

2006 ANS Annual Meeting

"A Brilliant Future: Nexus of Public Support in Nuclear Technology"

Embedded Topical Meetings:

2006 International Congress on Advances in Nuclear Power Plants (ICAPP 06)

Nuclear Fuels and Structural Materials for the Next Generation Nuclear Reactors

**JUNE 4-8, 2006
RENO, NEVADA
Reno Hilton Hotel**

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Reno Arch
PHOTO CREDIT:
RenoSparks Convention & Visitor's Authority

2006 ANS ANNUAL MEETING: “A Brilliant Future: Nexus of Public Support in Nuclear Technology”

EMBEDDED TOPICAL MEETINGS

- **2006 International Congress on Advances in Nuclear Power Plants (ICAPP 06)**
- **Nuclear Fuels & Structural Materials for the Next Generation Nuclear Reactors (NFSM)**

June 4-8, 2006 • Reno, Nevada • Reno Hilton Hotel

MEETING HIGHLIGHTS**SATURDAY, JUNE 3, 2006**

8:00 a.m. – 5:00 p.m. Teachers’ Workshop
5:00 p.m. – 8:00 p.m. Professional Divisions Workshop

SUNDAY, JUNE 4, 2006

8:00 a.m. – 5:00 p.m. Professional Development Workshop #2: “MCNP5”
1:00 p.m. – 1:30 p.m. First-Time Attendees Orientation
4:00 p.m. – 5:00 p.m. Student Assistant Training Session
5:00 p.m. – 6:00 p.m. Mentoring Program
6:00 p.m. – 7:30 p.m. ANS President’s Reception

MONDAY, JUNE 5, 2006

8:00 a.m. – 10:00 a.m. Spouse/Guest Hospitality
8:00 a.m. – 11:30 a.m. Plenary Session: 2006 ANS Annual Meeting – “A Brilliant Future: Nexus of Public Support in Nuclear Technology”
9:00 a.m. – 3:00 p.m. Spouse/Guest Tour: “Lake Tahoe Luncheon Cruise”
11:30 a.m. – 1:00 p.m. Operations and Power Division Luncheon
11:30 a.m. – 1:00 p.m. DDR and FCWM Divisions Luncheon
1:00 p.m. – 2:30 p.m. ANS President’s Special Session: “The Hydrogen Economy: Partnering with Nuclear for the Future–Panel”
2:30 p.m. – 4:00 p.m. Technical Sessions: 2006 ANS Annual Meeting
2:30 p.m. – 4:00 p.m. Technical Sessions: Embedded Topical Meeting – ICAPP 2006
4:00 p.m. – 5:00 p.m. ANS Business Meeting
4:00 p.m. – 6:00 p.m. Plenary 1: “Opening Plenary: New Infrastructure for Deployment of New Plants” — Embedded Topical Meeting – ICAPP 2006
7:00 p.m. – 11:00 p.m. Evening Event: Dinner at the “Resort at Red Hawk”

TUESDAY, JUNE 6, 2006

8:00 a.m. – 10:00 a.m. Spouse/Guest Hospitality
8:00 a.m. – 10:15 a.m. Plenary 2: “New Plant Design and Delivery” — Embedded Topical Meeting – ICAPP 2006
8:30 a.m. – 10:30 a.m. Plenary Session — Embedded Topical Meeting – NFSM
8:30 a.m. – 11:30 a.m. Technical Sessions: 2006 ANS Annual Meeting
9:00 a.m. – 3:00 p.m. Spouse/Guest Tour: Virginia City Tour
10:15 a.m. – 12:15 p.m. Technical Sessions: Embedded Topical Meeting – ICAPP 2006
10:45 a.m. – 12:15 p.m. Technical Sessions: Embedded Topical Meeting – NFSM
11:30 a.m. – 1:00 p.m. Honors and Awards Luncheon
1:00 p.m. – 4:00 p.m. Technical Sessions: 2006 ANS Annual Meeting
1:00 p.m. – 4:00 p.m. Technical Sessions: Embedded Topical Meeting – ICAPP 2006
1:00 p.m. – 5:15 p.m. Technical Sessions: Embedded Topical Meeting – NFSM
4:00 p.m. – 6:00 p.m. Plenary 3: “Innovation in Nuclear Technologies” — Embedded Topical Meeting – ICAPP 2006
7:00 p.m. – 10:00 p.m. Poster Session — Embedded Topical Meeting – NFSM

WEDNESDAY, JUNE 7, 2006

8:00 a.m. – 10:00 a.m. Spouse/Guest Hospitality
8:00 a.m. – 10:00 a.m. Plenary 4: “Utility/Owner Challenges to the Coming Resurgence in Generation Needs” — Embedded Topical Meeting – ICAPP 2006
8:30 a.m. – 11:30 a.m. Technical Sessions: 2006 ANS Annual Meeting
8:30 a.m. – 12:15 p.m. Technical Sessions: Embedded Topical Meeting – NFSM
10:00 a.m. – 12:00 p.m. Technical Sessions: Embedded Topical Meeting – ICAPP 2006
1:00 p.m. – 4:00 p.m. Technical Sessions: 2006 ANS Annual Meeting
1:00 p.m. – 4:00 p.m. Technical Sessions: Embedded Topical Meeting – ICAPP 2006
1:00 p.m. – 5:15 p.m. Technical Sessions: Embedded Topical Meeting – NFSM
4:00 p.m. – 6:00 p.m. Plenary 5: “Fuel Cycle Options for Sustainable Development of Nuclear Energy” — Embedded Topical Meeting – ICAPP 2006
7:00 p.m. – 11:00 p.m. Evening Event: Western Ho’Down

THURSDAY, JUNE 8, 2006

8:00 a.m. – 10:00 a.m. Plenary 6: “Looking to the Future - Trends and Challenges” — Embedded Topical Meeting – ICAPP 2006
8:30 a.m. – 11:30 a.m. Technical Sessions: 2006 ANS Annual Meeting
8:30 a.m. – 12:15 p.m. Technical Sessions: Embedded Topical Meeting – NFSM
10:00 a.m. – 12:00 p.m. Technical Sessions: Embedded Topical Meeting – ICAPP 2006
1:00 p.m. – 5:00 p.m. Technical Sessions: Embedded Topical Meeting – ICAPP 2006
1:00 p.m. – 5:15 p.m. Technical Sessions: Embedded Topical Meeting – NFSM

FRIDAY, JUNE 9, 2006

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

Joseph (Vic) Parrish
Energy Northwest
GENERAL CO-CHAIR



Louis E. Pardi
Washington Group International, Inc.
GENERAL CO-CHAIR



Jack Baker
Energy Northwest
ASSISTANT CO-GENERAL CHAIR



Bev Cadwell
Energy Northwest
ASSISTANT CO-GENERAL CHAIR



Leslie Briel
Washington Group International, Inc.
ASSISTANT CO-GENERAL CHAIR



K. Michael Goff
Idaho National Laboratory
TECHNICAL PROGRAM CHAIR



Karen L. Howden
Idaho National Laboratory
ASSISTANT TECHNICAL PROGRAM CHAIR



Raymond T. Klann
Argonne National Laboratory
ASSISTANT TECHNICAL PROGRAM CHAIR



Mary Lou Dunzik-Gougar
Idaho State University
STUDENT PROGRAM CHAIR



Lori A. Braase
Idaho National Laboratory
SPOUSE PROGRAM CHAIR



"A Brilliant Future: Nexus of Public Support in Nuclear Technology"



The 2006 ANS Annual Meeting will be held June 4-8, 2006, at the Reno Hilton Hotel in Reno, Nevada. There will be two embedded topical meetings held in conjunction with the 2006 ANS Annual Meeting: "2006 International Congress on Advances in Nuclear Power Plants (ICAPP 06)" and "Nuclear Fuels and Structural Materials for the Next Generation Nuclear Reactors." There will also be a Professional Development Workshop held in conjunction with the 2006 ANS Annual Meeting: "MCNP5."

Accommodations/Hotel Information

The Reno Hilton Hotel will be the location for the 2006 ANS Annual Meeting, where all meeting activities, technical sessions, and governance committee meetings will take place. The Reno Hilton Hotel is the largest hotel in Reno and Tahoe with 2,000 rooms. There are plenty of free-time options located right inside the property: a full shopping mall; a fully equipped health club; indoor and outdoor tennis courts; a fifty-lane bowling center; two movie theaters; the Hilton Bay Aqua Driving Range; and ten dining options.

Local Attractions

The Reno Hilton Hotel is located near many of Reno's sights and attractions: Lake Tahoe; Downtown River Walk and Amphitheater; Victorian Square; Wilbur D. May Museum and Arboretum/Botanical Gardens; National Automobile Museum; National Bowling Stadium; Fleischman Planetarium; Nevada Museum of Art; Nevada Historical Society; Virginia City; and Pyramid Lake.

ANS Registration

ANS Registration will be located in the Nevada Foyer of the Reno Hilton Hotel on Saturday, June 3rd through Thursday, June 8th. 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.

Registration Hours

SATURDAY, JUNE 3, 2006
2:00 p.m. – 5:00 p.m.

SUNDAY, JUNE 4, 2006
7:30 a.m. – 9:00 a.m.
(Registration for workshop participants only)

11:00 a.m. – 7:00 p.m.

MONDAY, JUNE 5, 2006
7:30 a.m. – 5:00 p.m.

TUESDAY, JUNE 6, 2006
7:30 a.m. – 5:00 p.m.

WEDNESDAY, JUNE 7, 2006
7:30 a.m. – 5:00 p.m.

THURSDAY, JUNE 8, 2006
7:30 a.m. – 1:30 p.m.

Student Assistants Program

Attendance at the 2006 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 4th, 4:00 p.m. – 5:00 p.m. in the Cascade 1 & 2 Rooms of the Reno Hilton Hotel. Student assistants receive free meeting registration and a copy of the meeting TRANSACTIONS. All students are responsible for paying their own room, tax and incidentals.

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

The student headquarters room will be located in the Nevada 12 Room of the Reno Hilton 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 p.m. - 1:30 p.m. on Sunday, June 4th, in the McKinley Room of the Reno Hilton Hotel.

Mentoring Program

A special mentoring program will be held from 5:00 p.m. - 6:00 p.m. on Sunday, June 4th in the Sierra 1 Room of the Reno Hilton 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 attendees, student members, new members, and those seeking career advancement and networking opportunities.

Message Information Desk

For those who wish to reach an attendee at the meeting, call the hotel phone number at 775-789-2000 and ask for the ANS Message Information Desk.

Notice for Speakers

All speakers and session chairs must sign in at the "Speakers Desk," located in the Nevada Foyer of the Reno Hilton Hotel (Sunday, June 4, 2006, through Thursday, June 8, 2006).

A Speakers' Preview Room, Room # 157 of the Reno Hilton Hotel, will be available during the following hours:

SUNDAY, JUNE 4, 2006
12:00 p.m. – 6:00 p.m.

MONDAY, JUNE 5, 2006
7:00 a.m. – 4:00 p.m.

TUESDAY, JUNE 6, 2006
7:00 a.m. – 4:00 p.m.

WEDNESDAY, JUNE 7, 2006
7:00 a.m. – 4:00 p.m.

THURSDAY, JUNE 8, 2006
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: Room # 151 (first floor of the hotel)

ANS Secretariat

Location: Room # 153 (first floor of the hotel)

ANS Media Center

MONDAY, JUNE 5, 2006
7:45 a.m. – 4:00 p.m.

TUESDAY, JUNE 6, 2006
8:00 a.m. – 4:00 p.m.

WEDNESDAY, JUNE 7, 2006
8:00 a.m. – 4:00 p.m.

THURSDAY, JUNE 8, 2006
8:00 a.m. – 2:00 p.m.

Location: Room #159 (first floor of the hotel)

ANS Media Workroom

The Public Information Committee will offer individualized sessions to ANS members interested in honing their communication skills. Conducted by experienced media professionals, coaching sessions will feature hands-on practice using videotaped interviews followed by constructive critiques. Candid feedback will help ANS members cultivate their abilities to tell their stories, respond to tough questions, and confidently share their knowledge with news media, policy makers and the public. Sessions will be held Monday through Wednesday between 11:30 a.m. and 1:00 p.m.

Spouse/Guest Hospitality

Spouse/guest hospitality breakfast will be served in Room # 2034 (Grand Parlor - located on the 20th floor) of the Reno Hilton Hotel from 8:00 a.m. - 10:00 a.m., Monday, June 5th through Wednesday, June 7th. 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 President's Reception and admittance to the spouse/ guest breakfast only – it does not include technical sessions or other events. Spouse/guest tours are scheduled. Registration for the tours is separate from the spouse/guest meeting registration.

**Attention Runners:
ANS FUN RUN**

On Tuesday, June 6th, there will be a noncompetitive 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 Reno, Nevada. Bring shoes and a big smile. We'll take care of the rest!

Professional Development Workshop

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

PROFESSIONAL DEVELOPMENT WORKSHOP:
"MCNP5"

SUNDAY, JUNE 4, 2006
8:00 a.m. - 5:00 p.m.
Location: Nevada 6

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

DOE Nuclear Criticality Safety Program and "Endusers Initiatives Workshop"

FRIDAY, JUNE 8, 2006
8:00 a.m. - 5:00 p.m.
Location: Nevada 6 & 7 Rooms of the hotel

Please turn to page 42 for additional information.



Pyramid at Pyramid Lake
PHOTO CREDIT:
Reno/Sparks Convention & Visitor's Authority



Pyramid Lake Shore
PHOTO CREDIT:
Reno/Sparks Convention & Visitor's Authority

SPECIAL EVENTS

PLEASE NOTE: The times listed are departure times and return times to/from the hotel. Busses will leave promptly from the South Entrance of the Reno Hilton Hotel.

CONFERENCE LUNCHEONS

Operations and Power Division (OPD) Luncheon

MONDAY, JUNE 5, 2006
11:30 a.m. - 1:00 p.m.
Location: Teton

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

DDR and FCWM Divisions Luncheon

MONDAY, JUNE 5, 2006
11:30 a.m. - 1:00 p.m.
Location: Nevada 11

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

ANS Honors and Awards Luncheon

TUESDAY, JUNE 6, 2006
11:30 a.m. - 1:00 p.m.
Location: Reno Ballroom

Plan to attend the Honors and Awards Luncheon held to recognize the outstanding efforts of the award winners and to celebrate their accomplishments. Tickets can be purchased at the ANS Registration Desk for \$45.

EVENING EVENTS

PLEASE NOTE: You must be registered for the meeting to attend the evening events.

ANS President's Reception

SUNDAY, JUNE 4, 2006
6:00 p.m. - 7:30 p.m.
Location: Tahoe Ballroom

The ANS President's Reception kicks off the meeting on Sunday, June 4th in the Reno Ballroom of the hotel.

One ticket to the ANS President's Reception is included in the full meeting registration fee. Additional tickets can be purchased at the ANS Registration Desk for \$65.

Dinner at the "Resort at Red Hawk"

MONDAY, JUNE 5, 2006
7:00 p.m. - 11:00 p.m.

Since breaking ground in 1995, Red Hawk has evolved into a true destination resort. Located just 20 minutes northeast of Reno, the Resort at Red Hawk's Events Center has become the premiere event's center in Northern Nevada. Guests will enjoy the dramatic floor to ceiling windows, a large deck overlooking the serene beauty of the surrounding wetlands as well as a floor to ceiling fireplace.

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



Dinner at the Resort at Red Hawk



PHOTO CREDIT –
FOR ALL RESORT AT
RED HAWK PHOTOS:
VANCE FOX



Western Ho'Down

WEDNESDAY, JUNE 7, 2006
7:00 p.m. – 11:00 p.m.

Our old fashioned Western Ho'Down will be staged at Reno's newest event center, the Tannenbaum! Located just 15 minutes from Reno, this center was formerly the famous Christmas Tree Restaurant — the new Tannenbaum Events Center has a long and rich history. Built lodge style with strong wood timbers, beautiful rock detail and wide-open windows bring in the towering pine trees and drifting clouds. The Center boasts expansive views of the Washoe Valley and the Virginia Foothills.

You will enjoy a true western welcome as you enter the events center. A barbeque buffet will be set up to include grilled tri tip, honey glazed chicken, fresh corn on the cob, baked beans, assorted dinner rolls, dessert and fresh coffee. You will witness a gripping display of Trick Roping & Fancy Six-gun Spinning just like in the movies...AND a "World Champion" Bullwhip show that's sure to make you 'flinch' as this cowboy pulls off one amazing feat after another. This show promises to leave you with an experience that you will never forget! Tickets can be purchased at the ANS Registration Desk for \$35.

SPOUSE/GUEST TOURS**Lake Tahoe Luncheon Cruise**

MONDAY, JUNE 5, 2006
9:00 a.m. – 3:00 p.m.



Emerald Bay

Our tour begins when we head south on Highway 395 through Washoe Valley, Carson City (Nevada State Capitol) and up Spooner summit to the shores of beautiful Lake Tahoe, one of North America's largest Alpine Lakes. You will arrive at Zephyr Cove where you will board the MS Dixie II. While enjoying the beauty of the majestic Sierra Nevada Mountains and learning of the lake's formation, you will enjoy a group luncheon on the main deck. During this fully narrated cruise, you will enjoy the beauty of Emerald Bay, one of the most photographed spots in the world as well as cruise by the Vikingsholm Castle and Fannette Island.

Tickets can be purchased at the ANS Registration Desk for \$67.

Virginia City Tour with Lunch

TUESDAY, JUNE 6, 2006
9:00 a.m. – 3:00 p.m.

This tour starts with a beautiful drive through Washoe Valley into the State Capitol, Carson City. Your guide will point out the governor's mansion and other interesting sites before you make your way to Virginia City. Established in 1859, Virginia City became the richest mining town in the world. San Francisco was built from the mines of the Comstock and the Civil War was partially financed from the gold and silvers discovered beneath the city. Upon arrival in Virginia City, you will enjoy a ride on the famous V&T Railroad. This is a 25-minute round-trip ride on an authentic steam train through some of the actual mining areas.

A group lunch will be served at the famous Delta Saloon. The Delta bears Virginia City's oldest business name, dating back more than 100 years to 1862. Today's Virginia City is remarkably the same as it was during its heyday with wooden sidewalks, restored mansions, "Old West" saloons, the Piper Opera House and mine tours.

Tickets can be purchased at the ANS Registration Desk for \$56.

ANS Expo 2006

November 12-14, 2006 • Albuquerque Convention Center • New Mexico

SUNDAY, 6-7:30pm • MONDAY, 11:30am - 6pm • TUESDAY, 10am - 2pm

The ANS Nuclear Technology Expo will be held in conjunction with the ANS Winter Meeting.

Meeting Theme: "Ensuring the Future in Times of Change: Nonproliferation and Security"

EMBEDDED TOPICALS:

17th Topical Meeting on the Technology of Fusion Energy

5th International Topical Meeting on Nuclear Plant Instrumentation, Controls, and Human Machine Interface Technology

Exhibitors Receive

- One Complimentary Meeting Registration
- Tickets for Reception & Luncheon
- ANS Expo Guide Listing
- Meeting Program Publicity
- Copy of Meeting TRANSACTIONS

Special Events in the Exhibit Hall

- Sunday** ANS President's Reception
- Monday** ANS Sponsored Luncheon, Prizes, Welcome Reception
- Tuesday** Concession Lunch, Prizes

For detailed information, or to request an Exhibitor Prospectus, contact Sharon Bohlander at 1.800.250.3678 x227 or visit www.earlbeckwith.com.

SESSIONS BY TRACK *(Asterisks indicate special sessions.)*

Track 1: A Brilliant Future: Nexus of Public Support in Nuclear Technology

*Opening Plenary: A Brilliant Future: Nexus of Public Support in Nuclear Technology, Mon. a.m. (8:00-11:30 a.m.)

*ANS President's Special Session: The Hydrogen Economy: Partnering with Nuclear for the Future—Panel, Mon. p.m. (1:00-2:30 p.m.)

Focus on Communications: Pronuclear Communications—Panel, Tues. p.m.

Focus on Communications: Speaking with the Media—Panel, Wed. p.m.

Track 2: Technology, Management, Operations, and New Construction of Nuclear Systems

Training, Human Performance, and Workforce Development, Mon. p.m.

Maintenance and Dynamics of Human Factors, Mon. p.m.

Low Power and Shutdown Operations: Observations, Trends, and Future Action—Panel, Tues. a.m.

The Licensing Process and Status of Small Power Reactors—Panel, Tues. p.m.

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

Tools and Concepts Related to the Human Machine Interface and Overall Safety Culture, Wed. p.m.

Addressing Aging and Obsolescence Issues with Printed Circuit Boards—Papers/Panel, Thurs. a.m.

Track 3: Nuclear Fuel Cycle Technologies

Implementing the Spent Fuel Recycling Initiative: Fuel Cycle Requirements and the Role of the Nuclear Power Utilities—Panel, Tues. a.m.

Fuel Cycle and Spent Fuel Modeling, Tues. p.m.

Evaluation of Recent Transmutation Scenarios for Partitioning/Transmutation of Actinides and Heat-Generating Fission Products, Wed. a.m.

Advanced Head-End Improvements for Processing Spent Nuclear Fuels, Wed. p.m.

Track 4: Nuclear and Criticality Safety Technologies

Emerging Topics in Nuclear Installations Safety, Mon. p.m.

Nuclear Criticality Safety Related to TA-18 Relocation, Mon. p.m.

Clad Embrittlement Criterion for Revised 10 CFR 50.46 Design Basis Accidents, Tues. a.m.

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

Alternative Source Term Applications to Improve Power Reactor Safety Analysis—Papers/Panel, Tues. p.m.

Integrating New Technology and Innovation Within Nuclear Criticality Safety, Tues. p.m.

Probabilistic Risk Assessment, Wed. a.m.

Mathematical Fire Modeling and Its Application to Nuclear Power Plants, Wed. p.m.

Tutorial on the Proposed ANSI/ANS 8.24 Standard: Validation of Neutron Transport Methods for Nuclear Criticality Safety Calculations, Wed. p.m.

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

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

Track 5: Environmental Science and Technologies

Environmental Monitoring and Modeling at Nuclear Facilities, Mon. p.m.

Long-Term Sustainability of Nuclear Fission Energy—I—Panel, Tues. a.m.

Long-Term Sustainability of Nuclear Fission Energy—II—Paper/Panel, Tues. p.m.

Environmental Aspects of New Site Selection—Papers/Panel, Wed. a.m.

Environmental Sciences: General, Thurs. a.m.

Track 6: Waste Management and Decommissioning Technologies

Decommissioning, Decontamination, and Reutilization Technological Advancements, Mon. p.m.

Regulatory Issues in Decommissioning, Tues. a.m.

Best of Decommissioning, Decontamination, and Reutilization 2005, Tues. p.m.

Transport and Storage of Commercial Spent Nuclear Fuel, Tues. p.m.

U.S. Department of Energy Cleanup and International Program Update, Wed. a.m.

Decommissioning, Decontamination, and Reutilization Hot Topics and Emerging Issues—Papers/Panel, Wed. p.m.

High-Level Waste Management, Thurs. a.m.

Track 7: Nuclear Science and Engineering

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

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

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

Thermal Hydraulics in Generation IV Systems, Tues. a.m.

Reactor Physics: General, Tues. a.m.

Research by U.S. Department of Energy—Sponsored Students, Tues. a.m.

Computational Medical Physics Benchmarks, Tues. a.m.

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

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

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

Student/Professional Collaborations in Reactor Physics, Tues. p.m.

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

Transport Methods: General, Wed. a.m.

University Research Reactor and Nuclear Science Programs, Wed. a.m.

Reactor Analysis Methods, Wed. p.m.

Computational Methods: General, Wed. p.m.

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

Track 8: Emerging Nuclear Technologies

Emerging Technologies Related to Hydrogen, Tues. p.m.

Thermal Hydraulics of Nuclear Hydrogen Systems, Tues. p.m.

Fusion Energy Using Lunar-Mined Helium, Thurs. a.m.

SESSIONS BY DIVISION

(Asterisks indicate special sessions. Parentheses indicate cosponsorship.)

Special Sessions

*Opening Plenary: A Brilliant Future: Nexus of Public Support in Nuclear Technology, Mon. a.m. (8:00-11:30 a.m.)

*ANS President's Special Session: The Hydrogen Economy: Partnering with Nuclear for the Future—Panel, Mon. p.m. (1:00-2:30 p.m.)

Biology and Medicine (BMD)

(Computational Medical Physics Benchmarks, Tues. a.m.)

Decommissioning, Decontamination, and Reutilization (DDR/D)

Decommissioning, Decontamination, and Reutilization Technological Advancements, Mon. p.m.

Regulatory Issues in Decommissioning, Tues. a.m.

Best of Decommissioning, Decontamination, and Reutilization 2005, Tues. p.m.

U.S. Department of Energy Cleanup and International Program Update, Wed. a.m.

Decommissioning, Decontamination, and Reutilization Hot Topics and Emerging Issues—Papers/Panel, Wed. p.m.

Education and Training (ETD)

Training, Human Performance, and Workforce Development, Mon. p.m.

Research by U.S. Department of Energy—Sponsored Students, Tues. a.m.

Focus on Communications: Pronuclear Communications—Panel, Tues. p.m.

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

Focus on Communications: Speaking with the Media—Panel, Wed. p.m.

Environmental Sciences (ESD)

Environmental Monitoring and Modeling at Nuclear Facilities, Mon. p.m.

Long-Term Sustainability of Nuclear Fission Energy—I—Panel, Tues. a.m.

Long-Term Sustainability of Nuclear Fission Energy—II—Paper/Panel, Tues. p.m.

Emerging Technologies Related to Hydrogen, Tues. p.m.

Environmental Aspects of New Site Selection—Papers/Panel, Wed. a.m.

Environmental Sciences: General, Thurs. a.m.

Fuel Cycle and Waste Management (FCWMD)

Implementing the Spent Fuel Recycling Initiative: Fuel Cycle Requirements and the Role of the Nuclear Power Utilities—Panel, Tues. a.m.

Fuel Cycle and Spent Fuel Modeling, Tues. p.m.

Evaluation of Recent Transmutation Scenarios for Partitioning/Transmutation of Actinides and Heat-Generating Fission Products, Wed. a.m.

Advanced Head-End Improvements for Processing Spent Nuclear Fuels, Wed. p.m.

High-Level Waste Management, Thurs. a.m.

Human Factors (HFD)

Maintenance and Dynamics of Human Factors, Mon. p.m.

Tools and Concepts Related to the Human Machine Interface and Overall Safety Culture, Wed. p.m.

Isotopes and Radiation (IRD)

University Research Reactor and Nuclear Science Programs, Wed. a.m.

Mathematics and Computation (MCD)

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

Computational Medical Physics Benchmarks, Tues. a.m.

Transport Methods: General, Wed. a.m.

Computational Methods: General, Wed. p.m.

Nuclear Criticality Safety (NCS/D)

Nuclear Criticality Safety Related to TA-18 Relocation, Mon. p.m.

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

Integrating New Technology and Innovation Within Nuclear Criticality Safety, Tues. p.m.

Transport and Storage of Commercial Spent Nuclear Fuel, Tues. p.m.

Tutorial on the Proposed ANSI/ANS 8.24 Standard: Validation of Neutron Transport Methods for Nuclear Criticality Safety Calculations, Wed. p.m.

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

Nuclear Installations Safety (NIS/D)

Emerging Topics in Nuclear Installations Safety, Mon. p.m.

Clad Embrittlement Criterion for Revised 10 CFR 50.46 Design Basis Accidents, Tues. a.m.

Alternative Source Term Applications to Improve Power Reactor Safety Analysis—Papers/Panel, Tues. p.m.

Probabilistic Risk Assessment, Wed. a.m.

Mathematical Fire Modeling and Its Application to Nuclear Power Plants, Wed. p.m.

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

Operations and Power (OPD)

(Implementing the Spent Fuel Recycling Initiative: Fuel Cycle Requirements and the Role of the Nuclear Power Utilities—Panel, Tues. a.m.)

Low Power and Shutdown Operations: Observations, Trends, and Future Action—Panel, Tues. a.m.

The Licensing Process and Status of Small Power Reactors—Panel, Tues. p.m.

Addressing Aging and Obsolescence Issues with Printed Circuit Boards—Papers/Panel, Thurs. a.m.

Radiation Protection and Shielding (RPS/D)

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

(Computational Medical Physics Benchmarks, Tues. a.m.)

Reactor Physics (RPD)

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

Reactor Physics: General, Tues. a.m.

Student/Professional Collaborations in Reactor Physics, Tues. p.m.

Reactor Analysis Methods, Wed. p.m.

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

Thermal Hydraulics (THD)

Thermal Hydraulics in Generation IV Systems, Tues. a.m.

Thermal Hydraulics of Nuclear Hydrogen Systems, Tues. p.m.

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

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

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

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

Aerospace Nuclear Science and Technology Technical Working Group (ANST)

Fusion Energy Using Lunar-Mined Helium, Thurs. a.m.

Young Members Group (YMG)

(Nuclear Criticality Safety Related to TA-18 Relocation, Mon. p.m.)

(Data, Analysis, and Operations for Nuclear Criticality Safety, Tues. a.m.)

(Integrating New Technology and Innovation Within Nuclear Criticality Safety, Tues. p.m.)

(Transport and Storage of Commercial Spent Nuclear Fuel, Tues. p.m.)



ROOM	MONDAY–JUNE 5TH			TUESDAY–JUNE 6TH		WEDNESDAY–JUNE 7TH		THURSDAY–JUNE 8TH
	8:00–11:30 AM	1:00–2:30 PM	2:30–4:00 PM	8:30–11:30 AM	1:00–4:00 PM	8:30–11:30 AM	1:00–4:00 PM	8:30–11:30 AM
RENO BALLROOM	Opening Plenary: A Brilliant Future: Nexus of Public Support in Nuclear Technology	ANS President's Special Session: The Hydrogen Economy: Partnering with Nuclear for the Future						
CARSON 1			Emerging Topics in Nuclear Installations Safety	Clad Embrittlement Criterion for Revised 10 CFR 50.46 Design Basis Accidents	Alternative Source Term Applications to Improve Power Reactor Safety Analysis–Papers/ Panel	Probabilistic Risk Assessment	Mathematical Fire Modeling and Its Application to Nuclear Power Plants	Nuclear Installations Safety: General
CARSON 2			Current Topics for Reactor Engineers– Panel	Thermal Hydraulics in Generation IV Systems	Emerging Technologies Related to Hydrogen ----- Thermal Hydraulics of Nuclear Hydrogen Systems	Young Professional Thermal Hydraulics Research Competition	Thermal Hydraulics: General—II	Thermal Hydraulics: General—III
CARSON 3			Environmental Monitoring and Modeling at Nuclear Facilities	Long-Term Sustainability of Nuclear Fission Energy—I–Panel	Long-Term Sustainability of Nuclear Fission Energy—II–Paper/ Panel	Environmental Aspects of New Site Selection–Papers/ Panel	Reactor Analysis Methods	Environmental Sciences: General
CARSON 4			Radiation Protection and Shielding: General	Implementing the Spent Fuel Recycling Initiative: Fuel Cycle Requirements and the Role of the Nuclear Power Utilities–Panel		Evaluation of Recent Transmutation Scenarios for Partitioning/ Transmutation of Actinides and Heat- Generating Fission Products	Advanced Head-End Improvements for Processing Spent Nuclear Fuels	High-Level Waste Management
CRYSTAL 1			Decommissioning, Decontamination, and Reutilization Technological Advancements	Regulatory Issues in Decommissioning	Best of Decommissioning, Decontamination, and Reutilization 2005	U.S. Department of Energy Cleanup and International Program Update	Decommissioning, Decontamination, and Reutilization Hot Topics and Emerging Issues– Papers/Panel	
CRYSTAL 2			Current Issues in Computational Methods— Roundtable	Reactor Physics: General	Student/Professional Collaborations in Reactor Physics	Transport Methods: General	Computational Methods: General	Reactor Physics Design, Validation, and Operating Experience
CRYSTAL 3			Nuclear Criticality Safety Related to TA-18 Relocation	Data, Analysis, and Operations for Nuclear Criticality Safety	Integrating New Technology and Innovation Within Nuclear Criticality Safety ----- Transport and Storage of Commercial Spent Nuclear Fuel	University Research Reactor and Nuclear Science Programs	Tutorial on the Proposed ANSI/ ANS 8.24 Standard: Validation of Neutron Transport Methods for Nuclear Criticality Safety Calculations	Nuclear Criticality Safety Standards– Forum
CRYSTAL 4			Training, Human Performance, and Workforce Development	Research by U.S. Department of Energy-Sponsored Students ----- Computational Medical Physics Benchmarks	Focus on Communications: Pronuclear Communications– Panel	Education and Training: General	Focus on Communications: Speaking with the Media–Panel	Fusion Energy Using Lunar-Mined Helium
CRYSTAL 5			Maintenance and Dynamics of Human Factors	Low Power and Shutdown Operations: Observations, Trends, and Future Action–Panel	The Licensing Process and Status of Small Power Reactors–Panel		Tools and Concepts Related to the Human Machine Interface and Overall Safety Culture	Addressing Aging and Obsolescence Issues with Printed Circuit Boards– Papers/Panel
SHASTA 1				Thermal Hydraulics: General—I	Fuel Cycle and Spent Fuel Modeling			

MONDAY • JUNE 5, 2006	
7:30 A.M. - 5:00 P.M.	MEETING REGISTRATION
8:00 A.M. - 10:00 A.M.	SPOUSE/GUEST HOSPITALITY
8:00 A.M. - 11:30 A.M.	2006 ANS ANNUAL MEETING OPENING PLENARY "A Brilliant Future: Nexus of Public Support in Nuclear Technology"
9:00 A.M. - 3:00 P.M.	SPOUSE/GUEST TOUR "Lake Tahoe Luncheon Cruise"
11:30 A.M. - 1:00 P.M.	OPERATIONS AND POWER DIVISION LUNCHEON
11:30 A.M. - 1:00 P.M.	DDR AND FCWM DIVISIONS LUNCHEON
1:00 P.M. - 2:30 P.M.	ANS PRESIDENT'S SPECIAL SESSION "The Hydrogen Economy: Partnering with Nuclear for the Future-Panel"
2:30 P.M. - 4:00 P.M.	2006 ANS ANNUAL MEETING TECHNICAL SESSIONS <ul style="list-style-type: none"> Emerging Topics in Nuclear Installations Safety Current Topics for Reactor Engineers-Panel Environmental Monitoring and Modeling at Nuclear Facilities Radiation Protection and Shielding: General Decommissioning, Decontamination, and Reutilization Technological Advancements Current Issues in Computational Methods-Roundtable Nuclear Criticality Safety Related to TA-18 Relocation Training, Human Performance, and Workforce Development Maintenance and Dynamics of Human Factors
2:30 P.M. - 4:00 P.M.	2006 ICAPP TECHNICAL SESSIONS (see pg 20)
4:00 P.M. - 5:00 P.M.	ANS BUSINESS MEETING
4:00 P.M. - 6:00 P.M.	2006 ICAPP PLENARY SESSION #1 (see pg 20) "Opening Plenary: New Infrastructure for Deployment of New Plants"
7:00 P.M. - 11:00 P.M.	EVENING EVENT "Dinner at the Resort at Red Hawk"

MONDAY, JUNE 5, 2006 • 8:00 A.M.

