2005 ANS Annual Meeting

"The Next 50 Years: Creating Opportunities"

Embedded Topical Meeting:

Space Nuclear Conference 2005 (SNC'05)

June 5-9, 2005

San Diego, California

Town & Country Hotel and Convention Center

Updated: May 16, 2005

Please note that Professional Development Workshop #3 has been cancelled.

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

Visit ANS home page www.ans.org for future meetings and more!

Meeting Highlights

2005 ANS Annual Meeting

"The Next 50 Years: Creating Opportunities"

Embedded Topical Meeting:

Space Nuclear Conference 2005 (SNC'05)

June 5-9, 2005 • San Diego, California • Town & Country Hotel and Convention Center

Saturday, June 4, 2005

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

Sunday, June 5, 2005

8:00 a.m. – 5:00 p.m.	Professional Development Workshop #2: "Introduction of Thermal Hydraulic RELAP5-3D Code"
8:30 a.m. – 5:00 p.m.	Professional Development Workshop #1: "Preparing for the Professional Engineering Exam"
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 6, 2005

8:00 a.m. – 10:00 a.m.	Spouse/Guest Hospitality
8:30 a.m. – 11:30 a.m.	Plenary Session: 2005 ANS Annual Meeting – "The Next 50 Years: Creating Opportunities"
9:30 a.m. – 3:00 p.m.	Spouse/Guest Tour: "San Diego Architecture Tour"
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. – 4:00 p.m.	Plenary Session: Embedded Topical Meeting - Space Nuclear Conference 2005
1:00 p.m. – 4:00 p.m.	Technical Sessions: 2005 ANS Annual Meeting
4:00 p.m. – 5:00 p.m.	ANS Business Meeting
4:00 p.m. – 6:00 p.m.	General Chair's Special Session: "Advanced Fuel Cycles Beyond Yucca Mountain"
7:00 p.m. – 10:30 p.m.	Evening Event: Buffet Dinner at Midway Aircraft Carrier Museum

Tuesday, June 7, 2005

8:00 a.m. – 10:00 a.m.	Spouse/Guest Hospitality
8:00 a.m. – 11:30 a.m.	Technical Sessions: SNC '05
8:30 a.m. – 11:30 a.m.	Technical Sessions: 2005 ANS Annual Meeting
9:30 a.m. – 3:00 p.m.	Spouse/Guest Tour: "Rancho Bernardo Winery"
11:30 a.m. – 1:00 p.m.	ANS Honors and Awards Luncheon
1:00 p.m. – 4:00 p.m.	Technical Sessions: 2005 ANS Annual Meeting and SNC '05
4:00 p.m. – 6:00 p.m.	ANS President's Session
6:00 p.m. – 12:00 a.m.	Multi-Division Mixer at Sycuan Casino – Paipa's Oasis Buffet
7:00 p.m. – 9:00 p.m.	SNC '05: Round Table Discussion: Space Nuclear Curricula in the Universities

Wednesday, June 8, 2005

8:00 a.m. – 10:00 a.m.	Spouse/Guest Hospitality
8:00 a.m. – 11:30 a.m.	Technical Sessions: SNC '05
8:30 a.m. – 11:30 a.m.	Technical Sessions: 2005 ANS Annual Meeting
9:00 a.m. – 4:00 p.m.	Technical Tour: Archimedes Technology Group, DIII-D Tokamak Fusion Experiment and the Urban Maglev Vehicle and Test Track at General Atomics
11:30 a.m. – 1:00 p.m.	Nuclear Installations Safety Division Luncheon
1:00 p.m. – 4:00 p.m.	Technical Sessions: 2005 ANS Annual Meeting and SNC '05
4:00 p.m. – 6:00 p.m.	Special Session: SNC '05
7:00 p.m. – 10:30 p.m.	Evening Event: Reception at the Aerospace Museum

Thursday, June 9, 2005

8:00 a.m. – 5:00 p.m.	Professional Development Workshop #4: "Advanced Gas Reactor Technology Course" (2 day workshop)
8:00 a.m. – 12:00 p.m.	Technical Sessions: SNC '05
8:30 a.m. – 11:30 a.m.	Technical Sessions: 2005 ANS Annual Meeting

Friday, June 10, 2005

8:00 a.m. – 4:30 p.m.	DOE Nuclear Criticality Safety Program
8:00 a.m. – 5:00 p.m.	Professional Development Workshop #4: "Advanced Gas Reactor Technology Course" (2 day workshop)

Meeting Officials

Senator Pete V. Domenici
U.S. Senate
HONORARY GENERAL CHAIR

Larry Papay
Consultant
GENERAL CHAIR

Ken Schultz
General Atomics
ASSISTANT GENERAL CHAIR

Loyd Wright
Southern California Edison
GENERAL CHAIR EMERITUS

Atam Rao
Consultant
TECHNICAL PROGRAM CHAIR

Thomas Kiess
U.S. Department of Homeland Security
ASSISTANT TECHNICAL PROGRAM CHAIR

Travis Knight
University of South Carolina
ASSISTANT TECHNICAL PROGRAM CHAIR

Karen Vierow
Purdue University
ASSISTANT TECHNICAL PROGRAM CHAIR

Edward L. (Ted) Quinn
Consultant
FINANCE CHAIR

Karen J. Seeland
Seeland & Associates
ASSISTANT FINANCE/GUEST PROGRAM CHAIR

Calvin Lee
Southern California Edison
STUDENT PROGRAM CHAIR

Chris Ellis
General Atomics
ASSISTANT STUDENT PROGRAM CHAIR

Henry Chiu
General Atomics
TECHNICAL TOUR CHAIR

Ray Golden
Southern California Edison
MEDIA CHAIR

Pat Winter
General Atomics
TEACHERS WORKSHOP

"The Next 50 Years: Creating Opportunities"

The 2005 ANS Annual Meeting will be held June 5-9, 2005, at the Town and Country Resort & Convention Center in San Diego, California. There will be an embedded topical meeting held in conjunction with the 2005 ANS Annual Meeting: Space Nuclear Conference 2005. There will be three Professional Development Workshops also held in conjunction with the 2005 ANS Annual Meeting: "Preparing for the Professional Engineering Nuclear Engineering Exam;" "Introduction to the Thermal Hydraulic RELAP5-3D Code;" and the two-day workshop, "Advanced Gas Reactor Technology Course."

Accommodations/Hotel Information

The Town & Country Hotel and Convention Center will be the location for the 2005 ANS Annual Meeting, where all meeting activities, technical sessions, and governance committee meetings will take place. A San Diego landmark, the The Town & Country Hotel and Convention Center is spread over 40 acres of immaculate grounds, landscaped by hundreds of grand arching palms.

Once a fertile farming valley, Mission Valley is now one of the most dynamic hot spots in all of San Diego. Adjacent to the Town & Country is the 27-hole Riverwalk Golf Course, world-class shopping at Fashion Valley Shopping Center, the largest shopping mecca in San Diego, with over 300 specialty shops and restaurants plus an 18 screen movie complex. In addition, access to San Diego's trolley system provides visitors with convenient transportation to Downtown San Diego, the historic Gaslamp Quarter, east to Qualcomm Stadium, South to the border at Tijuana, Mexico, and, of course, to Old Town.

Workshop for Science Educators

Location: to be determined

A workshop for science educators will be held on Saturday, June 4, 2005, 8:00 a.m. – 5:00 p.m. Please note that this workshop is held off-site. You must contact Chuck Vincent, ANS Outreach Department, at 708-579-8311 for further details. Advance registration is required for all who wish to attend.

This workshop is supported by a grant from the U.S. Department of Energy, Office of Nuclear Energy, Science and Technology and through the individual and organizational contributions to the ANS Public Education Program (PEP).

ANS Registration

ANS Registration will be located in the Atlas Foyer of the hotel, on Saturday, June 4th through Thursday, June 9th. Meetings and Workshop Registration, Speakers' and Session Chairs' Desk, and the Message Desk will also be located in the ANS Registration area.

Meeting registration is required for all attendees and presenters. Badges are required for admission to all technical sessions, workshops and events. An advance meeting registration form begins on page 39.

Registration Hours

SATURDAY, JUNE 4, 2005
2:00 p.m. – 5:00 p.m.

SUNDAY, JUNE 5, 2005
8:00 a.m. – 9:30 a.m.*
*(*Registration for workshop participants only.)*
11:00 a.m. – 7:00 p.m.

MONDAY, JUNE 6, 2005
7:30 a.m. – 5:00 p.m.

TUESDAY, JUNE 7, 2005
7:30 a.m. – 5:00 p.m.

WEDNESDAY, JUNE 8, 2005
7:30 a.m. – 5:00 p.m.

THURSDAY, JUNE 9, 2005
7:30 a.m. – 10:00 a.m.

Student Assistants Program

Attendance at the 2005 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 5th, 4:00 p.m. – 5:00 p.m. in the Stratford Room of the hotel. Student assistants receive free meeting registration and a copy of the meeting TRANSACTIONS. To apply for one of the student assistant positions, complete and submit the forms posted on the ANS web site. For more information, contact Calvin Lee at 858-366-3256 (phone) or cloudhaus@gmail.com (email); or contact the ANS Meetings Department at 708-579-8287. All students are responsible for paying their own room, tax and incidentals. Please refer to the ANS web site, www.ans.org, for more information about the meeting.

ANS student members who register for the meeting and/or work as session chairs' assistants should pick up travel assistance forms 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 Devonshire Room of the 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 5th, in the Brittany Room of the hotel.

Mentoring Program

A special mentoring program will be held from 5:00 p.m. – 6:00 p.m. on Sunday, June 5th, in the Pacific Salon 7 of the 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.

To register for the mentoring program, please complete the registration form posted on the ANS web site. Contact Scott Braland at 708-579-8217 (phone) or sbraland@ans.org (email).

Message Information Desk

For those who wish to reach an attendee at the meeting, call the hotel phone number at 619-291-7131 and ask for the ANS Message Desk.

Notice for Speakers

All speakers and session chairs must sign in at the "Speakers' Desk," located in the Atlas Foyer of the hotel (Sunday, June 5th through Thursday, June 9th).

A Speakers' Preview Room, the Esquire Room of the hotel, will be available during the following hours:

SUNDAY, JUNE 5, 2005
12:00 p.m. – 6:00 p.m.

MONDAY, JUNE 6, 2005
7:00 a.m. – 4:00 p.m.

TUESDAY, JUNE 7, 2005
7:00 a.m. – 4:00 p.m.

WEDNESDAY, JUNE 8, 2005
7:00 a.m. – 4:00 p.m.

THURSDAY, JUNE 9, 2005
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: Terrace Salon 3

ANS Secretariat

Location: Terrace Salon 1 & 2

ANS Media Center

MONDAY, JUNE 6, 2005
7:45 a.m. – 4:00 p.m.

TUESDAY, JUNE 7, 2005
8:00 a.m. – 4:00 p.m.

WEDNESDAY, JUNE 8, 2005
8:00 a.m. – 4:00 p.m.

Location: Lanai Parlor #1108

Members' Media Workroom

The Public Information Committee will be hosting practice interviews at the 2005 ANS Annual Meeting. This practice interview opportunity, conducted by experienced media professionals, will provide ANS members with candid feedback to help them cultivate their ability to tell their stories, respond to tough questions, and confidently share their knowledge with not only the news media but also policymakers and the public. Interviews will be held on Monday June 6, 2005 through Wednesday June 8, 2005 from 11:30 am to 1:30 pm. For more information contact media@ans.org.

Spouse/Guest Hospitality

Spouse/guest hospitality breakfast will be served in the Terrace Pavilion of the hotel from 8:00 a.m. – 10:00 a.m., Monday, June 6th through Wednesday, June 8th. 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 (organized by the NA YGN)

On Tuesday, June 7th, 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 San Diego, CA. Bring shoes and a big smile. We'll take care of the rest! For any further information, contact Mark Urso at phone number, 412-374-4349 or email, ursoma@westinghouse.com.

Professional Development Workshops

NOTE:
Registration for the workshop is separate from, and in addition to, the meeting registration fee. Use the advance meeting registration form (beginning on page 39) to register for the workshop.

PROFESSIONAL DEVELOPMENT WORKSHOP #1:
"Preparing for the Professional Engineering Nuclear Engineering Exam"
SUNDAY, JUNE 5, 2005
8:30 a.m. – 5:00 p.m.
Location: Pacific Salon 1

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

PROFESSIONAL DEVELOPMENT WORKSHOP #2:
"Introduction to the Thermal Hydraulic RELAP5-3D Code"
SUNDAY, JUNE 5, 2005
8:00 a.m. – 5:00 p.m.
Location: Pacific Salon 2

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

Please note that Professional Development Workshop #3 has been cancelled.

PROFESSIONAL DEVELOPMENT WORKSHOP #4:
"Advanced Gas Reactor Technology Course" (2-Day Workshop)
Part 1:
THURSDAY, JUNE 9, 2005
8:00 a.m. – 5:00 p.m.
Location: California Room

Part 2:
FRIDAY, JUNE 10, 2005
8:00 a.m. – 5:00 p.m.
Location: California Room

Registration price for the workshop is $475 for ANS Members and $575 for non-members.

DOE Nuclear Criticality Safety Program

FRIDAY, JUNE 10, 2005
8:00 a.m. – 4:30 p.m.
Location: Terrace Salons 1, 2 and 3

More information is available on page 35.

You, too, may catch glimpes of hot air balloons flying overhead.
(A special thank you to the photograher, Scott Dam.)

Special Events

Please Note:
The times listed are departure times and return times to/from the hotel. Busses will leave promptly from the Atlas Foyer Entrance (West) of the Town and Country Resort & Convention Center. Refunds can not be given for missing the bus.

CONFERENCE LUNCHEONS

Operations and Power Division (OPD) Luncheon
MONDAY, JUNE 6, 2005
11:30 a.m. – 1:00 p.m.
Location: Sunset Room

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

DDR and FCWM Divisions Luncheon
MONDAY, JUNE 6, 2005
11:30 a.m. – 1:00 p.m.
Location: Terrace Pavilion

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

ANS Honors and Awards Luncheon
TUESDAY, JUNE 7, 2005
11:30 a.m. – 1:00 p.m.
Location: California Room

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 in advance or on-site at the ANS Registration Desk for $45.

Nuclear Installations Safety Division Luncheon
WEDNESDAY, JUNE 8, 2005
11:30 a.m. – 1:00 p.m.
Location: Terrace Pavilion

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

EVENING EVENTS

Please Note:
You must be registered for the meeting to attend evening events.

ANS President's Reception
SUNDAY, JUNE 5, 2005
6:00 p.m. – 7:30 p.m.
Location: Royal Palm Court

The ANS President's Reception kicks off the meeting on Sunday, June 5th in the Royal Palm Court of the hotel. One ticket to the ANS President's Reception is included in the full meeting registration fee. Additional tickets can be purchased in advance or on-site at the ANS Registration Desk for $65.

Buffet Dinner at Midway Aircraft Carrier Museum
MONDAY, JUNE 6, 2005
7:00 p.m. – 10:30 p.m.

Experience Midway Magic aboard the nation's newest naval aviation museum, the U.S.S. Midway.

Located on San Diego Bay in downtown San Diego at Navy Pier, Midway provides a dynamic and enriching experience as guests take a look back at the history of America's longest serving Aircraft Carrier. A visit to Midway will instill a greater appreciation for naval aviation, service to country and sacrifice. Guests are invited to share in the 47 year odyssey that began in 1945 when Midway was commissioned as the largest ship in the world, and ended in 1992 with the liberation of Kuwait.

Please Note:
Flat shoes must be worn.

Tickets can be purchased in advance or on-site at the ANS Registration Desk for $50.

"The USS Midway was the Navy's most accomplished carrier and now is the flagship of aircraft carrier museums. An unparalleled odyssey awaits you when you come aboard, following in the wake of more than 225,000 Americans who served aboard CV-41."

(Photo credit: USS Midway Museum)

Multi-Division Mixer at Sycuan Casino – Paipa's Oasis Buffet
TUESDAY, JUNE 7, 2005
6:00 p.m. – 12:00 a.m.

Named San Diego's Best Buffet by the San Diego Reader, Paipa's Oasis has Executive Chef, Ted Borce, the 2004 Chapter Chef of the year by the Chefs de Cuisine Association of San Diego. Each day, Paipa's Oasis Buffet features entrees from around the world. Hand carved meats, Asian specialties and a decadent dessert bar will satisfy any appetite.

Please Note:
You must be 18 years of age or older to be in the casino, restaurants, and theatre.

Tickets can be purchased in advance or on-site at the ANS Registration Desk for $23.

Reception at Aerospace Museum

WEDNESDAY, JUNE 8, 2005
7:00 p.m. – 10:30 p.m.

Aviation history is truly a remarkable story, and it all unfolds at the San Diego Aerospace Museum. Your journey through the history of flight begins as you stand beneath a model of the Montgolfier brothers' hot air balloon of 1783 - the first manned vehicle in recorded history to break the bonds of gravity and lift man above the Earth.

Our International Aerospace Hall of Fame, the only one in the world, honors those men and women who have made a substantive contribution to the advance of the aerospace sciences. Exhibitry accompanying their portraits relates to the honorees and their accomplishments. Names such as Lindbergh, Montgolfier, Earhart, Gagarin, and Armstrong are here, all a part of the saga of the continuing conquest of air and space.

The Dawn of Powered Flight exhibit takes you to the sands of Kitty Hawk, North Carolina, where you are introduced to the first successful attempt at controlled, powered flight.

Rare specimens of aircraft suggest the excitement of air combat in the World War I Gallery. Marvel at the entertaining and dangerous antics of the barnstormers of the 1920s in the Golden Age of Flight Gallery.

Mint condition aircraft in a mint condition museum - a Spitfire Mk. XVI, a Navy F6F Hellcat and an A-4 Skyhawk jet - these beautifully restored airplanes help you appreciate the increasingly complex technology represented in the classic military aircraft of World War II, Korea and Vietnam.

The Museum's display of space age technology, like man's desire to journey to the stars, may never be finished, for it represents an adventure which the human race has truly just begun.

Tickets can be purchased in advance or on-site at the ANS Registration Desk for $50.

SPOUSE/GUEST TOURS

"San Diego Architecture Tour"

MONDAY, JUNE 6, 2005
Times: 9:30 a.m. – 3:00 p.m.

Villa Montezuma
A Victorian Painted Lady
The splendor and glory of San Diego's early boom years await you at the Villa Montezuma. Built in 1887 for internationally-celebrated author and musician Jesse Shepard, this Victorian house offers an exotic exterior, ornate interior and art glass windows. Listed on the National Register of Historic Places, the Villa Montezuma hosts a variety of cultural and community activities including Victorian Christmas celebrations, Victorian teas, musicales, poetry readings and educational programs.

Marston House
An Arts & Crafts Mansion
This home was built in 1905 for George Marston, prominent San Diego merchant, philanthropist and civic leader, who was a founder and first president of the San Diego Historical Society. The George White and Anna Gunn Marston house is an early example of the work of San Diego architects William Hebbard and Irving Gill. Furnished in the style of the American Arts and Crafts Movement of the early 20th century, the interior reflects the architects' commitment to function and simplicity of design. Five acres of landscaped grounds offer a picturesque blend of English Romantic themes with California influences. The Marston House is listed on the National Register of Historic Places.

Tickets can be purchased in advance or on-site at the ANS Registration Desk for $23. (Lunch is not included.)

"Rancho Bernardo Winery"

TUESDAY, JUNE 7, 2005
9:30 a.m. – 3:00 p.m.

In 1889 Bernardo Winery produced its first barrel of wine at the same location and in many of the same buildings it uses today. This rustic facility is one of the oldest continuously-operating wineries in Southern California, hidden away 20 miles north of San Diego in hilly countryside that was once part of a Spanish land grant. On the winery's property east of the Rancho Bernardo Inn, some of the vines have been producing for over 100 years.

Bernardo Winery has a long and colorful history. During Prohibition, the winery continued producing but the product line consisted of "medicinal" wine and fresh grape juice that would begin fermenting before the barrel reached the coast. During World War II the winery, under Vincent Rizzo, reduced its wine production to grow vegetables for the soldiers at nearby Camp Elliot, and the winery still grows the Italian fava bean. Not only do grapes and vegetables grow well in this climate, olive trees thrive in the Mediterranean weather. In January and February, the winery's trees are laden with ripe black olives, which each year yield 500-600 galloons of cold-presses virgin olive oil. After the war, the winery also produced olive oil for the tuna canneries that once thrived in San Diego. When construction of the sprawling Rancho Bernardo community began in the 1960s, Bernardo Winery sold hundreds of olive trees for landscaping the new development.

At one time there were 35 wineries in San Diego County, but only a few, Bernardo among them, have survived. The local wine industry is making a comeback, and today, Bernardo Winery is helping to lead this resurgence through its activities on behalf of the San Diego County Vintner's Association.

Master vintner Ross Rizzo, representing the second generation of Rizzos to own the winery, continues the tradition of making wines in the Old World style. Besides overseeing the winery, he has pioneered a new tradition of social outreach, hosting several annual fund-raising events to benefit the American Cancer Society, the Make-A-Wish Foundation, the local chamber of commerce and other civic groups.

Scattered on the grounds of Bernardo winery are a dozen one-of-a-kind shops, a restaurant and coffee house. The many antique farm implements and 100-year-old structures from the original winery create an air of authenticity surrounding the wine tasting room and shop. There visitors can purchase not only wines with the Bernardo label, but also savory herbs, spices, rare sauces and dressings, pickles, olives, jams, and jellies.

Tickets can be purchased in advance or on-site at the ANS Registration Desk for $21. (Lunch is not included.)

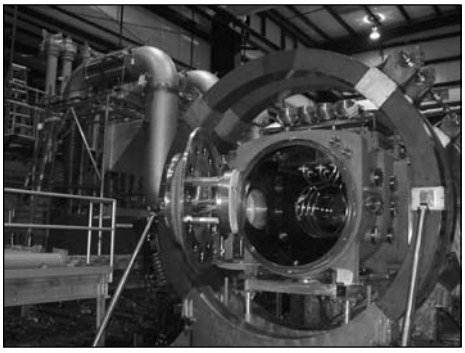
Left:
"One of several antique grape presses displayed at the Winery."

(Photo Credit: Bernardo Winery)

TECHNICAL TOUR

Archimedes Technology Group, the DIII-D Tokamak Fusion Experiment and the Urban Maglev Vehicle and Test Track at General Atomics

WEDNESDAY, JUNE 8, 2005
9:00 a.m. – 4:00 p.m.



Archimedes Plasma Filter

The first stop will be at the Archimedes Technology Group facilities where the Archimedes Filter is being demonstrated. The Archimedes Plasma Filter separates elements based on their atomic mass. The process uses radio frequency (RF) power to convert the injected material into a plasma. Electric and magnetic fields combine to spin the plasma much like an electric motor. The magnetic and electric fields can be adjusted to create a "mass cutoff" that keeps light ions confined to the plasma while heavy ions rotate to the side wall collector. Designed specifically for the defense nuclear waste at Hanford, WA, Savannah River, SC, and Idaho Falls, ID sites, the Filter may also offer solutions for other industrial applications.

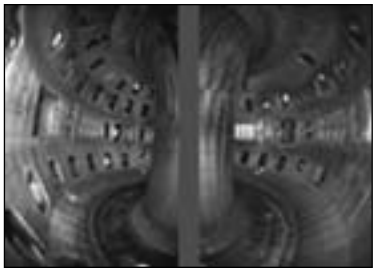
The second stop will be at the Urban Maglev vehicle test track at General Atomics. The goal of this program is to develop magnetic levitation technology that is a cost-effective, reliable, and environmentally friendly option for urban mass transportation in the United States. The system is levitated, propelled, and guided by electromagnetic forces. Levitation is achieved by using simple, passive permanent magnets arranged in a "Halbach" array configuration in the vehicle. Propulsion and guidance are achieved by a linear synchronous motor mounted on the track.

A picnic lunch will be provided at General Atomics, with a presentation on GA's Modular Helium Reactor development program, including gas turbine electric power production, thermochemical hydrogen production and Deep Burn spent fuel management applications.

Finally, a tour will be given of the DIII-D National Fusion Research Facility, located at General Atomics. DIII-D is the largest magnetic fusion research device in the US. This tokamak magnetic plasma confinement device is used by teams or researchers from all over the US and around the world, and is developing the plasma physics knowledge needed to move forward on the International Thermonuclear Experimental Reactor project.

PLEASE NOTE: Those under 18 years of age, pregnant, or with pacemakers are not allowed.

Please complete the mandatory technical tour clearance form, located on page 35, and return it with your registration forms. Tickets are available in advance for $35.00. *(Lunch will be provided.)*



A look inside the DIII-D.

(Asterisks indicate special sessions.)

Track 1: The Next 50 Years: Creating Opportunities

*ANS Opening Plenary: The Next 50 Years: Creating Opportunities, Mon. a.m. (8:30-11:30 a.m.)

*General Chair's Special Session: Advanced Fuel Cycles Beyond Yucca Mountain, Mon. p.m. (4:00-6:00 p.m.)

*ANS President's Special Session: Manpower for the Nuclear Industry... A Continuing Need, Tues. p.m. (4:00-6:00 p.m.)

Track 2: Symposium: Building the Next Nuclear Plants

"4S" Liquid-Metal Reactor for Galena, Alaska–Panel, Mon. p.m.

Nuclear Power 2010 Status–Panel, Tues. a.m.

Building the Next Nuclear Plants, Wed. a.m.

Track 3: Technology and Management of Current Plant Assets

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

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

Management of Materials Degradation in Current Light Water Reactor Fleet–Panel, Tues. a.m.

Robotics Research: The U.S. Department of Energy University Research Program in Robotics (URPR), Tues. a.m.

Hot Topics in Reactor Licensing: New Engineering Inspection Process–Panel, Tues. p.m.

Proactive Management of Materials Degradation in Generation IV Reactors–Panel, Tues. p.m.

*Instrumentation and Control: Lessons Learned—I, Wed. a.m.

*Instrumentation and Control: Lessons Learned—II, Wed. p.m.

Impact of Workforce Reduction on Utility Operations Effectiveness–Panel, Wed. p.m.

Track 4: New Plant Development, Applications, and Environmental Issues

Hydrogen Production Using Nuclear Energy—I, Mon. p.m.

*Hydrogen Production Using Nuclear Energy—II, Tues. a.m.

*Hydrogen Production Using Nuclear Energy—III–Papers/Panel, Tues. p.m.

Materials for Supercritical Water-Cooled Reactors, Tues. a.m.

Coolant Compatibility in Lead-Alloy–Cooled Systems, Tues. p.m.

