Dey Navarro, Gallego Cabezon, R. Orive Moreno (*IBERDROLA-Spain*)

Update on Advanced High Temperature Gas-Cooled Reactor Designs-Panel, Session Organizers and Co-Chairs: Edward Quinn (*Longenecker and Associates-USA*), Finis Southworth (*INEEL-USA*)

William Penn (William Penn Level)

Panelists:

- Finis Southworth (*INEEL-USA*)
- Arkal Shenoy (*GA-USA*)
- Jean-Claude Gauthier (*Framatome-USA*)
- John Flack (*INRC-USA*)
- Trevor Cook (*DOE NE-USA*)
- Phil Hildebrand (*Ind Tech Group-USA*)
- Dan Keuter (*Entergy-USA*)
- Regis Matzie (*Westinghouse-USA*)

Sodium and Gas Fast Reactors, Session Organizer: Jordi Roglans (*Argonne-USA*), **Co-Chairs:** Jordi Roglans (*Argonne-USA*), Kevan Weaver (*INEEL-USA*)

Three Rivers (William Penn Level)

8:00 a.m.

Neutronic Studies of Nuclear Fuels for a Breed and Burn GFR, P. Yarsky, M.J. Driscoll, P. Hejzlar (*MIT-USA*)

8:20 a.m.

Decay Heat Removal from a GFR Core by Natural Convection, W.C. Williams, P. Hejzlar, M.J. Driscoll (*MIT-USA*)

8:40 a.m.

Design Features of Advanced Sodium-Cooled Fast Reactor KALIMER-600, D. Hahn, Y.I. Kim, S.O. Kim, J.H. Lee, Y.B. Lee (*KAERI-Korea*)

9:00 a.m.

Neutronic Design of Kalimer-600 Core with Moderator Rods, S.G. Hong, S.J. Kim, H. Song, Y.I. Kim (*KAERI-Korea*)

9:20 a.m.

Analysis of Tube Failure Propagation due to Overheating in a Prototype LMFBR Steam-Generator Geometry by Using QUARK-LP Ver.4, Y. Shindo, K. Haga (*Japan Nuclear Energy Safety Organization-Japan*)

9:40 a.m.

Safety Design of Prototype Fast Breeder Reactor, S.B. Bhoje, S.C. Chetal, O.P. Singh (*ICCAR-India*)

Advanced Fuel Cycles, Recycling, and Actinide Transmutation, Session Organizer and Chair: Dominique Greneche (*COGEMA-France*)

Sternwheeler (William Penn Level)

8:00 a.m.

TRU Transmutation in Thorium-Based Heterogeneous PWR Core, K.M. Bae, J.Y. Lim, M.H. Kim (*Kyung Hee Univ-Korea*)

8:20 a.m.

Applicability of INPRO Methodology for Assessment of Nuclear Alternatives, Yu Korovin, V. Artisyuk (*Obrninsk State Technical Univ-Russia*), V. Mourougov (*IAEA-Austria*), A. Shmelev (*Moscow Engineering Physics Institute-Russia*)

8:40 a.m.

Consideration of Reactivity Initiated Accidents for TRU Recycling in LWRs, E. Shwageraus (*Ben Gurion Univ of the Negev-Israel*), P. Hejzlar, M.S. Kazimi (*MIT-USA*)

9:00 a.m.

Actinide Production in Gas Core Reactors, R. Norring, S. Anghaie, B. Smith, T.W. Knight (*Univ of Florida-USA*)

Space Nuclear Power and Propulsion Systems, Session Organizer and Chair: Norbert Frischauf, (*European Space & Technology Centre-The Netherlands*)

Riverboat (William Penn Level)

8:00 a.m.

Thermal Design of an Ultrahigh Temperature Vapor Core Reactor Combined Cycle Nuclear Power Plant, S.E. Bays, S. Anghaie, B. Smith, T.W. Knight (*Univ of Florida-USA*)

8:20 a.m.

Space Nuclear Power and Propulsion – a Basic Tool for the Manned Exploration of the Solar System, N. Frischauf, B.A. Hamilton (*ESA/ESTEC-The Netherlands*)

8:40 a.m.

A Uranium Plasma Propulsion System, T. Kammash, D.R. Leibrandt (*Univ of Michigan-USA*)

9:00 a.m.

A Feasibility Study of an Integral PWR for Space Applications, S. De Grandis, E. Finzi, C.V. Lombardi, D. Mandelli, E. Padovani, M. Passoni, M.E. Ricotti, L. Santini (*Politecnico di Milano-Italy*), L. Summerer (*ESTEC-The Netherlands*)

9:20 a.m.

Optimization of Small RANKINE Space Power Conversion Systems, J.J. Carbajo, G.L. Yoder (*ORNL-USA*)

9:40 a.m.

A Novel Electric Thruster Based on IEC Plasma Jet Technology, G.H. Miley, H. Momota, R. Stubbers (*Univ of Illinois at Urbana-Champaign-USA*)

WEDNESDAY, JUNE 16, 2004 • 10:00 A.M. – 11:30 P.M.

Advanced PWRs: Developmental Stage—I, Session Organizers and Co-Chairs: Lawrence Conway (*Westinghouse-USA*), Byung Oke Cho (*KHNP, Korea*)

Oakmont (First Floor)

10:00 a.m.

A Study on the Conceptual Design of a 1500 MWe Passive PWR with Annular Fuel, K.L. Lee, S.H. Chang (*KAIST-Korea*)

10:20 a.m.

Modeling and Experimental Tests on the Hydraulically Driven Control Rod: Option for IRIS Reactor, A. Cammi, M.E. Ricotti, A. Vitulo (*Politecnico di Milano-Italy*)

10:40 a.m.

Design Features of SMART Water Chemistry, B.S. Choi, S.H. Kim, J.Yoon, D.J. Lee, Y.Y. Bae, S.K. Zee (*KAERI-Korea*)

11:00 a.m.

Two-Phase Natural Circulation Tests for Integrated Modular Water Reactor (IMR), T. Suzuta, T. Kanagawa, K. Hibi, K. Takano, J. Ogata (*MHI-Japan*), A. Serizawa (*Kyoto Univ-Japan*), T. Matsumura (*CRIEPI-Japan*), T. Yamauchi (*Japan Atomic Power Co.-Japan*)

Supercritical Pressure Water Reactors—I, Session Organizers and Co-Chairs: Phil MacDonald (*INEEL-USA*), Katsumi Yamada (*Toshiba-Japan*)

Shadyside (First Floor)

10:00 a.m.

The Supercritical Water Cooled Reactor: Ongoing Research and Development in the U.S., J. Buongiorno (*INEEL-USA*)

10:20 a.m.

Status on R&D Planning for Supercritical Water Cooled Reactor Systems in the 6th European Framework Programme, J. Starflinger, (*FZK-Germany*), N. Aksan (*PSI-Switzerland*), D. Bittermann (*Framatome ANP-Germany*), L. Heikinheimo (*VTT-Finland*), G. Rimpault (*CEA Cadarache-France*), T. Schulenberg (*FZK-Germany*)

10:40 a.m.

Research and Development of High Temperature Light Water Cooled Reactor Operating at Supercritical-pressure in Japan, Y. Oka (*Univ of Tokyo-Japan*), K. Yamada (*Toshiba-Japan*)

11:00 a.m.

Research of Supercritical Pressure Water Cooled Reactor in Korea, Y.Y. Bae, H.K. Joo, J.S. Jang, Y.H. Jeong, J.H. Song, H.Y. Yoon (KAERI-USA), J.Y. Yoo (Seoul National Univ-Korea)

PRA and Risk-informed Decision Making: Methodology—II, Session Organizers and Co-Chairs: Robert E. Gamble (GE Nuclear Energy-USA), Nam Dinh (UC Santa Barbara-USA)

Panel/Oval (Mezzanine Level)

10:00 a.m.

Reliability Methods for Passive Systems, M. Marquès, J.F. Pignatelli (CEA/DER, Cadarache-France), F. D'Auria (Univ of Pisa-Italy), L. Burgazzi (ENEA-Italy), C. Müller (GRS-Germany), R. Bolado-Lavin, C. Kirchsteiger (EC-JRC/IE, Petten-The Netherlands), V. La Lumia (TECHNICATOME), I. Ivanov, B. Kalchev (Technical Univ of Sofia)

10:20 a.m.

Study on Communication System of Social Risk Information on Nuclear Energy, H. Yoshikawa, T. Sugiman, Y. Wakabayashi, H. Shimoda, M. Terado (Kyoto Univ-Japan), M. Akimoto, Y. Nagasato (Asahi Research Center-Japan)

10:40 a.m.

Development of Regulatory Guidance for the Review of Exemption Requests from the Requirements for Licensed Personnel Staffing, C. Plott (Micro Analysis & Design-USA), V. Barnes (Performance Safety & Health Associates-USA), T. Engh (Micro Analysis & Design-USA), J. Pesensky, A. Szabo (US NRC-USA)

11:00 a.m.

Regulatory Review of Early Site Permit Applications, M.L. Scott (USNRC-USA)

LOCA and non-LOCA - Analysis Methodologies, Session Organizer: JinHo Song (KAERI-Korea), **Chair:** B.W. Rhee (KAERI-Korea)

Grant Suite (Mezzanine Level)

10:00 a.m.

Examinations of Uncertainty in Late Reflood Phase Behavior of APR1400 LBLECA, S.W. Lee, H.G. Kim, S.J. Oh (KHNP-Korea), S.Y. Lee (KOPEC-Korea)

10:20 a.m.

Responses to Small Break Loss of Coolant Accident for SMART, K.H. Bae, H.C. Kim, M.H. Chang, S.Q. Zee, S.H. Kim (KAERI-Korea), U.C. Lee (Seoul National Univ-Korea)

10:40 a.m.

Reactivity Insertion Accident Analysis with Coupled RETRAN, Y.H. Kim, C.K. Yang, C.K. Sung, C.S. Lee (KEPRI-Korea)

11:00 a.m.

LOCA Analysis Evaluation Model with TRAC-PF1/NEM, R. Orive Moreno, I. Gallego Cabezón, P. García Sedano (IBERDROLA-Spain)

Pebble Bed Modular Reactors, Session Organizer and Chair: Abrie Botma (PBMR-South Africa)

William Penn (William Penn Level)

10:00 a.m.

Pebble Bed Modular Reactor: The PBMR Advantage, S. Caspersson (Westinghouse-USA), D. Matzner (PBMR-South Africa), T. Rudek (Westinghouse-USA), J. Slabber (PBMR-South Africa)

10:20 a.m.