Opening Plenary: A Brilliant Future: Nexus of Public Support in Nuclear Technology [Track 1] *Session Cochairs:* Joseph (Vic) Parrish (*Energy Northwest*), Louis E. Pardi (*Washington Grp Int*)

Reno Ballroom

8:00 a.m.

WELCOME:

E. James Reinsch (*ANS President & President, Bechtel Nuclear*)

SPEAKERS:

- Spencer Abraham (*Former U.S. Secretary of Energy, 2001–2005*)
- Nils J. Diaz (*Chairman, U.S. Nuclear Regulatory Commission*)
- Andrew C. White (*President & CEO, General Electric Nuclear Energy*)
- Jose N. Reyes, Jr. (*Department Head, Nuclear Engineering & Radiation Health Physics, Oregon State University*)
- Frank L. (Skip) Bowman (*President & CEO, Nuclear Energy Institute*)

PRESENTATION OF SMYTH AWARD:

Frank L. (Skip) Bowman (*President & CEO, Nuclear Energy Institute*)

MONDAY, JUNE 5, 2006 • 1:00 P.M.

ANS President's Special Session: The Hydrogen Economy: Partnering with Nuclear for the Future-Panel [Track 1] *Session Chair:* E. James Reinsch (*ANS President & President, Bechtel Nucl*)

Reno Ballroom

1:00 p.m.

PANELISTS:

- Donald L. Paul (*Chevron*)
- Michael Campbell (*General Atomics*)
- Dan Keuter (*Entergy Nucl*)
- Kelly Fletcher (*GE Global Research*)
- J. Byron McCormick (*General Motors*)

MONDAY, JUNE 5, 2006 • 2:30 P.M.

Emerging Topics in Nuclear Installations Safety, sponsored by NISD. [Track 4] *Session Organizer:* Dana A. Powers (*SNL*). *Chair:* David Diamond (*BNL*)

Carson 1

2:30 p.m.

The Boron Concentration Measurement: A New Concept to Follow the Boron 10 Depletion in PWRs, Jean-Pierre Burel, Patrick Pirat (*Data Sys & Sol*), Cécile Masson, Jean-Pierre Mégard (*EDF-SEPTEN*), Martial Berger (*EDF-CNEN*)

3:00 p.m.

Time-Limited Aging Analysis of BWR Reactor Vessel Components in License Renewal, Linh Tran, Robert Hsu, Ken Chang (*NRC*), Amy Hull (*ANL*)

3:30 p.m.

Fault Tolerant Reactor Protection System Technology, J. Troy Martel (*Invensys-Triconex*), Jadu G. Das (*Washington Grp Int*)

Current Topics for Reactor Engineers-Panel, sponsored by RPD. [Track 7] *Session Cochairs:* Robert St. Clair (*Duke Power*), Ivan Maldonado (*Univ of Cincinnati*)

Carson 2

2:30 p.m.

PANELISTS:

- Greg Storey (*TVA*)
- John Singleton (*Calvert Cliffs, Constellation Energy*)
- Duke Power and other utility representatives to be determined.

Environmental Monitoring and Modeling at Nuclear Facilities, sponsored by ESD. [Track 5] *Session Organizer:* Pete Fledderman (*Westinghouse SRS*). *Chair:* Pete Fledderman

Carson 3

2:30 p.m.

Transfer Factors for Small Mammals Collected from a ¹³⁷Cs Contaminated Reservoir, Michael H. Paller, G. Timothy Jannik, Lynn D. Wike (*SRNL*)

2:50 p.m.

Methodology for Modeling 2-D Groundwater Motion in a Geographic Information System (GIS), James S. Bollinger (*SRNL*), John K. Reed (*Geological Consultant*)

3:10 p.m.

Tritium Transport in South Atlantic Coastal Waters, Alfred J. Garrett, James S. Bollinger, Larry D. Koffman, David W. Hayes (*SRNL*)

3:30 p.m.

Dynamic Subsidence Modeling Studies of Low-Level Waste in Nevada, George Danko, Tyler Cluff (*Univ of Nevada, Reno*)

Radiation Protection and Shielding: General, sponsored by RPSD. [Track 7] *Session Chair:* Nicholas Tsoulfanidis (*Univ of Nevada, Reno*)

Carson 4

2:30 p.m.

Response Functions of Semiconductor Slow Neutron Detectors for Spectrometry, Qi Lou (*Univ of Illinois*), Raymond T. Klann, Patrick M. DeLurgio (*ANL*), James F. Stubbins (*Univ of Illinois*)

2:50 p.m.

Dose to Salivary Glands and Extrathoracic Airways for External Photon, Choonsik Lee, Choonik Lee, Wesley Bolch (*Univ of Florida*)

3:10 p.m.

Accurate Mathematical Determination of the Well-Type Detector's Efficiencies, M. I. Abbas (*Alexandria Univ*), S. S. Nafee (*Alexandria Univ, NIST*), L. R. Karam (*NIST*), Y. S. Selim (*Alexandria Univ*)

3:30 p.m.

Compactible Results for Capsular Cylindrical Shielding Using Analytical Methods and MCNP, E. V. Steinfelds, S. K. Loyalka, M. A. Prelas (*Univ of Missouri-Columbia*)

Decommissioning, Decontamination, and Reutilization Technological Advancements, sponsored by DDRD. [Track 6] *Session Chair:* Larry Boing (*ANL*)

Crystal 1

2:30 p.m.

Diamond Shaving of Contaminated Concrete Surfaces, Robert M. Hulick (*Bluegrass Concrete Cutting*)

3:00 p.m.

Proven Advancements and Advantages of Subsurface Sampling and Characterization of Nuclear Facilities Being Decommissioned, G. Charters, S. Aggarwal (*NMNT*)

3:30 p.m.

Decontamination of Large Metal Objects, Raymond Durante (*INTEK Technol*)

Current Issues in Computational Methods—Roundtable, sponsored

by MCD. [Track 7] *Session Organizer:* Todd Palmer (*Oregon State Univ*). *Chair:* William R. Martin (*Univ of Michigan*)

Crystal 2

2:30 p.m.

MCNP5 Modification Applicable to Reactor Analysis, Forrest Brown (*LANL*)

Nuclear Criticality Safety Related to TA-18 Relocation,

sponsored by NCSD; cosponsored by YMG. [Track 4] *Session Organizer:* Debdas Biswas (*LANL*). *Cochairs:* Ralph Winiarski (*Westinghouse*), Debdas Biswas

Crystal 3

2:30 p.m.

Disassembly of the Godiva Critical Assembly Machine, Joetta M. Goda (*LANL*)

3:00 p.m.

Criticality Safety for Godiva Pre-Disassembly Operations, John A. Miller, James S. Baker (*LANL*)

3:30 p.m.

Criticality Safety Above a Multiplication of 20 (The Godiva Disassembly), John A. Miller, James S. Baker (*LANL*)

Training, Human Performance, and Workforce Development,

sponsored by ETD. [Track 2] *Session Organizer:* Jane LeClair (*Constellation Nucl*). *Chair:* John Stankiewicz (*FP&L*)

Crystal 4

2:30 p.m.

Vertical Evaluations—A Technique for Training Program Review, Kent W. Hamlin (*INPO*)

2:50 p.m.

Threaded Discussions a Powerful Asynchronous Online Learning Tool, Lorraine F. NewHaven (*Westinghouse*)

3:10 p.m.

Cultivating and Training the Next Generation of Startup Engineers, Richard Holman, Leonard Bond, William Phoenix (*INL*)

3:30 p.m.

Virtual Reality for Improved Maintenance Training, Angelia Sebok (*Micro Analysis & Design*), Terje Johnsen (*OECD Halden Reactor Proj*)

Maintenance and Dynamics of Human Factors, sponsored by

HFD. [Track 2] *Session Chair:* Mark Friedmann (*Day & Zimmermann NPS*)

Crystal 5

2:30 p.m.

Enabling Successful Supply Chain Team Performance to Achieve Outage Goals, D. Kevin Cantrell (*American Tank & Fabricating*)

2:50 p.m.

SCWE Produces Bottom Line Results, Victor Chrjapin (*Washington Grp Int*)

3:10 p.m.

Worker Familiarity and Industrial Safety Outcomes, Mark Friedmann (*Day & Zimmermann NPS*)

3:30 p.m.

Continuous Improvement Processes and Impact on Maintenance, Mark Friedmann, Chuck Lepisto (*Day & Zimmermann NPS*)

TUESDAY • JUNE 6, 2006

7:30 A.M. - 5:00 P.M.

MEETING REGISTRATION

8:00 A.M. - 10:00 A.M.

SPOUSE/GUEST HOSPITALITY

8:00 A.M. - 10:15 A.M.

2006 ICAPP PLENARY SESSION #2 (see pg 20)
"New Plant Design and Delivery"

8:30 A.M. - 10:30 A.M.

2006 NFSM OPENING PLENARY (see pg 37)

8:30 A.M. - 11:30 A.M.

2006 ANS ANNUAL MEETING TECHNICAL SESSIONS

- Clad Embrittlement Criterion for Revised 10 CFR 50.46 Design Basis Accidents
- Thermal Hydraulics in Generation IV Systems
- Long-Term Sustainability of Nuclear Fission Energy—I—Panel
- Implementing the Spent Fuel Recycling Initiative: Fuel Cycle Requirements & the Role of the Nuclear Power Utilities—Panel
- Regulatory Issues in Decommissioning
- Reactor Physics: General
- Data, Analysis, and Operations for Nuclear Criticality Safety
- Research by U.S. Department of Energy—Sponsored Students
- Computational Medical Physics Benchmarks
- Low Power & Shutdown Operations: Observations, Trends, & Future Action—Panel
- Thermal Hydraulics: General—I

9:00 A.M. - 3:00 P.M.

SPOUSE/GUEST TOUR

"Virginia City Tour"

10:15 A.M. - 12:15 P.M.

2006 ICAPP TECHNICAL SESSIONS (see pg 20)

10:45 A.M. - 12:15 P.M.

2006 NFSM TECHNICAL SESSIONS (see pg 37)

11:30 A.M. - 1:00 P.M.

HONORS AND AWARDS LUNCHEON

1:00 P.M. - 4:00 P.M.

2006 ANS ANNUAL MEETING TECHNICAL SESSIONS

- Alternative Source Term Applications to Improve Power Reactor Safety Analysis—Papers/Panel
- Emerging Technologies Related to Hydrogen
- Thermal Hydraulics of Nuclear Hydrogen Systems
- Long-Term Sustainability of Nuclear Fission Energy—II—Paper/Panel
- Best of Decommissioning, Decontamination, & Radiation 2005
- Student/Professional Collaborations in Reactor Physics
- Integrating New Technology and Innovation Within Nuclear Criticality Safety
- Transport & Storage of Commercial Spent Nuclear Fuel
- Focus on Communications: Pronuclear Communications—Panel
- The Licensing Process & Status of Small Power Reactors—Panel
- Fuel Cycle & Spent Fuel Modeling

1:00 P.M. - 4:00 P.M.

2006 ICAPP TECHNICAL SESSIONS (see pg 20)

1:00 P.M. - 5:15 P.M.

2006 NFSM TECHNICAL SESSIONS (see pg 37)

4:00 P.M. - 6:00 P.M.

2006 ICAPP PLENARY SESSION #3 (see pg 20)

"Innovation in Nuclear Technologies"

TUESDAY, JUNE 6, 2006 • 8:30 A.M.

Clad Embrittlement Criterion for Revised 10 CFR 50.46 Design

Basis Accidents, sponsored by NISD. [Track 4] *Session Organizer:* Dana A. Powers (*SNL*). *Cochairs:* Ralph O. Meyer (*NRC*), O. Ozer (*EPRI*)

Carson 1

8:30 a.m.

Technical Basis for Revision of LOCA Embrittlement Criteria, Ralph O. Meyer (*NRC*), Michael C. Billone (*ANL*)

9:00 a.m.

Impact of Pre-Transient Hydrogen and Cooling Rate on the Post-LOCA Cladding Ductility—Recent CEA-EDF-Framatome Test Results, Nicolas Waeckel (*EDF-SEPTEN*), Jean-Paul Mardon (*AREVA Framatome ANP*), Jean-Christophe Brachet, Valérie Maillot (*CEA-Saclay*)

9:30 a.m.

Effect of Irradiation on Post-LOCA Cladding Behavior, R. O. Montgomery, J. M. Alvis (*ANATECH*), R. Yang, O. Ozer (*EPRI*)

10:00 a.m.

Prototypical Experiments on Air Oxidation of Zircaloy Cladding at High Temperatures, Martin Steinbrück (*FZK*)

10:30 a.m.

Semi-Mechanistic Approach for Evaluation of Zr Oxidation Experiments, G. Schanz (*FZK*)

11:00 a.m.

A QUENCH Experiment Including an Air Ingress Phase Prior to Flooding, L. Sepold (*FZK*), Z. Hózer (*KFKI*), G. Schanz, U. Stegmaier, M. Steinbrück, J. Stuckert (*FZK*)

Thermal Hydraulics in Generation IV Systems, sponsored by THD. [Track 7] *Session Organizers*: Kune Y. Suh (*Seoul Natl Univ*), Robert P. Martin (*AREVA*), Karen Vierow (*Purdue Univ*). *Cochairs*: Thomas Larson (*INL*), Karen Vierow

Carson 2
8:30 a.m.

Assessment of PBMR Analysis Using the MELCOR Code, K. J. Hogan, K. Vierow, S. T. Revankar (*Purdue Univ*), R. K. Cole, Jr., R. O. Gauntt, S. Rodriguez (*SNL*)

9:00 a.m.

Restructuring RELAP5-3D for Next Generation Nuclear Plant Analysis, Donna Post Guillen, George L. Mesina (*INL*), Joshua M. Hykes (*Penn State*)

9:30 a.m.

RELAP5-3D Model Validation and Benchmark Exercises for Advanced Gas Cooled Reactor Application, Eugene Moore, Y. A. Hassan (*Texas A&M*)

10:00 a.m.

Experimental Measurement of Flow Phenomena in a VHTR Lower Plenum Model, Hugh M. McIlroy, Jr., Donald M. McEligot, Glenn C. McCreery, Keith G. Condie, Robert J. Pink (*INL*)

10:30 a.m.

Investigation of Material Relocation in TIB of CEFBR, Z. Wang, X. W. Cao (*Shanghai Jiao Tong Univ*)

11:00 a.m.

Performance of a Printed Circuit Heat Exchanger in an Air Open Test Loop, Sung Chu Song, Hee Cheon No (*KAIST*), Cheol Shin Lee (*KOPEC*)

Long-Term Sustainability of Nuclear Fission Energy—I-Panel, sponsored by ESD. [Track 5] *Session Organizer*: Jan van Erp (*Consultant*). *Chair*: Daniel Meneley (*AECL*)

Carson 3
8:30 a.m.

PANELISTS:

- Bernard Fourest (*EDF*)
- Satoru Kondo (*JAEA*)
- Carter D. (Buzz) Savage (*DOE*)
- Phillip Finck (*ANL*)
- John Sackett (*Idaho State Univ*)

Implementing the Spent Fuel Recycling Initiative: Fuel Cycle Requirements and the Role of the Nuclear Power Utilities—Panel, sponsored by FCWMD; cosponsored by OPD. [Track 3] *Session Organizers*: Emory Collins, Don Spellman (*ORNL*), Ted Quinn (*Invenys*). *Cochairs*: Don Spellman, Ted Quinn

Carson 4
8:30 a.m.

PANELISTS:

- Strategic Plan Approach, Vic Reis (*DOE*)
- Fuel Cycle Requirements, Emory Collins (*ORNL*)
- Transporting Spent Fuel from Reactor Sites, Scott Ludwig (*ORNL*)
- MOX Fuel Irradiation, Steve Nesbit (*Duke Energy*)
- Role of Nuclear Power Utilities, Mike Sellman (*Nucl Mgt*)
- Deployment of Fast Reactors, Phillip Finck (*ANL*)

Regulatory Issues in Decommissioning, sponsored by DDRD. [Track 6] *Session Chair*: Rateb (Boby) Abu Eid (*NRC*)

Crystal 1
8:30 a.m.

An Overview of the U.S. Nuclear Regulatory Commission Role and Activities Related to Incidental Waste Determinations, Larry Camper, Anna H. Bradford, A. Christianne Ridge, David W. Esh, Scott Flanders, Rateb (Boby) Abu-Eid (*NRC*)

9:00 a.m.

Status of NRC Decommissioning Program Rulemaking and Decommissioning Guidance, J. Shepherd, R. L. Johnson, T. Fredrichs, D. Schmidt, K. Banovac (*NRC*)

9:30 a.m.

Update on the Implementation of the Memorandum of Understanding Between the United States Nuclear Regulatory Commission and the United States Environmental Protection Agency on Decommissioning Sites, Rafael L. Rodriguez, Derek A. Widmayer (*NRC*)

10:00 a.m.

It Is Not Just About the LTP—Integrating Regulatory Programs and Securing Approvals to Support Site Closure at Yankee Rowe, J. A. Hamilton (*CLF Ventures*), J. R. Lynch (*Yankee Atomic Electric*)

10:30 a.m.

Complex Dose Modeling Analysis for Decommissioning—A Case Study, Rateb (Boby) Abu Eid, Mark Thaggard (*NRC*)

Reactor Physics: General, sponsored by RPD. [Track 7] *Session Chair*: Tunc Aldemir (*Ohio State*)

Crystal 2
8:30 a.m.

Analysis of the Unmoderated Zeus Critical Experiment, Russell D. Mosteller, Peter J. Jaegers (*LANL*)

8:55 a.m.

Homogenization of Research Reactor Fuel for Discrete Ordinates Transport Calculations, Ryanne Kennedy, Tunc Aldemir (*Ohio State*)

9:20 a.m.

IRIS Full MOX Core Evaluation, F. Franceschini, B. Petrovic (*Westinghouse*)

9:45 a.m.

Physical Similarity in the Reactivity-Equivalent Physical Transformation, Yonghee Kim, Jae Man Noh (*KAERI*)

10:10 a.m.

Analysis of Decay Heat Measurements for BWR Fuel Assemblies, Germina Ilas, Ian C. Gauld (*ORNL*)

10:35 a.m.

Optimization of a Refueling Simulation for a CANDU Reactor by Using an Evolutionary Algorithm, Quang Binh Do (*Vietnam Atomic Energy Agency*), Gyuhong Roh, Hangbok Choi (*KAERI*)

11:00 a.m.

A Hybrid Optimization Method for Loading Pattern Search, Tao Wang (*Shanghai Jiao Tong Univ*), Zhongsheng Xie (*Xi'an Jiaotong Univ*)

Data, Analysis, and Operations for Nuclear Criticality Safety, sponsored by NCSD; cosponsored by YMG. [Track 4] *Session Organizer*: Robert Frost (*Nucl Safety Assoc*). *Cochairs*: Nichole Ellis (*Westinghouse*), Robert Frost

Crystal 3
8:30 a.m.

Criticality Potential of Waste Packages Containing DOE SNF Affected by Igneous Intrusion, Darby S. Kimball (*Bechtel Natl*), Charlotta E. Sanders (*Bechtel SAIC*)

9:00 a.m.

Calculation of Critical Experiments Involving U(37)O₂F₂ Solution, K. L. Goluoglu, A. W. Krass (*ORNL*)

9:30 a.m.

CSLEPs and Quick Screens: Answers to Expedited Processing of Legacy Criticality Safety Limits and Evaluations, David G. Erickson, Hans Toffer (*Fluor Hanford*), Robert E. Wilson (*DOE*)

10:00 a.m.

Comparison Between GEMER and KENO V.a on Heterogeneous System Simulation, Qi Ao, Lon E. Paulson (*GNF*)

Research by U.S. Department of Energy—Sponsored Students, sponsored by ETD. [Track 7] *Session Organizer*: Brian Hajek (*Ohio State*). *Chair*: Peter Caracappa (*RPI*)

Crystal 4

8:30 a.m.

Evaluation of a Simple System for Radiation Treatment Positioning, William H. Miller, Amenyedu Adovor, Andrew Andreassen, Yu-Wen Chang, Nithin Polasani (*Univ of Missouri-Columbia*)

8:55 a.m.

MCNP Study of Concrete Activation Due to Beam Port Penetration of the Illinois TRIGA Reactor, J'Tia Patrice Taylor, Brent J. Heuser (*Univ of Illinois*)

9:20 a.m.

Spallation Target Moderators for the Los Alamos Neutron Science Center, Daniel P. Speaker (*NCSU*), Erich A. Schneider (*Univ of Texas at Austin*)

9:45 a.m.

Analysis of the Pebble-Bed VHTR Spectrum Shifting Capabilities for Advanced Fuel Cycles, Pavel V. Tsvetkov, Megan L. Pritchard, David E. Ames II, Ayodeji B. Alajo (*Texas A&M*)

Computational Medical Physics Benchmarks, sponsored by MCD; cosponsored by RPSD and BMD, in collaboration with the Computational Medical Physics Working Group. [Track 7] *Session Organizer:* Bernadette Kirk (*ORNL*). *Chair:* Bernadette Kirk

Crystal 4

10:15 a.m.

Experimental Transport Benchmarks for Physical Dosimetry to Support Development of Fast-Neutron Therapy with Neutron Capture Augmentation, D. W. Nigg, J. K. Hartwell, J. R. Venhuizen, C. A. Wemple (*INL*), R. Risler, G. E. Laramore (*Univ of Washington*), W. Sauerwein, G. Hüdepohl (*Univ of Essen*), A. Lennox (*NIU Inst for Neutron Therapy, FNAL*)

10:40 a.m.

Isodose Mapping Using Coincidence Measurement of Annihilation Photons, Amol Patil (*Univ of Missouri-Rolla*), Dramane Konate (*Univ of Cincinnati*), Thomas P. Goter, Shoaib Usman (*Univ of Missouri-Rolla*)

11:05 a.m.

Determination of Optimum Source Position in Radiotherapy Inverse Planning Using MCNP-4C, Fouad A. Abolaban, Youssef A. Shatilla (*King Abdulaziz Univ*)

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

Low Power and Shutdown Operations: Observations, Trends, and Future Action—Panel, sponsored by OPD. [Track 2] *Session Organizer:* Mark Reinhart (*IAEA*). *Chair:* Mark Reinhart

Crystal 5

8:30 a.m.

PANELISTS:

- Mark Reinhart (*IAEA*)
- Kenneth L. Kiper (*FPL Energy*)
- Marie A. Pohida (*NRC*)
- William E. Burchill (*Texas A&M*)

Thermal Hydraulics: General—I, sponsored by THD. [Track 7] *Session Organizers:* Yassin A. Hassan (*Texas A&M*), Xiaodong Sun (*Ohio State*). *Cochairs:* Donna P. Guillen (*INL*), Xiaodong Sun

Shasta 1

8:30 a.m.

Thermal-Hydraulic Analysis of Electron Targets for Neutron Generation in a Subcritical System, Tanju Sofu, Yousry Gohar, David W. Pointer (*ANL*)

9:00 a.m.

Vortex Identification in a Channel Flow with Microbubbles, C. del C. Gutierrez-Torres (*IPN*), Y. A. Hassan (*Texas A&M*), J. A. Jiménez-Bernal (*IPN*)

9:30 a.m.

Coherent Structure Evolution Due to Microbubbles Injection in Turbulent Flow, Ling Zhen, Yassin A. Hassan (*Texas A&M*)

10:00 a.m.

Simulation of Molecular Phase Localized Deposition Patterns in Lung Bifurcations, V. R. Gutti, R. V. Tompson, S. K. Loyalka (*Univ of Missouri-Columbia*)

10:30 a.m.

Effect of LES Subgrid Scale Model on Flow Through Bends, V. Vishnu Karthik, Y. A. Hassan, A. R. McFarland (*Texas A&M*)

11:00 a.m.

Computational Fluid Dynamic Simulation of Liquid Inside a Cyclone, Shishan Hu, A. R. McFarland, Y. A. Hassan (*Texas A&M*)

TUESDAY, JUNE 6, 2006 • 1:00 P.M.

Alternative Source Term Applications to Improve Power Reactor Safety Analysis—Papers/Panel, sponsored by NISD. [Track 4] *Session Organizer:* Stephen Schultz (*Duke Energy*). *Chair:* Joseph Green (*Shaw Grp*)

Carson 1

1:00 p.m.

Implementation of Reactor Accident Alternative Source Term, Jay Y. Lee (*NRC*)

1:30 p.m.

Alternative Source Term Application for McGuire Nuclear Station, Franklin J. Verbos, Jr., Melissa S. Moran (*Duke Energy*)

2:00 p.m.

Important Isotopes to Post-Accident BWR Shielding Analyses with the Alternative Source Term, Gregory E. Broadbent (*Energy*)

2:30 p.m.

MELCOR 1.8.5 Benchmark for Alternative Source Term Technical Basis, Scott G. Ashbaugh, Randall O. Gauntt (*SNL*)

PANEL DISCUSSION:

3:00 p.m.

PANELISTS:

- David E. W. Leaver (*Polestar Applied Technol*)
- Thomas J. Mscisz (*Exelon*)

Emerging Technologies Related to Hydrogen, sponsored by ESD. [Track 8] *Session Organizer:* Ken Schultz (*General Atomics*). *Chair:* Ken Schultz

Carson 2

1:00 p.m.

Nuclear Power's Role in Breaking America's Addiction to Foreign Oil, Donn D. Dears (*TSAugust*)

1:20 p.m.

Coupling of a Nuclear Heating Reactor with LT-MED Desalination Process, Deng Jian, X. W. Cao (*Shanghai Jiao Tong Univ*)

1:40 p.m.

The Development of Autocatalytic Structural Materials for Use in the Sulfur-Iodine Process for the Production of Hydrogen, K. K. Miu, R. G. Ballinger (*MIT*), N. Li (*LANL*), J. Y. Lim, D. A. Rigual (*MIT*)

2:00 p.m.

Dose and Damage to Personnel and Electrodes from O(α,n)Ne Reactions, Kyle Maloy, Alex Misner, Todd S. Palmer, Richard Peterson, Qiao Wu (*Oregon State Univ*)

Thermal Hydraulics of Nuclear Hydrogen Systems, sponsored by THD. [Track 8] *Session Organizers:* Shripad Revankar (*Purdue Univ*), Chang Oh (*INL*). *Cochairs:* Shripad Revankar, Chang Oh

Carson 2

2:25 p.m.

Effects of Interstage Cooling on Brayton Cycle Efficiency, Chang H. Oh (*INL*), Robert Barner (*Texas A&M*)

2:45 p.m.

Thermal Hydraulic Analysis of HTGR Coupled with Hydrogen Plant, Chang H. Oh, Cliff Davis, Steven Sherman (*INL*), Robert Barner (*Texas A&M*)

3:05 p.m.

Simplified Model to Couple SI Cycle to Nuclear Heat Transport System, Shripad T. Revankar, Seungmin Oh, Nicholas Brown, Karen Vierow (*Purdue Univ*), Salvador Rodriguez, Randall Cole, Jr., Randall Gauntt (*SNL*)

3:25 p.m.

Assessment of Sulfur Iodine Thermochemical Water Splitting Process Flowsheet with ASPEN Code, Seungmin Oh, Shripad T. Revankar, Nicholas Brown, Karen Vierow (*Purdue Univ*), Salvador Rodriguez, Randall Cole, Jr., Randall Gaunt (*SNL*)

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

Long-Term Sustainability of Nuclear Fission Energy—II—Paper/Panel, sponsored by ESD. [Track 5] *Session Organizer:* Jan van Erp (*Consultant*). *Chair:* John Sackett (*Idaho State Univ*)

Carson 3

PAPER:

1:00 p.m.

Why We Should Use Nuclear Energy for Transportation, Robert E. Uhrig (*Univ of Tennessee*)

PANEL DISCUSSION:

1:30 p.m.

PANELISTS:

- Julian Steyn (*ERI*)
- Georges Capus (*COGEMA*)
- Daniel Meneley (*AECL*)
- Mikhail Khoroshev (*IAEA*)
- Fletcher Newton (*CAMECO*)

Best of Decommissioning, Decontamination, and Reutilization 2005, sponsored by DDRD. [Track 6] *Session Chair:* James Byrne (*First Energy*)

Crystal 1

1:00 p.m.

Decontamination and Recycling of Radioactive Material from Retired Components, Chris Wood, Sean Bushart (*EPRI*), David Bradbury, George Elder (*Bradtec Decon Technol*)

1:30 p.m.

Addressing Environmental Issues During D&D of a Former Fuel Cycle Facility, Elaine Hammick (*ABB*)

2:00 p.m.

Orientations for the Final Decommissioning of the RAPSODIE Fast Breeder Reactor, Jean Fontaine, Jean-Marc Goubot, Xavier Berson, Michel Soucille (*CEA*)

2:30 p.m.

The Reform of Near Term and Lifecycle Planning for the Sellafield Group of Sites and the Associated Reorganisation of the UK Nuclear Industry, David Reed (*British Nucl Grp*)

3:00 p.m.

Efficient Treatment of Bulk Materials from D&D, J. J. Shonka, M. R. Marcial, J. L. Kelley (*Shonka Research Assoc*)

3:30 p.m.

Stakeholder Outreach as a Project Risk Management Tool in Support of Site Closure—Lessons from Connecticut Yankee and Yankee Rowe, J. A. Hamilton (*CLF Ventures*), J. R. Lynch (*Yankee Atomic Electric*)

Student/Professional Collaborations in Reactor Physics, sponsored by RPD. [Track 7] *Session Organizer:* Mark DeHart (*ORNL*). *Chair:* Mark DeHart

Crystal 2

1:00 p.m.

Benchmark Analysis for a 2x2 Array Highly Enriched Uranium (HEU) and Iron Critical Experiment, Daniel Gehman, David Loaiza (*LANL*)

1:20 p.m.

PBMR 400 Coupled Code Benchmark: Challenges and Successes with NEM-THERMIX, Javier Ortensi, Hans Gougar (*INL*), Peter Mkhabela, James Han, Bismark Tyobeka, Kostadin Ivanov (*Penn State*)

1:40 p.m.

Coarse-Mesh Finite-Difference Acceleration in the NEWT Generalized-Geometry Lattice Physics Package, Zhaopeng Zhong (*Purdue Univ*), Mark D. DeHart (*ORNL*)

2:00 p.m.

Parallelization of the SCALE Continuous-Energy Resonance Processing Module GEMINEWTRN, Zhaopeng Zhong, Thomas J. Downar (*Purdue Univ*), Mark D. DeHart, Mark L. Williams (*ORNL*)

2:20 p.m.

Westinghouse Nuclear Fuel Engineering Collaborations with Nuclear Engineering Departments, Duncan Robinson, Elise Malek, Baard Johansen (*Westinghouse*)

2:40 p.m.

Integrating Students' Research into IRIS Design Development, B. Petrovic, M. Carelli (*Westinghouse*), M. Ricotti (*Polytechnic of Milan*), N. Todreas (*MIT*), F. Oriolo (*Univ of Pisa*), N. Cavlina (*Univ of Zagreb*), H. Ninokata (*Tokyo Inst of Technol*)

3:00 p.m.

