



Your NISD Leadership Team

We all thank you for being a part of the NIS Division and look forward to working with all of you. Please don't hesitate to reach out to anyone on the leadership team with suggestions or if you'd like to get involved.

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A Message from the Chair

By Nicholas R. Brown

I am thrilled to have the opportunity to serve my term as Nuclear Installations Safety Division elected Chair which began in June 2021. I have been involved in the Nuclear Installations Safety Division Governance since Bill Horak asked me to join the Program Committee in 2015. This is our first newsletter in several years, and there is a lot for us to discuss.



The nuclear community is facing both unprecedented opportunity and existential challenges. We probably all agree with United States Secretary of Energy Jennifer Granholm's remarks at the June 2021 American Nuclear Society Annual Meeting: "Carbon-free nuclear power is an absolutely critical part of our decarbonization equation." In early November 2021 at the COP 26 climate summit, global leaders have been pushing to have nuclear energy recognized as a vital pillar of our solution to the climate crisis. Broadly, nuclear energy is achieving recognition as an important part of the solution to global climate change. Simultaneously, plant closures and aging infrastructure are challenging circumstances the industry continues to face.

In NISD, we have several upcoming meetings. NISD is the home of probabilistic risk assessment in the American Nuclear Society. Currently, the PSA 2021 conference is ongoing in a virtual format, thanks to the leadership and flexibility of Carol Smidts and many others. PSA 2023, with a technical program led by Askin Guler Yigitoglu, will be in Knoxville in a joint meeting with the 13th Nuclear Plant Instrumentation, Control & Human-Machine Interface Technologies (NPIC&HMIT).

Although we are proud to be the home of risk assessment in ANS, NISD and its predecessor, the Nuclear Reactor Safety Division (NRSD), has historically played a role in hosting topical meetings in advanced reactors and traditional nuclear safety assessment. For example, some of the conference papers I presented as a graduate student were at the NISD-led International Topical Meeting on the Safety and Technology of Nuclear Hydrogen Production, Control, and Management in 2007 and 2010. NISD or NRSD also led embedded topical meetings in traditional or advanced reactor safety in 1994, 1997, 1998, 2000, 2001, and 2004. I am thrilled that, due to the leadership of Matt Denman, Kevin O'Kula, and others, an NISD-led embedded topical meeting on Advanced Reactor Safety will be held at the 2024 ANS Annual Meeting in Las Vegas.

We are presented with other opportunities also. The Operations and Power Division has formed the Advanced Reactors Working Group of ANS. In March, the Working Group sent a letter to the US Nuclear Regulatory Commission advocating for incorporating into the Part 53 rulemaking decades of experience with risk-informed and performance-based (RIPB) regulation and philosophy. NISD has the opportunity to get involved in this extremely important activity. Our involvement will be led by Bob Youngblood of Idaho National Laboratory, but there are opportunities for others in NISD to get involved.

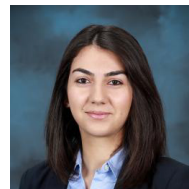
In general, our division could perhaps do a better job with communication. This newsletter is a start, but on the whole we need to ensure we communicate to early career professionals and students what our broad mission is, and encourage them to get involved. We could work more closely with our colleagues in Thermal Hydraulics Division, Operations and Power Division, and across ANS, as safety is an inherently interdisciplinary topic.

I am looking forward to seeing many of you in person and virtually at the 2021 ANS Winter Meeting. Please, if you have suggestions for how the division can improve, do not hesitate to reach out to me or to another member of NISD leadership.

I want to thank all the contributors to this newsletter from NISD, and especially Yunfei Zhao for help pulling it together.

Program Committee Report

By Askin Guler Yigitoglu, Aaron Epiney, and Mihai A. Diaconeasa



NISD is organizing five sessions at the 2021 ANS Winter Meeting including two paper sessions on current topics in PRA and three panels; one focusing on consensus standards and two panels will host lessons learned discussions from the recent failure events on nuclear installations.

