



ANS Conference

International High-Level Radioactive Waste Management

Real World Solutions for Integrated Management of Used Fuel and HLW



PSEG Nuclear, LLC



April 12-16, 2015
Charleston Marriott
Charleston, SC



ANS Conference

2015 International High-Level Radioactive Waste Management

*Our most sincere thanks to the following contributors for their support of the
2015 International High-Level Radioactive Waste Management*

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2015 IHLRWM MEETING TECHNICAL SESSIONS

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Meeting Highlights

SUNDAY, APRIL 12

1:00-5:30 p.m. Meeting Registration Hours

MONDAY, APRIL 13

6:30 a.m.-7:00 p.m. Meeting Registration Hours

7:00-8:00 a.m. Continental Breakfast

8:00 a.m.-12:30 p.m. Opening Plenary— I: *International Implementation of Used Fuel and HLW Disposal*

10:10-10:25 a.m. Morning Break

12:30-2:00 p.m. Attendee Luncheon

2:00 -4:45 p.m. Technical Sessions

3:40-3:55 p.m. Afternoon Break

7:00-9:00 p.m. Opening Reception

TUESDAY, APRIL 14

6:30 a.m.-6:00 p.m. Meeting Registration Hours

7:00-8:00 a.m. Continental Breakfast

8:00-10:10 a.m. Plenary—II: *What is Consent? What Does Consent-Based Siting Really Look Like?*

10:10-10:25 a.m. Morning Break

10:25 a.m.-12:30 p.m. Technical Sessions

12:30-2:00 p.m. Special Luncheon Session: *Fukushima Progress and Challenges*

2:00-4:45 p.m. Technical Sessions

3:15-3:30 p.m. Afternoon Break

5:15-7:30 p.m. Special Evening Reception and Session: Ben Rusche Special Session—*Perspectives on Geologic Disposal*

WEDNESDAY, APRIL 15

6:30 a.m.-5:00 p.m. Meeting Registration Hours

7:00-8:00 a.m. Continental Breakfast

8:00-10:00 a.m. Plenary—III: *Storage and Transportation: Experience, Success and Progress*

10:00-10:25 a.m. Morning Break

10:25 a.m.-12:30 p.m. Technical Sessions

12:30-2:00 p.m. Attendee Luncheon

2:00-5:35 p.m. Technical Sessions

3:40-3:55 p.m. Afternoon Break

THURSDAY, APRIL 16

6:30-10:00 a.m. Meeting Registration Hours

7:00-8:00 a.m. Continental Breakfast

8:00-9:40 a.m. Technical Sessions

INTERNATIONAL HIGH-LEVEL RADIOACTIVE WASTE MANAGEMENT

IHLRWM 2015

“Real World Solutions for Integrated Management of Used Fuel and HLW”



Honorary Chair:
Tiina Jalonen
Posiva Oy



General Chair:
Lake H. Barrett
L. Barrett Consulting, LLC



Program Chair:
Andrew G. Sowder
Electric Power Research Institute



Program Chair:
Ruth F. Weiner
Boston Government Services

Technical Program Committee

Joonhong Ahn, *University of California - Berkeley*

Mick Apted, *INTERA Inc.*

Sven Bader, *AREVA Federal Services*

Evaristo J. (Tito) Bonano, *Sandia National Laboratories (SNL)*

Daniel Bullen, *Defense Nuclear Facilities Safety Board (DNFSB)*

Lake Barrett, *L. Barrett Consulting*

Pat Brady, *Sandia National Laboratories (SNL)*

Amanda Casella, *Pacific Northwest National Laboratory (PNNL)*

Asdul Chowdhury, *Southwest Research Institute (SWRI)*

Ray Clark, *USEPA*

George Danko, *University of Nevada - Reno*

Bjorn Dverstorp, *Swedish Radiation Safety Authority (SSM)*

Leif Eriksson, *Nuclear Waste Dispositions*

Charles Forsberg, *Massachusetts Institute of Technology*

Frank Garisto, *Nuclear Waste Management Organization (NWMO)*

Nava Garisto, *SENES*

Brady Hanson, *Pacific Northwest National Laboratory (PNNL)*

John Kessler, *Electric Power Research Institute (EPRI)*

Matt Kozak, *INTERA Inc.*

Erik Kremer, *Nuclear Waste Management Organization (NWMO)*

Charles McCombie, *Arius Association*

Rod McCullum, *Nuclear Energy Institute (NEI)*

Sitakanta Mohanty, *Southwest Research Institute (SWRI)*

Kaname Miyahara, *Japan Atomic Energy Agency (JAEA)*

Steve Nesbit, *Duke Energy*

Gerald Ouzounian, *ANDRA*

Claudio Pescatore, *Organization for Economic Cooperation and Development (OECD)*

David Pickett, *Southwest Research Institute (SWRI)*

Rob Rechard, *Sandia National Laboratories (SNL)*

Vincenzo Rondinella, *Joint Research Centre, Institute for Transuranium Elements (JRC-ITU)*

Jim Rubenstone, *U.S. Nuclear Regulatory Commission (USNRC)*

Budhi Sagar, *Consultant*

Graham Smith, *GMS Abingdon*

Karen Smith, *RadEcol Consulting Ltd*

Andrew Sowder, *Electric Power Research Institute (EPRI)*

Eileen Supko, *Energy Resources International (ERI)*

Mark Sutton, *Lawrence Livermore National Laboratory (LLNL)*

Peter Swift, *Sandia National Laboratories (SNL)*

Sylvia Saltzstein, *Sandia National Laboratories (SNL)*

Stephen L. Turner, *Leidos*

Abe Van Luik, *U.S. Department of Energy (DOE) Carlsbad Field Office*

Stratis Vomvoris, *NAGRA*

John Walton, *University of Texas at El Paso*

Ruth Weiner, *Boston Government Services*

Schedule at a Glance

SUNDAY SCHEDULE AT A GLANCE		LOCATION
1:00-5:30 p.m.	Registration	Crystal A/B Foyer

MONDAY SCHEDULE AT A GLANCE		LOCATION
6:30 a.m.-7:00 p.m.	Registration	Crystal A/B Foyer
7:00-8:00 a.m.	Continental Breakfast	Crystal A/B
8:00-10:10 a.m.	Opening Plenary—I: <i>International Implementation of Used Fuel and HLW Disposal</i>	Crystal C/D
10:10-10:25 a.m.	Morning Break	
10:25 a.m.-12:30 p.m.	Opening Plenary—I: <i>International Implementation of Used Fuel and HLW Disposal (cont.)</i>	Crystal C/D
12:30-2:00 p.m.	Attendee Luncheon	Crystal A/B
2:00-3:40 p.m.	Technical Sessions <ul style="list-style-type: none"> • Repository Licensing—I • Nuclear Fuel Cycle Optimization and Integration: Disposal of Dual Purpose Canisters—I • Storage and Transportation: Transportation—I • Nuclear Fuel Cycle Optimization and Integration—Special Session: Progress in HLW Management at the U.S. DOE Savannah River Site • Borehole Disposal: General 	Emerald Salon One Emerald Salon Two Emerald Salon Three Yellow Topaz Opal Ballroom
3:40-3:55 p.m.	Afternoon Break	
3:55 -4:45 p.m.	Technical Sessions <ul style="list-style-type: none"> • Repository Licensing—II • Nuclear Fuel Cycle Optimization and Integration—Disposal of Dual Purpose Canisters—II • Storage and Transportation: Transportation— II • Nuclear Fuel Cycle Optimization and Integration—Management of Wastes from Reprocessing • Regulatory and Institutional Topics—Managing Unique Inventories of Used Fuel and HLW 	Emerald Salon One Emerald Salon Two Emerald Salon Three Yellow Topaz Opal Ballroom
7:00-9:00 p.m.	Opening Reception	Courtyard