*Impact of Innovations in Nuclear Infrastructure and Education (INIE) on Research Reactors—I, Tues. p.m.

*Impact of Innovations in Nuclear Infrastructure and Education (INIE) on Research Reactors—II, Wed. a.m.

Quantifying and Integrating Performance Measures for Advanced Fuel Cycles, Tues. p.m.

Safety Improvements in Designs of Advanced Reactors, Wed. a.m.

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

Proliferation-Resistant Fuel Cycles–Panel, Wed. a.m.

Advanced Nuclear Energy Systems Research and Development—I, Wed. p.m.

Advanced Nuclear Energy Systems Research and Development—II, Thurs. a.m.

Proliferation, Transmutation, and Radiation Aspects of Recycle Options, Thurs. a.m.

Track 5: Technology, Environmental Aspects, and Management of the Back End

Scientific Basis for Transportation and Storage of Actinide Materials, Mon. p.m.

Decommissioning, Decontamination, and Reutilization Current Topics–Papers/Panel, Mon. p.m.

Spent Nuclear Fuel: Storage, Direct Disposal, and Recycle, Wed. p.m.

Environmental and Biological Monitoring, Wed. p.m.

Environmental Aspects of Radioactive Waste, Thurs. a.m.

Track 6: Regulatory and Safety Issues

Risk Information Transmission and Security–Panel, Mon. p.m.

*Regulation of Safety Culture–Papers/Panel, Mon. p.m.

Qualification of Safety Analysis and Design Software Quality Assurance, Tues. a.m.

General Thermal Hydraulics, Tues. a.m.

Software Safety for Digital Electronics in Safety Systems, Tues. p.m.

Thermal-Hydraulic Code Development and Applications, Tues. p.m.

Probabilistic Safety Applications, Wed. a.m.

History of Nuclear Criticality Safety, Wed. a.m.

Progress on the Movement Toward Risk-Informed Performance-Based Standards–Panel, Wed. p.m.

Thermal-Hydraulic Experimentation, Thurs. a.m.

Reactor Safety: General, Thurs. a.m.

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

Track 7: Basic Science and Technology

Reactor Analysis Methods, Mon. p.m.

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

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

Mathematical Modeling: General, Tues. a.m.

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

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

Advanced Optimization Methods for Fuel Management, Tues. p.m.

*Next Generation of "Advanced" Methods for Light Water Reactor Analysis, Wed. a.m.

Computational Methods: General, Wed. a.m.

Reactor Physics: General—I, Wed. p.m.

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

Atomistic and Continuum Modeling, Wed. p.m.

Transport Methods: General, Wed. p.m.

SCALE State-of-the-Art Analysis Tools, Wed. p.m.

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

Track 8: Policy Issues and Communication

Education and Training: General, Mon. p.m.

The Development of Nuclear Power in Iran: Questions, Perspectives, and Impacts–Panel, Tues. a.m.

Challenges of the Global Threat Reduction Initiative–Panel, Tues. p.m.

Engaging the Anti's: Communications with Environmental Groups, Wed. a.m.

"Too Cheap to Meter" and Other Myths of the Nuclear Age–Panel, Wed. a.m.

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

Technical Sessions by Division

(Asterisks indicate special sessions. Parentheses indicate cosponsorship.)

Special Sessions

*ANS Opening Plenary: The Next 50 Years: Creating Opportunities, Mon. a.m. (8:30-11:30 a.m.)

*General Chair's Special Session: Advanced Fuel Cycles Beyond Yucca Mountain, Mon. p.m. (4:00-6:00 p.m.)

*ANS President's Special Session: Manpower for the Nuclear Industry... A Continuing Need, Tues. p.m. (4:00-6:00 p.m.)

Decommissioning, Decontamination, and Reutilization (DDRD)

Decommissioning, Decontamination, and Reutilization Current Topics–Papers/Panel, Mon. p.m.

Education and Training (ETD)

Education and Training: General, Mon. p.m.

Engaging the Anti's: Communications with Environmental Groups, Wed. a.m.

"Too Cheap to Meter" and Other Myths of the Nuclear Age–Panel, Wed. a.m.

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

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

Environmental Sciences (ESD)

Hydrogen Production Using Nuclear Energy—I, Mon. p.m.

*Hydrogen Production Using Nuclear Energy—II, Tues. a.m.

*Hydrogen Production Using Nuclear Energy—III–Papers/Panel, Tues. p.m.

Environmental and Biological Monitoring, Wed. p.m.

Environmental Aspects of Radioactive Waste, Thurs. a.m.

Fuel Cycle and Waste Management (FCWMD)

Scientific Basis for Transportation and Storage of Actinide Materials, Mon. p.m.

The Development of Nuclear Power in Iran: Questions, Perspectives, and Impacts–Panel, Tues. a.m.

Quantifying and Integrating Performance Measures for Advanced Fuel Cycles, Tues. p.m.

Challenges of the Global Threat Reduction Initiative–Panel, Tues. p.m.

Proliferation-Resistant Fuel Cycles–Panel, Wed. a.m.

Spent Nuclear Fuel: Storage, Direct Disposal, and Recycle, Wed. p.m.

Proliferation, Transmutation, and Radiation Aspects of Recycle Options, Thurs. a.m.

Isotopes and Radiation (IRD)

*Impact of Innovations in Nuclear Infrastructure and Education (INIE) on Research Reactors—I, Tues. p.m.

*Impact of Innovations in Nuclear Infrastructure and Education (INIE) on Research Reactors—II, Wed. a.m.

Materials Science and Technology (MSTD)

Materials for Supercritical Water-Cooled Reactors, Tues. a.m.

Coolant Compatibility in Lead-Alloy–Cooled Systems, Tues. p.m.

Atomistic and Continuum Modeling, Wed. p.m.

Mathematics and Computation (MCD)

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

Mathematical Modeling: General, Tues. a.m.

(Advanced Optimization Methods for Fuel Management, Tues. p.m.)

(*Next Generation of "Advanced" Methods for Light Water Reactor Analysis, Wed. a.m.)

Computational Methods: General, Wed. a.m.

Transport Methods: General, Wed. p.m.

Nuclear Criticality Safety (NCSD)

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

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

History of Nuclear Criticality Safety, Wed. a.m.

SCALE State-of-the-Art Analysis Tools, Wed. p.m.

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

Nuclear Installations Safety (NISD)

*Regulation of Safety Culture–Papers/Panel, Mon. p.m.

Qualification of Safety Analysis and Design Software Quality Assurance, Tues. a.m.

Management of Materials Degradation in Current Light Water Reactor Fleet–Panel, Tues. a.m.

Software Safety for Digital Electronics in Safety Systems, Tues. p.m.

Proactive Management of Materials Degradation in Generation IV Reactors–Panel, Tues. p.m.

Probabilistic Safety Applications, Wed. a.m.

Safety Improvements in Designs of Advanced Reactors, Wed. a.m.

Impact of Workforce Reduction on Utility Operations Effectiveness–Panel, Wed. p.m.

Reactor Safety: General, Thurs. a.m.

Operations and Power (OPD)

"4S" Liquid-Metal Reactor for Galena, Alaska–Panel, Mon. p.m.

Risk Information Transmission and Security–Panel, Mon. p.m.

Nuclear Power 2010 Status–Panel, Tues. a.m.

Hot Topics in Reactor Licensing: New Engineering Inspection Process–Panel, Tues. p.m.

Building the Next Nuclear Plants, Wed. a.m.

*Instrumentation and Control: Lessons Learned—I, Wed. a.m.

*Instrumentation and Control: Lessons Learned—II, Wed. p.m.

Progress on the Movement Toward Risk-Informed Performance-Based Standards–Panel, Wed. p.m.

Advanced Nuclear Energy Systems Research and Development—I, Wed. p.m.

Advanced Nuclear Energy Systems Research and Development—II, Thurs. a.m.

Radiation Protection and Shielding (RPSD)

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

Reactor Physics (RPD)

Reactor Analysis Methods, Mon. p.m.

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

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

Advanced Optimization Methods for Fuel Management, Tues. p.m.

*Next Generation of "Advanced" Methods for Light Water Reactor Analysis, Wed. a.m.

Reactor Physics: General—I, Wed. p.m.

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

(SCALE State-of-the-Art Analysis Tools, Wed. p.m.)

Robotics and Remote Systems (RRSD)

Robotics Research: The U.S. Department of Energy University Research Program in Robotics (URPR), Tues. a.m.

Thermal Hydraulics (THD)

(*Regulation of Safety Culture–Papers/Panel, Mon. p.m.)

(Qualification of Safety Analysis and Design Software Quality Assurance, Tues. a.m.)

General Thermal Hydraulics, Tues. a.m.

(Software Safety for Digital Electronics in Safety Systems, Tues. p.m.)

Thermal-Hydraulic Code Development and Applications, Tues. p.m.

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

Thermal-Hydraulic Experimentation, Thurs. a.m.

MONDAY • JUNE 6, 2005	
7:30 A.M. - 5:00 P.M.	**MEETING REGISTRATION**
8:00 A.M. - 10:00 A.M.	**SPOUSE/GUEST HOSPITALITY BREAKFAST**
8:30 A.M. - 11:30 A.M.	**2005 ANS ANNUAL MEETING OPENING PLENARY** "The Next 50 Years: Creating Opportunities"
9:30 A.M. - 3:00 P.M.	**SPOUSE/GUEST TOUR:** "San Diego Architecture Tour"
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. - 4:00 P.M.	**SNC '05 PLENARY SESSION** (see pg. 22)
1:00 P.M. - 4:00 P.M.	**2005 ANS ANNUAL MEETING TECHNICAL SESSIONS** • Reactor Analysis Methods • Hydrogen Production Using Nuclear Energy—I • "4S" Liquid-Metal Reactor for Galena, Alaska–Panel • Risk Information Transmission and Security–Panel • Regulation of Safety Culture–Papers/Panel • Current Issues in Computational Methods–Roundtable • Radiation Protection and Shielding: General • Current Topics for Reactor Engineers–Panel • Education and Training: General • Scientific Basis for Transportation and Storage of Actinide Materials • Decommissioning, Decontamination, and Reutilization Current Topics–Papers/Panel
4:00 P.M. - 5:00 P.M.	**ANS BUSINESS MEETING**
4:00 P.M. - 6:00 P.M.	**GENERAL CHAIR'S SPECIAL SESSION** "Advanced Fuel Cycles Beyond Yucca Mountain"
7:00 P.M. - 10:30 P.M.	**EVENING EVENT:** "Buffet Dinner at Midway Aircraft Carrier Museum"

MONDAY, JUNE 6, 2005 • 8:30 A.M.

ANS Opening Plenary: The Next 50 Years: Creating Opportunities

[Track 1] *Session Organizer:* Larry Papay *(General Chair, 2005 ANS Annual Meeting)*. *Chair:* Larry Papay

Golden Ballroom

8:30 a.m.

WELCOMING REMARKS:

- Larry Papay *(General Chair, 2005 ANS Annual Meeting)*
- James Tulenko *(President, American Nuclear Society)*

SPEAKERS:

- Clay Sell *(Deputy Secretary of Energy, U.S. Department of Energy)*
- Peter Lyons *(Commissioner, U.S. Nuclear Regulatory Commission)*
- Admiral John Grossenbacher *(Laboratory Director, Idaho National Laboratory)*
- Andrew C. White *(President and CEO, GE Nuclear Energy)*
- Richard Meserve *(President, Carnegie Institution of Washington)*
- Samuel Ting *(Thomas Dudley Cabot Professor of Physics, Massachusetts Institute of Technology)*

MONDAY, JUNE 6, 2005 • 1:00 P.M.

Reactor Analysis Methods, sponsored by RPD. [Track 7] *Session Organizer:* Ivan Maldonado *(Univ of Cincinnati)*. *Chair:* Dave Knott *(GE Energy)*

Pacific 1

1:00 p.m.
Validation of the GE Lattice Physics Code LANCER02, Dave Knott, Vernon W. Mills, Erin Wehlage *(GE Energy)*

1:20 p.m.
CASMO-4 and Multigroup MCNP Comparisons for MOX Fuel Assemblies, Scott Palmtag, Joel Rhodes III *(Studsvik Scandpower)*

1:40 p.m.
Fine-Lattice Stochastic Modeling of Particle Fuels in an HTGR Unit Fuel Element, Nam Zin Cho, Hui Yu *(KAIST)*

2:00 p.m.
Improved Features and Verification of an AFEN Method Code in Hexagonal-Z 3-D Geometry for Neutron Diffusion Calculation, Nam Zin Cho, Jaejun Lee *(KAIST)*, Do Sam Kim, Chae Yong Yang, Jong Chull Jo *(KINS)*

2:20 p.m.
Unified Nodal Formulation of Refined Analytic Function Expansion Nodal Method for Kinetics Application, Tae Young Han, Han Gyu Joo, Chang Hyo Kim *(Seoul Natl Univ)*

2:40 p.m.
Accounting for Moderator Heating in Supercritical Water Reactor Analysis, Paul P. H. Wilson, Po Hu *(Univ of Wisconsin, Madison)*

3:00 p.m.
Combining a Beowulf Cluster and MCNP5 to Solve Particle Transport Problems, Z. Zhao, G. Ivan Maldonado *(Univ of Cincinnati)*

3:20 p.m.
CANDU Core Calculations with Monte Carlo Based Homogenized Cross Sections, Justin Pounders, Farzad Rahnema *(Georgia Tech)*, Germina Ilas *(ORNL)*

Hydrogen Production Using Nuclear Energy—I, sponsored by ESD. [Track 4] *Session Organizer:* Maurice Ades *(Westinghouse SRC)*. *Chair:* John Sackett *(Idaho State Univ)*

Pacific 2

1:00 p.m.
Stability and Applicability of Inorganic Membranes for Use in the Production of Hydrogen Using Nuclear Energy, Brian L. Bischoff, Dane F. Wilson, Lee D. Trowbridge *(ORNL)*

1:30 p.m.
Thermal-Fluid and Electrochemical Modeling and Performance Study of a Planar Solid Oxide Electrolysis Cell, Bilge Yildiz, Tanju Sofu *(ANL)*

2:00 p.m.
Nuclear Generated Electricity for Hybrid-Electric Vehicles, Robert E. Uhrig *(Univ of Tennessee)*

2:30 p.m.
Use of Hydrogen Plasma for Storing Hydrogen in Nanophase Diamond Powder, Zach Houston, Tushar K. Ghosh, Mark A. Prelas *(Univ of Missouri, Columbia)*

3:00 p.m.
Hydrogen Storage in Nanosize Diamond Powder-Surface Modified by NaF, David Leal Escalante, Angel Velez, Mark A. Prelas, Tushar K. Ghosh *(Univ of Missouri, Columbia)*

3:30 p.m.
Multiple Application Potential of Generation IV Modular Helium Reactors Provide Compelling Reasons for Deployment, M. LaBar, A. Shenoy *(General Atomics)*, E. Quinn *(Technol Res)*

"4S" Liquid-Metal Reactor for Galena, Alaska–Panel, sponsored by OPD. [Track 2] *Session Organizer:* Alan Levin *(NRC)*. *Chair:* Garry L. Randolph *(SPRA)*

This session is dedicated to the memory of Dr. Ralph E. Lapp (1917–2004), nuclear physicist, lecturer, author, and radiation safety pioneer.

Pacific 3

1:00 p.m.

PANELISTS:

- Y. Sakashita *(Toshiba)*
- M. Yoder *(City Manager, Galena, Alaska)*
- C. W. Lapp *(Lapp Consulting Svc)*
- I. Kinoshita *(CRIEPI)*
- N. Ueda *(CRIEPI)*
- A. Minato *(CRIEPI)*
- N. Brown *(LLNL)*
- D. Rosinski *(Pillsbury Winthrop Shaw Pittman)*
- D. Carlson *(NRC)*

Risk Information Transmission and Security–Panel, sponsored by OPD. [Track 6] *Session Organizer:* Mark Reinhart *(NRC)*. *Chair:* Mark Reinhart

Pacific 4 & 5

1:00 p.m.

PANELISTS:

- Michele Laur *(NRC)*
- Michelle P. Carr *(SCE)*
- C. Richard Grantom *(STNPS)*
- Mark Reinhart *(NRC)*

Regulation of Safety Culture–Papers/Panel, sponsored by NISD; cosponsored by THD. [Track 6] *Session Organizer:* C. R. Martin *(DNFSB)*. *Chair:* C. R. Martin

Pacific 6 & 7

PAPERS:

1:00 p.m.
Significance Culture in Nuclear Installations, Constance Perin *(MIT)*, invited

1:30 p.m.
Regulating Safety Culture: Either a Bad Idea or Already Being Done, William R. Corcoran *(NSRC)*, invited

PANEL DISCUSSION:

2:00 p.m.

PANELISTS:

- Constance Perin *(MIT)*
- William R. Corcoran *(NSRC)*
- Lisamarie Jarriel *(NRC)*
- Chip Lagdon *(DOE)*
- Sonja B. Haber *(Human Performance Analysis)*

Current Issues in Computational Methods–Roundtable, sponsored by MCD. [Track 7] *Session Organizer:* Todd Palmer *(Oregon State Univ)*. *Chair:* Alireza Haghighat *(Univ of Florida)*

Royal Palm 1

1:00 p.m.

SPEAKER:

Computational Needs in Radiation Therapy, James Dempsey *(Univ of Florida)*

Radiation Protection and Shielding: General, sponsored by RPSD. [Track 3] *Session Chair:* Robert Hayes *(WIPP)*

Royal Palm 1

2:35 p.m.
Dose Rate Evaluation for Spent Fuel Aging Areas at Yucca Mountain, Georgeta Radulescu, Shiaw-Der Su *(Yucca Mtn Proj)*

2:55 p.m.
Repository Waste Package Transporter Shielding Weight Optimization, Charlotta E. Sanders, Shiaw-Der Su *(Yucca Mtn Proj)*

3:15 p.m.
ORIGEN-S Gamma Decay Spectra Characterization and Benchmarking, J. J. Klingensmith *(Penn State)*, I. C. Gauld *(ORNL)*

3:35 p.m.
Reduction of ß-Particle Transmission Using Emulsions, Charles A. Sparrow, Donna M. Rogers *(Mississippi State Univ)*, Victor F. Medina *(U.S. Army Corps of Eng)*

3:55 p.m.
A New Perspective on Angular Buildup Factors for Photons, H. Omar Wooten, Donald J. Dudziak, Drew E. Kornreich *(LANL)*, Nolan E. Hertel *(Georgia Tech)*

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

Current Topics for Reactor Engineers–Panel, sponsored by RPD. [Track 3] *Session Organizer:* Scott Thomas *(Duke Energy)*. *Chair:* Scott Thomas

Royal Palm 2

1:00 p.m.

PANELISTS:

- Robb Borland *(FENOC)*
- Bob Hall *(Dominion Gen)*
- Jeff Schmidt *(APS)*
- James Tusar *(Exelon)*
- Robert St. Clair *(Duke Power)*

Education and Training: General, sponsored by ETD. [Track 8] *Session Organizer:* Mike Robinson *(Bechtel Bettis)*. *Chair:* Kent Hamlin *(INPO)*

Royal Palm 3

1:00 p.m.
Real Time, Distance Lab via LabVIEW and Webcam, Yuxiang Gu, Rizwan-uddin *(Univ of Illinois)*

1:30 p.m.
The New Medical Physics Program at Georgia Institute of Technology in Cooperation with Emory University, C-K Chris Wang, Farzad Rahnema, Ward O. Winer *(Georgia Tech)*, Timothy H. Fox *(Emory Univ)*

2:00 p.m.
A Performance System Institute: Improving Organizational Performance through Improved Human Performance, Jo-Ann D. Rolle *(Excelsior Coll)*, Roger Kaufman *(Florida State Univ)*

2:30 p.m.
Assessing Training for Academic Credit—Traditional College Credit from Non-Traditional Sources, Richard P. Coe *(Excelsior Coll)*

3:00 p.m.
Challenging Demographics and Potential Remedies Associated with Educating Ph.D.-Level Actinide Radiochemists, Thomas E. Kiess *(DOE)*, Dale L. Perry *(LBNL)*

3:30 p.m.
SIMODIS: A Nuclear Reactor Component Dynamic Simulation, Lamartine N. F. Guimarães *(Inst for Advanced Studies, Univ Braz Cubas)*

Scientific Basis for Transportation and Storage of Actinide Materials, sponsored by FCWMD. [Track 5] *Session Organizer:* Alan Icenhour *(ORNL)*. *Cochairs:* Ron Livingston *(SRNL)*, Alan Icenhour

Royal Palm 5

1:00 p.m.
Establishing the Safety Basis for the Long-Term Storage of ^{233}U and ^{237}Np Oxides, Alan S. Icenhour, L. Mac Toth, Ron R. Brunson, Robert M. Wham *(ORNL)*

1:25 p.m.
Hydrogen Gas Evolution from Water Adsorbed onto Pure Plutonium Dioxide Powder, D. Kirk Veirs *(LANL)*

1:50 p.m.
Gas Generation from Impure Plutonium Dioxide Materials, Laura Worl *(LANL)*

2:15 p.m.
Post-Stabilization TGA-FTIR Analysis of Impure Plutonium Oxides at Rocky Flats, John M. Berg, Mark S. Brugh *(LANL)*

2:40 p.m.
Thermal Profile within a 3013 Storage Container Filled with Fine Plutonium Dioxide Powder, Patricia A. Bielenberg *(LANL)*

3:05 p.m.
Pilot-Scale Hydrogen Getter Testing for TRU Waste Transportation, Jonathan M. Duffey, Ronald R. Livingston *(SRNL)*

3:30 p.m.
Alternative Stabilization Methods for Packaging Plutonium-Bearing Materials, Ronald R. Livingston, Jonathan M. Duffey, Benjamin C. Hill, Arthur Jurgensen, Ann E. Visser *(SRNL)*

Decommissioning, Decontamination, and Reutilization Current Topics–Papers/Panel, sponsored by DDRD. [Track 5] *Session Chair:* J. Mark Price *(SCE)*

Royal Palm 6

PAPERS:
1:00 p.m.
Improving the U.S. Nuclear Regulatory Commission's Decommissioning Program, Robert L. Johnson, Dominick Orlando, Daniel Gillen, James Shepherd *(NRC)*

1:30 p.m.
Review of Fire Response Procedures for Defense Nuclear Facilities in Transition to Decommissioning or in Decommissioning, Herbert W. Massie, Jr., Charles J. March *(DNFSB)*

2:00 p.m.
Decommissioning the Next Generation of Nuclear Plants, Steve Redeker, John Newey, Dennis Gardiner *(SMUD)*

PANEL DISCUSSION:
2:30 p.m.
PANELISTS:
- J. Mark Price *(SCE)*
- Thomas LaGuardia *(TLG Svc)*
- J. B. Buckley *(Duratek)*

MONDAY, JUNE 6, 2005 • 4:00 P.M.

General Chair's Special Session: Advanced Fuel Cycles Beyond Yucca Mountain [Track 1] *Session Organizer:* Larry Papay *(General Chair, 2005 ANS Annual Meeting)*. *Chair:* Larry Papay

San Diego Room
4:00 p.m.
SPEAKERS:
- DOE Representative - to be determined
- Buzz Savage *(DOE)*
- Bertrand Barre *(AREVA)*
- E. Michael Campbell *(Vice President, General Atomics)*
- Ehud Greenspan *(Professor, University of California, Berkeley)*

TUESDAY • JUNE 7, 2005

7:30 A.M. - 5:00 P.M.	**MEETING REGISTRATION**
8:00 A.M. - 10:00 A.M.	**SPOUSE/GUEST HOSPITALITY BREAKFAST**
8:00 A.M. - 11:30 A.M.	**SNC '05 TECHNICAL SESSIONS** (see pg. 22)
8:30 A.M. - 11:30 A.M.	**2005 ANS ANNUAL MEETING TECHNICAL SESSIONS** • Reactor Physics Design, Validation, and Operating Experience • Hydrogen Production Using Nuclear Energy—II • Nuclear Power 2010 Status–Panel • Materials for Supercritical Water-Cooled Reactors • Qualification of Safety Analysis and Design Software Quality Assurance • Management of Materials Degradation in Current Light Water Reactor Fleet–Panel • Mathematical Modeling: General • Data, Analysis, and Operations for Nuclear Criticality Safety—I • Robotics Research: The U.S. Department of Energy University Research Program in Robotics (URPR) • The Development of Nuclear Power in Iran: Questions, Perspectives, and Impacts–Panel • General Thermal Hydraulics
9:30 A.M. - 3:00 P.M.	**SPOUSE/GUEST TOUR:** "Rancho Bernardo Winery"
11:30 A.M. - 1:00 P.M.	**ANS HONORS AND AWARDS LUNCHEON**
1:00 P.M. - 4:00 P.M.	**SNC '05 TECHNICAL SESSIONS** (see pg. 22)
1:00 P.M. - 4:00 P.M.	**2005 ANS ANNUAL MEETING TECHNICAL SESSIONS** • Advanced Optimization Methods for Fuel Management • Hydrogen Production Using Nuclear Energy—III–Papers/Panel • Hot Topics in Reactor Licensing: New Engineering Inspection Process–Panel • Coolant Compatibility in Lead-Alloy-Cooled Systems • Software Safety for Digital Electronics in Safety Systems • Proactive Management of Materials Degradation in Generation IV Reactors–Panel • Impact of Innovations in Nuclear Infrastructure and Education (INIE) on Research Reactors—I • Data, Analysis, and Operations for Nuclear Criticality Safety—II • Quantifying and Integrating Performance Measures for Advanced Fuel Cycles • Challenges of the Global Threat Reduction Initiative–Panel • Thermal-Hydraulic Code Development and Applications
4:00 P.M. - 6:00 P.M.	**ANS PRESIDENT'S SPECIAL SESSION** "Manpower for the Nuclear Industry...A Continuing Need"
6:00 P.M. - 12:00 A.M.	**EVENING EVENT:** "Multi-Division Mixer at Sycuan Casino"
7:00 P.M. - 9:00 P.M.	**SNC '05 ROUNDTABLE DISCUSSION** (see pg. 22)

TUESDAY, JUNE 7, 2005 • 8:30 A.M.

