



**Lawrence Livermore National Laboratory
7000 East Ave, Livermore CA, 94550**

SUBJECT: Report of Foreign Travel to the 12th International Conference on Nuclear Criticality Safety
DATE: October 26, 2023
TO: Dr. Angela Chambers, USDOE Nuclear Criticality Safety Program Manager, National Nuclear Security Administration, NA-ESH
FROM: Aaron Tamashiro, Nuclear Criticality Safety Division, Lawrence Livermore National Laboratory

MEETING TITLE

12th International Conference on Nuclear Criticality Safety

MEETING LOCATION

Sendai International Center, Miyagi, Japan

MEETING DATES:

October 1-6, 2023

ATTENDEES ON BEHALF OF NCSP

Aaron Tamashiro, Jesse Norris, Catherine Percher, Eric Aboud, Ruby Araj, Michael Branco-Katcher¹, Shauntay Coleman¹, Alan Yamanaka¹, and Samuel Varghese¹

MEETING PURPOSE

The purpose of the event was to share progress in topics relevant to nuclear criticality safety: codes and calculation methods; nuclear data; uncertainty and sensitivity analysis; measurements, experiments, and benchmarks; standards, assessment methodology, regulations; operational practices and safety cases; storage, transport, and disposal issues; criticality accidents and incidents; professional development issues and training; future challenges. Two special sessions were included covering: Fukushima Dai-ichi Nuclear Power Plant; Machine Learning, Deep Learning. LLNL presented results from PNDA measurements using gamma-ray spectroscopy, results from benchmark measurements of TEX-HEU and TEX-Hf, progress in low-temperature TEX, progress in dose characterization of the AFRR1 TRIGA reactor, and the design for a critical experiment to neutronically validate a molten chloride salt reactor.

The final program for the conference is attached.

MEETING BENEFITS TO THE NCSP

ICNC is the premiere conference for nuclear criticality research around the world. Attendees presented NCSP-funded research and interacted with national and international colleagues to further their understanding of different techniques and perspectives related to nuclear criticality safety. Topics in nuclear data needs were presented which may incite new ideas for future experiments and benchmarks for nuclear data validation. There have been discussions for HALEU benchmarks, which may be an avenue for new criticality experiments.

¹ Funded under separate auspices.

PURPOSE OF TRAVEL

C. Percher was on the ICNC international scientific advisory committee, a track leader for the “Measurements, Experiments, and Benchmarks” track, chaired two technical sessions, presented on ICSBEP Updates, and provided an invited closing plenary speech. J. Norris presented results from the TEX-HEU and TEX-Hf measurements and presented progress in modelling the low-temperature TEX configuration. E. Aboud presented progress in low-temperature TEX surrogate measurements. R. Araj presented results from coupling PNDA measurements with gamma-ray detection. Aaron presented a poster showcasing progress in dose characterization measurements at AFRRRI TRIGA reactor. Michael presented a design for a molten chloride reactor experiment facility.

Presentations, Chair Responsibilities, Etc.:

Seven presentations given:

- “TEX-HEU & TEX-Hf: Critical Assemblies with Highly Enriched Uranium, Polyethylene, and Hafnium,” Jesse Norris, C. Percher, D. Heinrichs, et. al.
- “Neutronic Characteristics of the Low-Temperature TEX Design and Proposed Configurations,” Jesse Norris, C. Percher, E. Aboud, et. al.
- “Towards an Era of Low Temperature Integral Critical Experiments: Surrogate Testing of Low-Temperature TEX Configurations,” Eric Aboud, P. Yap-Chiongco, J. Norris, et. al.
- “Gamma-ray Measurements from Pulsed-Neutron Die-Away Experiments (PNDA),” Ruby Araj, D. Siefman, L. Bernstein, et. al.
- “Criticality Experiment Design for the Molten Chloride Reactor Experiment Facility,” Michael Branco-Katcher, D. Siefman, T. Palmer, et. al.
- “Status of the International Criticality Safety Benchmark Evaluation Project,” Catherine Percher, J. Bess, W. Marshall, et. al.
- “Inherently Safe Subcritical Assembly Lite,” Samuel Varghese and W. Zywiec¹

Three poster presentations given:

- “AFRRRI TRIGA Reactor Neutron and Gamma Dose Characterization Preliminary Results,” Aaron Tamashiro, P. Angus, D. Heinrichs, et. al.
- “Comparison of Computational and Experimental Results for Criticality Accident Alarm Placement,” Alan Yamanaka, S. Kim, and S. Coleman¹
- “Criticality Safety Evaluation Project Development for University of California Berkeley Nuclear Criticality Safety Pipeline Course,” Shauntay Coleman, A. Yamanaka, and W. Zywiec¹

Four sessions chaired:

- “Fukushima Dai-Ichi Nuclear Power Plant,” Catherine Percher and Yasushi Nauchi (CRIEPI)
- “Measurements, Experiments, and Benchmarks,” Catherine Percher and Cheol Ho Pyeon (Kyoto Univ.)
- “Measurements, Experiments, and Benchmarks,” Jesse Norris and Kotaro Tonoike (JAEA)
- “Professional Development Issues and Training,” Shauntay Coleman and Hiroki Takezawa (Nagaoka Univ. of Tech)¹

Notable responsibilities and awards:

- Catherine Percher was part of the conference’s international scientific advisory committee and a track leader for the “Experiments and Benchmarks” track
- Catherine Percher was invited to deliver the Closing Plenary during the Closing Session
- A. Yamanaka awarded 2nd Best Poster for “Comparison of Computational and Experimental Results for Criticality Accident Alarm Placement”

- S. Coleman awarded Most Interesting Poster for “Criticality Safety Evaluation Project Development for University of California Berkeley Nuclear Criticality Safety Pipeline Course”

Distribution:

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Appendix: List of attendees

<u>First Name</u>	<u>Last Name</u>	<u>Affiliation</u>	<u>Country</u>
Gert	Van den Eynde	SCK CEN	Belgium
Alberto	Ottonello	Tractebel Engie	Belgium
Gaige	Moore	Canadian Nuclear Laboratories	Canada
Gard	Von Appen	Canadian Nuclear Laboratories	Canada
Kendall	Erlandson	Canadian Nuclear Laboratories	Canada
Feng	LIU	China Institute of Atomic Energy	China
Yunzhao	Li	Xi'an Jiaotong University	China
Karin	Rantamaki	STUK	Finland
Anssu	Ranta-aho	Teollisuuden Voima Oyj	Finland
Adrien	Feuerle	Andra	France
Aurelien	Dorval	CEA	France
Clement	Lopez	CEA	France
Coralie	Carmouze	CEA	France
Eric	Fillastre	CEA	France
Georgios	KYRIAZIDIS	CEA	France
Laurent	CHOLVY	CEA	France
Michael	Laget	CEA	France
Michael	Prigniau	CEA	France
Philippe	Humbert	CEA	France
Sebastien	Lahaye	CEA	France
Tan-Dat	HUYNH	CEA	France
Tangi	NICOL	CEA	France
Yi-Kang	Lee	CEA	France
Brian-may	SORBY	Framatome	France
Matthieu	DULUC	Framatome	France
Quentin	VUYET	Framatome	France
Arnaud	ENTRINGER	IRSN	France
Aurelie	BARDELAY	IRSN	France
Eric	LETANG	IRSN	France
Gabriel	Frontier	IRSN	France
Jeremy	Bez	IRSN	France
Johann	HERTH	IRSN	France
Mariya	Brovchenko	IRSN	France
Sophie	PIGNET	IRSN	France
Wilfried	Monange	IRSN	France
Alexis	CHARPENTIER-SUTER	MILLENNIUM SAS	France
Gerald	Gaudin	MILLENNIUM SAS	France

Adrien	GALLOZZI ULMANN	Mirion Technologies SAS	France
Andrew	Holcomb	OECD NEA	France
Ian	HILL	OECD NEA	France
Julie-Fiona	Martin	OECD NEA	France
Benoit	CHECIAK	Orano	France
Gregory	CAPLIN	Orano	France
MARCEL	TARDY	Orano	France
Remi	VASSIEUX	Orano	France
Steve	Duquenne	Orano	France
Olivier	Ravat	Orano Melox	France
Camille	JACQUES GASNOT	Orano Projets	France
Patrick	PIN	Orano Recyclage	France
Yannis	Blin	Orano Recyclage	France
David	NOYELLES	Universite Paris-Saclay, CEA	France
Christian	Herold	BGE	Germany
Benjamin	Ruprecht	Federal Office for the Safety of Nuclear Waste Management	Germany
Dirk	Schulze Grachtrup	Federal Office for the Safety of Nuclear Waste Management	Germany
Axel	Hoefer	Framatome GmbH	Germany
Stefan	Glaubrecht	Framatome GmbH	Germany
Fabian	Sommer	GRS	Germany
Volker	Hannstein	GRS	Germany
Thomas	Zumkley	TUV NORD EnSys	Germany
Maksym	Chernykh	WTI GmbH	Germany
Shunsuke	Sato	CRIEPI	Japan
Yasushi	Nauchi	CRIEPI	Japan
Hayate	Nakayama	Hitachi GE Nuclear Energy	Japan
Yuichi	Morimoto	Hitachi GE Nuclear Energy	Japan
Go	Chiba	Hokkaido University	Japan
Jun-Shuang	Fan	Hokkaido University	Japan
Keita	Yoshikawa	Hokkaido University	Japan
Yuya	Inagaki	Hokkaido University	Japan
Akito	Oizumi	JAEA	Japan
Fuyumi	Kobayashi	JAEA	Japan
Hai	Nguyen	JAEA	Japan
Hiroki	Sono	JAEA	Japan
Hiroshi	YANAGISAWA	JAEA	Japan
Hiroshi	Okuno	JAEA	Japan