TINTE Uncertainty Analysis of the Maximum Fuel Temperature During a DLOFC Event for the 400 MW Pebble Bed Modular Reactor, G. Strydom (PBMR-South Africa)

10:40 a.m.

Aerosol Transport in PBMR Accidents, R. Denning, M. Mkhosi, S. Nakamura, R. Christensen (Ohio State Univ-USA), V. Kogan (Battelle-USA)

11:00 a.m.

Distinct Element Method Analyses of Fuel Spheres in the PBMR Core Using PFC3D, A.G. Polson (PBMR-South Africa)

CFD Applications to Water, Liquid Metal, and Gas Reactors, Session Organizer and Chair: Reddy Vanga B.N. (Purdue Univ-USA)

Three Rivers (William Penn Level)

10:00 a.m.

Numerical Simulation of the Vertical Upward Flow of Water in a Heated Tube at Supercritical Pressure, S.H. Kim, Y.I. Kim, Y.Y. Bae, B.H. Cho (KAERI-Korea)

10:20 a.m.

Development of Predictable Technology for Thermal/Hydraulic Performance of Reduced-Moderation Water Reactors (3) - Current Status of Development of Three-Dimensional Two-Phase Flow Simulation Method, H. Yoshida, H. Tamai, K. Takase, T. Nagayoshi, H. Akimoto (JAERI-Japan)

10:40 a.m.

CFD Simulation of Turbulent Flow and Heat Transfer in Bare Rod Bundle, W.K. In, C.H. Shin, D.S. Oh, T.H. Chun (KAERI-Korea)

11:00 a.m.

Evolution of the Design Methodologies for the Next Generation of RPV: The Extensive Role of the Thermal Hydraulics Numerical Tools, N. Goreaud, N. Nicaise (Framatome ANP-France), R.H. Stoudt (Framatome ANP-USA)

Materials for Space Reactor Concepts, Session Organizer and Chair: Steve Zinkle (Oak Ridge National Laboratory-USA)

Sternwheeler (William Penn Level)

10:00 a.m.

Alkali Metal Heat Pipe Life Issues, R.S. Reid, (NASA/MSFC-USA)

10:20 a.m.

Sodium Based Heat Pipe Modules For Space Reactor Concepts: Stainless Steel SAFE-100 Core, J.J. Martin, R.S. Reid (NASA MSFC-USA)

10:40 a.m.

Refractory Metal Alloys, Candidate Materials for Advanced Nuclear Space Power Systems, P.J. Ring (Advanced Methods & Materials-USA), R.W. Buckman, Jr. (Refractory Metals Technology-USA)

11:00 a.m.

Overview of Radiation Effects in Refractory Alloys for Space Reactor Applications Steven J. Zinkle (ORNL-USA)

Nuclear Energy Application - Hydrogen—I, Session Organizer and Chair: Ken Schultz (General Atomics-USA)

Riverboat (William Penn Level)

10:00 a.m.

Deployment of GTHT300 Cogeneration for Hydrogen and Electric Generation, K. Kunitomi, X. Yan (JAERI-Japan), I. Minatsuki (Mitsubishi-Japan)

10:20 a.m.

Hydrogen Production from Nuclear Energy via High Temperature Electrolysis, J.S. Herring, J.E. O'Brien, C. Stoots, P.A. Lessing (INEEL-USA)

10:40 a.m.

Development of High Strength Reaction Sintered Silicon Carbide for Hydrogen Production System, S. Suyama, T. Kameda, Y. Itoh, N. Handa (Toshiba-Japan)

11:00 a.m.

Production of Hydrogen Using Nuclear Energy and Inorganic Membranes, B.L. Bischoff, L.D. Trowbridge, L.K. Mansur, C.W. Forsberg (ORNL-USA)

11:20 a.m.

MHR-Based Hydrogen Production Systems, M.B. Richards, A.S. Shenoy, K.R. Schultz (General Atomics-USA)

WEDNESDAY JUNE 16, 2004 • 1:00 P.M. – 2:30 P.M.

ICAPP '04 Plenary 4: Strategies for Optimizing the Nuclear Fuel Cycle, Chairs: Mujid Kazimi (MIT-USA); Bertrand Barré (AREVA-France)

William Penn (William Penn Level)

Speakers:

- Sue Ion (BNFL-UK)
- Buzz Savage (DOE-USA)
- Atsuyuki Suzuki (Japan Safety Commission-Japan)
- Chang Kook Yang (KNFC-Korea)

WEDNESDAY, JUNE 16, 2:00 • 2:30 P.M. – 4:00 P.M.

Economics, Regulation, Licensing and Construction, Session Organizers and Co-Chairs: Victor G. Snell (AECL-Canada), Michitugu Mori (TEPCO-Japan)

Oakmont (First Floor)

2:30 p.m.

Licensing the ACR in the USA – A Status Report, V. Snell (AECL-Canada), V. Langman (AECL Technologies-Canada), R. Ion (AECL-Canada), C. Reid (Bechtel-Canada)

2:50 p.m.

The Development of the KSNP, Areas of Improvements and Effects, J.Y. Yang, J.S. Yang, K.S. Yoon, B.N. Choi (KOPEC-Korea), S.Y. Park (KHNP-Korea)

3:10 p.m.

Identification and Resolution of Safety Issues for the Advanced Integral Type PWR, W.S. Kim, J.C. Jo, Y.G. Yune, H.J. Kim (KINS-Korea)

3:30 p.m.

Development of Regulatory Technical Requirements for the Advanced Integral Type Research Reactor, J.C. Jo, Y.G. Yune, W.S. Kim, H.J. Kim (KINS-Korea)

3:50 p.m.

What Will It Take to Get a New Nuclear Power Plant Financed?, G.R. George (PA Consulting Group-USA)

Supercritical Pressure Water Reactors—II, Session Organizers and Co-Chairs: Phil MacDonald (INEEL-USA), Katsumi Yamada (Toshiba-Japan)

Shadyside (First Floor)

2:30 p.m.

Safety Design Principle of Supercritical Water Cooled Reactors, Y. Ishiwatari, Y. Oka, S. Koshizuka (Univ of Tokyo-Japan)

2:50 p.m.

A Subchannel Analysis Code for Supercritical-Pressure LWR with Downward-Flowing Water Rods, T. Tanabe, S. Koshizuka, Y. Oka (Univ of Tokyo-Japan), K. Kitou (Hitachi-Japan)

3:10 p.m.

Improved Core Design of High Temperature Supercritical-Pressure Light Water Reactor, A. Yamaji, K. Kamei, Y. Oka, S. Koshizuka (Univ of Tokyo-Japan)

3:30 p.m.

Turbine Technologies for High Performance Light Water Reactors, D. Bittermann (Framatome ANP-Germany), J. Starflinger, T. Schulenberg (FZK-Germany)

Instrumentation for Space Nuclear Reactors, Session Organizer and Chair: Kelly Stinson-Bagby (Luna Innovations-USA)

Panel/Oval (Mezzanine Level)

2:30 p.m.

Fiber Bragg Gratings for High-Temperature Thermal Characterization, K.L. Stinson-Bagby, R.S. Fielder (Luna Innovations-USA)

2:50 p.m.

High-temperature Fiber Optic Sensors, an Enabling Technology for Nuclear Reactor Applications, R.S. Fielder, D. Klemer, K.L. Stinson-Bagby (Luna Innovations-USA)

3:10 p.m.

Test and Evaluation of Fiber Optic Sensors for High-Radiation Space Nuclear Power Applications, D. Klemer, R.S. Fielder, K.L. Stinson-Bagby (Luna Innovations-USA)

3:30 p.m.

Deflection Measurements of a Thermally Simulated Nuclear Core using a High-Resolution CCD-Camera, B.J. Stanojev (NASA MSFC-USA), M. Houts (LANL-USA)

Use of CFD in Plant Safety Assessment and Related Regulatory Issues, Session Organizer and Chair: Martin van Staden (PBMR-South Africa)

Grant Suite (Mezzanine Level)

2:30 p.m.

Rayleigh-Bénard Natural Convection Heat Transfer: Pattern Formation, Complexity and Predictability, T.N. Dinh, Y.Z. Yang, J.P. Tu, R.R. Nourgaliev, T.G. Theofanous (UC Santa Barbara-USA)

2:50 p.m.

Development of a Comprehensive Modeling Capability Based on Rigorous Treatment of Multi-Physics Phenomena Influencing Reactor Core Design, T. Sofu, D.P. Weber (ANL-USA), T.H. Chun, H.G. Joo (KAERI-Korea), J.W. Thomas, Z. Zhong, T.J. Downar (Purdue Univ-USA)

3:10 p.m.

Fluidelastic Instability of Helical Tubes Subjected to Single-Phase External Flow and Two-Phase Internal Flow, J.C. Jo, M.J. Jung, W.S. Kim, H.J. Kim (KINS-Korea)

3:30 p.m.

European Pressurized Water Reactor (EPR) SAR ATWS Accident Analyses by Using 3D Code Internal Coupling Method, R. Gagner, H. Lafitte, P. Dorneau (Framatome ANP-France), R.H. Stoudt (Framatome ANP-USA)

3:50 p.m.

Evaluation and Optimization of Spent Fuel Storage System Using Computational Fluid Dynamics, C.F. Viljoen, M.P. van Staden (PBMR-South Africa)

Plant Modernization and Retrofits, Session Organizer and Chair: Michael J. Winter (Exelon-USA)

Three Rivers (William Penn Level)

2:30 p.m.

Westinghouse Approach and Experience on Operating VVER (PWR)1000 I&C Modernization, M. Mahlab (Westinghouse-USA), N. Naydenov (Kozloduy NPP-Bulgaria), B. Sechensky (Westinghouse Energy Systems-Bulgaria)

2:50 p.m.

Optimized Application of MSRs and Steam Turbine Retrofits in Nuclear Power Plants, R. Crossland, J.-P. Gagelin, J. McCoach (ALSTOM-France)

3:10 p.m.

Progress Made in the SPINLINE 3 Based Refurbishment of the Safety I&C at the DUKOVANY VVER 440/213 NPPs, J.M. Palaric, C. Esmenjaud (Data Systems & Solution-France), J.P. Mauduit (Framatome ANP-France), F. Dalik (Skoda-Czech Republic), J. ROSOL (CEZ Dukovany NPP-Czech Republic)

3:30 p.m.

