UNITED STATES
NUCLEAR REGULATORY COMMISSION
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August 4, 2022

MEMORANDUM TO: Steven Lynch, Chief
Advanced Reactor Policy Branch
Division of Advanced Reactors and Non-Power
Production and Utilization Facilities
Office of Nuclear Reactor Regulation

FROM: Shelley Pitter, Project Manager
Advanced Reactor Policy Branch
Division of Advanced Reactors and Non-Power
Production and Utilization Facilities
Office of Nuclear Reactor Regulation

Signed by Pitter, Shelley on 08/04/22

SUBJECT: SUMMARY OF MARCH 16, 2022, PERIODIC ADVANCED REACTOR STAKEHOLDER PUBLIC MEETING

On March 16, 2022, the U.S. Nuclear Regulatory Commission (NRC) staff held an information meeting with a question-and-answer session with stakeholders to discuss advanced reactor topics including:

- Update on NRC TRi-structural ISOtropic (TRISO) Project Involving a Canadian Nuclear Safety Commission (CNSC)-NRC Joint Interim Report
- Trial Use Reg Guide (TRG) 1.247, “Acceptability of Probabilistic Risk Assessment (PRA) results for non-Light Water Reactor (LWR) Risk Informed Activities”
- Advanced Reactor Content of Application Project (ARCAP) and Technology Inclusive Content of Application Project (TICAP) Guidance Development Status
- Part 53 – Traditional, Risk-Informed Option
- Part 53 – Perspective on PRA, Process, Concerns, and Going Forward
- Development of Guidance for Evaluation Changes to Facilities Utilizing Nuclear Energy Institute (NEI) 18-04

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301-415- 3454

The meeting notice is available in the NRC's Agencywide Documents Access and Management System (ADAMS) at Accession No. ML22074A311, and the presentation slides are available at ADAMS Accession No. ML22074A190. The Enclosure to this summary lists the attendees for the meeting as captured by Microsoft Teams.

For each topic listed above, the NRC staff provided information and allotted time for stakeholder comments and questions. Stakeholders provided feedback on several of the topics and asked clarifying questions. NRC staff appreciated the feedback and provided response to the questions.

The NRC staff provided updates of the Advanced Reactor Integrated Schedule of Activities on the NRC's public website at https://www.nrc.gov/reactors/new-reactors/advanced/integrated-review-schedule.html. The NRC staff noted that the schedule reflects activities that have recently been completed, updated, or added since the January 19, 2022 advanced reactor stakeholder meeting.

The NRC staff and the Canadian Nuclear Safety Commission (CNSC) presented an overview of the first interim summary report on a generic TRISO fuel assessment that was developed by the CNSC and NRC. The report was released to the public on February 17, 2022 (ML22030A000) and is the first of four interim reports to be released in 2022. This project is exercising the fuel qualification framework described in the Nuclear Energy Agency report, "Regulatory Perspectives on Nuclear Fuel Qualification for Advanced Reactors," (ML22018A099) and the recently released NUREG-2246, "Fuel Qualification for Advanced Reactors," (ML22063A131). There was interest in learning about the manufacturing parameters and how they might affect TRISO particle performance and how this assessment relates to NRC's previous assessment in last year's EPRI TP. NRC staff clarified that some manufacturing parameters are address by EPRI's TP, however, some parameters (particularly those associated with the fuel kernel) were addressed by conditions in the staff's safety evaluation report. There was a comment about the term "melting" that was used in relation to TRISO particle performance under reactivity insertion accident (RIA) conditions and not being familiar with that term as typically degradation or barrier failures is used. NRC staff agreed that "melting" is not identified as a degradation mechanism or failure mode, but that some transient testing showed that fuel failure correlates with predicted melt temperatures. The tests discussed are associated with accident scenarios that may not be applicable to the reactor designs that use Uranium Oxycarbide (UCO) TRISO fuel. There was a question about when CNSC's separate regulatory document (REGDOC 2.4.5) would be available, and CNSC shared that public consultation will begin after April 1, 2022 (which is the beginning of Canada's new FY). There was a question on the RIA testing regarding all the tests being done on unirradiated fuel and the expectation would be that the failure thresholds would be lower. NRC staff clarified that the (1) the RIA tests may have limited applicability to burned UCO TRISO fuel, and that (2) reactivity insertions, sufficient to make the reactor prompt critical, may not need to be considered for reactor designs that use USO-TRISO. Therefore, transient testing to quality UCO TRISO fuel for such accident scenarios may not be warranted.