For those members who did not attend the PSA 2021, the paper session on Wednesday afternoon will be a good opportunity to learn the meeting highlights. The session will be open with a "Highlights from the PSA Meeting" talk and then we will have paper presentations.

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2021 ANS Winter NISD Technical Sessions

November 30-December 3, 2021

Session	# of papers	Time Slot (ET)
Current Topics in Probabilistic Risk Analysis - I	4	Wed 12:30-2:15PM
Current Topics in Probabilistic Risk Analysis - II	4	Thu 3:05-4:50PM
Lessons Learned and Risk Insights from the Duane Arnold Derecho Event of 2020	Panel	Thu 1:00-2:45PM
Research Reactor Fuel Failure Events: Learning from Recent HFIR and NIST Reactor Experience	Panel	Fri 8:00-9:45AM
Current and Emergent Issues in Consensus Standards	Panel	Fri 3:05-4:50PM

Because of the hybrid (in-person and virtual) format of the conference, sessions chairs required to be in the room will take more responsibilities, hosting Q&A for in-person audience and/or a remote audience. Let us take this opportunity to thank the session chairs and organizers for their efforts.

The PSA 2023 Topical Meeting will be held in Knoxville, TN from July 15-21, 2023. The organizers are working on the call for papers, which is currently planned to be posted online in August 2022. PSA 2023 will be collocated with Human Factors, Instrumentation and Controls (HFICD) Topical – Nuclear Plant Instrumentation, Control and Human-Machine Interface Technologies (NPIC&HMIT). More details about the conference will be available at <https://www.ans.org/meetings/view-364/>.

At the 2021 ANS Winter Meeting, the NISD Program Committee meeting will be held on Monday, November 29, 2021, starting at 6:00 pm. Please refer to the conference website. We would like to encourage our members to actively participate by attending our program committee meetings, submitting papers/summaries, and supporting the peer-review of the papers. We look forward to many more successful years with strong programs.

Askin Guler Yigitoglu
Oak Ridge National Laboratory
NISD PC Chair

Vice Chair: Aaron Epiney
Secretary: Mihai A. Diaconeasa

Treasurer Report

By Mihai A. Diaconeasa and Robert Youngblood



As reported in the division operating account financial statements through September 30, 2021, NISD has a fund balance of \$25,970. Overall, NISD's total dues at the end of the year are expected to be close to the amount budgeted. The revenues from the recent International Topical Meeting on Probabilistic Safety Assessment and Analysis (PSA 2021) November 7–12, 2021 are not yet reflected in the financial statement.

On this note, it is important to highlight that ANS is undergoing major changes in conference financing and profit-sharing with the divisions driven by the 2020 Change Plan adopted by the ANS Board. At present, we are all learning how to work optimally within the new structure.

NISD Joins the Advanced Reactors Group

By Robert Youngblood and Mihai A. Diaconeasa



As reported in a March 2021 article in ANS Newswire, earlier this year, ANS formed the “Advanced Reactors Working Group” (<https://www.ans.org/news/article-2689/ans-forms-advanced-reactors-working-group/>). Currently, Prasad Kadambi (Chair of ANS's Risk-Informed Performance-Based Principles and Policy Committee) has assumed the leadership role of the working group.

Initially, the group was “housed” within the Operations and Power Division, chaired by Piyush Sabharwal. “The ARG will be highly reliant on the active participation of ANS members from other divisions to make it a success,” Sabharwal said. “The initial objective behind such a group is to assist ANS with responding to queries, comments, and feedback related to advanced reactors, based on the experience and knowledge of a collective of ANS members.”

As an example, in March of 2021, ANS sent comments to the Nuclear Regulatory Commission (<https://www.nrc.gov/docs/ML2106/ML21063A107.pdf>) on the ongoing rulemaking for a risk-informed, performance-based, and technology-inclusive regulatory framework for advanced reactors (10 CFR Part 53). Among the ANS comments was the point that the approach being taken comports with ANS Position Statement 46 on “Risk-Informed and Performance-Based Regulations for Nuclear Power Plants” (<https://cdn.ans.org/policy/statements/docs/ps46.pdf>).