University of Cincinnati and LLNL Collaboration: PWR Fuel Pin Diversion Study, C. Yin, J. Burdo, G. Ivan Maldonado (*Univ of Cincinnati*), Young S. Ham (*LLNL*)

3:20 p.m.

University of Cincinnati and Westinghouse Collaboration: PHOENIX-4 Lattice Physics Studies, C. Yin, J. D. Galloway, G. Ivan Maldonado (*Univ of Cincinnati*), Emilio Fuentes, Juan Casal (*Westinghouse*)

Integrating New Technology and Innovation Within Nuclear Criticality Safety, sponsored by NCS&D; cosponsored by YMG. [Track 4]

Session Organizer: Peter Angelo (*Y-12 Natl Sec*). *Chair:* Jerry Lichtenwalter (*Y-12 Natl Sec*)

Crystal 3

1:00 p.m.

The Application of Recent Developments in Distributed Parametric Searches for Criticality Assessment Using the CodeMore Program, Paul Hulse, David Dewar (*British Nucl Grp*)

1:30 p.m.

Economic Impact of Criticality Safety Innovation at GNF-A, Lon E. Paulson (*GNF*)

Transport and Storage of Commercial Spent Nuclear Fuel,

sponsored by NCS&D; cosponsored by YMG. [Track 6] *Session Organizer:* Steve Bowman (*ORNL*). *Chair:* Steve Bowman

Crystal 3

2:05 p.m.

New Methods for Applying Fuel-Depletion Code Bias in Burnup-Credit Criticality Analyses, James E. Hopf (*BNG Fuel Sol*)

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

Focus on Communications: Pronuclear Communications—Panel,

sponsored by ETD. [Track 1] *Session Organizer:* David Pointer (*ANL*). *Chair:* Brian Meeley (*Potomac Communications Grp*)

Crystal 4

1:00 p.m.

PANELISTS:

- Richard Deklevar (*Sun City Nucl Science Club*)
- Wanda Munn (*Citizens for Medical Isotopes*)
- Kevin Phillips (*Mayor, Caliente, NV*)
- Paul Seidler (*Public Policy Analyst*)
- Bill Vasconi (*Nevadans for Nucl Safety and Benefits*)
- John Wheeler (*This Week in Nuclear*)

The Licensing Process and Status of Small Power Reactors—Panel, sponsored by OPD. [Track 2] *Session Organizer*: Christopher Lapp (*Lapp Consult Svc*). *Chair*: Phillip Moor (*Burns and Roe*)

Crystal 5

1:00 p.m.

PANELISTS:

- Marvin Yoder (*City Mgr, Galena, Alaska*)
- Yoshiaki Sakashita (*Toshiba*)
- Izuma Kinoshita (*CRIEPI*)
- Phillip Moor (*Burns and Roe*)
- Christopher W. Lapp (*Lapp Consult Svc*)
- NRC licensing representative to be determined.
- INL representative to be determined.

Fuel Cycle and Spent Fuel Modeling, sponsored by FCWMD. [Track 3] *Session Organizer*: Mike Goff (*INL*). *Chair*: Kemal Pasamehmetoglu (*INL*)

Shasta 1

1:00 p.m.

The IAEA International Project on Innovative Nuclear Reactors and Fuel Cycles (INPRO): Study on Opportunities and Challenges of Large-Scale Nuclear Energy Development, M. Khoroshev (*IAEA*), S. Subbotin (*Russian Research Ctr*)

1:30 p.m.

DESAE Integrated Computer Model for Global Analysis in INPRO Assessment Studies, V. Tsubulskiy, S. Subbotin (*Russian Research Ctr*), M. Khoroshev (*IAEA*)

2:00 p.m.

Simulation Institute for Nuclear Energy Modeling and Analyses (SINEMA): Developing a GENIUS, Christopher A. Juchau, Mary Lou Dunzik-Gougard (*Idaho State Univ*), Kemal Pasamehmetoglu (*INL*)

2:30 p.m.

Pinhole Breaches in Spent Fuel Containers: Some Modeling Considerations, Andrew M. Casella, Sudarshan K. Loyalka (*Univ of Missouri-Columbia*), Brady D. Hanson (*PNNL*)

3:00 p.m.

Canister Loading Monitor for CANDU Spent Fuel Dry Storage, Sang-Yoon Lee, Michael C. Miller (*LANL*), Il-Jin Park, Gyung-Sik Min (*Natl Nucl Mgt & Control Agency*)

WEDNESDAY, JUNE 7, 2006 • 8:30 A.M.

Probabilistic Risk Assessment, sponsored by NISD. [Track 4] *Session Organizer*: Dana A. Powers (*SNL*). *Chair*: Tunc Aldemir (*Ohio State*)

Carson 1

8:30 a.m.

Treatment of Uncertainties in Modeling the Failure of Major RCS Components in Severe Accident Analysis, Aram Hakobyan, Richard Denning, Tunc Aldemir (*Ohio State*), Sean Dunagan, David Kunsman (*SNL*)

9:00 a.m.

Quantification of Minimal Cutset Truncation Errors in Fault Tree Analysis, Jong Soo Choi (*KINS*), Nam Zin Cho (*KAIST*)

9:30 a.m.

A Graphical Tool for the Analysis of Event Trees, Kyle Metzroth, Umit Catalyurek, Tunc Aldemir (*Ohio State*), Sean Dunagan, Dave Kunsman (*SNL*)

10:00 a.m.

Software Quality Assurance for Analytical Codes, Steven A. Arndt (*NRC*)

10:30 a.m.

SMV Model-Based Safety Analysis of Software Requirements, Kwang Yong Koh, Poong Hyun Seong (*KAIST*)

11:00 a.m.

Transnational Nuclear Liability: Issues and Developments, Blake J. Nelson (*Akin, Gump, Strauss, Hauer & Feld*)

Young Professional Thermal Hydraulics Research Competition

sponsored by THD. [Track 7] *Session Organizers*: Donald Todd (*AREVA*), Shripad Revankar (*Purdue Univ*). *Cochairs*: Donald Todd, Cetin Unal (*LANL*)

Carson 2

8:30 a.m.

Fast Neutron Gamma-Insensitive Centrifugally-Tensioned Metastable Fluid Detector, P. Smagacz, J. Lapinskas, A. Horn, Y. Xu, R. P. Taleyarkhan (*Purdue Univ*)

8:55 a.m.

Fast Neutron Gamma-Insensitive Continuous Operation Tension Metastable Fluid Detector, J. Lapinskas, P. Smagacz, J. Webster, P. Shaw, Y. Xu, R. P. Taleyarkhan (*Purdue Univ*)

9:20 a.m.

Thermal Hydraulic Differences in Application of ASTRUM to 2-, 3-, and 4-Loop Plants, Jeffrey Kobelak, Cesare Frepoli (*Westinghouse*)

9:45 a.m.

Emergency Diesel Generator Start Time Effects on Pressurizer Surge Line Break, S. Y. Antoine (*Westinghouse*)

10:10 a.m.

Flow Visualization in a Packed Bed Reactor Using PIV and Refractive Index Matching, E. E. Dominguez-Ontiveros, R. B. Barner, C. E. Estrada-Perez, Y. A. Hassan, S. Abdel-Fattah (*Texas A&M*)

10:35 a.m.

CFD Simulation on a Slit Virtual Impactor, Sridhar Hari, Y. A. Hassan (*Texas A&M*)

11:00 a.m.

Instability Research of Two Phase Flow Using Fractal Image Coding, Zhi Shang, Jun Zhao, Shuo Chen (*Shanghai Jiao Tong Univ*)

Environmental Aspects of New Site Selection—Papers/Panel

sponsored by ESD. [Track 5] *Session Organizer*: Carl Mazzola (*Shaw Environ*). *Chair*: Vanice Perin (*NRC*)

Carson 3

PAPERS:

8:30 a.m.

Reactor Siting in Southeastern Coastal Plain Settings: Hydrostratigraphy and Lithostratigraphy, Douglas Wyatt (*Washington SMS*), Randolph Cumbest (*Washington SRC*)

9:00 a.m.

Site Selection and Environmental Requirements for Commercial Nuclear Power Plants Under 10 CFR 52, Kevin Bryson, John Downing (*Shaw Grp*)

WEDNESDAY • JUNE 7, 2006

7:30 A.M. - 5:00 P.M.

MEETING REGISTRATION

8:00 A.M. - 10:00 A.M.

SPOUSE/GUEST HOSPITALITY

8:00 A.M. - 10:00 A.M.

2006 ICAPP PLENARY SESSION #4 (see pg 21)

"Utility/Owner Challenges to the Coming Resurgence in Generation Needs"

8:30 A.M. - 11:30 A.M.

2006 ANS ANNUAL MEETING TECHNICAL SESSIONS

- Probabilistic Risk Assessment
- Young Professional Thermal Hydraulics Research Competition
- Environmental Aspects of New Site Selection—Papers/Panel
- Evaluation of Recent Transmutation Scenarios for Partitioning/Transmutation of Actinides & Heat-Generating Fission Products
- U.S. Dept. of Energy Cleanup & International Program Update
- Transport Methods: General
- University Research Reactor & Nuclear Science Programs
- Education & Training: General

8:30 A.M. - 12:15 P.M.

2006 NFSM TECHNICAL SESSIONS (see pg 37)

10:00 A.M. - 12:00 P.M.

2006 ICAPP TECHNICAL SESSIONS (see pg 21)

1:00 P.M. - 4:00 P.M.

2006 ANS ANNUAL MEETING TECHNICAL SESSIONS

- Mathematical Fire Modeling & Its Application to Nuclear Power Plants
- Thermal Hydraulics: General—II
- Reactor Analysis Methods
- Advanced Head-End Improvements for Processing Spent Nuclear Fuels
- Decommissioning, Decontamination, & Reutilization Hot Topics & Emerging Issues—Papers/Panel
- Computational Methods: General
- Tutorial on the Proposed ANSI/ANS 8.24 Standard: Validation of Neutron Transport Methods for Nuclear Criticality Safety Calculations
- Focus on Communications: Speaking with the Media—Panel
- Tools & Concepts Related to the Human Machine Interface & Overall Safety Culture

1:00 P.M. - 4:00 P.M.

2006 ICAPP TECHNICAL SESSIONS (see pg 21)

1:00 P.M. - 5:15 P.M.

2006 NFSM TECHNICAL SESSIONS (see pg 37)

4:00 P.M. - 6:00 P.M.

2006 ICAPP PLENARY SESSION #5 (see pg 21)

"Fuel Cycle Options for Sustainable Development of Nuclear Energy"

7:00 P.M. - 11:00 P.M.

EVENING EVENT: "Western Ho'Down"

PANEL DISCUSSION:

9:30 a.m.

PANELISTS:

- Tom Moorer (*SNOC*)
- James Oliver (*Tetra Tech NUS*)

Evaluation of Recent Transmutation Scenarios for Partitioning/Transmutation of Actinides and Heat-Generating Fission Products, sponsored by FCWMD. [Track 3] *Session Organizer*: Charles Forsberg (*ORNL*). *Chair*: Daniel Ingersoll (*ORNL*)

Carson 4

8:30 a.m.

Thorium-Based Fuels for Enhancing Plutonium Transmutation in Light Water Reactors, Reuben T. Sorensen, Jeffrey C. Davis, John C. Lee (*Univ of Michigan*)

9:00 a.m.

Transmutation Characteristics of Thorium-Based Fuel in a Multiple-Tier Fuel Cycle, Jeffrey C. Davis, Reuben T. Sorensen, John C. Lee, Ronald F. Fleming (*Univ of Michigan*)

9:30 a.m.

Transmutation of Americium and Curium Using Z-Pinch Fusion, B. B. Cipiti (*SNL*), P. P. H. Wilson (*Univ of Wisconsin-Madison*)

10:00 a.m.

Potential of Minor Actinides to Enhance VHTR Performance Characteristics, Pavel V. Tsvetkov, Ayodeji B. Alajo (*Texas A&M*)

10:30 a.m.

Comparison of Proliferation Resistance of Once-Through, MOX, and DUPIC Fuel Cycles, Jun Li, Man-Sung Yim, David McNelis (*NCSTU*)

11:00 a.m.

Conceptual Design of Accelerator Driven Fast/Thermal Spectrum Subcritical System, Xiaofeng Jiang, Hao Huang (*Shanghai Jiao Tong Univ*), Z. S. Xie (*Xi'an Jiaotong Univ*)

U.S. Department of Energy Cleanup and International Program Update, sponsored by DDRD. [Track 6] *Session Chair*: Mark Morton (*Polestar*)

Crystal 1

8:30 a.m.

DOE and Fluor Hanford Continue to Make Progress on Cleanup of Hanford, Michael B. Lackey (*Fluor Hanford*)

9:00 a.m.

Source Term Remediation and Demolition Strategy for the Hanford K-Area Spent Fuel Basins, Glen B. Chronister, Peter M. Knollmeyer (*Fluor Hanford*)

9:30 a.m.

Retrieval and Transfer of Decladding Process Sludge at the Marcoule Site (France), Eric Tchemitcheff (*COGEMA-Richland*), Marcel Delrieux (*SGN, AREVA*), Jean Luc Lecollier (*Technicatome, AREVA*), Grégoire Piot (*SGN/HRB, AREVA*), Hervé Comole (*COGEMA*)

10:00 a.m.

Clean-Up and Dismantling Operations at the Marcoule Site, Jean Fontaine, Michèle Tallec, Gérard Calmes, Jean-Louis Garcia (*CEA*)

10:30 a.m.

Decommissioning Operations at French INB 52 ATUE Facility, E. Gouhier, D. Seisson (*CEA*)

11:00 a.m.

Decommissioning Operations at French INB41 HARMONIE Reactor, Eric Gouhier, Sandra Paradis (*CEA*)

Transport Methods: General, sponsored by MCD. [Track 7] *Session Organizer*: Todd Palmer (*Oregon State Univ*). *Chair*: Barry Ganapol (*Univ of Arizona*)

Crystal 2

8:30 a.m.

Fourier Analysis of Parallel Inexact Block-Jacobi Splitting in Slab Geometry, Massimiliano Rosa (*Penn State*), James S. Warsa, Jae H. Chang (*LANL*)

9:00 a.m.

Coupled Space-Angle Adaptivity for Radiation Transport Modeling, HyeongKae Park, Cassiano R. E. de Oliveira (*Georgia Tech*)

9:30 a.m.

Asymptotically Correct Angular Distributions for Monte Carlo-Diffusion Interfaces, Gregory Davidson (*Univ of Michigan*), Jeffery D. Densmore (*LANL*), Anil K. Prinja (*Univ of New Mexico*), Jim E. Morel (*Texas A&M*)

10:00 a.m.

The Boundary Element Formulation of the One Group 1D Nodal Equations, B. D. Ganapol (*Univ of Arizona*), A. M. Ougouag (*INL*)

10:30 a.m.

A One Group-One-Dimensional Transport Benchmark in Cylindrical Geometry, B. D. Ganapol (*Univ of Arizona*)

University Research Reactor and Nuclear Science Programs, sponsored by IRD. [Track 7] *Session Organizer*: Kenan Ünlü (*Penn State*). *Chair*: Kenan Ünlü

Crystal 3

8:30 a.m.

Impact of INIE on the Oregon State TRIGA Reactor and Other Radiation Center Facilities, Steven R. Reese, Stephen E. Binney (*Oregon State Univ*)

8:50 a.m.

University of Wisconsin Supercritical Water Loop Radiation Energy Deposition Calibration, Eric J. Edwards, Paul P. H. Wilson, Mark Anderson (*Univ of Wisconsin-Madison*), David Bartels, Simon Pimblott (*Univ of Notre Dame*), Benjamin Schmitt, Daniel Ludwig, Joseph Prazak, Timothy Setter (*Univ of Wisconsin-Madison*)

9:10 a.m.

A High LET Neutron Irradiation Facility for Biological Samples at the MUTR, Eric Burgett, C.-K. Wang, Xin Zhang (*Georgia Tech*), Mohamad Al-Sheikhly, Ian Gifford, Vince Adams (*Univ of Maryland*)

9:30 a.m.

Addition of Hydrogen to Ni-Ti Multilayers: Implications for Improved Neutron Supermirror Performance, Hyunsu Ju, Brent J. Heuser (*Univ of Illinois*)

9:50 a.m.

NISP Optimization of a SANS Instrument at the IUCF LENS, Giovanna Danagouliau, Brent J. Heuser (*Univ of Illinois*)

10:10 a.m.

Graphical Methods of Teaching Monte Carlo Simulation, Alexander G. Atwood (*Suffolk County Community Coll*)

10:30 a.m.

Comparison of Gamma-Ray Detectors for Neutron-Based Explosives Detection Systems, Alexander Barzilov, Phillip Womble (*Western Kentucky Univ*)

10:50 a.m.

Training and Research in Energy Sciences & Engineering: Towards a Better Understanding of Nuclear Sciences and Innovative Concepts, O. K. Bouhelal (*ENIM*)

Education and Training: General, sponsored by ETD. [Track 2] *Session Organizer*: Mike Robinson (*Bechtel Bettis*). *Chair*: Mike Robinson

Crystal 4

8:30 a.m.

Distance Reactor Laboratory and Virtual Tours, Eric Edwards, Adam Sweet, Michelle Blanchard, Robert Agasie (*Univ of Wisconsin-Madison*), Prashant Jain, Rizwan-uddin (*Univ of Illinois*)

9:00 a.m.

Collaborative Decision-Making Strategies to Gain Public Support, Mark D. Radonich (*Cultural Effect Consulting*)

9:30 a.m.

Nuclear Power Engineering Education in India, Prabhat Munshi (*Indian Inst of Technol Kanpur*)

10:00 a.m.

The Interactive Nucleus: Students Take Control of the Atom, William Wabbersen (*ANS-Savannah River Section*)

10:30 a.m.

International Training Program: 3D S.UN.COP—Scaling, Uncertainty and 3D Thermal-Hydraulics/Neutron-Kinetics Coupled Codes Seminar, A. Petruzzi, F. D'Auria (*Univ of Pisa*), T. Bajs (*Univ of Zagreb*), F. Reventos (*UPC-SEN*)

WEDNESDAY, JUNE 7, 2006 • 1:00 P.M.

Mathematical Fire Modeling and Its Application to Nuclear Power Plants, sponsored by NISD. [Track 4] *Session Organizer*: Ray Gallucci (NRC). *Cochairs*: Mark H. Salley (NRC), Bijan Najafi (SAIC)

Carson 1

1:00 p.m.

Use of Fire Models in Regulatory Decisions, Naem Iqbal, Sunil Weerakkody (NRC)

1:25 p.m.

Validating Fire Models for Nuclear Power Plant Applications, Kevin McGrattan, Richard Peacock (NIST)

1:50 p.m.

Experimental Uncertainty in the Validation of Fire Models for Nuclear Power Plant Applications, Anthony Hamins (NIST)

2:15 p.m.

Predicting Fire-Induced Core Damage Frequencies—A Simple “Sanity Check,” Raymond H. V. Gallucci (NRC)

2:40 p.m.

Consensus Standards for the Evaluation of Fire Models for Nuclear Power Plant Applications, Richard Peacock (NIST)

3:05 p.m.

Current Fire Modeling Activities at U.S. NRC Office of Nuclear Regulatory Research, Jason Dreisbach (NRC)

3:30 p.m.

Fire Modeling Activities at Electric Power Research Institute, Robert P. Kassawara (EPRI), Bijan Najafi, Francisco Joglar (SAIC)

Thermal Hydraulics: General—II, sponsored by THD. [Track 7] *Session Organizers*: Yassin A. Hassan (Texas A&M), Xiaodong Sun (Ohio State). *Chair*: Joy L. Rempe (INL)

Carson 2

1:00 p.m.

Natural Convection Heat Transfer in an Internally Heated Semicircular Water Pool, Seung D. Lee, Jong G. Lee, Kune Y. Suh (Seoul Natl Univ)

1:30 p.m.

An Experiment Study on Thermo Hydraulic Characteristics Under FCI Conditions, Xiaoyan Li, Yanhua Yang, Jijun Xu (Shanghai Jiao Tong Univ)

2:00 p.m.

Strategy for Experimental Studies on Safety and Efficiency of New Design NPPs with VVER, Vladimir Blinkov, Oleg Melikhov (Electrogorsk Research and Eng Ctr on NPP Safety)

2:30 p.m.

Improved Model of Heat Transfer in Porous Crud Layers, Ling Zou, Barclay G. Jones (Univ of Illinois)

3:00 p.m.

Two-Phase Flow Structures Under Simulated Microgravity Condition, S. Vasavada (Purdue Univ), X. Sun (Ohio State), M. Ishii (Purdue Univ), W. Duval (NASA Glenn Research Ctr)

3:30 p.m.

2D Spectra Evaluation for Single and Two Phase Flows, Jose A. Jimenez-Bernal (IPN), Yassin A. Hassan (Texas A&M), Claudia del C. Gutierrez-Torres (IPN)

Reactor Analysis Methods, sponsored by RPD. [Track 7] *Session Chair*: Nam Zin Cho (KAIST)

Carson 3

1:00 p.m.

The AFEN Method in Cylindrical (r,θ,z) Geometry for Pebble Bed Reactors—Extension to Multigroup Form and Treatment of Voids, Nam Zin Cho, Joo Hee Lee, Jaejun Lee, Gil Soo Lee (KAIST)

1:30 p.m.

Reactivity Biases in the Simulation of the Random Dispersal of Fuel: The Case of VHTR Fuel Compacts, Felix C. Difilippo (ORNL)

2:00 p.m.

Implementation of Uncertainty Analysis in Evaluation of Small Disturbances, Plamen V. Petkov (Kozloduy NPP)

2:30 p.m.

A Convergence Problem of Nodal Methods, Ziyong Li, Shaohong Zhang (Shanghai Jiao Tong Univ), Y. A. Chao (Westinghouse)

3:00 p.m.

Fast-Running Loading Pattern Evaluation Method Based on Low-Order Harmonics Expansion, Dong Lv, Shaohong Zhang, Tao Wang (Shanghai Jiao Tong Univ), Y. A. Chao (Westinghouse)

3:30 p.m.

Tests of a Flow-Levitated Absorber for GFR LOF and LOCA Mitigation, M. J. Driscoll, C. S. Handwerk (MIT)

Advanced Head-End Improvements for Processing Spent Nuclear Fuels, sponsored by FCWMD. [Track 3] *Session Organizers*: Bill Del Cul (ORNL), Karen Howden (INL). *Chair*: Robert Benedict (INL)

Carson 4

1:00 p.m.

Advanced Head-End Processing of Spent Fuel: A Progress Report on a Pyrochemical Front-End, Guillermo D. Del Cul, Rodney D. Hunt, Barry B. Spencer, Emory D. Collins (ORNL), Brian Westphal, Karen Howden (INL)

1:30 p.m.

Recent Progress in the DEOX Process, B. R. Westphal, K. J. Bateman, R. P. Lind, D. L. Wahlquist (INL)

2:00 p.m.

Processing of Spent TRISO-Coated Reactor Fuels: Milling of Fuel to Support a Grind-Leach Process, Barry B. Spencer, Guillermo D. Del Cul, Catherine H. Mattus, Emory D. Collins (ORNL)

2:30 p.m.

Electrochemical Dissolution of Spent EBR-II Driver Fuel in Molten Salt Electrolyte, S. X. Li, D. Vaden, R. W. Benedict, K. M. Goff (INL)

3:00 p.m.

CFD Study of Turbulence in an Annular Centrifugal Contactor, Kent E. Wardle, Todd R. Allen, Ross Swaney (Univ of Wisconsin-Madison)

3:30 p.m.

Environmental Impact Assessment for the DFDF Under a Normal Operation, Ho-Hee Lee, Jang-Jin Park, Jin-Myeong Shin, Ki-ho Kim, In-Ha Jung, Myung-Seung Yang (KAERI)

Decommissioning, Decontamination, and Reutilization Hot Topics and Emerging Issues—Papers/Panel, sponsored by DDRD. [Track 6] *Session Chair*: Jay Kunze (Idaho State Univ)

Crystal 1

PAPERS:

1:00 p.m.

Design of Nuclear Power Plants to Facilitate Decommissioning, Richard H. Meservey (Battelle Energy Alliance)

1:30 p.m.

DD&R Issues if Nuclear Plants Are Sited Underground, Wes Myers, Ned Elkins (LANL), Jay Kunze, James Mahar (Idaho State Univ)

PANEL DISCUSSION:

2:00 p.m.

PANELISTS:

- Thomas LaGuardia (TLG Svc)
- John Parkyn (Private Fuel Storage)
- J. Mark Price (SCE)

Computational Methods: General, sponsored by MCD. [Track 7] *Session Organizer*: Todd Palmer (Oregon State Univ). *Chair*: Forrest B. Brown (LANL)

Crystal 2

1:00 p.m.

A Fast RSA Method for Fuel Particle Packing, Forrest B. Brown (LANL)

1:30 p.m.

Real Variance Estimation Using Inter-Cycle Correlation of Fission Source Distribution in Monte Carlo Eigenvalue Calculations, Hyung Jin Shim, Chang Hyo Kim (*Seoul Natl Univ*)

2:00 p.m.

Atomic-Scale Modeling of Dislocation-Radiation Defects Interaction, Yuri N. Osetsky, Roger E. Stoller (*ORNL*)

2:30 p.m.

Degradation Monitoring Through Unscented Kalman Filtering, Bulent Alpaya, John C. Lee (*Univ of Michigan*)

3:00 p.m.

Development and Benchmarking of Robust Non-Parametric Sequential Probability Ratio Tests, Adrian Miron (*Univ of Cincinnati*), Randall L. Bickford (*Expert Microsystems*)

3:30 p.m.

The Problem of Prompt Gamma Emission for Water Prospecting in Martian Regolith, Shikha Prasad, Natallia Pinchuk, Katie Woch, James Paul Holloway (*Univ of Michigan*)

Tutorial on the Proposed ANSI/ANS 8.24 Standard: Validation of Neutron Transport Methods for Nuclear Criticality Safety Calculations, sponsored by NCSN. [Track 4] *Session Organizer:* Fitz Trumble (*WSMS*). *Chair:* Fitz Trumble

Crystal 3

1:00 p.m.

PANELISTS:

- Larry L. Wetzel (*BWXT*)
- Charles D. Harmon (*LANL*)
- Fitz Trumble (*WSMS*)
- Jerry Hicks (*DOE/INNSA*)
- Burton M. Rothleder (*DOE*)
- Robert D. Busch (*Univ of New Mexico*)
- Kevin D. Kimball (*NISYS Corp*)
- D. A. Eghbali (*WSMS*)
- R. L. Reed (*WSMS*)

Focus on Communications: Speaking with the Media-Panel, sponsored by ETD. [Track 1] *Session Organizer:* David Pointer (*ANL*). *Chair:* David Pointer

Crystal 4

1:00 p.m.

PANELISTS:

- Keith Arterburn (*INL*)
- Sharon Kerrick (*ANS*)
- Brian Meeley (*Potomac Communications Grp*)
- Marjorie Burren (*B&B Assoc*)

Tools and Concepts Related to the Human Machine Interface and Overall Safety Culture, sponsored by HFD. [Track 2] *Session Chair:* John O'Hara (*BNL*)

Crystal 5

1:00 p.m.

An Analysis on Visual Search and EEG During Complex Diagnostic Tasks in NPPs, Jun-Su Ha, Poong-Hyun Seong (*KAIST*)

1:30 p.m.

An Empirical Analysis of Human Performance and Nuclear Safety Culture, Jeffrey C. Joe, Larry G. Blackwood (*INL*)

2:00 p.m.

Advances in HFE Methods and Their Implications for Regulatory Reviews, John O'Hara (*BNL*), J. Persensky, Autumn Szabo (*NRC*)

2:30 p.m.

HUPESS: Human Performance Evaluation Support System, Jun-Su Ha, Poong-Hyun Seong (*KAIST*)

3:00 p.m.

Safety Culture Enhancements to the Reactor Oversight Process, J. Persensky, I. Schoenfeld, V. Barnes (*NRC*)

3:30 p.m.

Development of V&V Facility for the Advanced Man-Machine Interface of Advanced Power Reactor in Korea, Man-Woo Kim, Jong-Jae Choi, Moon-Jae Choi, Il-Nam Choe (*KOPEC*)

THURSDAY • JUNE 8, 2006

7:30 A.M. - 1:30 P.M.

MEETING REGISTRATION

8:00 A.M. - 10:00 A.M.

2006 ICAPP PLENARY SESSION #6 (see pg 21)
"Looking to the Future:Trends and Challenges"

8:30 A.M. - 11:30 A.M.

2006 ANS ANNUAL MEETING TECHNICAL SESSIONS

- Nuclear Installations Safety: General
- Thermal Hydraulics: General—III
- Environmental Sciences: General
- High-Level Waste Management
- Reactor Physics Design, Validation, & Operating Experience
- Nuclear Criticality Safety Standards—Forum
- Fusion Energy Using Lunar-Mined Helium
- Addressing Aging & Obsolescence Issues with Printed Circuit Boards—Papers/Panel

8:30 A.M. - 12:15 P.M.

2006 NFSM TECHNICAL SESSIONS (see pg 37)

10:00 A.M. - 12:00 P.M.

2006 ICAPP TECHNICAL SESSIONS (see pg 21)

1:00 P.M. - 5:00 P.M.

2006 ICAPP TECHNICAL SESSIONS (see pg 21)

1:00 P.M. - 5:15 P.M.

2006 NFSM TECHNICAL SESSIONS (see pg 37)

THURSDAY, JUNE 8, 2006 • 8:30 A.M.

Nuclear Installations Safety: General, sponsored by NISD. [Track 4]
Session Organizer: Dana A. Powers (*SNL*). *Chair:* Kevin O’Kula (*WSMS*)

Carson 1

8:30 a.m.

Defense-in-Depth as an Analogue of Fault Tolerance, N. Prasad Kadambi (*NRC*)

9:00 a.m.

Computerized Severe Accident Management Operator Support “SAMOS,” G. Vayssier (*NSC Netherlands*), P. Fantoni (*IFE Halden*), L. Borondo (*Iberinco*), R. Martinez (*Tecnatom*), B. Krajnc (*NEK*), N. Dessars (*Westinghouse Europe*), J. Husarcek (*UJD*), J. Bahna (*VUJE*)

9:30 a.m.

Nuclear Facility Security: How Much is Enough? Matias F. Travieso-Diaz, Paul A. Gaukler (*Pillsbury Winthrop Shaw Pittman*)

10:00 a.m.

Key Aspects of RBMK Deterministic Safety Technology, F. D’Auria (*Univ of Pisa*), S. Soloviev (*NIKIET*)

10:30 a.m.

Preliminary Study on the Development of Chinese PWR SAMG, Kun Zhang, Xue-Wu Cao (*Shanghai Jiao Tong Univ*)

Thermal Hydraulics: General—III, sponsored by THD. [Track 7]

Session Organizers: Yassin A. Hassan (*Texas A&M*), Xiaodong Sun (*Ohio State*).
Chair: Kune Y. Suh (*Seoul Natl Univ*), Yassin A. Hassan

Carson 2

8:30 a.m.

Development of OECD/NRC BFBT Benchmark for Validation and Improvement of Two-Phase Flow Modeling, B. Neykov, F. Aydogan, L. E. Hochreiter, K. Ivanov (*Penn State*), H. Utsuno (*Japan Nucl Energy Safety Org*), E. Sartori (*OECD-NEA*), G. Rhee (*NRC*)

9:00 a.m.

Evaluation of the Downcomer Boiling Test (DOBO) Using RELAP5 and TRACE Codes, B. G. Huh (*KINS*), D. J. Euh, B. J. Yun (*KAERI*), Y. J. Cho, I. G. Kim (*KINS*), C.-H. Song (*KAERI*)

9:30 a.m.

Inactive Loop Flow Stagnation During Natural Circulation Cooldown, Daren Chang (*STP Nucl Operating*)

10:00 a.m.

CIAU Method to Evaluate the Uncertainty in System Thermal-Hydraulics Calculations. Key Applications, A. Petruzzi, F. D’Auria (*Univ of Pisa*)

10:30 a.m.

The BEMUSE Programme: Best-Estimate Methods Uncertainty and Sensitivity Evaluation—Phase 2, A. Petruzzi, F. D’Auria (*Univ of Pisa*)

11:00 a.m.

Non-Dimensional Analysis of Static Bifurcation in a Natural Circulation Loop, Lili Tong (*Shanghai Jiao Tong Univ*)

Environmental Sciences: General, sponsored by ESD. [Track 5] *Session Organizer:* Rebecca Steinman (*Advent Eng*). *Chair:* Douglas Osborne (*SNL*)

Carson 3

8:30 a.m.

High Resolution Hand-Held Gamma Spectrometer, Sanjoy Mukhopadhyay (*Bechtel Nevada*)

9:00 a.m.

Adiabatic Heat of Hydration Calorimetric Measurements for Reference Saltstone Waste, James S. Bollinger (*SRNL*)

9:30 a.m.