The NRC staff provided an update on the staff's development of Trial RG 1.247, which is expected to be issued by the end of March 2022. In particular, this presentation discussed the comments that were received on the preliminary version of the RG (ML21246A216), how they were addressed, and changes made to the RG. It also explained the opportunities for comment during the trial use period and how comments and lessons learned during the trial use period will be factored into the final version of the RG. In response to this presentation, there was positive feedback from several audience members on the process of this RG and interest in recreating the approach in future PRA standards.

The NRC staff presented a high-level overview of the status of ARCAP and TICAP guidance development. The presentation included a near term target milestone of late April early May for requesting public comment on the nine ARCAP interim staff guidance documents and the TICAP draft regulatory guide.

The NRC staff provided an overview of the NRC staff's development of a traditional, risk-informed option within the broader Part 53 regulatory framework. The traditional, risk-informed option is a licensing framework where risk analyses are used in a supporting or complementary role, similar to the design and licensing approaches currently used in Part 50 and Part 52. This option builds on the preliminary rule language issued in October 2021 (ML21270A005) and in February 2022 (ML22024A066) that proposed technology-inclusive alternatives to certain technical requirements for light-water reactors in Part 50 and will now be included as an alternative set of new requirements in Part 53. This presentation also discussed how a risk insights evaluation, formerly termed the Technology-Inclusive, Risk-Informed Maximum Accident (TIRIMA) licensing approach as discussed during a December 2021 Advisory Committee on Reactor Safeguards subcommittee meeting (ML21348A102), integrates with the traditional, risk-informed licensing framework in Part 53.

In response to this presentation, there was positive feedback on the staff's proposed flexible approaches for incorporating risk information into the Part 53 design and licensing processes. There were many clarification questions which the staff answered successfully. In response to a question about safety functions and their requirements being the same between the frameworks, the staff clarified that the safety and design requirements proposed for the traditional framework will be developed in a manner that reflects how these requirements are addressed within the current (traditional) regulatory frameworks. A comment was made suggesting that the Quality Assurance (QA) requirements in the traditional framework should be consistent with current requirements to minimize the potential that future applicants and licensees would potentially need to address a new set of QA program requirements. In response to a comment requesting a clarification on performance-based requirements in the traditional framework, the staff responded that they are evaluating whether performance-based requirements and alternatives in existing regulatory frameworks could convey to the traditional framework in Part 53. Additionally, the staff also responded that they are considering the use of performance-based requirements and the intent is to adopt similar approaches where unique language is being drafted for the traditional framework. In response to why the NRC needs to retain Parts 50 and 52 for future reactors, the staff confirmed that the regulatory approaches within the current frameworks are still considered viable options for use by near-term applicants.

The U.S. Nuclear Industry Council presentation provided thoughts on use of Probabilistic Risk Assessment in Part 53 and disconnect of Part 53 language with NEIMA intent. Observations on the current Part 53 stakeholder comment review process were provided, as well as suggested path forward and next steps to improve process. Ongoing and recent concerns regarding preliminary language were presented, as well as suggested path forward and next steps to evolve Part 53 language. This presentation augments input provided to NRC (including ML21309A578) and the Advisory Committee on Reactor Safeguards (https://www.nrc.gov/docs/ML2202/ML22024A447.pdf). In response to the presentation, NRC management thanked the speaker for his perspective and emphasized we are still in the development phase and not in a proposed rule stage. All comments are being heard, feedback is valued, and there will be a formal process to respond to comments. The staff has been transparent through heavy engagement with ACRS and directly with stakeholders. There was a comment from the audience on changing the safety goals and the expectation for an explanation.

