OFFICIAL PROGRAM

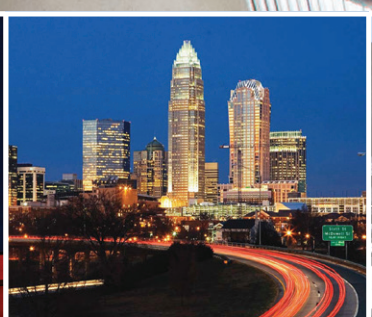
International Conference on Nuclear Criticality Safety

ICNC 2015
35 Years of International Cooperation

ANS

Hosted by the Nuclear Criticality Safety Division of the American Nuclear Society
Co-Sponsored by NEA

Photo by Randy Montoya/Sandia National Laboratories



September 13-17, 2015
Omni Charlotte Hotel
Charlotte, NC

ANS Conference

2015 International Conference on Nuclear Criticality Safety

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Other

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General Meeting Information

Plenary and Special Sessions

Technical Sessions

Additional

ICNC 2015
35 Years of International Cooperation

International Conference on Nuclear Criticality Safety

Every 4 years the international nuclear criticality safety community gathers to discuss technical, operational, computational, and regulatory issues in the practice of nuclear criticality safety. ICNC 2015 (International Conference on Nuclear Criticality) allows specialists from around the globe to come together to discuss, analyze and study the latest developments in the area of nuclear criticality safety. This is a unique opportunity to exchange ideas with industry experts, leaders, colleagues and peers. For the first time in 20 years, ICNC is back in the U.S. meeting in Charlotte, North Carolina. The meeting will include a 4-day technical program covering all areas of nuclear criticality safety in nuclear operations, a social program with multiple opportunities to see old friends from the international community and make new friends, and technical tours to check out nuclear facilities in the area.

Honorary Chair:
Elliott Whitesides
Retired, ORNL

General Chair:
Robert D. Busch
University of New Mexico

Asst. General Chair:
Sandra L. Larson
Atkins Nuclear Solutions US

Co-Program Chair:
Michaele Brady Raap
Battelle Northwest/PNNL

Co-Program Chair:
Larry Wetzel
BWX Technologies, Inc.

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Corporate Sponsorship Chair:
Hatice Akkurt
Electric Power Research Institute

ANS Nuclear Criticality Safety Division

SUNDAY, SEPTEMBER 13

1:00-7:00 p.m.	Registration
6:00-8:00 p.m.	Welcome Reception

MONDAY, SEPTEMBER 14

7:00 a.m.-6:00 p.m.	Registration
7:00-8:00 a.m.	Continental Breakfast
8:00 a.m.-12:00 p.m.	Opening Plenary
9:30-9:45 a.m.	Morning Break *(Sponsored by Duke Energy)*
12:00-1:00 p.m.	Lunch Break
1:00 -5:00 p.m.	Technical Sessions
2:40-3:05 p.m.	Afternoon Break *(Sponsored by C.S. Engineering, Inc.)*
5:30-7:30 p.m.	Reception at the Mint Museum Uptown

TUESDAY, SEPTEMBER 15

7:00 a.m.-7:00 p.m.	Registration
7:00-8:00 a.m.	Continental Breakfast
8:00 a.m.-12:00 p.m.	Technical Sessions
9:40-10:05 a.m.	Morning Break
12:00-1:00 p.m.	Lunch Break
1:00-3:00 p.m.	Technical Sessions
3:00-5:00 p.m.	ICNC Poster Session and Reception *(Sponsored by Atkins)*

WEDNESDAY, SEPTEMBER 16

7:00 a.m.-5:30 p.m.	Registration
7:00-8:00 a.m.	Continental Breakfast
8:00 a.m.-12:00 p.m.	Technical Sessions
9:40-10:05 a.m.	Morning Break
12:00-1:00 p.m.	Lunch Break
1:00-5:00 p.m.	Technical Sessions
2:40-3:05 p.m.	Afternoon Break
6:00-8:00 p.m.	Dinner at Founders Hall

THURSDAY, SEPTEMBER 17

7:00 a.m.-3:00 p.m.	Registration
7:00-8:00 a.m.	Continental Breakfast
8:00 a.m.-12:00 p.m.	Technical Sessions
9:40-10:05 a.m.	Morning Break
12:00-1:00 p.m.	Lunch Break
1:00-4:00 p.m.	ICNC Workshop – *Second level criticality modelling: beyond k-effective calculation, nuclear criticality safety begins…*

FRIDAY, SEPTEMBER 18

7:45 a.m.-3:00 p.m.	V.C. Summer Nuclear AP1000® Nuclear Plant Construction Tour *(Sponsored by Westinghouse)*
7:45 a.m.-3:00 p.m.	Columbia Fuel Fabrication Facility Plant Tour *(Sponsored by Westinghouse)*

ANS Nuclear Criticality Safety Division

Sunday, September 13		Location
1:00-7:00 p.m.	**Registration**	Grand Ballroom Foyer
6:00-8:00 p.m.	**Welcome Reception**	Cypress Room

Monday, September 14		Location
7:00 a.m.-6:00 p.m.	**Registration**	Grand Ballroom Foyer
7:00-8:00 a.m.	**Continental Breakfast**	Grand Ballroom Foyer
8:00 a.m.-12:00 p.m.	**Opening Plenary**	Grand Ballroom
9:30-9:45 a.m.	**Morning Break** *(Sponsored by Duke Energy Corporation)*	Grand Ballroom Foyer
12:00-1:00 p.m.	**Lunch Break** *(not provided)*	
1:00-5:00 p.m.	**Technical Sessions**	
	• Criticality Codes and Nuclear Data—I	Dogwood
	• Operational Practices—I	Birch
	• Development of Standards and Assessment Methodology—I	Juniper
	• Criticality Safety in Used Fuel Management—I	Cypress
2:40-3:05 p.m.	**Afternoon Break** *(Sponsored by C.S. Engineering, Inc.)*	Grand Ballroom Foyer
5:30-7:30 p.m.	**Reception at the Mint Museum Uptown**	Mint Museum

Tuesday, September 15		Location
7:00 a.m.-7:00 p.m.	**Registration**	Grand Ballroom Foyer
7:00-8:00 a.m.	**Continental Breakfast**	Grand Ballroom Foyer
8:00 a.m.-12:00 p.m.	**Technical Sessions**	
	• Criticality Codes and Nuclear Data—II	Willow
	• Operational Practices—II	Birch
	• Development of Standards and Assessment Methodology—II	Juniper
	• Criticality Safety in Used Fuel Management—II	Cypress
9:40-10:05 a.m.	**Morning Break**	Grand Ballroom Foyer
12:00-1:00 p.m.	**Lunch Break** *(not provided)*	
1:00-3:00 p.m.	**Technical Sessions**	
	• Uncertainty and Sensitivity Analysis—I	Willow
	• Criticality Safety in Used Fuel Management—III	Birch
3:00-5:00 p.m.	**ICNC Poster Session and Reception** *(Sponsored by Atkins)*	Poplar/Dogwood

Wednesday, September 16		Location
7:00 a.m.-5:30 p.m.	**Registration**	Grand Ballroom Foyer
7:00-8:00 a.m.	**Continental Breakfast**	Grand Ballroom Foyer
8:00 a.m.-12:00 p.m.	**Technical Sessions**	
	• Criticality Codes and Nuclear Data—III	Dogwood
	• Criticality Experiments—I	Birch
	• Uncertainty and Sensitivity Analysis—II	Juniper
	• Criticality Safety in Used Fuel Management—IV	Cypress
9:40-10:05 a.m.	**Morning Break**	Grand Ballroom Foyer
12:00-1:00 p.m.	**Lunch Break** *(not provided)*	
1:00-5:00 p.m.	**Technical Sessions**	
	• Criticality Codes and Nuclear Data—IV	Dogwood
	• Criticality Experiments—II	Birch
	• Analysis of Criticality Accidents and Incidents—I	Juniper
	• Criticality Safety in Used Fuel Management—V and Uncertainty and Sensitivity—III	Cypress
2:40-3:05 p.m.	**Afternoon Break**	Grand Ballroom Foyer
6:00-8:00 p.m.	**Dinner at Founders Hall**	

Thursday, September 17		Location
7:00 a.m.-3:00 p.m.	**Registration**	Grand Ballroom Foyer
7:00-8:00 a.m.	**Continental Breakfast**	Grand Ballroom Foyer
8:00 a.m.-12:00 p.m.	**Technical Sessions**	
	• Analysis of Criticality Accidents and Incidents—II	Cypress
	• Professional Development Issues	Juniper
	• Criticality Experiments—III	Dogwood
	• Storage, Transport, and Disposal of Fissile Material	Willow
9:40-10:05 a.m.	**Morning Break**	Grand Ballroom Foyer
12:00-1:00 p.m.	**Lunch Break** *(not provided)*	
1:00-4:00 p.m.	**ICNC Workshop:** *Second level criticality modelling: beyond k-effective calculation, nuclear criticality safety begins...*	Willow/Birch

Friday, September 18		Location
7:45 a.m.-3:00 p.m.	**V.C. Summer Nuclear AP1000® Nuclear Plant Construction Tour** *(Sponsored by Westinghouse)*	Departs from Lobby
7:45 a.m.-3:00 p.m.	**Columbia Fuel Fabrication Facility Plant Tour** *(Sponsored by Westinghouse)*	Departs from Lobby

MEETING REGISTRATION

The ANS Registration Desk is located in the Grand Ballroom Foyer of the Omni Charlotte, Sunday, September 13 – Thursday, September 17. Meeting registration is required for all attendees and speakers. Badges are required for admission to all plenaries, technical sessions and events.