Statistical Analysis of Fissile Mass, N. J. Devaser, J. A. March-Leuba, B. R. Upadhyaya (*Univ of Tennessee*)

10:00 a.m.

Turning Effluent Processing Plants to Remediation Leaders, Ian D. MacPherson, Iain A. Irving (*British Nucl Grp*)

10:30 a.m.

Development of INPRO Methodology in the Area of Environment, Masanao Moriawaki (*IAEA*), Roberto Dones (*Paul Scherrer Inst*), Sergey Fesenko (*IAEA*), W. Eberhard Falck (*Consultant*), Akira Omoto (*IAEA*)

High-Level Waste Management, sponsored by FCWMD. [Track 6] *Session Organizer:* Mike Goff (*INL*). *Chair:* Stephen L. Turner (*TerranearPMC*)

Carson 4

8:30 a.m.

Thermal Loading Perspective on U.S. Nuclear Waste Repository Needs, Mike P. Stahala, Man-Sung Yim (*NCSU*), David McNelis (*Univ of North Carolina at Chapel Hill*)

9:00 a.m.

The Influence of Fuel Cycle and Spent Fuel Characteristics on Repository Heat Loads, Jeff Preston, Jeff Clark, Gary Sweder, F. R. Mynatt, L. F. Miller (*Univ of Tennessee*)

9:30 a.m.

Design of a Radioactive Waste Immobilisation Plant: An Engineering Challenge, Alamin Hossain, Dylan Buckley (*ANSTO*)

10:00 a.m.

State, Tribal, and Federal Interactions Relative to Spent Nuclear Fuel Transportation—Transportation Emergency Preparedness Program, Ella McNeil (*DOE*)

10:30 a.m.

State, Tribal, and Federal Interactions Relative to Spent Nuclear Fuel Transportation, Corinne Macaluso (*DOE*), Elizabeth Helvey (*Bechtel SAIC*), Julie Offner (*Booz Allen Hamilton*)

11:00 a.m.

Small-Angle X-Ray Scattering Measurements of Helium Bubble Formation in Borosilicate Glass, Brent J. Heuser, Alexander Terekhov, Maria Okuniewski (*Univ of Illinois*)

Reactor Physics Design, Validation, and Operating Experience, sponsored by RPD. [Track 7] *Session Chair:* Atul A. Karve (*GE/GNF*)

Crystal 2

8:30 a.m.

A Process for Analyzing Channel-Control Blade Interference, Atul A. Karve, Gerald A. Potts, Robert A. Rand, Gerry M. Latter, Mark A. Dubecky (*GE/GNF*)

8:50 a.m.

MOX and MOX with ²³⁷Np/²⁴¹Am Inert Gas Generation Comparison in ATR, G. S. Chang, M. Robel, W. J. Carmack, D. J. Utterbeck (*INL*)

9:10 a.m.

Lifetime Predictions for Three Fuel Reloading Scenarios in the PULSTAR Reactor at NCSU, Matthew L. F. Miller, R. E. Pevey, L. F. Miller (*Univ of Tennessee*), A. I. Hawari (*NCSU*)

9:30 a.m.

Neutronic Design Study of a TRU Transmutation Core Using Void Duct Assemblies, Ser Gi Hong, Yeong Il Kim, Sang Ji Kim (*KAERI*)

9:50 a.m.

Configuration Adjustment Potential of the VHTR Prismatic Cores with Advanced Actinide Fuels, Pavel V. Tsvetkov, David E. Ames II, Ayodeji B. Alajo (*Texas A&M*)

10:10 a.m.

Radiation Damage Study at First Wall Structures of a Hybrid Type Magnetic Fusion Reactor, Mustafa Übeyli, Teyfik Demir (*TOBB ETU*)

10:30 a.m.

Neutronic Analysis of a Magnetic Fusion Reactor with Heavy Metal Salt, Sümer Sahin (*Gazi Univ*), Mustafa Übeyli (*TOBB ETU*)

10:50 a.m.

MCNP5 Simulations of ZrH Scattering Experiments, Yan Cao (*Univ of Michigan*), Tong Zhou, Iyad I. Al-Qasir, Ayman I. Hawari (*NCSU*), Ronald F. Fleming, John C. Lee (*Univ of Michigan*)

Nuclear Criticality Safety Standards–Forum, sponsored by NCSU. [Track 4] *Session Organizer:* Thomas P. McLaughlin (*LANL*). *Chair:* Thomas P. McLaughlin

Crystal 3

8:30 a.m.

Fusion Energy Using Lunar-Mined Helium, sponsored by ANST. [Track 8] *Session Organizer:* George H. Miley (*Univ of Illinois*). *Chair:* George H. Miley

Crystal 4

8:30 a.m.

MilliWatt Radioisotope Power System Performance Enhancement, Luca Gratton (*MGT Tech Consulting*)

9:00 a.m.

A Strategy for D-³He Fusion Development, J. F. Santarius, G. L. Kulcinski (*Univ of Wisconsin-Madison*), G. H. Miley (*Univ of Illinois*)

9:30 a.m.

On Use of D-³He in Fusion Space Propulsion, G. H. Miley (*Univ of Illinois, NPL Assoc*), H. Momota, P. J. Shrestha (*NPL Assoc*), J. F. Santarius (*Univ of Wisconsin-Madison*)

10:00 a.m.

A Bi-Modal Fusion Propulsion System for He³ Mining of the Planets, T. Kammash, R. Tang (*Univ of Michigan*), B. Cassenti (*Pratt & Whitney*)

10:30 a.m.

Carbon Nanotubes in IEC Fusion Reactors, S. Krupakar Murali (*Micron Technol*), Rick Nebel, Jaeyoung Park (*LANL*)

Addressing Aging and Obsolescence Issues with Printed Circuit Boards–Papers/Panel, sponsored by OPD. [Track 2] *Session Organizer:* Joseph Naser (*EPRI*). *Chair:* Joseph Naser

Crystal 5

PAPERS:

8:30 a.m.

Considerations of Electronic Circuit Board Aging, G. William Hannaman, C. Dan Wilkinson (*SAIC*), Joseph Naser (*EPRI*)

9:00 a.m.

An Approach to Printed Circuit Board Test Data Management, John Beatty, W. Merle Horner, Nicola Arlia, James Kistic (*Westinghouse*)

PANEL DISCUSSION:

9:30 a.m.

PANELISTS:

- Jim Amundsen (*FENOC*)
- John Hosler (*EPRI*)
- Randy Kersey (*SNOC*)
- G. William Hannaman (*SAIC*)
- John M. Beatty (*Westinghouse*)
- Joseph Naser (*EPRI*)

ROOM	MONDAY-JUNE 5TH		TUESDAY-JUNE 6TH				
	2:30-4:00 PM	4:00-6:00 PM	8:00-10:15 AM	10:15 AM - 12:15 PM	1:00-2:30 PM	2:30-4:00 PM	4:00-6:00 PM
TAHOE BALLROOM		ICAPP '06 Opening Plenary: New Infrastructure for Deployment of New Plants	ICAPP '06 Plenary 2: New Plant Design and Delivery				ICAPP '06 Plenary 3: Innovation in Nuclear Technologies
NEVADA 1				Separate Effects Thermal Hydraulic Experiments & Analysis—II	Separate Effects Thermal Hydraulic Experiments & Analysis—I	Economics, Regulation, Licensing and Construction	
NEVADA 2	Power Conversion			Gas Fast Reactors	Innovative HTRs, Fuels and Materials	Pebble Bed Modular Reactors	
NEVADA 3	Lead-alloy Fast Reactors—I: Heavy Liquid Metal Cooled Fast Reactors			Status of Advanced Reactor Programs	Sodium Fast Reactors		
NEVADA 4	Economic Decisions, Software Solutions, Organization and Work Management			Advanced BWRs	Performance and Condition Monitoring and Predictive Modeling—I	Performance and Condition Monitoring and Predictive Modeling—II	
NEVADA 5				Containment Performance and Hydrogen Control	LOCA and non-LOCA- Analysis Methodologies		
NEVADA 6	Integral Systems Thermal Hydraulic Experiments			Systems Analysis & Assessment		Thermal Hydraulics Measurement and Modeling Fundamentals	
NEVADA 7	Validation of Reactor Physics Methods			New Core/ Reactor Concepts	Reactor Physics Analyses and Applications	Advanced Fuel Cycles, Recycling, and Actinide Transmutation	
NEVADA 8	Materials Issues for Next Generation Plants—II			Materials Issues for Next Generation Plants—I	Structural and Materials Modeling and Analysis-I	Structural and Materials Modeling and Analysis-II	
NEVADA 9	Nuclear Hydrogen Production: Thermochemical			Nuclear Hydrogen Production: Electrolysis Processes	Advanced Power Conversion Systems-I	Advanced Power Conversion Systems-II	
NEVADA 10	Materials for Space Reactor Concepts			Advanced Concepts in Space Nuclear Power	Lunar/Mars Surface Power		

ROOM	WEDNESDAY-JUNE 7TH					THURSDAY-JUNE 8TH			
	8:00-10:00 AM	10:00AM-12:00PM	1:00-2:30 PM	2:30-4:00 PM	4:00-6:00 PM	8:00-10:00 AM	10:00AM-12:00PM	1:00-3:00 PM	3:00-5:00 PM
TAHOE BALLROOM	ICAPP '06 Plenary 4: Utility/Owner Challenges to the Coming Resurgence in Generation Needs				ICAPP '06 Plenary 5: Fuel Cycle Options for Sustainable Development of Nuclear Energy	ICAPP '06 Plenary 6: Looking to the Future—Trends and Challenges			
NEVADA 1		Advanced PWRs	The Role of Nuclear in Energy Forecasting Projections—U.S. and World	Innovative Water Cooled Reactors			Near Term Issues		
NEVADA 2		Heat Exchangers	Characterization of Fuel Cycle Design Options				Modeling and Simulation of HTRs		
NEVADA 3		Supercritical Pressure Water Reactors—III: Thermal Hydraulics	Supercritical Pressure Water Reactors—I: General Design/ Materials	Supercritical Pressure Water Reactors—II: R&D Programs/ Stability			Liquid-Salt-Cooled High-Temperature Reactors—I	Liquid-Salt-Cooled High-Temperature Reactors—II	Liquid-Salt-Cooled and Molten Salt Reactors—III
NEVADA 4			Availability, Preventive Maintenance, Optimization and Best Practices—I	Availability, Preventive Maintenance, Optimization and Best Practices—II			Digital Control Systems	Instrumentation and Control Upgrades, Decisions and Reliability—I	Instrumentation and Control Upgrades, Decisions and Reliability—II
NEVADA 5		Development and Application of Severe Accident Analysis Code	Advances in Severe Accident Analysis and Management				LOCA and non-LOCA—Plant Analyses—I	LOCA and non-LOCA—Plant Analyses—II	
NEVADA 6		Advances in Two-Phase Flow & Heat Transfer—I	Advances in CHF and Rod-Bundle Thermal Hydraulics				Advances in Two-Phase Flow & Heat Transfer—II	CFD Applications to Water, Liquid Metal, and Gas Reactors—I	CFD Applications to Water, Liquid Metal, and Gas Reactors—II
NEVADA 7		Advanced Fuel Cycle Reprocessing Technology Issues	Reactor Physics Methods/ Codes—I	Reactor Physics Methods/ Codes—II			Strategies for Advanced Fuel Cycles	Innovations in Core Designs	
NEVADA 8		Test and Design Methods for Space Reactor Systems	Testing and Analysis of Structures and Materials				PRA and Risk-Informed Decision Making: Methodology and Advances in Practice		
NEVADA 9		International Project on Innovative Nuclear Reactors and Fuel Cycles (INPRO)—Panel	Economics and Environmental Aspects of Nuclear Energy—I	Lead-alloy Fast Reactors—II: Lead-Alloy Coolant Technology and Thermal Hydraulics			Fuel Design and Irradiation Issues for Next Generation Plants	Economics and Environmental Aspects of Nuclear Energy—II	
NEVADA 10		Severe Accident Phenomena: Experiments and Modeling-I	Severe Accident Phenomena: Experiments and Modeling-II	Severe Accident Phenomena: Experiments and Modeling-III			Space Nuclear Power and Propulsion Systems		

**EMBEDDED TOPICAL MEETING: 2006 International Congress on Advances in Nuclear Power Plants
ICAPP '06 — Meeting Officials**

Frank L. (Skip) Bowman
NEI-USA
HONORARY CO-CHAIR



Un-Chul Lee
KNS-Korea
HONORARY CO-CHAIR



Georges Serviere
EDF-France
HONORARY CO-CHAIR



Takuya Hattori
TEPCO-Japan
HONORARY CO-CHAIR



Samim Anghaie
Univ of Florida-USA
GENERAL CO-CHAIR



Janghee Hong
KHNP-Korea
GENERAL CO-CHAIR



Philippe Pradel
CEA-France
GENERAL CO-CHAIR



Norio Sasaki
Toshiba-Japan
GENERAL CO-CHAIR



Roger Reynolds
AREVA-USA
TECHNICAL PROGRAM CO-CHAIR



Si-Hwan Kim
KAERI-Korea
TECHNICAL PROGRAM CO-CHAIR



Jean-Claude Gauthier
AREVA-France
TECHNICAL PROGRAM CO-CHAIR



Kazuaki Matsui
Institute of Applied Energy-Japan
TECHNICAL PROGRAM CO-CHAIR



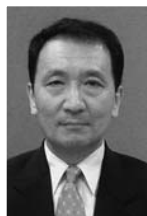
Mujid Kazimi
MIT-USA
STEERING COMMITTEE



Atam Rao
IAEA-Austria
STEERING COMMITTEE



Ki-In Han
KOPEC-Korea
STEERING COMMITTEE



Bertrand Vieillard-Baron
SFEN-France
STEERING COMMITTEE



Hideaki Heki
Toshiba-Japan
STEERING COMMITTEE



MONDAY • JUNE 5, 2006

7:30 A.M. - 5:00 P.M.	MEETING REGISTRATION
8:00 A.M. - 10:00 A.M.	SPOUSE/GUEST HOSPITALITY
8:00 A.M. - 11:30 A.M.	2006 ANS ANNUAL MEETING OPENING PLENARY (see pg 9) "A Brilliant Future: Nexus of Public Support in Nuclear Technology"
9:00 A.M. - 3:00 P.M.	SPOUSE/GUEST TOUR "Lake Tahoe Luncheon Cruise"
11:30 A.M. - 1:00 P.M.	OPERATIONS AND POWER DIVISION LUNCHEON
11:30 A.M. - 1:00 P.M.	DDR AND FCWM DIVISIONS LUNCHEON
1:00 P.M. - 2:30 P.M.	ANS PRESIDENT'S SPECIAL SESSION (see pg 9) "The Hydrogen Economy: Partnering with Nuclear for the Future—Panel"
2:30 P.M. - 4:00 P.M.	2006 ANS ANNUAL MEETING TECHNICAL SESSIONS (see pg 9)
2:30 P.M. - 4:00 P.M.	2006 ICAPP TECHNICAL SESSIONS <ul style="list-style-type: none"> • Power Conversion • Lead-Alloy Fast Reactors—I: Heavy Liquid Metal Cooled Fast Reactors • Economic Decisions, Software Solutions, Organization and Work Management • Integral Systems Thermal Hydraulic Experiments • Validation of Reactor Physics Methods • Materials Issues for Next Generation Plants—II • Nuclear Hydrogen Production: Thermochemical • Materials for Space Reactor Concepts
4:00 P.M. - 5:00 P.M.	ANS BUSINESS MEETING
4:00 P.M. - 6:00 P.M.	2006 ICAPP PLENARY SESSION #1: OPENING PLENARY "New Infrastructure for Deployment of New Plants"
7:00 P.M. - 11:00 P.M.	EVENING EVENT "Dinner at the Resort at Red Hawk"

MONDAY, JUNE 5, 2006 • 2:30 P.M. - 4:00 P.M.**Power Conversion**

Session Chair: Michael A. Fütterer (*JRC Petten-The Netherlands*)

Nevada 2**2:30 p.m.**

A Computational Study on Inlet Plenum Flow for a NHDD Plant, M.-H. Kim, W.-J. Lee, J.-H. Chang (*KAERI-Korea*)

2:50 p.m.

Thermal Assessment of Very High Temperature Reactors: Direct and Indirect Brayton Power Cycles, L.E. Herranz (*CIEMAT-Spain*), J.I. Linares, B.Y. Moratilla, B. López (*UPCO-Spain*)

3:10 p.m.

Evolution of the Power Conversion Unit Design of the GT-MHR, C.B. Baxi, E. Perez, A. Shenoy (*General Atomics-USA*), V. I. Kostin, N. G. Kodochigov, A. V. Vasyaev, S. E. Belov, V.F. Golovko (*Experimental Design Bureau of Machine Building-Russia*)

3:30 p.m.

Operational Curves for HTGR's Coupled to Closed Brayton Cycle Power Conversion Systems, S.A. Wright, R.J. Lipinski (*SNL-USA*)

Lead-alloy Fast Reactors-I: Heavy Liquid Metal Cooled Fast Reactors

Session Chairs: Luciano Cinotti (*Ansaldo Nucleare-Italy*), Craig F. Smith (*LLNL-USA*)

Nevada 3**2:30 p.m.**

Effect of Fuel Type on the Attainable Power of the Encapsulated Nuclear Heat Source Reactor, T. Okawa, E. Greenspan (*Univ of California, Berkeley-USA*)

2:50 p.m.

Optimized Battery-Type Reactor Primary System Design Utilizing Lead, Y.H. Yu, H.M. Son, I.S. Lee, K.Y. Suh (*Seoul National Univ-Korea*)

3:10 p.m.

Use of Multi-Purpose Modular Fast Reactors SVBR-75/100 in Market Conditions, A.V. Zrodnikov, G.I. Toshinsky, O.G. Komlev (*IPPE-Russia*), U.G. Dragunov, V.S. Stepanov, N.N. Klimov (*Gidropress-Russia*), I.I. Kopytov, V.N. Krushelnitsky (*Atomenergoproekt-Russia*)

3:30 p.m.

A CANDU-Based Fast Irradiation Reactor, Y. Shatilla (*INL-USA*)

Economic Decisions, Software Solutions, Organization and Work Management

Session Chairs: James K. Liming (*ABSG Consulting-USA*), Liu Fei (*Harbin Engineering Univ-China*)

Nevada 4**2:30 p.m.**

Operating Cost Reduction from Large Bore Snubber Reduction/Elimination, R. Brice-Nash, M. Dowdell, S. Swamy (*Westinghouse-USA*)

2:50 p.m.

Advancements in Risk-Informed Performance-Based Asset Management for Commercial Nuclear Power Plants, J.K. Liming, M.K. Ravindra (*ABSG Consulting-USA*)

3:10 p.m.

Study of On-line Computerized Procedure System for Nuclear Power Plant, L. Fei, Z. Zhijian, P. Minjun (*Harbin Engineering Univ-China*)

Integral Systems Thermal Hydraulic Experiments

Session Chair: Richard F. Wright (*Westinghouse-USA*)

Nevada 6**2:30 p.m.**

PKL Experiments on Loss of Residual Heat Removal under Shutdown Conditions in PWRs, K. Umminger, B. Schoen, T. Mull (*Framatome ANP-Germany*)

2:50 p.m.

Development of Conservative Method for Feedwater Pipe Break Analysis of an Integral Reactor, Y.-J. Chung, S.H. Kim, H.-C. Kim, S.-Q. Zee (*KAERI-Korea*)

3:10 p.m.

Testing of the Multi-Application Small Light Water Reactor (MASLWR) Passive Safety Systems, J.N. Reyes, J. Groome, B.G. Woods, E. Young, K. Abel, Y. Yao, Y.J. Yoo (*Oregon State Univ-USA*)

3:30 p.m.

Large Scale Gas Mixing and Stratification Triggered by a Buoyant Plume with and without Occurrence of Condensation, D. Paladino, O. Auban, R. Zboray (*PSI-Switzerland*)

Validation of Reactor Physics Methods

Session Chair: Jacopo Saccheri (*BNL-USA*)

Nevada 7**2:30 p.m.**

SCALE 5.0 Reactor Physics Assessment using the Module TRITON against Mixed Oxide (MOX) OECD/NEA Benchmarks, J. Saccheri, D. Diamond (*BNL-USA*)

2:50 p.m.

Neutron Fluence Vessel Assessment in the 1300MWe NPP French Fleet: The FLUOLE Program in EOLE, P. Blaise, N. Thiollay, P. Fougeras, C. Destouches, D. Beretz, T. Pont, D. Garnier, M. Chiron, Y.K. Lee (*CEA-France*), S. Janski (*EdF-France*)

3:10 p.m.

Analysis of Reactor Physics Experiment for the Irradiated LWR MOX Fuels, K. Kawashima, T. Yamamoto, K. Kamimura (*JNES-Japan*)

Materials Issues for Next Generation Plants-II

Session Chair: Todd Allen (*Univ of Wisconsin-USA*)

Nevada 8**2:30 p.m.**

Development of Advanced Control Rod of Hafnium Hydride for Fast Reactors, K. Konashi, T. Iwasaki (*Tohoku Univ-Japan*), T. Terai (*Univ of Tokyo-Japan*), M. Yamawaki (*Tokai Univ-Japan*), K. Kurosaki (*Osaka Univ-Japan*), K. Itoh (*Nuclear Development Corp-Japan*)

2:50 p.m.

Master Curve and Conventional Fracture Toughness of Modified 9Cr-1Mo Steel, J.-H. Yoon, S.-H. Kim, B.-S. Lee, W.-S. Ryu, J. Chang (*KAERI-Korea*)

3:10 p.m.

Response of 9Cr Steel and 20Cr Fe-base ODS Alloy to High-energy Ne Ion Irradiation at Elevated Temperatures, C. Zhang, J. Jang, M.-C. Kim (*KAERI-Korea, Chinese Academy of Sciences-China*), Y. Song (*Chinese Academy of Sciences-China*)

3:30 p.m.

Fuel Clad Materials R&D for High Burn-up Operation of Advanced Nuclear Energy Systems, A. Kimura, H.-S. Cho, N. Toda, R. Kasada, H. Kishimoto, N. Iwata (*Kyoto Univ-Japan*), S. Ukai, S. Ohtsuka (*Japan Nuclear Cycle Development Inst-Japan*), M. Fujiwara (*Kobelco Research Inst-Japan*)

Nuclear Hydrogen Production: Thermochemical

Session Chairs: Ken Schultz (*General Atomics-USA*), Ed Lahoda (*Westinghouse-USA*)

Nevada 9

2:30 p.m.

Hydrogen Production by Using Heat from High-temperature Gas-cooled Reactor HTTR; HTTR-IS Plan, N. Sakaba, S. Kasahara, H. Ohashi, A. Terada, S. Kubo, K. Onuki, K. Kunitomi (*JAEA-Japan*)

2:50 p.m.

Development of Sulfuric Acid Decomposer for Thermo-Chemical IS Process, H. Noguchi, H. Ota, A. Terada, S. Kubo, K. Onuki, R. Hino (*JAEA-Japan*)

3:10 p.m.

Nuclear Hydrogen Production Based on the Hybrid Sulfur Thermochemical Process, W.A. Summers, M.B. Gorenssek (*SRNL-USA*)

3:30 p.m.

An Experiment on Methane-Methanol-Iodomethane Cycle to Produce Nuclear Hydrogen, Y. Shin (*KAERI-Korea*), S. Lee (*Korea Research Inst of Chemical Technology-Korea*), W. Lee, K. Lee, J. Chang (*KAERI-Korea*)

Materials for Space Reactor Concepts

Session Chairs: Robert Hickman (*NASA-USA*), Cheryl Bowman (*NASA Glenn Research Center-USA*)

Nevada 10

2:30 p.m.

Life Testing of Refractory Metal / Sodium Heat Pipes, J.J. Martin, R.S. Reid (*NASA MSFC-USA*)

2:50 p.m.

Preliminary Analysis of a Water Shield for a Surface Power Reactor, J.B. Pearson (*NASA MSFC-USA*), T. Godfroy (*LANL-USA*)

3:10 p.m.

Design, Fabrication and Integration of a NaK-Cooled Circuit, A. Garber, T. Godfroy (*NASA MSFC-USA*)

3:30 p.m.

High Temperature Mechanical Properties of Molybdenum Solid Solution Alloys, I. Charit, K.L. Murty (*North Carolina State Univ-USA*)

MONDAY, JUNE 5, 2006 • 4:00 P.M. – 6:00 P.M.

ICAPP '06 Opening Plenary: New Infrastructure for Deployment of New Plants

Session Chairs: Frank L. (Skip) Bowman (*NEI-USA*), Takuya Hattori (*TEPCO-Japan*)

Tahoe Ballroom

SPEAKERS:

- Nils J. Diaz (*US NRC-USA*)
- Un-Chul Lee (*KNS-Korea*)
- Art Stall (*Florida Power & Light-USA*)
- Bruno Lescoeur (*EDF International-France*)
- Steve Tritch (*Westinghouse-USA*)
- Neil Todreas (*MIT-USA*)

TUESDAY, JUNE 6, 2006 • 8:00 A.M. – 10:15 A.M.

ICAPP '06 Plenary 2: New Plant Design and Delivery

Session Chairs: Roger Reynolds (*AREVA-USA*), Janghee Hong (*KHNP-Korea*), K. Yamauchi (*MHI-Japan*)

Tahoe Ballroom

SPEAKERS:

- Ki-In Han (*KOPEC-Korea*)
- John Polcyn (*Bechtel-USA*)
- Bernard Esteve (*AREVA-USA*)
- Chris Maslak (*GE-USA*)
- Akio Shioiri (*Toshiba-Japan*)
- Dan Lipman (*Westinghouse-USA*)
- Edward Hubner (*Shaw/Stone & Webster-USA*)

TUESDAY • JUNE 6, 2006

7:30 A.M. - 5:00 P.M.

MEETING REGISTRATION

8:00 A.M. - 10:00 A.M.

SPOUSE/GUEST HOSPITALITY

8:00 A.M. - 10:15 A.M.

2006 ICAPP PLENARY SESSION #2
"New Plant Design and Delivery"

8:30 A.M. - 10:30 A.M.

2006 NFSM OPENING PLENARY (see pg 37)

8:30 A.M. - 11:30 A.M.

2006 ANS ANNUAL MEETING TECHNICAL SESSIONS (see pg 9)

9:00 A.M. - 3:00 P.M.

SPOUSE/GUEST TOUR

"Virginia City Tour"

10:15 A.M. - 12:15 P.M.

2006 ICAPP TECHNICAL SESSIONS

- Separate Effects Thermal Hydraulic Experiments & Analysis—I
- Gas Fast Reactors
- Status of Advanced Reactor Programs
- Advanced BWRs
- Containment Performance and Hydrogen Control
- Systems Analysis & Assessment
- New Core/Reactor Concepts
- Materials Issues for Next Generation Plants—I
- Nuclear Hydrogen Production: Electrolysis Processes
- Advanced Concepts in Space Nuclear Power

10:45 A.M. - 12:15 P.M.

2006 NFSM TECHNICAL SESSIONS (see pg 37)

11:30 A.M. - 1:00 P.M.

HONORS AND AWARDS LUNCHEON

1:00 P.M. - 4:00 P.M.

2006 ANS ANNUAL MEETING TECHNICAL SESSIONS (see pg 9)

1:00 P.M. - 2:30 P.M.

2006 ICAPP TECHNICAL SESSIONS

- Separate Effects Thermal Hydraulic Experiments & Analysis—I
- Innovative HTRs, Fuels and Materials
- Sodium Fast Reactors
- Performance & Condition Monitoring & Predictive Modeling—I
- LOCA and non-LOCA-Analysis Methodologies
- Reactor Physics Analyses and Applications
- Structural and Materials Modeling and Analysis—I
- Advanced Power Conversion Systems—I
- Lunar/Mars Surface Power

2:30 P.M. - 4:00 P.M.

2006 ICAPP TECHNICAL SESSIONS

- Economics, Regulation, Licensing and Construction
- Pebble Bed Modular Reactors
- Performance & Condition Monitoring & Predictive Modeling—II
- Thermal Hydraulics Measurement and Modeling Fundamentals
- Advanced Fuel Cycles, Recycling, and Actinide Transmutation
- Structural and Materials Modeling and Analysis—II
- Advanced Power Conversion Systems—II

1:00 P.M. - 5:15 P.M.

2006 NFSM TECHNICAL SESSIONS (see pg 37)

4:00 P.M. - 6:00 P.M.

2006 ICAPP PLENARY SESSION #3

"Innovation in Nuclear Technologies"

TUESDAY, JUNE 6, 2006 • 10:15 A.M. - 12:15 P.M.

Separate Effects Thermal Hydraulic Experiments & Analysis-II

Session Chair: Pradip Saha (*GE Nuclear Energy-USA*)

Nevada 1

10:15 a.m.

Testing of a Compact Heat Exchanger for Use as the Cooler in a Supercritical CO2 Brayton Cycle, S. Lomperski, D. Cho (*ANL-USA*), H. Song, A. Tokuhito (*Kansas State Univ-USA*)

10:35 a.m.

Study on Acoustic Resonance and It's Damping of BWR Steam Dome, M. Ohtsuka, K. Fujimoto, S. Takahashi, F. Hirokawa, M. Tsubaki (*Hitachi-Japan*)

10:55 a.m.

Acoustic Analysis for a Steam Dome and Pippings of a 1,100 MWe-Class Boiling Water Reactor, Y. Kitajima, M. Watanabe, K. Matsunaga, T. Hagiwara (*Toshiba-Japan*)

11:15 a.m.

Flow Characteristics Analysis of Widows' Creek Type Control Valve for Steam Turbine Control, Y.H. Yoo, M.S. Sohn, K.Y. Suh (*Seoul National Univ-Korea*)

Gas Fast Reactors

Session Chairs: Tom Wei (*ANL-USA*), Jean-Claude Garnier (*CEA-France*)

Nevada 2

10:15 a.m.

GCFR: The European Union's Gas Cooled Fast Reactor Project, C. Mitchell (*NNC-UK*), C. Poette (*CEA-France*), K. Peers (*NNC-UK*), P. Coddington (*PSI-Switzerland*), J. Somers (*JRC ITU-The Netherlands*), G. Van-Goethem (*EC-Belgium*)

10:35 a.m.

Comparative Transient Analysis of Gas-cooled Fast Reactor for Different Fuel Types, P. Petkevich (*PSI, EPFL-Switzerland*), K. Mikityuk, P. Coddington, S. Pelloni (*PSI-Switzerland*), R. Chawla (*PSI, EPFL-Switzerland*)

10:55 a.m.

Contribution to GFR Design Option Selection, J.C. Garnier, C. Bassi, M. Blanc, J.C. Bosq, N. Chauvin (*CEA/Cadarache-France*), P. Dumaz, J.Y. Malo, B. Mathieu, A. Messié, L. Nicolas (*CEA/Saclay-France*), A. Ravenet (*CEA/Cadarache-France*)

11:15 a.m.

Plant System Design of Supercritical CO₂ Direct Cycle Gas Turbine Fast Reactor, K. Tozawa, N. Tsuji, Y. Kato, Y. Muto (*Tokyo Inst of Technology-Japan*)

11:35 a.m.

Shutdown/Emergency Cooling System for a 2400 MWth Supercritical CO₂-Cooled Direct-Cycle GFR, M.A. Pope, M.J. Driscoll, P. Hejzlar (*MIT-USA*)

11:55 a.m.

High Temperature Helium -Cooled Fast Reactor (HTHFR), R.A. Karam, D. Blaylock, E. Burgett, S.M. Ghiaasiaan, N. Hertel (*Georgia Inst of Technology-USA*)

Status of Advanced Reactor Programs

Session Chairs: Hiroshi Sekimoto (*Tokyo Inst of Technology-Japan*), Theron Marshall (*INL-USA*)

Nevada 3**10:15 a.m.**

The IAEA International Project on Innovative Nuclear Reactors and Fuel Cycles (INPRO): Study on Opportunities and Challenges of Large-Scale Nuclear Energy Development, M. Khoroshev (*IAEA-Austria*), S.Subbotin (*Kurchatov Inst-Russia*)

10:35 a.m.

Assessment of a French Scenario with the INPRO Methodology, A. Vasile, G.L. Fiorini (*CEA Cadarache-France*), J. Cazalet, F.L. Linet, V. Moulin (*CEA Saclay-France*), D. Grenèche (*AREVA-France*)

10:55 a.m.

Developments in Molten Salt and Liquid-Salt-Cooled Reactors, C. Forsberg (*ORNL-USA*)

11:15 a.m.

R&D Trends for the Future Sodium Fast Reactors in France, P. Dufour, P. Anzieu (*CEA-France*), D. Lecarpentier (*EDF-France*), J.P. Serpantié (*AREVA-France*)

Advanced BWRs

Session Chairs: Hideaki Heki (*Toshiba-JAPAN*), Bob Gamble (*GE Nuclear Energy-USA*)

Nevada 4**10:15 a.m.**

Innovative-Simplified Nuclear Power Plant Efficiency Evaluation with High-Efficiency Steam Injector System, S. Goto, S. Ohmori, M. Mori (*TEPCO-Japan*)

10:35 a.m.