The Southern Company provided an introduction and overview of a Southern-led project to develop guidance for evaluating changes to 10 CFR Part 50 or Part 52 licensed advanced non-light water reactor (ANLWR) facilities that utilize the Licensing Modernization Project (LMP) methodology (NEI 18-04). The objectives of the guidance are to: provide regulatory confidence that the basis for the LMP-based safety case will be effectively monitored and any changes will be efficiently managed; minimize the unnecessary burden to the regulator and owners/operators for determining if changes require a license amendment; and establish a clear understanding of how the 10 CFR 50.59 criteria for making facility changes without prior NRC approval may be met. This project builds upon the work accomplished by LMP and the TICAP which resulted in NEI Technical Reports NEI 18-04 and NEI 21-07, respectively. In response to a question regarding tabletop exercises, the speaker confirmed there is a plan to share the key lessons learned from the tabletop exercises and show how those are being incorporated into revisions to the guidance documents.

A general comment was shared at the end of the stakeholder meeting from a concerned and anti-nuclear activist who believes the nuclear power plants can be attacked and are not safe thus making them very dangerous in view of the current political situation.

Members of the public were in attendance and the NRC did not receive public meeting feedback forms. To see information regarding previously held periodic advanced reactor stakeholder public meetings, the NRC staff suggest that stakeholders visit the NRC's public website at https://www.nrc.gov/reactors/new-reactors/advanced/details.html#stakeholder. The next advanced reactor stakeholder meeting is currently scheduled for May 11, 2022.

Please direct any inquiries to me at 301-415-3454 or via e-mail at Shelley.Pitter@nrc.gov.

Enclosure:
Attendance List

SUBJECT: SUMMARY OF MARCH 16, 2022, PERIODIC ADVANCED REACTOR STAKEHOLDER PUBLIC MEETING DATED: AUGUST 4, 2022

DISTRIBUTION:
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RidsNrrDanu Resource
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ADAMS Accession Number: ML22153A497 **NRR-106**

OFFICE	NRR/DANU/UARP/PM	NRR/DANU/UARP/BC	NRR/DANU/UARP/PM
NAME	SPitter	SLynch	SPitter
DATE	7/6/2022	8/2/2022	8/4/2022

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March 16, 2022, Periodic Advanced Reactor Stakeholder PublicMeeting Attendance List

Name	Organization
Adams, Ben	NRC
Ahn, Hosung	NRC
Armstrong, Kenneth	NRC
Ashcraft, Joseph	NRC
Audrain, Meg	NRC
Banks, Courtney	NRC
Barrett, Antonio	NRC
Basavaraju, Chakrapani	NRC
Beall, Bob	NRC
Bowman, Eric	NRC
Boyce, Tom	NRC
Bukharin, Oleg	NRC
Bussey, Scott	NRC
Campbell, Shawn	NRC
Chowdhury, Prosanta	NRC
Compton, Keith	NRC
Costa, Arlon	NRC
Coyne, Kevin	NRC
Cubbage, Amy	NRC
de Messieres, Candace	NRC
Drzewiecki, Timothy	NRC
Garcia, Ismael	NRC
Gascot Lozada, Ramon	NRC
Giacinto, Joseph	NRC
Gilbertson, Anders	NRC
Glowacki, Brian	NRC
Gormsen, Elizabeth	NRC
Grady, Anne-Marie	NRC
Hansing, Nicholas	NRC
Harris, Tim	NRC
Hayes, Michelle	NRC
Helvenston, Edward	NRC
Hoellman, Jordan	NRC
Horowitz, Steven	NRC
Hsu, Kaihwa	NRC
Hughes Green, Niav	NRC
Humberstone, Matthew	NRC
Jauntirans, Juris	NRC
Jessup, William	NRC
Jones, Steve	NRC
Jung, Ian	NRC
Keefe, Maxine	NRC