Modernization of the Turbine Startup System at the Ringhals Unit 2 Nuclear Power Plant, S. Lindroos, B. Vallin, T. Johansson (Ringhals AB-Sweden), M. Lipner, R. Mundy, W. Schratz (Westinghouse-USA)

Nuclear Energy Application - Hydrogen—II, Session Organizer and Chair: Stephen Melancon (Entergy-USA)

Sternwheeler (William Penn Level)

2:30 p.m.

Safe Hydrogen Generation by Nuclear HTR, I. Sochet, A.L. Viossat (ENSIB-France), J.L. Rouyer (EDF-France), P. Hemmerich (EDF SEPTEN-France)

2:50 p.m.

Nuclear Energy Technologies for Hydrogen Production, B. Yildiz, M.S. Kazimi (MIT-USA)

3:10 p.m.

Well-to-Wheels Analysis of Energy Use and Greenhouse Gas Emissions of Hydrogen Produced with Nuclear Energy, Y. Wu, M.Q. Wang, A.D. Vyas, D.C. Wade, T.A. Taiwo (Argonne-USA)

3:30 p.m.

Analysis of Economic and Infrastructure Issues Associated with Hydrogen Production from Nuclear Energy, W.A. Summers, M.R. Buckner (Savannah River-USA)

Fuel Design and Irradiation Issues for Next Generation Plants, Session Organizers and Co-Chairs: Gerald Egeland (Los Alamos National Lab-USA), Il Soon Hwang (Seoul Nat. Univ.-Korea)

Riverboat (William Penn Level)

2:30 p.m.

Heavy Ion Irradiation Effects in Zirconium Nitride, G.W. Egeland (New Mexico Institute of Mining and Technology-USA), J.A. Valdez, J.G. Swadener (LANL-USA), B. Oliver (PNNL-USA), K.J. McClellan, S.A. Maloy, K.E. Sickafus (LANL-USA), G.M. Bond (New Mexico Institute of Mining and Technology-USA)

3:00 p.m.

Fuel Design Modeling for PEACER Development, W.C. Nam, H.W. Lee, I.S. Hwang (*Seoul National Univ-Korea*)

3:30 p.m.

Fuel Assembly Self-Excited Vibration Test Methodology, RY. Lu, K.D. Broach, J.J. McEvoy (*Westinghouse-USA*)

WEDNESDAY JUNE 16, 2004 • 4:00 P.M.– 6:00 P.M.

ICAPP '04 Plenary 5: Visions for Next Nuclear Era, Chairs: William Bohlke (*Exelon-USA*), Maria Teresa Dominguez (*EA-Spain*)

William Penn (William Penn Level)

Speakers:

- Jacques Bouchard (*CEA-France*)
- Jong-Hwa Chang (*KAERI-Korea*)
- Regis Matzie (*Westinghouse-USA*)
- Ernest Moniz (*MIT-USA*)
- Shinzo Saito (*Atomic Energy Commission of Japan*)

Thursday • June 17, 2004

7:30 A.M. - 10:00 A.M.	MEETING REGISTRATION
8:00 A.M. - 10:00 A.M.	ICAPP TECHNICAL SESSIONS <ul style="list-style-type: none">• Advanced BWRs—I• Supercritical Pressure Water Reactors—III• Containment Performance & Hydrogen Control• Ex-Vessel Debris Coolability & Steam Explosion: Experiments & Supporting Analysis• Operation, Maintenance and Reliability• Separate Effects Thermal Hydraulic Experiments & Analysis—I• Advances in Core Design Methodology and Experimental Benchmarking• Advanced Issues in Welding and Materials
8:30 A.M. - 11:30 A.M.	NATIONAL MEETING TECHNICAL SESSIONS (see pg. 24)
8:30 A.M. - 1:45 P.M.	TECHNICAL TOUR: U.S. Tool & Die, Inc.
10:00 A.M. - 12:00 P.M.	ICAPP TECHNICAL SESSIONS <ul style="list-style-type: none">• Advanced PWRs: Developmental Stage—II• Lead-Alloy Fast Reactors• PRA and Risk-informed Decision Making: Advances in Practice• Ex-Vessel Debris Coolability & Steam Explosion: Theory and Modeling• Separate Effects Thermal Hydraulic Experiments & Analysis—II• Benchmark Analysis & Assessment

THURSDAY, JUNE 17, 2004 • 8:00 A.M.– 10:00 A.M.

Advanced BWRs—I, Session Organizers: Hideaki Heki (*Toshiba Corporation, JAPAN*), Robert E. Gamble (*GE Nuclear Energy-USA*), **Co-Chairs:** Hideaki Heki (*Toshiba Corporation, JAPAN*), Werner Brettschuh (*Framatome ANP GmbH-Germany*)

Oakmont (First Floor)

8:00 a.m.

Large Bundle Design and Its Development for ABWR-II, M. Moriwaki, M. Chaki, M. Aoyama (*Hitachi-Japan*), H. Okada, H. Kitamura (*TEPCO-Japan*), K. Hiraiwa (*Toshiba-Japan*)

8:20 a.m.

Evaluation of Stability and Transient Characteristics of ABWR-II Large Bundle Core and SSR Influence for Transient Phenomena by TRACC Code, M. Chaki, H. Soneda (*Hitachi-Japan*), S. Mizokami, H. Kitamura (*TEPCO-Japan*), K. Hiraiwa (*Toshiba-Japan*), T. Fukahori (*Global Nuclear Fuel-Japan*), J.G. Andersen (*Global Nuclear Fuel-USA*)

8:40 a.m.

The Status of ABWR-II Development, H. Okada, H. Kitamura (*TEPCO-Japan*), K. Moriya (*Hitachi-Japan*), H. Heki (*Toshiba-Japan*)

9:00 a.m.

Primary System and Components Design of ABWR-II, K. Yamada, S. Tajima (*Toshiba-Japan*), J. Mizutani, M. Nishimura (*TEPCO-Japan*), H. Soneda (*Hitachi-Japan*)

9:20 a.m.

Study on Application of Seismic Isolation System to ABWR-II Building, H. Saito, H. Tanaka, A. Noguchi (*TEPCO-Japan*), J. Suhara (*Shimizu-Japan*), Y. Fukushima (*Kajima-Japan*)

9:40 a.m.

Design and Performance of ABWR-II Safety System, H. Oikawa, T. Sato (*Toshiba-Japan*), K. Sato (*Hitachi-Japan*), T. Taminami (*TEPCO-Japan*)

Supercritical Pressure Water Reactors—III, Session Organizers and Co-Chairs: Phil MacDonald (*INEEL-USA*), Katsumi Yamada (*Toshiba-Japan*)

Shadyside (First Floor)

8:00 a.m.

Corrosion Behavior of Candidate Alloys for Supercritical Water Reactors, K. Sridharan, A. Zillmer, J.R. Licht, T.R. Allen, M.H. Anderson, L. Tan (*Univ of Wisconsin-USA*)

8:30 a.m.

Experiments on Supercritical Pressure Convective Heat Transfer Having Relevance to SPWR, J. Fewster, J.D. Jackson (*Univ of Manchester-UK*)

9:00 a.m.

Pre-design Studies of SCWR in Fast Neutron Spectrum: Evaluation of Operating Conditions and Analysis of the Behaviour in Accidental Situations, Ph. Marsault, C. Renault, G. Rimpault, P. Dumaz, O. Antoni (*CEA/Cadarache-France*)

9:30 a.m.

Channel Type Reactors with Supercritical Water Coolant: Russian Experience, Yu.N. Kuznetsov, B.A. Gabaraev (*RIPE-Russia*)

Containment Performance and Hydrogen Control, Session Organizer and Chair: Joseph A. Green (*Stone & Webster-USA*)

Panel/Oval (Mezzanine Level)

8:00 a.m.

Fission Product Removal Analysis in APR1400 Containment, Y.S. Jang, T.Y. Kim, H.J. Ko, J.Y. Lim, K.S. KO (*KOPEC-Korea*)

8:20 a.m.

Technology Development on Alternate Source Term Analysis and Application, Y.J. Lee, C.Y. Chung (*KOPEC-Korea*)

8:40 a.m.

Hydrogen Removal System in VVER-91/99 Project, V.V. Bezlepkin, I.M. Ivkov, S.E. Semashko, S.V. Svetlov, T.G. Vardanidze (*SPAEP-Russia*)

9:00 a.m.

The Influence of Dynamic Pressures in the Estimation of Large Early Release Frequency (LERF), K.I. Ahn, J.E. Yang (*KAERI-Korea*)

9:20 a.m.

Study on Drywell Cooler Applicability to Sever Accident Management, T. Nakagawa (*Toshiba Engineering-Japan*), M. Akinaga, R. Hamazaki (*Toshiba-Japan*), T. Matsuo (*TEPCO-Japan*), K. Hashimoto (*HITACHI-Japan*)

9:40 a.m.

An Applicability of the Quenching Mesh Under Severe Accident Conditions, S.W. Hong, J.H. Song (*KAERI-Korea*), S.H. Chang (*KAIST-Korea*)

Ex-Vessel Debris Coolability and Steam Explosion: Experiments and Supporting Analysis, Session Organizer: Manfred Burger (*Univ of Stuttgart, IKE-Germany*), **Co-Chairs:** Manfred Burger (*Univ of Stuttgart, IKE-Germany*), Walter Widmann (*Univ of Stuttgart, IKE-Germany*)

Grant Suite (Mezzanine Level)

8:00 a.m.

A Computational Analysis of the Cold Crucible Melting of Corium, B.T. Min, S.W. Hong, J.H. Kim (*KAERI-Korea*), S.H. Chung (*KAIST-Korea*), J.H. Song (*KAERI-Korea*)

8:20 a.m.

ECOKATS-2: A Large Scale Experiment on Melt Spreading and Subsequent Cooling by Top Flooding, H. Alsmeyer, T. Cron, G. Messermer (*FZK-Germany*), W. Haefner (*Becker Technologies-Germany*)

8:40 a.m.

Results of Reactor Material Experiments Investigating 2-D Core-Concrete Interaction and Debris Coolability, M.T. Farmer, S. Lomperski (ANL-USA), S. Basu (US NRC-USA)

9:00 a.m.

Physico-Chemical Processes on the Heterogeneous Boundary of Oxides Melts, Molten Iron with the Sacrifice Materials, Yu. P. Udalov, B.A. Lavrov (St. Petersburg's State Institute of Technology-Russia)

9:20 a.m.