Reactor Physics Design, Validation, and Operating Experience, sponsored by RPD. [Track 7] *Session Chair:* Kevin Clarno *(ORNL)*

Pacific 1
8:30 a.m.
Verify Super Double-Heterogeneous Spherical Lattice Model for Equilibrium Fuel Cycle Analysis, Gray S. Chang *(INL)*

8:50 a.m.
Fuel Cycle Extension of the High Flux Isotope Reactor Using a Beryllium Internal Reflector, Ned Xoubi *(Univ of Cincinnati)*, R. T. Primm III *(ORNL)*, G. Ivan Maldonado *(Univ of Cincinnati)*

9:10 a.m.
ENHS (Encapsulated Nuclear Heat Source) Reactor Core Design for Reduced Power, Ser Gi Hong *(KAERI)*, Ehud Greenspan *(Univ of California, Berkeley)*, Yeong Il Kim *(KAERI)*

9:30 a.m.
A Feasibility Study of Small-Size Molten-Salt Cooled Long Life Cores, Ser Gi Hong *(KAERI)*, Ehud Greenspan *(Univ of California, Berkeley)*, Yeong Il Kim *(KAERI)*

9:50 a.m.
Using SIMULATE-3 for Load Maneuver Projections, Shawn K. Gibby, Andrew T. Godfrey *(Duke Energy)*

10:10 a.m.
Evaluation of Core Attributes Uncertainties due to Input Data Uncertainties, Hany S. Abdel-Khalik *(Framatome ANP)*, Paul J. Turinsky *(NCSU)*

10:30 a.m.
Development of MAPSSEL Long Life Detector Design—Performance Evaluation, Yu Sun Choi *(KEPRI)*, Toshio Morita, Michael D. Heibel *(Westinghouse)*

10:50 a.m.
Error Reduction in CPC Axial Power Distribution Synthesis, Hyeong Heon Kim, Sung Goo Chi *(KOPEC)*

Hydrogen Production Using Nuclear Energy—II, sponsored by ESD. [Track 4] *Session Organizer:* Kenneth Schultz *(General Atomics)*. *Chair:* Kenneth Schultz

Pacific 2
8:30 a.m.
Hydrogen Production by the Iodine-Sulphur Thermochemical Cycles: Partial Pressure Measurements, Denis Doizi, Vincent Dauvois, Vincent Delanne, Jean Luc Roujou, Bruno Larousse, Olivier Hercher, Pierre Fauvet, Christophe Moulin *(CEA, Saclay)*

9:00 a.m.
Viability and Efficiency Calculations for the Hybrid Cu-Cl Thermochemical Cycle, Michele A. Lewis, Joseph G. Masin *(ANL)*

9:30 a.m.
Zero Carbon Dioxide Release Hydrogen System Using Nuclear Powers, Yukitaka Kato, Ken-ichiro Otsuka, Chun Yi Liu *(Tokyo Inst of Technol)*, invited

10:00 a.m.
Conceptual Design for a Hybrid Sulfur Thermochemical Hydrogen Production Process, Maximilian B. Gorensek, William A. Summers, Melvin R. Buckner, Zafar H. Qureshi *(SRNL)*

10:30 a.m.
Interfacing the Pebble Bed Modular Reactor and the Westinghouse Sulfur Process, Lauren Paoletti, John Goossen, Edward J. Lahoda, Regis Matzie, Keith D. Task *(Westinghouse)*

11:00 a.m.
Conceptual Design of an MHR Plant Used to Produce Hydrogen, Matt Richards, Arkal Shenoy *(General Atomics)*, Ed Harvego *(INL)*

Nuclear Power 2010 Status–Panel, sponsored by OPD. [Track 2] *Session Organizers:* Edward Quinn *(Technol Res)*, Kyle Turner *(McCallum-Turner)*. *Cochairs:* Tom Miller *(DOE-NE)*, Kyle Turner

Pacific 3
8:30 a.m.
PANELISTS:
- Overview of DOE Program, Tom Miller *(DOE-NE)*
- Overview of NEI Programs and Support to NP2010, Russ Bell *(NEI)*
- Dominion Programs, Eugene Grecheck *(Dominion)*
- Entergy and NuStart Programs, Dan Keuter *(Entergy)*
- GE Program Update, Steve Hucik *(GE Nucl Energy)*
- Bechtel Program Update, John Polcyn *(Bechtel)*
- DOE EIA Energy Demand and Role of Nuclear, Robert Eynon *(DOE)*
- NRC Programs, David Matthews *(NRC)*

Materials for Supercritical Water-Cooled Reactors, sponsored by MSTD. [Track 4] *Session Organizer:* Todd Allen *(Univ of Wisconsin, Madison)*. *Chair:* Kumar Sridharan *(Univ of Wisconsin, Madison)*

Pacific 4 & 5
8:30 a.m.
Corrosion and SCC of Ferritic-Martensitic Steels in Supercritical Water, Pantip Ampornrat, Gaurav Gupta, Gary S. Was *(Univ of Michigan)*

9:00 a.m.
Corrosion of Ferritic-Martensitic Steel HT9 in Supercritical Water, Xiaowei Ren, Ling Zheng, Kumar Sridharan, Todd Allen *(Univ of Wisconsin, Madison)*

9:30 a.m.
Long Term Corrosion Performance of Alloys in Supercritical Water, A. J. Zillmer, J. R. Licht, K. Sridharan, T. R. Allen, M. L. Corradini *(Univ of Wisconsin, Madison)*

10:00 a.m.
Corrosion of Surface Modified Alloys in Supercritical Water, K. Sridharan, J. A. King, S. P. Harrington, A. K. Johnson, M. H. Anderson, T. R. Allen *(Univ of Wisconsin, Madison)*

10:30 a.m.
Radiation Chemical Yields of Water in Neutron and Gamma Radiation, Eric Edwards *(Univ of Wisconsin, Madison)*, David Bartels *(Notre Dame Radiation Lab)*, Luke Olson, Paul P. H. Wilson, Mark Anderson, Paul W. Humrickhouse *(Univ of Wisconsin, Madison)*

11:00 a.m.
Effect of Temperature Excursions on Void Swelling Behavior of Fe-Cr-Ni Alloys Irradiated with HVEM, H. Matsui, H. Satoh, S. Abe *(Tohoku Univ)*, I. Yamagata *(JNC)*

Qualification of Safety Analysis and Design Software Quality Assurance, sponsored by NISD; cosponsored by THD. [Track 6] *Session Organizer:* C. R. Martin *(DNFSB)*. *Chair:* David Diamond *(BNL)*

Pacific 6 & 7
8:30 a.m.
Insights from Assessments of Safety Software Quality Assurance, S. Seth, C. Ashley, D. Brown *(DOE)*

9:00 a.m.
Qualification of Safety Software in a Nuclear Weapons Complex Environment, David E. Peercy *(SNL)*, Phil Huffman *(BWXT Pantex)*, Ray Cullen *(Hudson Bergen Light Rail)*

9:30 a.m.
Software Validation of SCALE Pre- and Post-Processors, Timothy M. Lloyd, Brandon D. Thomas *(BNFL Fuel Sol)*

10:00 a.m.
Framework and Strategies for the Introduction of Best Estimate Models into the Licensing Process, C. Sollima, F. D'Auria *(Univ of Pisa)*, J. Mišák *(UJV)*, G. Petrangeli *(Univ of Pisa)*

Management of Materials Degradation in Current Light Water Reactor Fleet–Panel, sponsored by NISD. [Track 3] *Session Organizer:* Dana Powers *(SNL)*. *Cochairs:* Gary Was *(Univ of Michigan)*, Peter Ford *(NRC)*

Royal Palm 1
8:30 a.m.
PANELISTS:
- Development of Mitigation Actions for LWRs, P. L. Andresen *(GECRD)*
- Predicting First Failures, R. W. Staehle *(Univ of Minnesota)*
- Effect of Irradiation on Materials Degradation, G. Was *(Univ of Michigan)*
- Management of Corrosion Issues from an Operator Perspective, R. Jones *(EPRI)*

Mathematical Modeling: General, sponsored by MCD. [Track 7] *Session Organizer:* Todd Palmer *(Oregon State Univ)*. *Chair:* Todd Palmer

Royal Palm 2
8:30 a.m.
Representation of Measurement Uncertainty in Flux/Power Shape Construction from Monitored Data, Aram Hakobyan, Mihaela Biro, Tunc Aldemir *(Ohio State)*

9:00 a.m.
Double Differential Neutron Scattering Cross Sections for Ultra High Temperature Materials, Felix C. Difilippo, John P. Renier *(ORNL)*

9:30 a.m.
Application of Modal-Local Method for Modeling Pulsed Source Experiments, Viktoriya V. Kulik *(CEA, Saclay)*, John C. Lee *(Univ of Michigan)*

10:00 a.m.
One-Group Reactor Kinetics in Cylindrical Geometry?, B. D. Ganapol *(Univ of Arizona)*

10:30 a.m.
Multi Scale Approximation of the Time-Dependent Boltzmann Equation, B. Merk *(FZK)*, D. G. Cacuci *(Univ Karlsruhe)*

11:00 a.m.
Development of ^{129}I Scaling Factor Evaluation Method in Korean CANDU Reactor, Ki-ha Hwang, Sang-chul Lee, Kun-jai Lee *(KAIST)*

Data, Analysis, and Operations for Nuclear Criticality Safety—I, sponsored by NCSD. [Track 7] *Session Organizer:* Robert Frost *(Nucl Safety Assoc)*. *Chair:* Lane Paschal *(Paschal Tech Sol)*

Royal Palm 3
8:30 a.m.
LoPo, the First Enriched Uranium Reactor, A. Nichole Ellis *(Washington SMS)*

9:00 a.m.
Critical Mass Experiment with Uranium, Rhenium, and Polyethylene, Rene Sanchez, David Loaiza, David Daily, Robert Kimpland *(LANL)*

9:30 a.m.
Critical Mass Experiment with Niobium—1 wt.% Zirconium Fueled with Highly Enriched Uranium in Support of Project Prometheus, David Loaiza, Rene Sanchez, Kristin Chesson *(LANL)*, Michael Westfall, Calvin Hopper *(ORNL)*

10:00 a.m.
Experimental Criticality Benchmarks for the SNAP 10A/2 Reactor Cores, A. W. Krass, K. L. Goluoglu *(ORNL)*, R. G. Taylor *(C. S. Eng)*

10:30 a.m.
A SCALE/MCNP Method for Spent Fuel Transportation Criticality Qualification, Timothy M. Lloyd, James E. Hopf *(BNFL Fuel Sol)*

Robotics Research: The U.S. Department of Energy University Research Program in Robotics (URPR), sponsored by RRSD. [Track 3] *Session Chair:* Carl Crane *(Univ of Florida)*

Royal Palm 4
8:30 a.m.
Simulation-Based System Realization for Semiautonomous Tasks in Hazardous Environments, J. E. Wood, R. Lumia, G. P. Starr *(Univ of New Mexico)*

9:00 a.m.
Metrology Methodologies for High Precision DOE Applications, Mitch Pryor, Seong-Ho Kang, Delbert Tesar *(Univ of Texas, Austin)*

9:30 a.m.
The OmniTread Serpentine Robot for Radiation Surveillance, Johann Borenstein, Malik G. Hansen *(Univ of Michigan)*, Grzegorz Granosik *(Tech Univ of Lodz)*

10:00 a.m.
Sensitivity of a Force Measurement Scheme Implemented Via a Parallel Kinematic Machine, Shannon C. Ridgeway, Carl D. Crane III *(Univ of Florida)*

10:30 a.m.
Hybrid Self Localization for a Mobile Robotic Platform for Indoor and Outdoor Environments, Brad Grinstead, Andreas Koschan, Mongi A. Abidi *(Univ of Tennessee)*

11:00 a.m.
Intelligent 3D Sensing for Robotic Inspection of Hazardous Facilities, Sreenivas Sukumar, David Page, Andrei Gribok, Andreas Koschan, Mongi Abidi *(Univ of Tennessee)*

The Development of Nuclear Power in Iran: Questions, Perspectives, and Impacts–Panel, sponsored by FCWMD, in collaboration with the Special Committee on Nuclear Nonproliferation. [Track 8] *Session Organizer:* William Sutcliffe *(LLNL)*. *Chair:* William Sutcliffe

Royal Palm 5
8:30 a.m.
PANELISTS:
- Iran and the Nuclear Tipping Point, Jon Wolfsthal *(Carnegie Endowment)*
- Would a Safeguarded Nuclear Fuel Leasing Program Help Resolve the Iran Problem?, Chaim Braun, Michael May *(Stanford Univ)*
- A Washington Perspective on Iranian Nuclear Developments, Mark Fitzpatrick *(U.S. Dept of State)*
- A German Perspective on Iranian Nuclear Developments, Rudiger Ludeking *(German Foreign Ministry)*
- A French Perspective on Iranian Nuclear Developments, Martin Briens *(French Embassy)*
- Iranian Perspectives on the Development of Nuclear Power, Hadi Semati *(Tehran Univ)*
- Reconciling "Inalienable Right" and Nonproliferation: Challenges, Opportunities, and Constraints, Lawrence Scheinman *(Monterey Inst)*

General Thermal Hydraulics, sponsored by THD. [Track 6] *Session Chair:* Yassin Hassan *(Texas A&M)*

Royal Palm 6
8:30 a.m.
Preliminary Study of Water-Based Nanofluid Coolants for PWRs, J. Buongiorno, B. Truong *(MIT)*

8:50 a.m.
Cyclic Venting Phenomena in the PCCS of the SBWR, Seungmin Oh, S. T. Revankar *(Purdue Univ)*

9:10 a.m.
Mixed Convection Heat Transfer Experiments in Smooth and Rough Vertical Tubes, Paul Symolon, Will Neuhaus, Randy Odell *(Lockheed Martin)*

9:30 a.m.
Diagnostic Methodology for Pump Health in Nuclear Power Plant Using Fuzzy Logic, In-ho Won, Rong Gao, Lefteri H. Tsoukalas *(Purdue Univ)*, Evren Eryurek, Kadir Kavaklioglu *(Emerson Process Mgt)*

9:50 a.m.
Using CFD to Study Scalar Mixing in Turbulent Flow Fields, V. Vishnu Karthik, Y. A. Hassan, A. R. McFarland *(Texas A&M)*

10:10 a.m.
Reduced Pressure Scaling Criteria for Boiling Water Reactor Dynamic Simulation Including Void-Reactivity Coupling, Selim Kuran, Mamoru Ishii *(Purdue Univ)*

10:30 a.m.
Nonlinear Dynamics for Nuclear-Coupled Flow Power Oscillations in Boiling Water Reactors Including Subcooled Boiling and Gravity-Induced Flashing, Selim Kuran, Mamoru Ishii *(Purdue Univ)*

10:50 a.m.
Performance Enhancement of a Proposed Virtual Impactor Configuration Using CFD, Sridhar Hari, Y. A. Hassan, A. R. McFarland *(Texas A&M)*

TUESDAY, JUNE 7, 2005 • 1:00 P.M.

Advanced Optimization Methods for Fuel Management, sponsored by RPD; cosponsored by MCD. [Track 7] *Session Organizer:* Juan Luis François *(UNAM)*. *Chair:* Juan Luis François

Pacific 1
1:00 p.m.
A New Optimization Algorithm for In-Core Fuel Shuffling Sequence of BWR, Akio Yamamoto *(Nagoya Univ)*, Masayuki Toujou, Kentarou Komori *(Chuden CTI)*, Yasunori Kitamura, Yoshihiro Yamane *(Nagoya Univ)*

1:20 p.m.
The BPEC Methodology in the Pearls™ Loading Pattern Search Tool, F. D. Popa *(Westinghouse)*, S. Si *(SNERDI)*, H. Q. Lam *(Westinghouse)*

1:40 p.m.
Adaptively Constrained Multiobjective Genetic Algorithms for Incore Fuel Management Optimization, Paul M. Keller *(NCSU)*

2:00 p.m.
N-Streaming℠ Concept for Boiling Water Reactor Fuel Cycle Design, Mehdi Asgari, Dave J. Kropaczek *(GNF)*, James J. Tusar *(Exelon)*

2:20 p.m.
BWR Fuel Lattice Optimization Using Scatter Search, J. L. François, C. Martín-del-Campo, L. B. Morales, M. A. Palomera *(UNAM)*

2:40 p.m.
Innovative Use of Fuzzy Logic to Build Objective Functions in Nuclear Fuel Optimization Problems, C. Martín-del-Campo, J. L. François, M. A. Palomera, A. Barragán *(UNAM)*

3:00 p.m.
BALO-BWR Assembly Lattice Optimization, Albert G. Gu, Robert J. Veklotz, Thongchai Patchana, Ralph G. Grummer, Craig Brown *(Framatome ANP)*

3:20 p.m.
Heuristic Rules Embedded Genetic Algorithm for Loading Pattern Optimization, Fatih Alim, Kostadin Ivanov *(Penn State)*

Hydrogen Production Using Nuclear Energy—III–Papers/Panel, sponsored by ESD. [Track 4] *Session Organizer:* Jan van Erp *(Consultant)*. *Chair:* Daniel Meneley *(AECL)*

Pacific 2
PAPERS:
1:00 p.m.
Plant Definition and Economic Analysis for Centralized Nuclear Hydrogen Production, William A. Summers, Melvin R. Buckner, Maximilian B. Gorensek, Edward T. Danko *(SRNL)*

1:30 p.m.
Blending Real Wind with Nuclear to Market Hydrogen and Electricity, A. I. Miller, Romney B. Duffey *(AECL)*

2:00 p.m.
Progress in High-Temperature Electrolysis for the Production of Hydrogen, Carl M. Stoots, James E. O'Brien, J. Stephen Herring *(INL)*

PANEL DISCUSSION:
2:30 p.m.
PANELISTS:
- Masao Hori *(NSA)*
- Kenneth Schultz *(General Atomics)*
- John Sackett *(Idaho State Univ)*
- Won S. Park *(KAERI)*

Hot Topics in Reactor Licensing: New Engineering Inspection Process–Panel, sponsored by OPD. [Track 3] *Session Organizer:* Greg Gibson *(SCE)*. *Chair:* Greg Gibson

Pacific 3
1:00 p.m.
PANELISTS:
- Jeff Jacobson *(NRC)*
- Lori Armstrong *(Kewaunee)*
- Mike Kammer *(Summer)*
- Thomas Baldwin *(Diablo)*
- Mike Metell *(Vermont Yankee)*

Coolant Compatibility in Lead-Alloy–Cooled Systems, sponsored by MSTD. [Track 4] *Session Organizer:* Ning Li *(LANL)*. *Chair:* Ning Li

Pacific 4 & 5
1:00 p.m.
Corrosion of Candidate Materials for Lead-Cooled Reactors, McLean Machut, Kumar Sridharan, Todd Allen *(Univ of Wisconsin, Madison)*

1:30 p.m.
Corrosion Resistant Alloy Development for Pb-Bi Eutectic Service, J. Lim, R. G. Ballinger, P. W. Stahle *(MIT)*

2:00 p.m.
Improved Applications of a Kinetic Corrosion Model in Non-Isothermal Loop/Pipe Systems, Huajun Chen, Yitung Chen *(UNLV)*, Jinsuo Zhang *(LANL)*, Hsuan-Tsung Hsieh *(UNLV)*

2:30 p.m.
Oxide-Layer Growth Model of Steels in Liquid Lead-Alloy Systems, Jinsuo Zhang, Ning Li *(LANL)*

3:00 p.m.
Polonium Release Experiment in Direct Contact of Lead-Bismuth Eutectic with Water, Toru Obara, Terumitsu Miura, Hiroshi Sekimoto *(Tokyo Inst of Technol)*

3:30 p.m.
Design and Construction of Pb-Bi Loop: HELIOS, Seungho Jeong, Chi Bum Bahn, Seung Hee Chang, Il Soon Hwang *(Seoul Natl Univ)*

Software Safety for Digital Electronics in Safety Systems, sponsored by NISD; cosponsored by THD. [Track 6] *Session Organizer:* C. R. Martin *(DNFSB)*. *Chair:* Steven Arndt *(NRC)*

Pacific 6 & 7
1:00 p.m.
Safety-Critical Software in Nuclear Facilities–A Review of Appropriate Best Practices, R. G. Quirk *(DNFSB)*

1:25 p.m.
NuSEE: An Integrated Environment of Software Specification and V&V for NPP Safety-Critical Systems, Seo Ryong Koo, Poong Hyun Seong *(KAIST)*

1:50 p.m.
Software Design Analysis for the NPP I&C Systems Based on a Programmable Logic Controller (PLC), Seo Ryong Koo, Poong Hyun Seong *(KAIST)*

2:15 p.m.
Fault Tolerance Evaluation of Digital Plant Protection System in Nuclear Power Plants, Jun Seok Lee, Man Cheol Kim, Poong Hyun Seong *(KAIST)*, Hyun Gook Kang, Seung Cheol Jang *(KAERI)*

2:40 p.m.
Nuclear Qualification Lifecycle for the Invensys Tricon, Clayton Scott *(Triconex)*, Edward (Ted) L. Quinn *(Technol Res)*

3:05 p.m.
Digital Control System Reliability—Issues Related to the Modeling of Process Dynamics, Tunc Aldemir *(Ohio State)*, Steven A. Arndt *(NRC)*

3:30 p.m.
A Survey of Reliability Modeling Methodologies for Digital Instrumentation and Control Systems, Jason Kirschenbaum *(Ohio State)*, Michael Stovsky *(Consultant)*, Paolo Bucci, Tunc Aldemir *(Ohio State)*, Steven A. Arndt *(NRC)*

Proactive Management of Materials Degradation in Generation IV Reactors–Panel, sponsored by NISD. [Track 3] *Session Cochairs:* Peter Ford *(NRC)*, Gary Was *(Univ of Michigan)*

Royal Palm 1
1:00 p.m.
PANELISTS:
- GEN IV Materials Program, W. Corwin *(ORNL)*
- Degradation Issues for Metallic Components in GEN IV Systems, T. Allen *(Univ of Wisconsin, Madison)*
- Degradation of Non-Metallic Materials in Very High Temperature GEN IV Systems, L. Snead *(ORNL)*
- Regulatory Challenges for Advanced GEN IV Reactor Concepts, W. Shack *(ANL)*

Impact of Innovations in Nuclear Infrastructure and Education (INIE) on Research Reactors—I, sponsored by IRD. [Track 4] *Session Organizer:* Kenan Ünlü *(Penn State)*. *Chair:* Kenan Ünlü

Royal Palm 2
1:00 p.m.
Optimization of Beam Port Facility at PSBR, Fatih Alim, Baris Sarikaya, Kostadin Ivanov, Kenan Ünlü, Jack Brenizer, Yousry Azmy *(Penn State)*, invited

1:30 p.m.
TORT Modelling of the Beam Port Facility of PSBR and Comparison with MCNP, Kürşat B. Bekar, Yousry Y. Azmy, Kenan Ünlü *(Penn State)*, invited

2:00 p.m.
Reactor Design Efforts at UIUC, Jianwei Hu, F. E. Teruel, Rizwan-uddin *(Univ of Illinois)*, invited

2:30 p.m.
Enhancing Radiography Facilities at the UMLRR, Mark Tries, John J. Antal, Thomas Regan *(Univ of Massachusetts Lowell)*

3:00 p.m.
Development of a Neutron Radiography Facility at the Oregon State TRIGA® Reactor, Steven R. Reese, Stephen E. Binney, Todd S. Palmer, S. Todd Keller, Steven P. Smith, Gary M. Wachs *(Oregon State Univ)*

3:30 p.m.
Gamma Shield Design for the Supercritical Water Neutron Radiolysis Experiment, Paul W. Humrickhouse, Paul P. H. Wilson, Eric Edwards, Mark Anderson *(Univ of Wisconsin, Madison)*, David Bartels *(Notre Dame Radiation Lab)*

Data, Analysis, and Operations for Nuclear Criticality Safety—II, sponsored by NCSD. [Track 7] *Session Organizer:* Robert Frost *(Nucl Safety Assoc)*. *Chair:* Bradley Rearden *(ORNL)*

Royal Palm 3
1:00 p.m.
Implementation of a Computer Data Acquisition System for Criticality Safety Assessment, R. Claybourn, S. Huang, J. Lewis, J. Pearson *(LLNL)*

1:30 p.m.
Use of Gadolinium as a Primary Criticality Control in Disposing Waste Containing Plutonium at SRS, Davoud A. Eghbali, Kristan J. McCoid *(Washington SMS)*

2:00 p.m.
Criticality Concern with Fissionable Material Washout from Fuel Pin Breaches in the FFTF Sodium Removal System, J. S. Lan, R. F. Richard, H. Toffer *(Fluor Govt Grp)*, J. E. Baker *(Fluor Hanford)*

2:30 p.m.
Additional Applications of Fixed Neutron Absorbers, H. Toffer, D. G. Erickson (Fluor Govt Grp), S. F. Kessler (LLNL)

3:00 p.m.
Unified Criticality Safety Design Framework for Future Fuel Reprocessing Systems, Hiroki Nakabayashi, Kenichi Kurisaka, Koji Sato *(JNC)*, Kazuo Aoki *(Advanced Reactor Technol)*

3:30 p.m.
Classification of Administrative Controls that Support IROFS Under 10 CFR § 70 Subpart H, Robert L. Frost, Samuel K. Skiles *(Nucl Safety Assoc)*

Quantifying and Integrating Performance Measures for Advanced Fuel Cycles, sponsored by FCWMD. [Track 4] *Session Organizer:* Man-Sung Yim *(NCSU)*. *Chair:* Man-Sung Yim

Royal Palm 4

1:00 p.m.
Enhanced Thermal Conductivity Oxide or ECO Fuels, J. Fourcade, K. H. Sarma, S. G. Lee, A. A. Solomon *(Purdue Univ)*

1:30 p.m.
Repository Environmental Impact of HLW from Na-Cooled FBR, Joonhong Ahn *(Univ of California, Berkeley)*, Tetsuo Ikegami *(JNC)*

2:00 p.m.
An Integrative Repository Impact Assessment Model for Fuel Cycle Comparisons, Jun Li, Man-Sung Yim, David McNelis *(NCSU)*

2:30 p.m.
Impact of Partitioning, Transmutation and Waste Reduction Technologies on the Final Nuclear Waste Disposal, Waclaw Gudowski *(KTH)*, Reinhard Odoj *(FZJ)*

3:00 p.m.
Sensitivity of Fuel Cycle Performance Metrics to Perturbations in Cross Sections, Erich A. Schneider, Charles G. Bathke *(LANL)*

3:30 p.m.
Depleted Uranium Disposition Option: Beneficial Disposal in a High-Level-Waste Geologic Repository, M. Jonathan Haire *(ORNL)*

Challenges of the Global Threat Reduction Initiative–Panel, sponsored by FCWMD, in collaboration with the Special Committee on Nuclear Nonproliferation. [Track 8] *Session Organizer:* Ben Cross *(Westinghouse SRC)*. *Chair:* Richard R. Rawl *(ORNL)*

Royal Palm 5

1:00 p.m.
PANELISTS:
- Andrew Bieniawski *(NNSA)*
- Ed McGinnis *(NNSA)*
- Kasia Mendelsohn *(NNSA)*
- Massoud Samiei *(IAEA)*
- David Albright *(Inst for Science and International Security)*

Thermal-Hydraulic Code Development and Applications, sponsored by THD. [Track 6] *Session Chair:* Kurshad Muftuoglu *(Westinghouse)*

Royal Palm 6

1:00 p.m.
Whole Core Sub-Channel Analysis in LMR Systems Codes, Current Status, Floyd E. Dunn, James E. Cahalan *(ANL)*, Dohee Hahn, Hae-yong Jeong *(KAERI)*

1:20 p.m.
CHF Experiments in Single Tubes—TRACEv4.050 Code Validation, Audrius Jasiulevicius, Rafael Macian-Juan *(Paul Scherrer Inst)*

1:40 p.m.
Constitutive Relations for the Whole Core Sub-Channel Analysis Code, Hae-Yong Jeong, Dohee Hahn *(KAERI)*, Floyd E. Dunn, James E. Cahalan *(ANL)*

2:00 p.m.
Filtered Simulations of Turbulence in a Reactor Rod Bundle Flow, Paul F. Fischer, Constantine P. Tzanos *(ANL)*

2:20 p.m.
Comparative Analysis for Evaluating Passive Safety Design Features of the KALIMER-150, Young Min Kwon, Won Pyo Chang, Yong Bum Lee, Dohee Hahn *(KAERI)*, J. E. Cahalan *(ANL)*

2:40 p.m.
Loss of Residual Heat Removal System: TRACEv4.00 Simulation of a PKL Experiment, Audrius Jasiulevicius, Omar Zerkak, Rafael Macian-Juan *(Paul Scherrer Inst)*

3:00 p.m.
The Implementation of 3-Field Modeling into TRAC-M/F90, Sang Ik Lee, Hee Cheon No *(KAIST)*

3:20 p.m.
Establishment of an Applicable Version of the CIAU Methodology, A. Petruzzi, F. D'Auria *(Univ of Pisa)*

TUESDAY, JUNE 7, 2005 • 4:00 P.M.