Hiroyuki	OIGAWA	JAEA	Japan
Kazuhiko	Izawa	JAEA	Japan
Kazuya	Shimada	JAEA	Japan
Kenichi	Tada	JAEA	Japan
Kenya	SUYAMA	JAEA	Japan
Kodai	Fukuda	JAEA	Japan
Kotaro	TONOIKE	JAEA	Japan
Masahiro	Fukushima	JAEA	Japan
Satoshi	Gunji	JAEA	Japan
Shoichiro	OKITA	JAEA	Japan
Shouhei	Araki	JAEA	Japan
Shuhei	Maruyama	JAEA	Japan
Takatomo	Miura	JAEA	Japan
Taro	Ueki	JAEA	Japan
Tatsuya	Fujita	JAEA	Japan
Tomoaki	Watanabe	JAEA	Japan
Yasunobu	Nagaya	JAEA	Japan
Yuichi	Yamane	JAEA	Japan
Yuiko	Motome	JAEA	Japan
Cheol Ho	Pyeon	Kyoto University	Japan
Ken	Nakajima	Kyoto University (Professor Emeritus)	Japan
Irwan	Simanullang	Kyushu University	Japan
Nozomu	Fujimoto	Kyushu University	Japan
Hiroki	Koike	MHI	Japan
Yasuhiro	Harada	MHI	Japan
Shigeaki	Aoki	MNF	Japan
Hiroki	Takezawa	Nagaoka University of Technology	Japan
Shunya	Teratani	Nagoya University	Japan
Tomohiro	Endo	Nagoya University	Japan
Yoshinari	Harada	Nagoya University	Japan
Peng Hong	Liem	NAIS	Japan
Yasunori	YAMANAKA	NDF	Japan
Maho	Kawaguchi	NRA	Japan
Shigeki	Shiba	NRA	Japan
Hiroaki	Tagawa	Nuclear Engineering	Japan
Kento	Yamamoto	Nuclear Fuel Industries	Japan
Kohei	Matsuo	Osaka University	Japan
Takanori	Kitada	Osaka University	Japan
Masatoshi	Yamasaki	Studsvik Japan	Japan
Kenji	Owada	TEPCO	Japan
Kento	Sawada	TEPCO	Japan
Takahiro	Koide	TEPSYS	Japan
Koji	Fujikura	Tohoku University	Japan

Naoto	Aizawa	Tohoku University	Japan
Yuichi	NIIBORI	Tohoku University	Japan
Tetsuo	Matsumura	Tokai University	Japan
Jun	Nishiyama	Tokyo City University	Japan
Kenichi	Yoshioka	Toshiba ESS	Japan
Rei	Kimura	Toshiba ESS	Japan
Satoshi	Wada	Toshiba ESS	Japan
Yamato	Hayashi	Toshiba ESS	Japan
Iwao	KOBAYASHI		Japan
Yoshinori	Miyoshi		Japan
Steven	van der Marck	NRG	Netherlands
Agnieszka	Boettcher	National Centre for Nuclear Research	Poland
Changho	Shin	Hanyang University	Republic of Korea
Hyuncheol	Roh	Hanyang University	Republic of Korea
Jisoo	Bok	Hanyang University	Republic of Korea
Kwangpyo	Choi	Hanyang University	Republic of Korea
Sehwan	Seol	Hanyang University	Republic of Korea
Ser	Hong	Hanyang University	Republic of Korea
Seunghyeon	Choi	Hanyang University	Republic of Korea
Seungnam	Lee	Hanyang University	Republic of Korea
Shinsung	Oh	Hanyang University	Republic of Korea
Woojin	Lee	Hanyang University	Republic of Korea
Sohee	Cha	Kyunghee University	Republic of Korea
Donghyeok	Park	Sejong University	Republic of Korea
Gahee	Sim	Sejong University	Republic of Korea
Hyuk	Han	Sejong University	Republic of Korea
JeongMu	Eun	Sejong University	Republic of Korea
Kyoon Ho	CHA	Sejong University	Republic of Korea
Seokgeun	Cho	Sejong University	Republic of Korea
Pedro	Ortego	Science Engineering Associates	Spain
Imre	Pazsit	Chalmers University of Technology	Sweden
Dennis	Mennerdahl	EMS	Sweden
Andreas	Tatidis	Norwegian Radiation and Nuclear Safety Authority	Sweden
Jessica	Lybark	Ringhals AB	Sweden
Fredrik	Johansson	SKB	Sweden
Jesper	Kierkegaard	Vattenfall Nuclear Fuel	Sweden
Per	Zetterstrom	Vattenfall Nuclear Fuel	Sweden
Erik	Dalborg	Vattenfall Nuclear Fuel AB	Sweden

John	Loberg	Vattenfall Nuclear Fuel AB	Sweden
Vasileios	Rakopoulos	Westinghouse Electric Sweden	Sweden
Madalina	Wittel	Nagra	Switzerland
Susanne	Pudollek	Nagra	Switzerland
Alexander	Vasiliev	PSI	Switzerland
Arnau	Alba	PSI	Switzerland
Dimitri	Rochman	PSI	Switzerland
Louis	Berry	PSI	Switzerland
Matthias	Frankl	PSI	Switzerland
Jiri	Dus	Swiss Federal Nuclear Safety Inspectorate	Switzerland
Stuart	Watson	3T Safety Consultants	United Kingdom of Great Britain and Northern Ireland
Andrew	Buchan	AWE	United Kingdom of Great Britain and Northern Ireland
Essam	Mohammed	AWE	United Kingdom of Great Britain and Northern Ireland
Paul	Holloway	AWE	United Kingdom of Great Britain and Northern Ireland
Will	Philpott	AWE	United Kingdom of Great Britain and Northern Ireland
Craig	Holland	Cerberus Nuclear	United Kingdom of Great Britain and Northern Ireland
Katrina	Christaki	Cerberus Nuclear	United Kingdom of Great Britain and Northern Ireland
Michael	Kendall	Cerberus Nuclear	United Kingdom of Great Britain and Northern Ireland
Stewart	Hay	Cerberus Nuclear	United Kingdom of Great Britain and Northern Ireland
Tom	Page	Cerberus Nuclear	United Kingdom of Great Britain and Northern Ireland
Mark	Henderson	EDF Energy Nuclear Services	United Kingdom of Great Britain and Northern Ireland

Tamara	Baldwin	Galson Sciences	United Kingdom of Great Britain and Northern Ireland
Timothy	Hicks	Galson Sciences	United Kingdom of Great Britain and Northern Ireland
Albrecht	Kyrieleis	Jacobs	United Kingdom of Great Britain and Northern Ireland
Simon	Richards	Jacobs	United Kingdom of Great Britain and Northern Ireland
Benjamin	Williamson	Mount Nuclear Safety	United Kingdom of Great Britain and Northern Ireland
Deborah	Hill	National Nuclear Laboratory	United Kingdom of Great Britain and Northern Ireland
Emma	Sayce	National Nuclear Laboratory	United Kingdom of Great Britain and Northern Ireland
Jack	Venner	NCS Risk Management	United Kingdom of Great Britain and Northern Ireland
Charlotte	Davis	NTS	United Kingdom of Great Britain and Northern Ireland
Donna	Nuttall	Nuclear Transport Solutions	United Kingdom of Great Britain and Northern Ireland
Liam	Payne	Nuclear Waste Services	United Kingdom of Great Britain and Northern Ireland
Eoin	Flannery	Office for Nuclear Regulation	United Kingdom of Great Britain and Northern Ireland
Gregory	OConnor	Office for Nuclear Regulation	United Kingdom of Great Britain and Northern Ireland
Harry	Lester	Rolls-Royce	United Kingdom of Great Britain and Northern Ireland
Paul	Walmsley	Rolls-Royce	United Kingdom of Great Britain and Northern Ireland

Amy	van der Vyver	Sellafield	United Kingdom of Great Britain and Northern Ireland
Dominic	Winstanley	Sellafield	United Kingdom of Great Britain and Northern Ireland
James	Ryan	Sellafield	United Kingdom of Great Britain and Northern Ireland
Jennifer	Bateman	Sellafield	United Kingdom of Great Britain and Northern Ireland
Valeria	Raffuzzi	University of Cambridge	United Kingdom of Great Britain and Northern Ireland
Mark	Savage	Urenco UK	United Kingdom of Great Britain and Northern Ireland
Ben	Webborn	Webborn Nuclear Safety Consultants	United Kingdom of Great Britain and Northern Ireland
Cecil	Parks	Boston Government Services	United States of America
Kevin	Reynolds	CNS	United States of America
Matthew	Grammes	CNS Pantex	United States of America
Matthew	Buttrey	CNS Y-12 National Security Complex	United States of America
John	Bess	JFoster & Associates	United States of America
Patrick	Moo	JFoster & Associates	United States of America
Alexander	McSpaden	LANL	United States of America
Andrew	Smiley	LANL	United States of America
Bobbi	Riedel	LANL	United States of America
Cole	Kostelac	LANL	United States of America
David	Hayes	LANL	United States of America
Garrett	McMath	LANL	United States of America