TUESDAY SCHEDULE AT A GLANCE		LOCATION
6:30 a.m.-6:00 p.m.	Registration	Crystal A/B Foyer
7:00-8:00 a.m.	Continental Breakfast	Crystal A/B
8:00-10:10 a.m.	Plenary—II: <i>What is Consent? What Does Consent-Based Siting Really Look Like?</i>	Crystal C/D
10:10-10:25 a.m.	Morning Break	
10:25 a.m.-12:30 p.m.	Technical Sessions <ul style="list-style-type: none"> • Repository Safety Assessment I • Regulatory and Institutional Topics— The U.S. Geologic Repository Program The U.S. Geologic Repository: Getting Off the Dime—Panel • Storage and Transportation—Multipurpose System Designs • Repository Site Selection • Nuclear Fuel Cycle Optimization and Integration: Integrating Interim Storage and Disposal— I • Security, Safeguards and Nonproliferation 	Emerald Salon One Emerald Salon Two Emerald Salon Three Yellow Topaz Opal Ballroom Opal Ballroom
12:30-2:00 p.m.	Special Luncheon Session: Fukushima Progress and Challenges	Crystal A/B
2:00-3:15 p.m.	Technical Sessions <ul style="list-style-type: none"> • Nuclear Fuel Cycle Optimization and Integration—Modeling and Simulation • Repository Design: Engineered Barrier Systems—I • Storage and Transportation: Extended Storage—I • Repository Site Selection—Underground Research Laboratories • Borehole Disposal—Sealing and Thermal Modeling 	Emerald Salon One Emerald Salon Two Emerald Salon Three Yellow Topaz Opal Ballroom
3:15-3:30 p.m.	Afternoon Break	
3:30-4:45 p.m.	Technical Sessions <ul style="list-style-type: none"> • Repository Safety Assessment— II • Repository Design: Engineered Barrier Systems—II 	Emerald Salon One Emerald Salon Two

TUESDAY SCHEDULE AT A GLANCE (CONT.)		LOCATION
3:30-4:45 p.m.	Technical Sessions <ul style="list-style-type: none"> Storage and Transportation: Extended Storage—II Storage and Transportation: Transportation Analysis and Testing—I Borehole Disposal: Challenges and Opportunities—Panel 	Emerald Salon Three Yellow Topaz Opal Ballroom
5:15-7:30 p.m.	Special Evening Reception & Session: Ben Rusche Special Session— <i>Perspectives on Geologic Disposal</i>	Crystal C/D

WEDNESDAY SCHEDULE AT A GLANCE		LOCATION
6:30 a.m.-5:00 p.m.	Registration	Crystal AB Foyer
7:00-8:00 a.m.	Continental Breakfast	Crystal A/B
8:00-10:00 a.m.	Plenary—III: Storage and Transportation: Experience, Success and Progress	Crystal C/D
10:00-10:25 a.m.	Morning Break	
10:25 a.m.-12:30 p.m.	Technical Sessions <ul style="list-style-type: none"> Regulatory and Institutional Topics: Challenges and Successes Regulatory and Institutional Topics— Special Session on the Waste Isolation Pilot Plant Special Session on the Waste Isolation Pilot Plant: It Happened Here It Happened There—Panel Storage and Transportation—Special Session on Chloride-Induced Stress Corrosion Cracking of Stainless Steel Welded Canisters During Extended Storage—Panel Nuclear Fuel Cycle Optimization and Integration—Alternative Fuel Cycles and Reactor Technologies Borehole Disposal—Siting 	Emerald Salon One Emerald Salon Two Emerald Salon Three
12:30-2:00 p.m.	Attendee Luncheon	Yellow Topaz Opal Ballroom
2:00-3:40 p.m.	Technical Sessions <ul style="list-style-type: none"> Repository Performance Assessment: Radionuclide Release and Transport—I Repository Design: Natural Barrier Systems Storage and Transportation—Inspection and Aging Management of Dry Storage Systems—I Nuclear Fuel Cycle Optimization and Integration—Integrating Interim Storage and Disposal—II Biosphere—I 	Crystal A/B Emerald Salon One Emerald Salon Two Emerald Salon Three Yellow Topaz Opal Ballroom
3:40-3:55 p.m.	Afternoon Break	
3:55 -5:35 p.m.	Technical Sessions <ul style="list-style-type: none"> Repository Performance Assessment: Radionuclide Release and Transport—II Repository Design: Engineered Barrier Systems—III Storage and Transportation: Inspection and Aging Management of Dry Storage Systems—II Regulatory Institutional Topics—Advances in Understanding Consent-Based Siting for UNF Storage—Panel Biosphere—II 	Emerald Salon One Emerald Salon Two Emerald Salon Three Yellow Topaz Opal Ballroom

THURSDAY SCHEDULE AT A GLANCE		LOCATION
6:30-10:30 a.m.	Registration	Crystal A/B Foyer
7:00-8:00 a.m.	Continental Breakfast	Crystal A/B
8:00-9:40 a.m.	Technical Sessions <ul style="list-style-type: none"> Repository Performance Assessment—Disruptive Scenarios Regulatory and Institutional Topics—Special Session on Regulatory Updates and Milestones—Panel Storage and Transportation: Transportation Analysis and Testing— II Regulatory and Institutional Topics—Management, Oversight and Decommissioning of Nuclear Facilities 	Emerald Salon One Emerald Salon Two Yellow Topaz Opal Ballroom

General Information

NOTE:

Additional tickets are available for purchase for the Opening Reception, and the Conference Luncheons.

NOTICE FOR SPEAKERS:

All Speakers and Session Chairs must sign in at the ANS Registration Desk located in the Crystal A/B Foyer, during registration hours.

MEETING REGISTRATION

The ANS Registration Desk located in Crystal A/B is open Sunday, April 12 – Thursday, April 16. Meeting registration is required for all attendees and speakers. Badges are required for admission to all plenaries, technical sessions and events.

REGISTRATION HOURS

Sunday, April 12	• 1-5:30 p.m.
Monday, April 13	• 6:30 a.m.-7 p.m.
Tuesday, April 14	• 6:30 a.m.-6:00 p.m.
Wednesday, April 15	• 6:30 a.m.-5 p.m.
Thursday, April 16	• 6:30-10:00 a.m.

SPECIAL EVENTS

Opening Reception

Monday, April 13 • 7-9:00 p.m.

Location: Courtyard

One ticket to the Opening Reception is included in the full meeting registration fee. Additional tickets can be purchased at the ANS Registration Desk for \$100.00. Should there be inclement weather, event will be in Crystal A/B.

Attendee Luncheons

Monday, April 13 – Wednesday, April 15 • 12:30–2 p.m.

Location: Crystal A/B

Each full conference registrant will include a ticket for all (3) luncheons. Single day registrations will include a lunch ticket for that day. Additional tickets may be purchase at the ANS Registration Desk for \$85.00.



Continental Breakfast 7:00-8:00 a.m. – Crystal A/B

Opening Plenary—I: International Implementation of Used Fuel and HLW Disposal

Welcome and Opening Remarks

Session Organizer: Lake H. Barrett (*L. Barrett Consulting, LLC*)

Crystal C/D

8:00-10:10 a.m.

Speakers:

- Used Fuel and HLW Management in the U.S.: The View from Congress, Thomas Craig III (*U.S. Senate*)
- Status of Finland's Repository Program (*Onkalo Project*), Tiina Jalonen (*Posiva*)
- Status of the CIGEO Project in France, Jean-Michel Hoorelbeke (*ANDRA*)

Morning Break

10:10-10:25 a.m.

Opening Plenary—I (cont'd): International Implementation of Used Fuel and HLW Disposal

Session Organizer: Lake H. Barrett (*L. Barrett Consulting, LLC*)

Crystal C/D

10:25 a.m.-12:30 p.m.

Speakers:

- Status of Sweden's Repository Program, Saida Laârouchi Engström (*SKB*)
- What Next for Geologic Disposal in the United States? Peter Lyons (*DOE*)
- Panel Q&A [Moderated by Michael Apted (*INTERA*)]

Attendee Luncheon

Crystal A/B

12:30-2:00 p.m.

Repository Licensing—I

Session Organizer: Michael John Apted (*INTERA Inc.*)

Chair: Jim Rubenstone (*NRC*)

Emerald Salon One: 2:00-3:40 p.m.

2:00 p.m.

Early Involvement of the Canadian Nuclear Regulator in an Initiative for a Deep Geological Repository for the Long-Term Management of Canada's Used Nuclear Fuel, J. L. Mecke (*Canadian Nucl Safety Comm*)

2:25 p.m.

Regulatory Review and Assessment of SNF Encapsulation and Disposal Facility Construction License Application in Finland, Kai Hämäläinen, Jussi Santeri Heinonen (*STUK*)

2:50 p.m.

Regulatory Assessment of a Spent Fuel Repository at the Forsmark Site Sweden; Evolution of Groundwater Site Conditions, Bo Strömberg, Georg A. Lindgren, Björn Dverstorp, Clara Anghel (*Swedish Radiation Safety Authority*)

3:15 p.m.

A Structured Approach to Independent Modelling in Support of a Licensing Review, Shulan Xu, Björn Dverstorp, Georg Lindgren, Maria Norden (*Swedish Radiation Safety Authority*), Klaus-Jürgen Röehlig (*Clausthal Univ of Technology*)

Nuclear Fuel Cycle Optimization and Integration: Disposal of Dual Purpose Canisters—I

Session Organizer and Chair: Matthew W. Kozak (*INTERA, Inc.*)

Emerald Salon Two: 2:00-3:40 p.m.