ANS President's Special Session: Manpower for the Nuclear Industry...A Continuing Need [Track 1] *Session Organizer:* James Tulenko *(President, American Nuclear Society)*. *Chair:* James Tulenko

This session is dedicated to the memory and lifetime achievements of Dr. Walter J. Apley (1948–2005).

As the world is coming to need nuclear energy more and more, the continued staffing of the nuclear industry with the best and brightest requires the attention of our industry leaders and the development of plans to ensure that the industry is properly staffed with the best and brightest professionals.

San Diego Room

4:00 p.m.
SPEAKERS:
- William Magwood *(Director, Nuclear Energy, Science and Technology)*
- Peter Lyons *(Commissioner, NRC)*
- Sig Berg *(Executive Vice President, INPO)*
- Richard Clegg *(UK Head, Project Dalton)*

WEDNESDAY • JUNE 8, 2005

7:30 A.M. - 5:00 P.M.	**MEETING REGISTRATION**
8:00 A.M. - 10:00 A.M.	**SPOUSE/GUEST HOSPITALITY BREAKFAST**
8:00 A.M. - 11:30 A.M.	**SNC '05 TECHNICAL SESSIONS** (see pg. 24)
8:30 A.M. - 11:30 A.M.	**2005 ANS ANNUAL MEETING TECHNICAL SESSIONS** • Next Generation of "Advanced" Methods for Light Water Reactor Analysis • Probabilistic Safety Applications • Building the Next Nuclear Plants • Instrumentation and Control: Lessons Learned—I • Safety Improvements in Designs of Advanced Reactors • Thermal Hydraulics of Next-Generation Nuclear Reactors • Impact of Innovations in Nuclear Infrastructure and Education (INIE) on Research Reactors—II • History of Nuclear Criticality Safety • Engaging the Anti's: Communications with Environmental Groups • "Too Cheap to Meter" and Other Myths of the Nuclear Age–Panel • Proliferation-Resistant Fuel Cycles–Panel • Computational Methods: General
9:00 A.M. - 4:00 P.M.	**TECHNICAL TOUR:** "Archimedes Technology Group & General Atomics"
11:30 A.M. - 1:00 P.M.	**NUCLEAR INSTALLATIONS SAFETY DIVISION LUNCHEON**
1:00 P.M. - 4:00 P.M.	**SNC '05 TECHNICAL SESSIONS** (see pg. 24)
1:00 P.M. - 4:00 P.M.	**2005 ANS ANNUAL MEETING TECHNICAL SESSIONS** • Reactor Physics: General—I • Instrumentation and Control: Lessons Learned—II • Progress on the Movement Toward Risk-Informed Performance-Based Standards–Panel • Atomistic and Continuum Modeling • Impact of Workforce Reduction on Utility Operations Effectiveness–Panel • Transport Methods: General • Advanced Nuclear Energy Systems Research and Development—I • SCALE State-of-the-Art Analysis Tools • Focus on Communications: Speaking with the Media–Panel • Spent Nuclear Fuel: Storage, Direct Disposal, and Recycle • Environmental and Biological Monitoring
7:00 P.M. - 10:30 P.M.	**EVENING EVENT:** "Reception at the Aerospace Museum"

WEDNESDAY, JUNE 8, 2005 • 8:30 A.M.

Next Generation of "Advanced" Methods for Light Water Reactor Analysis, sponsored by RPD; cosponsored by MCD. [Track 7] *Session Organizer:* Scott Palmtag *(Studsvik Scandpower)*. *Chair:* Scott Palmtag

Pacific 1

8:30 a.m.
Verification of SCOPE2 through Analysis of Critical Assembly Experiments and Core Tracking Calculations, Masahiro Tatsumi, Hideaki Hyoudou, Hiroaki Nagano *(NFI)*, invited

9:00 a.m.
Calculation Models of AEGIS, an Advanced Neutronics Solver of Next Generation, Akio Yamamoto *(Nagoya Univ)*, Naoki Sugimura, Tadashi Ushio *(NEL)*

9:30 a.m.
Verification Calculations of AEGIS, an Advanced Neutronics Solver of Next Generation, Naoki Sugimura, Tadashi Ushio *(NEL)*, Akio Yamamoto *(Nagoya Univ)*

10:00 a.m.
Microscopic Depletion Model in SIMULATE-4, Tamer Bahadir *(Studsvik Scandpower)*, Sten-Örjan Lindahl *(Studsvik Scandpower AB)*, Scott P. Palmtag *(Studsvik Scandpower)*

10:30 a.m.
Real Core Tracking Analyses Using SIMULATE-4, Shinji Yoshida, Shinya Kosaka *(TEPCO)*

11:00 a.m.
Analysis of Results for the OECD/NEA and U.S. NRC PWR MOX/UO_2 Core Transient Benchmark, T. Kozlowski, T. J. Downar *(Purdue Univ)*

Probabilistic Safety Applications, sponsored by NISD. [Track 6] *Session Chair:* Stephen Schultz *(Duke Energy)*

Pacific 2
8:30 a.m.
A Quantitative Impact Analysis of Sensor Failures on Nuclear Power Plant Operators in Accident Situations, Man Cheol Kim, Poong Hyun Seong *(KAIST)*

9:00 a.m.
Updating Plant Probabilistic Risk Assessment Studies for Digital Instrumentation and Control Systems, Tunc Aldemir, Don W. Miller, Audeen W. Fentiman *(Ohio State)*, Steven A. Arndt *(NRC)*

9:30 a.m.
Diagnostic Strategies from Minimal Cut Sets, Juan Arellano *(IIE)*

10:00 a.m.
Application of a Situation Assessment Model of Nuclear Power Plant Operators to an Example Situation, Man Cheol Kim, Poong Hyun Seong *(KAIST)*

10:30 a.m.
Waterford-3 Alternative Source Term Implementation, Paul A. Sicard *(Entergy)*

11:00 a.m.
Risk-Informed Approach to Selecting Licensing Basis Events for the AREVA-HTR in the United States, Karl N. Fleming *(Technol Insights)*, Farshid Shahrokhi *(Framatome ANP)*, Fred A. Silady *(Technol Insights)*

Building the Next Nuclear Plants, sponsored by OPD. [Track 2] *Session Cochairs:* Karen Vierow *(Purdue Univ)*, Travis W. Knight *(Univ of South Carolina)*

Pacific 3
8:30 a.m.
Minimizing Development Risk for the AREVA HTR Concept, Lewis Lommers, Michel Lecomte *(Framatome ANP)*

9:00 a.m.
Development of a Nuclear Fuel Cycle Transparency Framework, Tracia West Love, Gary Rochau, David York *(SNL)*

9:30 a.m.
Modeling Nuclear Energy Market Penetration in the U.S. Energy Sector, A. M. Yacout, G. Conzelmann, V. Koritarov, L. Van Den Durpel *(ANL)*

10:00 a.m.
Alternatives for Power Generation and Potable Water Production in the Southern Regions of Morocco, O. K. Bouhelal *(Natl School of Mineral Industry)*, D. Zejli *(Natl Centre for Scientific and Tech Research)*

10:30 a.m.
Nuclear Reactors Sited Deep Underground in Steel Containment Vessels, Robert F. Bourque *(LANL)*

Instrumentation and Control: Lessons Learned—I, sponsored by OPD. [Track 3] *Session Chair:* Joseph Naser *(EPRI)*. All invited.

Pacific 4 & 5
8:30 a.m.
The Ringhals I&C System Modernisation: Some Lessons Learned, Martin Forsberg *(Ringhals AB)*

9:00 a.m.
Implementation of a SPINLINE 3 Diverse Safety System at IGNALINA NPP, Claude Esmenjaud, Dominique Moulin, Andrew Rounding *(Data Sys & Sol)*

9:30 a.m.
Development of PMAS and Its Application Experiences, S. M. Baek, S. C. Jeong, J. K. Lee, Y. C. Shin, H. B. Kim *(KOPEC)*

10:00 a.m.
Planning For and Integrating Lessons Learned into Digital Upgrades to Nuclear Power Plants, William Kurth *(Exelon Nucl Gen)*

Safety Improvements in Designs of Advanced Reactors, sponsored by NISD. [Track 4] *Session Organizer:* Undine Shoop *(NRC)*. *Chair:* Undine Shoop

Pacific 6 & 7
8:30 a.m.
EPR: Designed to Meet International Safety Standards with Significant Margin, Stephen Mazurkiewicz, Joerg Brauns, Joerg Blombach *(Framatome ANP)*

8:55 a.m.
The Design Verification of the Advanced Design Features in APR1400, Han-Gon Kim, Seung-Jong Oh, Kee-Cheol Park *(KHNP)*

9:20 a.m.
EPR: Bringing a Proven International Technology to the United States Market, Stephen M. Mazurkiewicz, John R. Concklin *(Framatome ANP)*

9:45 a.m.
EPR: Advanced Structural Design Features for a Defense in Depth, Todd Oswald, Calvin Wong *(Framatome ANP)*

10:10 a.m.
EPR Design Features to Mitigate Severe Accident Challenges, Stephen M. Mazurkiewicz, Manfred Fischer, Dietmar Bittermann *(Framatome ANP)*

10:35 a.m.
Passive Safety of the 600 MWe Korean Advanced Liquid Metal-Cooled Reactor, Hae-Yong Jeong, Young-Min Kwon, Won-Pyo Chang, Yong-Bum Lee *(KAERI)*

11:00 a.m.
Uncertainty Assessment of Gas-Cooled Fast Reactors, G. Aliberti, G. Palmiotti, M. Salvatores *(ANL)*, J. C. Bosq, J. Tommasi *(CEA, Cadarache)*

Thermal Hydraulics of Next-Generation Nuclear Reactors, sponsored by THD. [Track 4] *Session Chair:* Fan-Bill Cheung *(Penn State)*

Royal Palm 1
8:30 a.m.
An Advanced Vented Fuel Assembly Design for GFR Applications, M. A. Pope, P. J. Yarsky, M. J. Driscoll, P. Hejzlar, P. Saha *(MIT)*

8:55 a.m.
Assessment of a Molecular Diffusion Model in MELCOR, Richard L. Moore, Chang H. Oh *(INL)*

9:20 a.m.
Supercritical Water Heat Transfer, Mark H. Anderson, Jeremy Licht, Kyoung Woo Seo *(Univ of Wisconsin, Madison)*

9:45 a.m.
Experimental Loop Design for Supercritical Carbon Dioxide Brayton Cycle, Myoung Sung Sohn, Yong Hwan Yoo, Kune Y. Suh *(Seoul Natl Univ)*

10:10 a.m.
Key Thermal Fluid Phenomena in Prismatic Gas-Cooled Reactors, Donald M. McEligot, Glenn E. McCreery, Paul D. Bayless, Theron D. Marshall *(INL)*

10:35 a.m.
Temperature Effect on Heated Region Flow Starvation for Gas-Cooled Reactors, Piyush Sabharwall *(Idaho State Univ)*, Theron Marshall, Kevan Weaver *(INL)*

11:00 a.m.
Pseudo Material Construct for Coupled Neutronic-Thermal-Hydraulic Analysis of VHTGR, Jeremy L. Conlin, Wei Ji, John C. Lee, William R. Martin *(Univ of Michigan)*

Impact of Innovations in Nuclear Infrastructure and Education (INIE) on Research Reactors—II, sponsored by IRD. [Track 4] *Session Organizer:* Kenan Ünlü *(Penn State)*. *Chair:* Stephen LaMont *(LANL)*

Royal Palm 2
8:30 a.m.
A Preview of Research Projects at the NC State University PULSTAR Reactor, A. I. Hawari *(NCSU)*

9:00 a.m.
Impact of INIE on the MIT, RINSC, and UMass-Lowell Reactors, John A. Bernard, Lin-Wen Hu *(MIT)*, Terry Tehan *(RINSC)*, Mark Tries *(Univ of Massachusetts Lowell)*

9:30 a.m.
Thermal-Hydraulic Analysis of Neutron Cooling Systems, M. Habte, S. Yavuzkurt, K. Ünlü *(Penn State)*, invited

10:00 a.m.
The Upgrade of the TRIAX Spectrometer at the Missouri Research Reactor, Wouter Montfrooij, Douglas D. Charlton *(Univ of Missouri, Columbia)*, Jerel Zarestky *(Iowa State Univ)*

10:30 a.m.
Instrumentation for Neutron Scattering at the Missouri University Research Reactor, Paul F. Miceli, Wouter Montfrooij, Haskell Taub, Keary Schoen, David L. Worcester, R. Andy Winholtz *(Univ of Missouri, Columbia)*

11:00 a.m.
Delayed-Neutron Activation Analysis for Measurement of Trace Fissionables, Richard M. Lindstrom, George P. Lamaze, Jeffrey B. Ziegler, John K. Langland, R. Gregory Downing *(NIST)*, invited

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History of Nuclear Criticality Safety, sponsored by NCSD. [Track 6] *Session Organizer:* Norm Pruvost *(LANL)*. *Chair:* Norm Pruvost

Royal Palm 3
8:30 a.m.
History of the LLNL Criticality Safety Experiments in the Period of 1954–1963, F. Kloverstrom *(LLNL)*

9:00 a.m.
An Experimenter's Perspective on the History of the Hanford (Battelle) Critical Mass Laboratory, Mike Durst *(PNNL)*

9:30 a.m.
History of Critical Experiments at Los Alamos National Laboratory, Thomas P. McLaughlin *(Consultant)*

10:00 a.m.
History of the Oak Ridge Critical Experiments Program, J. T. Thomas *(Retired)*, R. M. Westfall, C. M. Hopper *(ORNL)*

10:30 a.m.
History of the Rocky Flats Critical Mass Laboratory, Robert E. Rothe *(Retired)*

Engaging the Anti's: Communications with Environmental Groups, sponsored by ETD. [Track 8] *Session Organizer:* W. D. Pointer *(ANL)*. *Chair:* Mary Lou Dunzik-Gougar *(Idaho State Univ)*

Royal Palm 4
8:30 a.m.
Engaging the Anti-Nukes: Perspective of a Former Anti-Nuke, Ruth Weiner *(SNL)*

8:50 a.m.
How Engineers' Quest for Perfection Hurts Nuclear's Public Image, James E. Hopf *(BNFL Fuel Sol)*

9:10 a.m.
Public Outreach in a "Hot Pocket," Howard C. Shaffer *(Retired)*

9:30 a.m.
Give the Public a Breath of Fresh Air: Taking Nuclear Outreach to the Frontlines, Todd R. Flowers *(Dominion Gen)*, Virginia Section of NA-YGN

"Too Cheap to Meter" and Other Myths of the Nuclear Age–Panel, sponsored by ETD. [Track 8] *Session Organizer:* W. D. Pointer *(ANL)*. *Chair:* Mary Lou Dunzik-Gougar *(Idaho State Univ)*

Royal Palm 4
10:00 a.m.
PANELISTS:
- Marc Garland *(Univ of South Carolina)*
- Ron Davidson *(Strategic Change Mgt)*
- Candace Davison *(Penn State)*
- Alan Waltar *(PNNL, retired)*

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

Proliferation-Resistant Fuel Cycles–Panel, sponsored by FCWMD, in collaboration with the Special Committee on Nuclear Nonproliferation. [Track 4] *Session Organizer:* Buzz Savage *(DOE)*. *Chair:* Emory Collins *(ORNL)*

Royal Palm 5
8:30 a.m.
PANELISTS:
- Jon Phillips *(NNSA)*
- Tom Shea *(PNNL)*
- Alex Burkart *(U.S. Dept of State)*
- James Laidler *(ANL)*
- Buzz Savage *(DOE)*

Computational Methods: General, sponsored by MCD. [Track 7] *Session Organizer:* Todd Palmer *(Oregon State Univ)*. *Chair:* Farzad Rahnema *(Georgia Tech)*

Royal Palm 6
8:30 a.m.
A New Formulation of Criticality for Multigroup Diffusion Theory in Heterogeneous Plane Geometry, B. D. Ganapol *(Univ of Arizona)*

9:00 a.m.
The Effects of Electron Scattering on the Absolute Parametric X-Ray (PXR) Yield Calculations, B. Sones *(U.S. Military Acad)*, Y. Danon, R. Block *(RPI)*

9:30 a.m.
Comparison of Monte Carlo and Deterministic Depletion Codes for LWR Fuel Cycle Analysis, Jeffrey C. Davis, John C. Lee *(Univ of Michigan)*

10:00 a.m.
Effect of Fuel Particles Distribution Model on PBR Cell Parameters, Germina Ilas *(ORNL)*, Farzad Rahnema *(Georgia Tech)*, Abderrafi M. Ougouag *(INL)*

10:30 a.m.
A New Stochastic Optimization Algorithm Based on Particle Collisions, Wagner F. Sacco, Cassiano R. E. de Oliveira *(Georgia Tech)*

11:00 a.m.
Burnup Capability Added to MCNPX, Holly R. Trellue, Gregg W. McKinney, Joe Durkee *(LANL)*

WEDNESDAY, JUNE 8, 2005 • 1:00 P.M.

Reactor Physics: General—I, sponsored by RPD. [Track 7] *Session Chair:* Paul Edelmann *(LANL)*

Pacific 1

1:00 p.m.
An Unresolved Resonance Evaluation for ^{233}U from 600 eV to 40 keV, L. C. Leal, H. Derrien, N. M. Larson, A. Courcelle *(ORNL)*

1:20 p.m.
On the Importance of Resonance-Dependent S(α,ß) Tables for Criticality Values, R. Dagan *(FZK)*

1:40 p.m.
Reactivity Impact of ENDF/B-VI Cross Sections for Deuterium in Heavy-Water Solution Benchmarks, Russell D. Mosteller, Joann M. Campbell, Robert C. Little *(LANL)*

2:00 p.m.
Impact of Missing Resonances in Determining Group Cross Sections and Uncertainties, G. Arbanas, L. C. Leal, N. M. Larson *(ORNL)*

2:20 p.m.
Isotopic Compositions of Material Used in a Radiological Dispersal Device Determined by Forward Model Calculations, David E. Burk, William S. Charlton, Mark Scott, Don Giannangeli, Kristen Epresi *(Texas A&M)*

2:40 p.m.
New Parameters for Evaluation of TRU Transmutation Effectiveness, Chi Young Han, Jong Kyung Kim *(Hanyang Univ)*, Un Chul Lee *(Seoul Natl Univ)*

3:00 p.m.
Neutron Calculations of Mixed HEU-LEU Cores for IAN-R1 Research Reactor, Jose Antonio Sarta Fuentes *(Distrital Univ Francisco Jose de Caldas)*, Luis Alvaro Castiblanco Bohorquez *(Ingeominas)*

3:20 p.m.
Thermal Neutron Moderation Calculations for a 14 MeV Portable Neutron Generator Source, Ralph J. Cerbone, Sergey Egorov *(Del Mar Ventures)*

Instrumentation and Control: Lessons Learned—II, sponsored by OPD. [Track 3] *Session Chair:* Joseph Naser *(EPRI)*

Pacific 2

1:00 p.m.
Development of Integrated Monitoring System for Flow Accelerated Corrosion, Na Young Lee, Seung Gi Lee, Kyung Ha Ryu, Il Soon Hwang *(Seoul Natl Univ)*, Jung Taek Kim *(KAERI)*, Vincent K. Luk *(SNL)*

1:30 p.m.
Equipment Early Fault Detection, Diagnostics, and Prognostics: Building on On-Line Monitoring Experience, Joseph Naser, Ramesh Shankar *(EPRI)*, invited

2:00 p.m.
Optimizing Plant Operation with First-Principles Prognostics, Leonard J. Bond *(INL, PNNL)*, Don B. Jarrell, Fred L. Leverenz *(PNNL)*, invited

2:30 p.m.
Visual Collaborative Environment for Advanced Integration in Nuclear Power Plant Management, Radu Tutos *(KLARO Sys)*

Progress on the Movement Toward Risk-Informed Performance-Based Standards–Panel, sponsored by OPD. [Track 6] *Session Organizer:* N. Prasad Kadambi *(NRC)*. *Chair:* N. Prasad Kadambi

Pacific 3

1:00 p.m.
PANELISTS:
- Drew Persinko *(NRC)*
- Robert K. Richter, Jr. *(SCE)*
- James K. Liming *(ABS Consulting)*
- N. Prasad Kadambi *(NRC)*

Atomistic and Continuum Modeling, sponsored by MSTD. [Track 7] *Session Organizer:* Tetsuo Shoji *(Tohoku Univ)*. *Chair:* Todd Allen *(Univ of Wisconsin, Madison)*

Pacific 4 & 5

1:00 p.m.
Atomistic Modelling of Chromium Precipitation in Fe-Cr Alloys, J. Wallenius *(KTH)*

1:30 p.m.
The Entropy of Delta Pu-Ga Alloys, M. Stan, M. I. Baskes *(LANL)*

2:00 p.m.
Dynamics of Brittle Fracture in Amorphous Silica: A Molecular Dynamics Study, Krishna Muralidharan *(Univ of New Mexico, Univ of Florida)*, Pierre Deymier, Joseph H. Simmons *(Univ of Arizona)*

2:30 p.m.
An Empirical Charge Redistribution Model for Oxide Fuel Materials, S. M. Valone *(LANL, Univ of New Mexico)*, S. R. Atlas *(Univ of New Mexico)*

3:00 p.m.
Design of Irradiation Experiments for the High Flux Isotope Reactor, Chunyun Wang, Seokho H. Kim, David K. Felde *(ORNL)*

3:30 p.m.
Stress Indices and Stress Intensification Factors at Head Plate Penetration Anchors, Eun Woo Ahn, Dong Bum Oh, Jik Lae Jo *(KOPEC)*

Impact of Workforce Reduction on Utility Operations Effectiveness–Panel, sponsored by NISD. [Track 3] *Session Organizer:* Anthony Baratta *(NRC)*. *Chair:* Anthony Baratta

Pacific 6 & 7

1:00 p.m.
PANELISTS:
- Tony L. McConnell *(Polestar)*
- Jim Von Suskil *(The Syzygy Grp)*
- Nick Trikouros *(Panlyon Technol)*
- Jeffrey Jeffries *(Paradigm Consulting Svc)*

Transport Methods: General, sponsored by MCD. [Track 7] *Session Organizer:* Todd Palmer *(Oregon State Univ)*. *Chair:* Yousry Azmy *(Penn State)*

Royal Palm 1

1:00 p.m.
Transient Capability for a MOC-Based Whole Core Transport Code DeCART, Jin-Young Cho, Kang-Seog Kim, Chung-Chan Lee *(KAERI)*, Han-Gyu Joo *(Seoul Natl Univ)*, Won-Sik Yang, T. A. Taiwo *(ANL)*, J. Thomas *(Purdue Univ)*

1:20 p.m.
Global Error Analysis of the Spatial Approximation in Discrete Ordinates Methods, Jose I. Duo, Yousry Y. Azmy *(Penn State)*

1:40 p.m.
High Order Spatial Expansion of the Incident Current in the Heterogeneous Coarse Mesh Transport Method, Benoit Forget, Farzad Rahnema *(Georgia Tech)*

2:00 p.m.
A Block Diagonal Parallel Preconditioning Strategy for the Finite Element-Spherical Harmonics Method, Hyeong Kae Park, Cassiano R. E. de Oliveira *(Georgia Tech)*

2:20 p.m.
A Decoupled Finite Element Heterogeneous Coarse Mesh Transport Method, Scott W. Mosher *(LANL)*, Farzad Rahnema *(Georgia Tech)*

2:40 p.m.
Atomic Mix Synthetic Acceleration for Transport in Binary Statistical Mixtures, Anil K. Prinja, Erin D. Fichtl *(Univ of New Mexico)*

3:00 p.m.