George	McKenzie	LANL	United States of America
Ionel	Stetcu	LANL	United States of America
Jesson	Hutchinson	LANL	United States of America
Kelly	Aldrich	LANL	United States of America
Kelsey	Amundson	LANL	United States of America
Kimberly	Bonilla	LANL	United States of America
Leah	Berman	LANL	United States of America
Michael	Rising	LANL	United States of America
Nicholas	Whitman	LANL	United States of America
Nicholas	Thompson	LANL	United States of America
Patrick	Huston	LANL	United States of America
Rene	Sanchez	LANL	United States of America
Riley	Bulso	LANL	United States of America
Robert	Weldon	LANL	United States of America
Tara	Robertson	LANL	United States of America
Theresa	Cutler	LANL	United States of America
Aaron	Tamashiro	LLNL	United States of America
Alan	Yamanaka	LLNL	United States of America
Catherine	Percher	LLNL	United States of America
Eric	Aboud	LLNL	United States of America
Jesse	Norris	LLNL	United States of America
Ruby	Araj	LLNL	United States of America
Samuel	Varghese	LLNL	United States of America

Shauntay	Coleman	LLNL	United States of America
Nicolas	HOUFLAIN	Mirion Technologies	United States of America
Sasha	Philips	Mirion Technologies	United States of America
Ayodeji	Alajo	Missouri University of Science & Technology	United States of America
Kyle	Neumann	NNL	United States of America
Michael	Zerkle	NNL	United States of America
Rachel	Weckselblatt	NNL	United States of America
Josiah	Moore	NNSA	United States of America
Michael	Branco-Katcher	Oregon State University	United States of America
Alex	Shaw	ORNL	United States of America
Alexander	Lang	ORNL	United States of America
Chris	Chapman	ORNL	United States of America
Cihangir	Celik	ORNL	United States of America
Douglas	Bowen	ORNL	United States of America
Kursat	Bekar	ORNL	United States of America
Shane	Hart	ORNL	United States of America
Timothy	Valentine	ORNL	United States of America
Travis	Greene	ORNL	United States of America
Walid	Metwally	ORNL	United States of America
William	Marshall	ORNL	United States of America
William	Wieselquist	ORNL	United States of America
Justin	Clarity	PNNL	United States of America
Kaushik	Banerjee	PNNL	United States of America

Mark	Neeley	PNNL	United States of America
Matthew	Conrady	PNNL	United States of America
Michael	Fendler	PNNL	United States of America
Travis	Zipperer	PNNL	United States of America
Ashley	Raster	SNL	United States of America
Brandon	Aguirre	SNL	United States of America
David	Ames	SNL	United States of America
John	Miller	SNL	United States of America
William	Cook	SNL	United States of America
Brittany	Williamson	Spectra Tech	United States of America
Rowdy	Davis	The University of New Mexico	United States of America
Don	Algama	United States Department of Energy	United States of America
Christopher	Perfetti	University of New Mexico	United States of America
Kathryn	Worrell	University of Tennessee	United States of America
JEREMY	MUNSON	USNRC	United States of America
Michel	Call	USNRC	United States of America
Ben	Martin	Y-12 National Security Complex	United States of America

Appendix: Meeting agenda

Time Schedule

Sunday, October 1, 14:00–16:30: Workshop, Room 2

Sunday, October 1, 15:00–19:00: Registration, Exhibition Hall 1 (Welcome Cocktail for 17:00–19:00)

Monday, October 2	Tuesday, October 3	Wednesday, October 4	Thursday, October 5
	8:00–8:30, Coffee Exhibition Hall 1		
8:30–11:00, Plenary Session Exhibition Hall 2	8:30–10:35, Session 4 Room 1: Track 1, Codes and Other Calculation Methods Room 2: Track 8, Criticality Accidents and Incidents Room 3: Track 6, Operational Practices and Safety Cases Room 4: Track 5, Standards, Assessment Methodology, Regulations	8:30–10:35, Session 7 Room 1: Track 1, Codes and Other Calculation Methods Room 2: Track 7, Storage, Transport, and Disposal Issues Room 3: Track 9, Professional Development Issues and Training Room 4: Track 4, Measurements, Experiments, and Benchmarks	8:30–10:35, Session 11 Room 1: Track 3, Uncertainty and Sensitivity Analysis Room 2: Track 7, Storage, Transport, and Disposal Issues Room 3: Special Session 2, Machine Learning, Deep Learning
11:00–11:30, Coffee Exhibition Hall 1		10:35–11:05, Coffee Exhibition Hall 1	
11:30–12:45, Session 1 Room 1: Track 2, Nuclear Data Room 2: Track 8, Criticality Accidents and Incidents Room 3: Track 6, Operational Practices and Safety Cases Room 4: Special Session 1, Fukushima Dai-Ichi Nuclear Power Plant	11:05–12:45, Session 5 Room 1: Track 1, Codes and Other Calculation Methods Room 2: Track 7, Storage, Transport, and Disposal Issues Room 3: Track 4, Measurements, Experiments, and Benchmarks Room 4: Track 5, Standards, Assessment Methodology, Regulations	11:05–12:45, Session 8 Room 1: Track 1, Codes and Other Calculation Methods Room 2: Track 7, Storage, Transport, and Disposal Issues Room 3: Track 9, Professional Development Issues and Training Room 4: Track 4, Measurements, Experiments, and Benchmarks	11:05–12:45, Closing Session Exhibition Hall 2
	12:45–14:00, Lunch Exhibition Hall 1		
14:00–15:40, Session 2 Room 1: Track 2, Nuclear Data Room 2: Track 8, Criticality Accidents and Incidents Room 3: Track 6, Operational Practices and Safety Cases Room 4: Special Session 1, Fukushima Dai-Ichi Nuclear Power Plant	14:00–16:05, Session 6 Room 1: Track 2, Nuclear Data Room 2: Track 7, Storage, Transport, and Disposal Issues Room 3: Track 6, Operational Practices and Safety Cases Room 4: Track 4, Measurements, Experiments, and Benchmarks	14:00–15:40, Session 9 Room 1: Track 3, Uncertainty and Sensitivity Analysis Room 2: Track 7, Storage, Transport, and Disposal Issues Room 3: Track 10, Future Challenges Room 4: Track 4, Measurements, Experiments, and Benchmarks	
15:40–16:10, Coffee Exhibition Hall 1	16:05–16:10, Coffee Exhibition Hall 1	15:40–16:10, Coffee Exhibition Hall 1	
16:10–17:50, Session 3 Room 1: Track 1, Codes and Other Calculation Methods Room 2: Track 8, Criticality Accidents and Incidents Room 3: Track 6, Operational Practices and Safety Cases Room 4: Special Session 1, Fukushima Dai-Ichi Nuclear Power Plant	16:10–17:50, Poster Session Exhibition Hall 1	16:10–17:50, Session 10 Room 1: Track 3, Uncertainty and Sensitivity Analysis Room 2: Track 7, Storage, Transport, and Disposal Issues Room 3: Track 10, Future Challenges Room 4: Track 4, Measurements, Experiments, and Benchmarks	

Tuesday, October 3, 18:30–21:00: Banquet, Hotel Metropolitan Sendai (Cocktail for 18:30–19:00)

Friday, October 6: Technical Tours

<p>Room 1 Track 2 NUCLEAR DATA</p> <p>Chairs: Shoichiro Okita (JAEA), Michael L. Zerkle (Naval Nuclear Lab.)</p>	<p>Room 2 Track 8 CRITICALITY ACCIDENTS AND INCIDENTS</p> <p>Chairs: Yuichi Yamane (JAEA) Matthieu Duluc (Framatome)</p>	<p>Room 3 Track 6 OPERATIONAL PRACTICES AND SAFETY CASES</p> <p>Chairs: Georgios Kyriazidis (CEA), Andrew Charles Buchan (AWE)</p>	<p>Room 4 Special Session 1 FUKUSHIMA DAI-ICHI NUCLEAR POWER PLANT</p> <p>Chairs: Jesson Hutchinson (LANL), Yasushi Nauchi (CRIEPI)</p>
<p>Thermal Neutron Scattering Law of UBe₁₃ and PuBe₁₃ <i>J.L. Wormald, M.L. Zerkle</i></p>	<p>Completion of the CEA Guide for Criticality Accident Studies <i>Michael Laget, Francis Barbry</i></p>	<p>APM Reprocessing Facility – Dismantling of Hot Cells Dedicated to Uranium and Plutonium Purification – Criticality Safety Case <i>Laurent Cholvy, Frédéric Antegnard, Koalyann Nuon et al.</i></p>	<p>Impact on Criticality of Using Pure Water with Corium coming from Nuclear Reactor Core Melting <i>Aurélie Bardelay, Wilfried Monange</i></p>
<p>Molecular Dynamics Analysis of Reactor Graphite for Preparing Thermal Neutron Scattering Law <i>Shoichiro Okita, Minoru Goto</i></p>	<p>More Critiques of Historical Criticality Accidents through the Lens of Behavioral Economics <i>Brittany Williamson</i></p>	<p>Strategic Characterisation to Support the Development of Criticality Safety Assessments for Decommissioning <i>B. J. Greenhalgh, T. Page</i></p>	<p>Criticality Assessment Assuming Spent Fuel Failure at Fukushima Daiichi Nuclear Power Plant Unit 1 <i>Takahiro Koide, Takashi Yoshii, Keita Fukawa</i></p>
<p>Impact of Light Water Covariance on Integral Benchmarks <i>Chris W. Chapman, Doro Wiarda, B.J. Marshall</i></p>	<p>The Nuclear Criticality Accident in Japan, Revisited <i>Hiroshi Okuno, Kenya Suyama</i></p>	<p>Phenix – The Neutronography Reactor and Its Auxiliary Circuits – Criticality Safety Issues <i>Laurent Cholvy, Quentin Simon, Nadine Bonny et al.</i></p>	<p>Features of Fukushima Daiichi Nuclear Power Plant Accident and Information on Fuel Debris Obtained from PCV Internal <i>Kenji Owada, Masakuni Kumeda, Takeshi Honda et al.</i></p>