2:00 p.m.

A Case for Direct Disposal of SNF in Existing DPCs, Ernest Hardin, Elena Kalinina (*SNL*), Robert Clark (*DOE*), Robert Howard, Kaushik Banerjee, John Scaglione (*ORNL*), Joe Carter (*SRNL*)

2:25 p.m.

Revisiting Direct Disposal of Dual-Purpose Canister Systems, Matthew W. Kozak, Michael J. Apted (*INTERA, Inc.*), Andrew Sowder (*EPRI*)

2:50 p.m.

Evaluation of Filler Materials to Control Post-Closure Criticality of Dual Purpose Canisters, R. T. Jubin, K. Banerjee (*ORNL*), T. Severynse (*SRNL*)

3:15 p.m.

Criticality Analysis Process for Direct Disposal of Dual Purpose Canisters, John M. Scaglione (*ORNL*), Abdelhalim A. Alsaed (*Enviro Nuclear Services*), Robert L. Howard (*ORNL*), Ernest L. Hardin (*SNL*)

Technical Sessions: Monday, April 13

Storage and Transportation: Transportation—I

Session Organizer: Ruth F. Weiner (*Boston Government Services*)

Chair: Sylvia Saltzstein (*SNL*)

Emerald Salon Three: 2:00-3:40 p.m.

2:00 p.m.

A Proposed Waste Acceptance Queue for Shutdown Nuclear Power Reactors, Steven P. Nesbit, Lara S. Nichols (*Duke Energy Corp*)

2:25 p.m.

Transportation of Spent Nuclear Fuel from the Reactor Sites in U.S.—What Will It Take, Elena A. Kalinina (*SNL*), Ingrid K. Busch (*ORNL*)

2:50 p.m.

Constraint-Based Routing Models for the Transport of Radioactive Materials, Steven Peterson, Cheng Liu (*ORNL*)

3:15 p.m.

Systems for the Intermodal Routing of Spent Nuclear Fuel, Steven Peterson, Cheng Liu (*ORNL*)

Nuclear Fuel Cycle Optimization and Integration— Special Session: Progress in HLW Management at the U.S. DOE Savannah River Site

Session Organizer: Andrew G. Sowder (*EPRI*)

Chair: Lawrence Ling (*Savannah River Remediation*)

Yellow Topaz: 2:00-3:40 p.m.

2:00 p.m.

Integrated High Level Waste System Planning—Utilizing an Integrated Systems Planning Approach to Ensure End-State Definitions are Met and Executed, Lawrence T. Ling (*Savannah River Remediation*), Sonitza M. Blanco (*DOE*), invited

2:25 p.m.

High-Level Waste Management at the Department of Energy Savannah River Site, Lawrence T. Ling, Stuart MacVean (*Savannah River Remediation*), James Folk (*DOE*), invited

2:50 p.m.

Completion of Operational Closure of Tank 5F and Tank 6F by Grouting Including the First Time Grouting of Cooling Coils Associated Annulus, James Rush, Gregory Arthur (*Savannah River Remediation, LLC*), Jolene Seitz (*DOE*)

Borehole Disposal: General

Session Organizer and Chair: Patrick Brady (*SNL*)

Opal Ballroom: 2:00-3:40 p.m.

2:00 p.m.

Why Demonstration of a Deep Borehole Disposal Concept Matters to the Nuclear Industry, Andrew Sowder (*EPRI*), Rod McCullum (*NEI*), Vincent Kindfuller (*MIT*)

2:25 p.m.

Deep Geological Boreholes: A Suitable Disposal Route for Hanford Cs/Sr Capsules, Karl P. Travis, Fergus G. F. Gibb (*Univ of Sheffield*)

2:50 p.m.

Research Needs for Deep Boreholes, Patrick V. Brady, Bill W. Arnold, Robert J. MacKinnon, Ernest L. Hardin, David C. Sassani, Kristopher L. Kuhlman, Geoff A. Freeze (*SNL*)

Afternoon Break

3:40-3:55 p.m.

Repository Licensing—II

Session Organizer: Michael John Apted (*INTERA Inc.*)

Chair: Jim Rubenstone (*NRC*)

Emerald Salon One: 3:55-4:45 p.m.

3:55 p.m.

The Role of Key Consultants in the Finnish Radiation and Nuclear Safety Authority's 'Construction License Application' Review and Assessment, Michael Apted (*INTERA Inc.*), Neil Chapman (*MCM International*), Budhi Sagar (*Southwest Research Inst*)

4:20 p.m.

Maintaining a Safety Case for Licensing—A Swedish Case Study, Kristina Gillin (*Candesco*), Martina Sturek (*SKB*)

Nuclear Fuel Cycle Optimization and Integration— Disposal of Dual Purpose Canisters— II

Session Organizer and Chair: Matthew W. Kozak (*INTERA, Inc.*)

Emerald Salon Two: 3:55-4:45 p.m.

3:55 p.m.

Disposability of the Loaded U.S. Dual-Purpose Canisters from a Criticality Standpoint, Kaushik Banerjee, John M. Scaglione, Justin B. Clarity (*ORNL*)

4:20 p.m.

Initial Evaluation of Standardized Canisters in the Waste Management System, Joshua J. Jarrell, Robert A. Joseph III (*ORNL*), Jeffrey A. Fortner (*ANL*), Richard E. Hale, Robert L. Howard (*ORNL*), Elena A. Kalinina (*SNL*), Gordon M. Petersen, Robert B. Wilkerson (*Univ of Tennessee*)

Storage and Transportation: Transportation— II

Session Organizer: Ruth F. Weiner (*Boston Government Services*)

Chair: Sylvia Saltzstein (*SNL*)

Emerald Salon Three: 3:55-4:45 p.m.

3:55 p.m.

Stakeholder Tool for Assessing Radioactive Transportation (START), Mark Abkowitz (*Vanderbilt Univ*), Erica Bickford (*DOE*), invited

4:20 p.m.

Laying the Groundwork for a Large-Scale Used Fuel Transportation System, Matthew Feldman, John Wagner, Kevin Connolly (*ORNL*), Steven Maheras (*PNNL*), Erica Bickford, Jay Jones, Patrick Schwab (*DOE*)

Nuclear Fuel Cycle Optimization and Integration— Management of Wastes from Reprocessing

Session Organizer: Andrew G. Sowder (*EPRI*)

Chair: Sven Bader (*AREVA*)

Yellow Topaz: 3:55-4:45 p.m.

3:55 p.m.

Contamination of Zirconium Metal by Cadmium Dissolved in Molten LiCl-KCl Salt, N. A. Earle, S. E. Skutnik (*Univ of Tennessee*)

4:20 p.m.

Chlorination Process Development for Zirconium Recovery from Used Fuel Cladding, Emory D. Collins, G. D. Del Cul, B. B. Spencer, R. D. Hunt, R. R. Brunson, C. Ausmus (*ORNL*)

Regulatory and Institutional Topics—Managing Unique Inventories of Used Fuel and HLW

Session Organizer and Chair: Graham Smith (*GMS Abingdon Ltd.*)

Opal Ballroom: 3:55-4:45 p.m.

3:55 p.m.

Regulatory Supervision of Management of Submarine and Icebreaker Spent Fuel in Russian Federation, Malgorzata Karpow Sneve (*Norwegian Radiation Protection Authority*)

4:20 p.m.

Issues in Research Reactor Spent Fuel Management, Graham Smith (*GMS Abingdon Ltd.*)

Continental Breakfast 7:00-8:00 a.m. – Crystal A/B

Plenary— II: What is Consent? What Does Consent-Based Siting Really Look Like?

Session Organizer: Ruth F. Weiner (*Boston Government Services*)

Chair: Debra Knopman (*RAND Corp.*)

Crystal C/D

8:00-10:10 a.m.

Speakers:

- The Public Side of Consent, Hank Jenkins-Smith (*Univ of Oklahoma*)
- What Did Consent Look Like for WIPP?, George Dials (*LANL*)
- Consent in Canada, Jo-Ann Facella (*NWMO*)
- Moving Beyond the Blue Ribbon Commission Recommendations in the U.S., Timothy Frazier (*Bipartisan Policy Center's Nuclear Waste Initiative*)

Morning Break

10:10-10:25 a.m.

Repository Safety Assessment—I

Session Organizer: Sitakanta Mohanty (*Southwest Research Inst*)

Cochairs: Alan Hedin (*SKB*), Delphine Pellegrini (*IRSN*)

Emerald Salon One: 10:25 a.m.-12:30 p.m.

10:25 a.m.