SWR 1000: An Advanced, Medium-Sized Boiling Water Reactor, Ready for Deployment, W. Brettschuh (*AREVA-Germany*)

10:55 a.m.

Design Study Status of Compact Containment BWR, H. Heki, M. Nakamru, M. Kuroki, K. Arai, M. Tahara (*Toshiba-Japan*), T. Hoshi (*JAPC-Japan*)

11:15 a.m.

ESBWR - An Evolutionary Reactor Design, R.E. Gamble, D.H. Hinds, S.A. Hucik, C.E. Maslak (*GE Energy-USA*)

11:35 a.m.

Development of Medium Small BWR "DMS" (Double MS: Modular Simplified & Medium Small Reactor), T. Hino, M. Chaki, K. Tominaga, M. Matsuura (*Hitachi-Japan*), T. Hida (*JAPC-Japan*)

Containment Performance and Hydrogen Control

Session Chair: Christian Clément (*EDF-France*)

Nevada 5**10:15 a.m.**

In-containment Thermal Hydraulic and Aerosol Behaviour during Severe Accidents: Analysis of the PHEBUS-FPT2 Experiment, L.E. Herranz, J. Fontanet, M. Vela-García (*CIEMAT-Spain*)

10:35 a.m.

On the Fission Products Transport Modeling, E. Honaiser (*Brazilian Navy Technological Center-Brazil*)

10:55 a.m.

Experimental Study on the Applicability of Quenching Mesh for an Equipment Protection during a Hydrogen Combustion, S.-W. Hong, J.-H. Song, H.-D. Kim (*KAERI-Korea*)

11:15 a.m.

Effect of Forced Mixing & Condensation on Hydrogen Distribution During Postulated Accident in MAPS Containment, S. Kumar, M. Kansal, N. Mohan, S.G. Ghadge, S.S. Bajaj (*Nuclear Power Corp of India*)

11:35 a.m.

Estimation of Source Term for Indian PHWRs (KAPS) as Part of PSA Level-2 Study, M. Kansal, N. Mohan, S.G Ghadge, S.S. Bajaj (*Nuclear Power Corp of India*)

Systems Analysis & Assessment

Session Chairs: Bernard Faydide (*CEA-France*), Nusret Aksan (*PSI-Switzerland*)

Nevada 6**10:15 a.m.**

Confirmatory Analysis of the AP1000 Passive Residual Heat Removal Heat Exchanger with 3-D Computational Fluid Dynamic Analysis, J.R. Schwall, N.U. Karim, J.G. Thakkar, C. Taylor, T. Schulz, R.F. Wright (*Westinghouse-USA*)

10:35 a.m.

Recent Improvements to the RELAP5-3D Code, R.A. Riemke, P.B. Bayless, S.M. Modro (*INL-USA*)

10:55 a.m.

Investigation of Heat Transfer Mechanisms under Shutdown Plant Conditions with TRACE Code, A. Jasiulevicius, O. Zerkak, R. Macian-Juan (*PSI-Switzerland*)

11:15 a.m.

Performance Analyses of ECCS and Containment Systems for the 4500MW ESBWR, Y.K. Cheung, B.S. Shiralkar, W. Marquino (*GE Energy Nuclear-USA*)

11:35 a.m.

Two-Phase Flow Studies in Nuclear Power Plant Primary Circuits Using the Three-Dimensional Thermal-Hydraulic Code BAGIRA, S.D. Kalinichenko, A.E. Kroshilin, V.E. Kroshilin, A.V. Smirnov (*VNIIAES-Russia*), P. Kohut (*BNL-USA*)

New Core/Reactor Concepts

Session Chair: Bojan Petrovic (*Westinghouse-USA*)

Nevada 7**10:15 a.m.**

Neutronic and Physical Characteristics of Reactor SVBR 75/100 with Different Types of Fuel, N.N. Novikova, O.G. Komlev, G.I. Toshinsky (*SSC RF IPPE-Russia*)

10:35 a.m.

Local-Spectrum-Modified Fast Reactor Cores with Hydrides, T. Yokoyama (*Aitel Corp-Japan*), K. Konashi, T. Iwasaki (*Tohoku Univ-Japan*), T. Terai (*Tokyo Univ-Japan*), M. Yamawaki (*Tokai Univ-Japan*)

10:55 a.m.

Small PWR Using Coated Particle Fuel with Ceramics Cladding, I. Tanihira, Y. Shimazu (*Hokkaido Univ-Japan*)

11:15 a.m.

Wire Wrapped Fuel Pin Hexagonal Arrays for PWR Service, P. Diller (*GE-USA*), N. Todreas, P. Hejzlar (*MIT-USA*)

Materials Issues for Next Generation Plants-I

Session Chair: Jim Cole (*INL-USA*)

Nevada 8**10:15 a.m.**

Corrosion Rate Evaluations of Structural Materials for Iodine-Sulfur Thermochemical Water Splitting Cycle, S. Kubo, M. Futakawa, N. Tanaka, J. Iwatsuki (*JAEA-Japan*), A. Yamaguchi, R. Tsukada (*Chiyoda-Japan*), K. Onuki (*JAEA-Japan*)

10:35 a.m.

Modeling on Oxygen Transfer in the Nature Convection Lead-bismuth Eutectic Flow, H. Chen, Y. Chen, J. Zhang, H.-T. Hsieh (*Univ of Nevada, Las Vegas-USA*)

10:55 a.m.

Corrosion and Stress Corrosion Cracking of High Cr Ferritic-Martensitic Steels in Supercritical Water, J. Jang, S.S. Hwang, C.H. Han, B.H. Lee (*KAERI-Korea*)

11:15 a.m.

SCC Properties of Candidate Alloys for SCWR Core Components, N. Saito, Y. Tsuchiya, F. Kano, M. Ookawa (*Toshiba-Japan*), J. Kaneda, K. Moriya (*Hitachi-Japan*), H. Matsui (*Tohoku Univ-Japan*)

11:35 a.m.

Critical Issues on Selection of Candidate Materials for Out-of-Core Structural Applications in Generation IV Nuclear Reactors, M. Misra, K.S. Raja, Y. Ashida, S. Badwe (*Univ of Nevada*)

Nuclear Hydrogen Production: Electrolysis Processes

Session Chairs: Layla Sandell (*EPRI-USA*), John M (Jack) Tuohy (*Hitachi America-USA*)

Nevada 9**10:15 a.m.**

Revised Capital and Operating HyS Hydrogen Production Costs, D.F. McLaughlin, S.A. Paletta, E.J. Lahoda (*Westinghouse-USA*), W. Kriel (*PBMR-USA*)

10:35 a.m.

Hydrogen Production System with High Temperature Electrolysis for Nuclear Power Plant, K. Matsunaga, E. Hoashi, S. Fujiwara, M. Yoshino, T. Ogawa, S. Kasai (*Toshiba-Japan*)

10:55 a.m.

Separation Requirements for a Hydrogen Production Plant and High-Temperature Nuclear Reactor, C. Smith, S. Beck, B. Galyean (*INL-USA*)

11:15 a.m.

Simulation Modeling of a Tubular-type Solid Oxide Electrolysis Cell for Hydrogen Production on Nuclear Power Plant, E. Hoashi, T. Ogawa, K. Matsunaga, K. Nakada, S. Fujiwara, S. Kasai (*Toshiba-Japan*)

11:35 a.m.

Development of Flow Net Solver for HyPEP: A Hydrogen Production Plant Efficiency Calculation Program, J.-W. Park, Y.J. Lee (*KAERI-Korea*)

Advanced Concepts in Space Nuclear Power

Session Chair: Pavlos Mikellides (*Arizona State Univ-USA*)

Nevada 10**10:15 a.m.**

Energy Deposition via Magnetoplasmadynamic Acceleration, P.G. Mikellides, B. England (*Arizona State Univ-USA*), J.H. Gilland (*NASA GRC-USA*)

10:35 a.m.

MOA: Magnetic Field Oscillating Amplified Thruster and its Application for Nuclear Electric and Thermal Propulsion, N. Frischauf, M. Hettmer, A. Grassauer, T. Bartusch (*QASAR Technologies-Austria*), O. Koudelka (*Graz Univ of Technology-Austria*)

10:55 a.m.

A Comparison of the Performance Capabilities of Radioisotope Energy Conversion Systems, Betavoltaic Cells, and other Nuclear Batteries, E.V. Steinfelds, M.A. Prelas, S.K. Loyalka, R.V. Tompson (*Univ of Missouri at Columbia-USA*)

11:15 a.m.

Space Shuttle Nuclear Antenna for Deep Space Remote Power Transfer, L. Popa-Simil (*Consultant-USA*)

TUESDAY, JUNE 6, 2006 • 1:00 P.M. - 2:30 P.M.**Separate Effects Thermal Hydraulic Experiments & Analysis-I**

Session Chairs: Nusret Aksan (*PSI-Switzerland*), Bernard Faydide (*CEA-France*)

Nevada 1**1:00 p.m.**

A Study on Experiment and Numerical Analysis for Disclosing Shell Wall Thinning of a Feedwater Heater, K.M. Hwang, T. Eun Jin (*KOPEC-Korea*), L. Woo (*Daeji Metal Co-Korea*), K.H. Kim (*Kyunghee Univ-Korea*)

1:20 p.m.

Advanced Design Concept of Direct Vessel Injection, T.-S. Kwon, C.-H. Song, W.-P. Baek (*KAERI-Korea*)

1:40 p.m.

Water Jet Impingement Flow Characteristics in Direct Vessel Injection System, S.H. Yoon (*Seoul National Univ-Korea*), K.Y. Suh (*Seoul National Univ, PHILOSOPHIA-Korea*)

2:00 p.m.

An Experimental Investigation for the Moisture Separation System of a Steam Generator, J.-I. Kim, M.-Y. Kim, H.-S. Bae (*DOOSAN Heavy Industries-Korea*), B.-E. Lee (*Korea Aviation Polytechnic College-Korea*)

Innovative HTRs, Fuels and Materials

Session Chair: Michel Lecomte (*AREVA-France*)

Nevada 2**1:00 p.m.**

High-Temperature Gas Cooled Reactors: Design Features, Potential and Challenges, M. Methnani (*IAEA-Austria*)

1:20 p.m.

Cermet Coatings Tribological Behavior in High Temperature Helium, L. Cachon, S. Albaladejo, P. Taraud, G. Laffont (*CEA Cadarache-France*)

1:40 p.m.

RAPHAEL: The European Union's (Very) High Temperature Reactor Project, M.A. Fütterer (*EC/JRC-The Netherlands*), D. Besson, E. Bogusch, B. Carlucci, D. Hittner, D. Verrier (*AREVA-France*), Ph. Billot, M. Phélip (*CEA-France*), D. Buckthorpe (*NNC-UK*), S. Casalza (*EC DG RTD-Belgium*), V. Chauvet (*STEP-France*), A. van Heek (*Nuclear Research & Consultancy Group-The Netherlands*), W. von Lensa (*FZJ- Germany*), J. Pirson (*Tractebel Eng-Belgium*), W. Scheuermann (*Univ of Stuttgart-Germany*)

Sodium Fast Reactors

Session Chairs: Satoru Kondo (*JAEA-Japan*), Philippe Dufour (*CEA-France*)

Nevada 3**1:00 p.m.**

A Modular Metal Fuel Fast Reactor Enhancing Economic Potential, Y. Chikazawa, Y. Okano, M. Konomura, K. Sato (*JAEA-Japan*), M. Ando, S. Nakanishi (*JAPC-Japan*), N. Sawa (*Advanced Reactor Technology-Japan*), Y. Shimakawa (*MHI-Japan*)

1:20 p.m.

Sensitivity and Uncertainty Analysis of ARGON-3 Code on the ULOF Event of the 4S Reactor, H. Horie, K. Miyagi, H. Matsumiya, H. Matsumoto (*Toshiba-Japan*), Y. Nishi (*CREIPI-Japan*)

1:40 p.m.

Flow and Temperature Distributions Evaluation on Sodium Heated Large Sized Straight Double-wall-tube Steam Generator, N. Kishohara, T. Moribe, T. Sakai (*JAEA-Japan*)

2:00 p.m.

Technology Options for a Fast Spectrum Test Reactor, D.M. Wachs, R.W. King, I.Y. Glagolenko (*INL-USA*), Y. Shatilla (*King Abdulaziz Univ-Saudi Arabia*)

Performance and Condition Monitoring and Predictive Modeling-I

Session Chair: Thomas E. Blue (*Ohio State Univ-USA*)

Nevada 4**1:00 p.m.**

A Flow-rate Measurement Method by Using the Motor Power of the Axial Flow Pumps with Higher Specific-speeds, J. Lee, J.K. Seo, C.T. Park, S. Ryu, J. Yoon, S.Q. Zee (*KAERI-Korea*)

1:20 p.m.

Fault Diagnosis of Steam Generator Using Signed Directed Graph and Artificial Neural Networks, M.N. Aly (*Alex. Univ-Egypt*), H.N. Hegazy (*Nuclear Power Plants Authorit-Egypt*)

1:40 p.m.

Predictions of Displacement Damage and Count Rate for SiC Detectors in IRIS, B. Khorsandi (*Ohio State Univ-USA*), B. Lohan (*Westinghouse-USA*), T.E. Blue, D. Miller, J. Kulisek (*Ohio State Univ-USA*)

2:00 p.m.

Gas Release Driven Dynamics in Research Reactors Piping, N. I. Kolev, I. Roloff-Bock, G. Schlicht (*Framatome ANP-Germany*)

LOCA and non-LOCA - Analysis Methodologies

Session Chairs: Paul Coddington, Audrius Jasiulevicius (*PSI-Switzerland*), Eckhard Krepper (*FZR-Germany*)

Nevada 5**1:00 p.m.**

APR1400 Reactivity Insertion Accident Analysis Using KNAF, C.-K. Yang, Y.-H. Kim, C.-K. Sung (*KEPRI-Korea*)

1:20 p.m.

Notes on the Implementation of Non-parametric Statistics within the Westinghouse Realistic Large Break LOCA Evaluation Model (ASTRUM), C. Frepoli, L. Oriani (*Westinghouse-USA*)

1:40 p.m.

Application of Advanced Thermal Hydraulic TRACG Model to Preserve Operating Margins in BWRs at Extended Power Uprate Conditions, J.G.M. Andersen (*Global Nuclear Fuel-USA*), J.L. Casillas, B.S. Shiralkar (*GE Nuclear Energy-USA*)

2:00 p.m.

RIA Limits Based on Commercial PWR Core Response to RIA, C.L. Beard, D.B. Mitchell, W.H. Slagle (*Westinghouse-USA*)

2:20 p.m.

A Methodology for the Quantification of Uncertainty in Best Estimate Code Physical Models, P. Vinai, R. Macian, R. Chawla (*PSI-Switzerland*)

2:40 p.m.

The Improvement of the Interfacial Drag Model in RELAP5/MOD3.3 to Simulate Downcomer Boiling Phenomena in APR1400, H.-G. Kim, S.-H. Lee (*KHNP-Korea*)

Reactor Physics Analyses and Applications

Session Chair: Jae-Man Noh (*KAERI-Korea*)

Nevada 7**1:00 p.m.**

Boiling Water Reactor Fuel Cycle Optimization for Prevention of Channel-Blade Interference, D.J. Kropaczek, A.A. Karve, C.C. Oyarzun, M. Asgari (*Global Nuclear Fuel-USA*), J.J. Tusar (*Exelon-USA*)

1:20 p.m.

Comparison of SFRs and LFRs as Waste Burners, K. Tucek, J. Carlsson, D. Vidovic, H.U. Wider (*JRC/IE-The Netherlands*), J. Somers, J.-P. Glatz (*ITU-Germany*)

1:40 p.m.

Calculation of the Local Neutronic Parameters for CANDU Fuel Bundles Using Transport Methods, V. Balaceanu, A. Rizoiu, V. Hristea (*Inst for Nuclear Research-Romania*)

Structural and Materials Modeling and Analysis-I

Session Chair: Ram Srinivasan (*BNG Fuel Solutions-USA*)

Nevada 8**1:00 p.m.**

Application of USNRC NUREG/CR-6661 and Draft DG-1108 to Evolutionary and Advanced Reactor Designs, C. Chen (*Apollo Consulting-USA*)

1:20 p.m.

Structural Integrity of ESBWR Primary Containment for 60-Years of Thermal Duty Cycle Operations, R.J. James, Y.R. Rashid (*ANATECH-USA*), A.S. Liu, B. Gou (*GE Nuclear Energy-USA*)

1:40 p.m.

Evaluation of Liner Backpressure Due to Concrete Pore Pressure at Elevated Temperatures, R.J. James, Y.R. Rashid (*ANATECH-USA*), A.S. Liu, B. Gou (*GE Nuclear Energy-USA*)

2:00 p.m.

Assessment of Analytical Prediction of JNES Seismic Wall Pressure Data for ABWR Model Structures, J. Xu, J. Nie, C. Costantino, C. Hofmayer (*BNL-USA*), H. Graves (*US NRC-USA*)

Advanced Power Conversion Systems-I

Session Chair: Per Peterson (*UC Berkeley-USA*)

Nevada 9**1:00 p.m.**

A Supercritical CO₂ Cycle - a Promising Power Conversion System for Generation IV Reactors, P. Hejzlar, V. Dostal, M.J. Driscoll (*MIT-USA*)

1:20 p.m.

Automatic Control Strategy Development for the Supercritical CO₂ Brayton Cycle for LFR Autonomous Load Following, A. Moissevsev, J.J. Sienicki (*ANL-USA*)

1:40 p.m.

Fast Reactor with Indirect Cycle System of Supercritical CO₂ Gas Turbine Plant, M. Mito, N. Yoshioka, Y. Ohkubo, N. Tsuzuki, Y. Kato (*Tokyo Inst of Technology-Japan*)

2:00 p.m.

Low-Temperature Multiple-Reheat Closed Gas Power Cycles for the AHTR and LSFR, Z. Haihua, P.F. Peterson (*Univ of California Berkeley-USA*)

Lunar/Mars Surface Power

Session Chair: Michael Houts (*NASA MSFC-USA*)

Nevada 10**1:00 p.m.**

Reduced-Enrichment, Fast-Spectrum Lunar/Mars Surface Reactors, D. Poston, T. Marcille, R. Kapernick, P. Sadasivan, B.W. Amiri (*LANL-USA*)

1:20 p.m.

Thermal-Structural Design of Water Shield for Surface Reactor Missions, P. Sadasivan, R.J. Kapernick, D.I. Poston (*LANL-USA*)

1:40 p.m.

Surface Power Fission System Fuels: Safeguards Cost Implications of Fuel Inventory, P. Sadasivan, T.F. Marcille, D.I. Poston (*LANL-USA*)

2:00 p.m.

Demonstrating the Viability and Affordability of Nuclear Surface Power Systems, M. Van Dyke, S. Bragg-Sitton, R. Dickens, A. Garber, T. Godfroy, M. Houts, J. Martin, B. Pearson, R. Reid, D. Wagner (*NASA MSFC-USA*)

2:20 p.m.

Surface Power Fission System Fuels: Technology Readiness and Qualification Issues, T.F. Marcille, D.I. Poston (*LANL-USA*)

2:40 p.m.

Options for Affordable Fission Surface Power Systems, M.G. Houts, S. Gaddis, R. Porter, M. Van Dyke, J. Martin, T. Godfroy, S. Bragg-Sitton, A. Garber, B. Pearson (*NASA MSFC-USA*)

TUESDAY, JUNE 6, 2006 • 2:30 P.M. - 4:00 P.M.**Economics, Regulation, Licensing and Construction**

Session Chair: Toney Mathews (*AREVA-USA*)

Nevada 1**2:30 p.m.**

Multinational Design Approval Program, J.F. Williams, J.B. Jacobson (*NRC-USA*)

2:50 p.m.

Development of the Evaluation System of Total Modularization Effect for Power Plant Construction, K. Akagi, M. Takada, S. Asakura, K. Murayama, J. Kawahata (*Hitachi-Japan*)

3:10 p.m.

From Streams to Lumps: Transforming Long-Term Incentives into Up-Front Financing for New Nuclear Construction, G.R. George (*Nomura Securities International-USA*)

Pebble Bed Modular Reactors

Session Chairs: John M (Jack) Tuohy (*Hitachi America-USA*), Phil MacDonald (*Consultant-USA*)

Nevada 2**2:30 p.m.**

Experimental Results of Pebble Beds Thermal Hydraulic Characteristics, S. Rimkevicius, E. Uspuras (*Lithuanian Energy Inst-Lithuania*)

2:50 p.m.

Cycle Configurations for a PBMR Steam and Electricity Production Plant, D. Matzner, W. Kriel, M. Correia, R. Greyvenstein (*PBMR-South Africa*)

3:10 p.m.

The Control of the PBMR Nuclear Power Unit, O. Rubin, M. Venter, J. Jordaan (*PBMR-South Africa*)

3:30 p.m.

Selection of Licensing Basis Events for the U.S. Design Certification of the PBMR, F.A. Silady (*Tech Insights-USA*), E.G. Wallace (*PBMR-USA*), K.N. Fleming (*Tech Insights-USA*)

Performance and Condition Monitoring and Predictive Modeling-II

Session Chairs: Yoichiro Shimazu (*Hokkaido Univ-Japan*), Ed Dugan (*Univ of Florida-USA*)

Nevada 4**2:30 p.m.**

Preliminary Measurements Supporting Reactor Vessel and Large Component Inspection Using X-Ray Backscatter Radiography by Selective Detection, D. Sheddlock, E.T. Dugan, A.M. Jacobs (*Univ of Florida-USA*), L. Houssay (*Westinghouse-USA*)

2:50 p.m.

Day, Night and All-Weather Security Surveillance Automation, V. Morellas (*Honeywell Labs-USA*), C. Johnston (*Honeywell ACS-USA*), A. Johnson (*Honeywell Labs-USA*), S.D. Roberts, G.L. Francisco (*L-3 Communications Infrared Products-USA*)

3:10 p.m.

A System for Water Thickness Gaging in a Bellows Tube was Developed, using Special UT Probe Attachment and an Immersion Ultrasonic Inspection, K.-M. Koo, S.-B. Kim, Y.-M. Cheong, H.-S. Jung, I.-C. Lim, C.-S. Park (*KAERI-Korea*)

3:30 p.m.

Inspection Head Design for the In-Service Inspection of Fuel Channels of Pressurized Heavy Water Reactors, A.K. Haruray, R.D. Veerapur, R.K. Puri, M. Singh (*BARC-India*)

Thermal Hydraulics Measurement and Modeling Fundamentals

Session Chair: Samim Anghaie (*Univ of Florida-USA*)

Nevada 6**2:30 p.m.**

Measurement and Simulation of a Two- Component Two-Phase Flow, R. Saksena (*Indian Inst of Tech-India*), P. Satyamurthy (*BARC-India*), P. Munshi (*Indian Inst of Tech-India*)

2:50 p.m.

Heat Transfer of the Wet Thermal Insulator with Multi-layer, J.-W. Kim (*Seoul National Univ-Korea*), T.-W. Kim, D.-J. Lee (*KAERI-Korea*), G.-C. Park (*Seoul National Univ-Korea*)

3:10 p.m.

The Thermal Hydraulic Test of the MEGAPIE Cooling System and System Code Validation, W.H. Leung, S. Dementjev (*PSI-Switzerland*), M. Dierckx (*SCK.CEN-Belgium*), G. Groeschel (*PSI-Switzerland*)

Advanced Fuel Cycles, Recycling, and Actinide Transmutation

Session Chair: Temitope Taiwo (*ANL-USA*)

Nevada 7**2:30 p.m.**

Coupled Hybrid Monte Carlo - Deterministic Analysis of VHTR Configurations with Advanced Actinide Fuels, P.V. Tsvetkov, D.E. Ames II, A.B. Alajo, M.L. Pritchard (*Texas A&M Univ-USA*)

2:50 p.m.

Minor Actinides Recycling in PWRs, M. Delpech, H. Golfier (*CEA Saclay-France*), A. Vasile, F. Varaine, L. Boucher (*CEA Cadarache-France*), D. Grenèche (*AREVA-France*)

3:10 p.m.

Actinide Transmutation Using Pressurized Water Reactors, M. Visosky, P. Hejzlar, M. Kazimi (*MIT-USA*)

3:30 p.m.

Neptunium as a Tool for Reducing Proliferation Risks with Plutonium: A Technical Analysis of its Efficiency and its Drawbacks, D. Greneche, S. Ng, B. Guesdon, R. Vinoche (*AREVA -France*), M. Delpech, H. Golfier, F. Dolci, C. Poinot-Salanon (*CEA-France*)

Structural and Materials Modeling and Analysis-II

Session Chair: Ram Srinivasan (*BNG Fuel Solutions-USA*)

Nevada 8**2:30 p.m.**

Buckling of Thin Cylindrical Shell Subject to Uniform External Pressure, G. Forasassi, R. Lo Frano (*Univ of Pisa-Italy*)

2:50 p.m.

Effect of Pipe Size on the Leak-Before-Break Recommended Safety Margins in a Typical Pressurized Water Reactor, D.C. Bhowmick, S.A. Swamy, A. Udyawar (*Westinghouse Nuclear Services-USA*)

3:10 p.m.

Embrittlement Problems of Metal Structures of Nuclear Power Plants, B. Tabakova, I. Yankova (*Technical Univ of Sofia-Bulgaria*), P. Petrov (*Inst of Electronics, Bulgarian Academy of Sciences-Bulgaria*)

3:30 p.m.

Low Cycle Fatigue Behaviour of Irradiated Stainless Steel As Shielding Material, N. Dogan Baydogan, M. Baydogan, A.B. Tugrul, H. Cimenoglu (*Istanbul Technical Univ-Turkey*)

Advanced Power Conversion Systems-II

Session Chair: Haihua Zhao (*UC Berkeley-USA*)

Nevada 9**2:30 p.m.**

Capsule Test for Investigating Sodium- Carbon Dioxide Interaction, J.H. Choi, S.D. Suk, D. Cho, J.M. Kim, D. Hahn (*KAERI-Korea*), J.H. Cahalan (*ANL-USA*)

2:50 p.m.

Design of Turbomachinery for the Supercritical CO₂ Gas Turbine Fast Reactor, Y. Muto, Y. Kato (*Tokyo Inst of Tech-Japan*)

3:10 p.m.

Supercritical Carbon Dioxide Brayton Power Conversion Cycle Design for Optimized Battery-Type Integral Reactor System, W.J. Kim, T.W. Kim, M.S. Sohn, K.Y. Suh (*Seoul National Univ-Korea*)

TUESDAY, JUNE 6, 2006 • 4:00 P.M. – 6:00 P.M.**ICAPP '06 Plenary 3: Innovation in Nuclear Technologies**

Session Chairs: James Lake (*INL-USA*), Hiroshi Sekimoto (*Tokyo Inst of Tech-Japan*)

Tahoe Ballroom**SPEAKERS:**

- How to Increase LWR Power Density?, Regis Matzie (*Westinghouse-USA*)
- Assessment of Power Conversion Systems for Electricity and Cogeneration, Michel Lecomte (*AREVA-France*)
- Improving the Economic of Future Reactors, Mujid Kazami (*MIT-USA*)
- Nuclear Hydrogen, Shusaku Shiozawa (*JAEA-Japan*)
- Nuclear Power for the Transport Sector, Charles Forsberg (*ORNL-USA*)
- A Sustainable Regional Waste Transmutation System: PEACER, Il-Soon Hwang (*SNU-Korea*)

WEDNESDAY • JUNE 7, 2006

7:30 A.M. - 5:00 P.M.	MEETING REGISTRATION
8:00 A.M. - 10:00 A.M.	SPOUSE/GUEST HOSPITALITY
8:00 A.M. - 10:00 A.M.	2006 ICAPP PLENARY SESSION #4 "Utility/Owner Challenges to the Coming Resurgence in Generation Needs"
8:30 A.M. - 11:30 A.M.	2006 ANS ANNUAL MEETING TECHNICAL SESSIONS (see pg 9)
8:30 A.M. - 12:15 P.M.	2006 NFSM TECHNICAL SESSIONS (see pg 37)
10:00 A.M. - 12:00 P.M.	2006 ICAPP TECHNICAL SESSIONS <ul style="list-style-type: none"> Advanced PWRs Heat Exchangers Supercritical Pressure Water Reactors—III: Thermal Hydraulics Development & Application of Severe Accident Analysis Code Advances in Two-Phase Flow & Heat Transfer—I Advanced Fuel Cycle Reprocessing Technology Issues Test and Design Methods for Space Reactor Systems International Project on Innovative Nuclear Reactors & Fuel Cycles (INPRO)—Panel Severe Accident Phenomena: Experiments & Modeling—I
1:00 P.M. - 4:00 P.M.	2006 ANS ANNUAL MEETING TECHNICAL SESSIONS (see pg 9)
1:00 P.M. - 2:30 P.M.	2006 ICAPP TECHNICAL SESSIONS <ul style="list-style-type: none"> The Role of Nuclear in Energy Forecasting Projections—US & World Characterization of Fuel Cycle Design Options Supercritical Pressure Water Reactors—I: General Design/Materials Availability, Preventative Maintenance, Optimization & Best Practices—I Advances in Severe Accident Analysis & Management Advances in CHF & Rod Bundle Thermal Hydraulics Reactor Physics Methods/Codes—I Testing & Analysis of Structures & Materials Economics & Environmental Aspects of Nuclear Energy—I Severe Accident Phenomena: Experiments & Modeling—II
1:00 P.M. - 5:15 P.M.	2006 NFSM TECHNICAL SESSIONS (see pg 37)
2:30 P.M. - 4:00 P.M.	2006 ICAPP TECHNICAL SESSIONS <ul style="list-style-type: none"> Innovative Water Cooled Reactors Supercritical Pressure Water Reactors-II: R&D Programs/Stability Availability, Preventative Maintenance, Optimization & Best Practices—II Reactor Physics Methods/Codes—II Lead-alloy Fast Reactors—II: Lead-alloy Coolant Technology & Thermal Hydraulics Severe Accident Phenomena: Experiments & Modeling—III
4:00 P.M. - 6:00 P.M.	2006 ICAPP PLENARY SESSION #5 "Fuel Cycle Options for Sustainable Development of Nuclear Energy"
7:00 P.M. - 11:00 P.M.	EVENING EVENT: "Western Ho'Down"

WEDNESDAY, JUNE 7, 2006 • 8:00 A.M. – 10:00 A.M.

ICAPP '06 Plenary 4: Utility/Owner Challenges to the Coming Resurgence in Generation Needs

Session Chairs: Atam Rao (IAEA-Austria), Philippe Pradel (CEA-France)

Tahoe Ballroom

SPEAKERS:

- Dan Keuter (Entergy-USA)
- Sukjoo Jhun (KHNP-Korea)
- Georges Serviere (EDF-France)
- David Christian (Dominion-USA)
- Louis B. Long (Southern Nuclear Operations-USA)

WEDNESDAY, JUNE 7, 2006 • 10:00 A.M. - 12:00 P.M.

Advanced PWRs

Session Chairs: Richard F. Wright (Westinghouse-USA), Takashi Kanagawa (Mitsubishi Heavy Industries-Japan)

Nevada 1

10:00 a.m.

IRIS - Progressing Toward a Worldwide Deployment, M.D. Carelli, B. Petrovic (Westinghouse-USA)

10:20 a.m.

Advanced Design Feature of APR1400 and Realization in Shin Kori Construction Project, S.J. OH, K.C. Park, H.G. Kim (NETEC, KHNP-Korea)

10:40 a.m.

Development of Emergency Response Guidelines (ERGs) for AP1000, Y. Hayashi (Kansai Electric-Japan), G. Saiu (Ansaldo-Italy), R.F. Wright (Westinghouse-USA)

11:00 a.m.

AP1000 Design for Security, L. Long (Southern-USA), W.E. Cummins, J.W. Winters (Westinghouse-USA)

11:20 a.m.

Technology Verification of the Advanced Integral Reactor SMART, S.H. Kim, Y.D. Hwang, H.C. Kim, S.K. Zee (KAERI-Korea)

11:40 a.m.

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

Heat Exchangers

Session Chair: Hee Cheon No (KAIST-Korea)

Nevada 2

10:00 a.m.

Multi-Scale Stress Analysis For Compact Plate Heat Exchangers, W. Huang, H. Zhao, P.F. Peterson (Univ of California Berkeley-USA)

10:20 a.m.

Development of the Intermediate Heat Exchanger (IHX) for ANTARES, E. Breuil, G. Francois (AREVA-France), P. Tochon (CEA-France), E. Walle (EDF-France)

10:40 a.m.

Design of a Small Scale High Temperature Gas Loop for Process Heat Exchanger Design Tests, S.D. Hong, D.S. Oh, W.J. Lee, J.H. Chang (KAERI-Korea)

11:00 a.m.

Heat Exchangers for the Next Generation of Nuclear Reactors, X. Li, R. Le Pierres, S.J. Dewson (Heatric Division of Meggitt-UK)

11:20 a.m.