Room 1 Track 2 NUCLEAR DATA Chairs: Dimitri Alexandre Rochman (PSI) Tomoaki Watanabe (JAEA)	Room 2 Track 8 CRITICALITY ACCIDENTS AND INCIDENTS Chairs: Hiroshi Okuno (JAEA) Michael Laget (CEA)	Room 3 Track 6 OPERATIONAL PRACTICES AND SAFETY CASES Chairs: Andrew B. Smiley (LANL) Amy Elizabeth van der Vyver (Sellafield)	Room 4 Special Session 1 FUKUSHIMA DAI-ICHI NUCLEAR POWER PLANT Chairs: Aurélie Bardelay (IRSN) Yasushi Nauchi (CRIEPI)
Automated, Reproducible Data Processing, Verification, and Validation at the NEA <i>Andrew Holcomb, Daniela Foligno, Michael Fleming</i>	A New Analysis of the Windscale Criticality Accident Using Monte-Carlo Code MONK <i>Emma Sayce, Neil Harris, Nathan Sayle</i>	JHR Fuel Storage Pool Criticality Safety Analysis <i>Eric Fillastre, Georges Kyriazidis, Manuel Bergman et al.</i>	Criticality Control Method for Fuel Debris Retrieval in Fukushima Daiichi NPP <i>Yasuhiro Harada, Makoto Nakano, Yamato Hayashi et al.</i>
The TENDL Nuclear Data Library: For Criticality Calculations and More <i>D. Rochman, A.J. Koning, S.C. van der Marck</i>	Multiphysics Analysis of Reactivity Changes due to Solution Flow in the Past Criticality Accident at Windscale Works in 1970 <i>Kodai Fukuda, Yuichi Yamane</i>	Providing a Criticality Warning System Omission Case for a Legacy Reactor Facility at AWE <i>Essam Mohammed, Mark A Roydhouse</i>	Development of Criticality Approach Monitoring Method Using Neutron Detectors for Fuel Debris Retrieval in Fukushima Dai-ichi NPP <i>Yamato Hayashi, Makoto Nakano, Yuichi Morimoto</i>
Comparison of Neutronic Characteristics of BWR Burnup Fuel between JENDL-4.0 and JENDL-5 <i>Tomoaki Watanabe, Kenichi Tada, Tomohiro Endo et al.</i>	Preliminary analysis of GODIVA supercritical transient behaviors by using the Multi-region Integral Kinetic code including delayed neutron effect <i>Hiroki Takezawa, Toru Obara</i>	Criticality Safety Analysis of the RECUMO Project <i>Gert Van den Eynde, Mireille Gysemans, Marijke Geerts et al.</i>	Investigation of Sub-criticality Monitoring System Based on Feynman-alpha Method for Large-Scale Fuel Debris <i>Satoshi Wada, Makoto Shimizu, Yamato Hayashi et al.</i>
Comparison of Calculated Bare Critical Masses between Two Versions of the Japanese Evaluated Nuclear Data Library, JENDL-5 and JENDL-4.0 <i>Akito Oizumi</i>	Sensitivity Analysis of the Parameters in Consequence Analysis of Postulated Fuel Debris Criticality Accident in Fukushima Dai-ichi NPP <i>Yuichi Yamane, Kenya Suyama</i>	EPEE: A Tool to Compare the Moderating Efficiency of a Material to the One of Water <i>Aurélien Dorval, David Noyelles, Michaël Prigniau et al.</i>	Detector Shielding-Moderator Design Effect to Eigenvalue Estimation Results Based on Feynman-a Method <i>Rei Kimura, Yamato Hayashi, Makoto Shimizu</i>

<p>Room 1 Track 1 CODES AND OTHER CALCULATION METHODS Chairs: Michael Rising (LANL) Yasunobu Nagaya (JAEA)</p>	<p>Room 2 Track 8 CRITICALITY ACCIDENTS AND INCIDENTS Chairs: Emma Louise Sayce (UKNNL) Kodai Fukuda (JAEA)</p>	<p>Room 3 Track 6 OPERATIONAL PRACTICES AND SAFETY CASES Chairs: Tom Page (Cerberus Nuclear) Laurent Cholvy (CEA)</p>	<p>Room 4 Special Session 1 FUKUSHIMA DAI-ICHI NUCLEAR POWER PLANT Chairs: Catherine Percher (LLNL) Yasushi Nauchi (CRIEPI)</p>
<p>Novel Methods in MONK for Criticality Modelling in Highly Disordered Random Heterogeneous Media <i>Jessica Fildes, Richard Hiles, Brian Jones et al.</i></p>	<p>Generalized CAAS Probe Positioning Methodology for a Variety of Fissile Material Processes <i>Adrien Gallozzi Ulmann, Prosper Liu, Sasha Philips et al.</i></p>	<p>Review of the Facility Criticality Safety Manager Role at AWE <i>Andrew Buchan, Christopher Hodgkinson, Paul Holloway et al.</i></p>	<p>Development of the Fuel Debris Criticality Characteristics Measurement System <i>Jun Nishiyama, Seiya Manabe, Hideki Harano et al.</i></p>
<p>Random Media Criticality Analysis Methods in Monte Carlo Solver Solomon <i>Taro Ueki</i></p>	<p>Criticality Accident Alarm System Modeling for the Uranium Processing Facility <i>M. Buttrey, S. Goluoglu, K. Reynolds</i></p>	<p>Dealing with the Past and Present – Criticality Safety Considerations Associated with Residues Clean-up at the NNL Preston Laboratory <i>Deborah Hill, Lauren Flint, Martin Watson et al.</i></p>	<p>Estimation of ²³⁵U Enrichment by Neutron Induced Gamma Ray Spectroscopy <i>Yasushi Nauchi, Shunsuke Sato, Motomu Suzuki et al.</i></p>
<p>Overview of NEA/WPNCS Activities on Criticality Problems in Random Media <i>Andrea Zoia, Jessica Fildes, Brian Jones et al.</i></p>	<p>Using MCNP to Predict Effects of a Postulated Criticality Accident on Personal Dosimetry <i>Mark N Neeley, Krista I Kaiser, Matthew M. Conrady</i></p>	<p>Criticality Control Flow Diagram: Your NCS Assessment in One Diagram <i>Grégory Caplin, Raphaël Reynaud, Gilles Neron de Surgy</i></p>	<p>Critical Assemblies in JAEA and the Role of the New STACY <i>Hiroki Sono, Kazuhiko Izawa, Tsutomu Yoritsune et al.</i></p>
<p>Method for Criticality Calculations and Estimation of the Fissile Mass Based on the Theory of Multiplicity Counting <i>Imre Pázsit, Victor Dykin, Senada Avdič</i></p>	<p>Criticality Safety Evaluation of High Radioactive Liquid Waste during the Evaporation to Dryness Process at Tokai Reprocessing Plant <i>Takatomo Miura, Atsunari Kudo, Daisuke Koyama et al.</i></p>	<p>Criticality Safety Officer Program at Technical Area 55 in Los Alamos National Laboratory <i>Leah Berman, David Kimball, James Bunsen</i></p>	<p>Debris-Simulated Core Analysis under Fuel Procurement Constraints in New STACY Experiments <i>Shouhei Araki, Satoshi Gunji, Yu Arakaki et al.</i></p>