The Influence of Variations in Water Depth and Melt Composition on a Spontaneous Steam Explosion in the TROI Experiments, J.H. Kim, I.K. Park, B.T. Min, S.W. Hong, Y.S. Shin, J.H. Song, H.D. Kim (KAERI-Korea)

9:40 a.m.

Blind Benchmark Calculations for Melt Spreading in the ECOSTAR Project, C. Spengler, H.J. Allelein (GRS-Germany), B. Spindler, J.M. Veteau (CEA-France), J.J. Foit, H. Alsmeyer (FZK-Germany), J. Artnik, M. Fischer (Framatome ANP-Germany)

Operation, Maintenance and Reliability, Session Organizer and Chair: Vaughn Whisker III (Penn State University-USA)

William Penn (William Penn Level)

8:00 a.m.

Simulating Nuclear Power Plant Maintenance Activities Using Immersive Virtual Environments V.E. Whisker, A.J. Baratta, T.S. Shaw (Penn State Univ-USA), J.W. Winters, J.A. Clelland, F.T. Johnson (Westinghouse-USA)

8:20 a.m.

Assessments of the Longevity of Metal of Equipment of Nuclear Power Plant Equipped with Reactor VVER-1000, V.P. Gorbatykh, S.N. Al-Kassem (MPEI-Russia)

8:40 a.m.

Applied Nuclear Accountability Systems: A Case Study in the System Architecture and Development of NUMAC, A.B. Campbell (Clemson Univ-USA)

9:00 a.m.

Application of System Analysis for Definition of the Causes of Anomalies Occurrence in the Reactor Circuit Equipment, K.N. Proskouriakov, M. Gholampoor, V.V. Karataev, A.S. Pavlov (MPEI-Russia), V.N. Nikiphorov (Energomash-Russia), V.U. Hiretdinov (OKB Gidropress-Russia)

9:20 a.m.

Human Factor Reliability during the Safe Operation of NPP Units, B.M. Tabakova (Technical Univ-Bulgaria), L. Tzokova (NPP Kozloduy-Bulgaria)

Separate Effects Thermal Hydraulic Experiments & Analysis—I, Session Organizer and Chair: Richard F. Wright (Westinghouse-USA)

Three Rivers (William Penn Level)

8:00 a.m.

Investigation of the Steam Flow Behavior During a Horizontal Injection in the Vertical Annulus, J.H. Koo, W.J. Kim, J.H. Ku, K.Y. Suh (Seoul National Univ-Korea), C.H. Song (KAERI-Korea)

8:30 a.m.

Prandtl Number Dependent Natural Convection With Internal Heat Sources, K.H. Lee, S.D. Lee, K.Y. Suh (Seoul National Univ-Korea), J.L. Rempe (INEEL-USA), F.B. Cheung (Penn State Univ-USA), S.B. Kim (KAERI-Korea)

9:00 a.m.

Simulation of Westinghouse G1 and G2 Low Pressure Boil-Off Experiments Using WCOBRA/TRAC, C. Frepoli, K. Ohkawa, R. Kemper (Westinghouse-USA)

9:30 a.m.

Thermal Hydraulic Analysis of Annular Fuel-Based Assemblies, K.H. Han, S.H. Chang (KAIST-Korea)

Advances in Core Design Methodology and Experimental Benchmarking, Session Organizer and Chair: Jess C. Gehin (Oak Ridge National Laboratory-USA)

Sternwheeler (William Penn Level)

8:00 a.m.

Development of Innovative Design Processor, Y.S. Park, C.O. Park (KNFC-Korea)

8:20 a.m.

Control Rod Pattern Planning of a BWR using Enhanced Nelder-Mead Method, Y. Kobayashi (TEPCO Systems Corporation-Japan), E. Aiyoshi (Keio Univ-Japan)

8:40 a.m.

New Uncertainty Reduction Method of Na Void Worth for Long-Life Small Fast Reactor, T. Takeda, T. Kitada, M. Toishikawa (Osaka Univ-Japan), N. Ueda (CRIEPI-Japan), M. Yamaoka (Toshiba-Japan), S. Okajima (JAERI-Japan)

9:00 a.m.

Analysis of SNEAK-7A & 7B Critical Benchmarks Using 3-D Deterministic Transport with Different Libraries, S.J. Kim (KAERI-Korea), I. Kodeli, E. Sartori (OECD NEA-France)

9:20 a.m.

Advances in Code Validation for Mixed-Oxide Fuel Use in Light-Water Reactors through Benchmark Experiments in the VENUS Critical Facility, P. D'hondt, P. Baeten (SCK/CEN-Belgium), B. Lance, D. Marloye, J. Basselier (BELGONUCLEAIRE-Belgium)

9:40 a.m.

Optimal Control Strategy Search Using a Simplest 3-D PWR Xenon Oscillation Simulator, Y. Shimazu (Hokkaido Univ-Japan)

Advanced Issues in Welding and Materials, Session Organizers: Il Soon Hwang (Seoul Nat. Univ-Korea), Akio Tsuji (Hitachi-Japan), **Chair:** Il Soon Hwang (Seoul Nat. Univ-Korea)

Riverboat (William Penn Level)

8:00 a.m.

Creep-fatigue Damage Evaluation of 316SS Y-junction Structure in Liquid Metal Reactor, J.B. Kim, H.Y. Lee, C.K. Park, G.P. Jeon, J.H. Lee (KAERI-Korea)

8:20 a.m.

Effect of Carbon Content in Filler Metal on J-R Characteristics of Weld Metal for Nuclear Power Plant Surge Line Piping, K.C. Kim, B.I. Yang, J.T. Kim, J.I. Suk, H.K. Kwon (Doosan-Korea)

8:40 a.m.

Development of a Weldable, Corrosion Resistant, Neutron Absorbing Structural Material, W.L. Hurt, R.E. Mizia, T.E. Lister, P.J. Pinhero (INEEL-USA), C.V. Robino (Sandia-USA), J.N. Dupont (Lehigh Univ-USA)

9:00 a.m.

Seismic Load Rating Procedure for Welded Steel Frames Oligocyclic Fatigue, M.D. Ratiu, N.T. Moisidis (CALCET-USA)

9:20 a.m.

Hydrogen Embrittlement of Oxide Dispersion Strengthening Steels under in-situ Cathodic Charging, J.S. Lee, A. Kimura (Kyoto Univ-Japan), S. Ukai (JNC-Japan), M. Fujiwara (Kobelco-Japan), I.S. Kim (KAIST-Korea)

THURSDAY, JUNE 17, 2004 • 10:00 A.M. – 12:00 P.M.

Advanced PWRs: Developmental Stage—II, Session Organizers and Co-Chairs: Lawrence Conway (Westinghouse-USA), Byung Oke Cho (KHNP, Korea)

Oakmont (First Floor)

10:00 a.m.

A Tight Lattice, Epithermal Core Design for the Integral PWR, J.G.B. Saccheri (BNL-USA), N.E. Todreas, M.J. Driscoll (MIT-USA)

10:20 a.m.

Internal Control Rod Drive Mechanisms, Design Options for IRIS, L.E. Conway, B. Petrovic (Westinghouse-USA)

10:40 a.m.

Design of a Fault Diagnosis System for Next Generation Nuclear Power Plants, K. Zhao, B.R. Upadhyaya (Univ of Tennessee-USA), R.T. Wood (ORNL-USA)

11:00 a.m.

Advanced Integral-type Small-size PWR – SMART, M.H. Chang, S.Q. Zee, K.K. Kim, S.H. Kim (KAERI-Korea)

11:20 a.m.

A Review of the Containment Building Design for the Advanced Reactor, J.H. Lee, M.B. Park, S.C. Yun (KOPEC-Korea)

Lead-Alloy Fast Reactors, Session Organizers: Craig F. Smith (*LLNL-USA*), Douglas Crawford (*Argonne National Laboratory-West-USA*); **Chair:** Douglas Crawford (*Argonne National Laboratory-West-USA*)

Shadyside (First Floor)

10:00 a.m.

Control and Safety System Design for Highly Autonomous Operation of a Modular Lead Reactor with Steam Cycle, R.B. Vilim (*Argonne-USA*)

10:20 a.m.

Optimization of a Small Modular Lead Fast Reactor with Steam Cycle for Remote Siting, E.E. Feldman, T.Y.C. Wei, J.J. Sienicki (*ANL-USA*)

10:40 a.m.

Thermal-Hydraulic Analysis on the Encapsulated Nuclear Heat Source (ENHS), T. Sakai (*JNC-Japan*), T. Iwasaki (*INESI-Japan*)

11:00 a.m.

Design and Experimental Study for Development of Pb-Bi Cooled Direct Contact Boiling Water Small Fast Reactor (PBWFR), M. Takahashi, T. Obara, T. Iguchi, A. Otsubo, M. Kondo, Y. Qi, M. Matsumoto, E. Yusibani, T. Akashi, A. Yamada, H. Nei, K. Hata, K. Hara, S. Uchida, H. Osada, Y. Kasahara, K. Matsuzawa, N. Sawa, Y. Yamada, K. Kurome, Y. Okubo (*Tokyo Inst of Tech-Japan*)

11:20 a.m.

Design Study of Pb-Bi-Cooled and NaK-Cooled Small Reactors: PBWFR and DSFR, A. Otsubo, M. Takahashi (*Tokyo Inst of Tech-Japan*)

PRA and Risk-informed Decision Making: Advances in Practice, Session Organizers and Co-Chairs: Nam Dinh (*UC Santa Barbara-USA*), Robert E. Gamble (*GE Nuclear Energy-USA*)

Panel/Oval (Mezzanine Level)

10:00 a.m.

New Work Environment for Reactor Safety Analysts: Integrated Training and Accident Analysis System, S.M. Modro, J.E. Fisher (*INEEL-USA*), M. Jankowski, J. Misak (*IAEA-Austria*), S.M. Neelov (*Kursk NPP-Russia*), G.E. Wilson (*KatJon Services-USA*)

10:20 a.m.

Atmospheric Dispersion Analysis Method Using MACCS2, J.M. Yang, R. Glaser (*LLNL-USA*)

10:40 a.m.

Seismic Initiating Event Analysis For A PBMR Plant, H. van Graan, D. Serbanescu, Y. Combrink (*PBMR-South Africa*), O. Coman (*Stevenson & Associates-Romania*)

11:00 a.m.

The Insights from Developing Specific Reliability Database for a Korean Nuclear Power Plant, B.L. Park, J.K. Han, S.K. Park, S.K. Kang (*KOPEC-Korea*), Y.K. Jeong, P.S. Kim, B.O. Cho, T.S. Jung, J.Y. Doh (*KHNP-Korea*)

11:20 a.m.