Properties of the S_n-Equivalent Integral Transport Operator in Slab Geometry, Massimiliano Rosa, Yousry Y. Azmy *(Penn State)*, Jim E. Morel *(LANL)*

3:20 p.m.
Simple But Powerful Analytic Transport Benchmarks: The Rod Problem, Jeffrey A. Favorite *(LANL)*

Advanced Nuclear Energy Systems Research and Development—I, sponsored by OPD. [Track 4] *Session Chair:* Buzz Savage *(DOE)*

Royal Palm 2
1:00 p.m.
Brayton Power Cycles and High-Temperature Salt-Cooled Reactors, Charles W. Forsberg *(ORNL)*

1:25 p.m.
Shut-Down and Restart Simulation of CANDLE Fast Reactors, Hiroshi Sekimoto, Yutaka Udagawa *(Tokyo Inst of Technol)*

1:50 p.m.
Explicit Modeling of Particle Fuel for the Very-High Temperature Gas-Cooled Reactor, Wei Ji, Jeremy L. Conlin, William R. Martin, John C. Lee *(Univ of Michigan)*, Forrest B. Brown *(LANL)*

2:15 p.m.
Reactivity Potential of Annular VHTGR Cores, Yonghee Kim, Jae Man Noh, Won Seok Park *(KAERI)*, Beomseok Han *(Seoul Natl Univ)*

2:40 p.m.
Conceptual Design of Advanced Sodium-Cooled Fast Reactor KALIMER-600, Dohee Hahn, Yeong-Il Kim, Seong-O Kim, Jae-Han Lee, Yong-Bum Lee *(KAERI)*

3:05 p.m.
Utilization of New Coolants in a Multi-Functional Reactor, Sümer Şahin *(Gazi Univ)*, Mustafa Übeyli *(TOBB Univ of Economics and Technol)*

3:30 p.m.
A Survey of Uranium Supply Curve Estimates, Erich A. Schneider *(LANL)*

SCALE State-of-the-Art Analysis Tools, sponsored by NCSD; cosponsored by RPD. [Track 7] *Session Organizer:* Steve Bowman *(ORNL)*. *Chair:* Robert Busch *(Univ of New Mexico)*

Royal Palm 3
1:00 p.m.
Overview of Advances in SCALE Development, S. M. Bowman *(ORNL)*

1:20 p.m.
Continuous-Energy Version of the SCALE Control Modules for Use with Continuous-Energy KENO V.a and KENO-VI, D. F. Hollenbach, M. E. Dunn *(ORNL)*

1:40 p.m.
Recent Enhancements to the SCALE 5 Resonance Self-Shielding Methodology, M. L. Williams, S. Goluoglu, L. M. Petrie *(ORNL)*

2:00 p.m.
Continuous-Energy Multidimensional S_N Transport for Problem-Dependent Resonance Self-Shielding Calculations, Zhaopeng Zhong, Thomas J. Downar *(Purdue Univ)*, Mark D. DeHart, Mark L. Williams *(ORNL)*

2:20 p.m.
ENDF/B-VI Library Generation and Testing for the SCALE Code System, M. E. Dunn, P. B. Fox, N. M. Greene, L. M. Petrie *(ORNL)*

2:40 p.m.
Advances in the TSUNAMI Sensitivity and Uncertainty Analysis Codes Beyond SCALE 5, Bradley T. Rearden, Mark L. Williams, James E. Horwedel *(ORNL)*

3:00 p.m.
Assessment of TRITON and PARCS for Full-Core MOX Fuel Calculations, Mark D. DeHart *(ORNL)*, Jacopo Saccheri, David Diamond *(BNL)*, Anthony P. Ulses *(NRC)*

3:20 p.m.
GeeWiz: Integrated User Interface for SCALE, Stephen M. Bowman, James E. Horwedel *(ORNL)*

Focus on Communications: Speaking with the Media–Panel, sponsored by ETD. [Track 8] *Session Organizer:* W. D. Pointer *(ANL)*. *Chair:* Mimi Limbach *(Potomac Communications Grp)*

Royal Palm 4
1:00 p.m.
PANELISTS:
- Mimi Limbach *(Potomac Communications Grp)*
- Keith Arterburn *(INL)*
- Laura Hermann *(ANS)*
- Carl Crawford *(Entergy Nucl)*

Spent Nuclear Fuel: Storage, Direct Disposal, and Recycle, sponsored by FCWMD. [Track 5] *Session Organizer:* Charles Forsberg *(ORNL)*. *Chair:* Barry Spencer *(ORNL)*

Royal Palm 5
1:00 p.m.
HTR Spent Fuel and Waste Management Options, W. J. Szymczak, J. K. McCoy *(Framatome ANP)*

1:30 p.m.
Effects of the TRISO Particles Kernel Radius on the Burnup of a Thorium Fuel in the Gas Turbine—Modular Helium Reactor, Alberto Talamo, Waclaw Gudowski *(KTH)*

2:00 p.m.
Processing of Spent TRISO-Coated Gen IV Reactor Fuels: Mechanical Head-End Processing, Barry B. Spencer, Guillermo D. Del Cul, Emory D. Collins *(ORNL)*

2:30 p.m.
Advanced Head-End Processing of Spent Fuel: A Progress Report, Guillermo D. Del Cul, Rodney D. Hunt, Barry B. Spencer, Emory D. Collins *(ORNL)*, Kenneth Bateman, Karen Howden, Brian Westphal *(ANL)*

3:00 p.m.
Linear Programming Approach for Modeling Solidification of HLW from PWR, Myeongguk Cheon, Joonhong Ahn *(Univ of California, Berkeley)*, Tetsuo Ikegami *(JNC)*

Environmental and Biological Monitoring, sponsored by ESD. [Track 5] *Session Organizer:* Pete Fledderman *(Westinghouse SRC)*. *Cochairs:* Jilia Banaee *(INL)*, Pete Fledderman

Royal Palm 6
1:00 p.m.
Climatic Site Characteristics for Early Site Permits, R. Brad Harvey *(NRC)*

1:30 p.m.
Visualization of Environmental Radiation Data Using Geostatistics, Juyoul Kim *(Univ of California, Los Angeles)*

2:00 p.m.
A GEM-Based TEPC for Neutron Protection Dosimetry, Marat Seidaliev, C-K Chris Wang *(Georgia Tech)*

2:30 p.m.
Contribution of Hair Dosimetry Following Criticality Accident, L. Lebaron-Jacobs, A. Miele, R. Fottorino *(CEA, Cadarache)*

3:00 p.m.
Alternative Method for Whole Body Biomarker I-131 Quick Screenings, Yung-Chang Lai, Yu-Wen Chen, Shiang-Bin Jong *(Kaohsiung Medical Univ)*

3:30 p.m.
Development of a Chitosan Based Adsorbent for Arsenic Removal, Rajesh Gutti, Lou Ross, William H. Miller, Tushar K. Ghosh *(Univ of Missouri, Columbia)*

THURSDAY • JUNE 9, 2005

7:30 A.M. - 10:00 A.M.	**MEETING REGISTRATION**
8:00 A.M. - 12:00 P.M.	**SNC '05 TECHNICAL SESSIONS** (see pg. 26)
8:00 A.M. - 5:00 P.M.	**PROFESSIONAL DEVELOPMENT WORKSHOP #4** "Advanced Gas Reactor Technology Course" (2-Day Workshop)
8:30 A.M. - 11:30 A.M.	**2005 ANS ANNUAL MEETING TECHNICAL SESSIONS** • Reactor Physics: General—II • Thermal-Hydraulic Experimentation • Reactor Safety: General • Advanced Nuclear Energy Systems Research and Development—II • Nuclear Criticality Safety Standards–Forum • Research by U.S. Department of Energy-Sponsored Students • Proliferation, Transmutation, and Radiation Aspects of Recycle Options • Environmental Aspects of Radioactive Waste

THURSDAY, JUNE 9, 2005 • 8:30 A.M.

Reactor Physics: General—II, sponsored by RPD. [Track 7] *Session Chair:* Youssef Shatilla *(King Abdul Aziz Univ)*

Pacific 1

8:30 a.m.
Physics Analysis of Coolant Voiding in the ACR-700 Lattice, C. A. Cotton, D. Lee, T. Kozlowski, T. J. Downar *(Purdue Univ)*, W. S. Yang *(ANL)*, D. E. Carlson *(NRC)*

8:50 a.m.
A Pressure Tube Fast Test Reactor Concept, Youssef Shatilla *(King Abdul Aziz Univ)*

9:10 a.m.
Reactor Physics Analysis of a Tube-in-Duct Fuel Design for GFR Service, P. Yarsky, M. A. Pope, M. J. Driscoll, P. Hejzlar *(MIT)*

9:30 a.m.
Analysis of the OECD/NEA PBMR-268 Transient Benchmark Problem with the PARCS Neutronics Code, Volkan Seker, Thomas J. Downar *(Purdue Univ)*

9:50 a.m.
Analysis of the Dry Process Fuel Cycle for a Sodium-Cooled Fast Reactor, Chang Joon Jeong, Gyu Hong Roh, Hangbok Choi *(KAERI)*

10:10 a.m.
Impacts of Geometrical Approximations on Tritium Breeding Ratio in Fusion Blanket Analysis, Beomseok Han *(Seoul Natl Univ)*, Yonghee Kim *(KAERI)*, Chang Hyo Kim *(Seoul Natl Univ)*

10:30 a.m.
Analysis of Neutronics of Subcritical Blanket—Cascade Neutron Amplifier for Fusion-Fission Hybrid, Alexander Barzilov, Phillip Womble *(Western Kentucky Univ)*

10:50 a.m.
Confirmatory Experiments for Nuclear Emissions during Acoustic Cavitation, Y. Xu, A. Butt *(Purdue Univ)*

Thermal-Hydraulic Experimentation, sponsored by THD. [Track 6] *Session Cochairs:* Seungmin Oh *(Purdue Univ)*, Larry Hochreiter *(Penn State)*

Pacific 4 & 5

8:30 a.m.
Microscale Heat Transfer at Ultra-High Heat Fluxes Over a Wide Range of Pressures, Robert H. Leyse *(Inz)*

9:00 a.m.
A Comparative Experimental Study on the PRHRS of an Advanced Integral Type Reactor, H. S. Park, K. Y. Choi, S. J. Lee, M. K. Chung *(KAERI)*

9:30 a.m.
Direct Vessel Inclined Injection System for Advanced Power Reactor 1400 MWe, Jong K. Lee, Kune Y. Suh *(Seoul Natl Univ)*, Chul H. Song *(KAERI)*

10:00 a.m.
Effects of Combined Axial and Cross Flows on the Fuel Rod Vibration, A. Mandour, M. E. Conner, R. Lu *(Westinghouse Nucl Fuel)*

10:30 a.m.
Droplet De-entrainment on Vertical Rods in Air-Droplet Mixture Flow, Kyung-Won Lee, Hee Cheon No *(KAIST)*, Chul-Hwa Song *(KAERI)*

Reactor Safety: General, sponsored by NISD. [Track 6] *Session Chair:* Herbert Massie *(DNFSB)*

Pacific 6 & 7

8:30 a.m.
Development of Power Uprate Technology for Korean Nuclear Power Plants, Sung Sik Yu, Il Kon Kim, Hae Ryong Hwang *(KOPEC)*, Ji In Kim, Eung Soo Chang, Tae Ju Chun *(KHNP)*

9:00 a.m.
Tests of Ejectors Designed for Dynamic Natural Convection, K. I. Soplenkov *(VNIIAES)*, A. W. Reinsch *(DYNAC Sys)*, V. G. Selivanov *(Kharkov Aeronautical Inst)*

9:30 a.m.
Development of the Program for Identifying High ORD Jobs in Nuclear Power Plants, Yong Min Kim, Dong Hoon Shin, Chang Sun Kang *(Seoul Natl Univ)*, Young Ho Cho *(POSDATA)*, Jungkwon Son, Kidoo Kang, Kyoungdoek Kim *(KHNP)*

10:00 a.m.
Creating the Foundation for AP-913, Darryl Barney *(SCE)*, Jeff Kasschau *(First Approach)*, Bill Bromley *(CQS Consult)*, Roland Daigle *(Mission Reaction)*, Ted Quinn *(Technol Res)*

10:30 a.m.
Investigation of Zircaloy-4 Doped with Metallic Burnable Poisons, C. K. Kahambwe, R. L. McDaniels *(Univ of Tennessee)*, Barry Hindin *(Battelle)*, M. L. Grossbeck *(Univ of Tennessee)*

Advanced Nuclear Energy Systems Research and Development—II, sponsored by OPD. [Track 4] *Session Chair:* Buzz Savage *(DOE)*

Royal Palm 2

8:30 a.m.
Fuels and Materials Testing Capability for Next Generation Reactors: A Review, William F. Skerjanc, Mary Lou Dunzik-Gougar *(Idaho State Univ)*, Wayne D. Ridgway, Ali S. Siahpush *(INL)*

8:55 a.m.
Comparison of Neutron Yield Characteristics between Proton Accelerator and Electron Accelerator for Waste Transmutation, Yaxi Liu, Man-Sung Yim, David McNelis *(NCSU)*

9:20 a.m.
PEACER Fuel Rod Creep Modeling on Solver-Interfaced 3D CAD System, Won Chang Nam, Hyong Won Lee, Il Soon Hwang *(Seoul Natl Univ)*

9:45 a.m.
Surface Alloying of Boron into Zirconium-Alloy Fuel Cladding Material, K. Sridharan *(Univ of Wisconsin, Madison)*, T. J. Renk *(SNL)*, A. K. Johnson, S. P. Harrington *(Univ of Wisconsin, Madison)*, E. J. Lahoda *(Westinghouse)*, P. P. Provencio *(SNL)*, M. L. Corradini *(Univ of Wisconsin, Madison)*

10:10 a.m.
Yalina Subcritical Assembly—Neutron Kinetic Analysis and Reactivity Determination, Carl-Magnus Persson *(KTH)*, Sergey Chigrinov, Hanna Kiyavitskaya *(Natl Acad of Sciences of Belarus)*, Alexandra Åhlander *(KTH)*, Thomas Stummer *(Vienna Univ of Technol)*, Per Seltborg, Waclaw Gudowski *(KTH)*

10:35 a.m.
Computational Tool for Nuclear Data Sensitivity Analysis and Uncertainty Propagation in NESTLE, William A. Wieselquist *(NCSU)*

11:00 a.m.
Fissile Fuel Breeding in ARIES-RS Fusion Reactor, Sümer Sahin *(Gazi Univ)*, Mustafa Übeyli *(TOBB Univ of Economics and Technol)*, Adem Acir *(Gazi Univ)*

Nuclear Criticality Safety Standards–Forum, sponsored by NCSD. [Track 6] *Session Organizer:* Thomas McLaughlin *(Consultant)*. *Chair:* Thomas McLaughlin

Royal Palm 3

8:30 a.m.

Research by U.S. Department of Energy-Sponsored Students, sponsored by ETD. [Track 7] *Session Organizer:* Brian Hajek *(Ohio State)*. *Chair:* Mike Robinson *(Bechtel Bettis)*

Royal Palm 4

8:30 a.m.
Assessment of Radiation Absorbed Doses During Micro-CT Imaging, Said Daibes Figueroa, Timothy Hoffman *(Univ of Missouri, Columbia; HSTMVH)*, William Miller *(Univ of Missouri, Columbia)*, Christopher Winkelmann *(HSTMVH)*, Shameem Hasan *(Univ of Missouri, Columbia)*, Richard Poelling, Tiffani Shelton *(HSTMVH)*

9:00 a.m.
Magnetic Deflection of Electrons and Ions Produced by Pyroelectric Crystals, Jeffrey A. Geuther, Yaron Danon *(RPI)*

9:30 a.m.
Statistical Analysis of a System for Radiation Treatment Positioning Accuracy, Yu-Wen Chang, William H. Miller *(Univ of Missouri, Columbia)*, Jatinder R. Palta *(Univ of Florida)*

10:00 a.m.
Fundamental Condensation Heat Transfer Studies for Horizontal PCCS Heat Exchanger, T. Wu, K. Vierow *(Purdue Univ)*

10:30 a.m.
An Integrated Model of Natural Circulation Loop Under Low Pressure, Quan Zhou, Rizwan-uddin *(Univ of Illinois)*

Proliferation, Transmutation, and Radiation Aspects of Recycle Options, sponsored by FCWMD, in collaboration with the Special Committee on Nuclear Nonproliferation. [Track 4] *Session Organizers:* Emory Collins *(ORNL)*, Mel Buckner *(Westinghouse SRC)*, Buzz Savage *(DOE)*. *Chair:* Scott Gillespie *(Bechtel SAIC)*

Royal Palm 5

8:30 a.m.
Transmutation of Transuranic Waste Recycled in Light Water Reactors, K. S. Allen, E. P. Naessens *(U.S. Military Acad)*

8:55 a.m.
Use of Transuranics as Burnable Absorbers in Light Water Reactors, E. P. Naessens, K. S. Allen, B. E. Moretti *(U.S. Military Acad)*

9:20 a.m.
Limited Self-Protection Benefits from Recycling Unseparated Transuranics and Lanthanides, Jungmin Kang *(Seoul Natl Univ)*, Frank von Hippel *(Princeton Univ)*

9:45 a.m.
Assessment of Proliferation Resistance of Nuclear Reactors Using Fuzzy Logic Based Barrier Method, J. Li, M. S. Yim, D. McNelis *(NCSU)*

10:10 a.m.
The Advantage of Fusion Sources for Nuclear Waste Transmutation, B. B. Cipiti *(SNL)*

10:35 a.m.
Radiation Source Term Calculation of CANDU Fuels, Hangbok Choi, Ho Jin Ryu, Chang Je Park *(KAERI)*

11:00 a.m.
Proliferation Resistance Metrics for Separated Streams of Reactor-Grade Transuranics, John A. Stillman *(ANL)*

Environmental Aspects of Radioactive Waste, sponsored by ESD. [Track 5] *Session Chair:* Rebecca Steinman *(Advent Eng Svc)*

Royal Palm 6

8:30 a.m.
Measurement Systems for Environmental Restoration at a Reactor Accident Site, J. R. Giles *(INL)*, C. P. Oertel, R. P. Wells *(ICP)*

8:55 a.m.
3D Geospatial Modeling for Visualization and Analysis of Groundwater Contamination at Nuclear Facilities, James C. Shepherd *(NRC)*, Gerry L. Stirewalt *(MANDEX)*

9:20 a.m.
Performance Assessment for Conceptual LLW Repository in Korea, D. Kawasaki, J. Ahn *(Univ of California, Berkeley)*, J. B. Park, C. L. Kim *(KHNP)*

9:45 a.m.
Disposition of Government Thorium Nitrate Stockpile: A Case Study, William Hermes, James Terry, Tom Hylton, Catherine Mattus *(ORNL)*

10:10 a.m.
Of Cat Scans and Glowing Pigs: Nuclear Facility Animal Control, E. D. Picazo *(URS Grp)*, J. P. Bleech *(West Valley Nucl Svc)*, A. M. Bird *(DOE)*

10:35 a.m.
Chromium Diffusion on Natural Diamond, Adrián E. Méndez, Mark A. Prelas, Tushar Ghosh, Louis Ross, Jr. *(Univ of Missouri, Columbia)*

11:00 a.m.
Production of Nanoparticles of Aluminum Oxide by Decomposition of Aerosols of Aluminum Nitrate Solution in a Flame, Damaris Vale, Angel Velez, Tushar K. Ghosh, Sudarshan K. Loyalka *(Univ of Missouri, Columbia)*

EMBEDDED TOPICAL MEETING:
Space Nuclear Conference 2005

Larry Foulke
Bechtel Bettis
GENERAL CHAIR

Raynor Taylor
NASA-HQ
GENERAL CHAIR

Kathryn McCarthy
INL
TECHNICAL PROGRAM CHAIR

Melissa Van Dyke
NASA-MSFC
TECHNICAL PROGRAM CHAIR

	Monday, June 6, 2005	Tuesday, June 7, 2005				
Room	**1:00–4:00 p.m.**	**8:00–10:00 a.m.**	**10:00–11:30 a.m.**	**1:00–2:30 p.m.**	**2:30–4:00 p.m.**	**7:00–9:00 p.m.**
Sunrise	SNC'05 Plenary Session #1: Space Nuclear Power and Propulsion	SNC '05 Plenary Session #2: Project Prometheus	Nuclear Electric Propulsion	Space Power Reactor Concepts—I	Space Power Reactor Concepts—II	Round Table Discussion: Space Nuclear Curricula and Research in the Universities
Sunset			Heat Transport and Power Conversion—I	Heat Transport and Power Conversion—II	Path from Student to Young Professional	
Towne			Space Reactors in Perspective	Compressors and Pumps	Advanced Propulsion Concepts-Fission	
Dover			Refractory Alloys—I	High Temperature Materials, Creep Studies and Corrosion (1:00-3:30 p.m.)		
Stratford			Shield and Surface Activation	Space Shielding-Design (1:00-3:00 p.m.)		

	Wednesday, June 8, 2005					Thursday, June 9, 2005	
Room	**8:00-10:00 a.m.**	**10:00-11:30 a.m.**	**1:00-2:30 p.m.**	**2:30-4:00 p.m.**	**4:00-6:00 p.m.**	**8:00-10:00 a.m.**	**10:00 a.m. - 12:00 p.m.**
Sunrise	SNC'05 Plenary Session #3: Nuclear Thermal and Bimodal Propulsion	Nuclear Fuels	Planetary (Moon and Mars) Surface Power Strategy and Design		SNC'05 Plenary Session #4: Key Issues and Challenges		
Sunset		Space Nuclear Power Safety	Radioisotopes (1:00-4:00 p.m.)			Space Reactor Concepts for Power and Thermal Propulsion	Refractory Alloys—II
Towne		Testing	Reactor Design Concepts	Thermionics/ Thermo-electric Reactor Power Systems		Dynamics, Control, and Systems Engineering Aspects for Space Nuclear Power and Propulsion	Measurement Systems for Space Nuclear Power and Propulsion
Dover		Space Radiation and Reactor Shileding–Materials	Mission Design for Manned and Unmanned Space Exploration	Space Shielding–Modeling		Space Radiation Shielding	Radiation Effects–Facilities and Testing
Stratford		Thermal Fluid Design Issues–II	Thermal Fluid Design Issues–I	Advanced Propulsion Concepts–Fusion		Nuclear Design	Thermal Fluid Design and Modeling

SNC '05 Sessions by Day: Monday (Afternoon)/Tuesday (Morning)

MONDAY • JUNE 6, 2005	
7:30 A.M. - 5:00 P.M.	MEETING REGISTRATION
8:00 A.M. - 10:00 A.M.	SPOUSE/GUEST HOSPITALITY BREAKFAST
8:30 A.M. - 11:30 A.M.	2005 ANS ANNUAL MEETING OPENING PLENARY (see pg. 11)
9:30 A.M. - 3:00 P.M.	SPOUSE/GUEST TOUR: "San Diego Architecture Tour"
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. - 4:00 P.M.	SNC '05 PLENARY SESSION "Space Nuclear Power & Propulsion"
1:00 P.M. - 4:00 P.M.	2005 ANS ANNUAL MEETING TECHNICAL SESSIONS (see pg. 11)
4:00 P.M. - 5:00 P.M.	ANS BUSINESS MEETING
4:00 P.M. - 6:00 P.M.	GENERAL CHAIR'S SPECIAL SESSION (see pg. 12)
7:00 P.M. - 10:30 P.M.	EVENING EVENT: "Buffet Dinner at Midway Aircraft Carrier Museum"

MONDAY, JUNE 6, 2005 • 1:00 P.M. – 4:00 P.M.

Plenary #1: Space Nuclear Power & Propulsion, *Session Chairs:* Ray Taylor *(NASA-HQ)*, Larry Foulke *(Bechtel Bettis)*

Sunrise

INVITED SPEAKERS:

- Evolution of the Nuclear Testing and Regulatory Environments, Nils J. Diaz *(Chairman, U.S. NRC)*
- Application of Superconductivity Technology in Space for Propulsion, Energy, and Radiation Protection, Samuel C.C. Ting *(Nobel Laureate, Thomas Dudley Cabot Professor of Physics, MIT)*
- Variable Specific Impulse Magnetoplasma Rocket (VASIMR) Test Results, Franklin Chang-Diaz *(Senior Astronaut, NASA)*
- Space Nuclear Power: Past and Future 50 Years, Anatoly V. Zrodnikov *(Academician, Director General IPPE, Russia)*
- The Power of Continuity: Nuclear Rockets Past and Present, James A. Dewar *(Consultant)*
- Development and Testing Results of Nuclear Thermal Reactors in USSR, Evgeniy K. D'yakov *(Director HTTD, LUTCH, Russia)*

TUESDAY • JUNE 7, 2005	
7:30 A.M. - 5:00 P.M.	MEETING REGISTRATION
8:00 A.M. - 10:00 A.M.	SPOUSE/GUEST HOSPITALITY BREAKFAST
8:00 A.M. - 10:00 A.M.	SNC '05 PLENARY SESSION #2 "Project Prometheus"
8:30 A.M. - 11:30 A.M.	2005 ANS ANNUAL MEETING TECHNICAL SESSIONS (see pg. 12)
9:30 A.M. - 3:00 P.M.	SPOUSE/GUEST TOUR: "Rancho Bernardo Winery"
10:00 A.M. - 11:30 A.M.	SNC '05 TECHNICAL SESSIONS • Nuclear Electric Propulsion • Heat Transport and Power Conversion—I • Space Reactors in Perspective • Refractory Alloys—I • Shield and Surface Activation
11:30 A.M. - 1:00 P.M.	ANS HONORS AND AWARDS LUNCHEON
1:00 P.M. - 2:30 P.M.	SNC '05 TECHNICAL SESSIONS • Space Power Reactor Concepts—I • Heat Transport and Power Conversion—II • Compressors and Pumps
1:00 P.M. - 3:00 P.M.	SNC '05 TECHNICAL SESSION • Space-Shielding Design
1:00 P.M. - 3:30 P.M.	SNC '05 TECHNICAL SESSION • High-Temperature Materials, Creep Studies and Corrosion
1:00 P.M. - 4:00 P.M.	2005 ANS ANNUAL MEETING TECHNICAL SESSIONS (see pg. 12)
2:30 P.M. - 4:30 P.M.	SNC '05 TECHNICAL SESSIONS • Space Power Reactor Concepts—II • Path fom Student to Young Professional • Advanced Propulsion Concepts-Fission
4:00 P.M. - 6:00 P.M.	ANS PRESIDENT'S SPECIAL SESSION (see pg. 16)
6:00 P.M. - 12:00 A.M.	EVENING EVENT: "Multi-Division Mixer at Sycuan Casino"
7:00 P.M. - 9:00 P.M.	SNC '05 ROUNDTABLE DISCUSSION "Space Nuclear Curricula and Research in the Universities"

TUESDAY, JUNE 7, 2005 • 8:00 A.M. – 10:00 A.M.

Plenary #2: Project Prometheus, *Session Chair:* Matt Forsbacka *(NASA)*

Sunrise

INVITED SPEAKERS:

- Overview of Project Prometheus, John R. Casani *(Manager, Project Prometheus, NASA-JPL)*
- The Reactor Module for Project Prometheus, Mike Wollman, *(Manager Space Power Programs, Naval Reactors Prime Contractor Team)*
- The Spacecraft for Project Prometheus, Peggy Nelson *(VP, Project Manager Prometheus I, Northup Grumman)*
- The Science Package for Project Prometheus, Torrance V. Johnson *(Chief Scientist, Solar System Exploration Programs Directorate, NASA-JPL)*

TUESDAY JUNE 7, 2005 • 10:00 A.M. –11:30 A.M.