Enclosure

Name	Organization
Khan, Maryam	NRC
Krsek, Robert	NRC
Lav, Samantha Crane	NRC
Le, Tuan	NRC
Lee, Pete	NRC
Li, Chang	NRC
Li, Yueh-Li	NRC
Lynch, Steven	NRC
Manoly, Kamal	NRC
Marksberry, Don	NRC
Mazza, Jan	NRC
Miller, Chris	NRC
Moulton, Charles	NRC
Munson, Clifford	NRC
Mussatti, Daniel	NRC
Neuhausen, Alissa	NRC
Nguyen, John	NRC
Nolan, Ryan	NRC
Oberson, Greg	NRC
O'Bryan, Phil	NRC
O'Donnell, Edward	NRC
Oesterle, Eric	NRC
Orenak, Michael	NRC
Palmrose, Donald	NRC
Phan, Hanh	NRC
Philpott, Stephen	NRC
Piotter, Jason	NRC
Pires, Jose	NRC
Pohida, Marie	NRC
Reckley, William	NRC
Reed, Beth	NRC
Reisi Fard, Mehdi	NRC
Rivera, Richard	NRC
Roche-Rivera, Robert	NRC
Rose, Michael	NRC
Rubenstone, James	NRC
Sampson, Michele	NRC
Schrader, Eric	NRC
Sebrosky, Joseph	NRC
Segala, John	NRC
Seymour, Jesse	NRC
Shams, Mohamed	NRC
Siwy, Alexandra	NRC
Smith, Brian	NRC

Name	Organization
Smith, Maxwell	NRC
Sosa, Belkys	NRC
St Hilaire, Zee	NRC
Steckel, Jim	NRC
Stutzke, Martin	NRC
Tappert, John	NRC
Taylor, Robert	NRC
Teal, Charles	NRC
Tetter, Keith	NRC
Tharakan, Binesh	NRC
Travis, Boyce	NRC
Tseng, Ian	NRC
Tuttle, Glenn	NRC
Valliere, Nanette	NRC
Vazquez, Justin	NRC
Vettori, Robert	NRC
Vitto, Steven	NRC
Vokoun, Patricia	NRC
Wagner, Katie	NRC
Walker, Shakur	NRC
Wang, Weijun	NRC
Weisman, Robert	NRC
Whitman, Jennifer	NRC
Widmayer, Derek	NRC
Williams, Donna	NRC
Weerakkody, Sunil	NRC
Wong, Yuken	NRC
Wu, De	NRC
Xu, Jim	NRC
Christensen, Jason	Idaho National Laboratory
Chwasz, Christopher	Idaho National Laboratory
Burdick, Stephen	Idaho National Laboratory
Demkowicz, Paul	Idaho National Laboratory
Ferrara, Scott	Idaho National Laboratory
Hicks, Thomas	Idaho National Laboratory
King, Tom	Idaho National Laboratory
Kinsey, Jim	Idaho National Laboratory
Weir, Stephanie	Idaho National Laboratory
Arndt, Steven	Oak Ridge National Laboratory
Belles, Randy	Oak Ridge National Laboratory
Chen, Ben	Argonne National Laboratory
Grabaskas, Dave	Argonne National Laboratory
Li, Meimei	Argonne National Laboratory
Luxat, David Lyle	Sandia National Laboratories

Name	Organization
A., Viola (Elysium)	Stakeholder
Afzali, Amir	Stakeholder
Aguero, Stephanie	Stakeholder
Akstulewicz, Frank	Stakeholder
Anderson, Victoria	Stakeholder
Alvestav, Anna (Gast)	Stakeholder
Apostol, Minodora (Invitat)	Stakeholder
Armistead, Robert	Stakeholder
Austgen, Kati	Stakeholder
Basken, Jay	Stakeholder
Becker, Gary	Stakeholder
Behnke, Donald H.	Stakeholder
Bergman, Jana	Stakeholder
Bleizeffer, Dustin	Stakeholder
Boudart, Jan	Stakeholder
Braudt, Thomas	Stakeholder
Brooks, Caleb	Stakeholder
Brown, Tony	Stakeholder
Boyer, Chad	Stakeholder
Budnitz, Robert	Stakeholder
Burg, Rob	Stakeholder
Byman, Michelle	Stakeholder
Chapman, Travis (X-energy)	Stakeholder
Conlon, Kelly	Stakeholder
Courtenay, Christopher	Stakeholder
Davies, Mark	Stakeholder
Draffin, Cyril (USNIC)	Stakeholder
Dreke, Ryan Christopher	Stakeholder
Drouhard, Linus	Stakeholder
Ellenson, Margaret	Stakeholder
Flanagan, George	Stakeholder
Ford, Leigh	Stakeholder
Ferrante, Fernando	Stakeholder
Franovich, Rani	Stakeholder
Geiger, Charlotte (X-energy)	Stakeholder
Gifford, Ian	Stakeholder
Grant, Eddie	Stakeholder
Graven, Ethan	Stakeholder
Grzeck, Lee	Stakeholder
Guo, Yujun	Stakeholder
Haggerty, Neil	Stakeholder
Hammon, Beth (EPW)	Stakeholder
Harris, Kurt	Stakeholder
Hartle, Brandon	Stakeholder