Lessons Learned from Internal Fire PSAs on CANDU Reactors and PRWs in Korea, S.H. Kim, B.H. Jeong, S.K. Kang (*KOPEC-Korea*), Y.K. Jeong, P.S. Kim, B.O. Cho (*KHNP-Korea*)

11:40 a.m.

Applications of Living Fire PRA Models to Fire Protection Significance Determination Process in Taiwan, D.C. Chen, C.K. Lo, T.J. Lin, C.H. Wu (*INER-Taiwan*), J.C. Lin (*ABSG Consulting-USA*)

12:00 p.m.

Probabilistic Safety Assessment of Tehran Research Reactor, S.M.H. Hosseini, M.R. Nematollahi (*Shiraz Univ-Iran*), K. Sepanloo (*AEOL-Iran*)

Ex-Vessel Debris Coolability and Steam Explosion: Theory and Modeling, Session Organizer: Manfred Burger (*Univ of Stuttgart, IKE-Germany*), **Co-Chairs:** Manfred Burger (*Univ of Stuttgart, IKE-Germany*), Walter Widmann (*Univ of Stuttgart, IKE-Germany*)

Grant Suite (Mezzanine Level)

10:00 a.m.

Coolability of Particle Beds: Examination and Influence of Friction Laws, P. Schäfer, M. Groll, W. Schmidt, W. Widmann, M. Bürger (*IKE Stuttgart Univ-Germany*)

10:30 a.m.

Theoretical Investigations of the COMET Concept for Ex-Vessel Core Melt Retention, W. Widmann, M. Buerger, G. Lohnert (*IKE Univ of Stuttgart-Germany*), H. Alsmeyer (*FZK IKET-Germany*)

11:00 a.m.

Modelling of Viscous and Inviscid Fluid Ejection through Orifices by Sparging Gas, B. Tourniaire, J.M. Seiler (*CEA/Grenoble-France*)

11:30 a.m.

New Miscibility Gap for Ex-vessel Corium Oxide Compositions, Y. Petrov (*St. Petersburg State Electrotechnical Univ-Russia*), Y. Udalov (*St. Petersburg State Inst of Tech-Russia*), K. Jurek (*Physical Inst CAS-Czech Republic*), P. Sazavski, P. Selucki (*Nuclear Research Inst-Czech Republic*), C. Journeau, P. Piluso (*CEA/Cadarache-France*)

Separate Effects Thermal Hydraulic Experiments & Analysis—II, Session Organizer and Chair: Richard F. Wright (*Westinghouse-USA*)

Three Rivers (William Penn Level)

10:00 a.m.

Analysis of Flow in Pilot Operated Safety and Relief Valve of Nuclear Reactor Coolant System, S.B. Kwon, D.W. Lee (*Kyungpook Natl Univ-Korea*), I.G. Kim, H.J. Ahn, H.J. Kim (*KINS-Korea*)

10:20 a.m.

Incorporation of a Helical Tube Heat Transfer Model in the MARS Thermal Hydraulic Systems Analysis Code for the T/H Analysis of SMART Reactor, Y.J. Lee, B.D. Chung (*KAERI-Korea*), J.C. Jo, H.J. Kim (*KINS-Korea*), U.C. Lee (*Seoul National Univ-Korea*)

10:40 a.m.

Large-Scale Water-Vapor Two-Phase Flow Simulations in Advanced Light Water Reactor Cores, H. Yoshida, K. Takase (*JAERI-Japan*), Y. Ose (*Yamato-Japan*), H. Tamai, T. Kano, H. Akimoto (*JAERI-Japan*)

11:00 a.m.

Experiment and RELAP5 Analysis for the Downcomer Boiling of APR1400 under LBLOCA, D.W. Lee, H.C. No, E.H. Lee (*KAIST-Korea*), S.J. Oh (*KHNP-Korea*), C.H. Song (*KAERI-Korea*)

11:20 a.m.

Large Scale Verification of External RPV Cooling in Case of Severe Accident, H. Schmidt (*Framatome ANP-Germany*)

Benchmark Analysis & Assessment, Session Organizer and Chair: Andre Gagnon (*Westinghouse-USA*)

Sternwheeler (William Penn Level)

10:00 a.m.

Simplified SBLOCA Analysis of AP1000, W.L. Brown (*Westinghouse-USA*)

10:20 a.m.

Experimental Verification of the Three-dimensional Thermo-Hydraulic Models in the Best-Estimate Code BAGIRA, S.D. Kalinichenko, A.E. Kroshilin, V.E. Kroshilin, A.V. Smirnov (*VNIIAES-Russia*), P. Kohut (*BNL-USA*)

10:40 a.m.

Transient Analysis for Evaluating the Potential Boiling in the High Elevation Emergency Cooling Units of PWR Following a Hypothetical Loss of Coolant Accident (LOCA) and Subsequent Water Hammer Due to Pump Restart, S.M. Husaini, R.K. Qashu (*Southern California Edison-USA*)

11:00 a.m.

Single Channel Flow Blockage Accident Phenomena Identification and Ranking Table (PIRT) for the Advanced CANDU Reactor, N.K. Popov, A. Abdul-Razzak (*AECL-Canada*), H. Sills (*Consultant-Canada*), V.G. Snell, V. Langman (*AECL-Canada*)

11:20 a.m.

Analysis of the VVER Standard Problem INSC-PSBV1 –11% Coolant Leak from Upper Plenum– with RELAP5/MOD3.2, O. Melikhov, V. Melikhov, Yu. Parfenov, O. Gavritenkova, I. Lipatov (*EREC-Russia*), I.V. Elkin (*RCC-Russia*), P. Bayless (*INEEL-USA*)

11:40 a.m.

Thermo-hydraulic Simulation of Pressurizer in Transient Cases, A.T. Ardeshir, M. Nematollahi (*Univ of Shiraz-Iran*), K. Sepanloo (*AEOL-Iran*), F. Daneshvari (*Azad Univ-Iran*)

Professional Development Workshop #1

"Preparing for the Nuclear Engineering Professional Engineering Exam"

SUNDAY, JUNE 13, 2004 • 9:00 A.M. - 5:00 P.M. • LOCATION: Sky Room

Workshop Organizer:

Dr. Robert Busch, Director, Nuclear Engineering Laboratory, University of New Mexico

Purpose of Workshop:

This course is designed for individuals who have passed the Fundamentals of Engineering exam (formerly the EIT exam) and who are preparing for the Professional Engineering Exam (PE exam) in Nuclear Engineering. Instructors will provide details on registration and how it differs from state to state, plus an overview of the examination formats. The six basic skill areas, neutronics, instrumentation and measurements, nuclear power shielding, nuclear materials and fuels and radioactive waste will be discussed in details. For each skill area, the instructor will describe 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 a sample exam and list of recommended resources for continued study.

Workshop Outline:

Introduction

Shielding

Radioactive Waste Management

Nuclear Power Skills

Fuel Cycle

PRA

Neutronics Skills

Instrumentation and Measurement Skills Area

Robert Busch, University of New Mexico

Charles Sparrow, Mississippi State University

Dan Bullen, Iowa State University

T/B/D

Dale Lancaster, NuclearConsultants.com

Gerald Loignon, South Carolina Electric and Gas

T/B/D

T/B/D

Professional Development Workshop #2

Project Management in the Nuclear Industry

Sunday, June 13, 2004

9:00 a.m. - 5:00 p.m.

Location: Conference Room A (Omni William Penn Hotel)

Virtually everyone has been involved in a large project if they have worked in the nuclear industry for a few years. This workshop will give attendees the opportunity to benchmark their organizations, sharpen their skills in project management and to share their experiences with others.

Four industry experts, with over 75 years of combined experience, will present the challenges that they and their organizations have faced in the management of large projects within the nuclear industry. The workshop will be highly interactive (including Q&As, case studies, and table tops) so as to allow the attendees to learn from the speakers and each other.

AGENDA

Time	Topic	Speaker
9:00 a.m. - 9:15 a.m.	Introduction	Jeff Robertson, Duke Power Company
9:15 a.m. - 9:25 a.m.	Opening/Keynote Speaker	E. James Reinsch, Bechtel Power Corporation; President-elect, American Nuclear Society
9:25 a.m. - 10:10 a.m.	Review of the ANS Project in Support of Department of Homeland Security: Risk Communications on Dirty Bombs	Ted Quinn, Consultant
10:10 a.m. - 10:55 a.m.	Role of the Project Manager in Assuring Compliance with Corporate Goals While Meeting the Needs of the Customer	Jim Flaherty, Framatome ANP
10:55 a.m. - 11:10 a.m.	Break	
11:10 a.m. - 11:55 a.m.	Case Study	
11:55 a.m. - 12:10 p.m.	Discussion	
12:10 p.m. - 1:10 p.m.	Lunch	
1:10 p.m. - 1:55 p.m.	Scope Creep — The Creep That Kills	Tom Gerlowski, Westinghouse Electric Company, LLC
1:55 p.m. - 2:40 p.m.	Oconee — Preparing to Excel for the Next Thirty Years!	Bill Edge, Duke Power Company
2:40 p.m. - 2:55 p.m.	Break	
2:55 p.m. - 4:10 p.m.	Round Table	

DOE Nuclear Criticality Safety Program

DSA/NCS Workshop

Friday, June 18, 2004 • 8:00 A.M. - 4:30 P.M.

Location: William Penn Ballroom

Purpose

The NCSP is a comprehensive program that integrates the need to maintain the US criticality safety infrastructure with effective support for criticality safety programs throughout the DOE complex. Two groups have important roles in the NCSP, and this session will focus on their recent activities. In the morning session, following remarks by Program management, the Criticality Safety Coordinating Team (CSCT) will discuss several current issues. Presentation of Documented Safety Analysis (DSA) issues at the INEEL will follow, and the End-Users Group will organize the rest of the day as a forum to discuss the relationship between criticality safety and the entire DSA process. This session is open to anyone interested in a discussion of criticality safety and DSA issues from the point of view of both criticality safety and safety basis practitioners. This session, while not part of the official ANS program, has been arranged through the courtesy of the ANS Headquarters staff. While the NCSP and the DSA process are specific to the DOE, the interaction between criticality safety experts and experts in other safety areas must be faced within other organizations, both nationally and internationally. In addition to DOE and contractor personnel, NRC and licensee safety personnel are encouraged to attend.