Nuclear Electric Propulsion, *Session Chair:* Ivana Hrbud *(Purdue Univ)*

Sunrise

PANELISTS:

10:00 a.m.
Jay Polk *(NASA-JPL)*

10:20 a.m.
John Foster *(NASA-GRC)*

10:40 a.m.
Energetics of Propellant Options for High-Power Hall Thrusters, A. Kieckhafer, L.B. King *(Michigan Tech Univ)*

11:00 a.m.
Thruster Design for IEC-Based Spacecraft Propulsion, G.H. Miley, H. Momota, Y. Yang, L. Wu, Y. Takeyama, R. Thomas *(Univ of Illinios-Urbana)*

Heat Transport and Power Conversion—I, *Session Chairs:* Ronald J. Lipinski, Steven A. Wright *(Sandia)*

Sunset

10:00 a.m.
The Multi-Cylinder Free-Piston Stirling Engine: A Breakthrough for High-Power Space Applications, M.A. White *(Stirling Technology Company)*

10:20 a.m.
Vortex Separator for Use in Microgravity Nuclear Power Systems, C. Kurwitz *(Texas A&M Univ)*, K. Marsden *(ANL-W)*, M. Ellis, F. Best *(Texas A&M Univ)*

10:40 a.m.
Startup Response for a Nuclear Brayton Conversion System, W. Determan, C. Kudija *(Boeing-Rocketdyne)*

11:00 a.m.
Comparision of Direct and Indirect Gas Reactor Brayton Systems for Nuclear Electric Space Propulsion, M. Postlethwait, P. DiLorenzo, S. Belanger, J. Ashcroft *(KAPL)*

Space Reactors in Perspective, *Session Chairs:* Richard Ballard, William J. Emrich *(NASA-MSFC)*

Towne

10:00 a.m.
An Overview of Past, Present, and Future of Space Nuclear Power & Propulsion, S. Anghaie, B. Smith *(Univ of Florida)*

10:20 a.m.
Thermoelectricity and Thermionics in Space Nuclear Power Systems Using Direct Energy Conversion: Current Status and Prospects, V.I. Yarygin *(SSC RF–IPPE-Russia)*

10:40 a.m.
Lessons Learned (?) From 50 Years of U.S. Space Fission Power Development, S.R. Greene *(ORNL)*

11:00 a.m.
Space Nuclear Power Public and Stakeholder Risk Communication, S.M. Dawson *(NASA-JPL)*, M. Sklar *(The Aerospace Corporation)*

Refractory Alloys—I, *Session Chairs:* Binayak Panda *(NASA-MSFC)*, Dion Sunderland *(ANATECH Corp)*

Dover

10:00 a.m.
Molybdenum-Rhenium Alloys for Spacecraft Reactor Applications, J.T. Busby, E.K. Ohriner, L.L. Snead, F.W. Wiffen, S.J. Zinkle *(ORNL)*, R.F. Luther *(Bechtel Bettis)*, R.W. Buckman *(Refractory Metals Technology)*, R.E. Gold *(Pittsburgh Materials Technology)*

10:20 a.m.
Fracture Toughness Properties of Two Mo-Re Alloys, M.A. Sokolov *(ORNL)*, R.F. Luther *(Bettis)*

10:40 a.m.
Review of Refractory Metal Compatibility with Liquid Lithium, S.J. Pawel, P.F. Tortorelli, J.R. DiStefano *(ORNL)*, W.L. Ohlinger, R.F. Luther *(Bettis)*, Y.A. Ballout *(KAPL)*

11:00 a.m.
Chemical Compatibility Issues for Refractory Metals in Helium-Based Working Fluids, P.F. Tortorelli, D.F. Wilson, S.J. Pawel, J.R. DiStefano *(ORNL)*

Shield and Surface Activation, *Session Chairs:* Larry Townsend *(Univ of Tennessee)*, Andrew C. Kadak *(MIT)*

Stratford

10:00 a.m.
Shielding Design Concept for an MIT Nuclear Power Station for the Moon and Mars, E.D. Johnson, A. Bushman, M.D. Hershcovitch *(MIT)*

10:25 a.m.
Computational Analysis of Martian Regolith in Martian Space Environment, S.K. Aghara, R. Wilkins, J. Zhou *(Prairie View A&M Univ)*

10:50 a.m.
Review of Space Reactor Shielding Material and Configuration Alternatives, E. Pheil *(KAPL)*

TUESDAY, JUNE 7, 2005 • 1:00 P.M. - 2:30 P.M.

Space Power Reactor Concepts—I, *Session Chair:* Pablo Rubiolo *(Westinghouse)*

Sunrise

1:00 p.m.
NTP Engine System Studies at NASA-MSFC, K.W. Nelson *(NASA-MSFC)*

1:25 p.m.
Multimegawatt Space Power with Vapor Core Reactor and Magnetohydrodynamic Power Conversion System, S. Anghaie, B. Smith *(Univ of Florida)*, T. Knight *(Univ of South Carolina)*

1:50 p.m.
Americium Nuclear Battery for Space Power Applications, Y. Ronen, L. Droizman, E. Shwageraus *(Ben Gurion Univ-Israel)*

Heat Transport and Power Conversion—II, *Session Chair:* Dale Rogers *(Boeing)*

Sunset

1:00 p.m.
Space Nuclear Power and Power Propulsion Systems Based on the Reactor with External Solid Core Heat Conversion, N.N. Ponomaryev-Stepnoi, V.S. Rachuk, V.P. Smetannikov, I.I. Fedik *(Kurchatov Institute-Russia)*

1:25 p.m.
Optimization of Rankine Space Power Conversion Systems with the Codes ALKASYS-SRPS and DAKOTA, J.J. Carbajo, G.L. Yoder *(ORNL)*

1:50 p.m.
Comparision of Crossflow and Axial Flow for a Compact Gas Cooled Reactor, C. Linrud *(KAPL)*

Compressors and Pumps, *Session Chair:* Richard Ballard *(NASA-MSFC)*

Towne

1:00 p.m.
Electromagnetic Pump Technology for Space Flight Applications, W.R. Determan, R.S. Baker *(Boeing-Rocketdyne)*

1:25 p.m.
RELAP5-3D Compressor Model, J.E. Fisher, C.B. Davis *(INL)*

1:50 p.m.
Application of Annular Linear Induction Pumps Technology For Waste Heat Rejection and Power Conversion, H.E. Adkins, Jr. *(PNNL)*

TUESDAY, JUNE 7, 2005 • 1:00 P.M. - 3:00 P.M.

Space Shielding-Design, *Session Chair:* Bruce Schnitzler *(INL)*

Stratford

1:00 p.m.
Engineering Effort Needed to Design Spacecraft with Radiation Constraints, R. Singleterry Jr. *(NASA-LARC)*

1:25 p.m.
Effects of Nuclear Interactions on Accuracy of Space Radiation Transport, Z.W. Lin *(Univ of Alabama)*

1:50 p.m.
Shielding Considerations in Space Nuclear Applications, G. Johnson *(Boeing-Rocketdyne)*

2:15 p.m.
Plasma Magnetic Shield for Radiation Shielding and Crew Protection, J.T. Slough, R.M. Winglee *(Univ of Washington)*

2:40 p.m.
Selection of Optimal SNPS Radiation Shielding System for High-orbit Spacecraft Equipped with Antenna Assembly, A.Yu. Plotnikov, A.P. Pyshko *(FSUE IPPE-Russia)*, A.G. Eremin, G.A. Zaritskiy *(FSUE Red Star-Russia)*

TUESDAY, JUNE 7, 2005 • 1:00 P.M. – 3:30 P.M.

High Temperature Materials, Creep Studies and Corrosion, *Session Chair:* Steve Zinkle *(ORNL)*

Dover

1:00 p.m.
Candidate Materials for Space Nuclear Power Conversion Systems, S. Yang, N. Hoffman *(Boeing-Rocketdyne)*

1:25 p.m.
Analysis of the Creep Performance of Selected Refractory Metals of Interest to Space Nuclear Power Systems, S.C. Watson, G.A. Young, Y.A. Ballout, T.L. Sham *(Lockheed Martin)*

1:50 p.m.
Biaxial Creep Testing of High-Temperature Superalloy and Refractory Metal Alloys, L.L. Rishel, A.J. Mueller, R.F. Luther, J. Kundrat *(Bechtel Bettis)*, R. Buck *(Advanced Steel Technology)*

2:15 p.m.
Creep Test Results on Refractory Metal Tubes Produced by Electrodeposition Techniques, J. Inman, W.C. Richardson, J. Halfinger *(BWXT, Inc.)*

2:40 p.m.
Application of Computational Materials Design to Assess and Develop Structural Materials for Space Nuclear Applications, J.-S. Wang, W. Huang, H.-J. Jou, G. Olson *(QuesTek Innovations)*, Y.A. Ballout, G.A. Young *(Lockheed Martin)*

3:05 p.m.
Ensuring Longevity of Metal Water Processing Equipment in Space Systems, V.P. Gorbatykh, S.N. Al Kassem *(MPEI-Russia)*

TUESDAY, JUNE 7, 2005 • 2:30 P.M. - 4:00 P.M.

Space Power Reactor Concepts—II, *Session Chair:* Harold Gerrish *(NASA-MSFC)*

Sunrise

2:30 p.m.
A Summary of the 710 High Temperature Gas Reactor Development Program, R.E. Reid *(Consultant)*

2:55 p.m.
Carbon-Carbon-Composite Salt-Cooled Electric Space Reactors, C. Forsberg, T. Burchell, D. Williams, D. Holcomb, R. Holdaway, A. Qualls *(ORNL)*

3:20 p.m.
MITEE: A Compact Near Term NTP Engine for New and Unique Robotic and Manned Space Exploration Missions, J. Powell, G. Maise, J. Paniagua *(Plus Ultra Technologies, Inc.)*

The Path from Student to Young Professional in Space Nuclear Applications, *Session Chair:* Shannon Bragg-Sitton *(LANL)*

Sunset
This session will incorporate young professionals (YPs) working in the field of space nuclear power/propulsion that have entered the real world within the last few years. The YP panelists will incorporate recent graduates at each degree level – BS, MS, and PhD – such that all levels of work will be addressed. The session will include panelists at the supervisory level (technical) who are active in recruiting and working with new hires. Panelists will encompass the major employers (from both the government and industry sides) that are key in the current space nuclear effort. Topics that will be discussed include how to successfully make the jump from student to YP (e.g., how important are internships?), the differences in job scope for BS/MS/PhD graduates, experiences of recent graduates (e.g., how did I end up in this really cool job?), and what employers expect of new hires. All topics will be discussed with regard to positions in space applications of nuclear technology.

PANELISTS:
- Shannon Bragg-Sitton *(LANL)*
- Dave Poston *(LANL)*
- Tristan Schaefer *(KAPL)*
- Melissa Hunter *(Bettis)*
- Ron Lipinski *(Sandia)*
- Tamera Johnson *(Northrop Grumman)*

Advanced Propulsion Concepts-Fission, *Session Chair:* Mike Houts *(NASA-MSFC)*

Towne
2:30 p.m.
Pulsed Gas Core Reactors for Space Power & Propulsion Applications, S. Anghaie, B. Smith *(Univ of Florida)*, T. Knight *(Univ of South Carolina)*

2:55 p.m.
High Efficiency Magnetic-Nuclear Propulsion/Power System, P.V. Tsvetkov, R.R. Hart *(Texas A&M Univ)*

3:20 p.m.
On the Possibility of Using a Solid State Nuclear Reactor - Accelerator Propulsion, L. Popa-Simil *(Consultant)*

TUESDAY, JUNE 7, 2005 • 7:00 P.M. – 9:00 P.M.

Roundtable Discussion on Space Nuclear Curricula and Research in the Universities, *Moderators:* Shannon Bragg-Sitton, *(LANL)*, Larry Foulke *(NR-Bettis)*

Sunrise
This informal discussion session will focus on the currently available curricula and ongoing research in space applications of nuclear technology. The discussion will follow a brief panel in which universities that currently have strong research programs in this area are invited to briefly present the scope of their efforts with regard to coursework available to students (undergraduate and/or graduate level) and research efforts. It is expected that the session will outline a catalog of appropriate coursework for space nuclear applications and a catalog of current university research strengths in space nuclear applications. It is also expected that an ongoing discussion group will be established to continue to develop and improve the curricula available within nuclear engineering programs with regard to the space program. All interested parties are welcome to attend.

WEDNESDAY • JUNE 8, 2005	
7:30 A.M. - 5:00 P.M.	**MEETING REGISTRATION**
8:00 A.M. - 10:00 A.M.	**SPOUSE/GUEST HOSPITALITY BREAKFAST**
8:00 A.M. - 10:00 A.M.	**SNC '05 PLENARY SESSION** "Nuclear Thermal and Bimodal Propulsion"
8:30 A.M. - 11:30 A.M.	**2005 ANS ANNUAL MEETING TECHNICAL SESSIONS** (see pg. 16)
9:00 A.M. - 4:00 P.M.	**TECHNICAL TOUR:** "Archimedes Technology Group & General Atomics"
10:00 A.M. - 11:30 A.M.	**SNC '05 TECHNICAL SESSIONS** • Nuclear Fuels • Space Nuclear Power Safety • Testing • Space Radiation and Reactor Shielding-Materials • Thermal Fluid Design Issues—II
11:30 A.M. - 1:00 P.M.	**NUCLEAR INSTALLATIONS SAFETY DIVISION LUNCHEON**
1:00 P.M. - 2:30 P.M.	**SNC '05 TECHNICAL SESSIONS** • Planetary (Moon and Mars) Surface Power Strategy and Design • Reactor Design Concepts • Mission Design for Manned and Unmanned Space Exploartion • Thermal Fluid Design Issues—I
1:00 P.M. - 4:00 P.M.	**2005 ANS ANNUAL MEETING TECHNICAL SESSIONS** (see pg. 16)
1:00 P.M. - 4:00 P.M.	**SNC '05 TECHNICAL SESSION** • Radioisotopes
2:30 P.M. - 4:00 P.M.	**SNC '05 TECHNICAL SESSIONS** • Thermionics/Thermo-electric Reactor Power Systems • Space Shielding-Modeling • Advanced Propulsion Concepts-Fusion
4:00 P.M. - 6:00 P.M.	**SNC '05 PLENARY SESSION** "Key Issues and Challenges"
7:00 P.M. - 10:30 P.M.	**EVENING EVENT:** "Reception at the Aerospace Museum"

WEDNESDAY, JUNE 8, 2005 • 8:00 A.M. – 10:00 A.M.

Plenary#3: Nuclear Thermal and Bimodal Propulsion, *Session Chairs:* Wayne Bordelon *(NASA-MSFC)*, Vladimir Vasilkovski *(Red Star-Russia)*

Sunrise
INVITED SPEAKERS:
- Lesson Learned from Rover/NERVA Program, Stanley Gunn *(Rocketdyne-Boeing)*
- An Overview of NTP/ BNTP Concepts and Missions, Stan Borowski *(NASA-GRC)*
- High Temperature NTP Fuel Development and Testing, Evgeniy K. D'yakov *(Director HTTD, LUTCH, Russia)*
- NTP and Bimodal Design Options, Randy Parsley *(Director of Advanced Propulsion Programs, United Technologies, Pratt & Whitney)*
- NTP System Development Program at NASA-MSFC, Harold Gerrish *(Lead Nuclear Thermal Propulsion, NASA-MSFC)*
- Bill Campbell *(Aerojet)*

WEDNESDAY, JUNE 8, 2005 • 10:00 A.M. - 11:30 A.M.

Nuclear Fuels, *Session Chairs:* Wayne Ohlinger *(Bettis)*, Steven D. Howe *(LANL)*

Sunrise
10:00 a.m.
Fifty Years of Space Nuclear Fuel Development, P. Harris *(Harris Engineering Services)*, S. Anghaie *(Univ of Florida)*

10:20 a.m.
Uranium Nitride Fuel and Pellet Manufacturing for Space Nuclear Applications, W.C. Richardson, M. Shaw, D. Husser, S. Scoles *(BWXT)*

10:40 a.m.
The Development of a Tricarbide Foam Fuel Matrix for Nuclear Propulsion, D.L. Youchison, R.X. Lenard *(Sandia)*, B.E. Williams *(Ultramet, Inc.)*, S. Anghaie *(Univ of Florida)*

11:00 a.m.
Demonstration of Fission Product Retention in a Novel NTR Fuel, S.D. Howe, G.P. Jackson *(Hbar Technologies)*

Space Nuclear Power Safety, *Session Chairs:* Anthony J. Baratta *(U.S. NRC)*, Joseph A. Sholtis, Jr. *(Sholtis Engineering & Safety Consulting)*

Sunset

10:00 a.m.
A Rationale for a Set of Risk-Based Safety Goals for Launching Space Nuclear Power Plants, W.E. Kastenberg *(Univ of California at Berkeley)*, M.V. Frank *(Safety Factor Associates, Inc)*

10:20 a.m.
SP-100 Space Reactor Risk Assessment: Lessons Learned, D.R. Damon *(USNRC)*

10:40 a.m.
A Quasi-Dynamic Risk Analysis Framework for Space-Reactor Missions, M.V. Frank *(Safety Factor Associates, Inc.)*, W.E. Kastenberg *(Univ of California, Berkeley)*

11:00 a.m.
Proposed Safety Guidelines for Space Reactors, J.A. Sholtis, Jr. *(Sholtis Engineering & Safety Consulting)*

Testing, *Session Chair:* Robert Fielder *(Luna Innovations)*

Towne

10:00 a.m.
Heat Pipe Reactor Dynamic Response Tests: SAFE-100a Reactor Core Prototype, S.M. Bragg-Sitton *(NASA-MSFC)*

10:20 a.m.
Abnormal Dynamic Grain Growth During Creep Deformation of Powder-Metallurgy (PM) Grade Molybdenum Sheet, J. Ciulik, E.M. Taleff *(Univ of Texas-Austin)*

10:40 a.m.
High-Temperature Fiber Bragg Grating Sensor Optimization for 3D Temperature Mapping of the SAFE-100a Thermal Simulator, R.S. Fielder, R.G. Duncan, C.L. Kozikowski, M.T. Raum *(Luna Innovations)*

11:00 a.m.
Sandia Closed Brayton Cycle Test Loop Description and Test Results, S.A. Wright, R. Fuller, R.J. Lipinski *(Sandia)*

Space Radiation and Reactor Shielding-Materials, *Session Chair:* Steve Zinkle *(ORNL)*

Dover

10:00 a.m.
Conventional and Advanced Shielding Materials, L.L. Snead, L.K. Mansur, T.N. Tiegs, J.L. Yugo *(ORNL)*, W.L. Ohlinger *(Bettis)*, Y.A. Ballout *(KAPL)*

10:20 a.m.
Radiation Effects in Refractory Alloys, S.J. Zinkle, F.W. Wiffen, J.T. Busby, L.L. Snead *(ORNL)*, G. Newsome, R. Nelson *(KAPL)*, E. Mader *(Bettis)*

10:40 a.m.
Material Selections for Reactor Radiation Shielding of a Space Reactor Power System, R.K. Disney *(Consultant)*, T.A. Berg *(Y-12 National Nuclear Security Complex, BWXT Y-12)*

11:00 a.m.
Dual Purpose Effective Radiation Shielding Material for Space Mission Applications, Z. Shayer, R.C. Amme *(Univ of Denver)*

Thermal Fluid Design Issues—II, *Session Chairs:* Thomas K. Larson *(INL)*, Pablo Rubiolo *(Westinghouse)*

Stratford

10:00 a.m.
Space Nuclear Power Heat Rejection Design Consideration and Technology Development, C.Y. Lu *(Boeing-Rocketdyne)*, J. Rosenfeld *(Thermacore)*, B. Drolen *(Boeing Company Space and Intelligence Systems)*, S. Yang, A. von Arx *(Boeing-Rocketdyne)*

10:20 a.m.
Modeling Liquid Metals Boiling with the ATHENA Code, J.J. Carbajo, G.L. Yoder *(ORNL)*

10:40 a.m.
Micro-scale Liquid Metal Evaporator/Vapor Generator Designs for Earth and Space Power Applications, A. Ruggles *(Univ of Tennessee)*

11:00 a.m.
Temperature Fields in the Reflectors of a Dual Purpose Thermionic Space Craft Reactor During Thrust Phase, S. Sahin, H.M. Sahin, A. Acir *(Gazi Üniv-Turkey)*, T. Altinok *(Kara Harp Okulu-Turkey)*

WEDNESDAY, JUNE 8, 2005 • 1:00 P.M. - 2:30 P.M.

Planetary (Moon and Mars) Surface Power Strategy and Design, *Session Chairs:* Travis W. Knight *(Univ of South Carolina)*, Norbert Frischauf *(ESA-The Netherlands)*

Sunrise

1:00 p.m.
RAPID-L Operator-Free Fast Reactor for Lunar Base Power System, M. Kambe *(CRIEPI-Japan)*, H. Tsunoda *(Mitsubishi Research Institute-Japan)*, K. Mishima *(Kyoto Univ-Japan)*, T. Iwamura *(JAERI-Japan)*

1:20 p.m.
Use of Nuclear Power on the Lunar or Martian Surface, A. Zillmer *(Boeing-Rocketdyne)*, M. Henley *(Boeing-Phantom Works)*, J. Santarius, G. Kulcinski, H. Schmitt *(Univ of Wisconsin-Madison)*

1:40 p.m.
Development, Integration and Utilization of Surface Nuclear Energy Sources for Exploration Missions, M.G. Houts, G.R. Schmidt, S. Bragg-Sitton, R. Hickman, A. Hissam, V. Houston, J. Martin, O. Mireles, R. Reid, T. Schneider, J.W. Smith, E. Stewart, J. Turpin, M. Van Dyke, J. Vaughn, D. Wagner *(NASA-MSFC)*

2:00 p.m.
PRESTO: Power Reactor for Surface Terminal Operation, A.L. Qualls, S.R. Greene, E.D. Blakeman, K.W. Childs *(ORNL)*

Reactor Design Concepts, *Session Chair:* Ronald J. Lipinski *(Sandia)*

Towne

1:00 p.m.
Point Design Concept for a 100 kW(e) Reactor Module for JIMO, G. Neeley, J. Halfinger, W. Bingham, W.C. Richardson *(BWXT, Inc)*

1:20 p.m.
Nuclear Reactor for Electric Power Generation in Space Applications, M. Cumo, M. Frullini, A. Gandini, F. Garofalo, F. Mattu, A. Naviglio, L. Sorabella *(Univ of Rome-Italy)*

1:40 p.m.
SUSEE: An Ultra Lightweight Space Nuclear Power System Based on Conventional Water Reactor Technology, G. Maise, J. Powell, J. Paniagua *(Plus Ultra Technologies, Inc.)*

2:00 p.m.
Reactor Core Concept for an MIT Nuclear Power Reactor for the Moon and Mars, S.C. Kane, T.S. Ellis, S.P. Gallagher, M.A. Stawicki *(MIT)*

Mission Design for Manned and Unmanned Space Exploration, *Session Chair:* Ron Porter *(NASA-MSFC)*

Dover

1:00 p.m.
Nuclear Electric Propulsion Evolution Study - From JIMO to Crewed Outer Planet Missions, R.B. Adams, T. Polsgrove, H. Dan Thomas *(NASA-MSFC)*, M.R. Brown *(Allied Aerospace)*, R. Chiroux, T. Moton, T. Percy *(Science Applications International Corp)*, T. Crane *(Qualis Corporation)*, D. Fields, G. Statham, D. Phil, P.S. White *(ISSI, Inc)*

1:25 p.m.
ALPH: A Compact Robotic Nuclear Powered Factory to Build and Supply Bases on Mars Prior to Manned Landings, J. Powell, G. Maise, J. Paniagua *(Plus Ultra Technologies, Inc.)*

1:50 p.m.
A New Nuclear Powered Cycler to Mars, E. Finzi, G.Hanninen, A.Zonca, A.Mafficini, A. Davighi, A. Finzi *(Politecnico di Milano-Italy)*

Thermal Fluid Design Issues—I, *Session Chairs:* Thomas K. Larson *(INL)*, Pablo Rubiolo *(Westinghouse)*

Stratford
1:00 p.m.
Investigation of Interfacial Structures in Simulated Microgravity Conditions, S. Vasavada, X. Sun, M. Ishii *(Purdue Univ)*

1:20 p.m.
Investigation of Thermal-Hydraulic Parameters Combinations Which Increase the Flow Induced Stresses in Nuclear Reactor Structures, K.N. Proskuryakov, V.J. Sasin *(Moscow Power Engineering Institute-Russia)*

1:40 p.m.
Wavelet Study of Microbubble Drag Reduction Mechanism in a Boundary Channel Flow, L. Zhen, Y.A. Hassan *(Texas A & M Univ)*

2:00 p.m.
Integrator Circuit an Analogy for Convection, S. Usman *(Univ of Missouri-Rolla)*, S. Abdallah, M. Hawwari, M. Scarangella *(Univ of Cincinnati)*, L. Shoaib *(Yathrib Associates LLC)*

WEDNESDAY, JUNE 8, 2005 • 1:00 P.M. – 4:00 P.M.

Radioisotopes, *Session Chairs:* David K. Wagner *(NASA-MSFC)*, Harold McFarlane *(INL)*

Sunset
PANELISTS:
1:05 p.m.
Tutorial on Selection of Pu-238 as the Radioisotope of Choice for Deep Space Power Systems, Harold McFarlane *(INL)*

1:20 p.m.
DOE Production and Testing of Radioisotope Power Systems for NASA, Tim Frazier *(DOE)*

1:50 p.m.
Radioisotope Power Systems at Idaho National Laboratory, Ken Rosenberg *(INL)*

2:10 p.m.
Overview of Future NASA Missions with Radioisotope Power Systems, George R. Schmidt *(NASA-MSFC)*

2:40 p.m.
Progress Status of Skutterudite-Based Segmented Thermoelectric Technology Development, T. Caillat, A. Jewell, J. Cheng, J. Paik, J. Sakamoto *(NASA-JPL)*

3:00 p.m.
Research Opportunities for Radioisotope Power Systems, Jerry Grey *(Princeton Univ)*

3:20 p.m.
Discussion/Q&A from audience

WEDNESDAY, JUNE 8, 2005 • 2:30 P.M. - 4:00 P.M.