REGISTRATION HOURS

Sunday, September 13	• 1:00-7:00 p.m.
Monday, September 14	• 7:00 a.m.-6:00 p.m.
Tuesday, September 15	• 7:00 a.m.-7:00 p.m.
Wednesday, September 16	• 7:00 a.m.-5:30 p.m.
Thursday, September 17	• 7:00 a.m.-3:00 p.m.

NOTE:

Additional tickets can be purchased at the ANS Registration Desk for the Welcome Reception, Monday evening reception and Wednesday Banquet.

ABOUT ANS

To view the ANS Bylaws, Mission and Code of Ethics make sure to visit www.ans.org/about.

NOTICE FOR SPEAKERS:

All Speakers and Session Chairs must sign in at the ANS Registration Desk. Grand Ballroom Foyer

Consent To Use Photographs And Videos

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The Mint Museum Uptown

WELCOME RECEPTION

Location: Cypress Room
Sunday, September 13 • 6:00-8:00 p.m.

One ticket to the Welcome Reception is included in the full meeting registration fee.
Additional tickets can be purchased at the ANS Registration Desk for $75.00.

OPENING PLENARY SESSION

Location: Grand Ballroom
Monday, September 14 • 8:00 a.m.-12:00 p.m.

8:15-8:25 a.m.
Robert Busch
Welcome to ICNC 2015

8:25-8:30 a.m.
Elliott Whitesides, Honorary Chair *(ORNL, ret.)*

8:30-9:30 a.m.

- Jerry McKamy *(DOE)*– The U.S. DOE Criticality Safety Enterprise - Next Generation
- Neil Harris *(NNL)* – Nuclear Criticality Safety in the United Kingdom—Work In Progress

Break
9:30-9:45 a.m.

9:45-12:00 p.m.

- Eric Létang *(IRSN)* – Current State of Criticality Safety Efforts in France, Focus on IRSN International Cooperation in Nuclear Criticality Safety Activities
- Kenya Suyama *(JAEA)* – Criticality Safety Control of Fuel Debris Produced by the Accident of Fukushima Daiichi Nuclear Power Plants—Technical Development in Japan from 2012 and the Future
- Kotaro Tonoike *(JAEA)* – Study on Criticality Control of Fuel Debris by Japan Atomic Energy Agency to Support Nuclear Regulation Authority of Japan
- Jim Gulliford *(OECD)* – An International Perspective on Nuclear Criticality Safety
- Michaele Brady Raap *(PNNL)*– NEA Criticality Working Group Activities
- Summary—Robert Busch *(Univ of New Mexico)*

RECEPTION AT THE MINT MUSEUM

Location: Mint Museum Uptown, at Levine Center for the Arts, 500 South Tryon Street, Charlotte
Monday, September 14 • 5:30-7:30 p.m.

The Mint Museum Uptown houses an internationally-renowned Craft + Design Collection, as well as outstanding collections of American, Modern and Contemporary, and European art. The five-story 145,00 square foot facility combines inspiring architecture with groundbreaking exhibitions to provide visitors with memorable educational and cultural experiences.

The Mint Museum is within walking distance from the Omni Charlotte hotel.

Tickets can be purchased at the ANS Registration Desk for $100.00.

ICNC POSTER SESSION AND RECEPTION

Location: Poplar/Dogwood
Tuesday, September 15 • 3:00-5:00 p.m.

DINNER BANQUET AT FOUNDERS HALL

Location: 100 N Tryon St, Charlotte, NC
Wednesday, September 16 • 6:00-8:00 p.m.
Additional tickets can be purchased at the ANS Registration Desk for $132.00.

ICNC WORKSHOP

"Second level criticality modelling: beyond k-effective calculation, nuclear criticality safety begins..."

Location: Willow/Birch
Thursday, September 17 • 1:00-4:00 p.m.

Instructors:

Y. Richet, G. Caplin & M. Duluc *(IRSN)*

This workshop investigates the usage of computer codes from a Nuclear Criticality Safety standpoint rather than from a criticality code standpoint. Indeed, NCS specialists are often more interested in physical parameters like critical mass or penalizing water moderation rather than the k-effective given by the code (which is often an intermediate parameter). An approach dealing with this issue is presented, using a "second level" criticality modelling, integrating statistical learning algorithm, criticality model & k-effective calculations. This approach will help NCS specialists to solve complex and time consuming NCS problems. As an illustration, practical applications like homogeneous/heterogeneous subcritical limits determination or subcriticality checking of configurations will be tested, actively involving participants.

V.C. SUMMER NUCLEAR AP1000® NUCLEAR PLANT CONSTRUCTION TOUR

*SOLD OUT

Location: Virgil C. Summer Nuclear Plant
Friday, September 18 • 8:00 a.m.-3:00 p.m.

As part of this unique opportunity, participants will receive an overview of the SCE&G V.C. Summer station, including a discussion on regulatory challenges. Following an introduction to V.C. Summer, participants will learn about the construction of the AP1000 plants in China before experiencing firsthand the construction taking place at V.C. Summer. The visit will conclude with a tour of the AP1000 simulator.

Bus Departure: Meeting in Lobby at 7:45 a.m.

Visit the ANS Registration Desk to be placed on a waiting list, should availability open up.*

COLUMBIA FUEL FABRICATION FACILITY PLANT TOUR

*SOLD OUT

Location: Westinghouse Columbia Fuel Fabrication Facility Plant
Friday, September 18 • 8:00 a.m.-3:00 p.m.

Westinghouse Nuclear Fuel is a single-source fuel provider for PWRs, BWRs, AGRs and also VVERs worldwide. Participants will receive an overview of the Fuel Fabrication Process followed by a tour of parts of the facility.

Bus Departure: Meeting in Lobby at 7:45 a.m.

Visit the ANS Registration Desk to be placed on a waiting list, should availability open up.*

Technical Sessions

1:00-4:45 p.m.

Criticality Codes and Nuclear Data—I

Session Organizers: Michael E. Dunn *(ORNL),* Jingjing Wang *(Canadian Nuclear Laboratories)*

Session Cochairs: Michael Dunn *(ORNL)*, Greg O'Connor *(Office for Nuclear Regulation)*

Dogwood: 1:00-4:20 p.m._

1:00 p.m.
The Official Website of the U. S. Department of Energy's Nuclear Criticality Safety Program, B. Koponen, D. Heinrichs, C. Lee *(LLNL),* L. Scott *(SAIC)*

1:25 p.m.
Validation of Continuous Energy Sensitivity Coefficients Calculations in the MORET 5 Code, A. Jinaphanh, N. Leclaire, B. Cochet, B. Quaghebeur *(IRSN)*

1:50 p.m.
Calculation and Use of Pointwise Effective Cross-Sections in the Unresolved Resonance Region, V. M. Shmakov *(RFNC-VNIITF)*

2:15 p.m.
The Additive Volume Density Law Implemented in the LATEC Workbench to Deal With Fissile Media That Contain Moderator Elements, Frederic Fernex, Nicolas Leclaire, LoïcHeulers *(IRSN)*

Afternoon Break: 2:40-3:05 p.m. - Grand Ballroom Foyer

3:05 p.m.
Taking Into Account the Temperature Effect in Nitrate Solutions: Validation of the Pitzer and "Isotemp" Density Laws to be Implemented in the LATEC Workbench, Nicolas Leclaire, Frédéric Fernex, Loïc Heulers *(IRSN)*

3:30 p.m.
Critical and Subcritical Mass Computations for ^{247}Cm, C. T. Rombough *(CTR Technical Services, Inc.)*, D. F. Hollenbach, R. G. Taylor *(C. S. Engineering, Inc.)*

3:55 p.m.
MCNP6 Status and Plans for Criticality Safety Applications, F. B. Brown, M. E. Rising, C. J. Solomon, J. S. Bull *(LANL)*

Operational Practices—I

Session Organizers: Jingjing Wang *(AECL)*, William Doane Jr., *(AREVA-Richland)*

Session Cochairs: Brandon O'Donnell *(BWX Technologies)*, Jingjing Wang *(AECL)*

Birch: 1:00-4:45 p.m.