Design Issues Affecting Piping Associated with a New Moisture Separator Re-heater, H.-K. Kim, J.-K. Cho (KOPEC-Korea)

Supercritical Pressure Water Reactors-III: Thermal Hydraulics

Session Chairs: Slawomir (Mike) Modro (INL-USA), Yoon-Young Bae (KAERI-Korea)

Nevada 3

10:00 a.m.

Experimental Investigation on Heat Transfer Characteristics in Vertical Upward Flow of Supercritical CO₂, H. Kim, Y.Y. Bae, H.Y. Kim, J.H. Song, B.H. Cho (KAERI-Korea)

10:20 a.m.

Prediction of Heat Transfer for a Supercritical Water Test with a Four Pin Fuel Bundle, L. Behnke (RWE Power-Germany), S. Himmel, C. Waata (FZK-Germany), E. Laurien (Univ of Stuttgart-Germany), T. Schulenberg (FZK-Germany)

10:40 a.m.

Development of Mechanistic Modeling Capabilities for Generation-IV Supercritical Water-Cooled Reactor (SCWR), M.Z. Podowski, S.P. Antal (Rensselaer Polytechnic Inst-USA), H. Anglart (Royal Inst of Tech, Stockholm-Sweden)

11:00 a.m.

Heat Transfer Measurements in the University of Wisconsin Supercritical Water Loop, J.R. Licht, P.K. Alex, M.H. Anderson, M.L. Corradini (Univ of Wisconsin-Madison-USA)

11:20 a.m.

Numerical Study of Heat Transfer in Supercritical Pressure Water in Tight Fuel Rod Channels, J. Yang, Y. Oka, Y. Yishiwatari, J. Liu, J. Yoo (Univ of Tokyo-Japan)

Development and Application of Severe Accident Analysis Code

Session Chairs: Karen Vierow (Purdue Univ-USA), Hho Jung Kim (KINS-Korea)

Nevada 5

10:00 a.m.

CANDU 6 Severe Core Damage Accident Consequence Analysis for Steam Generator Tube Rupture Scenario Using MAAP4-CANDU v4.0.5A: Preliminary Results, S.M. Petoukhov, B. Awadh, P.M. Mathew (AECL-Canada)

10:20 a.m.

SOCRAT - The System of Codes for Realistic Analysis of Severe Accidents, L.A. Bolshov, V.F. Strizhov (Russian Academy of Sciences-Russia)

10:40 a.m.

Severe Accident Analysis for PHEBUS FPT0 Experiment with Code ICARE2, D. Mukhopadhyay (BARC-India), G. Repetto, O. De. Luez, P. Chatelard (IRSN-France)

11:00 a.m.

MELCOR Simulation of the TMI-2 Severe Accident and Initial Recovery Phases, T. Haste, J. Birchley (*PSI-Switzerland*), E. Cazzoli, J. Vitazkova (*Cazzoli Consulting-Switzerland*)

11:20 a.m.

Application of RELAP5/SCDAP and COCOSYS Codes for Severe Accident Analysis in RBMK-1500 Reactor, E. Urbonavicius, E. Uspuras, S. Rimkevicius, A. Kaliatka (*Lithuanian Energy Inst-Lithuania*)

11:40 a.m.

Performance of RELAP/SCDAPSIM Code on the Fission Products Transport Prediction, E. Honaiser (*Brazilian Navy Technological Center-Brazil*)

Advances in Two-Phase Flow & Heat Transfer-I

Session Chairs: Nusret Aksan (*PSI-Switzerland*), Pradip Saha (*GE Nuclear Energy-USA*)

Nevada 6**10:00 a.m.**

A Study on Bubble Departure and Bubble Lift-Off in Sub-Cooled Nucleate Boiling Flows, W. Wu, P. Chen, B.G. Jones, T.A. Newell (*Univ of Illinois at Urbana-Champaign-USA*)

10:20 a.m.

Heat Transfer For Subcooled Flow Boiling In Hypervapotron Configuration, P. Chen, W. Wu, B.G. Jones, T.A. Newell (*Univ of Illinois at Urbana-Champaign-USA*)

10:40 a.m.

Riemann Problem when Modeling Dual-Speed Bubble Flow, B.L. Kantsyrev (*Research Inst for Nuclear Power Plant Operation-Russia*)

11:00 a.m.

Azimuthal Film Boiling Heat Transfer from Downward-facing Hemispheres, M.J. Yu, C.S. Kim, K.Y. Suh (*Seoul National Univ-Korea*)

11:20 a.m.

Transient Response of a Natural Convection System, B.S. Mohammad, S. Usman (*Univ of Missouri-Rolla-USA*), L. Shoaib (*Yathrib Associates-USA*), S. Abdallah (*Univ of Cincinnati-USA*)

Advanced Fuel Cycle Reprocessing Technology Issues

Session Chair: Dominique Greneche (*COGEMA-France*)

Nevada 7**10:00 a.m.**

Application of a Plasma Mass Separator to Advanced LWR Spent Fuel Reprocessing, C. Ahlfeld (*Archimedes Technology Group-USA*), K. Czerwinski (*Univ of Nevada, Las Vegas-USA*), R. Freeman, R. Miller, L. Papay, J. Wagoner (*Archimedes Technology Group-USA*)

10:20 a.m.

Development in Waste Volume Reduction Technologies for Highly Contaminated Organic Radioactive Compounds, Y. Akai, H. Oomura, M. Fujie, S. Moniwa, S. Seki, T. Yotsuyanagi, M. Ebata, J. Takagi (*Toshiba-Japan*)

10:40 a.m.

R&D of On-line Reprocessing Technology for Molten-Salt Reactor Systems, J. Uhlir, R. Tulackova, K. Chuchvalcova Bimova (*Nuclear Research Inst Rez-Czech Republic*)

11:00 a.m.

Cost Savings of Nuclear Power with Total Fuel Reprocessing, C.W. Solbrig, R.W. Benedict (*INL-USA*)

11:20 a.m.

Heat Transfer Design for Ceramic Waste Forms From Pyroprocessing, K.J. Bateman, C.W. Solbrig, R.W. Benedict (*INL-USA*)

Test and Design Methods for Space Reactor Systems

Session Chair: Tom Marcille (*LANL-USA*)

Nevada 8**10:00 a.m.**

Autonomous Control and Diagnostics of Space Reactor Systems, B.R. Upadhyaya (*Univ of Tennessee-USA*), M.G. Na, X. Xu (*Chosun Univ-Korea*), S.R.P. Perillo (*Univ of Tennessee-USA*)

10:20 a.m.

The Value of A Nuclear Ground Test, D.L. Blessing (*Lockheed Martin-USA*)

10:40 a.m.

Space Power System Modeling with EBAL, A. Zillmer, D. Hanks, W.-H. Tu (*Pratt & Whitney Rocketdyne-USA*)

International Project on Innovative Nuclear Reactors and Fuel Cycles (INPRO)-Panel

Session Chair: Atam Rao (*IAEA-Austria*)

Nevada 9**10:00 a.m.****PANELISTS:**

- Overview and Project Status, Atam Rao (*IAEA-Austria*)
- Methodology to Assess Innovative Nuclear Energy System (INS) (1): Economics, Safety, Environment, and Waste Management, Masanao Moriwaki (*IAEA-Austria*)
- International Joint Study on Closed Fuel Cycle with Fast Reactors, Sergey V. Yugay (*IPPE-Russia*)
- Transition from LWRs to GEN IV Fast Neutron Systems, Alfredo Vasile (*CEA-France*)
- Methodology to Assess INS (2): Infrastructure, Proliferation Resistance and Method of Assessment, Mikhail Khoroshev (*IAEA-Austria*)
- Proliferation Resistance of Whole Fuel Cycle of DUPIC, Joo Hwan Park (*KAERI-Korea*)
- Hydrogen Generating INS in National Energy Mix, Indravadan Dulera (*BARC-India*)

Severe Accident Phenomena: Experiments and Modeling-I

Session Chairs: T. (Nithy) Nitheanandan (*AECL-Canada*), Sevostian Bechta (*NIIT-Russia*)

Nevada 10**10:00 a.m.**

Use of Molten Core Concrete Interactions in the Melt Stabilization Strategy of the EPR, M. Nie, M. Fischer (*AREVA-Germany*)

10:20 a.m.

Simulation of Molten Core Concrete Interaction in Oxide/Metal Configuration with the TOLBIAC-ICB Code: Application to the BETA Experiments, B. Tourniaire, B. Spindler (*CEA Grenoble-France*)

10:40 a.m.

Assessment of Two-Phase Flow Heat Transfer Correlations for Molten Core Concrete Interaction Study, B. Tourniaire, O. Varo (*CEA Grenoble-France*)

11:00 a.m.

Phenomenological Modeling of the Melt Eruption Cooling Mechanism During Molten Core-concrete Interaction (MCCI), M.T. Farmer (*ANL-USA*)

WEDNESDAY, JUNE 7, 2006 • 1:00 P.M. - 2:30 P.M.**The Role of Nuclear In Energy Forecasting Projections-U.S. and World**

Session Chair: Edward Quinn (*Invensys-USA*)

Nevada 1**1:00 p.m.**

Prospective of the Electrical Mexican Sector: 2005-2014, G. Alonso (*Instituto Nacional de Investigaciones Nucleares-Mexico*)

1:20 p.m.

Economic Analysis of the Levelized Cost of Electricity Generation, G. Alonso, J.R. Ramirez, J.C. Palacios (*Instituto Nacional de Investigaciones Nucleares-Mexico*)

1:40 p.m.

Nuclear Power's Prospects: A view to 2030, R. Eynon (*US DOE-USA*)

2:00 p.m.

When Do Commercial Reactors Shut Down? The Record Since 1999, R.E. Hagen (*US DOE-USA*)

Characterization of Fuel Cycle Design Options

Session Chair: M. Todosow (*BNL-USA*)

Nevada 2**1:00 p.m.**

Non-Invasive Characterisation of Burnup for PWR Spent Fuel Rods with Burnups > 80 GWd/t, S. Caruso (*PSI, EPFL-Switzerland*), M. Murphy, F. Jatuff (*PSI-Switzerland*), R. Chawla (*PSI, EPFL-Switzerland*)

1:20 p.m.

Toxicity of Radioactive Wastes Generated from PEACER in Korea, S.I. Kim, K.J. Lee (*KAIST-Korea*)

1:40 p.m.

Micro X-ray Radiography for the Coating Thickness Measurement in the Simulated TRISO-coated Fuel Particle, W.K. Kim, Y.W. Lee, J.Y. Park (*KAERI-Korea*), K.W. Lee, J.B. Park (*DRGEM Corp-Korea*), S.W. Ra (*Chungnam National Univ-Korea*)

2:00 p.m.

HELIOS: Irradiation of U-free Fuels and Targets for Americium Transmutation, F. Scaffidi-Argentina (*JRC, Inst for Energy-The Netherlands*), D. Haas, J. Somers (*JRC Inst for Transuranium Elements-Germany*), F. Klaassen, R. Schram (*Nuclear Research and Consultancy Group-The Netherlands*), D. Warin (*CEA Saclay-France*), J.M. Bonnerot (*CEA Cadarache-France*), C. Garzenne (*EDF-France*)

2:20 p.m.

Feasibility Study of MOX Fuel Online Burnup Analysis, M. L. Dennis, S. Usman (*Univ of Missouri-Rolla-USA*)

Supercritical Pressure Water Reactors-I: General Design/Materials

Session Chairs: Laurence Leung (*AECL-Canada*), Thomas Schulenberg (*FZK/JIKET-Germany*)

Nevada 3**1:00 p.m.**

Mechanical Analysis of the Assembly Box of a HPLWR Fuel Assembly, S. Himmel (*FZK-Germany*), J. Hofmeister (*RWE Power AG-Germany*), J. Starflinger, T. Schulenberg (*FZK-Germany*)

1:20 p.m.

Static Thermal Design Limit of Supercritical Water-Cooled Fast Reactor, J. Yoo, Y. Oka, J. Yang, J. Liu (*Univ of Tokyo-Japan*)

1:40 p.m.

Conceptual Design of a Reactor Pressure Vessel and its Internals for a HPLWR, K. Fischer (*EnBW Kraftwerke AG-Germany*), J. Starflinger, T. Schulenberg (*FZK-Germany*)

2:00 p.m.

In-situ Measurements of the Oxidation of AISI 316L(NG) and its Constituents (Fe, Cr and Ni) in Ultrasupercritical Water, I. Betova (*Bulgarian Academy of Science-Bulgaria*), M. Bojinov (*Univ of Chemical Tech & Metallurgy-Bulgaria*), P. Kinnunen, V. Lehtovuori, S. Peltonen, S. Penttila, T. Saario (*VTT-Finland*)

Availability, Preventive Maintenance, Optimization and Best Practices-I

Session Chairs: César Queral (*Univ Politécnica de Madrid-Spain*), Seth A. Swamy (*Westinghouse-USA*)

Nevada 4**1:00 p.m.**

A Flaw Tolerance Approach to Address Reactor Vessel Head Penetration Cracking Issue, C.K. Ng, S. Jirawongkraisorn, S. Swamy (*Westinghouse-USA*)

1:20 p.m.

Application of a Software Tool for Evaluating Human Factors in Accident Sequences, C. Queral, A. Expósito, I. Gonzalez (*Univ Politécnica de Madrid-Spain*), J.A. Quiroga, A. Ibarra (*UCM-Spain*), J. Hortal (*CSN-Spain*), J.-E. Hulsund, S. Nilsen (*Halden Reactor Project-Spain*)

1:40 p.m.

Interdisciplinary Approach to Reduce Human Errors in the Nuclear Power Plant, Y. Jung, J. Lee (*KHNP-Korea*)

2:00 p.m.

The Status of Plant Lifetime Management Study of Wolsong Unit 1 in Korea, T. Song, I. Jeong, S.-Y. Hong (*KEPRI-Korea*), S.-D. Lee (*KHNP-Korea*)

Advances in Severe Accident Analysis and Management

Session Chairs: Tim Haste (*PSI-Switzerland*), Sudhamay Basu (*US NRC-USA*)

Nevada 5**1:00 p.m.**

SARNET: Integrating Severe Accident Research in Europe - Safety Issues in the Source Term Area, T. Haste (*PSI-Switzerland*), P. Giordano (*IRSN-France*), L. Herranz (*CIEMAT-Spain*), J.-C. Micaelli (*IRSN-France*)

1:20 p.m.

Detailed Analysis of In-Vessel Melt Progression in the Loss of Coolant Accident of OPR1000, R.J. Park, S.B. Kim, H.D. Kim (*KAERI-Korea*)

1:40 p.m.

IAEA Activities in the Area of Safety Analysis and Accident Management, S. Lee, M. El-Shanawany (*IAEA-Austria*)

2:00 p.m.

OSSA—An Optimized Approach to Severe Accident Management: EPR Application, E.C. Sauvage, R. Prior (*AREVA-France*), S.M. Mazurkiewicz, K. Coffey (*AREVA-USA*)

2:20 p.m.

Accident Management for Indian Pressurized Heavy Water Reactors, S. Hajela, R. Grover, S.G. Ghadge, S.S. Bajaj (*Nuclear Power Corp of India*)

2:40 p.m.

CANDU Severe Accident Analysis, G. Negut, A. Catana (*Inst for Nuclear Research-Romania*), I. Prisecaru (*Univ Politehnica Bucharest-Romania*)

Advances in CHF and Rod Bundle Thermal Hydraulics

Session Chair: Floyd Dunn (*ANL-USA*)

Nevada 6**1:00 p.m.**

Development of Analytical Procedures on Two-Phase Flow in Tight-Lattice Fuel Bundles for Fast-Spectrum Light Water Reactor for Flexible Fuel Cycle (FLWR), H. Yoshida, A. Ohnuki, T. Misawa, K. Takase, H. Akimoto (*JAEA-Japan*)

1:20 p.m.

Whole Core Sub-Channel Analysis Verification With the EBR-II SHRT-17 Test, F.E. Dunn, J.E. Cahalan (*ANL-USA*), D. Hahn, H.-Y. Jeong (*KAERI-Korea*)

1:40 p.m.

Impact of Different Correlations on TRACEv4.160 Predicted Critical Heat Flux, A. Jasiulevicius, R. Macian-Juan (*PSI-Switzerland*)

2:00 p.m.

Feasibility Study on Thermal/Hydraulic Performance of Innovative Water Reactor for Flexible Fuel Cycle (FLWR), A. Ohnuki, K. Takase, M. Kureta, H. Yoshida, H. Tamai, W. Liu, T. Nakatsuka, T. Misawa, H. Akimoto (*JAEA-Japan*)

Reactor Physics Methods/Codes-I

Session Chair: Han Gyu Joo (*Seoul National Univ-Korea*)

Nevada 7**1:00 p.m.**

Development of a Computer Code System for the Analysis of VHTR Cores, J.M. Noh, K.-S. Kim, H.C. Lee, Y.H. Kim (*KAERI-Korea*)

1:20 p.m.

Optimal Refueling Pattern Search for a CANDU Reactor Using a Genetic Algorithm, Q.B. Do, G. Roh, H. Choi (*KAERI-Korea*)

1:40 p.m.

ERANOS 2.1: The International Code System for GENIV Fast Reactor Analysis, J.M. Ruggieri, J. Tommasi, J.F. Lebrat, C. Suteau, D. Plisson-Rieunier, C. De Saint Jean, G. Rimpault, J.C. Sublet (*CEA/Cadarache-France*)

2:00 p.m.

Enhanced Monte Carlo Linked Depletion Capabilities in MCNPX, M.L. Fensin (*Univ of Florida-USA*), J.S. Hendricks (*LANL-USA*), S. Anghaie (*Univ of Florida-USA*)

Testing and Analysis of Structures and Materials

Session Chair: Françoise Touboul (*CEA-France*)

Nevada 8**1:00 p.m.**

Influence of Hydrogen Content on Axial Fracture Toughness Parameters of Zr-2.5Nb Pressure Tube Alloy in the Temperature Range of 306-573 K, R.N. Singh (*Malmo Univ-Sweden*), P. Ståhle (*Malmo Univ/Lund Univ-Sweden*), N.S. Srinivasan (*Lund Univ-Sweden*)

1:20 p.m.

On the Creep Behavior of Niobium-modified Zirconium Alloys, I. Charit, K.L. Murty (*North Carolina State Univ-USA*)

1:40 p.m.

Effects of Hydrogen on the Fatigue Crack Growth Rate of Low Alloy Steels, S.G. Lee, C. Jang, I.S. Kim (*KAIST-Korea*)

2:00 p.m.

Microstructural Examination of the Effect of Surface Machining on Stress Corrosion Cracking in Core Shroud Made of 316L, Y. Sueishi, A. Kohyama (*Kyoto Univ-Japan*), M. Narui (*Tohoku Univ-Japan*), K. Asano (*TEPCO-Japan*)

2:20 p.m.

Corrosion Processes of the CANDU Steam Generator Materials in the Presence of Silicon Compounds, D. Lucan, M. Fulger, L. Velciu (*Inst for Nuclear Research-Romania*), G. Lucan (*Academy of Economic Studies-Romania*), G. Jinescu (*Univ Politehnica Bucharest-Romania*)

Economics and Environmental Aspects of Nuclear Energy-I

Session Chairs: Ed Lahoda (*Westinghouse-USA*), Layla Sandell (*EPRI-USA*)

Nevada 9**1:00 p.m.**

Production of Liquid Synthetic Fuels from Carbon, Water and Nuclear Power on Ships and at Shore Bases for Military and Potential Commercial Applications, S.L. Bogart (*Consultant-USA*), K. Schultz, L. Brown, B. Russ (*General Atomics-USA*)

1:20 p.m.

Market Penetration Simulation of Hydrogen Powered Vehicles in Korea, E. Jun, Y.H. Jeong, S.H. Chang (*KAIST-Korea*)

1:40 p.m.

High-Temperature Reactors for In Situ Recovery of Oil from Oil Shale, C. Forsberg (*ORNL-USA*)

2:00 p.m.

Nuclear Energy for Oil Extraction in Canadian Tar Sands: Integration of Nuclear Power with In-Situ Oil Extraction, A. Finan, K. Miu, A. Kadak (*MIT-USA*)

Severe Accident Phenomena: Experiments and Modeling-II

Session Chairs: Mitch Farmer (*ANL-USA*), Sergei Petoukhov (*AECL-Canada*)

Nevada 10**1:00 p.m.**

The Results of the CCI-3 Reactor Material Experiment Investigating 2-D Core-concrete Interaction and Debris Coolability with a Siliceous Concrete Crucible, M.T. Farmer, S. Lomperski (*ANL-USA*), S. Basu (*U.S. NRC-USA*)

1:20 p.m.

Validation of the COMET Bottom-flooding Core-catcher with Prototypic Corium, C. Journeau (*CEA Cadarache-France*), H. Alsmeyer (*FZK-Germany*)

1:40 p.m.

Results of the Triggered TROI Steam Explosion Experiments with a Narrow Interaction Vessel, J.H. Kim, I.K. Park, B.T. Min, S.W. Hong, S.H. Hong, J.H. Song, H.D. Kim (*KAERI-Korea*)

WEDNESDAY, JUNE 7, 2006 • 2:30 P.M. - 4:00 P.M.**Innovative Water Cooled Reactors**

Session Chair: Werner Brettschuh (*AREVA-Germany*)

Nevada 1**2:30 p.m.**

Design and Dynamic Performance of a Small Water Cooled Reactor Fuelled with Plutonium in Rock-Like Oxide (ROX) Form, M. Gaultier, G. Danguy (*Ecole des Applications Militaires de l'Energie Atomique-France*), D. Ritchie (*Nuclear Department, DCEME-UK*), L. Greenlees, A. Perry (*Rolls-Royce MP-UK*), A. Williams, A. Thompson, J. Brushwood, P.A. Beeley (*Nuclear Department, DCEME-UK*)

2:50 p.m.

Feasibility of Improving BWR Performance Using Hydride Fuel, P. Ferroni (*MIT-USA*), M. Fratoni, F. Ginex, F. Ganda (*Univ of California, Berkeley-USA*), C. Handwerk (*MIT-USA*), E. Greenspan (*Univ of California, Berkeley-USA*), N. Todreas (*MIT-USA*)

3:10 p.m.

The Results of Feasibility Study of Co-Generation NPP with Innovative VK-300 Simplified Boiling Water Reactor, Yu.N. Kuznetsov (*RDIFE-Russia*)

3:30 p.m.

Overview of Integrated Modular Water Reactor (IMR) Development, K. Hibi, T. Kanagawa (*Mitsubishi Heavy Industries-Japan*), A. Serizawa, T. Kunugi (*Kyoto Univ-Japan*), T. Okazaki, T. Hida (*JAPC-Japan*), K. Yoneda, T. Matsumura (*CRIEPI-Japan*)

3:50 p.m.

Design of Steam Generator for 700 MWE IPHWR, B. John, S.G. Ghadge (*Nuclear Power Corp of India*)

Supercritical Pressure Water Reactors-II: R&D Programs/ Stability

Session Chairs: Katsumi Yamada (*Toshiba-Japan*), Laurence Leung (*AECL-Canada*)

Nevada 3**2:30 p.m.**

R&D on Supercritical Pressure Water-Cooled Reactor in Korea, Y.-Y. Bae (*KAERI-Korea*)

2:50 p.m.

Research Program of a Super Fast Reactor, Y. Oka, Y. Ishiwatari, J. Lui, T. Terai, S. Nagasaki, Y. Muroya, H. Abe (*Univ of Tokyo-Japan*), H. Mori (*Kyusyu Univ-Japan*), M. Akiba, H. Akimoto, K. Okumura, N. Akasaka (*JAEA-Japan*), S. Goto (*TEPCO-Japan*)

3:10 p.m.

Flow Stability of Supercritical Water Cooled Systems, X. Cheng, B. Kuang, Y.H. Yang (*Shanghai Jiaotong Univ-China*)

3:30 p.m.

Coupled Neutronic-Thermal Hydraulic Out-of-Phase Stability of Supercritical Water Cooled Reactors, J. Zhao, P. Saha, M.S. Kazimi (*MIT-USA*)

Availability, Preventive Maintenance, Optimization and Best Practices-II

Session Chairs: César Queral (*Univ Politécnic de Madrid-Spain*), Seth A. Swamy (*Westinghouse-USA*)

Nevada 4**2:30 p.m.**

Lessons Learnt from Seismic PRA and Margin Assessments for New Nuclear Power Plants, M.K. Ravindra, W.H. Tong, J. Liming (*ABS Consulting-USA*)

2:50 p.m.

Development of Performance Demonstration Programs for Steam Generator Tubing Analysts in Korea, C.H. Cho, M.W. Nam, D.H. Jee, J.H. Jung, H.J. Lee, S.-K. Kim (*KEPRI-Korea*)

3:10 p.m.

US EPR - Tests Performed to Confirm the Mechanical and Hydraulic Design of the Vessel Internals, P. Dolleans, J.L. Chambrin, T. Muller (*Framatome ANP-France*)

Reactor Physics Methods/Codes-II

Session Chair: Richard Sanchez (*CEA-France*)

Nevada 7**2:30 p.m.**

Assembly Based Modular Ray Tracing and CMFD Acceleration for BWR Cores with Different Fuel Lattices, J.W. Thomas (*Purdue Univ-USA*), H.G. Joo (*Seoul National Univ-Korea*), Y. Xu, M. Kalugin, B. Kochunas, T.J. Downar (*Purdue Univ-USA*)

2:50 p.m.

Sensitivity Analysis Based on Transport Theory for Innovative Reactor, T. Takeda, K. Asano, T. Kitada (*Osaka Univ-Japan*)

3:10 p.m.

AttilaR Modeling with Comparisons to Data, MCNP and MCNPX for the Advanced Test Reactor (ATR), D.S. Lucas, A. LaPorta, D.A. Hounshel (*INL-USA*)

3:30 p.m.

Verification of Optimal Control Strategy Search Using a Simplest 3-D PWR Xenon Oscillation Simulator, Y. Shimazu (*Hokkaido Univ-Japan*)

3:50 p.m.

A New Hybrid Optimization Method for Loading Pattern Search, T. Wang (*Shanghai Jiao Tong Univ-China*), Z. Xie (*Xi'an Jiao Tong Univ-China*)

Lead-alloy Fast Reactors-II: Lead-alloy Coolant Technology and Thermal Hydraulics

Session Chairs: James J. Sienicki (*ANL-USA*), Ning Li (*MIT-USA*), Kune Y. Suh (*Seoul National Univ-Korea*)

Nevada 9

2:30 p.m.

Pre-Test Analysis of the MEGAPIE Spallation Source Target Cooling Loop Using TRAC/AAA Code, E. Bubelis, P. Coddington, W. Leung (*PSI-Switzerland*)

2:50 p.m.

Natural Convection Heat Transfer Characteristics of Liquid Metal Cooled by Subcooled Water, I.S. Lee, Y.H. Yu, H.M. Son, K.Y. Suh (*Seoul National Univ-Korea*)

3:10 p.m.

Performance of Magnetic Hydro-Dynamic Pump in Lead-Bismuth Eutectic Target Circuit (TC-1), J. Ma (*Univ of Nevada, Las Vegas-USA*), N. Li (*LANL-USA*), S. Ignatiev (*IPPE-Russia*), V. Kutanov (*GIDROPRESS-Russia*)

3:30 p.m.

Heavy Liquid Metal Technologies Development in KALLA, R. Stieglitz, J. Knebel, C. Fazio, G. Müller, J. Konys (*FZK-Germany*)

3:50 p.m.

Operation Experience of LBE Loop: HELIOS, S.H. Jeong, C.B. Bahn, S.H. Chang, Y.J. Oh, W.C. Nam, K.H. Ryu, H.O. Nam, J. Lim, T.H. Lee, S.G. Lee, N.Y. Lee, I.S. Hwang (*Seoul National Univ-Korea*)

Severe Accident Phenomena: Experiments and Modeling-III

Session Chairs: Sergei Petoukhov (*AECL-Canada*), Mitch Farmer (*ANL-USA*)

Nevada 10

2:30 p.m.

The Results From the First High-Pressure Melt Ejection Test Completed in the Molten Fuel Moderator Interaction Facility at Chalk River Laboratories, T. Nitheanandan, G. Kyle, R. O'Connor, D. Sanderson (*AECL-Canada*)

2:50 p.m.

ARTEMIS Program: Investigation of MCCI by Means of Simulating Material Experiments, J.M. Veteau (*CEA-France*)

3:10 p.m.

Molten Corium Concrete Interaction: Post-Calculations of 1D ARTEMIS Tests with The TOLBIAC-ICB Code, B. Spindler, J.M. Veteau (*CEA-France*)

3:30 p.m.

Experimental Study of Interactions Between Suboxidized Corium and Reactor Vessel Steel, S.V. Bechta, V.B. Khabensky, V.S. Granovsky, E.V. Krushinov, S.A. Vitol (*NITI-Russia*), V.V. Gusarov, V.I. Almjashev (*ISC RAS-Russia*), D.B. Lopukh (*SPbGETU-Russia*), W. Tromm (*FZK-Germany*), D. Bottomley (*ITU-Germany*), M. Fischer (*AREVA-Germany*), P. Piluso (*CEA-France*), A. Miasoedov (*FZK-Germany*), E. Altstadt, H.G. Willschütz (*FZR-Germany*), F. Fichot (*IRSN-France*)

WEDNESDAY, JUNE 7, 2006 • 4:00 P.M. – 6:00 P.M.

ICAPP '06 Plenary 5: Fuel Cycle Options for Sustainable Development of Nuclear Energy

Session Chairs: Dominique Greneche (*COGEMA-France*), Kazuaki Matsui (*Inst of Applied Energy-Japan*)

Tahoe Ballroom

SPEAKERS:

- Rosa Yang (*EPRI-USA*)
- Sue Ion (*BNFL-United Kingdom*)
- Shinzo Saito (*AEC-Japan*)
- Alan Hanson (*AREVA NC-USA*)
- Baldev Raj (*IGCAR-India*)
- James Tulenko (*Univ of Florida-USA*)

THURSDAY • JUNE 8, 2006

7:30 A.M. - 1:30 P.M.

MEETING REGISTRATION

8:00 A.M. - 10:00 A.M.

2006 ICAPP PLENARY SESSION #6

"Looking to the Future - Trends & Challenges"

8:30 A.M. - 11:30 A.M.

2006 ANS ANNUAL MEETING TECHNICAL SESSIONS (see pg 9)

8:30 A.M. - 12:15 P.M.

2006 NFSM TECHNICAL SESSIONS (see pg 37)

10:00 A.M. - 12:00 P.M.

2006 ICAPP TECHNICAL SESSIONS

- Near Term Issues
- Modeling & Simulation of HTRs
- Liquid-Salt-Cooled High-Temperature Reactors—I
- Digital Control Systems
- LOCA & non-LOCA - Plant Analyses—I
- Advances in Two-Phase Flow & Heat Transfer—II
- Strategies for Advanced Fuel Cycles
- PRA & Risk-Informed Decision Making: Methodology & Advances in Practice
- Fuel Design & Irradiation Issues for Next Generation Plants
- Space Nuclear Power & Propulsion Systems

1:00 P.M. - 3:00 P.M.

2006 ICAPP TECHNICAL SESSIONS

- Liquid-Salt-Cooled High-Temperature Reactors—II
- Instrumentation & Control Upgrades, Decisions & Reliability—I
- LOCA & non-LOCA - Plant Analyses—II
- CFD Applications to Water, Liquid Metal, & Gas Reactors—I
- Innovations in Core Designs
- Economics & Environmental Aspects of Nuclear Energy—II

1:00 P.M. - 5:15 P.M.

2006 NFSM TECHNICAL SESSIONS (see pg 37)

3:00 P.M. - 5:00 P.M.

2006 ICAPP TECHNICAL SESSIONS

- Liquid-Salt-Cooled High-Temperature Reactors—III
- Instrumentation & Control Upgrades, Decisions & Reliability—II
- CFD Applications to Water, Liquid Metal, & Gas Reactors—II

THURSDAY JUNE 8, 2006 • 8:00 A.M. – 10:00 A.M.

ICAPP '06 Plenary 6: Looking to the Future – Trends & Challenges

Session Chairs: Samim Anghaie (*Univ of Florida-USA*), Jean-Claude Gauthier (*AREVA-France*)

Tahoe Ballroom

SPEAKERS:

- Gary Holahan (*NRC-USA*)
- Ma Teresa Domínguez (*EA-Spain*)
- Atam Rao (*IAEA-Austria*)
- Scott Campbell (*Washington Policy Analysis, Inc-USA*)
- Young Jin Kim (*KAERI-Korea*)
- Gail H. Marcus (*OECD/NEA-France*)

THURSDAY, JUNE 8, 2006 • 10:00 A.M. - 12:00 P.M.

Near Term Issues

Session Chair: Terry L. Schulz (*Westinghouse-USA*)

Nevada 1

10:00 a.m.

Licensing the Next Generation of Nuclear Power Plants, M.K. Klump, L.A. Dudes (*US NRC-USA*)

10:20 a.m.

Near-Term Deployment of New Nuclear Generation, P.S. Hastings (*Duke Energy-USA*)

10:40 a.m.

The NuStart AP1000 Compact Control Room Implementation, D. Harmon (*Westinghouse-USA*)

11:00 a.m.