Program

8:00 a.m.	Welcome and Introduction (A. Garcia, DOE NE-ID)
8:05 a.m.	NCSP Status Report (J. Felty, SAIC)
8:20 a.m.	CSSG Status Report (A. Garcia, DOE NE-ID)
8:30 a.m.	CSCT Activity Summary (J. McKamy, DOE EH)
9:00 a.m.	End-Users Group Report (C. Robinson, BWXT Y-12)
9:20 a.m.	DOE-EH Activities Related to DSA/NCS Issues (J. McKamy, DOE EH)
9:40 a.m.	Report on CSCT Tracking/Trending of NCS Infractions (R. Wilson, DOE EM)
10:00 a.m.	Break
10:15 a.m.	NCSP Website Status and Demonstration (S. Huang, LLNL)
10:35 a.m.	Report from EFCOG on DSA/NCS Activities (K. Carroll, BWXT Y-12)
11:00 a.m.	DSA Issues at the INEEL (T. Hobbs, BBWI)
11:20 a.m.	DSA Issues at the INEEL (J. Carroza, DOE NE-ID)
Noon	Lunch Break
1:00 p.m.	DSA/NCS Workshop Report (C. Robinson, BWXT Y-12)
1:10 p.m.	DSA/NCS Issues at the INEEL (T. Taylor, BBWI)
1:30 p.m.	Impact of DNFSB Recommendation 2002-3 and the DOE Administrative Control Standard (K. Carroll and C. Robinson, BWXT Y-12)
2:30 p.m.	NCS/DSA Issues at ORO (K. Reynolds, DOE ORO)
2:50 p.m.	Open Forum
3:30 p.m.	Open Discussion, Path Forward, Action Items (A. Garcia, DOE NE-ID)
4:00 p.m.	Closing Remarks (J. Felty, SAIC)

Committee Meetings

NATIONAL COMMITTEES

Accreditation Policies & Procedures

Sunday, 5:00 p.m. - 7:00 p.m.
Location: Conference D

Board of Directors/ Professional Division Reports

Wednesday, 4:00 p.m. - 6:00 p.m.
Location: Grand Ballroom

Board of Directors

Thursday, 8:00 a.m. - 5:00 p.m.
Location: Grand Ballroom

Book Publishing

Sunday, 11:00 a.m. - 12:00 p.m.
Location: Frick

Business Meeting

Monday, 4:00 p.m. - 5:00 p.m.
Location: Urban

Bylaws & Rules

Sunday, 1:30 p.m. - 4:00 p.m.
Location: Conference D

Finance

Tuesday, 4:00 p.m. - 7:00 p.m.
Location: Vandergrift

Honors & Awards

Monday, 4:00 p.m. - 7:00 p.m.
Location: Vandergrift

International

Tuesday, 4:00 p.m. - 7:00 p.m.
Location: Monongahela

Local Sections/Workshop

Sunday, 8:00 a.m. - 12:00 p.m.
Location: Allegheny

Meetings, Proceedings, & Transactions

Monday, 7:30 a.m. - 8:30 a.m.
Location: Laughlin

Membership

Sunday, 11:00 a.m. - 1:00 p.m.
Location: Parkview West

National Program Committee (NPC) – Program

Wednesday, 4:00 p.m. - 7:00 p.m.
Location: Monongahela

National Program Committee (NPC) – Screening & International

Monday, 4:00 p.m. - 7:00 p.m.
Location: Conference C

NEED

Sunday, 6:00 p.m. - 7:00 p.m.
Location: Carnegie I

Nuclear News Editorial Advisory

Sunday, 4:00 p.m. - 5:30 p.m.
Location: Heinz

Planning

Sunday, 2:00 p.m. - 6:00 p.m.
Location: Laughlin

Policies & Procedures/ Quality Improvement (PPOI)

Sunday, 2:00 p.m. - 4:00 p.m.
Location: Frick

President's Meeting with Committee Chairs

Sunday, 9:00 a.m. - 10:00 a.m.
Location: Monongahela

President's Meeting with Division Chairs

Sunday, 10:00 a.m. - 12:00 p.m.
Location: Monongahela

Professional Development Workshop

Sunday, 1:30 p.m. - 3:00 p.m.
Location: Parlor E & F

Professional Divisions

Tuesday, 4:00 p.m. - 7:00 p.m.
Location: Grand Ballroom

Professional Engineering Exam

Sunday, 3:00 p.m. - 6:00 p.m.
Location: Conference B

Professional Women in ANS

Monday, 11:30 a.m. - 1:00 p.m.
Location: Oliver

Public Information

Monday, 4:00 p.m. - 5:30 p.m.
Location: Parkview West

Public Policy

Wednesday, 4:00 p.m. - 6:00 p.m.
Location: Ascot

Publications Steering

Monday, 4:00 p.m. - 6:00 p.m.
Location: Fox Chapel

Radwaste Solutions Editorial Advisory

Monday, 7:00 a.m. - 8:30 a.m.
Location: Vandergrift

Scholarship Policies & Procedures

Tuesday, 4:00 p.m. - 6:00 p.m.
Location: Conference C

Student Sections

Sunday, 12:00 p.m. - 2:00 p.m.
Location: Laughlin

Technical Journals

Sunday, 1:30 p.m. - 3:30 p.m.
Location: Heinz

SPECIAL COMMITTEES

ETHICS

Sunday, 8:00 p.m. - 10:00 p.m.
Location: Parkview West

Non-Proliferation

Monday, 5:00 p.m. - 7:00 p.m.
Location: Conference B

Nuclear Energy Renaissance

Monday, 4:00 p.m. - 7:00 p.m.
Location: Heinz

Power Generation Sector Outreach

Sunday, 11:30 a.m. - 1:00 p.m.
Location: Fox Chapel

Work Force Issues

Sunday, 12:00 p.m. - 1:30 p.m.
Location: Conference D

OTHER COMMITTEES

CNF

Monday, 7:30 p.m. - 10:00 p.m.
Location: Parkview East

D&D Topical Planning Committee

Tuesday, 4:00 p.m. - 6:00 p.m.
Location: Parkview West

DOE NCS Program – CSSG

Wednesday, 4:00 p.m. - 6:00 p.m.
Location: Vandergrift

Eagle Alliance Board of Directors

Sunday, 1:00 p.m. - 3:30 p.m.
Location: Carnegie I

Faculty Advisors Roundtable

Monday, 7:00 a.m. - 8:15 a.m.
Location: Parkview West

ICAPP 2005 Planning Committee

Tuesday, 11:30 a.m. - 1:00 p.m.
Location: Asiago Restaurant

INSC

Sunday, 8:00 a.m. - 5:00 p.m.
Location: Paneled/Oval

Marketing Pilot Project Meeting

Monday, 2:30 p.m. - 4:30 p.m.
Location: Parkview East

Mathematics & Computation/Reactor Physics/Radiation Protection & Shielding Joint Benchmark Meeting

Sunday, 11:00 a.m. - 1:00 p.m.
Location: Carnegie I

NEDHO

Monday, 4:30 p.m. - 6:00 p.m.
Location: Phipps

Operating Nuclear Facility Safety – Planning Meeting

Tuesday, 7:00 a.m. - 8:00 a.m.
Location: Parkview West

Technical Group on Computational Medical Physics

Sunday, 4:00 p.m. - 5:30 p.m.
Location: Conference C

UWC 2004 Planning Committee

Sunday, 10:00 a.m. - 11:30 a.m.
Location: Conference D

DIVISION COMMITTEES

Accelerator Applications

EXECUTIVE

Monday, 11:30 a.m. - 1:00 p.m.
Location: Vandergrift

PROGRAM/MEMBERSHIP

Sunday, 7:30 p.m. - 9:30 p.m.
Location: Laughlin

Aerospace Nuclear Science and Technologies

Sunday, 10:00 a.m. - 12:00 p.m.
Location: Heinz

Biology & Medicine

COMMITTEE OF THE WHOLE
Sunday, 4:00 p.m. - 5:30 p.m.
Location: Fox Chapel

Decommissioning, Decontamination & Reutilization

COMMITTEE MEETING
Sunday, 1:00 p.m. - 5:30 p.m.
Location: Allegheny

Education & Training

ALPHA NU SIGMA
Sunday, 11:00 a.m. - 12:00 p.m.
Location: Parkview East

EXECUTIVE/MEMBERSHIP/
HONORS & AWARDS
Sunday, 1:30 p.m. - 4:00 p.m.
Location: Conference C

PROGRAM
Sunday, 10:30 a.m. - 12:00 p.m.
Location: Conference C

UNIVERSITY/INDUSTRY RELATIONS
Sunday, 9:30 a.m. - 10:30 a.m.
Location: Conference C

Environmental Sciences

EXECUTIVE
Sunday, 10:00 a.m. - 2:30 p.m.
Location: Conference B

PROGRAM
Sunday, 8:30 a.m. - 10:00 a.m.
Location: Conference B

Fuel Cycle & Waste Management

EXECUTIVE
Sunday, 3:30 p.m. - 5:30 p.m.
Location: Oakmont

PROGRAM
Sunday, 1:30 p.m. - 3:30 p.m.
Location: Oakmont

TECHNICAL OPERATING COMMITTEES
Sunday, 12:00 p.m. - 1:30 p.m.
Location: Oakmont

Fusion Energy

EXECUTIVE
Sunday, 3:00 p.m. - 5:00 p.m.
Location: Carnegie I

Human Factors

EXECUTIVE/PROGRAM
Monday, 4:00 p.m. - 6:30 p.m.
Location: Oliver

Isotopes & Radiation

EXECUTIVE
Sunday, 2:30 p.m. - 4:00 p.m.
Location: Parkview East

JOINT PROGRAM COMMITTEE -
I&R & BM
Sunday, 1:30 p.m. - 2:30 p.m.
Location: Parkview East