Thermionics/Thermo-electric Reactor Power Systems, *Session Chairs:* Karl Nelson, Wayne Bordelon *(NASA-MSFC)*

Towne
2:30 p.m.
100 kWe Space Reactor for a Potential Jupiter Icy Moon Orbiter Mission, C.F. Acosta, J.L. Weir, B. Ahmed, S. Anghaie *(Univ of Florida)*

2:50 p.m.
Mass and Performance Trends of Space Nuclear Power Systems, E.Y. Robinson *(The Aerospace Corporation)*

3:10 p.m.
A New Generation of Space Thermionic Nuclear Power Systems, V.I. Yarygin *(SSC RF–IPPE-Russia)*

Space Shielding-Modeling, *Session Chairs:* William Atwell, Gregory A. Johnson *(Boeing – Rocketdyne)*

Dover
2:30 p.m.
Monte Carlo Radiation Detector Modeling in Space Systems, J.S. Hendricks, J.M. Burward-Hoy *(LANL)*

2:50 p.m.
ESA's SPace ENVironment Information System (SPENVIS): a Web Based Tool for Assessing Radiation Doses and Effects in Spacecraft Systems, D. Heynderickx, B. Quaghebeur, J. Wera *(BIRA-Belgium)*, E.J. Daly, H.D.R. Evans *(ESA/ESTEC-The Netherlands)*

3:10 p.m.
Application of FLUKA Monte-Carlo Transport Code to Lunar and Planetary Exploration, T. Wilson, N. Zapp *(NASA-JSC)*, L. Pinsky, A. Empl *(Univ of Houston)*, A. Fasso *(Stanford Linear Accelerator Center)*, A. Ferrari, S. Roesler, V. Vlachoudis *(CERN-Switzerland)*, G. Battistoni, M. Campanella, F. Cerutti, E. Gadioli, M.-V. Garzelli, S. Muraro, T. Rancati, P. Sala *(INFN/Univ of Milan-Italy)*, F. Ballarini, A. Ottolenghi, D. Scannicchio *(INFN/Univ of Pavia-Italy)*, M. Carboni, M. Pelliccioni *(INFN-Italy)*, J. Ranft *(Siegen Univ-Germany)*

3:30 p.m.
Segmenting Space Shields, B. Alpay, J.P. Holloway *(Univ of Michigan)*

Advanced Propulsion Concepts-Fusion, *Session Chairs:* George Miley *(Univ of Illinois-UC)*, Terry Kammash *(Univ. of Michigan - Ann Arbor)*

Stratford
2:30 p.m.
Antiproton Powered Gas Core Fission Propulsion System, T. Kammash *(Univ. of Michigan - Ann Arbor)*

2:55 p.m.
Pulsed High Density Fusion Rocket, J.T. Slough *(Univ of Washington)*

3:20 p.m.
Nuclear Heating Considerations in the Superconducting Coils of VISTA Spacecraft, S. Sahin, H.M. Sahin, A. Acir *(Gazi Üniv-Turkey)*, T. Altinok *(Kara Harp Okulu-Turkey)*

WEDNESDAY, JUNE 8, 2005 • 4:00 P.M. – 6:00 P.M.

Plenary #4: Key Issues and Challenges, *Session Chairs:* Kathryn McCarthy *(INL)*, Melissa Van Dyke *(NASA-MSFC)*

Sunrise
INVITED SPEAKERS:
- Building Public Confidence,
  Beverly A. Cook *(Safety Manager, Project Prometheus, NASA-JPL)*
- Deployment of High Power Nuclear Systems in Space: Economics and Legal Issues,
  Vladamir Vasilkovsky *(Academician, Director General Red Star-Russia)*
- Surviving the Space Environment,
  Henry B. Garrett *(Chief Technologist for the Office of Safety and Mission Success, NASA-JPL)*
- Nuclear Thermionics Space Power,
  Nikolai N. Ponomarev-Stepnoi *(Academician, Vice-President of Russian Research Center Kurchatov Institute)*

THURSDAY • JUNE 9, 2005	
7:30 A.M. - 10:00 A.M.	**MEETING REGISTRATION**
8:00 A.M. - 10:00 A.M.	**SNC '05 TECHNICAL SESSIONS** • Space Reactor Concepts for Power and Thermal Propulsion • Dynamics, Control, and Systems Engineering Aspects for Space Nuclear Power and Propulsion • Space Radiation Shielding • Nuclear Design
8:00 A.M. - 5:00 P.M.	**PROFESSIONAL DEVELOPMENT WORKSHOP #3** "RADTRAN5: Estimating Risks of Transporting Radioactive Materials"
8:00 A.M. - 5:00 P.M.	**PROFESSIONAL DEVELOPMENT WORKSHOP #4** "Advanced Gas Reactor Technology Course" (2-Day Workshop)
8:30 A.M. - 11:30 A.M.	**2005 ANS ANNUAL MEETING TECHNICAL SESSIONS** (see pg. 20)
10:00 A.M. - 12:00 P.M.	**SNC '05 TECHNICAL SESSIONS** • Refractory Alloys—II • Measurement Systems for Space Nuclear Power and Propulsion • Radiation Effects - Facilities and Testing • Thermal Fluid Design and Modeling

THURSDAY, JUNE 9, 2005 • 8:00 A.M. - 10:00 A.M.

Space Reactor Concepts for Power and Thermal Propulsion, *Session Chair:* Mike Houts *(NASA-MSFC)*

Sunset

8:00 a.m.
Ultralight Weight and Ultracompact Space Power & Propulsion with Square Lattice Honeycomb Reactors, S. Anghaie, R. Gouw *(Univ of Florida)*, T. Knight *(Univ of South Carolina)*

8:25 a.m.
First Studies on the Optimized Propulsion Unit System OPUS within the Current Nuclear Space Program in CEA, E. Rigaut, X. Raepsaet *(CEA-Saclay, DEN-France)*

8:50 a.m.
Capillary Pumped Passive Reactor for Space Power, T.F. Lin, J.E. Fredley, T.G. Hughes *(Penn State Univ)*

9:15 a.m.
Conceptual Mechanical and Neutronic Design of a Tricarbide Foam Fuel Matrix for Nuclear Thermal Propulsion, R.X. Lenard, D. Youchison *(Sandia)*, B.E. Williams *(Ultramet, Inc.)*, S. Anghaie *(Univ of Florida)*

Dynamics, Control, and Systems Engineering Aspects for Space Nuclear Power and Propulsion, *Session Chair:* Richard Wood *(ORNL)*

Towne

8:00 a.m.
Space Reactor Power System Autonomy, R. T. Wood *(ORNL)*

8:25 a.m.
Closed Brayton Cycle Startup Transient for a Gas Cooled Reactor, S.A. Wright *(Sandia)*

8:50 a.m.
Dynamic Modeling and Control of a Space Nuclear Reactor System, B.R. Upadhyaya, K. Zhao *(Univ of Tennessee)*

9:15 a.m.
Control Sensors for the JIMO Mission, C.B. Geller *(Bettis)*, J.A. Boyle *(KAPL)*, D. Holcomb *(ORNL)*, R.O. Wilson *(Bechtel Pittsburgh Machinery)*

Space Radiation Shielding, *Session Chair:* Robert C. Singleterry *(NASA-LARC)*

Dover

8:00 a.m.
Radiation Exposure Estimates for Manned Exploratory Missions Utilizing Selected Shielding Materials, W. Atwell, W. Bartholet *(Boeing)*, M. Clowdsley, B. Anderson, J. Wilson *(NASA-Langley)*, J. Nealy *(Old Dominion Univ)*, T. Miller, L. Townsend *(Univ of Tennessee)*

8:25 a.m.
Predictions of Fragment Fluences From High-Energy Iron Interacting with ISS Wall Targets, L.W. Townsend, T.M. Miller, C.E. Campbell *(Univ of Tennessee)*, A.A. Gabriel *(Scientific Investigation & Development)*, T. Handler *(Univ of Tennessee)*

8:50 a.m.
Reliability Quantification of Electronics in the Space Environment, Z. Wei, B.D. Ganapol *(Univ of Arizona)*

9:15 a.m.
Comparison of Measured and MCNPX Calculated Lateral Scattering Distributions for 250 MeV Protons, M.F. Moyers *(Loma Linda Univ)*

Nuclear Design, *Session Chair:* Mike Zerkle *(Bechtel Bettis)*

Stratford

8:00 a.m.
ZPPR-16 & 20 Benchmark Review and Assessment, T.F. Marcille *(LANL)*

8:20 a.m.
Nuclear Design Characteristics of Ultrahigh Temperature Space Reactors with Thermal Spectrum, R. Gouw, S. Anghaie *(Univ of Florida)*

8:40 a.m.
Applications of SCALE 5 TSUNAMI for Critical Experiment Benchmark Design, Interpretation, and Estimation of Biases and Uncertainties for Space Power Reactor Designs and Safety Analyses, C.M. Hopper, J.A. Bucholz, R.M. Westfall, C.V. Parks *(ORNL)*

9:00 a.m.
Critical Mass Experiment with Niobium-1 wt.% Zirconium Fueled with Highly Enriched Uranium in Support of Project Prometheus, D. Loiza *(LANL)*

9:20 a.m.
Reactivity Characteristics of Soil Moderated Mixtures for Space Reactor Accidents, L. Gratton *(Consultant)*

9:40 a.m.
Modification of MONTEBURNS to Evaluate Space Reactors at Criticality throughout the Burnup Cycle, H. Trellue *(LANL)*

THURSDAY, JUNE 9, 2005 • 10:00 A.M. - 12:00 P.M.

Refractory Alloys—II, *Session Chair:* Robert Hickman *(NASA-MSFC)*

Sunset

10:00 a.m.
Niobium-Base Alloys for Space Nuclear Applications, K.J. Leonard, C.E. Duty, S.J. Zinkle *(ORNL)*, R.F. Luther *(Bechtel Bettis)*, R.E. Gold *(Pittsburgh Materials Technology)*, R.W. Buckman *(Refractory Metals Technology)*

10:25 a.m.
The Potential of Tantalum Alloys for Space Nuclear Applications, C.E. Duty, S.J. Zinkle *(ORNL)*, R.F. Luther *(Bechtel Bettis)*, R.W. Buckman *(Refractory Metals Technology)*, R.E. Gold *(Pittsburgh Materials Technology)*, Y.A. Ballout *(Lockheed Martin)*

10:50 a.m.
The Mechanical Behavior of Nb-1Zr, T.E. McGreevy, C.E. Duty, K.J. Leonard, F.W. Wiffen, S.J. Zinkle *(ORNL)*

11:15 a.m.
Recovery and Recrystalization Behavior of Nb-1Zr and Group VB Metals, D.T. Hoelzer, E.A. Kenik, S.A. Speakman *(ORNL)*

11:40 a.m.
Joining Issues for Refractory Alloys, M.L. Santella *(ORNL)*

Measurement Systems for Space Nuclear Power and Propulsion, *Session Chair:* Frank Ruddy *(Westinghouse)*

Towne

10:00 a.m.
A Wide Range Neutron Detector for Nuclear Space Power Applications, C. Barrientos *(Black River Technology Inc.)*, J. de Luis *(Payload Systems)*

10:25 a.m.
Ab Initio Thermometry for Long-Term Unattended Space Reactor Operation, D.E. Holcomb, R.A. Kisner *(ORNL)*, C.L. Britton, Jr. *(Univ of Tennessee)*

10:50 a.m.
Power Monitoring in Space Nuclear Reactors Using Silicon Carbide Radiation Detectors, F.H. Ruddy *(Westinghouse)*, J.U. Patel *(NASA-JPL)*, J.G. Williams *(Univ of Arizona)*

11:15 a.m.
Recent Advancements in Harsh Environment Fiber Optic Sensors: An Enabling Technology for Space Nuclear Power, R.S. Fielder, R.G. Duncan, M.L. Palmer *(Luna Innovations)*

Radiation Effects – Facilities and Testing, *Session Chair:* Leo M. Bobek *(Univ of Massachusetts Lowell)*

Dover
10:00 a.m.
Sandia National Laboratories' Radiation Effects Testing Reactor Facilities, D.G. Talley, L.E. Martin, R.D. Beets *(Sandia)*

10:25 a.m.
The Berkeley Accelerator Space Effects (BASE) Facility, M.A. McMahan *(Lawrence Berkeley National Laboratory)*

10:50 a.m.
Facilities for Radiation Testing and Research at the UMLRL, L.M. Bobek, T.M. Regan, J.R. White, D.F. Sullivan *(Univ Massachusetts Lowell)*

11:15 a.m.
Radiation Testing to Assess Damage in Electronics for Deep Space Missions, E. Normand, J.L. Wert, B. Bartholet *(Boeing Phantom Works)*, T. Lynch, T. Hertel, K. Metcalf *(Boeing IDS-Rocketdyne)*

11:40 a.m.
Strategies for Radiation Hardness Testing of Power Semiconductor Devices, M.O. Patton, R.D. Harris *(Analex Corp)*, R.G. Rohal *(Micro Energy Corp)*, T.E. Blue, A.C. Kauffman *(Ohio State Univ)*, A.J. Frasca *(Wittenberg Univ)*

Thermal Fluid Design and Modeling, *Session Chairs:* Frederick Best *(Texas A&M Univ)*, James Pasch *(Univ of Florida)*

Stratford
10:00 a.m.
High Temperature Lightweight Heat Pipe Panel Technology Development, T.G. Stern *(ATK - Composites)*, W.G. Anderson *(Advanced Cooling Technologies)*

10:25 a.m.
Temperature Induced Flows in Gas Mixtures: Nuclear Applications in Space and Fuels, E.L. Tipton, T.K. Ghosh, R.V. Tompson, I.N. Ivchenko, S.K. Loyalka *(Univ of Missouri-Columbia)*

10:50 a.m.
Two-phase Flow Issues in Space Nuclear Reactor and Nuclear Propulsion Systems, R. Oinuma, D.C. Bean, C.B. Neill, R.C. Kurwitz, F.R. Best *(Texas A&M Univ)*

11:15 a.m.
A Hybrid Fine-Coarse Computational Mesh Simulation Tool for Space Nuclear Systems, A. Charmeau, S. Anghaie *(Univ of Florida)*

11:40 a.m.
Two-Phase Hydrogen Properties and Modeling Approaches for NTP Applications, J. Pasch, S. Anghaie, M. Popp *(Univ of Florida)*

PROFESSIONAL DEVELOPMENT WORKSHOP #1:

"Preparing for the Nuclear Engineering Professional Engineering Exam"

SUNDAY, JUNE 5, 2005
8:30 a.m. – 5:00 p.m.
LOCATION: Pacific Salon I

WORKSHOP ORGANIZER:
Dr. Robert Busch, Director, Nuclear Engineering Laboratory, University of New Mexico

WORKSHOP INSTRUCTORS:
Robert D. Busch, P.E., University of New Mexico
Gerald A. Loignon, Jr., P.E., V.C. Summer Nuclear Station
Charles A. Sparrow, P.E., Mississippi State University

PURPOSE OF WORKSHOP:
This course is designed for individuals who have passed the Fundamentals of Engineering Exam (formerly the EIT exam) and who are preparing for the Professional Engineering Exam (PE exam) in Nuclear Engineering. Instructors will provide details on registration and how it differs from state to state, plus an overview of the examination formats. The six basic skill areas; neutronics, instrumentation and measurements, nuclear power shielding, nuclear materials and fuels, and radioactive waste, will be discussed in detail. For each skill area, the instructor will describe the topics and the skills to be tested within each.

Examples of questions will be presented in depth, after which students will work other typical questions on their own. Instructors will provide assistance, then review solutions with the group. Students will be provided a sample exam and list of recommended resources for continued study.

WORKSHOP OUTLINE:

Time	Topic	Instructor
8:30 a.m. - 9:00 a.m.	Introduction and PE Exam Overview	Busch
9:00 a.m. - 10:30 a.m.	Shielding and Neutronics	Sparrow
10:30 a.m. - 12:00 p.m.	Nuclear Power Skills and PRA	Loignon
12:00 p.m. - 1:30 p.m.	LUNCH (on your own)	
1:30 p.m. - 3:00 p.m.	Radioactive Waste, Nuclear Fuel Cycle and Instrumentation	Busch
3:00 p.m. - 3:30 p.m.	Wrap-up	Busch

PROFESSIONAL DEVELOPMENT WORKSHOP #2:

"Introduction of Thermal Hydraulic RELAP5-3D Code"

SUNDAY, JUNE 5, 2005
8:00 a.m. – 5:00 p.m.
LOCATION: Pacific Salon II

WORKSHOP ORGANIZER:
Gary W. Johnsen, RELAP5-3D Program Manager, Idaho National Laboratory

INSTRUCTORS:
Paul D. Bayless, Sr. Advisory Engineer, Idaho National Laboratory
Cliff B. Davis, Consulting Engineer, Idaho National Laboratory

PURPOSE OF WORKSHOP:
This one day class will introduce participants to the RELAP5-3D thermal-hydraulic systems computer code. RELAP5-3D is the latest version in the RELAP code series code developed at the Idaho National Laboratory for the US Nuclear Regulatory Commission and the Department of Energy. Key features of the code include: multidimensional hydrodynamic model (Cartesian or cylindrical); integrated multidimensional nodal kinetics model based on NESTLE; graphical user interface; and functional under UNIX and Windows platforms.

RELAP5-3D has been extensively used for the analysis of light water reactors of various designs, including Generation II and III pressurized and boiling water reactors of both Western and Russian designs. Specific applications of the code have included simulations of transients in light water reactor (LWR) systems, such as loss of coolant, anticipated transients without scram (ATWS), and operational transients such as loss of feedwater, loss of offsite power, station blackout, and turbine trip. Most recently, capabilities have been added for the analysis of Generation IV reactor designs.

The class will provide an overview of the code's models and capabilities and will include "hands-on" exercises. Personnel interested in transient and accident analysis of current and future reactor designs should find the class informative.

NOTE: Portions of the class are "hands on". Participants are encouraged to bring PC laptops running Windows 95 or higher to load and execute the code.

WORKSHOP OUTLINE:

Time	Topic
8:00 a.m. - 9:00 a.m.	Introduction and Code Overview @ General discussion of the code approach, capabilities, and applications
9:00 a.m. - 9:45 a.m.	Flow models - Flow regimes, interfacial friction, wall friction, form losses
9:45 a.m. - 10:15 a.m.	RELAP5 Graphical User Interface and code execution - description of GUI, how to run the code
10:15 a.m. - 10:30 a.m.	Break and code installation on participant PCs
10:30 a.m. - 11:00 a.m.	Demonstration/exercise 1 @ Typical PWR small break LOCA @ Instructor-led demonstration of GUI, showing plots and system graphics
11:00 a.m. - 11:30 a.m.	Heat and mass transfer models - Interfacial heat and mass transfer, heat conduction, wall heat transfer
11:30 a.m. - 12:00 p.m.	Component models @ branches, pumps, valves, accumulators
12:00 p.m. - 1:00 p.m.	Lunch
1:00 p.m. - 1:45 p.m.	Special process models - Critical flow, flooding, trips and control variables, reactor kinetics
1:45 p.m. - 2:00 p.m.	Development of facility input models
2:00 p.m. - 2:45 p.m.	Demonstration/exercise 2 @ Counterflow heat exchanger - Walk participants through changing either type of controller or gains, compare results to original
2:45 p.m. - 3:00 p.m.	Break
3:00 p.m. - 3:30 p.m.	Current applications - alternate working fluids, application to Gen IV reactors, research/test reactors, space reactors, simulators, non-nuclear and experiment facilities
3:30 p.m. - 3:45 p.m.	RELAP5 resources @ describes how to obtain the code and the resources available to RELAP5 users
3:45 p.m. - 5:00 p.m.	Open discussion and demonstration/exercise 3 @ Reactivity feedback in a natural circulation loop

PROFESSIONAL DEVELOPMENT WORKSHOP #4:

"Advanced Gas Reactor Technology Course" (2-Day Workshop)

THURSDAY, JUNE 9, 2005 • 8:00 a.m. – 5:00 p.m.
FRIDAY, JUNE 10, 2005 • 8:00 a.m. – 5:00 p.m.
LOCATION: California Room

COURSE LEADER:
Dr. Madeline Feltus is the Advanced Gas Reactor Fuels Program Manager in the Office of Nuclear Energy Science and Technology in the Department of Energy. She has developed and organized the DOE gas reactor technology course and participated in other ANS course programs. She has participated in gas reactor research programs and international gas reactor technology efforts.

COURSE INSTRUCTORS:
Syd Ball, Manager of GT-MHR Program, Oak Ridge National Laboratory
Madeline Feltus, Advanced Gas Reactor Fuels Program Manager, Office of Nuclear Energy Science and Technology, U.S. Department of Energy
Lewis Lommers, Framatome
Pete Pappano, Oak Ridge National Laboratory
Larry Parme, Licensing Manager, General Atomics
Scott Penfield, Jr., Principal Technology Insights and Past Chair, Chattanooga and San Diego Sections
Matt Richards, General Atomics
Ted Quinn, Consultant and Past President, ANS
John Saurwein, General Atomics
Arkal Shenoy, Director, Gas Reactor Program, General Atomics

WORKSHOP OUTLINE:

Topic	*Speaker*
THURSDAY, JUNE 9, 2005	
Course Introduction, Objectives and Agenda Overview	Feltus/Ball
History and Background of Gas Reactors	Feltus
PBMR Overview	Feltus/Ball
Lunch (on your own)	
GT-MHR Overview	Shenoy
Gas Reactor Power Conversion Systems/Hydrogen PCS	Penfield
Core Thermal-hydraulics	Ball
Core Reactor Physics	Feltus
Adjourn	
FRIDAY, JUNE 10, 2005	
Reactor System, Structures, Seismic, High Temperature Materials	Shenoy
Fuel Design, Manufacturing, and Performance: General Behavior of Fission Product Groups, Fuel Failure Mechanisms, Fuel Specs., Design and Manufacturing, Fission Products Release: PIE Methods and Tests, Fuel Behavior Prediction Models.	
Graphite Issues: Oxidation, Irradiation, Air Ingress	
Lunch (on your own)	
I&C Technology for Advanced Reactors – Safety Margins	Quinn
Safety and Licensing: Accident Selection; Proliferation Issues; Containment/Confinement; Safety Codes, Analysis Methods	Parme/Ball
Question and Answer Period, Wrap-up	Feltus/Ball
Adjourn	

DOE Nuclear Criticality Safety Program and "DSA Issues Workshop"

FRIDAY, JUNE 10, 2005
8:00 a.m. - 4:30 p.m.
LOCATION: Terrace Salons 1, 2 and 3

Sponsored by the Nuclear Criticality Safety Division

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. DOE personnel, DNFSB staff, EFCOG safety personnel and technical program element staff will discuss the status of the NCSP. EFCOG safety analysis personnel, DOE Criticality Safety Coordinating Team, and the End-Users Group will discuss status of DSA issues and CS. This NCSP 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 and effective DSA in support of operations. Extensive audience participation is encouraged and anticipated. Because of a large section of this program pertaining to DSA issues, Safety Analysis personnel are encouraged to attend.