The Need for an International Quality Standard, R. Srinivasan (*BNG Fuel Solutions-USA*), D.A. Brown (*Time Solutions-USA*)

11:20 a.m.

Nuclear Reactors in Deregulated Markets: Integration between Providers and Customers?, P.P. Girard (*CEA-France*)

Modeling and Simulation of HTRs

Session Chairs: Lewis Lommers (*AREVA-USA*), Phil MacDonald (*Consultant-USA*)

Nevada 2

10:00 a.m.

Design of an Alternative Coolant Inlet Flow Configuration for the Modular Helium Reactor, M. Reza (*Texas A&M Univ-USA*), E.A. Harvego (*INL-USA*), M. Richards, A. Shenoy (*General Atomics-USA*), K.L. Peddicord (*Texas A&M Univ-USA*)

10:20 a.m.

GT-MHR Start-up Reactivity Insertion Transient Analysis Using Simulink, M. Reisi Fard, T.E. Blue, D.W. Miller (*Ohio State Univ-USA*)

10:40 a.m.

Overview of Helium Cooled System Applications with RELAP at ENEA, P. Meloni, M. Casamirra (*ENEA-Italy*)

11:00 a.m.

Thermal Analysis for a Heterogeneous VHTR Disposition Element as a Function of Burnup, S. Bays (*Univ of Florida-USA*), P. Sabharwall (*Idaho State Univ-USA*), S. Hearing, K. Weaver (*INL-USA*)

11:20 a.m.

Validation of CATHARE Code for Gas-Cooled Reactors: Comparison with EVO Experimental Data on Oberhausen II Facility, F. Bentivoglio, N. Tauveron (*CEA-France*)

11:40 a.m.

Optimization of the Neutronics of the Advanced High Temperature Reactor, J. Zakova, A. Talamo (*KTH-Sweden*)

Liquid-Salt-Cooled High-Temperature Reactors-I

Session Chairs: Per Peterson (*UC Berkeley-USA*), Dan Ingersoll (*ORNL-USA*)

Nevada 3**10:00 a.m.**

Overview and Status of the Advanced High-Temperature Reactor, D.T. Ingersoll, C.W. Forsberg (*ORNL-USA*)

10:20 a.m.

Effects of Coolant Temperature Changes on Reactivity for Various Coolants in a Liquid Salt Cooled Very High Temperature Reactor (LS-VHTR), W.A. Casino Jr. (*AREVA-USA*)

10:40 a.m.

Investigation of an Alternative Fuel Form for the Liquid Salt Very High Temperature Reactor (LS-VHTR), W.A. Casino Jr. (*AREVA-USA*)

11:00 a.m.

Salt Selection for the LS-VHTR, D.F. Williams, K.T. Clarno (*ORNL-USA*)

Digital Control Systems

Session Chair: Steve Yang (*HF Controls-USA*)

Nevada 4**10:00 a.m.**

Real-Time Graphic Display Utility For Nuclear Safety Applications, S. Yang, X. Huang, J. Taylor, J. Stevens, T. Gerardis, A. Hsu, T. McCreary (*HF Controls-USA*)

10:20 a.m.

An Advanced Tool for Control System Design and Maintenance, J. Storm, H. Lohmann (*Rheinmetall Defence Electronics-Germany*)

10:40 a.m.

Design for a New Signals Analyzer through a Circuit Modeling Simulation as a One Body System for SAC's, K.-M. Koo, S.-B. Kim, H.-D. Kim, H.-Y. Kang (*KAERI-Korea*)

11:00 a.m.

HFC-6000 for Nuclear I&C Upgrade, J. Taylor, A. Hsu, T. Gerardis, J. Stevens, T. McCreary, S. Yang (*HF Controls-USA*)

LOCA and non-LOCA - Plant Analyses-I

Session Chairs: Paul Coddington, Audrius Jasiulevicius (*PSI-Switzerland*), Sandra Sloan (*AREVA-USA*)

Nevada 5**10:00 a.m.**

The Evaluation of Steam Generator Level Measurement Model for OPR1000 Using RETRAN-3D, D.Y. Lee, S.J. Hong, B.C. Lee (*FNC Technology-Korea*), H.S. Lim (*KHNP Nuclear Environment Technology Inst-Korea*)

10:20 a.m.

A Parametric Study of a Large Break in Reactor Inlet Header of CANDU 6 Reactors Using RELAP5 Code, I. Prisecaru, D. Dupleac, P. Ghitescu, L. Biro (*Politehnica Univ-Romania*)

10:40 a.m.

Simulation of Loss of RHRS Sequences in the Almaraz NPP during Midloop Operation Using TRACE Code, C. Queral, I. González, A. Expósito (*Univ Politécnica de Madrid-Spain*)

11:00 a.m.

Effect of Flow Configurations on Velocity and Temperature Distribution of Moderator inside 540 MWe PHWR Calandria using CFD Techniques, J.S. Bharj, R.R. Sahaya, D. Datta, S.P. Dharne (*Nuclear Power Corp of India*)

11:20 a.m.

Assessment of Shutdown Systems Performance for LBLOCA for TAPS 3&4, N. Kumar, S.K. Yadav, T.A. Khan, M. Singhal (*Nuclear Power Corp of India*)

11:40 a.m.

Effect of Reactor Channel Modelling On Rewetting Pattern for AHWR Fuel Cluster, D. Mukhopadhyay, H.G. Lele, A.K. Ghosh (*BARC-India*)

Advances in Two-Phase Flow & Heat Transfer-II

Session Chair: Pradip Saha (*GE Nuclear Energy-USA*)

Nevada 6**10:00 a.m.**

Experiment Study on the Condensation Heat Transfer with Accumulated Noncondensable Gas in a Vertical Tube, K.-Y. Lee, M.H. Kim (*Pohang Univ of Science and Tech-Korea*)

10:20 a.m.

Application of a Generalized Diffusion Layer Theory to Predict Experiment Data on Condensation of Vapor-air Mixtures, Y. Liao, K. Vierow (*Purdue Univ-USA*)

10:40 a.m.

Preparation and Characterization of Water-Based Nanofluids for Nuclear Applications, W.C. Williams, E. Forrest, L.W. Hu, J. Buongiorno (*MIT-USA*)

11:00 a.m.

Study of Two-phase Heat Transfer in Nanofluids for Nuclear Applications, S.J. Kim, B. Troung, J. Buongiorno, L.W. Hu, I.C. Bang (*MIT-USA*)

11:20 a.m.

Corrosion and Precipitation in Non-isothermal LBE Pipe/Loop Systems, T. Tan, Y. Chen, H. Chen, X. Tan, S. Hsieh (*Univ of Nevada, Las Vegas-USA*)

Strategies for Advanced Fuel Cycles

Session Chair: Won Sik Yang (*ANL-USA*)

Nevada 7**10:00 a.m.**

Impact of Advanced Fuel Cycle Options on Waste Management Policies, S. Gordelier (*OECD/NEA-France*), J.-M. Cavedon (*PSI-Switzerland*)

10:20 a.m.

ADS Model in TIRELIRE-STRATEGIE Fuel Cycle Simulation Code: Application to Minor Actinides Transmutation Studies, C. Garzenne, S. Massara, P. Tetart (*EDF-France*)

10:40 a.m.

A Strategy for Advanced Fuel Cycle Deployment, K. Arie, K. Utsunomiya, R. Fujita, S. Yamaguchi (*Toshiba-Japan*)

11:00 a.m.

Smooth Transition from Light Water Reactors to Fast Breeder Reactors by Flexible Fuel Cycle Initiative (FFCI), J. Yamashita, T. Fukasawa, F. Kawamura, K. Hoshino, A. Sasahira (*Hitachi-Japan*)

11:20 a.m.

A Specific Long Term Plan for Management of U.S. Nuclear Spent Fuel, S. Levy (*Consultant-USA*)

PRA and Risk-informed Decision Making: Methodology and Advances in Practice

Session Chairs: Young G. Jo (*Southern Nuclear Operating Co-USA*), Kazuo Ishiguma, (*JAPC-Japan*)

Nevada 8**10:00 a.m.**

A Formal Integration of the Decoupled Level 1 and 2 PSA Models into a Single Operational Model for Risk-informed Applications, K.-I. Ahn, J.-E. Yang (*KAERI-Korea*)

10:20 a.m.

A Study on the Reactor Core Failure Thresholds to Safety Operation of LMFBR, K. Haga, H. Endo, T. Ishizu, Y. Shindo (*JNES-JAPAN*)

10:40 a.m.

Seabrook Level 2 PRA Update to Include Accident Management, R.J. Lutz (*Westinghouse-USA*), K. Kiper (*FPL Energy-USA*), R.E. Henry (*Fauske and Associates-USA*), M. Lucci (*Westinghouse-USA*)

11:00 a.m.

A Study on Structured Simulation Framework for Design and Evaluation of Human-machine Interface System: Application for On-line Risk Monitoring for Nuclear Power Plant, J. Zhan, M. Yang, S.C.Li, M.J. Peng, Z.J. Zhang (*Harbin Engineering Univ-China*)

11:20 a.m.

Reliability Assessment of SMART Reactor Protection System, W.Y. Yun, C.H. Jeong, S.H. Kim, S.Y. Lee (*KINS-Korea*)

11:40 a.m.

Development and Verification of a SAPHIRE Risk Monitor for Chernobyl Type Reactors, B.I. Vinnikov (*Kurchatov Inst-Russia*)

12:00 p.m.

Level-2 Probabilistic Safety Assessment for 220 MWe Indian PHWR (KAPS), V. Hari, N. Mohan, S.G Ghadge, S.S. Bajaj (*Nuclear Power Corp of India*)

Fuel Design and Irradiation Issues for Next Generation Plants

Session Chair: Travis W. Knight (*Univ of South Carolina-USA*)

Nevada 9**10:00 a.m.**

Comparison of the 3 MeV C+ Irradiation Effects between the Nuclear Graphite Made of Pitch and Petroleum Cokes, S.-H. Chi, G.-C. Kim, J. Chang (*KAERI-Korea*)

10:20 a.m.

Advanced GFR Utilizing NITE-SiC/SiC Shield Fuel Pin, A. Kohyama, T. Hinoki (*IAE, Kyoto Univ-Japan*), T. Mizuno (*JAEA-Japan*), J.S. Park, H. Kishimoto (*IAE, Kyoto Univ-Japan*)

10:40 a.m.

Evaluation of Specialized Thermocouples for High-Temperature In-Pile Testing, J.L. Rempe, D.L. Knudson, K.G. Condie (*INL-USA*), S.C. Wilkins (*Consultant-USA*)

11:00 a.m.

A New Facility for the Irradiation of Materials at Very High Temperatures, R.G. Ballinger, P. Hejzlar, M.S. Kazimi, G.H. Kohse, Y. Ostrovsky, P.W. Stahle, Z. Xu (*MIT-USA*)

Space Nuclear Power and Propulsion Systems

Session Chair: David Poston (*LANL-USA*)

Nevada 10**10:00 a.m.**

Comparison of Reactor Technologies and Designs for Lunar/Martian Surface Reactor Applications, D. Poston, R. Kapernick, T. Marcille, P. Sadasivan, D. Dixon, B.W. Amiri (*LANL-USA*)

10:20 a.m.

A Practical Approach to Starting Fission Surface Power Development, L. Mason (*NASA GRC-USA*)

10:40 a.m.

Evaluation of an Integrated Gas-Cooled Reactor Simulator and Brayton Turbine-Generator, A. Hissam, E. Stewart (*NASA MSFC-USA*)

11:00 a.m.

Passive Reactor Cooling Using Capillary Porous Wick, C.G. Miller, T.F. Lin (*Pennsylvania State Univ-USA*)

11:20 a.m.

Self-Driven Decay Heat Removal in a GCR Closed Brayton Cycle Power System, S.A. Wright, R.J. Lipinski (*SNL-USA*)

THURSDAY, JUNE 8, 2006 • 1:00 P.M. - 3:00 P.M.**Liquid-Salt-Cooled High-Temperature Reactors-II**

Session Chairs: Dan Ingersoll, Charles Forsberg (*ORNL-USA*)

Nevada 3**1:00 p.m.**

Alternative Passive Decay-Heat Systems for the Advanced High-Temperature Reactor, C.W. Forsberg (*ORNL-USA*)

1:20 p.m.

A Flexible Base-Line Design for the Advanced High-Temperature Reactor Utilizing Metallic Reactor Internals (AHTR-MI), P.F. Peterson, H. Zhao (*Univ of California Berkeley-USA*)

1:40 p.m.

Performance of Decay Heat Removal Systems in the LS-VHTR, J.J. Sienicki, A. Moiseyev, M.T. Farmer, F.E. Dunn, J.E. Cahalan (*ANL-USA*)

2:00 p.m.

Thermal-Hydraulic Analyses of the LS-VHTR, C.B. Davis, G.L. Hawkes (*INL-USA*)

2:20 p.m.

Dynamic System Model of the LS-VHTR to Estimate Design Parameter Impacts on Safety Margin and Reactor Economics, A.L. Qualls, T.L. Wilson, Jr. (*ORNL-USA*)

Instrumentation & Control Upgrades, Decisions & Reliability-I

Session Chair: Tricia Bolian (*AREVA-USA*)

Nevada 4**1:00 p.m.**

Plant Modernization with Digital Reactor Protection System: Safety System Upgrades at US Nuclear Power Stations, W.L. Heckle, T. Bolian (*AREVA-USA*)

1:20 p.m.

Design of the Fully Digitalized SOE System in Nuclear Power Plants, J.Y. Keum, G.O. Park, H.Y. Park, G.S. Jang (*KAERI-Korea*)

1:40 p.m.

Experience with Control Systems Modernization on Operating Nuclear Units (Kozloduy NPP VVER 1000), N. Naydenov (*Kozloduy NPP-Bulgaria*), B. Sechensky (*Westinghouse Energy Systems-Bulgaria*)

2:00 p.m.

Application of Digital Technology for the Plant Protection System in Ulchin Nuclear Power Plant Units 5&6, D. Lee, I. Kim (*KOPEC-Korea*)

LOCA and non-LOCA - Plant Analyses-II

Session Chairs: Sandra Sloan (*AREVA-USA*), Paul Coddington, Audrius Jasiulevicius (*PSI-Switzerland*)

Nevada 5**1:00 p.m.**

AREVA Team Develops Sump Strainer Blockage Solution for PWRs, R. Phan (*AREVA-USA*)

1:20 p.m.

LOCA Feasibility Study of Almaraz NPP 110% Power Uprate, R. Orive, I. Gallego, P. Garcia, A. Concejal (*IBERDROLA-Spain*), J.C. Marti-nez-Murillo (*ALMARAZ-TRILLO AIE-Spain*)

1:40 p.m.

Fuel and Core Design Verification for Extended Power Uprate in Ringhals Unit 3, P. Gabriellson, M. Stepniewski, J. Almberger (*Vattenfall Bränsle AB-Sweden*)

2:00 p.m.

Process Control Logic Modification to Mitigate Transient Following Tripping of a Primary Circulating Pump for a 540 MWe PHWR Power Plant, A.D. Contractor, A.J. Gaikwad, R. Kumar, G. Chakraborty (*BARC-India*), S.F. Vhora (*Nuclear Power Corp of India*)

2:20 p.m.

Assessment of Heat up of Shut-off rods of 540MWe IPHWRs using CFD Techniques, D. H. Yadav, N. K. Pathak, D. Datta, S.P. Dharne (*Nuclear Power Corp of India*)

2:40 p.m.

LOCA Analysis for Assessment of Stagnation Feeder Break Size for TAPS 3&4, T.A. Khan, M. Singhal, H.P.Rammohan, P.K Malhotra, S.G. Ghadge, S.S. Bajaj (*Nuclear Power Corp of India*)

3:00 p.m.

Plant Transient Analysis for TAPS-3&4 using RELAP-5/MOD 3.2, S.L. Sharma, S. Banerjee, H.P. Rammohan, P.K Malhotra, S.G. Ghadge, S.S. Bajaj (*Nuclear Power Corp of India*)

CFD Applications to Water, Liquid Metal, and Gas Reactors-I

Session Chairs: Akira Ohnuki (JAEA-Japan), Ji-Hwan Jeong (Pusan National Univ-Korea)

Nevada 6**1:00 p.m.**

Large Eddy Simulation of a Mixing-T Experiment, P. Coste, P. Quemere, P. Roubin, P. Emonot (CEA Grenoble-France), M. Tanaka, H. Kamide (JAEA-Japan)

1:20 p.m.

Assessment of CFD Modelling for PTS Thermal-hydraulics Using Multiple Scale Experimental Facilities, S.M. Willemsen, J.A. Lycklama à Nijeholt (NRG-The Netherlands)

1:40 p.m.

On the Application of CFD Modeling for the Prediction of the Degree of Mixing in a PWR during a Boron Dilution Transient, J.A. Lycklama à Nijeholt (NRG-The Netherlands), T. Hohne (FZR-Germany)

2:00 p.m.

Head Loss Evaluation in a PWR Reactor Vessel Using CFD Analysis, J.H. Jeong, J.P. Park (Pusan National Univ-Korea), B.-S. Han (Enesys-Korea)

2:20 p.m.

Case Study for Predicting Hydraulic Effects on External Ultrasonic Flowmeters, D. Augenstein, H. Estrada, E. Hauser, E. Madera (Caldon Ultrasonics-USA), S. Keijers, F. Bertels (Suez/Tractebel Engineering-Belgium), R. Hoefnagels, E. Gorleer, D. Beirnaert, P. Goorden (Electrabel-Belgium)

Innovations in Core Designs

Session Chair: Toshikazu Takeda (Osaka Univ-Japan)

Nevada 7**1:00 p.m.**

Development of Erbium-bearing Super High Burnup Fuel, A. Yamamoto (Nagoya Univ-Japan), T. Takeda (Osaka Univ-Japan), H. Unesaki (Kyoto Univ-Japan), M. Mori (Nuclear Engineering, Ltd-Japan), M. Yamasaki (Nuclear Fuel Industries, Ltd.-Japan)

1:20 p.m.

EDF Nuclear Power Plants Operating Experience with MOX Fuel, X. Thibault (EDF-France)

1:40 p.m.

Long Life Single Load Reactor Fuel, L. Popa-Simil (Consultant-USA)

2:00 p.m.

Transmutation Characteristics in a Pb-Bi Cooled Fast Reactor, PEACER-300, J.-Y. Lim, M.-H. Kim (Kyung Hee Univ-Korea)

2:20 p.m.

Fuel-cycle of CANDU Burnup with Depleted Uranium, H. Sekimoto (Tokyo Inst of Tech-Japan)

Economics and Environmental Aspects of Nuclear Energy-II

Session Chairs: John M (Jack) Tuohy (Hitachi America-USA), Ken Schultz (GA-USA)

Nevada 9**1:00 p.m.**

Economics of Nuclear Process Heat Applications, R.W. Kuhr, C. Bolthrunis, M. Corbett (Shaw Stone & Webster-USA)

1:20 p.m.

The Modular Helium Reactor for Future Energy Needs, M.B. Richards, A.S. Shenoy, F. Venneri, M.P. LaBar, K.R. Schultz, L.C. Brown (GA-USA)

1:40 p.m.

Economic Considerations of Nuclear Desalination in Korea, M.-K. Lee, S.-S. Kim (KAERI-Korea)

2:00 p.m.

Future Energy System in Environment, Economy, and Energy Problems: Nuclear System as a Solution to the E3 Trilemma, K. Ikeda (MHI-Japan), H. Sekimoto (Tokyo Inst of Tech-Japan)

2:20 p.m.

Future Energy System in Environment, Economy, and Energy Problems: (2) Various Nuclear Energy System Evaluations, K. Matsui, H. Ujita (IAE-Japan), M. Tashimo (Energy Think Tank-Japan)

2:40 p.m.

Innovative Nuclear Reactors Implementation in the Armenian Energy Sector, A. Gevorgyan (Ministry of Energy-Armenia)

3:00 p.m.

Public Acceptance of Nuclear Energy in México, J.R. Ramirez-Sanchez, G. Alonso, J. Palacios H. (Instituto Nacional De Investigaciones Nucleares-Mexico)

THURSDAY, JUNE 8, 2006 • 3:00 P.M. - 5:00 P.M.**Liquid-Salt-Cooled and Molten-Salt Reactors-III**

Session Chairs: Charles Forsberg (ORNL-USA), Per Peterson (UC Berkeley-USA)

Nevada 3**3:00 p.m.**

Fast Thorium Molten Salt Reactors Started with Plutonium, E. Merle-Lucotte, D. Heuer, C. Le Brun (LPSC/IN2P3/CNRS-France), L. Mathieu (CENBG-France), R. Brisot, E. Liatard, O. Meplan, A. Nuttin (LPSC/IN2P3/CNRS-France)

3:20 p.m.

Molten Salt Reactor Technology Gaps, C.W. Forsberg (ORNL-USA)

3:40 p.m.

Experience with Alloys Compatibility with Fuel and Coolant Salts and their Application to Molten Salt Actinide Recycler & Transmuter, V.V. Ignatiev, A.I. Surenkov, I. Gnidoi, V.I. Fedulov (RRC-Kurchatov Inst-Russia), V.K. Afonichkin, A.L. Bovet (VNIITF-Russia), V.G. Subbotin, A. Panov, A.D. Toropov (IHTE-Russia)

4:00 p.m.

Dynamics of Molten Salt Reactor, J. Krepel, U. Rohde, U. Grundmann (FZR-Germany)

Instrumentation & Control Upgrades, Decisions & Reliability-II

Session Chairs: Joel Woodcock (Westinghouse-USA), Laurent Delabroy (EDF-France)

Nevada 4**3:00 p.m.**

Accumulation of Operational History through Emulation Test to Meet Proven Technology Requirement for Newly Developed I&C Technology, Y.C. Shin (KHNP-Korea), H.S. Son (ENESYS-Korea), S.K. Kang (KHNP-Korea)

3:20 p.m.

An Evaluation System for Checking the Status of I&C Systems in Nuclear Power Plants, J.W. Hyun, H.Y. Chung, C.H. Sung (KHNP-Korea)

3:40 p.m.

Use Case Driven Approach to Develop Simulation Model of PCS for APR1400 Simulator, D.W. Kim, H.S. Kim, H.T. Kang, B.H. Bae (KHNP-Korea)

4:00 p.m.

Parallel Magnetic Flow Electromagnet for Movable Coil Control-rod Driving Mechanism, J. Zhang (Shanghai Jiao Tong Univ-China)

CFD Applications to Water, Liquid Metal, and Gas Reactors-II

Session Chairs: Akira Ohnuki (JAEA-Japan), Ji-Hwan Jeong (Pusan National Univ-Korea)

Nevada 6**3:00 p.m.**

CFD Modeling of High Temperature Gas Cooled Reactors, C.J. van Rensburg, C. Viljoen, M.P. van Staden (PBMR-South Africa)

3:20 p.m.

Towards CFD Modelling of Critical Heat Flux in Fuel Rod Bundles, E. Krepper (FZR-Germany), Y. Egorov (ANSYS-Germany), B. Koncar (Jozef Stefan Inst-Slovenia)

3:40 p.m.

Study on the Gas Entrainment Design Method by CFD Data on Steady Cylindrical Systems for a Sodium-cooled Reactor, T. Sakai (JAEA-Japan), H. Monji (Univ of Tsukuba-Japan), Y. Eguchi (CRIEPI-Japan), T. Iwasaki, H. Ohshima (NESI Inc-Japan)

4:00 p.m.

Simulation of Containment Atmosphere Mixing and Stratification Experiment in the ThAI Facility with a CFD Code, M. Babic, I. Kljenak, B. Mavko (Jozef Stefan Inst-Slovenia)

4:20 p.m.

Progress on the Development of Two-Dimension Eulerian-Lagrangian Code LeFIX, S. Nilsuwankosit (Chulalongkorn Univ-Thailand), I. Park, J.H. Song (KAERI-Korea)

EMBEDDED TOPICAL MEETING: Nuclear Fuels and Structural Materials for the Next Generation Nuclear Reactors NFSM — Meeting Officials

Lance L. Snead
Oak Ridge National Laboratory
GENERAL CO-CHAIR



David A. Petti
Idaho National Laboratory
GENERAL CO-CHAIR



Madeline Feltus
U.S. Department of Energy
GENERAL CO-CHAIR



Todd R. Allen
University of Wisconsin, Madison
GENERAL CO-CHAIR



Bill Corwin
Oak Ridge National Laboratory
TECHNICAL PROGRAM CO-CHAIR



Jon Carmack
Idaho National Laboratory
TECHNICAL PROGRAM CO-CHAIR



Kathryn McCarthy
Idaho National Laboratory
TECHNICAL PROGRAM CO-CHAIR



Doug Crawford
Idaho National Laboratory
TECHNICAL PROGRAM CO-CHAIR



Steven Zinkle
Oak Ridge National Laboratory
TECHNICAL PROGRAM CO-CHAIR



Timothy McGreevy
Oak Ridge National Laboratory
TECHNICAL PROGRAM CO-CHAIR



NOT PICTURED:

Timothy Burchill,
Oak Ridge National Laboratory,
TECHNICAL PROGRAM CO-CHAIR

Kemal Pasamehmetoglu,
Idaho National Laboratory
TECHNICAL PROGRAM CO-CHAIR

DATE AND TIME	ROOM	
TUESDAY—JUNE 6TH	SIERRA 1 & 2	MCKINLEY
8:30 AM - 10:45 AM	Plenary	
10:45 AM - 12:15 PM	High-Temperature Gas-Cooled Reactors	
1:00 PM - 3:15 PM	Fuels—I	
3:15 PM - 5:15 PM	Leveraging Materials Progress for Next Generation Reactors	
7:00 PM - 10:00 PM		Poster Session
WEDNESDAY—JUNE 7TH		
8:30 AM - 10:45 AM	Sodium-Cooled Fast Reactors	
10:45 AM - 12:15 PM	Supercritical Water-Cooled Reactors	
1:00 PM - 3:15 PM	High-Temperature Design, Methodology, and Regulatory Issues	
3:15 PM - 5:15 PM	Fuels—II	
THURSDAY—JUNE 8TH		
8:30 AM - 10:45 AM	High-Temperature Applications	
10:45 AM - 12:15 PM	Corrosion	
1:00 PM - 3:15 PM	High-Temperature Materials Development	
3:15 PM - 5:15 PM	Fuels—III	

TUESDAY, JUNE 6, 2006 • 8:30 A.M.

Plenary. *Session Organizer:* Lance Snead (ORNL). *Chair:* Lance Snead. All invited.

**Sierra 1 & 2
8:30 a.m.**

Overview of Generation IV Reactor Concepts, Kathryn A. McCarthy (INL)

Generation IV Reactor Integrated Materials Program, William Corwin (ORNL)

Advanced Fuel Cycle Initiative Fuel Development Program Overview, William J. Carmack (INL)

TUESDAY, JUNE 6, 2006 • 10:45 A.M.

High-Temperature Gas-Cooled Reactors. *Session Organizer:* Philippe Billot (CEA). *Chair:* Philippe Billot

**Sierra 1 & 2
10:45 a.m.**

Design and Materials Aspects of the PBMR, Mark N. Mitchell, Kobus Smit, Mary Fechter, Shahed Fazluddin (PBMR)

Overview of Fuel and Materials Development for the AREVA HTR, Lewis Lommers (AREVA)

High Temperature MHR Design, Technology and Applications, Arkal Shenoy, Donald McEachern, John Saurwein (General Atomics)

TUESDAY, JUNE 6, 2006 • 1:00 P.M.

Fuels—I. *Session Organizer:* Dave Petti (INL). *Chair:* Kemal Pasamehmetoglu (INL)

**Sierra 1 & 2
1:00 p.m.**

Outlines of the CEA's Materials R&D Program for the Gas Cooled Systems, Philippe Billot, Jean-Louis Séran, Lionel Gosmain, Hélène Burler (CEA)

Fuel Development for Gas-Cooled Fast Reactors, M. K. Meyer (INL)

An Update on the DOE Advanced Gas Reactor (AGR) Fuel Development and Qualification Program, David Petti (INL)

The CRP-6 Benchmark on HTGR Fuel Behavior, Mayeul Phélip (CEA), Igor Kadarmetov (A. A. Bochar All-Russian Research Inst of Inorganic Materials), David Petti (INL)

Fission Product Interactions with Carbides and Nitrides, Paul A. Demkowicz, David A. Petti, Karen Wright (INL)

TUESDAY, JUNE 6, 2006 • 3:15 P.M.