1:00 p.m.
Improvements to Neutron Detection of Pu in Solvent for an Aqueous Buffer Tank, Magnox Reprocessing Plant, Sellafield, Anthony R. Wilson *(Sellafield Ltd)*

1:25 p.m.
Recovery from Loss of Reductant to a U/Pu Separation Contactor, Magnox Reprocessing Plant, Sellafield, Anthony R. Wilson *(Sellafield Ltd)*

1:50 p.m.
Initial Recovery of the Magnox Reprocessing Plant Following a Loss of Reductant Feed in the Solvent Extraction Process, Andrew Sutton *(Sellafield Limited)*

2:15 p.m.
Further Work on Credible Levels of Water Moderation, Larry L. Wetzel, Brandon O'Donnell *(BWX Technologies)*

Afternoon Break: 2:40-3:05 p.m. - Grand Ballroom Foyer

3:05 p.m.
Establishing No Credible Risk of Inadvertent Criticality for the K 25 Demolition Project, Brenda Hawks *(DOE)*, Jeff Castor *(Navarro Research & Eng)*, Roger Bartholomay, Robert Malinosky. Jr. *(UCOR)*

3:30 p.m.
The Application of ALARP to Legacy Residues Recovery Processes on the Springfields Site in the United Kingdom, Deborah A. Hill *(NNL)*, T. Gordon Wadeson *(Springfields Fuels Ltd.)*

3:55 p.m.
Can a Radiolocial Event Impact a Criticality Safety Program: Lessons Learned at WIPP, Benjamin Larsen *(Nuclear Waste Partnership)*, Sandi Larson *(Atkins Nuclear Solutions US)*

4:20 p.m.
Development of a Process for Remediation of Enriched Uranium Coolant Tanks at Awe Aldermaston, Mark Roydhouse, David Perry *(AWE)*, Jack Venner *(SR3C Ltd.)*, Simon Plummer *(RPS Risk Management)*

Technical Sessions

1:00-4:45 p.m.

Development of Standards and Assessment Methodology—I

Session Organizers: Nicholas W. Brown *(Nuclear Fuel Services, Inc.)*, Neil Harris *(National Nuclear Laboratory Limited)*

Session Cochairs: Chris Tripp *(NRC)*, Neil Harris *(NNL)*

Juniper 1:00-4:20 p.m.

1:00 p.m.

International Organization for Standardization on the Topic of Nuclear Criticality Safety (ISO TC85/SC5/WG8), Calvin M. Hopper *(Retired Convener ISO TC85/SC5/WG8)*, Douglas G. Bowen *(ORNL)*, Sylvie Tarlé, Mickaël Hampartzounian *(AREVA NP - E&P)*

1:25 p.m.

The Criticality Incident Detection System Omission Cases for the Fuel Routes at EDF Energy Power Stations, D. Putley, J. S. Martin, M. Henderson *(EDF Energy Generation)*

1:50 p.m.

Just a Word or Two: Nuclear Criticality, Dennis Mennerdahl *(E Mennerdahl Systems)*

2:15 p.m.

UK Regulatory Review of the Double Contingency Principle in Criticality Safety, Tristan Thomas *(Office for Nuclear Regulation)*

Afternoon Break: 2:40-3:05 p.m. - Grand Ballroom Foyer

3:05 p.m.

"Criticality Events" Database for Fuel Cycle Facilities in Support of the IRSN Nuclear Criticality Safety Guide, R. Cousin, I. Le Bars *(IRSN)*

3:30 p.m.

Status of the French Regulations Concerning Nuclear Criticality Safety, StéphaneEvo *(IRSN)*, Claude Manuel *(ASN)*

3:55 p.m.

The Doe Criticality Safety Support Group—A Retrospective Perspective, Fitz Trumble *(URS Professional Solutions)*, David Erickson *(Savannah River Nuclear Solutions)*

Criticality Safety in Used Fuel Management—I

Session Organizers: Meraj Rahimi *(NRC)*, Jose Conde *(ENUSA)*

Session Cochairs: Meraj Rahimi *(NRC)*, Jose Conde *(ENUSA)*

Cypress: 1:00-4:45 p.m.

1:00 p.m.

A Study on the Criticality Safety for the Direct Disposal of Used Nuclear Fuel in Japan: Application of Burnup Credit to the Criticality Safety Evaluation for the Disposal Canister, Kento Yamamoto, Hiroshi Akie, Kenya Suyama *(JAEA)*

1:25 p.m.

A Burnup Credit Approach for Irradiated Fast-Neuton Reactor Fuels: Nuclides of Interest and Fuel Storage Application, Coralie Carmouze, Cécile Riffard *(CEA)*, Gabriele Grassi *(AREVA-NC)*

1:50 p.m.

Extensive Sensitivity Study of PWR Fuel Assay Data, Maik Hennebach *(AREVA GmbH)*

2:15 p.m.

Optimization of a Dry, Mixed Nuclear Fuel Storage Array for Nuclear Criticality Safety, Benjamin Baranko *(Univ of Idaho)*, Akira Tokuhiro *(Purdue Univ)*

Afternoon Break: 2:40-3:05 p.m. - Grand Ballroom Foyer

3:05 p.m.

Accumulation of Gadolinium Isotopes in Used Nuclear Fuel, Kenya Suyama, Takao Kashima *(JAEA)*

3:30 p.m.

Evaluation of Isotopic Measurements and Burn-Up Value of Sample M11 of REBUS Project, Candan Töre, Alain Rodriguez, Pedro Ortego *(SEA)*

3:55 p.m.

Criticality Characteristics of MCCI Products Possibly Produced in Reactors of Fukushima Daiichi Nuclear Power Station, Kotaro Tonoike, Kiyoshi Ohkubo *(JAEA)*, Tomoyuki Takada *(ITOCHU Techno-Solutions Corp.)*

4:20 p.m.

Analysis of an Existing Spent Fuel Pool Storage Rack using Current Practices and Updated Depletion Bias and Uncertainty Values, Linda M. Farrell, Glen Seeburger *(AREVA Inc)*

Technical Sessions

8:00-11:45 a.m.

Criticality Codes and Nuclear Data—II

Session Organizers: Michael E. Dunn *(ORNL)*, Jingjing Wang *(Canadian Nuclear Laboratories)*

Session Cochairs: Greg Maxwell *(Iowa State Univ)*, Anthony Wilson *(Sellafield Ltd.)*

Willow: 8:00-11:20 a.m.

8:00 a.m.
Capture Cross Section Measurements in ^{nat}Fe and ^{181}Ta from 1 to 200 keV using a New C_6D_6 Detector Array, B. McDermott, E. Blain, A. Daskalakis, N. Thompson, A. Youmans, H. J. Choun, W. Steinberger, Y. Danon *(RPI)*, D. Barry, B. Epping, G. Leinweber, M. Rapp *(BMPC)*

8:25 a.m.
Production of the Thermal Scattering Law and Neutron Scattering Cross Sections for Ice from First Principles, Jesse C. Holmes, Michael L. Zerkle *(BAPL)*

8:50 a.m.
Benchmark Testing of a New ^{56}Fe Evaluation for Criticality Safety Applications, L. C. Leal *(ORNL)*, E. Ivanov *(IRSN)*

9:15 a.m.
Evaluated ^{182,183,184,186}W Neutron Cross Sections and Covariances in the Resolved Resonance Region, M. T. Pigni, L. C. Leal *(ORNL)*

Morning Break: 9:40-10:05 a.m. - Grand Ballroom Foyer

10:05 a.m.
Preliminary Critical Experiments Validation of a Lattice Physics Code LATC, Yeshuai Sun, Zhanquan Liu, Yuhang Yan, Shuo Li, Zhiyan Liu, Hui Yu, Yixue Chen *(SNPTC)*

10:30 a.m.
Inter-Code Comparison of TRIPOLIØ® and MVP on the MCNP Criticality Validation Suite, E. Brun, A. Zoia, J. C. Trama, S. Lahaye *(CEA, Saclay)*, Y. Nagaya *(JAEA)*

10:55 a.m.
Impact of Modeling Choices on Inventory and In-Cask Criticality Calculations for Forsmark 3 BWR Spent Fuel, J. S. Martinez *(Univ Politécnica de Madrid)*, B. J. Ade, S. M. Bowman, I. C. Gauld, G. Ilas, W. J. Marshall *(ORNL)*

Operational Practices—II

Session Organizers: William Doane Jr., *(AREVA-Richland)*, Jingjing Wang *(Canadian Nuclear Laboratories)*

Session Cochairs: William Doane, Jr. *(AREVA)*, Jack Venner *(AWE)*

Birch: 8:00-11:45 a.m.