As noted above, Piyush Sabharwal got the ball rolling initially. But ANS's intent is to get more divisions involved, and NISD intends to support this group. To get us started, Bob Youngblood will be involved as a member from NISD, but it is likely that many others in NISD will be interested in participating and are more than welcome.



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Bylaws and Rules Update

By Eric Harvey

Over the next few weeks, we are updating the NIS Division Rules and Bylaws documents. The currently active Division documents can be found on our website at: <http://nisd.ans.org/documents/>. As you'll see these were last revised in 2009 and 2007, respectively. The intended updates include: they don't use the latest Society logo, or adhere to branding and style guides, and they are not in the latest side-by-side column formats. The scope of the changes is primarily format related, and we currently envision little to no content changes. If content changes do come about, they will be highlighted and brought to the Executive Committee for discussion and approval. We have the goal of trying to present draft markup versions of these two documents by this upcoming ANS 2021 Winter Meeting at the gathering of the NISD Executive Committee.



If there are any substantive changes or edits that you want to suggest, please reach out to Nick Brown (nbrown49@utk.edu) or myself, Eric Harvey (contact@elmtech.llc).

Awards Summary

By Zachary Jankovsky and Kevin O'Kula



NISD gives the Tommy Thompson Award for Reactor Safety for outstanding lifetime contributions to the field of nuclear reactor safety. Each year we consider several members who have achieved eminence in the field. Recent awardees include Karl Fleming (2021), Dennis Henneke (2020), and Mohammad Modarres (2019). Each of these individuals has made lasting contributions to probabilistic risk assessment in several areas of risk for several types of reactors.

The George Laurence Pioneering Award recognizes individuals who have made outstanding pioneering contributions to the field of nuclear reactor safety philosophy. This is not an annual award; rather, it is given when NISD deems that such recognition is appropriate. Stephen Wood was named the Laurence awardee in 2020 for contributions to SAPHIRE, in recognition of its importance in organizing risk knowledge and insights.

The David Okrent Award for Nuclear Safety recognizes recent contributions and accomplishments of significant value to nuclear safety from young members and students. The first Okrent awardees are Katrina Groth and Matthew Denman, both for 2021. Katrina and Matthew are doing work in safety and risk analysis that sets the bar for other

young members and suggests even greater things ahead.

The first PSA Graduate Research Lightning Round was held during the 17th International ANS Conference on Probabilistic Safety Assessment and Analysis 2021 (PSA 2021). From the seven graduate student participants, Austin Lewis (University of Maryland) was awarded the Best Late-Stage Student Presentation for his presentation, "Dynamic Bayesian Network Updating Approaches for Enabling Causal Dynamic Probabilistic Risk Assessments," and Andres Ruiz-Tagle (University of Maryland) was awarded the Best Early-Stage Student Presentation for his work, "Causal Reasoning with Bayesian Networks for Quantitative Risk Assessment of Engineering Systems." A consensus of participants and viewers recommended that the Lightning Round be included in future PSA topical meetings.

PSA 2021 Summary

By Kevin O'Kula

The 17th International ANS Conference on Probabilistic Safety Assessment and Analysis 2021 (PSA 2021) was successfully conducted in a virtual format, November 8-12, 2021. Realizing that pandemic impacts to travel would dramatically reduce attendance to the planned, early September Columbus, Ohio event, the Organizing Committee, NISD and ANS headquarters staff reset the meeting as an entirely virtual technical conference.



While the entire Organizing Committee is to be commended for reconfiguring PSA 2021 in a remarkably short time, especially critical roles were played by Technical Program Chair Professor Carol Smidts (Ohio State University), Honorary Chair Richard Denning (Battelle Energy Institute (Retired), Publications Chair Professor Vaibhav Sinha (Ohio State University), and Finance Oversight and Local Section Representative John Greenwood (First Energy Corporation). Also thanked for their help in logistics and many other tasks for PSA 2021 were Yunfei Zhao, Timothy DeFranco, and Gulcin Sarici Turkmen, all of Ohio State University.