SKB's Updates of the Forsmark SNF Repository License Application—Long-Term Safety, Allan Hedin, Johan Andersson, Christina Lilja, Patrik Sellin (*SKB*)

10:50 a.m.

Overview of a Postclosure Safety Assessment of a Canadian Used Fuel Repository in Sedimentary Rock, M. Gobien, F. Garisto, N. Hunt, E. P. Kremer, C. Medri (*NWMO*)

11:15 a.m.

Development of the NUMO Safety Case—Safety Assessment, Manabu Inagaki, Susumu Kurosawa, Sanae Shibutani, Keisuke Ishida, Katsuhiko Ishiguro (*NUMO*)

11:40 a.m.

A Simple Improved Measure of Risk from a Geologic Repository, Allen G. Croff, Steven L. Krahn (*Vanderbilt Univ*)

12:05 p.m.

A Methodology for Representing the Geosphere-Biosphere Interface in Assessment Models, M. C. Thorne (*Mike Thorne and Associates Ltd*), G. M. Smith (*GMS Abingdon Ltd*)

Regulatory and Institutional Topics—The U.S. Geologic Repository Program

Session Organizer and Chair: Steven P. Nesbit (*Duke Energy*)

Emerald Salon Two: 10:25-11:15 a.m.

10:25 a.m.

Partisanship, Information, and Public Opinion about Yucca Mountain, Matthew C. Nowlin (*College of Charleston*)

10:50 a.m.

Redirecting the U.S. Nuclear Waste Program, Robert J. Halstead (*State of Nevada*), Alvin Mushkatel, Kathy Thomas (*Arizona State Univ Polytechnic*)

Regulatory and Institutional Topics—The U.S. Geologic Repository: Getting Off the Dime—Panel

Session Organizer and Chair: Steven P. Nesbit (*Duke Energy*)

Emerald Salon Two: 11:15 a.m.-12:30 p.m.

11:15 a.m.

There is a national and international consensus that deep geological disposal is the best solution for the disposal of the large and growing quantities of used nuclear fuel and high level radioactive waste. That consensus is further embodied in United States law (the Nuclear Waste Policy Act, as amended). Nevertheless, while other countries make progress on siting and developing geologic repositories, the future of the U.S. program remains uncertain. Knowledgeable and respected panelists from government and industry will discuss ways of making real progress on the geologic repository part of the United States radioactive waste management program. Included will be consideration of international lessons-learned that may actually be applicable and useful in the United States.

Panelists:

- Rod McCullum (*NEI*)
- Mick Apted (*INTERA*)
- Joonhong Ahn (*Univ of California, Berkeley*)

Storage and Transportation—Multipurpose System Designs

Session Organizer and Chair: Brady D. Hanson (PNNL)

Emerald Salon Three: 10:25 a.m.-12:30 p.m.

10:25 a.m.

AREVA TN Universal Centralized Storage System, Zhaojuan (Jane) He, William Bracey (AREVA)

10:50 a.m.

MP197HB: First Licensed Transportation Package with Canistered High Burnup Fuel After Dry Storage, Jayant Bondre (AREVA TN)

11:15 a.m.

Recent Issues Found in a Dual Purpose Cask Design, David Garrido (ENSA)

11:40 a.m.

COBRA-SFS Dry-Cask Modeling Sensitivities in High-Capacity Canisters, Remy Devoe, Kevin R. Robb (ORNL)

12:05 p.m.

Behaviour of Spent Fuel During Storage, Paul Nicholas Standing (IAEA)

Repository Site Selection

Session Organizer: Peter N. Swift (SNL)

Chair: Kevin McMahon (SNL)

Yellow Topaz: 10:25 a.m.-12:05 p.m.

10:25 a.m.

Site Selection in Switzerland: The Narrowing-Down Methodology and its Application, P. Zuidema, A. Gautschi (Nagra)

10:50 a.m.

Implementing Geological Disposal in the UK, Ann McCall, Andrew Craze (Radioactive Waste Management), invited

11:15 a.m.

Development of the NUMO Safety Case—Geological Characterisation and Synthesis, Kunio Ota, Junichi Goto, Takanori Kunimaru, Toshifumi Moriya, Kimitaka Yoshimura, Seietsu Takeda (NUMO)

11:40 a.m.

Canada's Deep Geological Repository for Used Nuclear Fuel—Update on the Site Evaluation Process and Interweaving of Aboriginal Traditional Knowledge, Mahrez Ben Belfadhel, Jo-Ann Facella, Bob Watts (NWMO)

Nuclear Fuel Cycle Optimization and Integration: Integrating Interim Storage and Disposal— I

Session Organizer: Charles W. Forsberg (MIT)

Chair: Sven Bader (AREVA)

Opal Ballroom: 10:25-11:40 a.m.

10:25 a.m.

Overview of the DOE Nuclear Fuel Storage and Transportation Planning Project, John Wagner (ORNL), Joe Carter (SRNL), Matt Feldman, Rob Howard (ORNL), William Nutt (ANL), Jeff Williams (DOE)

10:50 a.m.

Update on the United States Department of Energy's Used Fuel Disposition R&D Campaign, Peter N. Swift (SNL), Jens T. Birkholzer (LBNL), Shannon Bragg-Sitton (INL), Robert J. MacKinnon, Kevin A. McMahon, Sylvia J. Saltzstein, Ken B. Sorenson (SNL)

11:15 a.m.

Coming to an Ocean Far From You—Sub-Seabed Repositories, Craig L. Porter (Jesseal Engineering and Technical Services, LLC)

Security, Safeguards and Nonproliferation

Session Organizer: Andrew G. Sowder (EPRI)

Chair: Sven Bader (AREVA)

Opal Ballroom: 11:40 a.m.-12:30 p.m.

11:40 a.m.

Uncertainty of the Pu to ²⁴⁴Cm Ratio in Spent Fuel, Seung Min Woo, Joonhong Ahn (Univ of California, Berkeley)

12:05 p.m.

Numerical Estimation of the Spent Fuel Ratio, Samuel G. Durbin, Eric R. Lindgren, Jason Wilke (SNL)

Special Luncheon Session: Fukushima Progress and Challenges

Crystal A/B

12:30-2:00 p.m.

Speaker:

- Lake Barrett (*L. Barrett Consulting*)

Repository Design: Engineered Barrier Systems—I

Session Organizer: Andrew Sowder (*EPRI*)

Chair: Daniel Bullen (*DNFSB*)

Emerald Salon Two: 2:00-3:15 p.m.

2:00 p.m.

Modeling Thermohydrological-Mechanical Behavior of Granular Bentonite, Chandrika Manepally, Stuart Stothoff, Goodluck Ofoegbu, Biswajit Dasgupta (*CNWR-Southwest Research Inst*), Randall Fedors (*NRC*)

2:25 p.m.

Monitoring of the Shaft Seal at Canada's Underground Research Laboratory, D. Priyanto Putro, P. Thompson, S. Stroes-Gascoyne (*CNL*), D. Dixon (*Golder Assoc Limited*), P. Korkeakoski (*Posiva Oy*), R. Farhoud (*ANDRA*)

2:50 p.m.

Development of the Canadian Used Fuel Repository Engineered Barrier System, Chris Hatton (*NWMO*)

Storage and Transportation: Extended Storage—I

Session Organizer: Andrew Sowder (*EPRI*)

Chair: Vincenzo Rondinella (*EC-JRC-ITU*)

Emerald Salon Three: 2:00-3:15 p.m.

2:00 p.m.

ISI of Dry Storage Casks for Spent Nuclear Fuel: Leveraging Knowledge from Reactors, Ryan M. Meyer, Michael T. Anderson, John P. Lareau (*PNNL*)

2:25 p.m.

Probabilistic Performance Assessment: SCC of SNF Interim Storage Canisters, C. Bryan, C. Sallaberry, R. Dingreville, C. Stockman (*SNL*), H. Adkins (*PNNL*), M. Sutton (*LLNL*)

2:50 p.m.

Characterization and Effects of Hydrides in High-Burnup PWR Cladding Alloys, M. C. Billone, T. A. Burtseva, Y. Y. Liu (*ANL*)

Repository Site Selection—Underground Research Laboratories

Session Organizer: Charles McCombie (*MCM Consulting*)

Chair: Efstratios (Stratis) Vomvoris (*NAGRA*)

Yellow Topaz: 2:00-3:15 p.m.

2:00 p.m.

Current Status of R&D Activities and Future Plan of Mizunami Underground Research Laboratory, H. Osawa, K. Koide, E. Sasao, T. Iwatsuki, H. Saegusa, K. Hama, T. Sato (*JAEA*)

2:25 p.m.