8:00 a.m.
Criticality Hazard Identification Technique for Development of Safe Operating Limits and Restrictions, David Pilgrim, Angela Weaver *(Canadian Nuclear Laboratories)*

8:25 a.m.
Developing a Competent Criticality Safety Program: A Reprospective, Robert Wilson *(DOE)*

8:50 a.m.
ATALANTE Research Facility—New Mass Limits in a Unit Containing Plutonium and Minor Actinides, Philippe Giroud, Béatrice Batifol, Laurent Cholvy, Éric Fillastre, David Noyelles, Emmanuel Gagnier *(CEA)*

9:15 a.m.
Storage and Concentration of Plutonium and Uranium Solutions in LES 401 Hot Cell (ATALANTE)—Criticality Safety Considerations, Laurent Cholvy, Philippe Giroud, Antoine Hervy, Laurent Athenour *(CEA)*

Morning Break: 9:40-10:05 a.m. - Grand Ballroom Foyer

10:05 a.m.
Review of Non Destructure Assay Techniques Utilised for Decommissioning of Plutonium Facilities at AWE, Nicholas J. Robey, Andrew W. Davies *(AWE)*

10:30 a.m.
Development of Human Factors Awareness for Criticality Safety Specialists at Westinghouse Nuclear Fuels, Andrew Brown *(Westinghouse– Springfields Fuels Ltd.)*

10:55 a.m.
Improvements in Criticality Safety Training for Plant Operators at the Sellafield Site, Andrew Sutton *(Sellafield Ltd.)*

11:20 a.m.
Issues About Implementation of Geometry Control to Maintain Nuclear Criticality Safety, A.Bardelay, G. Caplin, S. Evo *(IRSN)*

Technical Sessions

8:00 a.m.-11:20 p.m.

Development of Standards and Assessment Methodology—II

Session Organizers: Nicholas W. Brown *(Nuclear Fuel Services, Inc.)*, Neil Harris *(National Nuclear Laboratory Limited)*

Session Cochairs: Blaine Rice *(Nuclear Fuel Services)*, Derek Putley *(EDF Energy Generation)*

Juniper: 8:00-11:20 a.m.

8:00 a.m.

A Systematic Approach to the Analysis of Double Faults Within Design Basis Accident Methodology, S. A. Watson *(SR3C Ltd.)*

8:25 a.m.

Safe Dissolution of High Flux Isotope Reactor Cores, Brittany Williamson, John Lint, Bill Clifton *(SRNS)*

8:50 a.m.

Anomalies of the Fissile Mass Control Inside a Controlled Geometry Leading to Important Safety Issues, G. Caplin, M. Duluc *(IRSN)*

9:15 a.m.

On the Benefit of Using Both Hand Calculation Methods and Computer Experiments Algorithms to Solve Complex Nuclear Criticality Safety Problems, G. Caplin, M. Duluc, Y. Richet *(IRSN)*

Morning Break: 9:40-10:05 a.m. - Grand Ballroom Foyer

10:05 a.m.

Application of Probability Method to Demonstrate Unsafe Configuration of Dropped Cans is Not Credible, Brandon O'Donnell, Larry L. Wetzel, Kenneth Conway *(BWX Technologies)*

10:30 a.m.

Nuclear Criticality Safety Standard for a Fuel Reprocessing Plant Assuming Burnup Credit Published by the Atomic Energy Society of Japan, Ken Nakajima *(Kyoto Univ)*, Kuniyuki Itahara *(Japan Nuclear Fuel Ltd., retired)*, Hiroshi Okuno *(JAEA)*

10:55 a.m.

Recycling Facility Periodic Safety Review: Application of a Methodology Used for the Nuclear Criticality-Safety Review of Geometrically Safe or Favorable Equipment, A. Coulaud, M. Hampartzounian, G. Néron de Surgy *(AREVA NP)*, E. Guillou, Y. Blin, G. Grassi *(AREVA NC)*

Criticality Safety in Used Fuel Management—II

Session Organizers: Meraj Rahimi *(NRC)*, Jose Conde *(ENUSA)*

Session Cochairs: Andrew Barto *(NRC)*, Anne Till *(Rolls-Royce Marine Power Operations Ltd.)*

Cypress: 8:00-11:20 a.m.

8:00 a.m.

COMPLINK: A Versatile Tool for Automatizing the Representation of Material Data in MCNP Models, M. Pecchia, J. J. Herrero, H. Ferroukhi, A. Vasiliev, S. Canepa *(PSI)*, A. Pautz *(PSI/EPFL)*

8:25 a.m.

Analysis of Fission-Product Energy Release After Thermal-Neutron Fission of ^{235}U and ^{239}Pu by SCALE-6.1.3 with Recently Available Fission Product Yield Data, Do Heon Kim, Choong-Sup Gil, Young-Ouk Lee *(KAERI)*

8:50 a.m.

Application of EPRI Depletion Reactivity Benchmarks, L. Jutier, G. Caplin *(IRSN)*, A. Mijonnet *(AUSY)*

9:15 a.m.

Criticality Calculation Package and Its Use for a Spent Fuel Storage Pool with Steam Layer, K. M. Rantamäki *(VTT Technical Research Centre of Finland Ltd.)*

10:05 a.m.
Validation Study for Crediting Chlorine in Criticality Analyses for Spent Nuclear Fuel Disposition, Vladimir Sobes, John M. Scaglione, John C. Wagner, Michael E. Dunn *(ORNL)*

10:30 a.m.
DARWIN2 Low Burnup Validation for Burnup Credit Isotopes using SFCOMPO PIE Database—Verification of ICF Values, C. Riffard, A. Santamarina, C. Carmouze, L. San Felice *(CEA)*

10:55 a.m.
Criticality Safety Analysis of Spent Fuel Storage or Handling Disposals using Burnup Credit —Loading Curve Calculation, Dimitri Damelet, Richard Giraud *(MILLENNIUM)*, Gérard Sacre *(REEL SAS)*, Laurent Bindel *(MILLENNIUM)*

Technical Sessions

1:00-2:40 p.m.

Uncertainty and Sensitivity Analysis—I

Session Organizers: Bradley T. Rearden *(ORNL)*, Tatiana Ivanova *(OECD)*

Session Cochairs: Robert Wilson *(DOE)*, Alexis Jinaphanh *(IRSN)*

Willow: 1:00-2:40 p.m.

1:00 p.m.
Impact of New Prompt Fission Neutron Spectrum Evaluations and the Associated Cross-Correlations on Critical Assemblies using MCNP6, Michael E. Rising, Forrest B. Brown, Denise Neudecker, Albert C. Kahler, Patrick M. Talou *(LANL)*

1:25 p.m.
Sensitivities and Correlations of Critical Experiments Due to Uncertainties of System Parameters and Nuclear Data, Elisabeth Peters, Fabian Sommer, Maik Stuke *(GRS)*

1:50 p.m.
Towards Application of a Neutron Cross-Section Uncertainty Propagation Capability in the Criticality Safety Methodology, A. Vasiliev, D. Rochman *(PSI)*, T. Zhu *(PSI/EPFL)*, M. Pecchia, H. Ferroukhi *(PSI)*, A. Pautz *(PSI/EPFL)*

2:15 p.m.
Flattening of Fuel Importance for Heterogeneous System to Estimate Maximal Neutron Multiplication Factor, Yasushi Nauchi, Motomu Suzuki *(CRIEPI)*

Criticality Safety in Used Fuel Management—III

Session Organizers: Meraj Rahimi *(NRC)*, Jose Conde *(ENUSA)*

Session Cochairs: Shadi Ghrayeb *(NRC)*, Stephane Evo *(IRSN)*

Birch: 1:00-2:40 p.m.

1:00 p.m.
Evaluation of Isotopic Measurements and Burn-Up Value of Samples GU3,GU3` and BM5, BM5` of ARIANE Project, CandanTöre, Alain Rodriguez, Pedro Ortego *(SEA)*

1:25 p.m.
PWR Commercial Reactor Criticals as Validation for Spent Fuel Transport Cask Burnup Credit, Stefan Anton *(Holtec International)*

1:50 p.m.
Coolant Density and Control Blade History Effects in Extended BWR Burnup Credit, B. J. Ade, W. J. Marshall, S. M. Bowman, I. C. Gauld, G. Ilas *(ORNL)*, J. S. Martinez *(Univ Politécnica de Madrid)*

2:15 p.m.
The Composition of Seawater and the Effect of Seawater Immersion on Reactivity, Michael L. Zerkle *(BAPL)*

ICNC Poster Session & Reception

Session Cochairs: Larry Wetzel *(BWX Technologies)*, Gregory Caplin *(IRSN)*

Poplar Room/Dogwood: 3:00-5:00 p.m.