Leveraging Materials Progress for Next Generation Reactors. *Session Organizer:* Todd Allen (Univ of Wisconsin-Madison). *Chair:* Bill Corwin (ORNL)

**Sierra 1 & 2
3:15 p.m.**

Modeling Advanced Materials, Wolfgang Hoffelner, Maria Samaras (Paul Scherrer Inst)

Graphite for Next Generation Reactors, T. D. Burchell, J. P. Strizak (ORNL)

Ferritic Steels for Next-Generation Reactors, R. L. Klueh, A. T. Nelson (ORNL)

Development of Optimized Martensitic 9Cr-ODS Steel Cladding, S. Ukai, T. Kaito, S. Ohtsuka, T. Narita, H. Sakasegawa (JAEA)

Use of Friction Stir Welding and Friction Stir Processing for Advanced Nuclear Fuels and Materials Joining Applications, J. I. Cole, C. R. Clark, J. F. Jue (INL), D. A. Cullen (Arizona State Univ)

TUESDAY, JUNE 6, 2006 • 7:00 P.M.**Poster Session****McKinley
7:00 p.m.**

Radiation Response of a 9 Cr Oxide Dispersion Strengthened ODS to Heavy Ion Irradiation, T. R. Allen (Univ of Wisconsin-Madison), J. Gan, J. I. Cole (ANL), S. Ukai (JAEA), S. Shutthanandan, S. Thevuthasan (PNNL)

Improved Creep Properties of Grain Boundary Engineered 9Cr-1Mo-Nb-V (T91) Steel, Gaurav Gupta, Gary S. Was (Univ of Michigan)

Facility for Conducting Stress Corrosion Cracking of Neutron Irradiated Specimens in Supercritical Water, S. Teysseyre, Q. Peng, C. Becker, G. S. Was (Univ of Michigan)

Corrosion Resistance of Ferritic/Martensitic ODS Alloys in LBE Environment and Application of MA956, Peter Hosemann (Univ of Leoben, LANL), Felix Olivas, Ning Li (LANL)

Thermophysical Characterization of Nitrides: Preliminary Results, A. Ciriello, V. V. Rondinella, D. Staicu, J. Somers (European Commission, JRC, Inst for Transuranium Elements)

SIROCCO: The CEA and AREVA Irradiation Programme of VHTR Fuel, M. Phélip (CEA), P. Guillermier (Framatome ANP), S. Bendotti (CEA)

Measurement of the Fuel Pin Deflection in an Assembly Irradiated in FBR "JOYO," Kozo Katsuyama, Tsuyoshi Nagamine, Yasuo Nakamura, Shin-ichiro Matsumoto, Takeo Asaga, Hirota Furuya (JAEA)

Thermomechanics of Candidate Coatings for Advanced Gas Reactor Fuels, A. Nosek, J. Conzen, H. Doesscher, C. Martin, J. Blanchard (Univ of Wisconsin-Madison)

The CRP-6 Benchmark on HTGR Fuel Behavior Under Accident Conditions, Karl Verfondern (FZJ), Yumin Mao (Fachhochschule Aachen)

The CRP-6 Benchmark on HTGR Fuel Behavior Under Normal Operation, Mayeul Phélip (CEA), Igor Kadarmetov (A. A. Bochar All-Russian Research Inst of Inorganic Materials), David Petti (INL)

Burn-Leach: The Most Important Test in the Manufacture of HTGR Fuel, Heinz Nabielek (FZJ), Chunhe Tang (INET), Shohei Ueta (JAEA), Karl Verfondern (FZJ)

Postirradiation Examination of AFCI Metallic Transmutation Fuels at 8 at.%, Bruce A. Hilton, Douglas L. Porter, Steven L. Hayes (INL)

Temperature Dependence of Oxidation of Ferritic-Martensitic Alloys in Supercritical Water, Pantip Ampornrat, Gary S. Was (Univ of Michigan)

Chemical Interactions Between Metallic SFR Fuel and Advanced Claddings, Dennis D. Keiser, Jr., James I. Cole (INL)

Corrosion of 9Cr Oxide Dispersion Strengthened Steel in Supercritical Water Environment, Y. Chen, K. Sridharan, T. R. Allen (Univ of Wisconsin-Madison)

Effects of Accelerated Irradiation on Coated Particle Fuel Performance, David A. Petti, John T. Maki, Darrell L. Knudson, Gregory K. Miller (INL)

Experimental Design for Testing Materials Corrosion in Molten Fluoride Salt, Luke Olson, James Ambrosek, Kumar Sridharan, Mark Anderson, Todd Allen, Dave Williams, Dane Wilson (Univ of Wisconsin-Madison)

Modeling of Corrosion Mechanisms of Steels for Lead-Alloy Cooled Reactors, McLean Machut, Kumar Sridharan (Univ of Wisconsin-Madison), Ning Li (LANL), Todd Allen (Univ of Wisconsin-Madison)

Postirradiation Examination of AFCI Nitride and Oxide Transmutation Fuels at 8 at.%, Bruce A. Hilton, Douglas L. Porter, Steven L. Hayes (INL)

Zirconium Metal Inert Matrix Fuel Fabrication, Randall Fielding, Jan-Fong Jue, James Stuart (INL)

Characterization of Uranium Carbide Spheres for Gas-Cooled Fast Reactors, Jan-Fong Jue, Randall Fielding (*INL*)

Oxidation Behavior of HCM12A Exposed in Harsh Environments, L. Tan, M. T. Machut, K. Sridharan, T. R. Allen (*Univ of Wisconsin-Madison*)

Growth of SiC Whiskers in SiC/SiC Composites and Its Effect on Mechanical Properties, Weon-Ju Kim, Seok Min Kang, Ji Yeon Park, Woo-Seog Ryu (*KAERI*)

Statistical Approach of HTR Fuel Particle Failure, C. Cannaméla, F. Michel (*CEA*)

ATLAS, a Code for V/HTR Fuel Performance Evaluation, Frédéric Michel (*CEA*), Pierre Mailhe (*Framatome ANP*)

Pyrocarbon Materials for High Temperature Reactor Fuels, D. Hélyary (*Univ of Bordeaux, CEA*), V. Basini (*CEA*), F. Cellier (*Framatome ANP*)

Radiation Resistance of Ceramic Candidates for Generation IV Gas-Cooled Reactors, B. D. Miller, C. A. Dickerson, H. J. Yount, T. R. Allen (*Univ of Wisconsin-Madison*)

Thermal Analysis of LWR-2 Experiment in the Advanced Test Reactor, Grant L. Hawkes (*INL*)

BWXT Capabilities and Experience Relevant to Generation IV Reactor Fuel Development, S. W. Scoles, W. C. Richardson (*BWXT*)

An EBSD Investigation on Flow Localization of 316L Stainless Steel, Xianglin Wu, Xiao Pan, James C. Mabon (*Univ of Illinois*), Meimei Li (*ORNL*), James F. Stubbins (*Univ of Illinois*)

Effect of High Temperature Processing on UCO Fuel Kernel Characteristics, D. L. Husser (*BWXT*), M. A. Ebner (*INL*), T. B. Lindemer (*Harbach Eng and Sol*)

Development of a Continuous CVD Process for TRISO Coating for AGR Fuel, Joseph T. Keeley, Bruce L. Tomlin (*BWXT*)

Neutronic Performance of the LANSCE Materials Test Station, Michael R. James (*LANL*), Erich A. Schneider (*Univ of Texas at Austin*), Guenter Muhrer, Eric J. Pitcher (*LANL*)

Irradiation Effects of Helium and Hydrogen in BCC Single Crystal Iron, Maria A. Okuniewski (*Univ of Illinois*), Chaitanya S. Deo, Srivilliputhur G. Srinivasan, Michael I. Baskes, Michael R. James, Stuart A. Maloy (*LANL*), James F. Stubbins (*Univ of Illinois*)

Burn-Up Capability Optimization for Deep Burn Modular Helium Reactor, Di Yun, Thomas A. Patten, Bei Ye, James F. Stubbins (*Univ of Illinois*)

Structural Materials for Fast Spectrum Reactors to Transmute Spent Nuclear Fuel, S. A. Maloy (*LANL*), M. B. Toloczko (*PNNL*)

Degradation of Triso Fuel in a Repository Environment, Joshua Peterson, Mary Lou Duznik-Gougar (*Idaho State Univ*)

Effects of Chromium and Silicon on Iron-Alloy Corrosion in Pb-Bi Eutectic, J. Lim, R. G. Ballinger, P. W. Stahle (*MIT*), N. Li (*LANL*)

The Development and Production of Functionally Graded Composite Cladding and Structural Materials for Lead-Bismuth Service, R. G. Ballinger, J. Lim (*MIT*), N. Li (*LANL*)

Materials Testing in Supercritical CO₂, Jeongyoun Lim (*MIT*), Ning Li (*LANL*), Ronald Ballinger (*MIT*)

Stochastic Deformations and Bubble Density Evolution in Nuclear Materials, Ray B. Stout (*RhoBetaSigma Affaires*)

Shear Properties at the PyC/SiC Interface of TRISO-Coating, Takashi Nozawa, Lance L. Snead, Yutai Katoh, James H. Miller (*ORNL*)

The Reference Stress Concept—An Alternative Approach to Stress Classification, Douglas L. Marriott (*Stress Eng Svc*)

Experiment and Model Development on the Effect of Burn-Off for Graphite Oxidation, Eung Soo Kim, Hee Cheon No (*KAIST*)

Preliminary Study on Polonium Filter for Lead Alloy Cooled Reactors, Toru Obara, Takeru Koga, Terumitsu Miura, Hiroshi Sekimoto (*Tokyo Inst of Technol*)

Studying TRISO Fuel Failure Using Passive Gamma-Ray Spectrometry, J. M. Harp, E. H. Martin, A. I. Hawari, M. A. Bourham (*NCSU*)

Effects of Neutron Irradiation on Temperature Dependence of Yield Stress of Molybdenum, Meimei Li, T. S. Byun, N. Hashimoto, L. L. Snead, S. J. Zinkle (*ORNL*)

Fracture Stress of SiC Layer in Coated Particle Fuel, T. S. Byun, S. G. Hong, L. L. Snead, Y. Katoh (*ORNL*)

Stress Analysis of Composite Control Rod Tubes for Gen IV Reactor, Seong-Gu Hong (*KAIST, ORNL*), Yutai Katoh (*ORNL*), Will Windes (*INL*), Lance Snead, James Klett (*ORNL*)

Swelling, Creep, and Embrittlement of Three Russian Ferritic-Martensitic Steels Irradiated in the BN-350 Fast Reactor, S. I. Porollo, A. M. Dvoriashin, S. P. Shulepin, Yu. V. Konobeev (*IPPE*), N. I. Budylnin, E. G. Mironova, M. V. Leontyeva-Smirnova, A. G. Ioltukhovskiy (*A. A. Bochar All-Russian Research Inst of Inorganic Materials*), F. A. Garner (*PNNL*)

Development of a TRISO Particle Overcoating and Compacting Process for the VHTR, P. J. Pappano, M. P. Trammell, M. R. Rogers (*ORNL*)

Review of HT-9 Cladding Creep Correlations for Advanced Liquid Metal Fast Reactors, Ho Jin Ryu, A. M. Yacout, Yeon Soo Kim, G. L. Hofman (*ANL*)

Final Post-Irradiation Examinations of FMDP Weapons-Derived MOX Fuel, R. N. Morris, C. A. Baldwin, N. H. Packan (*ORNL*)

Creep Response of Alloy 617 in Impure Helium for VHTR Applications, P. S. Shankar, K. Natesan, D. L. Rink (*ANL*)

International Research Cooperation in Next Generation Reactors: A Path to Non-Proliferation Through ISTC, José Ignacio Pradas-Poveda (*ISTC*)

Fuel and Core Structural Materials for Commercial Fast Sodium Reactor in Russia: State-of-Art and Prospects, L.M. Zabudko, A.A. Kamaev (*IPPE*)

Critical Issues on Materials for Generation-IV Reactors, M. Caro, J. Marian, E. Martinez, A. Caro, E.M. Lopasso, D.A. Crowson, A. Arsenlis, M. Victoria, J.M. Perlado (*LLNL*)

WEDNESDAY, JUNE 7, 2006 • 8:30 A.M.

Sodium-Cooled Fast Reactors. *Session Organizer:* Madeline Feltus (*DOE*).
Chair: Doug Crawford (*INL*)

Sierra 1 & 2 8:30 a.m.

Design Challenges for Sodium-Cooled Fast Reactors, Mamoru Konomura, Masakazu Ichimiya (*JAEA*)

Structural and Cladding Aspects of Fast Reactors, T. R. Allen (*Univ of Wisconsin-Madison*)

Fuels for Sodium-Cooled Fast Reactors, Douglas C. Crawford, Douglas L. Porter, Steven L. Hayes (*INL*)

The Strong Influence of Atomic Displacement Rate on Neutron-Induced Void Swelling of Structural Alloys, F. A. Garner (*PNNL*)

Pyrometallurgical Production of U-Pu Alloy and Injection Casting of U-Pu-Zr, Kinya Nakamura, Takeshi Yokoo (*CRIEPI*), Yasuo Arai (*JAEA*)

WEDNESDAY, JUNE 7, 2006 • 10:45 A.M.

Supercritical Water-Cooled Reactors. *Session Organizer:* Todd Allen (*Univ of Wisconsin-Madison*). *Chair:* Dane Wilson (*ORNL*)

**Sierra 1 & 2
10:45 a.m.**

Status of Supercritical Water Reactor Design, T. Schulenberg (*FZK*), D. Bittermann (*Framatome ANP*)

Zirconium Alloys for Supercritical Water Reactor Applications: Challenges and Possibilities, Arthur Motta, Aylin Yilmazbayhan, Marcelo Silva (*Penn State*), Robert J. Comstock (*Westinghouse*), Gary Was, Eric Gartner, Quinja Peng (*Univ of Michigan*), Yong Hwan Jeong, Jeong Yong Park (*KAERI*)

Irradiation Induced Microstructure and Irradiation Assisted Stress Corrosion Cracking in Supercritical Water, S. Teysseyre, E. West, Z. Jiao, G. S. Was (*Univ of Michigan*)

Grain Boundary Engineering of FCC and BCC Alloys, L. Tan, K. Sridharan, T. R. Allen (*Univ of Wisconsin-Madison*)

WEDNESDAY, JUNE 7, 2006 • 1:00 P.M.

High-Temperature Design, Methodology, and Regulatory Issues. *Session Organizer:* Lance Snead (*ORNL*). *Todd Allen (Univ of Wisconsin-Madison)*

**Sierra 1 & 2
1:00 p.m.**

Next Generation Nuclear Plant Technical Issues and Safety Research Needs—NRC Staff Views, Stuart Rubin (*NRC*)

Elevated Temperature Structural Design Criteria—Background and Issues for GEN IV/VHTR, Robert Jetter (*Consultant*)

NRC and ACRS Technical Issues Relating to Clinch River Breeder Reactor (CRBR), William J. O'Donnell (*O'Donnell Consulting Eng*)

Evaluation of the ASME-NH B-1 Test for Very High Temperature Application, Timothy E. McGreevy (*ORNL*)

WEDNESDAY, JUNE 7, 2006 • 3:15 P.M.

Fuels—II. *Session Organizer:* Dave Petti (*INL*). *Chair:* Dave Petti

**Sierra 1 & 2
3:15 p.m.**

Coated Particle Fuel for the Advanced Gas Reactor, R. A. Lowden, J. H. Miller, J. C. McLaughlin, J. D. Hunn (*ORNL*)

Characterization Methods for Quality Control Analysis of Coated Particles and Fuel Compacts for the Advanced Gas Reactor Fuel Development and Qualification Program, John D. Hunn (*ORNL*)

Present Status of ZrC Coated Fuel Particle Development for Very High Temperature Reactors in JAEA, Kazuhiro Sawa, Shouhei Ueta, Jun Aihara (*JAEA*)

Gas-Fast Reactor Fuel Fabrication, Randall Fielding, Mitch Meyer, Jan-Fong Jue, Jian Gan (*INL*)

Fast Spectrum Nitride Transmutation Fuels for the Futurix-FTA Irradiation Experiment, Stewart Voit, Kenneth McClellan, Christopher Stanek (*LANL*)

THURSDAY, JUNE 8, 2006 • 8:30 A.M.

High-Temperature Applications. *Session Organizer:* Madeline Feltus (*DOE*). *Chair:* Jon Carmack (*INL*)

**Sierra 1 & 2
8:30 a.m.**

Fuel Characteristics and Requirements for the Advanced High-Temperature Reactor, Charles W. Forsberg (*ORNL*)

Material Challenges for Hydrogen Production from Nuclear Systems, P. S. Pickard (*SNL*)

Four Decades of Fast Reactor Structural Materials: Experience and Questions for the Future, J. T. Busby, P. J. Maziasz, E. E. Bloom (*ORNL*)

Simplified Inelastic Analysis Method Based on r-Factor, Saurin Majumdar (*ANL*)

Qualification Programs for the Materials Envisioned in VHTRs, Bernard Riou, Claude Escaravage, Odile Gelineau (*Framatome ANP*)

THURSDAY, JUNE 8, 2006 • 10:45 A.M.

Corrosion. *Session Organizer:* Todd Allen (*Univ of Wisconsin-Madison*). *Chair:* Ron Ballinger (*MIT*)

**Sierra 1 & 2
10:45 a.m.**

Corrosion in Sodium and Salt Systems, Dane F. Wilson (*ORNL*)

Environmental Resistance of Alloys in the Next Generation Nuclear Plant, Richard N. Wright (*INL*), Dane F. Wilson (*ORNL*)

Steel Corrosion in Heavy Liquid Metals, Ning Li (*LANL*)

Corrosion and Stress Corrosion Cracking in Supercritical Water, Gary S. Was, Pantip Ampornrat, Gaurav Gupta, Sebastien Teysseyre (*Univ of Michigan*)

THURSDAY, JUNE 8, 2006 • 1:00 P.M.

High-Temperature Materials Development. *Session Organizer:* Lance Snead (*ORNL*). *Chair:* G. Hayner (*INL*)

**Sierra 1 & 2
1:00 p.m.**

Carbon Fiber Composites for Harsh Nuclear Environments, Lance L. Snead (*ORNL*), Will Windes (*INL*), James Klett, Yutai Katoh (*ORNL*)

Structural Ceramic Composites for the VHTR, W. E. Windes (*INL*), Y. Katoh, L. Snead (*ORNL*), C. Henager (*PNNL*)

Refractory Alloys for Nuclear Applications, S. J. Zinkle, J. T. Busby, K. J. Leonard, L. L. Snead, D. T. Hoelzer, T. S. Byun, M. Li (*ORNL*)

Development of Nanostructured Ferritic Alloys for Advanced Fission and Fusion Energy Applications, G. R. Odette, T. Yamamoto, P. Miao (*Univ of California, Santa Barbara*), M. J. Alinger (*Univ of California, Santa Barbara/Berkeley, GE Research*), B. D. Wirth (*Univ of California, Berkeley*), D. T. Hoelzer, N. Hashimoto (*ORNL*), R. J. Kurtz, D. S. Gelles, B. M. Oliver (*PNNL*)

THURSDAY, JUNE 8, 2006 • 3:15 P.M.

Fuels—III. *Session Organizer:* Dave Petti (*INL*). *Chair:* K. Sawa (*JAEA*)

**Sierra 1 & 2
3:15 p.m.**

Fuel Performance Modeling for Coated Particle Fuel: The PARFUME Code, David Petti, John Maki, Greg Miller, Darrell Knudson (*INL*)

Handbook on SiC and ZrC Properties for Fuel Performance Modeling, Lance L. Snead, Yutai Katoh, Takashi Nozawa (*ORNL*), David Petti (*INL*)

An Approach to Fuel Development and Qualification, Douglas C. Crawford, Douglas L. Porter, Steven L. Hayes, Kemal Pasamehmetoglu (*INL*)

MOX Fuel Fabrication for the AFCI Program, Paul A. Lessing, Timothy A. Hyde (*INL*)

Fabrication of Dual Phase Magnesia-Zirconia Ceramics Doped with Plutonia and Erbium, P. G. Medvedev, J. F. Jue, S. M. Frank (*INL*)

Closing Remarks

PROFESSIONAL DEVELOPMENT WORKSHOP:
MCNP5 WORKSHOP

Sunday, June 4, 2006
8:00 a.m. – 5:00 p.m.
Location: Nevada 6

The MCNP5 Workshop is directed toward MCNP users in four areas: criticality calculations, nuclear data, radiation detection, and medical physics. Members of the MCNP development team from X-Division at LANL will describe new features in MCNP5, discuss the effective use of MCNP5 in the application areas, demonstrate code input and output, and provide insight into both the development and uses of new features in the code. The workshop is organized into independent modules so that participants may attend any or all of the segments.

1. New Features in MCNP5

2. Advances in Criticality Calculations

- a. Plotting spectral quantities using lethargy plotting
- b. Using improved mesh tallies for power distributions
- c. Source entropy for convergence analysis
- d. Weilandt acceleration of convergence
- e. HTGR geometry modeling

3. Nuclear Data

- a. Current Status of ENDF/B-VII for MCNP Calculations
- b. The DOPPLER code for creating temperature-dependent libraries

4. Radiation Detection Simulation with MCNP

- a. Review the basic physics involved with gamma-ray radiation detection and discuss the limits of the simulation physics.
- b. Review MCNP features useful in comparing typical calculations (eg. efficiency, spectroscopy) with experimental measurements for both active and passive gamma-rays.
- c. Discuss comparisons with MCNP calculations and benchmark experiments for NaI and HPGe detectors.

5. Medical Physics Calculations with MCNP5

- a. Review of recent improvements to MCNP for modeling medical physics applications.
- b. Current status of the “MCNP Primer for Medical Physics Applications”.
- c. Discussion of MCNP analysis of medical physics benchmark calculations.

**DOE NUCLEAR CRITICALITY SAFETY PROGRAM
and
“ENDUSERS INITIATIVES WORKSHOP”**

Friday, June 9, 2006 • 8:00 a.m. to 2:00 p.m. • Location: Nevada 6 & 7 Rooms

*Sponsored by the Nuclear Criticality Safety Division
Supported by the Nuclear Criticality Safety Program (NCSP)*

PURPOSE

The NCSP is a comprehensive, crosscutting program that integrates the need to maintain the US criticality safety infrastructure with effective support for criticality safety programs throughout the DOE complex. This workshop, while not part of the official ANS program, has been arranged through the courtesy of the ANS Headquarters staff. The presentations are based on the DOE NCS Program, but because of the global application of the work supported by the DOE NCSP, feedback is encouraged from anyone interested in the needs of a diverse, well-organized criticality safety program in support of operations. Extensive audience participation is encouraged and anticipated.

SCOPE

For this workshop, NCSP solicits input concerning ways to improve the ability of criticality safety practitioners to utilize NCSP products and thus better provide criticality safety support at their sites. NCSP seeks answers to the questions: Are the current NCSP products useful? What impediments, if any, limit their usefulness? What additional products would be useful?

At this workshop, the Enduser group will discuss the status of current initiatives presented at the last workshop in November, 2005, and propose new initiatives. Working groups will then meet to address these topics, including identified needs and proposed actions, to enhance criticality safety programs across the DOE complex. Current initiatives include:

- 1) Operator training simulator
- 2) How to reduce human errors and errors during movements
- 3) How to best track materials
- 4) How to deal effectively and consistently with infractions
- 5) Sharing lessons learned
- 6) Neutron physics data area
- 7) Computer code features

Initial presentations will be followed by the break-out of working groups and group participation. Interested criticality safety practitioners are welcome to participate.

PROGRAM

8:00 am	Welcome and expectations for the workshop
8:20 am	Status of the NCSP Five Year Plan
8:40 am	Enduser activities and status of need area initiatives
9:00 am	Working group break-out sessions
11:00 am	Working group reports, summary of progress
1:30 pm	Closing remarks
2:00 pm	Adjourn

CONTACTS

Dr. Jerry N. McKamy
Dr. John S. Pearson

NATIONAL COMMITTEES**Accreditation Policies & Procedures**

SUNDAY, 5:00 P.M. - 7:00 P.M.
LOCATION: Shasta 1

ANS Business Meeting

MONDAY, 4:00 P.M. - 5:00 P.M.
LOCATION: Reno Ballroom

**Board of Directors/
Professional Division Reports**

WEDNESDAY, 4:00 P.M. - 6:00 P.M.
LOCATION: Reno Ballroom

Board of Directors

THURSDAY, 8:00 A.M. - 5:00 P.M.
LOCATION: Reno Ballroom

Book Publishing

SUNDAY, 11:00 A.M. - 12:00 P.M.
LOCATION: Ruby 1

Bylaws & Rules

SUNDAY, 1:30 P.M. - 4:00 P.M.
LOCATION: McKinley

Executive Conference Review

SUNDAY, 8:30 a.m. - 10:30 a.m.
LOCATION: Crystal 5

Finance

TUESDAY, 4:00 P.M. - 7:00 P.M.
LOCATION: Whitney

Honors & Awards

MONDAY, 4:00 P.M. - 7:00 P.M.
LOCATION: Ruby 1

International

SUNDAY, 11:30 A.M. - 2:00 P.M.
LOCATION: Crystal 3 & 4

Local Sections/Workshop

SUNDAY, 8:00 A.M. - 12:00 P.M.
LOCATION: Carson 1

Meetings, Proceedings, & Transactions

MONDAY, 7:30 A.M. - 8:30 A.M.
LOCATION: Ruby 2

Membership

SUNDAY, 11:00 A.M. - 1:00 P.M.
LOCATION: Sierra 1

NEED

SUNDAY, 7:30 P.M. - 9:30 P.M.
LOCATION: Carson 1

Nuclear News Editorial Advisory

SUNDAY, 4:00 P.M. - 5:30 P.M.
LOCATION: Carson 2

Planning

SUNDAY, 2:00 P.M. - 6:00 P.M.
LOCATION: Teton 1

**Policies & Procedures/
Quality Improvement (PPQI)**

SUNDAY, 2:00 P.M. - 4:00 P.M.
LOCATION: Nevada 5

**President's Meeting with
Committee Chairs**

SUNDAY, 9:00 A.M. - 10:30 A.M.
LOCATION: Crystal 1 & 2

**President's Meeting with
Division Chairs**

SUNDAY, 10:30 A.M. - 12:00 P.M.
LOCATION: Crystal 1 & 2

Professional Development Workshop

TUESDAY, 7:30 A.M. - 9:00 A.M.
LOCATION: Teton 2

Professional Divisions

TUESDAY, 4:00 P.M. - 7:00 P.M.
LOCATION: Teton

Professional Engineering Exam

SUNDAY, 3:00 P.M. - 6:00 P.M.
LOCATION: Ruby 2

Professional Women in ANS

MONDAY, 11:30 A.M. - 1:00 P.M.
LOCATION: Ruby 2

Program (NPC) – Program

WEDNESDAY, 4:00 P.M. - 7:00 P.M.
LOCATION: Teton

**Program (NPC) –
Screening & International**

MONDAY, 4:00 P.M. - 6:00 P.M.
LOCATION: Teton

Public Information

SUNDAY, 3:30 P.M. - 5:30 P.M.
LOCATION: Ruby 1

Public Policy

WEDNESDAY, 11:30 A.M. - 1:00 P.M.
LOCATION: Whitney

Publications Steering

MONDAY, 4:00 P.M. - 6:00 P.M.
LOCATION: Ruby 2

Scholarship Policy & Coordination

SUNDAY, 10:30 A.M. - 12:00 P.M.
LOCATION: Teton 2

Student Sections

SUNDAY, 12:00 P.M. - 2:00 P.M.
LOCATION: Teton 1

Technical Journals

SUNDAY, 1:00 P.M. - 3:30 P.M.
LOCATION: Ruby 1

SPECIAL COMMITTEES**Development**

MONDAY, 11:30 A.M. - 1:00 P.M.
LOCATION: Sierra 1

Nuclear Nonproliferation

SUNDAY, 2:00 P.M. - 4:00 P.M.
LOCATION: Carson 4

Power Generation Outreach

SUNDAY, 11:30 A.M. - 1:00 P.M.
LOCATION: Shasta 1

OTHER COMMITTEES**CNF**

MONDAY, 7:30 P.M. - 10:00 P.M.
LOCATION: Ruby 2

DDR 2007 Planning Meeting

SUNDAY, 4:00 P.M. - 5:00 P.M.
LOCATION: Nevada 2

Eagle Alliance Board of Directors

SUNDAY, 1:00 P.M. - 3:30 P.M.
LOCATION: Shasta 1

ICAPP 2007 Planning Meeting

SUNDAY, 4:00 P.M. - 6:00 P.M.
LOCATION: Nevada 10

INSC

SUNDAY, 8:00 A.M. - 5:00 P.M.
LOCATION: Nevada 7

**Mathematics & Computation/Reactor
Physics/Radiation Protection & Shielding
Joint Benchmark Meeting**

SUNDAY, 11:00 A.M. - 1:00 P.M.
LOCATION: Sierra 2

NEDHO

MONDAY, 4:30 P.M. - 6:00 P.M.
LOCATION: Nevada 11

Past President's Advisory

TUESDAY, 7:00 A.M. - 9:00 A.M.
LOCATION: Ruby 1

PHYSOR - 2006 Planning Committee

TUESDAY, 4:00 P.M. - 6:00 P.M.
LOCATION: Ruby 1

UWC 2006 Planning Committee

SUNDAY, 10:00 A.M. - 11:30 A.M.
LOCATION: McKinley

DIVISION COMMITTEES**Accelerator Applications****EXECUTIVE**

MONDAY, 11:30 A.M. - 1:00 P.M.
LOCATION: Shasta 2

PROGRAM/MEMBERSHIP

SUNDAY, 7:30 P.M. - 9:30 P.M.
LOCATION: Nevada 2

**Aerospace Nuclear Science and
Technologies****COMMITTEE MEETING**

SUNDAY, 10:00 A.M. - 12:00 P.M.
LOCATION: Carson 4

Biology & Medicine**COMMITTEE OF THE WHOLE**

SUNDAY, 4:00 P.M. - 5:30 P.M.
LOCATION: Sierra 2

COMPUTATIONAL MEDICAL PHYSICS**WORKING GROUP**

MONDAY, 11:30 A.M. - 1:00 P.M.
LOCATION: Ruby 1

**Decommissioning, Decontamination &
Reutilization****PROGRAM**

SUNDAY, 1:00 P.M. - 2:00 P.M.
LOCATION: Nevada 2

EXECUTIVE

SUNDAY, 2:00 P.M. - 4:00 P.M.
LOCATION: Nevada 2

Education & Training**ALPHA NU SIGMA**

SUNDAY, 1:00 P.M. - 2:00 P.M.
LOCATION: Carson 4

**EXECUTIVE/MEMBERSHIP/
HONORS & AWARDS**

SUNDAY, 1:30 P.M. - 4:00 P.M.
LOCATION: Carson 3

NUCLEAR WORKFORCE WORKING GROUP

SUNDAY, 12:00 P.M. - 1:00 P.M.
LOCATION: Carson 4

PROGRAM

SUNDAY, 10:30 A.M. - 12:00 P.M.
LOCATION: Carson 3

**UNIVERSITY/INDUSTRY/
GOVERNMENT RELATIONS**

SUNDAY, 9:30 A.M. - 10:30 A.M.
LOCATION: Carson 3

Environmental Sciences**EXECUTIVE**

SUNDAY, 10:00 A.M. - 2:30 P.M.
LOCATION: Carson 2

**NUCLEAR PRODUCTION OF HYDROGEN
WORKING GROUP**

ORGANIZING
MONDAY, 4:00 P.M. - 5:00 P.M.
LOCATION: Crystal 4
EXECUTIVE
MONDAY, 5:00 P.M. - 6:00 P.M.
LOCATION: Crystal 4

PROGRAM

SUNDAY, 8:30 A.M. - 10:00 A.M.
LOCATION: Carson 2

Fusion Energy**EXECUTIVE**

SUNDAY, 3:00 P.M. - 5:00 P.M.
LOCATION: Nevada 3

Fuel Cycle & Waste Management**EXECUTIVE**

SUNDAY, 3:30 P.M. - 5:30 P.M.
LOCATION: Nevada 11

PROGRAM

SUNDAY, 1:30 P.M. - 3:30 P.M.
LOCATION: Nevada 11

TECHNICAL OPERATING COMMITTEE

SUNDAY, 12:00 P.M. - 1:30 P.M.
LOCATION: Nevada 11

Human Factors**EXECUTIVE/PROGRAM**

MONDAY, 4:00 P.M. - 6:30 P.M.
LOCATION: Shasta 1

Isotopes & Radiation**EXECUTIVE**

SUNDAY, 2:30 P.M. - 4:00 P.M.
LOCATION: Shasta 2

**JOINT PROGRAM COMMITTEE -
I&R & B&M**

SUNDAY, 1:30 P.M. - 2:30 P.M.
LOCATION: Nevada 3

Materials Science & Technology**EXECUTIVE**

MONDAY, 7:00 P.M. - 9:00 P.M.
LOCATION: Ruby 1

Mathematics & Computation**EXECUTIVE**

SUNDAY, 2:00 P.M. - 4:00 P.M.
LOCATION: Sierra 1

PROGRAM

SUNDAY, 1:00 P.M. - 2:00 P.M.
LOCATION: Sierra 1

Nuclear Criticality Safety**EDUCATION MEETING**

SUNDAY, 10:00 A.M. - 11:00 A.M.
LOCATION: Whitney

EXECUTIVE

SUNDAY, 3:00 P.M. - 5:30 P.M.
LOCATION: Whitney

PROGRAM

SUNDAY, 1:00 P.M. - 3:00 P.M.
LOCATION: Whitney

Nuclear Installation Safety**EXECUTIVE**

MONDAY, 5:00 P.M. - 8:00 P.M.
LOCATION: Shasta 2

PROGRAM

SUNDAY, 7:30 P.M. - 11:00 P.M.
LOCATION: Nevada 3

Operations & Power**EXECUTIVE**

SUNDAY, 3:30 P.M. - 6:00 P.M.
LOCATION: Carson 1

**NUCLEAR CONSTRUCTION WORKING
GROUP**

TUESDAY, 4:00 P.M. - 6:00 P.M.
LOCATION: Ruby 2

PROGRAM

SUNDAY, 1:00 P.M. - 3:30 P.M.
LOCATION: Carson 1

Radiation Protection & Shielding**EXECUTIVE**

MONDAY, 5:00 P.M. - 7:00 P.M.
LOCATION: Whitney

PROGRAM

MONDAY, 4:00 P.M. - 5:00 P.M.
LOCATION: Whitney

Reactor Physics**EXECUTIVE**

SUNDAY, 4:00 P.M. - 6:00 P.M.
LOCATION: Teton 2

GOALS & PLANNING

SUNDAY, 12:00 P.M. - 2:00 P.M.
LOCATION: Teton 2

PROGRAM

SUNDAY, 2:00 P.M. - 4:00 P.M.
LOCATION: Teton 2

Robotics & Remote Systems**EXECUTIVE**

SUNDAY, 10:00 A.M. - 3:00 P.M.
LOCATION: Ruby 2

Thermal Hydraulics**EXECUTIVE**

SUNDAY, 4:00 P.M. - 6:00 P.M.
LOCATION: Crystal 5

HONORS & AWARDS

TUESDAY, 5:00 P.M. - 7:00 P.M.
LOCATION: Shasta 2

PROGRAM

SUNDAY, 2:00 P.M. - 4:00 P.M.
LOCATION: Crystal 5

STANDARDS COMMITTEES**ANS Standards Board**

TUESDAY, 12:00 P.M. - 6:00 P.M.
LOCATION: Cascade

ANS 2.15

WEDNESDAY, 1:00 P.M. - 3:30 P.M.
LOCATION: Cascade 1

ANS 2.29

TUESDAY, 8:30 A.M. - 3:00 P.M.
LOCATION: Ruby 2

ANS 6.1.2

SUNDAY, 2:00 P.M. - 5:00 P.M.
LOCATION: Nevada 9

ANS 8.1

TUESDAY, 7:00 A.M. - 8:30 A.M.
LOCATION: Shasta 2

ANS 8.3

SATURDAY, 10:00 A.M. - 1:00 P.M.
LOCATION: Cascade 2

ANS 8.12

TUESDAY, 7:00 A.M. - 8:00 A.M.
LOCATION: Teton 1

ANS-8.21 Working Group

TUESDAY, 7:00 A.M. - 8:30 A.M.
LOCATION: Ruby 2

THURSDAY, 7:00 A.M. - 8:30 A.M.
LOCATION: Ruby 2

ANS-8.22

WEDNESDAY, 4:00 P.M. - 6:00 P.M.
LOCATION: Cascade 1

ANS-19**Reactor Physics Standards**

MONDAY, 8:30 A.M. - 10:30 A.M.
LOCATION: Shasta 1

ANS-19.3

WEDNESDAY, 4:00 P.M. - 6:00 P.M.
LOCATION: Whitney

ANS-19.6.1

SATURDAY, 8:30 A.M. - 5:00 P.M.
LOCATION: Cascade 1

SUNDAY, 8:30 A.M. - 12:00 P.M.
LOCATION: Cascade 1

ANS-28/ANS-53.1

WEDNESDAY, 8:30 A.M. - 5:00 P.M.
LOCATION: Shasta 2

THURSDAY, 8:30 A.M. - 12:00 P.M.
LOCATION: Cascade 1

ANS-51.1/52.1

TUESDAY, 8:00 A.M. - 5:00 P.M.
LOCATION: Nevada 11

NFSC Standards Committee

MONDAY, 8:30 A.M. - 6:00 P.M.
LOCATION: Cascade

NOTE: Some afternoon committee meetings will be held in rooms that follow a technical session. The technical sessions must be allowed to finish prior to entering the room to begin the committee meeting.