PSA 2021 Highlights included four plenary sessions covering Licensing Modernization (Fig. 1), Risk Assessment



Figure 1. Prof. Carol Smidts, Travis Chapman, Fernando Ferrante, and Karl Fleming during the Monday, November 8th Opening Plenary Session on Licensing Modernization.

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Methods in Non-Nuclear Fields, Safety/Reliability for Automotive and Electrified Aviation, and the Non-LWR Risk Standard. A fifth plenary on PRA awards featured a tribute by Ali Mosleh to the life, career and contributions of John Garrick. Also presented in this session was an PSA Achievement Award to Tunc Aldemir for Development and Promotion of Methods of Dynamic PRA, and the session was concluded with the recognition of Matt Denman with the David Okrent Award in Nuclear Safety. (Also recognized at the June ANS Annual Meeting with the Okrent Award was Professor Katrina Groth).

Thirty-nine paper and panel sessions were conducted via the Zoom platform on topics of Non-LWR Licensing, Level 1-3 PRA, Human Reliability Analysis, Advanced Reactors, Dynamic PRA, Risk Informed Management, Aging, Data Analysis/Artificial Intelligence, External Event PRA, Risk Management/Economics, Non-Nuclear Reactor Risk, Digital I&C and Software Reliability, Physical Security, Integrated and Hybrid Energy Systems, Uncertainty Quantification, Multi-Unit PRA, External Hazard Probabilistic Risk Assessment for Nuclear Power Plants, Cyber Risk, Extended Events, and Advances in Level II/III Methods.

Preliminary registration data from ANS headquarters for PSA 2021 is shown in Table 1.

Registration Category	Number Registered
Full meeting, Members	65
Full meeting, Non-members	90
One-day, Members	9
One-day, Non-members	18
Emeritus	3
Students	31
Workshop-Only	14
Total	230

Advanced Reactor Safety Topical Meeting

By Matthew R. Denman

NISD has some exciting news in support of ANS's grand challenge to support the licensing pathway for advanced reactors: we are restarting a topical series on advanced reactor safety! It is an exciting time for advanced reactors: NuScale has received approval for its standardized design, Oklo Inc. has submitted a combined operating license for its Aurora design, Kairos Power has submitted its construction permit application for the Hermes reactor outside of Oak Ridge, TerraPower/GE and X-Energy have received Advanced Reactor Demonstration awards for their Sodium and Xe-100 designs, respectively; and those are just the highlights of a vibrant and fast-moving advanced reactor community. As these designs progress through the licensing process, new and innovative approaches to safety will be demonstrated and deployed.



The Advanced Reactor Safety Topical meeting, to be embedded in the 2024 ANS Annual meeting to be held in Las Vegas, will provide a much needed forum for the advanced reactor community to come together and share 1) the results of their computational and experimental research efforts, 2) experience and divergences in the approaches to the licensing framework, and 3) advances in safety approaches for new fuel cycle facilities to support these new designs. Please contact NISD leadership if you are interested in participating in the early planning process.

Scheduled NISD Meetings

By Yunfei Zhao

NISD will hold PC and EC meetings during the 2021 ANS Winter meeting.

PC meeting:
Nuclear Installations Safety Division - Program (VIRTUAL): Monday, November 29, 2021|6:00–8:00PM EST
Zoom link: <https://us02web.zoom.us/j/84650487678?pwd=TW4vWUMvc0xscK5QZTNadXhPcStOZz09>



EC meeting:
Nuclear Installations Safety Division - Executive (VIRTUAL): Wednesday, December 1, 2021|6:00–8:00PM EST
Zoom link: <https://us02web.zoom.us/j/81436984909?pwd=aS93NGZtRjRjQvZkVvYVUzNDZlVhWUT09>

NISD Website

The NISD Website may be accessed at: <http://nisd.ans.org>. Suggestions for further enhancements are solicited and may be e-mailed to the NISD Webmaster at: contact@elmtech.llc.