T1 Bare, Complex, and Potassium-Filled Heu Oralloy Annuli Benchmark Experiments, John D. Bess *(INL)*, Quinton S. Beaulieu, Andrew J. Hummel *(INL)*

T2 Enhancements to a Dissolver Burn Up Credit Safety Case to Reduce Further Gd Use in the Thermal Oxide Reprocessing Plant (THORP), Sellafield, Anthony R. Wilson *(Sellafield Ltd)*

T3 The Development of Criticality Response Materials, Thomas Carroll, Neil Harris, James R. Rendell, Conor Cumming *(NNL)*

T4 Minimal Critical Values for Various Fissile Media with Very Low Content of Plutonium Mixed in Different Kinds of Matrix, Veronique Dumont, Isabelle Duhamel, Grégory Caplin *(IRSN)*

T5 The Experiment Filtering Tool in the MACSENS Workbench, Fréderic Fernex *(IRSN)*, Nicolas Soppera, Manuel Bossant *(OECD)*

T6 Minimum Critical Masses of Heterogeneous Moderated Plutonium and Uranium Metal Systems and their Practical Application to Operation Limits, A. R. Wysong, A. L. Salazar-Crockett, N. Glazener, R. E. Krentz-Wee *(LANL)*

T7 Identification of the Threshold Security Applied for Fuel Under Reactivity-Initiated Conditions by Self-Organized Maps and Neural Networks, Daniel De Souza Gomes, Benedito Dias Baptista Filho, Fabio Branco Oliveira *(IPEN)*

T8 Hydration of Uranium Residues Contained in Enriched Uf_6 Cylinders, M. Milin, J. Rannou, L. Viaulle, G. Caplin *(IRSN)*

T9 SFDS the Criticality Assembly for the Experimental Research of the Nuclear Spent Fuel Dissolver in CIAE, Qi Zhou, Qingfu Zhu *(CIAE)*

T10 Recovery From Feeding Unconditioned Feed to Part of the Solvent Extraction Process in Thorp, Andrew Sutton *(Sellafield Ltd.)*

T11 Reassessment of Uncertainties for the PU-MET-INTER-002 Benchmark, Richard M. Lell, Micheal A. Smith *(ANL)*

T12 Nuclear Criticality Safety of Pipes Networks Containing Uranium, A. Bardelay, G. Caplin *(IRSN)*, M. Sacko *(Univ Pierre and Marie Curie)*

T13 Impact of Correlated Data in Validation Procedures, Elisabeth Peters, Fabian Sommer, Maik Stuke *(GRS)*

T14 CIRCEE v1—A Versatile Tool for Criticality Accident Dose Assessment, Michael Laget (*CEA/DEN/DM2S/SERMA/CP2C)*

T15 Investigation of the Continuous-Energy Sensitivity Methods in SCALE 6.2 using TSUNAMI-3D, Elizabeth L. Jones, G. Ivan Maldonado *(Univ of Tennessee, Knoxville)*, William J. Marshall, Christopher M. Perfetti, Bradley T. Rearden *(ORNL)*

T16 Experimental Validation of the Cristal V2.0 French Criticality Calculation Package, Emmanuel Gagnier, François Xavier Giffard, Cécile Riffard, Coralie Carmouze *(CEA)*, Nicolas Leclaire, Isabelle Duhamel *(IRSN)*

T17 An Industrial Application of the Burnup Credit Including Actinides and Fission Products for PWR UO_2 Used Fuel Transportation, Marcel Tardy, Stavros Kitsos, L. Milet, Gabriele Grassi *(AREVA)*

T18 A Methodology for Defining Intermediate Level Waste Package Characteristics That Ensure Criticality Safety in a Geological Disposal Facility, Tim Hicks, Slimane Doudou (*Galson Sciences Ltd.)*, Robert Winsley *(Radioactive Waste Management)*

T19 Sensitivity Studies to Support TEX Critical Experiments Design, Evgeny A. Ivanov, Mariya Brovchenko, Isabelle Duhamel *(IRSN)*, Perry Young *(Oakridge Sciences & Services)*, Catherine Percher, David Heinrichs *(LLNL)*

T20 Criticality Safety Administration in Legacy Waste Management, J. Wang, J. Stewart, N. Tran *(Canadian Nuclear Laboratories)*

T21 The Conduct of the United States Department of Energy Nuclear Criticality Safety Program Hands-on Training and Education Courses, Douglas G. Bowen, Lori Scott *(ORNL)*, Jerry N. McKamy *(DOE)*

Technical Sessions

8:00-11:45 a.m.

Criticality Codes and Nuclear Data—III

Session Organizers: Michael E. Dunn *(ORNL)*, Jingjing Wang *(Canadian Nuclear Laboratories)*

Session Cochairs: Christopher Perfetti *(ORNL)*, Mark Roydhouse *(AWE)*

Dogwood: 8:00-11:45 a.m.

8:00 a.m.
Implementation of a Generalized Coherent Elastic Scattering Formulation for Thermal Neutron Scattering Analysis, Yuwei Zhu, Ayman I. Hawari *(NCSU)*

8:25 a.m.
JRC-IRMM/ORNL Collaboration on Nuclear Data for Nuclear Criticality Safety, J. Heyse, S. Kopecky, C. Lampoudis, C. Paradela, A. Plompen, P. Schillebeeckx, P. Siegler *(EC-JRC-IRMM)*, K. Guber, L. Leal *(ORNL)*

8:50 a.m.
Diagnosing Undersampling in Monte Carlo Eigenvalue and Flux Tally Estimates, Christopher M. Perfetti, Bradley T. Rearden *(ORNL)*

9:15 a.m.
COG11.1 Description, New Features, and Development Activities, Richard M. Buck, David P. Heinrichs, Chuck K. Lee, Edward M. Lent *(LLNL)*

Morning Break: 9:40-10:05 a.m. - Grand Ballroom Foyer

10:05 a.m.
MONK10: A Monte Carlo Code for Criticality Analysis, David Long, Simon Richards, Paul N. Smith, Christopher Baker, Adam Bird, Nigel Davies, Geoff Dobson, Tim Fry, David Hanlon, Ray Perry, Max Shepherd *(Amec Foster Wheeler)*

10:30 a.m.
Quantification of Calculation Accuracy for Code Systems in Burn-Up Credit Applications by Recalculations of Experimental Data, Matthias Behler, Volker Hannstein, Robert Kilger, Franz-Eberhard Moser, Maik Stuke *(GRS)*

10:55 a.m.
Considerations for the Application of Artificial Neural Networks to Criticality Code Validation, Peter L. Angelo *(Y-12 NSC)*, Daniel F. Hollenbach *(C. S. Engineering, Inc.)*, James S. Baker *(Savanah River Site)*

11:20 a.m.
NJOY21: Making NJOY Suitable for the 21st Century, Jeremy Lloyd Conlin, A. C. Kahler, D. Kent Parsons *(LANL)*

Criticality Experiments—I

Session Organizers: David P. Heinrichs *(LLNL)*, Yoshinori Miyoshi *(JAEA)*

Session Cochairs: David Heinrichs *(LLNL)*,Yoshinori Miyoshi *(JAEA)*

Birch: 8:00-11:20 a.m.

8:00 a.m.
Design of Water-Moderated Heterogeneous Cores in New STACY Facility Through JAEA/IRSN Collaboration, Kazuhiko Izawa, Kotaro Tonoike *(JAEA)*, Nicolas Leclaire, Isabelle Duhamel *(IRSN)*

8:25 a.m.
Evaluation of a Potassium Filled UO_2 Core in a Beryllium-Reflected Space Reactor, Margaret A. Marshall, John D. Bess *(INL)*

8:50 a.m.
Estimation of Uncertainties for Subcritical Benchmark Measurements, J. Hutchinson, M. Smith-Nelson *(LANL)*, B. Richard *(CEA)*, T. Cutler, T. Grove *(LANL)*

9:15 a.m.
Joint Neutron Measurements on the Flat-Top HEU Critical Assembly Machine, J. Hutchinson, M. Smith-Nelson, D. Hayes, R. Sanchez, T. Cutler, A. Sood *(LANL)*, B. Richard *(CEA)*, R. Bahran *(LANL)*, A. Chapelle, P. Casoli *(CEA)*, R. Robinson *(Alabama A&M)*

Morning Break: 9:40-10:05 a.m. - Grand Ballroom Foyer

10:05 a.m.
AWE Bonner-Sphere Measurements of the Neutron Leakage Spectrum from the Godiva-IV Critical Assembly at NCERC, C. L. Wilson, L. F. Clark, P. Angus *(AWE)*, D. Heinrichs, D. Hickman, J. Burch, B. Hudson, J. Scorby, C. Wong, A. Wysong *(LLNL)*, J. Goda, D. Hayes, J. Hutchinson, R. Sanchez *(LANL)*

10:30 a.m.
Design and Validation of a Single-Exposure Passive Neutron Spectrometer *(PNS)*, Leo Clark, Chris Wilson *(AWE)*

10:55 a.m.
The Final Jezebel Evaluation?, Jeffrey A. Favorite, Roger W. Brewer *(LANL)*

Technical Sessions

8:00-11:20 a.m.