Nagra's Activities at the Grimsel Test Site and Mont Terri Project: Update and Outlook, S. Vomvoris, I. Blechschmidt, T. Vietor, H. Mueller (*Nagra*)

2:50 p.m.

Underground Research Facility in Highly Anisotropic Rocks, Bukov URF, Czech Republic, L. Vondrovic, M. Vencl, M. Dvořáková, J. Slovák, I. Pospíšková (*Radioactive Waste Repository Authority*)

Borehole Disposal—Sealing and Thermal Modeling

Session Organizer and Chair: Patrick Brady (*SNL*)

Opal Ballroom: 2:00-3:15 p.m.

2:00 p.m.

Cementitious Grouts for Disposal of Nuclear Wasteforms in Deep Boreholes, Nick C. Collier, Karl P. Travis, Fergus G. F. Gibb (*The Univ of Sheffield*), Neil B. Milestone (*Callaghan Innovation*)

2:25 p.m.

Sealing Deep Borehole Disposals of Radioactive Waste by "Rock Welding", Fergus G. F. Gibb, Karl P. Travis (*Univ of Sheffield*), invited

2:50 p.m.

High Performance Ceramic Plugs for Borehole Sealing, William Lowry, Sandra Dunn, Ken Coates (*Olympic Research, Inc.*), Andrew Duguid (*Schlumberger Carbon Services*), Ken Wohletz (*LANL*)

Nuclear Fuel Cycle Optimization and Integration—Modeling and Simulation

Session Organizer: Vincenzo V. Rondinella (EC-JRC-ITU)

Chair: Joonhong Ahn (Univ of California, Berkeley)

Emerald Salon One: 2:00-3:15 p.m.

2:00 p.m.

Validation of Electrolyte Solution Densities Important to Processing Hanford Nuclear Waste: Tri-Sodium Citrate, Jacob G. Reynolds (Washington River Protection Solutions, LLC)

2:25 p.m.

ORIGAMI: A New Interface for Fuel Assembly Characterization with ORIGEN, Steve E. Skutnik (Univ of Tennessee), Mark L. Williams, Robert A. LeFebvre (ORNL)

2:50 p.m.

Fuel Cycle Applications with the Data Stored Within the Unified Database, Joshua Peterson, John Scaglione (ORNL)

Afternoon Break

3:15-3:30 p.m.

Repository Safety Assessment—II

Session Organizer: Matthew W. Kozak (INTERA, Inc.)

Chair: Ray Clark (EPA)

Emerald Salon One: 3:30-4:45 p.m.

3:30 p.m.

Assessment of the Chemical Hazard of a Canadian Used Fuel Repository with Copper Containers, M. Gobien, F. Garisto, N. Hunt, E. P. Kremer (NWMO)

3:55 p.m.

Investigating the Implications of Managing Depleted Natural and Low Enriched Uranium Through Geological Disposal, Daniel Galson (Galson Sciences Limited), Matthew Wallstead (Radioactive Waste Management Ltd.), Liz Harvey (Galson Sciences Ltd.)

4:20 p.m.

Site Specificity in Advanced Dose Assessment Modeling, R. A. Klos (Aleksandria Sciences Ltd.), Anders Wörman (KTH)

Repository Design: Engineered Barrier Systems—II

Session Organizer: Andrew Sowder (EPRI)

Chair: Daniel Bullen (DNFSB)

Emerald Salon Two: 3:30-4:45 p.m.

3:30 p.m.

Constitutive Model Development for Bentonite Buffer Behavior, S. Stothoff, C. Manepally (CNWRA-Southwest Research Inst), R. Fedors (NRC)

3:55 p.m.

A Consequence Model for Bentonite Buffer Defects in Fractured Rock, Stuart Stothoff (CNWRA)

4:20 p.m.

Modeling THMC Changes in EBS Bentonite at High Temperature, Liange Zheng, Jonny Rutqvist, Jens T. Birkholzer (LBNL)

Storage and Transportation: Extended Storage—II

Session Organizer and Chair: Vincenzo V. Rondinella (EC-JRC-ITU)

Emerald Salon Three: 3:30-4:45 p.m.

3:30 p.m.

Spent Nuclear Fuel Characterization in View of Long-Term Storage, V. V. Rondinella, T. Wiss, D. Papaioannou, R. Nasyrow, F. Cappia, S. Van Winckel, D. Serrano-Purroy, D. Wegen (EC-JRC-ITU)

3:55 p.m.

Radiolysis Model Analysis for a Used Fuel Storage Canister, Richard S. Wittman, Brady D. Hanson (PNNL)

4:20 p.m.

Phenomena Affecting Used Nuclear Fuel Cladding Temperatures during Vacuum Drying Operations, M. Hadj-Nacer, T. Manzo (Univ of Nevada, Reno), M. Ho, I. Graur (Univ of Aix-Marseille), M. Greiner (Univ of Nevada, Reno)

Storage and Transportation: Transportation Analysis and Testing—I

Session Organizer and Chair: Ruth F. Weiner (*Boston Government Services*)

Yellow Topaz: 3:30-4:45 p.m.

3:30 p.m.

Rail Shock and Vibration Pre-Test Modeling of a Used Nuclear Fuel Assembly, Steven B. Ross, Nicholas A. Klymyshyn, Philip J. Jensen, Ralph E. Best, Steven J. Maheras (*PNNL*), Paul E. McConnell (*SNL*), John Orchard (*DOE*)

3:55 p.m.

Lessons Learned from CIRFT Testing on SNF Vibration Integrity Study, J.-An Wang, H. Wang, H. Jiang, B. Bevard, R. Howard, J. Scaglione (*ORNL*)

4:20 p.m.

Special Fleet Maintenance Functions, Requirements, and Facility Concepts for AAR-2043 Railcars, R. Howard, P. Singley, M. Feldman, D. Giuliano, B. Bevard (*ORNL*), J. Carter (*SRNL*)

Borehole Disposal: Challenges and Opportunities—Panel

Session Organizer and Chair: Patrick Brady (*SNL*)

Opal Ballroom: 3:30-4:45 p.m.

3:30 p.m.

Deep borehole disposal of nuclear wastes is receiving increasing attention as a solution to nuclear waste disposal that is potentially cheaper, faster, and just as safe a solution as traditional mined geologic repositories. The U.S. Department of Energy has recently embarked on a 5-year effort to demonstrate deep borehole technology in the field and to address key technical issues, including site selection and characterization, borehole sealing and feasibility of drilling large diameter boreholes. This panel will present U.S. and international perspectives on the challenges and opportunities associated with deep boreholes as a disposal option.

Panelists:

- Fergus Gibb (*Univ of Sheffield*)
- Ernest Hardin (*SNL*)
- Bill Lowry (*Olympic Research*)
- Mary Lou Zoback (*U.S. Nuclear Waste Technical Review Board*)

Special Evening Reception and Session: Ben Rusche Special Session—Perspectives on Geologic Disposal—Panel

Session Organizer: Ruth F. Weiner (*Boston Government Services*)

Chair: Peter Swift (*SNL*)

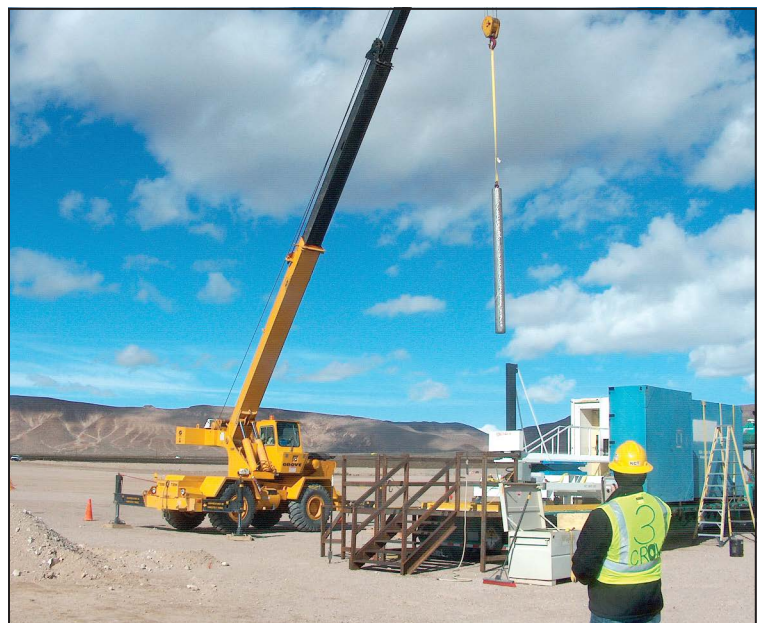
Crystal C/D: 5:15-7:30 p.m.