Name	Organization
Henneke, Dennis (GE Power Portfolio)	Stakeholder
Holcomb, David	Stakeholder
Holtzman, Benjamin	Stakeholder
Jackson, Nathan	Stakeholder
Jelalian, Alan	Stakeholder
Jennetta, Andrea	Stakeholder
Kameswaran, Ram	Stakeholder
Kissinger, Peter	Stakeholder
Kraft, Steven	Stakeholder
LeBlond, Peter	Stakeholder
Loza, Paul (X-energy)	Stakeholder
Luchsinger, Deborah A. (Services – 6)	Stakeholder
Lusse, Lemmer	Stakeholder
Lyman, Edwin	Stakeholder
Maioli, Andrea	Stakeholder
Marzano, Matthew (EPW)	Stakeholder
McGlinn, William	Stakeholder
Merrifield, Jeffrey S.	Stakeholder
Meyer, Mitchell	Stakeholder
Mohaghegh, Zahra	Stakeholder
Moneghan, Daniel	Stakeholder
Morin, Tammy	Stakeholder
Muzikova, Ewa	Stakeholder
Nesbit, Steven	Stakeholder
Nichol, Marcus	Stakeholder
Nolan, Chris	Stakeholder
Nordby, Ingrid (X-energy)	Stakeholder
O, John	Stakeholder
Paese, Richard M.	Stakeholder
Peterson, Lisa	Stakeholder
Pfabe, John	Stakeholder
Pigg, Kevin	Stakeholder
Pope, Steven	Stakeholder
Pugh, Nyla	Stakeholder
Razvi, Junaid	Stakeholder
Redondo, Morais, Jaime	Stakeholder
Riti, Tim	Stakeholder
Robinson, Chris	Stakeholder
Sakurahara, Tatsuya	Stakeholder
Seabaugh, Ryan (MDNR)	Stakeholder
Shahrokhi, Farshid	Stakeholder
Sicilia, Tom	Stakeholder
Sigmon, Chet Austin	Stakeholder
Simmons, Delaney	Stakeholder

Name	Organization
Sommer, Christopher	Stakeholder
Spalding, Amanda	Stakeholder
Stadtlander, Richard	Stakeholder
Staiger, Maggie	Stakeholder
Stein, Adam	Stakeholder
Terrani, Kurt	Stakeholder
Tomkins, Jim	Stakeholder
Train, David	Stakeholder
Traverso, Ava	Stakeholder
Tshiltz, Mike	Stakeholder
Vamvakias, Brian	Stakeholder
Van-Derpoel, Lynn	Stakeholder
Vaughn, Stephen	Stakeholder
Wallace, Ed	Stakeholder
Wang, Raymond C. (X-energy)	Stakeholder
Wheat, Justin	Stakeholder
White, Patrick (NIA)	Stakeholder
Winslow, William M.	Stakeholder
Wolf, Peter D.	Stakeholder
Wyche, Altheia	Stakeholder
Yang, Bei	Stakeholder
Zach, Andrew (EPW)	Stakeholder

* Attendance list based on Microsoft Teams Participant list. List does not include individuals that connected via phone