Uncertainty and Sensitivity Analysis—II

Session Organizers and Cochairs: Bradley T. Rearden *(ORNL)*, Tatiana Ivanova *(OECD)*

Juniper: 8:00 -10:55 a.m.

8:00 a.m.
The MOX Powder Calculation Improvement: OECD Benchmark Proposal and CRISTAL-RIB Results, A. Santamarina, C. Riffard *(CEA)*

8:25 a.m.
Implementation and Validation of Reference Sensitivity Profile Calculations in TRIPOLI4, G. Truchet, P. Leconte, A. Santamarina *(CEA, DEN, DER/SPRC)*

8:50 a.m.
Minimum Critical Masses and Their Uncertainties, for Several Fissile Nuclides and Reflectors, Steven C. van der Marck *(NRG)*

9:15 a.m.
Calculating Uncertainty on K-Effective with MONK10, Christopher Baker, Paul N. Smith, Robert Mason, Max Shepherd, Simon Richards, Richard Hiles, Ray Perry, Dave Hanlon, Geoff Dobson *(Amec Foster Wheeler)*

Morning Break: 9:40-10:05 a.m. - Grand Ballroom Foyer

10:05 a.m.
Second-Order Adjoint Sensitivity Analysis Methodology (2nd-ASAM) for Computing Exactly and Efficiently First- and Second-Order Sensitivities in Large-Scale Systems, Dan Gabriel Cacuci *(Univ of South Carolina)*

10:30 a.m.
Use of Tsunami in the Validation of SCALE 6.1 for the Swedish Spent Fuel Repository, Fredrik Johansson, Henrik Liljefeldt *(SKB)*

Criticality Safety in Used Fuel Management—IV

Session Organizers: Meraj Rahimi *(NRC)*, Jose Conde *(ENUSA)*

Session Cochairs: Don Mueller *(ORNL)*, Andy Sutton *(Sellafield Ltd.)*

Cypress: 8:00-11:20 a.m.

8:00 a.m.
Applications of Neutron-Absorbing Structural-Amorphous Metal (SAM) Coatings for Criticality Safety Controls of Used Fuel Storage, Transportation, and Disposal, J. S. Choi , C. Lee, , B. Anderson, M. Sutton, B. Ebbinghaus *(LLNL)*

8:25 a.m.
Recent Activities Regarding the Use of Burnup Credit in France, L. Jutier, G. Caplin, S. Evo *(IRSN)*, G. Grassi, E. Guillou, A. Coulaud, M. Hampartzounian, M. Tardy, S. Kitsos *(AREVA)*, A. Chambon, C. Carmouze, C. Riffard, A. Santamarina *(CEA)*

8:50 a.m.
Criticality Safety Analysis of As-Loaded Spent Nuclear Fuel Casks, Kaushik Banerjee, John M. Scaglione *(ORNL)*

9:15 a.m.
Regulatory Perspective of Boiling Water Reactor Peak Reactivity Credit in Spent Fuel Storage and Transportation, S. Z. Ghrayeb, V. Wilson *(NRC)*

Morning Break: 9:40-10:05 a.m. - Grand Ballroom Foyer

10:05 a.m.
MONK10: Burnup Credit Capability, Max Shepherd, Nigel Davies, Simon Richards, Paul N. Smith, Will Philpott, Chris Baker, Richard Hiles, Dave Hanlon *(Amec Foster Wheeler)*

10:30 a.m.
Technical Basis for Peak Reactivity Burnup Credit for BWR Spent Nuclear Fuel in Storage and Transportation Systems, W. J. Marshall, B. J. Ade, S. M. Bowman, I. C. Gauld, G. Ilas, U. Mertyurek, G. Radulescu *(ORNL)*

10:55 a.m.
Burnup Credit for BWR UOX Used Fuels: Criticality-Safety Sensitivity Studies for Reprocessing, M. Hampartzounian, A. Coulaud, F. Knibbe, E. Martinolli *(AREVA NP)*, E. Guillou, A. Launay, G. Grassi *(AREVA NC)*

Technical Sessions

1:00-4:45 p.m.

Criticality Codes and Nuclear Data—IV

Session Organizers: Michael E. Dunn *(ORNL)*, Jingjing Wang *(Canadian Nuclear Laboratories)*

Session Cochairs: James Morman *(ANL)*, Ken Nakajima *(Kyoto Univ)*

Dogwood: 1:00-4:20 p.m.

1:00 p.m.
The Application of ICASPA to Critical and Safe Mass Calculations, D. Putley, J. S. Martin, M. Henderson *(EDF Energy Generation)*

1:25 p.m.
CRISTAL V2.0: A New-Generation Criticality Package, Jean-Michel Gomit, Isabelle Duhamel *(IRSN)*, Arnaud Entringer, Christine Magnaud, Frédéric Damian, Cécile Riffard *(CEA)*

1:50 p.m.
Validation of SCALE 6.2 Criticality Calculations using KENO V.A and KENO-VI, W. J. Marshall, B. T. Rearden *(ORNL)*, Elizabeth L. Jones *(Univ of Tennessee, Knoxville)*

2:15 p.m.
Development and Testing of Neutron Cross-Section Covariance Data for SCALE 6.2, W. J. Marshall, M. L. Williams, D. Wiarda, B. T. Rearden, M. E. Dunn, D. E. Mueller, J. B. Clarity *(ORNL)*, E. L. Jones *(Univ of Tennessee, Knoxville)*

Afternoon Break: 2:40-3:05 p.m. - Grand Ballroom Foyer

3:05 p.m.
Back-and-Forth Approximation as a Simple Neutron Transport Model, V. M. Shmakov *(RFNC-VNIITF)*

3:30 p.m.
AMPX: A Modern Cross-Section Processing System for Generating Nuclear Data Libraries, D. Wiarda, M. L. Williams, C. Celik, M. E. Dunn *(ORNL)*

3:55 p.m.
Criticality Safety Enhancements for SCALE 6.2 and Beyond, B. T. Rearden, K. B. Bekar, C. Celik, K. T. Clarno, M. E. Dunn, S. W. D. Hart, A. M. Ibrahim, S. R. Johnson, B. R. Langley, J. P. Lefebvre, R. A. Lefebvre, W. J. Marshall, U. Mertyurek, D. E. Mueller, D. E. Peplow, C. M. Perfetti, L. M. Petrie, Jr., A. B. Thompson, D. Wiarda, W. A. Wiselquist, M. A. Williams *(ORNL)*

Criticality Experiments—II

Session Organizers: David P. Heinrichs *(LLNL)*, Yoshinori Miyoshi *(JAEA)*

Session Cochairs: Doug Bowen *(ORNL)*, Kotaro Tonoike *(JAEA)*

Birch: 1:00-4:45 p.m.

1:00 p.m.
Final Design for the Thermal Epithermal eXperiments (TEX) with ZPPR Plutonium/Aluminum Plates with Polyethylene and Tantalum, Catherine Percher, Soon Kim, David Heinrichs, *(LLNL)*

1:25 p.m.
Growth of the International Criticality Safety and Reactor Physics Benchmark Experiment Evaluation Projects Since ICNC 2011, John D. Bess *(INL)*, J. Blair Briggs *(Retired)*, Jim Gulliford *(OECD/NEI)*

1:50 p.m.
Benchmark Models and Experimental Data for a U(20)-Polyethylene Moderated Critical System, Douglas G. Bowen *(ORNL)*, Larry Wetzel *(BWX Technologies)*, Robert Busch *(Univ of New Mexico)*

2:15 p.m.
Present Status of STACY Modification Program and Fundamental Nuclear Properties of Experimental Cores Related to Fuel Debris Criticality, Y. Miyoshi, K, Izawa, H. Sono, T. Kida, M. Muazaki, A. Sakon, K. Tonoike *(JAEA)*

Afternoon Break: 2:40-3:05 p.m. - Grand Ballroom Foyer

3:05 p.m.
Representability Evaluation of Fuel Debris Nuclear Characteristics by Heterogeneous Core of STACY, Atsushi Sakon, Kazuhiko Izawa, Hiroki Sono, Kotaro Tonoike, Yoshinori Miyoshi *(JAEA)*

3:30 p.m.
Experimental Study for Subcriticality Measurement of Fuel Debris in the Fukushima Daiichi Reactor, Satoshi Gunji *(JAEA)*, Kenichi Yoshioka, Hiroshi Matsumiya, Hironori Kumanomido, Yamato Hayashi *(Toshiba Corp.)*

3:55 p.m.
Point Kinetics and Coupled Neutron Transport—CFD Modelling of Criticality Excursions in Fissile Solutions, Paul N. Smith, Brendan Tollit *(Amec Foster Wheeler)*, Christopher Pain, Andrew Buchan *(Imperial College London)*

4:20 p.m.
Experiments with Partially-Reflected Square-Pitched Arrays of Water-Moderated 6.9 Percent Enriched UO_2 Fuel Rods, Gary A. Harms, Allison D. Miller, John T. Ford, Rafe D. Campbell *(SNL)*

Technical Sessions
1:00-4:20 p.m.