This special evening session honors the life and contributions of Ben Rusche, a treasured citizen of South Carolina and true pioneer and leader in nuclear safety, waste management, and clean-up. His numerous contributions and accomplishments include service as the first director of the Office of Civilian and Radioactive Waste Management at DOE, the first Director of the NRC's Nuclear Reactor Regulation Branch roles, multiple key leadership positions at the Savannah River Plant (now Savannah River Site), and member and chair of the South Carolina Governor's Nuclear Advisory Council. The session will feature international perspectives and dialog on lessons learned from over six decades of global pursuit for permanent geologic disposal of used fuel and HLW.

From 5:15-6:00 p.m., heavy appetizers and beverages will be served. The session will start promptly at 6:00 p.m.

Panelists:

- Introduction: Lake Barrett (*L. Barrett Consulting*)
- Global Perspective, Mick Apted (*INTERA*)
- Swedish Perspective, Björn Dverstorp (*SSM*)
- U.S. Program, Michael Voegelé (*Consultant*)



Continental Breakfast 7:00-8:00 a.m. – Crystal A/B

Plenary—III: Storage and Transportation: Experience, Success and Progress

Session Organizer: Ruth F. Weiner (*Boston Government Services*)

Chair: Eileen Supko (*Energy Resources International*)

Crystal C/D

8:00-10:00 a.m.

Speakers:

- Challenges and Progress for U.S. Used Fuel and Management, Andrew Griffith (*DOE*)
- Coming Soon: Centralized Interim Storage in Spain, Pablo Zuloaga (*ENRESA*)
- Transporting Used Nuclear Fuel—Experience and Perspective from a U.S. Utility, Steve Edwards (*Duke Energy*)
- Is Transportation of Used Nuclear Fuel and HLW a Non-Issue?, Doug Ammerman (*SNL*)

Morning Break

10:00-10:25 a.m.

Regulatory and Institutional Topics: Challenges and Successes

Session Organizer and Chair: Rob P. Rechard (*SNL*)

Emerald Salon One: 10:25 a.m.-12:30 p.m.

10:25 a.m.

Development of the NUMO Safety Case—Overview, Hiroshi Fujihara, Akira Deguchi, Hiroyoshi Ueda, Tetsuo Fujiyama, Hiroyuki Umeki (*NWMO*)

10:50 a.m.

Development of the NUMO Safety Case—Repository Design and Engineering, Shigeru Kubota, Kiyoshi Fujisaki, Satoru Suzuki, Akira Deguchi, Hiroyuki Umeki (*NWMO*)

11:15 a.m.

The Review of the Swedish Spent Fuel Repository License Application, Johan Swahn (*Swedish NGO Office for Nuclear Waste Review*)

11:40 a.m.

Knowledge Preservation for Repository Systems, Kevin A. McMahon, Gordon J. Appel (*SNL*), Abraham Van Luik (*DOE*), John B. Whitley (*SNL*)

12:05 p.m.

Changes in Dose Performance Measures as Modeling Progressed for the Previously Proposed U.S. Repository in Volcanic Tuff, Rob P. Rechard (*SNL*)

Regulatory and Institutional Topics—Special Session on the Waste Isolation Pilot Plant

Session Organizer: Abraham E. Van Luik (*DOE, Carlsbad Field Office*)

Cochairs: Dana Bryson (*DOE-Carlsbad Field Office*), Derek Wilson (*NWMO*)

Emerald Salon Two: 10:25-11:15 a.m.

10:25 a.m.

Waste Isolation Pilot Plant Recovery: A Status Report, Dana Bryson, José Franco (*DOE*)

10:50 a.m.

Independent Monitoring of the Waste Isolation Pilot Plant, P. Thakur, S. Ballard, R. Hardy (*Carlsbad Environmental Monitoring & Research Center*)



Regulatory and Institutional Topics—Special Session on the Waste Isolation Pilot Plant: It Happened Here It Happened There—Panel

Session Organizer: Abraham E. Van Luik (DOE, Carlsbad Field Office)

Cochairs: Dana Bryson (DOE-Carlsbad Field Office), Derek Wilson (NWMO)

Emerald Salon Two: 11:15 a.m.-12:30 p.m.

11:15 a.m.

In the nuclear industry, whatever happens in one place, especially if it is a negative thing, will have repercussions throughout the industry. The 15 years of success at the Waste Isolation Pilot Plant in New Mexico had some positive influence on other repository programs, but that quickly faded away as the news of the minor radiation release from that repository became known. Locally, support for the repository remained strong due to the communications effort made on the nature of the event, its negligible public health impacts, and the likelihood of full recovery. Local support was also enhanced by the work of an independent monitoring agency, located in Carlsbad, that corroborated the claim to continued public safety. The panel will include both U.S. and international participants.

Panelist:

- Dana Bryson (DOE, Carlsbad Field Office)
- Derek Wilson (NWMO)
- Russell Hardy (Carlsbad Environmental Monitoring and Research Center)
- Ann McCall (NDA, United Kingdom)
- Alain Harman (ANDRA, France)
- Thilo von Berlepsch (DBE, Germany)

Storage and Transportation—Special Session on Chloride-Induced Stress Corrosion Cracking of Stainless Steel Welded Canisters During Extended Storage—Panel

Session Organizer: Steven C. Marschman (INL)

Chair: Ken Sorenson (SNL)

Emerald Salon Three: 10:25 a.m.-12:30 p.m.

10:25 a.m.

Dry storage of used nuclear fuel will continue for many years. Large numbers of welded stainless steel canister systems are in use internationally and now dominate the U.S. market. As storage times have increased, canister aging phenomena become increasingly important. Chloride-induced stress corrosion cracking (CISCC) of austenitic stainless steel is a concern for susceptible welded stainless steel systems. This

panel brings together representatives from government and industry to discuss the current state of CISCSS research, the evolving state of dry storage regulations, and a status of plans and actions being taken to mitigate potential canister degradation.

Panelists:

- Al Csontos (NRC)
- Rod McCullum (NEI)
- John Kessler (EPRI)
- Steve Marschman (INL)

Nuclear Fuel Cycle Optimization and Integration—Alternative Fuel Cycles and Reactor Technologies

Session Organizer and Chair: Joonhong Ahn (Univ of California, Berkeley)

Yellow Topaz: 10:25 a.m.-12:30 p.m.

10:25 a.m.

Development and Testing of a Decision Framework and a Decision Tool for Determining Fuel Cycle Preferences, Andrea R. Gardiner, Steven L. Krahn, Timothy M. Ault, Allen G. Croff, Bethany L. Burkhardt, James H. Clarke, Lyndsey M. Fyffe (Vanderbilt Univ), Albert J. Machiels, Andrew G. Sowder (EPRI)

10:50 a.m.

Qualitative and Quantitative Metrics for Evaluating the Nuclear Fuel Cycle, John M. Swanson, Ishoc Salaam, Sama Bilbao y León (Virginia Commonwealth Univ)

11:15 a.m.

Comparison of Radioactive Waste Volumes from Single Used Nuclear Fuel Recycling and the Once-Through Nuclear Fuel Cycle, Bethany L. Burkhardt, Steven Krahn, Allen Croff, Kevin Brown, James H. Clarke (Vanderbilt Univ), Albert Machiels, Andrew Sowder (EPRI)

11:40 a.m.

Hedging Against Uncertainty in the Nuclear Fuel Cycle, Urairisa Phathanapirom, Erich Schneider (Univ of Texas, Austin)

12:05 p.m.

Feasibility of Molten Salt Fast Reactor for Emerging National Tasks, Yasuo Hirose, Koshi Mitachi (Retired), Yoichiro Shimazu (Univ of Fukui)

Borehole Disposal—Siting

Session Organizer and Chair: Patrick Brady (SNL)

Opal Ballroom: 10:25 a.m.-12:30 p.m.

10:25 a.m.

Siting Guidelines for a Deep Borehole Disposal Facility, Geoff A. Freeze, Bill W. Arnold, Patrick V. Brady, David C. Sassani, Kristopher L. Kuhlman (SNL)

10:50 a.m.

Site Characterization for a Deep Borehole Field Test, Kristopher L. Kuhlman, Bill W. Arnold, Patrick V. Brady, David C. Sassani, Geoff A. Freeze, Ernest L. Hardin (SNL)

11:15 a.m.

A GIS Database to Support Siting of a Deep Borehole Field Test, Frank V. Perry (LANL), Bill W. Arnold (SNL), Richard E. Kelley (LANL)

11:40 a.m.

An Analysis on the Borehole Spacing of Deep Borehole Disposal of HLW, Jongyoul Lee, Geonyoung Kim, Daeseok Bae, Heuijoo Choi, Kyeongsoo Kim (KAERI)

12:05 p.m.