<p>Room 1 Track 1 CODES AND OTHER CALCULATION METHODS Chairs: Simon Richards (Jacobs) Kenichi Yoshioka (Toshiba ESS)</p>	<p>Room 2 Track 8 CRITICALITY ACCIDENTS AND INCIDENTS Chair: Mark N. Neeley (PNNL) Hiroki Takezawa (Nagaoka Univ. of Tech.)</p>	<p>Room 3 Track 6 OPERATIONAL PRACTICES AND SAFETY CASES Chairs: Essam Mohammed (AWE) Gert Van den Eynde (SCK CEN)</p>	<p>Room 4 Track 5 STANDARDS, ASSESSMENT METHODOLOGY, REGULATIONS Chairs: Alexander Lang (ORNL) David Noyelles (CEA)</p>
<p>Verification and Validation of the New MCNP6.3 Criticality Features <i>Michael E. Rising, Alexander R. Clark, Jennifer L. Alwin</i></p>	<p>IRSN Progress on Emergency Preparedness and Response in Case of Criticality Accident <i>Julien Rannou, Gaël Loubert</i></p>	<p>Challenges in the Development of the Metal Purification Process at Y-12 <i>Benjamin Martin, Tom Young, Chris Haught</i></p>	<p>A Competent Authority's View on Licensing and Foreign Certificate Validation of Transport Packages for Fissile Material <i>Dirk Schulze Grachtrup, Benjamin Ruprecht</i></p>
<p>Confirmation of ICSBEP Benchmarking (LCT and LST) Using MVP3 Code <i>Shigeaki Aoki</i></p>	<p>An Analysis of Criticality Safety "Near Misses" <i>Fabien Duret, Matthieu Duluc, Johann Herth</i></p>	<p>Development of Low Enriched Uranium Plus (LEU+) Enrichment Capability and the Associated Impacts on Criticality Safety <i>Mark Savage, Charlotta Sanders</i></p>	<p>Regulating Criticality Safety in the UK: Experience from Office for Nuclear Regulation Cross-sites Inspection Series <i>Eoin Flannery, Clive Ingram, Adam Nichols</i></p>
<p>Automating the Production of Criticality Handbook Curves <i>Sareena Hussain, Stuart Watson, Monis Janjua et al.</i></p>	<p>Neutron Leakage, H/D, and Geometric Buckling Changes in Containers with Small H/D Ratios <i>Ashley R. Raster, Robert D. Busch, John A. Miller</i></p>	<p>Development of a Modular Storage of Non Irradiated Mixed Oxide Fuel <i>C. Jacques Gasnot, S. Duquenne, G. Caplin</i></p>	<p>Strategies for Establishing Adequate Subcritical Margin for Cases Involving Insufficient Benchmark Data at Enrichment and Fuel Fabrication Facilities (HALEU Applications) <i>Jeremy W. Munson</i></p>
<p>Radiation Safety Information Computational Center: An Information Analysis Center for Nuclear Criticality Safety <i>Timothy E. Valentine</i></p>	<p>Nuclear Criticality Safety Lessons Learned from the Rocky Flats Plant Fires <i>Patrick Huston, Kaelin Glover</i></p>	<p>Neutron Moderating Materials Other than Water: How, Why and When the Problems Arose and the Solutions Proposed by the CEA <i>Georgios Kyriazidis, Aurelien Dorval</i></p>	<p>Assessment of a Sophisticated PWR Burn-up Credit Application for a Transport Cask Design <i>Benjamin Ruprecht, Dirk Schulze Grachtrup</i></p>
		<p>A Device Designed to Detect Hydrogen in Moderation Controlled Workshops <i>Olivier Ravat</i></p>	<p>Development of a SKB Burn-up Credit Methodology for BWR <i>Fredrik Johansson, Jesper Kierkegaard, John Loberg et al.</i></p>

<p>Room 1 Track 1 CODES AND OTHER CALCULATION METHODS Chairs: Yi-Kang Lee (CEA) Kenya Suyama (JAEA)</p>	<p>Room 2 Track 7 STORAGE, TRANSPORT, AND DISPOSAL ISSUES Chairs: Michel Call (USNRC) Tim Hicks (Galson Sciences)</p>	<p>Room 3 Track 4 MEASUREMENTS, EXPERIMENTS, AND BENCHMARKS Chairs: Catherine Percher (LLNL) Cheol Ho Pyeon (Kyoto Univ.)</p>	<p>Room 4 Track 5 STANDARDS, ASSESSMENT METHODOLOGY, REGULATIONS Chairs: Dirk Schulze Grachtrup (BASE) Eoin Flannery (ONR)</p>
<p>Recent Developments to MONK® and Visual Workshop for Criticality Safety Applications <i>Simon Richards, Adam Bird, Andrew Cox et al.</i></p>	<p>International Approaches to Post-Closure Criticality Safety : French Agency Strategy <i>A. Feuerle</i></p>	<p>Status of the International Criticality Safety Benchmark Evaluation Project <i>C. Percher, J.D. Bess, W.J. Marshall et al.</i></p>	<p>Basis of 10CFR71.15(b) for Consideration into SSR-6 Para. 417 <i>Alexander Lang, Andrew B. Barto, Douglas G. Bowen</i></p>
<p>New Bateman Equation Solvers in MENDEL version 3.1 <i>S. Lahaye, A. Anne, R. Baron et al.</i></p>	<p>Comparison of Burn-up Credit Methodologies for Post-Closure Criticality Safety Assessments Using a Simplified Reference Modelling Configuration <i>Jasdeep Bansal, Callum Eldridge, Ahmed Shama et al.</i></p>	<p>The Case for and Against a Gadolinium Bias in SCALE: Round 2 <i>W. J. Marshall, A. M. Shaw, T. M. Greene et al.</i></p>	<p>International Standards for Nuclear Criticality Safety <i>Ben Webborn, Douglas G. Bowen, Grégory Caplin</i></p>
<p>Improvements of the SCALE Testing Framework <i>Shane W. D. Hart, Seth R. Johnson, Robert A. Lefebvre et al.</i></p>	<p>UK Perspective on Post-Closure Criticality Safety Assessments in the Final Disposal of Higher Activity Waste <i>Liam Payne, Stuart Watson, Robert Mason et al.</i></p>	<p>Preliminary Model Development in Support of a New Criticality Safety Benchmark for HEU Metal Annuli and Cylinders with Reflectors of Three- to Nineteen-Inch Thickness <i>Kathryn Worrell, Gabriel Lentchner, John Mihalczko et al.</i></p>	<p>New CEA Handbooks for Criticality Safety Assessment Demonstrations <i>David Noyelles, Aurélien Dorval, Michaël Prigniau</i></p>
<p>The CRISTAL Criticality Package: from 2.0 towards 2.1 Version <i>Arnaud Entringer, Aurélie Bardelay, Sébastien Lahaye et al.</i></p>	<p>Swiss Perspective on Post-Closure Criticality Safety Assessments in the Final Disposal of High-Level Waste <i>Madalina Wittel, Susanne Pudollek</i></p>	<p>A High-Fidelity Benchmark of the AGN-201M Reactor at the University of New Mexico <i>Rowdy Davis, Christopher M. Perfetti, Larry L. Wetzel et al.</i></p>	<p>Evaluation of the Sum-of-Fractions Methodology for Water and Polyethylene Moderated Systems <i>Travis J. Zipperer, Andrew W. Prichard, Travis M. Greene et al.</i></p>

<p>Room 1 Track 2 NUCLEAR DATA</p> <p>Chairs: Coralie Carmouze (CEA) Kenichi Tada (JAEA)</p>	<p>Room 2 Track 7 STORAGE, TRANSPORT, AND DISPOSAL ISSUES</p> <p>Chairs: Adrien Feuerle (ANDRA) Madalina Wittel (Nagra)</p>	<p>Room 3 Track 6 OPERATIONAL PRACTICES AND SAFETY CASES</p> <p>Chairs: Aurélien Dorval (CEA) Deborah Ann Hill (UKNNL)</p>	<p>Room 4 Track 4 MEASUREMENTS, EXPERIMENTS, AND BENCHMARKS</p> <p>Chairs: Jesson Hutchinson (LANL) Shouhei Araki (JAEA)</p>
<p>FP Concentrations Evaluation With FPY Data Considering Fission Rate Spectrum <i>Kohei Matsuo, Takanori Kitada, Satoshi Takeda et al.</i></p>	<p>A Criticality Analysis for Disposal Canister Considering Fuel Burnup and Iron Corrosion Effect <i>Shin Sung Oh, Kyu Jung Choi, Ser Gi Hong</i></p>	<p>Altering the Requirement to Assay Waste Drums containing Plutonium Contaminated Material at Sellafield Ltd. <i>Amy van der Vyver, Michael Hobson</i></p>	<p>Optimization Algorithm for Criticality Experiment Design Using Whisper <i>Cole Kostelac, Ayodeji Alajo, Nicholas Thompson</i></p>
<p>Consistent Nuclear Data Evaluations for Criticality Safety <i>I. Stetcu, T. Kawano, A. E. Lovell et al.</i></p>	<p>The United States Perspective on Post-Closure Criticality Safety Assessments in the Final Disposal of High-Level Waste <i>Laura Price, Kaushik Banerjee</i></p>	<p>Burnup Credit Criticality Safety Case for AGR Spent Fuel Storage <i>James Ryan, Albrecht Kyrieleis, Jennifer Bateman et al.</i></p>	<p>Criticality Experiments to Reduce Compensating Errors in Plutonium Nuclear Data <i>J. Hutchinson, J. Alwin, B. Bell et al.</i></p>
<p>Nuclear Data for Neutron Criticality Applications at GELINA <i>P. Schillebeeckx, C. Camouze, S. Kopecky et al.</i></p>	<p>Refinement of the Loading Curve Determination Methodology and Modeling for Swiss PWR Spent Fuel Final Disposal Canisters <i>M. Frankl, A. Vasiliev, D. Rochman et al.</i></p>	<p>Criticality Safety of Orano La Hague Dissolver Rinsing Operations <i>Y. Blin, C. Quenault, R. Vassieux et al.</i></p>	<p>The EUCLID Experiment and Nuclear Data Library Comparisons <i>Nicholas W. Thompson, Jesson Hutchinson, Jennifer Alwin et al.</i></p>
<p>Inter- Codes and Nuclear Data Comparison under Collaboration Works between IRSN and JAEA <i>Satoshi Gunji, Shouhei Araki, Tomoaki Watanabe et al.</i></p>	<p>Criticality Safety for UK Spent Fuel Disposal in the Post-Closure Phase of a Geological Disposal Facility <i>Robert Mason, Albrecht Kyrieleis, Lynn Grindrod et al.</i></p>	<p>Lessons Learned From Ventilation and Glovebox Flooding Via Overfilling of the Wet Vacuum System in a Plutonium Facility <i>Andrew Smiley, Amanda Bowles Tomaszewski, Michael Corum</i></p>	<p>Reactivity Coefficient Measurements to Aid in Reducing Compensating Errors in Plutonium Nuclear Data <i>T. Cutler, J. Alwin, M. Grosskopf et al.</i></p>
<p>Dependence of the Average Total Kinetic Energy of Fission Fragments on Incident Neutron Energy Studied by a 4D Langevin Model <i>Kazuya Shimada, Chikako Ishizuka, Satoshi Chiba</i></p>	<p>Criticality Safety for UK Spent Fuel Disposal in the Pre-Closure Phase of a Geological Disposal Facility <i>Liam Payne, Andrew Price, Steven Lonsdale et al.</i></p>		