Analysis of Criticality Accidents and Incidents—I

Session Organizers: Calvin M. Hopper *(ORNL, ret.)*, Matthieu Duluc *(IRSN)*

Session Cochairs: Richard G. Taylor *(C. S. Engineering)*, Matthieu Duluc *(IRSN)*

Juniper: 1:00-4:20 p.m.

1:00 p.m.
COMSOL Multiphysics Simulation of the 1958 Y-12 Criticality Accident, Peter Angelo *(Y-12 NSC)*

1:25 p.m.
New Simplified Formulae of Estimation of the Total Number of Fissions Based on the Nordheim-Fuchs Model, M. Duluc, G. Caplin *(IRSN)*

1:50 p.m.
Initiation of Fission Chains During Delayed Criticality Accidents, Philippe Humbert, Boukhmes Méchitoua *(CEA)*

2:15 p.m.
2013 CALIBAN and PROSPERO Experiments for the Study of the Behavior of Radiation Protection Instrumentations in Case of a Criticality Accident, M. Duluc, F. Trompier, M. A. Chevallier *(IRSN)*, L. Chambru, N. Authier, N. Vedrenne *(CEA)*

Afternoon Break: 2:40-3:05 p.m. - Grand Ballroom Foyer

3:05 p.m.
Reactivity Effects at the Mayak Production Association, January 2 1958 Criticality Accident using Serpent 2 and OpenFOAM, Richard M. Vega, Taylor K. Lane, John A. Miller, Norm F. Schwers *(SNL)*

3:30 p.m.
Stability of Fissile Solution Systems, Robert Kimpland, Steven Klein *(LANL)*

3:55 p.m.
Prompt Super Critical Kinetic Analysis with Neutron Coupling Between Fuel Debris, Toru Obara, Hiroki Takezawa, Delgersaikhan Tuya *(Tokyo Inst Technol)*

Criticality Safety in Used Fuel Management—V and Uncertainty and Sensitivity Analysis—III

Session Organizers: Meraj Rahimi *(NRC)*, Jose Conde *(ENUSA)*, Bradley T. Rearden *(ORNL)*, Tatiana Ivanova *(OECD)*

Session Cochairs: Bob Maurer *(Nuclear Fuel Services)*, Consuelo Alejano *(CSN)*

Cypress: 1:00-4:20 p.m.

1:00 p.m.
Evaluation of an Unexpected Reflector Temperature Effects for Water Isolated Array Configurations, Michael L. Zerkle, Thomas E. Copinger *(BAPL)*

1:25 p.m.
Addressing Fission Product Validation in MCNP Burnup Credit Criticality Calculations, Don Mueller, Douglas G. Bowen, William J. Marshall *(ORNL)*

1:50 p.m.
Overview of Neutron Absorber Materials Used in Spent Fuel Pools, Hatice Akkurt *(EPRI)*, Kristopher Cummings *(NEI)*

2:15 p.m.
Overview of Zion Comparative Analysis Project for Assessment of Boral® Neutron Absorber Material Performance and Monitoring in Spent Fuel Pools, Hatice Akkurt *(EPRI)*, Spencer Feuerstein, Matt Harris *(Curtiss Wright Corp.)*, Steven Baker *(Transware Enterprises)*

3:05 p.m.
A Covariance Methodology for Theoretically Generated Thermal Neutron Inelastic Scattering Data, Jesse C. Holmes *(BAPL)*, Ayman I. Hawari *(NCSU)*, Michael L. Zerkle *(BAPL)*

3:30 p.m.
SCALE 6.2 Continuous-Energy TSUNAMI-3D Capabilities, Christopher M. Perfetti, Bradley T. Rearden *(ORNL)*

3:55 p.m.
Determination of Critical Experiment Correlations using the Sampler Sequence Within SCALE 6.2, W. J. Marshall, B. T. Rearden *(ORNL)*

Technical Sessions

8:00-11:45 a.m.

Analysis of Criticality Accidents and Incidents—II

Session Organizers: Calvin M. Hopper *(ORNL,ret.)*, Matthieu Duluc *(IRSN)*

Session Cochairs: David K. Hayes *(LANL)*, Yuichi Yamane *(JAEA)*

Cypress: 8:00-11:45 a.m.

8:00 a.m.
Development of Criticality Risk Evaluation Method for Fuel Debris in Fukushima-Dai-Ichi NPS, Yuichi Yamane, Kotaro Tonoike *(JAEA)*

8:25 a.m.
The Unforeseen Component of Risk When Considering the Need for a Criticality Accident Alarm System, Neil Harris *(NNL)*

8:50 a.m.
A New Dose Assessment Method for the UK System of Criticality Accident Dosimetry, C. L. Wilson, P. Angus, L. Buchanan, L. F. Clark, A. Waterfall *(AWE)*

9:15 a.m.
Incorporating Realistic Conservatism into Criticality Alarm Placement and Emergency Response: A Regulatory Perspective, Christopher S. Tripp, Greg C. Chapman *(NRC)*

Morning Break: 9:40-10:05 a.m. - Grand Ballroom Foyer

10:05 a.m.
Effect of Moisture Content and Distribution on Radiation Transport in Concrete, Paul J. Holloway, Andrew W. Davies *(AWE)*

10:30 a.m.
Means for Stopping a Criticality Accident in the MELOX Homogenizer, O. Ravat *(AREVA NC MELOX)*, A. Coulaud, T. Mattera *(AREVA E&P)*

10:55 a.m.
Fissile Material Found in Electrical Junction Box at Nuclear Fuel Services, Inc., Nicholas W. Brown, W. Randy Shackelford *(Nuclear Fuel Services, Inc.)*

11:20 a.m.
Circumvention of Safety Related Equipment at Nuclear Fuel Services, Inc., W. Randy Shackelford, Nicholas W. Brown *(Nuclear Fuel Services, Inc.)*

Professional Development Issues

Session Organizers and Cochairs: Fitz Trumble *(URS Safety Management Solutions, LLC)*, Deborah Hill *(National Nuclear Laboratory Limited)*

Juniper: 8:00-11:20 a.m.

8:00 a.m.
Recent Activities of the UK Working Party on Criticality, Deborah A. Hill *(NNL)*

8:25 a.m.
Development of Criticality Safety Awareness Training for Front Line Workers at AWE, Christopher Hodkinson, Eoin Flannery *(AWE)*

8:50 a.m.
Savannah River Nuclear Solutions Criticality Safety Training and Qualification Program and Professional Development/ Retention, D. G. Erickson, J. Brotherton, J. M. Low *(SRNS)*

9:15 a.m.
Design, Development and Utilization of the New LLNL Inherently Safe Subcritical Assembly (ISSA), David Heinrichs, Jennifer Burch, Becka Hudson, Catherine Percher *(LLNL)*, Andrew Wysong *(LANL)*

Morning Break: 9:40-10:05 a.m. - Grand Ballroom Foyer

10:05 a.m.
Training Practices for CEA Engineers Qualified in Criticality Safety, Georgios Kyriazidis, Emmanuel Gagnier, Eric Fillastre *(CEA)*

10:30 a.m.
An Overview of the 2014 Revision of ANSI/ANS-8.1-2014, "Nuclear Criticality Safety in Operations with Fissionable Materials Outside Reactors", Douglas G. Bowen *(ORNL)*, Nick Brown *(Nuclear Fuel Services, Inc.)*

10:55 a.m.
Radiation Sources and Criticality Safety, William L. Myers, Mark V. Mitchell *(LANL)*, Shean P. Monahan *(SNL)*

Technical Sessions

8:00 a.m.-11:45 p.m.

Criticality Experiments—III

Session Organizers: David P. Heinrichs *(LLNL)*, Yoshinori Miyoshi *(JAEA)*

Session Cochairs: Dave Erickson *(SRS)*, Maik Stuke *(GRS)*

Dogwood: 8:00-11:45 a.m.

8:00 a.m.