Modeling Transient Thermal Conditions for Nuclear Waste in Deep Boreholes, Robert J. Geringer, Clifford Singer (Univ of Illinois)

Attendee Luncheon

Crystal A/B

12:30-2:00 p.m.

Repository Performance Assessment: Radionuclide Release and Transport—I

Session Organizer: Andrew Sowder (EPRI)

Chair: David Pickett (Southwest Research Inst)

Emerald Salon One: 2:00-3:40 p.m.

2:00 p.m.

FIRST-Nuclides: Results on Radionuclide Release from Used Fuel, Bernhard Kienzler (KIT), Karel Lemmens (SCK.CEN)

2:25 p.m.

Sensitivity Studies With a Probabilistic Radionuclide Transport Model for Geological Disposal in Meuse/Haute-Marne, France, Richard Codell (Consultant), Sitakanta Mohanty, Stuart Stothoff (Southwest Research Inst), Gregory Mathieu, Marc Bourgeois, Delphine Pellegrini (IRSN)

2:50 p.m.

Effects of Dissolved Hydrogen on Dissolution Rates of SIMFUEL in High-Level Waste Repositories With Reducing Conditions, Pavan K. Shukla (Southwest Research Inst), Tae Ahn (NRC)

3:15 p.m.

Estimating Gas-Borne Dose Consequences from a Used Fuel Repository in Sedimentary Rock, E. P. Kremer (NWMO), J. D. Avis, N. Calder (Geofirma Eng Limited), N.G. Hunt (NWMO)

Repository Design: Natural Barrier Systems

Session Organizer: Efstratios (Stratis) Vomvoris (NAGRA)

Cochairs: Jin-Ping (Jack) Gwo (NRC), Stuart Stothoff (Southwest Research Inst)

Emerald Salon Two: 2:00-3:40 p.m.

2:00 p.m.

THMC Behaviour of Clay-Based Barriers under High Temperature—From Laboratory to URL Scale, S. Vomvoris (Nagra), J. Birkholzer, Liange Zheng (LBNL), I. Gaus, I. Blechschmidt (Nagra)

2:25 p.m.

Understanding Thermal Constraints for High-Heat-Generating Wastes in the UK, Ann McCall, Martin Cairns (Radioactive Waste Management Limited), invited

2:50 p.m.

Modeling the Coupled Hydrogeochemical and Mechanical Behavior of a Single Artificial Fracture in Novaculite Rock, J. Gwo, T. Cao, R. Fedors, J. Rubenstone (NRC)

3:15 p.m.

Numerical Characterization of the Excavation Damaged Zone in the HG-A Experiment, Robert Walsh, Othman Nasir (Geofirma Eng Ltd), Helen Leung (NWMO), John Avis (Geofirma Eng Ltd)

Storage and Transportation—Inspection and Aging Management of Dry Storage Systems—I

Session Organizer: John H. Kessler (EPRI)

Chair: Shannon Chu (EPRI)

Emerald Salon Three 2:00-3:40 p.m.

2:00 p.m.

Aging Management for High Burnup Used Fuel in Dry Storage—A Holistic Approach, Rod McCullum (NEI), Tom Brookmire (Dominion Energy), Pam Cowan (Exelon Generation), Kris Cummings (NEI), John Kessler (EPRI), Steve Nesbit (Duke Energy), Terry Pickens (Xcel Energy)

2:25 p.m.

Gap Analysis to Support Modeling the Long-Term Degradation of Used Nuclear Fuel Canisters, P. J. Jensen, D. J. Sunderland, S. B. Ross, R. O. Montgomery, B. D. Hanson, R. Devanathan (PNNL)

2:50 p.m.

Aging Management Program for Stainless Steel Dry Storage System Canisters, Darrell S. Dunn, Bruce Lin (NRC), Ryan M. Meyer, Michael T. Anderson (PNNL)

3:15 p.m.

EPRI's CISCC R&D Roadmap and Development of CISCC Aging Management Guidelines, Shannon Marie Chu (EPRI)

Nuclear Fuel Cycle Optimization and Integration—Integrating Interim Storage and Disposal—II

Session Organizer and Chair: Rob P. Rechard (SNL)

Yellow Topaz 2:00-3:40 p.m.

2:00 p.m.

Process Flow Diagrams and Node Descriptions for the SNF WMS, R. A. Joseph III, R. E. Hale, G. M. Petersen, R. L. Howard (ORNL), M. Nutt (ANL)

2:25 p.m.

Waste Management System Architecture Evaluations, W. Mark Nutt, Casey Trail (ANL), Thomas Cotton (Complex Systems LLC), Robert Howard, Bret van den Akker (ORNL)

2:50 p.m.

Integrating Management of Spent Nuclear Fuel in the United States by Consolidated Storage, Rob P. Rechard, Laura L. Price, Elena A. Kalinina, Evaristo J. Bonano (SNL), Hank C. Jenkins-Smith (Univ of Oklahoma)

3:15 p.m.

Qualitative Evaluation of Options for Disposal of SNF and HLW, Laura Price, David Sassani, Peter Swift, Evaristo Bonano (SNL)

Biosphere—I

Session Organizer: Karen Smith (RadEcol Consulting Ltd.)

Chair: Graham Smith (GMS Abington Ltd.)

Opal Ballroom: 2:00-3:40 p.m.

2:00 p.m.

International Cooperation and Biosphere Assessment: BIOPROTA, K. Smith (RadEcol Consulting Ltd.), G. Smith (GMS Abington Ltd.), D. Pérez-Sánchez (CIEMAT)

2:25 p.m.

Biosphere Assessment for Safety Case of Final Disposal of Spent Nuclear Fuel, Lauri Parviainen, Kirsi Riekkö (Posiva Oy)

2:50 p.m.

International Developments in Addressing Environmental Change in Post Closure Safety Assessments, Tobias Lindborg (Swedish Nuclear Fuel and Waste Management Col/Swedish Univ of Agricultural Science), Mike Thorne (Mike Thorne and Assoc Ltd.)

3:15 p.m.

Results from Post-Closure Dose Assessment Models with “Alternative” Levels of Detail, Ryk A. Klos (Aleksandria Sciences), Danyl Pérez-Sánchez (CIEMAT), Shulan Xu, Maria Nordén (SSM)

Afternoon Break

3:40-3:55 p.m.

Repository Performance Assessment: Radionuclide Release and Transport—II

Session Organizer: Andrew Sowder (EPRI)

Chair: David Pickett (Southwest Research Inst)

Emerald Salon One: 3:55-4:20 p.m.

3:55 p.m.

Relevance of Radionuclide Transport Assisted by Colloids in a KBS-3 Repository, Osvaldo Pensado (Southwest Research Inst)

Repository Design: Engineered Barrier Systems—III

Session Organizer: David A. Pickett (*Southwest Research Inst*)

Chair: Michael Apted (*INTERA Inc.*)

Emerald Salon Two: 3:55-4:45 p.m.

3:55 p.m.

Alternative Method for the Production of Copper Barriers, T. Hernandez-Selva (*BEP Surface Technologies Ltd/Univ of Manchester*), D. L. Engleberg, F. Scenini (*Univ of Manchester*), D. Fox, A. McClusky (*BEP Surface Technologies Ltd*)

4:20 p.m.

Copper Corrosion in Simulated Anoxic Granitic Underwater
Xihua He (*Southwest Research Inst*), Tae Ahn (*NRC*), Jude McMurry (*Retired*)

Storage and Transportation: Inspection and Aging Management of Dry Storage Systems— II

Session Organizer: John H. Kessler (*EPRI*)

Chair: Rod McCullum (*NEI*)

Emerald Salon Three: 3:55-5:35 p.m.

3:55 p.m.

Collaboration on Aging Management for Extended Storage of Used Fuel, Holger Voelzke (*BAM Federal Inst for Materials Research and Testing*), Yung Liu (*ANL*)

4:20 p.m.

Dry Storage Canister Inspections to Inform Aging Management Efforts, Keith Waldrop (*EPRI*)

4:45 p.m.

Inspection and Monitoring of Dry Canister Storage Systems, Jeremy B. Renshaw, Shannon Chu, John H. Kessler, Keith Waldrop (*EPRI*)

5:10 p.m.

Feasibility of Acoustic Methods for Impurity Gas Monitoring in Dry Storage Systems, Ryan M. Meyer, Judith M. Cuta, A. Mark Jones, Kayte M. Denslow, Pradeep Ramuhalli, Harold F. Adkins, Brady D. Hanson (*PNNL*)

Biosphere— II

Session Organizer: Karen Smith (*RadEcol Consulting Ltd*)

Chair: Graham Smith (*GMS Abingdon Ltd.*)

Opal Ballroom: 3:55-5:10 p.m.