Track 1: CODES AND OTHER CALCULATION METHODS

P-01	The Construction of a Quantitative Comparison of Upper Subcritical Methods for Novel Neutronic Systems	<i>Bobbi Riedel, Christopher Perfetti</i>
P-02	Nuclear Criticality Safety Analogue "Tool" for Approximating Subcritical Equipment and Process Designs and Operations Limits	<i>Calvin M. Hopper, Megan Pritchard, Cecil V. Parks</i>
P-03	GRS Handbook on Criticality – Digital Version <i>HBcrit</i>	<i>Fabian Sommer</i>
P-04	A Burnup Calculation System Coupled with MCNP and SCALE/ORIGEN	<i>Kenichi Yoshioka, Satoshi Wada, Shunichiro Omika</i>
P-05	Temperature Reactivity Feedback Coefficient for the MYRRHA Critical Core – Design Revision 1.8	<i>L. Fiorito, A. Peñalosa, M. Zanetti et al.</i>
P-06	Stochastic Neutronics Simulations Using Deterministic Transport With N-Forked Fission Branching Approximations	<i>Philippe Humbert</i>
P-07	Cyclone – New Features for Criticality Safety Analyses	<i>Stewart Hay, Carl Hughes, Peter Taylor</i>
P-08	Solution to Random-Media Criticality Benchmarks with a Monte Carlo Solver Solomon	<i>Yasunobu Nagaya</i>

Track 2: NUCLEAR DATA

P-09	Linearization of Thermal Neutron Scattering Cross Section to Optimize the Number of Energy Grid Points	<i>Kenichi Tada</i>
P-10	The First Core Criticality Analysis of the RSG GAS Multipurpose Research Reactor using the Newly Released JENDL-5 Nuclear Data Library	<i>Peng Hong Liem, Donny Hartanto</i>
P-11	Nuclear Data Sensitivity Analysis of Post-Irradiation Examination Data with Fuel Depletion Calculation Module CBZ/Burner	<i>Yuya Inagaki, Go Chiba, Keita Yoshikawa et al.</i>

Track 3: UNCERTAINTY AND SENSITIVITY ANALYSIS

P-12	Adjustment of Uncertain Modeling Parameters through Analyses of Post-Irradiation Examination Data	<i>Keita Yoshikawa, Go Chiba, Yuya Inagaki et al.</i>
P-13	On the PSI Routine Criticality Safety Evaluation Methodology and its Validation Approach	<i>A. Vasiliev, H. Lee, M. Frankl et al.</i>
P-14	A Method to Estimate Burnup Using Enrichment(IE), Cooling Time(CT) and TNSI(Total Neutron Source Intensity) in Spent Fuels : Apply to MCNP Neutron Detection	<i>Kwangheon Park, So hee Cha</i>
P-15	Data Assimilation Using Prompt Neutron Decay Constant α for Water to Reduce Uncertainties due to Thermal Neutron Scattering Law	<i>Yoshinari Harada, Hibiki Yamaguchi, Tomohiro Endo et al.</i>

Track 4: MEASUREMENTS, EXPERIMENTS, AND BENCHMARKS

P-16	AFRRI TRIGA Reactor Neutron and Gamma Dose Characterization Preliminary Results	<i>Aaron Sun Tamashiro, Philip Angus, David Heinrichs et al.</i>
P-17	Analysis of the MUSiC ^3He Multiplicity Data	<i>Alex McSpaden, Jesson Hutchinson, George McKenzie et al.</i>
P-18	Canceled	
P-19	Benchmark Analyses on Control Rod Worths of TRIGA Reactor Modeled in the ICSBEP Handbook Using Continuous-Energy Monte Carlo Code MVP Version 3	<i>Hiroshi Yanagisawa, Miki Umeda, Yuiko Motome et al.</i>
P-20	An Alternative to Solution Experiments for Nuclear Data Validation & Training: Reflection and Interaction of Juxtaposed Uranium (RAIJU) Experiment Design	<i>Kelsey Amundson, Nicholas Thompson</i>
P-21	Pu Oxalate Slurries – A Potential Bounding Condition for Aqueous Chloride Processes	<i>Kimberly B. Muscarella, Kelly E. Aldrich, Dung M. Vu et al.</i>
P-22	Design of TEX-MOX Critical Experiments Varying Neutron Spectrum	<i>M. Brovchenko, J. Bez, M. Daury et al.</i>
P-23	Nano Second Pulsed Die-Away Experiments for Nuclear Data Validation	<i>Valeria Raffuzzi, Daniel Siefman, Lee Bernstein</i>
P-24	Design of a $\text{UO}_2\text{-BeO}$ Critical Experiment at Sandia	<i>William M. Cook, Elijah C. Lutz, David E. Ames et al.</i>

Track 5: STANDARDS, ASSESSMENT METHODOLOGY, REGULATIONS

P-25	Updates of the French Criticality Safety Analysis Guide And Event Database (LOGIC)	<i>Fabien Duret, Matthieu Duluc, Aurélie Bardelay</i>
P-26	LICORNE: A Useful Software for Criticality Safety Reference Values	<i>Wilfried Monange, Aurélie Bardelay</i>

Track 6: OPERATIONAL PRACTICES AND SAFETY CASES

P-27 Criticality Assessment of Borosilicate Raschig Rings Poisoned Tanks Dismantling
Laurent Zambelli, Patrick Pin, Michaël Gal et al.

Track 7: STORAGE, TRANSPORT, AND DISPOSAL ISSUES

P-28 Investigation of the Specific k_{eff} Behaviour in Simplified Corrosion Scenarios for a Potential PWR Final Disposal Canister Design
M. Frankl, A. Vasiliev, L. Berry et al.

P-29 Evaluation of the Fukushima Daini 2F2 8x8-4 Samples
Pedro Ortego

P-30 The Benefits of a Multiple Water Barrier Design Transport Package
Michelle Nuttall, Charlotte Davis

P-31 Effects of Low Temperature on Transport Criticality Safety
Charlotte Davis, Michelle Nuttall

P-32 Criticality Sensitivity Analysis for the Standard Waste Transport Container 255 (SWTC-255)
Charlotte Davis, Michelle Nuttall, Michael Hobson et al.

Track 8: CRITICALITY ACCIDENTS AND INCIDENTS

P-33 Comparison of Computational and Experimental Results for Criticality Accident Alarm Placement
Alan J. Yamanaka, Soon S. Kim, Shauntay Coleman

P-34 The CAAS-3S Criticality Accident Alarm System Dose-Rate Feature
Sasha Philips, Adrien Gallozzi Ulmann, Prosper Liu et al.

Track 9: PROFESSIONAL DEVELOPMENT ISSUES AND TRAINING

P-35 Interface of Criticality Safety with Other Transport Disciplines
Charlotte Davis, Michelle Nuttall

P-36 Professional Development of NCS Staff: Benefits of Going beyond Technical and Regulations
John A. Miller, Robert D. Busch, Ashley R. Raster et al.

P-37 Nuclear Criticality Safety through Training, Organizational and Human Factors Integration and Feedback, at Orano Recyclage Reprocessing Plant
Patrick PIN, Bérengère MARTIN, Rémi VASSIEUX

P-38 Criticality Safety Evaluation Project Development for University of California Berkeley Nuclear Criticality Safety Pipeline Course
Shauntay Coleman, Alan Yamanaka, William Zywiec

P-39 Problem-Based Learning Program of Reactor Physics Experiment to Measure Subcriticality for an Unknown System
Shunya Teratani, Yoshinari Harada, Kaito Mori et al.

Special Session 1: FUKUSHIMA DAI-ICHI NUCLEAR POWER PLANT

P-40 Study on Criticality Safety Control of Fuel Debris for Validation of Methodology Applied to the Safety Regulation
Kenya Suyama, Taro Ueki, Satoshi Gunji et al.

P-41 Progress of Modification Work of the Static Experiment Critical Facility (STACY) and Preparation for First Series of Critical Experiments under the New Regulatory Standards of Japan
Kazuhiko Izawa, Junichi Ishii, Masakazu Seki et al.

P-42 Status on the Development of the Fabrication and Analysis Equipment of the Pseudo Fuel Debris
Fuyumi Kobayashi, Hiroyuki Fukaya, Kazuhiko Izawa et al.