A New Model for the Dynamic of Criticality Excursions in Fissile Solutions, Laurent Bindel, Eric Lejeune *(MILLENNIUM)*

8:25 a.m.

Evaluation of the Concrete Shield Compositions from the 2010 Criticality Accident Alarm System Benchmark Experiments at the CEA Valduc Silene Facility, T. M. Miller, C. Celik, M. E. Dunn, J. C. Wagner, K. L. McMahan *(ORNL)*, N. Authier, X. Jacquet, G. Rousseau, H. Wolff, J. Piot, L. Savanier, N. Baclet *(CEA Valduc)*, Y. K. Lee, V. Masse, J.-C. Trama, E. Gagnier, F. Gabriel, P. Blanc-Tranchant *(CEA/DEN/DANS/DM2S/SERMA)*, R. Hunter *(Cavendish Nuclear Ltd.)*, S. Kim, G. M. Dulik *(LLNL)*, K. H. Reynolds *(Y-12 NSC)*

8:50 a.m.

Rod-by-Rod Detailed Monte Carlo Method of Cofrentes NPP as a Commercial Core Critical, Alain Rodriguez, Pedro Ortego, CandanTöre *(SEA)*, Manuel Albendea, Jose Melara *(IBERDROLA Generación Nuclear S.A.)*

9:15 a.m.

Measurement of Neutron and Gamma-Ray Noise in Large Subcritical Condition for Criticality Safety, Tsuyoshi Misawa, Yoshiyuki Takahashi *(Kyoto Univ)*

Morning Break: 9:40-10:05 a.m. -Grand Ballroom Foyer

10:05 a.m.

A New Critical Experiment in Support of the Nuclear Criticality Safety Class, Theresa Cutler, John Bounds, Travis Grove, Jesson Hutchinson, David Hayes, Rene Sanchez *(LANL)*

10:30 a.m.

Optimization of Hafnium Dimensions for Thermal/Epithermal Experiments (TEX) With Highly Enriched Uranium Jemima Plates and Polyethylene, Deepa Khatri, Catherine Percher, David Heinrichs *(LLNL)*

10:55 a.m.

2014 CALIBAN and PROSPERO Experiments for the Criticality Accident Dosimetry Intercomparison, F. Trompier, M.-A. Chevallier, M. Duluc *(IRSN)*, D. Heinrichs, D. Hickman, B. Hudson, M. Lobaugh, M. Merritt, C. Wong, A. Wysong *(LLNL)*, L. Buchanan, A. Waterfall, C. Wilson *(AWE)*

11:20 a.m.

National Criticality Experiments Research Center: Status and Update, D. K. Hayes, W. L. Myers *(LANL)*

Storage, Transport, and Disposal of Fissile Material

Session Organizers: John M. Scaglione *(ORNL)*, Kenya Suyama *(JAEA)*

Session Cochairs: John Scaglione *(ORNL)*, Kenya Suyama *(JAEA)*

Willow: 8:00-11:45 a.m.

8:00 a.m.

Beyond 5% Enrichment Limit for PWR 17x17 and VVER-440 Fuel—Criticality Problems, Vladimir Chrapciak *(VUJE, Inc.)*

8:25 a.m.

Analysis of the Likelihood of Post-Closure Criticality in a Geological Disposal Facility, Tim Hicks, Tamara Baldwin *(Galson Sciences Ltd.)*, Robert Winsley *(Radioactive Waste Management)*

8:50 a.m.

Applying Understanding of Likelihood and Consequences to Demonstrate Post-Closure Criticality Safety of a Geological Disposal Facility, Robert Winsley *(Radioactive Waste Management)*, Tim Hicks *(Galson Sciences Ltd.)*, Robert Mason *(Amec Foster Wheeler)*

9:15 a.m.

Upper Subcritical Calculations Based on Correlated Data, Vladimir Sobes, Bradley T. Rearden, Don E. Mueller, William J. Marshall, John M. Scaglione, Michael E. Dunn *(ORNL)*

Morning Break: 9:40-10:05 a.m. - Grand Ballroom Foyer

10:05 a.m.

Understanding the Consequences of Hypothetical Post-Closure Transient Criticality in a Geological Disposal Facility, Robert Mason, Paul Smith *(Amec Foster Wheeler)*, Robert Winsley *(Radioactive Waste Management)*

10:30 a.m.

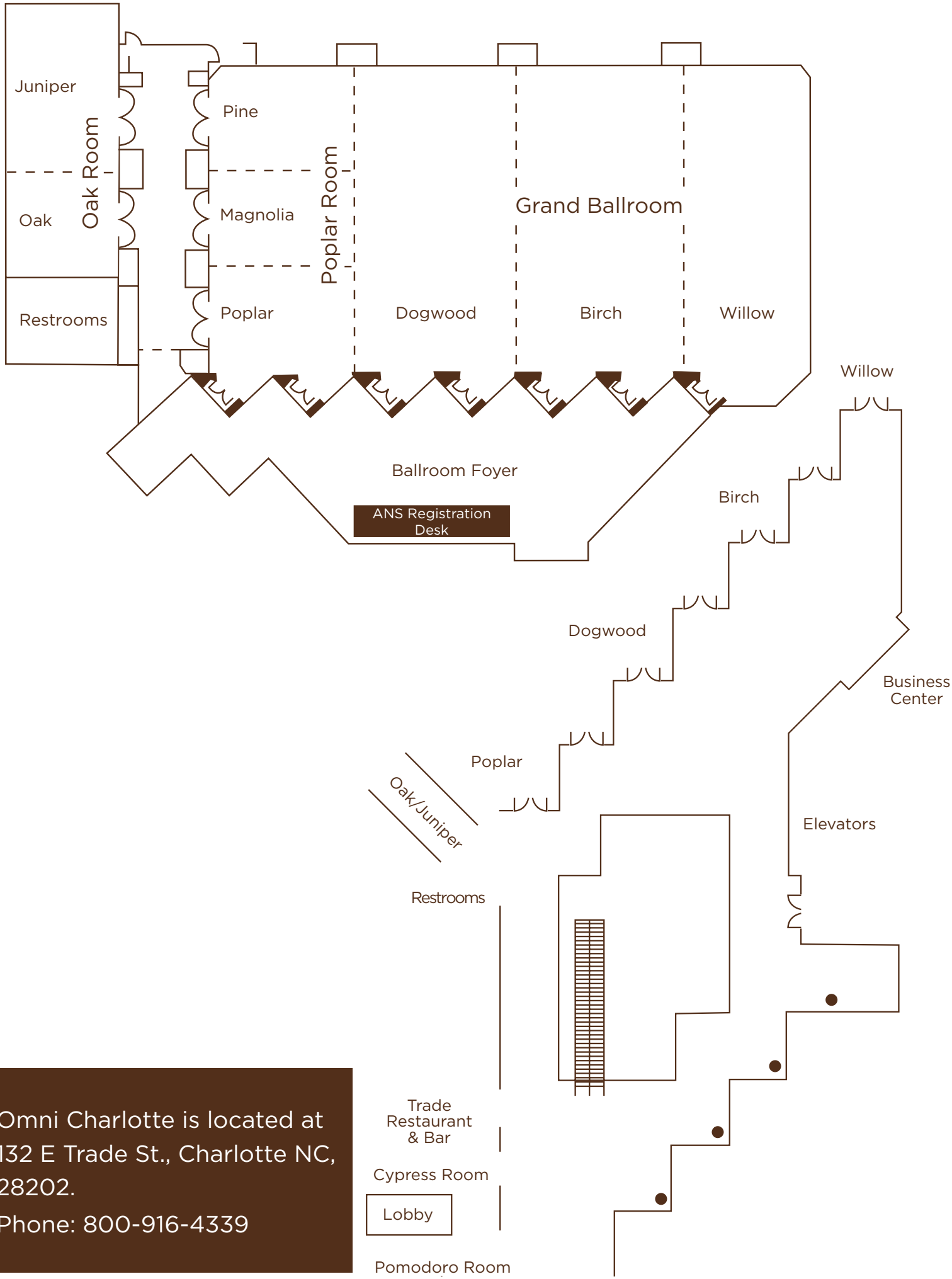
UK Regulatory Experience with the Criticality Safety of Transport Package Applications, Gregory O'Connor *(Office for Nuclear Regulation)*

10:55 a.m.

Review of Fissile Material Exemptions and General Licenses in 10 CFR Part 71, Andrew Barto *(NRC)*, Cecil V. Parks, Douglas G. Bowen *(ORNL)*

11:20 a.m.

Computational Scheme for Burnup Credit Applied to Long-Term Waste Disposal, José J. Herrero, M. Pecchia, H. Ferroukhi, S. Canepa, A. Vasiliev *(PSI)*, Stefano Caruso *(NAGRA)*



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