3:55 p.m.

Estimation of Dilution, Capture, and Dose for IAEA Reference Biospheres, Paul E. Mariner, W. Payton Gardner (*SNL*)

4:20 p.m.

Determination of Concentration Ratios of Stable Sr and Cs for Fish, and Analysis of Factors Influencing Their Range of Variation, Lena Konovalenko, Clare Bradshaw (*Stockholm Univ*), Ulrik Kautsky (*SKB*)

4:45 p.m.

Review of Current Methods in Internal Dosimetry of Non-Human Biota, N. E. Martinez (*Clemson Univ*)

Regulatory Institutional Topics—Advances in Understanding Consent-Based Siting for UNF Storage—Panel

Session Organizer: Rob Rechar (*SNL*)

Chair: Evaristo Bonano (*SNL*)

Yellow Topaz: 3:55-5:35 p.m.

3:55 p.m.

As the U.S. contemplates directions for and revisions to its radioactive waste policy, the next few years provide an opportunity to explore options for and attributes of a consent-based process for siting radioactive waste management facilities. Panel members will review research on public perceptions of consent-based siting, discuss the implications of these perceptions relative to the U.S. situation, and capture lessons learned from international programs, including those addressed in Tuesday's Plenary Session on Consent.

Panelists:

- Matt Knowlin (*College of Charleston*)
- Carol Silva (*University of Oklahoma*)
- Kuhika Gupta (*University of Oklahoma*)
- Judith Holms (*Northwind*)

Continental Breakfast 7:00-8:00 a.m. – Crystal A/B

Repository Performance Assessment—Disruptive Scenarios

Session Organizer: Erik Kremer (NWMO)

Cochairs: Erik Kremer (NWMO), Mark Gobien (NWMO)

Emerald Salon One: 8:00-9:40 a.m.

8:00 a.m.

Fifth Case Study: Identification and Analysis of Disruptive Scenarios, F. Garisto (NWMO), J. Avis (Geofirma Eng Ltd), M. Gobien, E. P. Kremer, C. Medri (NWMO)

8:25 a.m.

Detailed Gas Generation and Transport Modelling at the Room and Repository Scale, J. D. Avis, N. Calder (Geofirma Eng Ltd), E. P. Kremer (NWMO)

8:50 a.m.

Modeling the Accumulation of Thermally Fissile Materials in HLW Repository, Alex Salazar, Joonhong Ahn (Univ of California, Berkeley)

9:15 a.m.

A Criticality Safety Study for the Disposal of Damaged Fuel Debris, Xudong Liu, Joonhong Ahn (Univ of California, Berkeley), Fumio Hirano (JAEA)

Regulatory and Institutional Topics—Special Session on Regulatory Updates and Milestones—Panel

Session Organizer and Chair: James Rubenstone (NRC)

Emerald Salon Two: 8:00-9:40 a.m.

8:00 a.m.

Independent regulators have an important role in ensuring the safe and secure management of spent fuel and other high level radioactive waste, and in environmental protection. This session highlights recent regulatory actions in the U.S. and other countries, including decisions and review activities on continued storage of spent fuel and proposed deep geologic repositories for high-level waste.

Panelist:

- James Rubenstone (NRC)
- Keith McConnell (NRC)
- Bjorn Dverstorp (SSM)

Storage and Transportation: Transportation Analysis and Testing— II

Session Organizer and Chair: Ruth F. Weiner (Boston Government Services)

Yellow Topaz: 8:00-9:40 a.m.

8:00 a.m.

A Sufficiency Criterion for Spent Fuel in Dry Storage Subjected to Transportation Accident Conditions, Joseph Rashid (ANATECH), Albert Machiels (EPRI)

8:25 a.m.

The Impact of Cask Wake on Materials Released from a Type B Cask, Christopher Clutz, Ruth Weiner (SNL)

8:50 a.m.

Shielding Evaluation of the ENSA ENUN 32P Cask for Zonal Loading, Dominic Napolitano, David Hartmangruber, Drew Blackwell (Enercon Federal Services), David Garrido (Equipos Nucleares, SA)

9:15 a.m.

Burnup Credit Criticality Evaluation of the ENSA ENUN 32P Cask, Curt Lindner, Dominic Napolitano, Alan Wells (Enercon Federal Services), David Garrido (Equipos Nucleares, SA)

Regulatory and Institutional Topics—Management, Oversight and Decommissioning of Nuclear Facilities

Session Organizer and Chair: Kevin A. McMahon (SNL)

Opal Ballroom: 8:00-9:40 a.m.

8:00 a.m.

Fukushima Spent Fuel Defueling Status, Takao Shimura, Masaru Iwanami (Hitachi-GE Nuclear Energy)

8:50 a.m.

Content Analysis of DOE Occurrence Reports at Nuclear Chemical Facilities, Lyndsey Fyffe (Vanderbilt Univ), James A. Hutton (DOE), James H. Clarke, Steven Krahn, David Kosson (Vanderbilt Univ)

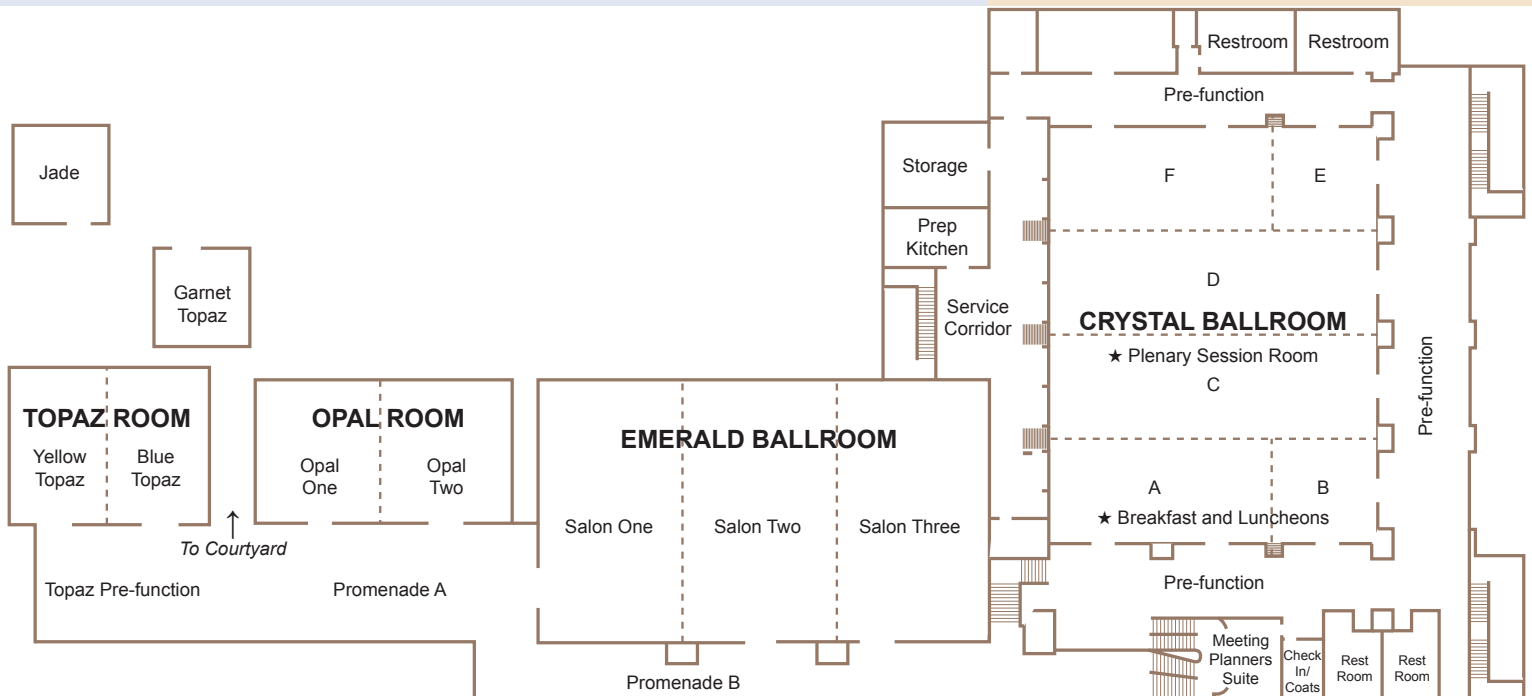
9:15 a.m.

Aging Management Program for Reinforced Concrete Structures, Ricardo D. Torres, Bhasker P. Tripathi, Emma L. Wong, John P. Wise, Darrell S. Dunn, Aladar A. Csontos (NRC)



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