PROGRAM:

8:00 a.m.	Greetings CSSG	Adolf Garcia
8:10 a.m.	NCSP	Jim Felty
8:20 a.m.	EFCOG	Pamela Horning
8:30 a.m.	DNFSB Staff	
8:45 a.m.	NCSP elements status (3)	
9:30 a.m.	CSCT	Jerry McKamy
9:45 a.m.	Endusers	Shean Monahan
10:00 a.m.	BREAK	
10:15 a.m.	DSA Issues a) PISA b) TSRs vs Safety Program Controls c) Other	William Brock
NOON	Lunch	
1:00 p.m.	DOE STDR 3007	Kevin Carroll (end users issues)
2:00 p.m.	DOE EH	
2:15 p.m.	DSA/CS issues	Chris Robinson
3:30 p.m.	Open Forum	Robert Wilson
4:30 p.m.	End meeting	Adolf Garcia

Committee Meetings

NATIONAL COMMITTEES

Accreditation Policies & Procedures
SUNDAY, 5:00 P.M. – 7:00 P.M.
LOCATION: Pacific Salon 6

ANS Business Meeting
MONDAY, 4:00 P.M. – 5:00 P.M.
LOCATION: Golden West

Board of Directors/ Professional Division Reports
WEDNESDAY, 4:00 P.M. – 6:00 P.M.
LOCATION: Golden West

Board of Directors
THURSDAY, 8:00 A.M. – 5:00 P.M.
LOCATION: Golden West

Book Publishing
SUNDAY, 11:00 A.M. – 12:00 P.M.
LOCATION: Royal Palm Salon 3

Bylaws & Rules
SUNDAY, 1:30 P.M. – 4:00 P.M.
LOCATION: Royal Palm Salon 2

Executive Conference Review
SUNDAY, 10:30 A.M. – 12:00 P.M.
LOCATION: Pacific Salon 5

Finance
TUESDAY, 4:00 P.M. – 7:00 P.M.
LOCATION: Eaton

Honors & Awards
MONDAY, 4:00 P.M. – 7:00 P.M.
LOCATION: Stratford

International
SUNDAY, 3:00 P.M. – 6:00 P.M.
LOCATION: California

Local Sections/Workshop
SUNDAY, 8:00 A.M. – 12:00 P.M.
LOCATION: Golden West

Meetings Proceedings and Transactions
MONDAY, 7:30 A.M. – 8:30 A.M.
LOCATION: Brittany

Membership
SUNDAY, 11:00 A.M. – 1:00 P.M.
LOCATION: Royal Palm Salon 4

NEED
SUNDAY, 7:30 P.M. – 9:30 P.M.
LOCATION: Royal Palm Salon 2

Nuclear News Editorial Advisory
SUNDAY, 4:00 P.M. – 5:30 P.M.
LOCATION: Royal Palm Salon 3

Nuclear Technology Editorial Advisory Board
SUNDAY, 10:00 A.M. – 11:00 A.M.
LOCATION: Royal Palm Salon 3

Planning
SUNDAY, 2:00 P.M. – 6:00 P.M.
LOCATION: Sunset

Policies & Procedures/ Quality Improvement (PPQI)
SUNDAY, 2:00 P.M. – 4:00 P.M.
LOCATION: Royal Palm Salon 3

President's Meeting with Committee Chairs
SUNDAY, 9:00 A.M. – 10:30 A.M.
LOCATION: California Room

President's Meeting with Division Chairs
SUNDAY, 10:30 A.M. – 12:00 P.M.
LOCATION: California Room

Professional Development Workshop
SUNDAY, 1:30 P.M. – 3:00 P.M.
LOCATION: Pacific Salon 3

Professional Divisions
TUESDAY, 4:00 P.M. – 7:00 P.M.
LOCATION: California

Professional Engineering Exam
SUNDAY, 3:00 P.M. – 6:00 P.M.
LOCATION: Towne

Professional Women in ANS
MONDAY, 11:30 A.M. – 1:00 P.M.
LOCATION: Brittany

Program (NPC) – Program
WEDNESDAY, 4:00 P.M. – 7:00 P.M.
LOCATION: California

Program (NPC) – Screening & International
MONDAY, 4:00 P.M. – 6:00 P.M.
LOCATION: California

Public Information
SUNDAY, 3:30 P.M. – 5:30 P.M.
LOCATION: Eaton

Public Policy
WEDNESDAY, 11:30 A.M. – 1:00 P.M.
LOCATION: Ascot

Publications Steering
MONDAY, 4:00 P.M. – 6:00 P.M.
LOCATION: Sunset

Scholarship Policy and Coordination
SUNDAY, 10:30 A.M. – 12:00 P.M.
LOCATION: Pacific 3

Student Sections
SUNDAY, 12:00 P.M. – 2:00 P.M.
LOCATION: Sunset

Technical Journals
SUNDAY, 1:00 P.M. – 3:30 P.M.
LOCATION: Pacific Salon 5

SPECIAL COMMITTEES

Nuclear Nonproliferation
SUNDAY, 2:00 P.M. – 4:00 P.M.
LOCATION: Dover

TUESDAY, 5:00 P.M. – 7:00 P.M.
LOCATION: Clarendon

Power Generation Outreach
SUNDAY, 11:30 A.M. – 1:00 P.M.
LOCATION: Royal Palm Salon 2

OTHER COMMITTEES

CNF
MONDAY, 7:30 P.M. – 10:00 P.M.
LOCATION: Eaton

Eagle Alliance Board of Directors
SUNDAY, 1:00 P.M. – 3:30 P.M.
LOCATION: Galleria Salon 1

Mathematics & Computation/ Reactor Physics/ Radiation Protection & Shielding Joint Benchmark Meeting
SUNDAY, 11:00 A.M. – 1:00 P.M.
LOCATION: Royal Palm Salon 6

NEDHO
MONDAY, 4:30 P.M. – 6:00 P.M.
LOCATION: Royal Palm 3

Past President's Advisory
TUESDAY, 7:00 A.M. – 9:00 A.M.
LOCATION: Ascot

PHYSOR-2006 Planning Committee Meeting
TUESDAY, 4:00 P.M. – 6:00 P.M.
LOCATION: Ascot

PNC
SUNDAY, 8:00 A.M. – 5:00 P.M.
LOCATION: San Diego

DIVISION COMMITTEES

Accelerator Applications

EXECUTIVE
MONDAY, 11:30 A.M. – 1:00 P.M.
LOCATION: Ascot

PROGRAM/MEMBERSHIP
SUNDAY, 7:30 P.M. – 9:30 P.M.
LOCATION: Sunset

Aerospace Nuclear Science and Technologies

COMMITTEE MEETING
SUNDAY, 10:00 A.M. – 12:00 P.M.
LOCATION: Royal Palm Salon 1

Biology & Medicine

COMMITTEE OF THE WHOLE
SUNDAY, 4:00 P.M. – 5:30 P.M.
LOCATION: Royal Palm Salon 6

Education and Training

ALPHA NU SIGMA
SUNDAY, 1:00 P.M. – 2:00 P.M.
LOCATION: Eaton

EXECUTIVE/MEMBERSHIP/ HONORS & AWARDS
SUNDAY, 1:30 P.M. – 4:00 P.M.
LOCATION: Pacific Salon 6

NUCLEAR WORKFORCE WORKING GROUP
SUNDAY, 12:00 P.M. – 2:00 P.M.
LOCATION: Royal Palm 3

PROGRAM
SUNDAY, 10:30 A.M. – 12:00 P.M.
LOCATION: Pacific Salon 6

UNIVERSITY/INDUSTRY/ GOVERNMENT RELATIONS
SUNDAY, 9:30 A.M. – 10:30 A.M.
LOCATION: Pacific Salon 6

Environmental Sciences

EXECUTIVE
SUNDAY, 10:00 A.M. – 2:30 P.M.
LOCATION: Towne

PROGRAM
SUNDAY, 8:30 A.M. – 10:00 A.M.
LOCATION: Towne

Fusion Energy

EXECUTIVE
SUNDAY, 3:00 P.M. – 5:00 P.M.
LOCATION: Pacific Salon 3

Fuel Cycle & Waste Management

EXECUTIVE
SUNDAY, 3:30 P.M. – 5:30 P.M.
LOCATION: Royal Palm Salon 1

PROGRAM
SUNDAY, 1:30 P.M. – 3:30 P.M.
LOCATION: Royal Palm Salon 1

TECHNICAL OPERATING COMMITTEE
SUNDAY, 12:00 P.M. – 1:30 P.M.
Location: Royal Palm Salon 1

Human Factors

EXECUTIVE/PROGRAM
MONDAY, 4:00 P.M. – 6:30 P.M.
LOCATION: Clarendon

Isotopes and Radiation

EXECUTIVE
SUNDAY, 2:30 P.M. – 4:00 P.M.
LOCATION: Pacific Salon 7

JOINT PROGRAM COMMITTEE – I&R & BM
SUNDAY, 1:30 P.M. – 2:30 P.M.
LOCATION: Pacific Salon 7

Materials Science & Technology

EXECUTIVE
MONDAY, 7:00 P.M. – 9:00 P.M.
LOCATION: Ascot

Mathematics & Computation

EXECUTIVE
SUNDAY, 2:00 P.M. – 4:00 P.M.
LOCATION: Royal Palm Salon 6

PROGRAM
SUNDAY, 1:00 P.M. – 2:00 P.M.
LOCATION: Royal Palm Salon 6

Nuclear Criticality Safety

EDUCATION MEETING
SUNDAY, 10:00 A.M. – 11:00 A.M.
LOCATION: Royal Palm Salon 5

EXECUTIVE
SUNDAY, 3:00 P.M. – 5:30 P.M.
LOCATION: Royal Palm Salon 5

PROGRAM
SUNDAY, 1:00 P.M. – 3:00 P.M.
LOCATION: Royal Palm Salon 5

Nuclear Installation Safety

EXECUTIVE
MONDAY, 5:00 P.M. – 8:00 P.M.
LOCATION: Brittany

PROGRAM
SUNDAY, 7:30 P.M. – 11:00 P.M.
LOCATION: Royal Palm Salon 3

Operations & Power

EXECUTIVE
SUNDAY, 3:30 P.M. – 6:00 P.M.
LOCATION: Royal Palm Salon 4

NEW CONSTRUCTION WORKING GROUP
TUESDAY, 4:00 P.M. – 6:00 P.M.
LOCATION: Terrace Pavilion

PROGRAM
SUNDAY, 1:00 P.M. – 3:30 P.M.
LOCATION: Royal Palm Salon 4

Radiation Protection & Shielding

EXECUTIVE
MONDAY, 5:00 P.M. – 7:00 P.M.
LOCATION: Ascot

PROGRAM
MONDAY, 4:00 P.M. – 5:00 P.M.
LOCATION: Ascot

Reactor Physics

EXECUTIVE
SUNDAY, 4:00 P.M. – 6:00 P.M.
LOCATION: Sunrise

GOALS & PLANNING
SUNDAY, 12:00 P.M. – 2:00 P.M.
LOCATION: Sunrise

PROGRAM
SUNDAY, 2:00 P.M. – 4:00 P.M.
LOCATION: Sunrise

Robotics and Remote Systems

EXECUTIVE
SUNDAY, 10:00 A.M. – 3:00 P.M.
LOCATION: Pacific Salon 4

Thermal Hydraulics

EXECUTIVE
SUNDAY, 5:00 P.M. – 7:00 P.M.
LOCATION: Pacific Salon 4

HONORS & AWARDS
TUESDAY, 5:00 P.M. – 7:00 P.M.
LOCATION: Brittany

PROGRAM
SUNDAY, 3:00 P.M. – 5:00 P.M.
LOCATION: Pacific Salon 4

STANDARDS COMMITTEES

ANS Standards Board
TUESDAY, 9:00 A.M. – 5:00 P.M.
LOCATION: Fairfield

ANS 6.1.1 Working Group
TUESDAY, 8:00 A.M. – 10:00 A.M.
LOCATION: Clarendon

ANS 8.1
TUESDAY, 7:00 A.M. – 8:30 A.M.
LOCATION: Sheffield

ANS 8.12 Working Group
MONDAY, 4:30 P.M. – 5:30 P.M.
LOCATION: Sheffield

ANS 8.21
TUESDAY, 7:00 A.M. – 8:00 A.M.
LOCATION: Fairfield

WEDNESDAY, 7:00 A.M. – 8:00 A.M.
LOCATION: Fairfield

ANS 10.4
TUESDAY, 5:00 P.M. – 8:00 P.M.
LOCATION: Fairfield

ANS 18.1 Working Group
WEDNESDAY, 1:00 P.M. – 5:00 P.M.
LOCATION: Brittany

ANS 19 Reactor Physics Standards
MONDAY, 8:30 A.M. – 10:30 A.M.
LOCATION: Eaton

ANS 28
WEDNESDAY, 8:00 A.M. – 5:00 P.M.
LOCATION: Fairfield

ANS 51.1/52.1 Working Group
TUESDAY, 8:00 A.M. – 5:00 P.M.
LOCATION: Brittany

Level 3 PRA
MONDAY, 4:00 P.M. – 6:00 P.M.
LOCATION: Fairfield

CSSG
WEDNESDAY, 4:00 P.M. – 6:00 P.M.
LOCATION: Ascot

NFSC
MONDAY, 8:30 A.M. – 6:00 P.M.
LOCATION: Towne

NFSC Subcommittee Chair Meeting
TUESDAY, 8:00 A.M. – 12:00 P.M.
LOCATION: Eaton

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.

TECHNICAL TOUR FORM: ARCHIMEDES TECHNOLOGY GROUP, DIII-D TOKAMAK FUSION EXPERIMENT AND URBAN MAGLEV VEHICLE AND TEST TRACK AT GENERAL ATOMICS

AMERICAN NUCLEAR SOCIETY: 2005 ANNUAL MEETING

"The Next 50 Years: Creating Opportunities"

June 5-9, 2005 • San Diego, CA • Town and Country Resort & Convention Center

ARCHIMEDES TECHNOLOGY GROUP, DIII-D TOKAMAK FUSION EXPERIMENT AND URBAN MAGLEV VEHICLE AND TEST TRACK AT GENERAL ATOMICS (WEDNESDAY, JUNE 8, 2005)

PLEASE PRINT – PLEASE NOTE THAT YOU MUST BE REGISTERED FOR THE 2005 ANS ANNUAL MEETING TO PARTICIPATE IN THE TECHNICAL TOUR TO THE ARCHIMEDES TECHNOLOGY GROUP, DIII-D TOKAMAK FUSION EXPERIMENT AND URBAN MAGLEV VEHICLE AND TEST TRACK AT GENERAL ATOMICS.

NO EXCEPTIONS.

First Name/Middle Initial: _____ Last Name: _____

Telephone (Daytime): _____ Fax: _____ Email: _____

Do you have any special needs that must be accommodated for you to participate fully in the tour? If so, please specify:

_____

_____

Date of Birth: _____ Age: _____ ❒ Male ❒ Female

Social Security Number: _____

Employer's Name: _____

Employer's Address: _____

_____

NON-U.S. CITIZENS PLEASE COMPLETE THE FOLLOWING: (PLEASE PRINT)

Country of Citizenship: _____ PRA # (Green Card): _____

Passport #: _____ Expiration Date: _____

Visa Type: _____ Expiration Date: _____

NOTE TO ALL: YOU WILL BE REQUIRED TO PRESENT YOUR PHOTO IDENTIFICATION (PASSPORT OR GREEN CARD FOR NON-U.S. CITIZENS; DRIVER'S LICENSE FOR U.S. CITIZENS) BEFORE THE START OF THE TOURS. TOUR ATTENDANCE BY NON-U.S. CITIZENS MAY BE RESTRICTED BY THE HOST ORGANIZATIONS.

MAIL OR FAX THIS COMPLETED FORM WITH YOUR ADVANCE MEETING REGISTRATION FORM, NO LATER THAN MAY 12TH, 2005, TO:

AMERICAN NUCLEAR SOCIETY
ANS REGISTRAR
P.O. Box 97781
Chicago, IL 60678-7781

Fax: 708/579-8314

ADVANCE REGISTRATION FORM

2005 ANS ANNUAL MEETING: "The Next 50 Years: Creating Opportunities"

EMBEDDED TOPICAL MEETING: Space Nuclear Conference 2005 (SNC'05)

June 5-9, 2005 • San Diego, CA • Town and Country Resort & Convention Center

FILL OUT COMPLETELY - PLEASE PRINT

ANS ID #: _____

First Name/Middle Initial: _____ Last Name: _____

Job Title: _____ Company/Affiliation: _____

Street Address: _____ ❒ Company or ❒ Home

City/State/Zip Code: _____ Country: _____

Telephone: _____ Facsimile: _____

Email: _____

ANS Members, Please Check If This Is Your: ❒ New Address *(will change member record)* or ❒ Meeting Registration Address Only

Please Indicate: ❒ ANS National Individual Member ❒ ANS Fellow ❒ Emeritus Member ❒ Student
❒ Non-member ❒ Non-member Invited Speaker ❒ Organization Member Representative
❒ Special accommodation required to fully participate (40)
❒ ANS Local Section Member *(ANS Local Section Members who are not national members, do not qualify for ANS Member rate.)*

INDIVIDUAL CONFERENCE REGISTRATION – PREREGISTRATION DEADLINE FOR REDUCED FEE IS MAY 12, 2005

	Fees Paid By May 12, 2005		Fees Paid After May 12, 2005	
	ANS National Member	Non-member*	ANS National Member	Non-member*
Full ANS & Topical Meeting	[01] ❒ $615	[02] ❒ $765	[09] ❒ $715	[10] ❒ $865
Includes 1 ticket to the ANS President's Reception				
One Day Attendance	[03] ❒ $475	[04] ❒ $625	[11] ❒ $550	[12] ❒ $700
Circle One: Mon Tues Wed Thur				
does not include ticket to the ANS President's Reception or other events				
Student	[05] ❒ $85	[06] ❒ $135	[13] ❒ $135	[14] ❒ $185
does not include ticket to the ANS President's Reception or other events				
ANS Emeritus Member	[07] ❒ $85	N/A	[15] ❒ $135	N/A
does not include ticket to the ANS President's Reception or other events				
Spouse/Guest	[08] ❒ $120	N/A	[16] ❒ $165	N/A
(Includes 1 ticket to the ANS President's Reception and admittance to the spouse/guest hospitality breakfast on Monday, Tuesday, & Wednesday - does not include technical sessions or other events.)				

Please supply spouse/guest name: _____

All meeting attendees, please note:
You must select one of the meeting publications (choice [41] or [42] on the following page, or the TRANSACTIONS will be given to you by default.

PLEASE REGISTER ON-SITE AFTER WEDNESDAY, JUNE 1, 2005.

SPECIAL EVENTS AND TOURS Please note: you must be registered for the meeting to attend evening events.

SUNDAY, JUNE 5, 2005

Additional tickets for ANS President's Reception [21] # of tickets ___ @ $65 each = $_____

MONDAY, JUNE 6, 2005

Spouse/Guest tour: "San Diego Architecture Tour" [22] # of tickets ___ @ $23 each = $_____
Operations & Power Division Luncheon [23] # of tickets ___ @ $45 each = $_____
DDR and FCWM Divisions Luncheon [24] # of tickets ___ @ $45 each = $_____
Evening event: Buffet dinner at Midway Aircraft Carrier Museum [25] # of tickets ___ @ $50 each = $_____

CONTINUED ON THE NEXT PAGE. PLEASE RETURN BOTH PAGES WITH PAYMENT.

NAME: _____

SPECIAL EVENTS AND TOURS (CONTINUED)

PLEASE NOTE: YOU MUST BE REGISTERED FOR THE MEETING TO ATTEND EVENING EVENTS.

TUESDAY, JUNE 7, 2005

SPOUSE/GUEST TOUR: "RANCHO BERNARDO WINERY" [26] # OF TICKETS ___ @ $21 EACH = $_____

HONORS AND AWARDS LUNCHEON [27] # OF TICKETS ___ @ $45 EACH = $_____

EVENING EVENT: MULTI-DIVISION MIXER (AT SYCUAN CASINO, PAIPA'S OASIS BUFFET) [28] # OF TICKETS ___ @ $23 EACH = $_____

WEDNESDAY, JUNE 8, 2005

TECHNICAL TOUR: ARCHIMEDES TECHNOLOGY GROUP, DIII-D TOKAMAK FUSION EXPERIMENT & THE URBAN MAGLEV VEHICLE & TEST TRACK AT GENERAL ATOMICS [29] # OF TICKETS ___ @ $35 EACH = $_____

NUCLEAR INSTALLATIONS SAFETY DIVISION (NISD) LUNCHEON [30] # OF TICKETS ___ @ $45 EACH = $_____

EVENING EVENT: RECEPTION AT AEROSPACE MUSEUM [31] # OF TICKETS ___ @ $50 EACH = $_____

MEETING PUBLICATIONS

ALL REGISTERED MEETING ATTENDEES WILL RECEIVE EITHER A CD-ROM OF THE ANS ANNUAL MEETING SUMMARIES OR A CD-ROM OF THE EMBEDDED TOPICAL MEETING PROCEEDINGS. INDICATE WHICH MEETING PUBLICATION YOU WISH TO RECEIVE (SELECT ONE):

[41] ___ TRANSACTIONS (VOLUME 92) CONTAINS SUMMARIES FROM THE ANS ANNUAL MEETING (CD-ROM ONLY)
[42] ___ "SNC'05 (SPACE NUCLEAR CONFERENCE 2005)" FULL PAPER PROCEEDINGS (CD-ROM ONLY)

ADDITIONAL PUBLICATIONS AVAILABLE FOR PURCHASE:

[43] ❒ I WANT TO PURCHASE A COPY OF THE ANS TRANSACTIONS (ANNUAL MEETING SUMMARIES) ON CD-ROM FOR $75 $_____

[44] ❒ I WANT TO PURCHASE A COPY OF THE FULL PAPERS PRESENTED AT THE "SNC'05" EMBEDDED TOPICAL MEETING ON CD-ROM FOR $75 $_____

[45] ❒ I WANT TO PURCHASE A PRINTED COPY OF THE ANS TRANSACTIONS (ANNUAL MEETING SUMMARIES) FOR $25 $_____

ANS PROFESSIONAL DEVELOPMENT WORKSHOPS (PDW)

REGISTRATION FOR THE ANS PROFESSIONAL DEVELOPMENT WORKSHOP(S) IS SEPARATE FROM, AND IN ADDITION TO, THE 2005 ANS ANNUAL MEETING. IF ATTENDING BOTH, A WORKSHOP(S) AND THE ANNUAL MEETING, YOU MUST REGISTER AND PAY FOR THEM BOTH. REGISTRATION FOR THE WORKSHOP(S) INCLUDES COPIES OF AVAILABLE PAPERS AND MATERIALS. PLEASE REGISTER EARLY, SPACE IS LIMITED!

PDW #1: "PREPARING FOR THE NUCLEAR ENGINEERING PROFESSIONAL ENGINEERING EXAM" - SUNDAY, JUNE 5, 2005

ANS NAT'L MEMBER [50] ❒ @ $450 NON-MEMBER [51] ❒ @ $550 $_____

PDW #2: "RELAP5-3D CODE" - SUNDAY, JUNE 5, 2005

ANS NAT'L MEMBER [52] ❒ @ $450 NON-MEMBER [53] ❒ @ $550 $_____

~~PDW #3: "RADTRAN5" - THURSDAY, JUNE 9, 2005~~ **Cancelled**!

~~ANS NAT'L MEMBER [54] ❒ @ $450 NON-MEMBER [55] ❒ @ $550 $_____~~

PDW #4: "ADVANCED GAS REACTOR TECHNOLOGY COURSE (2 DAY WORKSHOP)" - THURSDAY, JUNE 9, 2005 AND FRIDAY, JUNE 10, 2005

ANS NAT'L MEMBER [56] ❒ @ $475 NON-MEMBER [57] ❒ @ $575 $_____

*ATTENTION NON-MEMBER REGISTRANTS:

NON-MEMBER FEE ENTITLES YOU TO A ONE-TIME FREE MEMBERSHIP IN THE AMERICAN NUCLEAR SOCIETY (DATE OF PROCESSED APPLICATION THROUGH DEC 2005). YOU MUST FIRST FILL OUT A MEMBERSHIP APPLICATION. AFTER YOUR APPLICATION IS PROCESSED, YOU WILL BE SENT A MEMBERSHIP CARD AND *NUCLEAR NEWS* MAGAZINE, BEGINNING YOUR BENEFITS. NON-U.S. RESIDENTS WILL NEED TO PAY $54 FOR *NUCLEAR NEWS* POSTAGE. THIS OFFER DOES NOT APPLY TO THOSE REGISTERED FOR WORKSHOPS ONLY. FREE MEMBERSHIP AVAILABLE TO NON-MEMBERS ONLY (CANNOT BE USED FOR MEMBERSHIP RENEWAL).

[75] ❒ I WANT TO BE A MEMBER OF ANS. MY MEMBERSHIP BENEFITS WILL BE IN EFFECT FROM DATE OF PROCESSED APPLICATION THROUGH DECEMBER, 2005.
[76] ❒ I DO NOT WANT TO BE A MEMBER OF ANS.

GRAND TOTAL AND FORM OF PAYMENT FOR MEETINGS, TOURS AND WORKSHOPS

TOTAL OF ALL FUNCTIONS AND EVENTS **GRAND TOTAL** $_____

METHOD OF PAYMENT

❒ CHECK ❒ AMERICAN EXPRESS ❒ VISA ❒ MASTERCARD ❒ DINERS CLUB ❒ WIRE TRANSFER

CREDIT CARD NUMBER: _____ EXP. DATE: _____

CARDHOLDER'S SIGNATURE: _____

PRINT CARDHOLDER'S NAME IF DIFFERENT THAN REGISTRANT

PLEASE REGISTER ON-SITE AFTER WEDNESDAY, JUNE 1, 2005.

MAKE CHECKS PAYABLE TO ANS IN U.S. FUNDS AND MAIL TO ANS, 97781 EAGLE WAY, CHICAGO, IL 60678-9770. CREDIT CARD REGISTRATIONS MAY BE FAXED TO 708/579-8314. DO NOT MAIL REGISTRATIONS WHICH HAVE BEEN FAXED. REGISTRATION CANCELLATIONS MUST BE MADE IN WRITING PRIOR TO MAY 12TH IN ORDER TO RECEIVE A REFUND MINUS A $75 PROCESSING FEE. SPECIAL EVENT AND TOUR TICKETS WILL BE REFUNDED IN FULL IF CANCELLATION REQUEST IS RECEIVED BY MAY 12TH. MEETING REGISTRATIONS, SPECIAL EVENT AND TOUR TICKETS CANCELED AFTER MAY 12TH WILL NOT BE REFUNDED; HOWEVER,YOU MAY SEND A SUBSTITUTE. PLEASE CONTACT THE ANS REGISTRAR AT TELEPHONE NUMBER: 708/579-8316 OR EMAIL: registrar@ans.org WITH ANY QUESTIONS.

HOTEL RESERVATION FORM

TOWN AND COUNTRY RESORT & CONVENTION CENTER, SAN DIEGO, CA

2005 ANS ANNUAL MEETING
June 5-9, 2005

RESERVATION DEADLINE: MAY 12, 2005

HOTEL TELEPHONE - MAIN LINE: 619-291-7131
ADVANCE RESERVATIONS: 800-772-8527
RESERVATIONS FAX: 619-294-4681
ONLINE RESERVATIONS: www.towncountry.com (GROUP CODE "ANS")

FOR RESERVATIONS, EITHER CALL OR SEND THIS FORM DIRECTLY TO THE HOTEL – DO NOT SEND THIS FORM TO THE AMERICAN NUCLEAR SOCIETY

PLEASE PRINT OR TYPE

GUEST NAMES(S): _____

COMPANY: _____

MAILING ADDRESS: _____

CITY/STATE/ZIP: _____ COUNTRY: _____

TELEPHONE: _____ FACSIMILE: _____

ARRIVAL DATE: _____ DEPARTURE DATE: _____

PREFERRED ACCOMMODATIONS

Special Request	Room Type	Single	Double
❒ SMOKING	❒ GARDEN ROOM	❒ $125.00	❒ $140.00
❒ NON-SMOKING	❒ REGENCY TOWER/COURTYARD	❒ $142.00	❒ $167.00
❒ HANDICAP ACCESSIBLE	❒ ROYAL PALM TOWER	❒ $159.00	❒ $174.00

ADDITIONAL SPECIAL REQUESTS: _____

CHECK-IN TIME IS 3:00 P.M. • CHECK-OUT TIME IS 11:00 A.M. EXPECTED ARRIVAL TIME: _____

METHOD OF PAYMENT

CHECK # _____

CREDIT CARD

❒ AMERICAN EXPRESS ❒ VISA ❒ MASTER CARD ❒ DINERS CLUB ❒ DISCOVER

CREDIT CARD NUMBER: _____ EXPIRATION DATE: _____

CARDHOLDER'S NAME: _____ DEPOSIT AMOUNT: _____

CARDHOLDER'S SIGNATURE: _____

ONE NIGHT'S DEPOSIT OR CREDIT CARD INFORMATION MUST ACCOMPANY RESERVATION TO GUARANTEE ROOM. (ONE NIGHT WILL BE BILLED TO YOUR CREDIT CARD.) RESERVATIONS MUST BE MADE BY MAY 12, 2005. AFTER THIS DATE, RESERVATIONS ARE SUBJECT TO AVAILABILITY. DEPOSITS ARE REFUNDABLE IF RESERVATION IS CANCELLED 48 HOURS IN ADVANCE. NOTE: RESERVE YOUR ROOM EARLY. YOU WILL RECEIVE WRITTEN CONFIRMATION OF YOUR RESERVATION FROM THE HOTEL.

PLEASE NOTE: RESERVE YOUR ROOM EARLY! RESERVATIONS MUST BE MADE BY MAY 12, 2005.

- RESERVATIONS RECEIVED AFTER THE DEADLINE DATE WILL BE SUBJECT TO AVAILABILITY AND WILL BE CHARGED AT THE HOTEL'S PREVAILING ROOM RATE.
- YOUR DEPOSIT GUARANTEES YOUR ROOM. PLEASE TELEPHONE CHANGES TO OUR RESERVATION DEPARTMENT AT 800-772-8527.
- CHECK-OUT TIME IS 11:00 A.M., CHECK-IN TIME IS 3:00 P.M.
- ALL RATES ARE SUBJECT TO CITY OCCUPANCY TAX, CURRENTLY 10.5%.

our most sincere thanks to the

following contributors for their support of the

2005 ANS Annual Meeting

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thank you