P-43 Planning of the Debris-Simulated Critical Experiments on the New STACY
Satoshi Gunji, Shouhei Araki, Yu Arakaki et al.

P-44 Preliminary Analysis of Randomized Configuration Patterns in Modified STACY Core
Shigeki Shiba, Daiki Iwahashi, Tsuyoshi Okawa et al.

P-45 Preliminary Analyses of Modified STACY Core Configuration Using Serpent With JENDL-5
Maho Kawaguchi, Shigeki Shiba, Daiki Iwahashi et al.

Special Session 2: Machine Learning, Deep Learning

P-46 Missing Rods Pattern Optimization in LWR Fuel Assembly Using a Genetic Algorithm Coupled with Heterogeneous TRIPOLI-4[®] Monte Carlo Calculations
J. Dupas, D. Noyelles, M. Prigniau

<p>Room 1 Track 1 CODES AND OTHER CALCULATION METHODS Chairs: Shane W. D. Hart (ORNL) Shigeaki Aoki (MNF)</p>	<p>Room 2 Track 7 STORAGE, TRANSPORT, AND DISPOSAL ISSUES Chairs: J��r��my Bez (IRSN) Liam Payne (Nuclear Waste Services)</p>	<p>Room 3 Track 9 PROFESSIONAL DEVELOPMENT ISSUES AND TRAINING Chairs: Cheol Ho Pyeon (Kyoto Univ.) Dominic Winstanley (Sellafield)</p>	<p>Room 4 Track 4 MEASUREMENTS, EXPERIMENTS, AND BENCHMARKS Chairs: Steven C. van der Marck (NRG) Kenichi Tada (JAEA)</p>
<p>Application of an Empirical Density Law via Python for Aqueous Plutonium Chloride Systems in MCNP6 <i>Riley Bulso, Jennifer Alwin, Christopher Perfetti et al.</i></p>	<p>GMIT: A Tool to Support Post-Closure Criticality Safety Assessments <i>E. Adam Paxton, Jiejie Wu, Tim Hicks et al.</i></p>	<p>Collaboration of Nuclear Criticality Safety and Accident Dosimetry in Planning and Exercise Development <i>Matthew M. Conrady</i></p>	<p>High Multiplication Neutron Noise Measurements Using the Seven Percent Critical Experiment 7uPCX <i>Nicholas Whitman, Tanner Heatherly, Jesson Hutchinson et al.</i></p>
<p>Application of a Density Law via Python for Aqueous Plutonium Nitrate Systems in MCNP6 <i>Tara Robertson, Jennifer Alwin, Christopher Perfetti et al.</i></p>	<p>Revision of the Dounreay Low Level Waste Disposal Facilities Operational and Post-Closure Criticality Safety Assessment <i>Tamara Baldwin, Tim Hicks, Emily Swain-Phipps et al.</i></p>	<p>Development of Two Educational Calculation Codes Monte Carlo Calculation Code S-Monte and Diffusion Calculation Code S-Dif <i>Tetsuo Matsumura, Takanori Kameyama</i></p>	<p>Gamma-ray Measurements from Pulsed-Neutron Die-Away Experiments (PNDA) <i>Ruby Araj, Daniel Siefman, Lee Bernstein et al.</i></p>
<p>Criticality Calculations of Spent Fuel Storage Pool with Water Holes <i>S. Duquenne, Y. Blin, B. Checiak et al.</i></p>	<p>German Perspective on Post-Closure Criticality Safety Assessments in the Final Disposal of High-Level Waste <i>Christian Herold, Florian Voigts, Sabine Unger</i></p>	<p>Implementation of CARTA into Criticality Training Programmes <i>Katrina Christaki, Stewart Hay, Toby Tyas</i></p>	<p>Thermal Pulsed Neutron Die Away Experiments in Salt Water <i>Valeria Raffuzzi, Daniel Siefman, Lee Bernstein</i></p>
<p>Method and Code Development for the Nuclide Composition Evaluation of Commercial PWR Spent Fuel Assembly <i>Liangzhi Cao, Senhan Yang, Yunzhao Li</i></p>	<p>Initial Considerations on Potential Optimisation Options of Spent Fuel Disposal Canisters Taking into Account Post-Closure Criticality Safety <i>Madalina Wittel, Valentyn Bykov, Maksym Chernykh et al.</i></p>	<p>In Silico Versus in Situ the Challenging Landscape of Nuclear Criticality Safety Training <i>David K. Hayes</i></p>	<p>Inherently Safe Subcritical Assembly Lite <i>Samuel T. Varghese, William Zywiec</i></p>
	<p>Nagra's Approach to Post-Closure Criticality Safety Case Development within the High-Level Waste Repository Programme Roadmap <i>Madalina Wittel, Susanne Pudollek</i></p>	<p>Overview and Current Progress of the DOE/NNSA Nuclear Criticality Safety Program Training and Education Program <i>Douglas G. Bowen</i></p>	<p>Fast Spectrum Reactivity Worth Measurements in STEK <i>Steven van der Marck, Arjan Koning</i></p>

<p>Room 1 Track 1 CODES AND OTHER CALCULATION METHODS</p> <p>Chairs: TBD Taro Ueki (JAEA)</p>	<p>Room 2 Track 7 STORAGE, TRANSPORT, AND DISPOSAL ISSUES</p> <p>Chairs: Tamara Baldwin (Galson Sciences) Pedro Ortego (SEA)</p>	<p>Room 3 Track 9 PROFESSIONAL DEVELOPMENT ISSUES AND TRAINING</p> <p>Chairs: Shauntay Coleman (LLNL) Hiroki Takezawa (Nagaoka Univ. of Tech)</p>	<p>Room 4 Track 4 MEASUREMENTS, EXPERIMENTS, AND BENCHMARKS —A Memory of Gary Harms— Chairs: Mariya Brovchenko (IRSN) Akito Oizumi (JAEA)</p>
<p>Adapting CLUTCH Methodology to Multigroup TSUNAMI-3D for Eigenvalue Sensitivity Calculations <i>K. B. Bekar, W. J. Marshall</i></p>	<p>Exotic Fuels Transport Challenge <i>Albrecht Kyrieleis, Andrew Thallon, Ahmed Aslam</i></p>	<p>A Guide for Criticality Safety Training and Awareness of Personnel Working in Nuclear Installations <i>Clement Lopez, Fleur Lespinasse, Laurent Cholvy et al.</i></p>	<p>Molybdenum Sleeve Experiments in the Sandia Critical Experiments Facility <i>Gary A. Harms, David E. Ames, Nicolas Leclaire et al.</i></p>
<p>Verification and Performance Impact of the New Parallel MCNP6.3 Particle Track Output Capability for Subcritical Multiplication Simulations <i>Michael E. Rising, Nicholas H. Whitman, Jesson D. Hutchinson</i></p>	<p>Criticality Risk Associated with the Bulk Deployment of Powder Extinguishants <i>Jennifer Bateman, Holly Pearson, Dan Johnson</i></p>	<p>Development of Nuclear Criticality Staff at Pacific Northwest National Laboratory <i>Krista I Kaiser, Mark N Neeley</i></p>	<p>Methods to Determine Burst Repeatability for Godiva IV <i>Joetta Goda, Robert Allen Weldon Jr, Travis Grove et al.</i></p>
<p>TRIPOLI-4® Neutron Multiplication Calculations for the Subcritical Experiments of the BeRP Ball Reflected by Tungsten <i>Yi-Kang Lee, François-Xavier Hugot</i></p>	<p>High Assay Low Enriched Uranium Transportation Packages Under 10 CFR Part 71 – U.S. NRC Research and Certification Activities <i>Andrew B. Barto, Michel Call</i></p>	<p>Ensuring the Sustainability of Criticality Safety Expertise <i>Dominic Winstanley</i></p>	<p>Quantifying Burst Repeatability for Godiva IV <i>Robert Allen Weldon Jr, Joetta Goda, Travis Grove et al.</i></p>
<p>Use of SCALE MAVRIC Radiation Transport Calculations for the Design of a Subcritical Assembly at Oak Ridge National Laboratory <i>M. N. Dupont, A. Lang, D. Bowen</i></p>	<p>Increased Flexibility for Reflectors Near Storage Arrays of Fissionable Items at Sandia <i>William M. Cook, Elijah C. Lutz, Ashley R. Raster et al.</i></p>	<p>A Look at a “Quid Pro Quo” NCS Assessment Culture <i>John A. Miller, David P. Heinrichs, Mark N. Neeley et al.</i></p>	<p>Experiment Design and Preparation for a Shielding Benchmark Utilizing Godiva-IV <i>Garrett McMath, Tyler Borgwardt, Riley Cumberland et al.</i></p>