Materials Science & Technology

EXECUTIVE
Monday, 7:00 p.m. - 9:00 p.m.
Location: Laughlin

Mathematics & Computation

EXECUTIVE
Sunday, 2:00 p.m. - 4:00 p.m.
Location: Fox Chapel

PROGRAM
Sunday, 1:00 p.m. - 2:00 p.m.
Location: Fox Chapel

Nuclear Criticality Safety

EDUCATION
Sunday, 10:00 a.m. - 11:00 a.m.
Location: Phipps

EXECUTIVE
Sunday, 3:00 p.m. - 5:30 p.m.
Location: Phipps

PROGRAM
Sunday, 1:00 p.m. - 3:00 p.m.
Location: Phipps

Nuclear Installation Safety

EXECUTIVE
Monday, 5:00 p.m. - 8:00 p.m.
Location: Carnegie I

PROGRAM
Sunday, 7:30 p.m. - 11:00 p.m.
Location: Frick

Operations & Power

EXECUTIVE
Sunday, 3:00 p.m. - 6:00 p.m.
Location: Parkview West

PROGRAM
Sunday, 1:00 p.m. - 3:00 p.m.
Location: Parkview West

Radiation Protection & Shielding

EXECUTIVE
Monday, 5:00 p.m. - 7:00 p.m.
Location: Laughlin

PROGRAM
Monday, 4:00 p.m. - 5:00 p.m.
Location: Laughlin

Reactor Physics

EXECUTIVE
Sunday, 4:00 p.m. - 6:00 p.m.
Location: Vandergrift

GOALS & PLANNING
Sunday, 12:00 p.m. - 2:00 p.m.
Location: Vandergrift

PROGRAM
Sunday, 2:00 p.m. - 4:00 p.m.
Location: Vandergrift

Robotics & Remote Systems

EXECUTIVE
Sunday, 11:00 a.m. - 3:00 p.m.
Location: Oliver

Thermal Hydraulics

EXECUTIVE
Sunday, 5:00 p.m. - 7:00 p.m.
Location: Oliver

HONORS & AWARDS
Tuesday, 5:00 p.m. - 7:00 p.m.
Location: Oliver

PROGRAM
Sunday, 3:00 p.m. - 5:00 p.m.
Location: Oliver

STANDARDS COMMITTEES

ANS Standards Board
Tuesday, 8:00 a.m. - 5:00 p.m.
Location: Conference B

ANS-3.11
Tuesday, 1:00 p.m. - 5:00 p.m.
Location: Laughlin

ANS-6.1.1
Wednesday, 9:00 a.m. - 11:00 a.m.
Location: Carnegie I

ANS-8.1
Thursday, 7:00 a.m. - 8:30 a.m.
Location: Laughlin

ANS-8.23
Saturday, 1:00 p.m. - 4:00 p.m.
Location: Conference B

ANS-8.26
Tuesday, 7:00 a.m. - 8:30 a.m.
Location: Laughlin

ANS-8.27
Thursday, 8:00 a.m. - 5:00 p.m.
Location: Vandergrift

ANS-10.4
Wednesday, 7:00 p.m. - 9:00 p.m.
Location: Conference C

ANS-19, Reactor Physics
Monday, 8:30 a.m. - 10:30 a.m.
Location: Conference C

ANS-28
Wednesday, 8:30 a.m. - 12:00 p.m.
Location: Vandergrift

ANS-52.1
Tuesday, 8:00 a.m. - 5:00 p.m.
Location: Heinz

ANS-58.2, Kick-Off Meeting
Tuesday, 8:30 a.m. - 11:30 a.m.
Location: Parkview West

Decontamination and Site Remediation,
NFSC Subcommittee
Tuesday, 7:00 a.m. - 8:30 a.m.
Location: Vandergrift

N-16
Monday, 9:00 a.m. - 4:00 p.m.
Location: Fox Chapel

NFSC
Monday, 8:00 a.m. - 5:00 p.m.
Location: Carnegie I

NOTE: This is a preliminary listing. Times and locations are subject to change. The Official Program, distributed at the meeting, will contain the final meeting schedule.

Mentor Registration Form

Invest in Your Future

ANS Mentoring Program
Sunday, Jun 13, 2004
5:00 - 6:00 pm
Park View East

The Mentoring Program is a unique opportunity for Mentors to invest in the future by connecting with the next shooting stars (new members, first-time meeting attendees, and student members) of the nuclear industry. It's a chance for those new to the profession to connect with "those in the know;" experienced professionals with real-world knowledge to share.

What are the benefits for Mentors and Protégés?

Mentors

- Influence the future
- Keep up to date
- Leave a legacy

Protégés

- Fast track a career
- Get individual attention
- Build a professional relationship

If you are the next shooting star of the nuclear industry or you wish to catch a shooting star, sign up today to participate in the ANS Mentoring Program. You'll be given information to guide you and support from previous program participants. Of course, you'll be connected with someone whose interests match your own with the potential for lifelong learning and friendship.

Yes. I want to be a: Mentor Protégé

(Please print all information)

Name _____

Company or School _____

Address _____ City / State / Zip _____

Phone _____ Fax _____ Email _____

Professional Interests:

Please list the Divisions and Committees of which you are, or would like to be, a member:

Please mail, fax, or email this form by June 4, 2004 to:

Membership Department
American Nuclear Society
555 N. Kensington Avenue
La Grange Park, IL 60526

Phone: 800-323-3044 Fax: 708-579-8295 Email: sbraland@ans.org

Meeting Registration Form

2004 ANS ANNUAL MEETING

"A Golden Anniversary — A Golden Opportunity"

EMBEDDED TOPICAL MEETING:

"2004 International Congress on Advances in Nuclear Power Plants (ICAPP 2004)"

June 13-17, 2004 • Pittsburgh, Pennsylvania • Omni William Penn Hotel

FILL OUT COMPLETELY - PLEASE PRINT

ANS ID #: _____

FIRST NAME/MIDDLE INITIAL: _____ LAST NAME: _____

JOB TITLE: _____ COMPANY/AFFILIATION: _____

STREET ADDRESS: _____ COMPANY OR HOME

CITY/STATE/ZIP CODE: _____ COUNTRY: _____

TELEPHONE: _____ FACSIMILE: _____

EMAIL: _____

ANS MEMBERS, PLEASE CHECK IF THIS IS YOUR: NEW ADDRESS (WILL CHANGE MEMBER RECORD) OR MEETING REGISTRATION ADDRESS ONLY

PLEASE INDICATE: ANS NATIONAL INDIVIDUAL MEMBER ANS FELLOW EMERITUS MEMBER STUDENT

NON-MEMBER NON-MEMBER INVITED SPEAKER ORGANIZATION MEMBER REPRESENTATIVE

SPECIAL ACCOMMODATION REQUIRED TO FULLY PARTICIPATE (40)

ANS LOCAL SECTION MEMBER (ANS LOCAL SECTION MEMBERS WHO ARE NOT NATIONAL MEMBERS, DO NOT QUALIFY FOR ANS MEMBER RATE.)

INDIVIDUAL CONFERENCE REGISTRATION – PREREGISTRATION DEADLINE FOR REDUCED FEE IS MAY 11, 2004

	FEES PAID BY MAY 11, 2004		FEES PAID AFTER MAY 11, 2004	
	ANS NATIONAL MEMBER	NON-MEMBER*	ANS NATIONAL MEMBER	NON-MEMBER*
FULL ANS & TOPICAL MEETING INCLUDES 1 TICKET TO ANS 50TH ANNIVERSARY BANQUET	[01] <input type="checkbox"/> \$590	[02] <input type="checkbox"/> \$740	[09] <input type="checkbox"/> \$690	[10] <input type="checkbox"/> \$840
ONE DAY ATTENDANCE CIRCLE ONE: MON TUES WED THUR DOES <u>NOT</u> INCLUDE TICKET TO ANS 50TH ANNIVERSARY BANQUET OR OTHER EVENTS	[03] <input type="checkbox"/> \$450	[04] <input type="checkbox"/> \$600	[11] <input type="checkbox"/> \$525	[12] <input type="checkbox"/> \$675
STUDENT DOES <u>NOT</u> INCLUDE TICKET TO ANS 50TH ANNIVERSARY BANQUET OR OTHER EVENTS	[05] <input type="checkbox"/> \$75	[06] <input type="checkbox"/> \$125	[13] <input type="checkbox"/> \$125	[14] <input type="checkbox"/> \$175
ANS EMERITUS MEMBER DOES <u>NOT</u> INCLUDE TICKET TO ANS 50TH ANNIVERSARY BANQUET OR OTHER EVENTS	[07] <input type="checkbox"/> \$75	N/A	[15] <input type="checkbox"/> \$125	N/A
SPOUSE/GUEST (INCLUDES 1 TICKET TO ANS 50TH ANNIVERSARY BANQUET & ADMITTANCE TO THE SPOUSE/GUEST HOSPITALITY BREAKFAST ON MONDAY, TUESDAY, & WEDNESDAY - DOES <u>NOT</u> INCLUDE TECHNICAL SESSIONS OR OTHER EVENTS.)	[08] <input type="checkbox"/> \$110	N/A	[16] <input type="checkbox"/> \$155	N/A

PLEASE REGISTER ON-SITE AFTER WEDNESDAY, JUNE 9, 2004.

Please note: You must select one of the meeting publications (choice [41] or [42] on the following page, or the TRANSACTIONS will be given to you by default.

PLEASE SUPPLY SPOUSE/GUEST NAME: _____

NAME: _____

SPECIAL EVENTS AND TOURS

SUNDAY, JUNE 13, 2004

ADDITIONAL TICKETS FOR ANS 50TH ANNIVERSARY BANQUET [21] # OF TICKETS ___ @ \$65 EACH = \$ _____

MONDAY, JUNE 14, 2004

SPOUSE/GUEST TOUR: "MOLLY'S TROLLEYS" [22] # OF TICKETS ___ @ \$40 EACH = \$ _____

OPERATIONS AND POWER DIVISION LUNCHEON AT NICK & TONY'S RESTAURANT [23] # OF TICKETS ___ @ \$40 EACH = \$ _____

DDR AND FCWM DIVISIONS LUNCHEON AT THE CARLTON RESTAURANT [24] # OF TICKETS ___ @ \$40 EACH = \$ _____

EVENING EVENT: RECEPTION AT HEINZ FIELD & FIREWORKS [25] # OF TICKETS ___ @ \$35 EACH = \$ _____

TUESDAY, JUNE 15, 2004

SPOUSE/GUEST TOUR: CARNEGIE MUSEUM OF NATURAL HISTORY [26] # OF TICKETS ___ @ \$45 EACH = \$ _____

HONORS AND AWARDS LUNCHEON AT OMNI WILLIAM PENN HOTEL [27] # OF TICKETS ___ @ \$40 EACH = \$ _____

EVENING EVENT: MULTI-DIVISION MIXER AT THE PENN BREWERY [28] # OF TICKETS ___ @ \$40 EACH = \$ _____

WEDNESDAY, JUNE 16, 2004

SPOUSE/GUEST TOUR: JOHN HEINZ PITTSBURGH HISTORY CENTER [29] # OF TICKETS ___ @ \$45 EACH = \$ _____

NUCLEAR INSTALLATIONS SAFETY DIVISION LUNCHEON AT OMNI WILLIAM PENN HOTEL [30] # OF TICKETS ___ @ \$40 EACH = \$ _____

EVENING EVENT: THE FRICK ART & HISTORICAL CENTER [31] # OF TICKETS ___ @ \$40 EACH = \$ _____

THURSDAY, JUNE 17, 2004

TECHNICAL TOUR: U.S. TOOL & DIE, INC. [32] # OF TICKETS ___ @ \$15 EACH = \$ _____

MEETING PUBLICATIONS

ALL REGISTERED MEETING ATTENDEES WILL RECEIVE EITHER A CD-ROM OF THE ANS ANNUAL MEETING SUMMARIES OR A CD-ROM OF THE ICAPP 2004 PROCEEDINGS. INDICATE WHICH MEETING PUBLICATION YOU WISH TO RECEIVE (SELECT ONE):

[41] ___ TRANSACTIONS (VOLUME 90) CONTAINS SUMMARIES FROM THE ANS ANNUAL MEETING (CD-ROM ONLY)

[42] ___ ICAPP 2004 PROCEEDINGS (CD-ROM ONLY)

ADDITIONAL PUBLICATIONS AVAILABLE FOR PURCHASE:

[43] I WANT TO PURCHASE AN ADDITIONAL COPY OF THE ANS TRANSACTIONS (ANNUAL MEETING SUMMARIES) ON CD-ROM FOR \$75 \$ _____

[44] I WANT TO PURCHASE THE FULL PAPERS PRESENTED AT THE ICAPP 2004 EMBEDDED TOPICAL MEETING "INTERNATIONAL CONGRESS ON ADVANCES IN NUCLEAR POWER PLANTS" ON CD-ROM FOR \$75 \$ _____

[45] I WANT TO PURCHASE A PRINTED COPY OF THE ANS TRANSACTIONS (ANNUAL MEETING SUMMARIES) FOR \$25 \$ _____

ANS PROFESSIONAL DEVELOPMENT WORKSHOP REGISTRATION

REGISTRATION FOR THE ANS PROFESSIONAL DEVELOPMENT WORKSHOPS IS SEPARATE FROM, AND IN ADDITION TO, THE 2004 ANS ANNUAL MEETING. IF ATTENDING BOTH, A WORKSHOP AND THE ANNUAL MEETING, YOU MUST REGISTER AND PAY FOR THEM BOTH. REGISTRATION FOR THE WORKSHOPS INCLUDES COPIES OF AVAILABLE PAPERS AND MATERIALS. PLEASE REGISTER EARLY, SPACE IS LIMITED!

WORKSHOP #1: "PREPARING FOR THE PROFESSIONAL ENGINEERING EXAM" - SUNDAY, JUNE 13, 2004

ANS NAT'L MEMBER [50] @ \$450 NON-MEMBER [51] @ \$550

WORKSHOP #2: "PROJECT MANAGEMENT IN THE NUCLEAR INDUSTRY" - SUNDAY, JUNE 13, 2004

ANS NAT'L MEMBER [52] @ \$450 NON-MEMBER [53] @ \$550

*ATTENTION NON-MEMBER REGISTRANTS:

NON-MEMBER FEE ENTITLES YOU TO A ONE-TIME FREE MEMBERSHIP IN THE AMERICAN NUCLEAR SOCIETY (DATE OF PROCESSED APPLICATION THROUGH DEC 2004). YOU MUST FIRST FILL OUT A MEMBERSHIP APPLICATION. AFTER YOUR APPLICATION IS PROCESSED, YOU WILL BE SENT A MEMBERSHIP CARD AND NUCLEAR NEWS MAGAZINE, BEGINNING YOUR BENEFITS. NON-U.S. RESIDENTS WILL NEED TO PAY \$54 FOR NUCLEAR NEWS POSTAGE. THIS OFFER DOES NOT APPLY TO THOSE REGISTERED FOR WORKSHOPS ONLY. FREE MEMBERSHIP AVAILABLE TO NON-MEMBERS ONLY (CANNOT BE USED FOR MEMBERSHIP RENEWAL).

[75] I WANT TO BE A MEMBER OF ANS. MY MEMBERSHIP BENEFITS WILL BE IN EFFECT FROM DATE OF PROCESSED APPLICATION THROUGH DECEMBER, 2004.

[76] I DO NOT WANT TO BE A MEMBER OF ANS.

GRAND TOTAL AND FORM OF PAYMENT FOR MEETINGS, TOURS AND WORKSHOPS

TOTAL OF ALL FUNCTIONS AND EVENTS GRAND TOTAL \$ _____

METHOD OF PAYMENT

CHECK AMERICAN EXPRESS VISA MASTERCARD DINERS CLUB WIRE TRANSFER

CREDIT CARD NUMBER: _____ EXP. DATE: _____

CARDHOLDER'S SIGNATURE: _____

PRINT CARDHOLDER'S NAME IF DIFFERENT THAN REGISTRANT

PLEASE REGISTER ON-SITE AFTER WEDNESDAY, JUNE 9, 2004.

MAKE CHECKS PAYABLE TO ANS IN U.S. FUNDS AND MAIL TO ANS, P.O. BOX 97781, CHICAGO, IL 60678-7781. CREDIT CARD REGISTRATIONS MAY BE FAXED TO 708/579-8314. DO NOT MAIL REGISTRATIONS WHICH HAVE BEEN FAXED. REGISTRATION CANCELLATIONS MUST BE MADE IN WRITING PRIOR TO MAY 11TH IN ORDER TO RECEIVE A REFUND MINUS A \$75 PROCESSING FEE. SPECIAL EVENT AND TOUR TICKETS WILL BE REFUNDED IN FULL IF CANCELLATION REQUEST IS RECEIVED BY MAY 11TH. MEETING REGISTRATIONS, SPECIAL EVENT AND TOUR TICKETS CANCELED AFTER MAY 11TH WILL NOT BE REFUNDED; HOWEVER, YOU MAY SEND A SUBSTITUTE. PLEASE CONTACT THE ANS REGISTRAR AT TELEPHONE NUMBER: 708/579-8316 OR EMAIL: registrar@ans.org WITH ANY QUESTIONS.

Hotel Reservation Form **OMNI WILLIAM PENN HOTEL • PITTSBURGH, PA**

ANS 2004 ANNUAL MEETING
June 13-17, 2004

HOTEL TELEPHONE - MAIN LINE: 412-281-7100
RESERVATIONS TELEPHONE: 800-400-1700
RESERVATIONS FAX: 402-334-8013

RESERVATION DEADLINE: MAY 11, 2004

FOR RESERVATIONS, EITHER CALL OR SEND THIS FORM DIRECTLY TO THE HOTEL –
DO NOT SEND THIS FORM TO THE AMERICAN NUCLEAR SOCIETY

Internet users **ONLY**, to register on line, please click **HERE**.

PLEASE PRINT OR TYPE (* REQUIRED)

* GUEST NAME(S): _____

* COMPANY: _____

* MAILING ADDRESS: _____

* CITY/STATE/ZIP: _____ * COUNTRY: _____

* TELEPHONE: _____ * FACSIMILE: _____

* ARRIVAL DATE: _____ * DEPARTURE DATE: _____

PREFERRED ACCOMMODATIONS

* SPECIAL REQUEST: SMOKING NON-SMOKING HANDICAP ACCESSIBLE

* BED REQUEST: TWO DOUBLE BEDS ONE SINGLE BED

ROOM RATE: \$145.00 (SINGLE OCCUPANCY) \$155.00 (DOUBLE OCCUPANCY)

ADDITIONAL SPECIAL REQUESTS: _____

EXPECTED ARRIVAL TIME: _____

CHECK-IN TIME IS 3:00 P.M. • CHECK-OUT TIME IS 12:00 P.M.

*** METHOD OF PAYMENT**

CHECK # _____

CREDIT CARD

AMERICAN EXPRESS VISA MASTER CARD DINERS CLUB CARTE BLANCHE DISCOVER

CREDIT CARD NUMBER: _____ EXPIRATION DATE: _____

CARDHOLDER'S NAME: _____ DEPOSIT AMOUNT: _____

CARDHOLDER'S SIGNATURE: _____

PLEASE NOTE: RESERVE YOUR ROOM EARLY! RESERVATIONS MUST BE MADE BY MAY 11, 2004.

- RESERVATIONS RECEIVED AFTER THE DEADLINE DATE WILL BE SUBJECT TO AVAILABILITY AND WILL BE CHARGED AT THE HOTEL'S PREVAILING ROOM RATE.
- THE HOTEL'S CHECK-IN TIME IS 3:00 P.M. ROOM ASSIGNMENTS PRIOR TO THAT TIME ARE ON A "SPACE AVAILABILITY" BASIS ONLY.
- THE HOTEL'S CHECK-OUT TIME IS 12:00 P.M. GROUP ATTENDEES STAYING IN THEIR ROOMS BEYOND CHECK-OUT TIME WITHOUT HOTEL AUTHORIZATION WILL BE CHARGED FOR AN ADDITIONAL ROOM NIGHT. LATE CHECK-OUT IS PROVIDED BASED ON AVAILABILITY AND IS SUBJECT TO THE HOTEL'S BUSINESS NEEDS. ARRANGEMENTS CAN BE MADE BY CONTACTING THE FRONT DESK AND REQUESTING LATE CHECK-OUT.
- ONE NIGHT'S DEPOSIT OR CREDIT CARD INFORMATION MUST ACCOMPANY RESERVATION TO GUARANTEE ROOM.
- YOUR DEPOSIT GUARANTEES YOUR ROOM. PLEASE TELEPHONE CHANGES TO OUR RESERVATION DEPARTMENT AT 800-400-1700. FAILURE TO CANCEL YOUR RESERVATION 72 HOURS PRIOR TO YOUR ARRIVAL DAY WILL RESULT IN ONE NIGHT'S ROOM AND TAX BEING CHARGED TO YOUR CREDIT CARD OR LOSS OF DEPOSIT.
- IN THE EVENTS OF SHARE-WITHS OR ROOMMATES, PLEASE SEND ONLY ONE FORM.
- ALL RATES ARE SUBJECT TO APPLICABLE TAXES, SUBJECT TO CHANGE WITHOUT NOTICE. (CURRENT OCCUPANCY TAX IS 14%)

OMNI WILLIAM PENN HOTEL • 530 William Penn Place • Pittsburgh, PA 15219

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following sponsors for their support of the
2004 ANS ANNUAL MEETING

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thank you