Room 1 Track 3 UNCERTAINTY AND SENSITIVITY ANALYSIS Chairs: Alexander Vasiliev (PSI) Shuhei Maruyama (JAEA)	Room 2 Track 7 STORAGE, TRANSPORT, AND DISPOSAL ISSUES Chairs: John Bess (JFoster & Associates) William M. Cook (SNL)	Room 3 Track 10 FUTURE CHALLENGES Chairs: Rei Kimura (Toshiba ESS) Dominic Winstanley (Sellafield)	Room 4 Track 4 MEASUREMENTS, EXPERIMENTS, AND BENCHMARKS Chairs: Rene G. Sanchez (LANL) Masahiro Fukushima (JAEA)
Nuclear Data Sensitivity Analysis of a Sodium Shielding Experiment Based on Generalized Perturbation Theory for Data Assimilation <i>Shuhei Maruyama, Tomohiro Endo, Akio Yamamoto</i>	Assessment of Validation for Burnup Credit Calculations for LEU+ and High Burnup Fuel <i>M. N. Dupont, C. Celik, A. Lang et al.</i>	Preliminary Study of Burnup Measurement and Relative Power Distribution in the HTTR Using Gamma-Ray Measurement <i>Irwan L. Simanullang, Shohei Kawaguchi, Nozomu Fujimoto et al.</i>	MUSiC: Critical Experiment with Bare Highly Enriched Uranium Shells Benchmark <i>Rene Sanchez, George McKenzie, Alexander McSpaden</i>
Sensitivity and Uncertainty-Based Techniques to Extend the Database of Experimental Validation Benchmarks: Practical Example of "IEU" Slabs <i>T. Albert, Q. Vuyet, C. Rechatin et al.</i>	Criticality Safety Recommendations for the Treatment of Extended Enrichment and High Burnup Fuel for Storage and Transportation Systems <i>Alex Shaw, Nicholas Kucinski, Briana Hiscox</i>	Effect of Nuclear Data Library on Criticality and Transmutation Characteristics in Fluoride Molten Salt Reactor <i>Koji Fujikura, Naoto Aizawa</i>	Future of the MUSiC Experiment Data <i>George McKenzie, Flynn Darby, Jesson Hutchinson et al.</i>
Efficient Uncertainty Quantification Using Deterministic Sampling Method with Simplex Ensemble and Scaling Method <i>Tomohiro Endo, Akio Yamamoto</i>	The Importance of Transport Criticality Safety <i>Charlotte Davis, Michelle Nuttall</i>	MCNP-6 Criticality Comparison of Additive Manufacturing Techniques for the Fabrication of Metallic Nuclear Fuels <i>Patrick J. Moo</i>	Towards an Era of Low Temperature Integral Critical Experiments: Surrogate Testing of Low-Temperature TEX Configurations <i>Eric Aboud, Paul Yap-Chiongco, Jesse Norris et al.</i>
Uncertainty Quantification of α and γ Emission Spectra <i>S. Lahaye, T.D. Huynh, A. Tsilanizara</i>	Consideration of Agglomeration of Low Enriched Fissile Materials and the Detrimental Effect on Package Payloads/CSI <i>Michelle Nuttall, Charlotte Davis</i>		Neutronic Characteristics of the Low-Temperature TEX Design and Proposed Configurations <i>Jesse Norris, Catherine Percher, Eric Aboud et al.</i>

<p>Room 1 Track 3 UNCERTAINTY AND SENSITIVITY ANALYSIS Chairs: Axel Hoefler (Framatome) Tangi Nicol (CEA)</p>	<p>Room 2 Track 7 STORAGE, TRANSPORT, AND DISPOSAL ISSUES Chairs: Charlotte Davis (NTS) Matthias Frankl (PSI)</p>	<p>Room 3 Track 10 FUTURE CHALLENGES Chairs: Naoto Aizawa (Tohoku Univ.) Irwan Liapto Simanullang (Kyusyu Univ.)</p>	<p>Room 4 Track 4 MEASUREMENTS, EXPERIMENTS, AND BENCHMARKS Chairs: Jesse D. Norris (LLNL) Kotaro Tonoike (JAEA)</p>
<p>Experimental Correlation Estimation and Their Role in Transposition Method <i>Tangi NICOL, Alexandre DEPLORTE, Julien PIETRI</i></p>	<p>Impact of Recent ENDF Nuclear Data on Burnup Credit Criticality Safety Analyses <i>W. A. Metwally, M. N. Dupont, W. J. Marshall et al.</i></p>	<p>IRSN Review of Experimental Needs for Nuclear Criticality Safety <i>Aurélie Bardelay, Jean-Baptiste Clavel, Wilfried Monange et al.</i></p>	<p>Experiments to Measure the Effect of Tantalum on Critical Systems <i>David E. Ames, Gary A. Harms, Elijah Lutz et al.</i></p>
<p>Validating Mixtures of ²³³U, ²³⁵U, and ²³⁹Pu for the Sum-Offractions Method <i>T. M. Greene, A. Lang, W. J. Marshall</i></p>	<p>The Modelling of LEU Heterogeneous Systems as Tetrahedral Arrays in MONK®, SCALE and MCNP® and the Impact of Heterogeneity on Runtime <i>Stuart Watson, Simon Richards, Monis Janjua</i></p>	<p>Towards a Direct Comparison of Practical CSE with BUC Approaches: Benchmark Proposal for a Pseudo-application Case with User-defined NCS Criteria <i>A. Vasiliev, M. Frankl, D. Rochman et al.</i></p>	<p>TEX-HEU & TEX-Hf: Critical Assemblies with Highly Enriched Uranium, Polyethylene, and Hafnium <i>Jesse Norris, Catherine Percher, David Heinrichs et al.</i></p>
<p>Impact of Correlations Between Experiments on the Evaluation of Bias due to Nuclear Data by Assimilation Methodologies <i>Frédéric Fernex, Nicolas Leclaire, Aurélie Bardelay et al.</i></p>	<p>Evaluation of the ARIANE Samples Irradiated in Gösgen Reactor <i>Pedro Ortego</i></p>	<p>Criticality Analyses of the PWR Core with Accident Tolerant Fuel <i>Agnieszka Boettcher, Zuzanna Marcinkowska</i></p>	<p>Verification and Validation of Monte Carlo Simulations Using Swiss PWR HZP Data <i>L. Berry, A. Vasiliev, M. Hursin et al.</i></p>
<p>Bias and Correlated Data, Comparison of Methods <i>A. Hoefler, M. Stuke, H. S. Abdel-Khalik et al.</i></p>	<p>Impact of Low Temperatures on Criticality Safety Assessments for Fissile Material Transportation <i>Jeremy Bez, Marcel Tardy, Aurélie Bardelay et al.</i></p>		<p>Plutonium Chloride Solution Characterization: Impacts on Density from Pu Oxidation States and Saturation Effects <i>Kelly E. Aldrich, Kimberly B. Muscarella, Justin N. Cross et al.</i></p>

Room 1 Track 3 UNCERTAINTY AND SENSITIVITY ANALYSIS Chairs: Jun-Shuang FAN (Hokkaido Univ.) Travis Greene (ORNL)	Room 2 Track 7 STORAGE, TRANSPORT, AND DISPOSAL ISSUES Chairs: W. A. Metwally (ORNL) Stuart Watson (3T Safety Consultant)	Room 3 Special Session 2 MACHINE LEARNING, DEEP LEARNING Chairs: Justin Clarity (PNNL) Arnau Albà Jacas (PSI)	Room 4
Deterministic-Monte Carlo Hybrid Methods for Eigenvalue Sensitivity Coefficient Calculations <i>T. M. Greene, K. Bekar, W. J. Marshall</i>	Micro-SMR LEU+ Once-through Fuel Cycle Spent Fuel Actinides Characteristics Verification <i>John Bess, Gray Chang, Mie Hiruta et al.</i>	Uncertainty Quantification on Spent Nuclear Fuel with LMC <i>Arnau Albà, Andreas Adelman, Dimitri Rochman</i>	
Overview of Spent Nuclear Fuel Inventory Results for the ARIANE GU3 Sample <i>C. Carmouze, R. Ichou, G. Ilas et al.</i>	Criticality of Poisoned Cells for Underwater Spent Fuel Storage <i>B. Checiak, G. Caplin, Y. Blin et al.</i>	Applicability of Machine Learning to Criticality <i>Charpentier-Süter Alexis, Gaudin Gérald, Arphant Nicolas et al.</i>	
A Study of Model Dependence in Burnup Credit Criticality Safety Analysis <i>Axel Hofer, Stefan Glaubrecht</i>	Decay Heat Calculation for Efficient Storage of Spent Nuclear Fuel <i>Shunsuke Sato, Yasushi Nauchi</i>	Progress Toward the Development of an Artificial Neural Network for Rapid Post-Closure Reactivity Analysis <i>Justin Clarity, Harish Gadey, Peter Stefanovic et al.</i>	No presentations
Investigating Similarity Differences for Light-Water Moderated and Polyethylene-Moderated Systems <i>T. M. Greene, W. J. Marshall</i>	Decay Heat of Irradiated Nuclear Fuels – A Status Report from the NEA WPNCs <i>D. Rochman, A. Algora, Ø. Bremnes et al.</i>	Criticality Experiment Design for the Molten Chloride Reactor Experiment Facility <i>Michael Branco-Katcher, Daniel Siefman, Todd S. Palmer et al.</i>	
Lost and Found Opportunities Around the Chlorine Worth Study <i>W. J. Marshall</i>	Comparative Study of the Impact on the Nuclear Criticality Safety of the Boron and Burnup Credit in Pools of Spent Fuel Assemblies from PWR Nuclear Power Plants <i>Alberto Ottonello, Marie-Pierre Fontaine, Nicolas Slosse</i>	The Prediction of the Critical Parameters of Post-Processing Non-uniform Conditions based on Improved BP Neural-Network <i>Liang Song, Sun Ming-ze, Cheng Yu-ting et al.</i>	