



# UNITED STATES NUCLEAR REGULATORY COMMISSION

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## **U.S. Nuclear Regulatory Commission 35th Annual Regulatory Information Conference March 14, 2023 Chair Christopher T. Hanson (as prepared and not presented)**

Thank you, Andrea, for that introduction, and welcome to you all. This year's RIC opens on Albert Einstein's birthday. What better way to celebrate than by kicking off a conversation centering around technology and the future. It's also Pi Day, 3.14. So, I also plan to celebrate later with a slice of pie. I come from a town with an annual blueberry festival; it's blueberry or nothing for me.

Thank you for attending this year's conference, whether you're joining us virtually from your homes and offices across the United States and around the world or whether you're joining us here in person.

This year's event marks the first time we've gathered for the RIC in person at the same time the entire program is available live online. We are making history today. Thank you to Andrea, Ray, their teams, our production crew, and all the many others who made this first-of-a-kind RIC possible.

I would also like to thank my colleagues on the Commission. We welcomed two Commissioners since our last RIC, bringing us to our full complement of five. We might not always agree, but we each bring something different to the table. And we're stronger as a collegial body for those differences.

I'd also like to recognize and welcome some important NRC alumni—former Chairmen Dick Meserve and Steve Burns and Commissioners Jeff Merrifield, George Apostolakis, Bill Magwood, and Bill Ostendorff. I and the other current Commissioners have benefited greatly from your legacy and your ongoing engagement.

Finally, I would like to extend a special thank you to my staff—both my permanent staff and those who joined me on rotation. Thank you to Kathleen Blake, Patty Jimenez, Molly Marsh, Cinthya Román, Tony Nakanishi, Olivia Mikula, Mandy Mauer, Lisa Dimmick, and Jessie Quintero. Together we've accomplished a lot in the last year.

## Ukraine

Before I turn to the main topic of my speech, I want to express my continued, deepest concern for the people of Ukraine. It is unbelievable and heartbreaking to me that I said the same thing a full year ago.

On March 4th last year, shortly after its further invasion of Ukraine, Russia forcibly seized the Zaporizhzhya Nuclear Power Plant, the largest in Europe. We watched the footage of combat around the site's operating reactors during the initial assault, an unprecedented event in the history of warfare, and fighting continued near the plant for months afterward, and increased again recently.

Credible reports implicate Russian personnel in systematically mistreating the Ukrainian staff, including unlawful detention and even physical abuse. Moscow also created a company explicitly to usurp Ukraine's control over the Zaporizhzhya plant and then coerced Ukrainian employees to sign contracts, thus forcing an impossible choice between defying their Russian minders or staying put and maintaining the safety of the reactors.

Despite the heroic professionalism of the Zaporizhzhya plant's Ukrainian employees, they cannot operate under such duress indefinitely. And Ukrainian regulators have consistently been denied access to the site for critical safety inspections.

Russia's actions have violated all the International Atomic Energy Agency's "Seven Indispensable Pillars of Nuclear Safety." Russia's flagrant disregard for nuclear safety further demolishes its claim to be a responsible nuclear power and supplier of civil nuclear technologies to the global energy sector.

I am resolute in the NRC's long-standing support of Ukraine's nuclear workers and our regulatory counterpart as they work to protect and sustain the safe operation of their nuclear facilities. I'm thankful that Congress provided funds for the NRC to support our fellow regulators with equipment and other forms of assistance, which we have done and will continue to do.

I am especially pleased to have in attendance my colleague and friend from the State Nuclear Regulatory Inspectorate of Ukraine, Chairman Oleg Korikov, and his colleagues. Each of them has been touched by the horrors of this war, and I applaud their bravery in sustaining the civil institutions that will be critical to rebuilding Ukraine when it is victorious.

### I. Introduction

The theme for this year's RIC is "Navigating the Nuclear Future." I'd like to focus today on what I've observed during my time as Chair, and what I envision for the future of the agency.

I've been fortunate over these past few years to meet and get to know our staff in the Regions, at Headquarters, and out in the field. These meetings have not only emphasized the hard work and dedication of our agency staff, they've also highlighted for me several concrete examples of the ways in which we are changing how we work to navigate the nuclear future.

In my remarks today I'll first share examples large and small—the ways we're embracing changes to our agency culture, the major projects that are already benefitting from those changes, and how we're innovating the way we approach our work at the office, team, and individual staff level. Throughout, I'll touch on just some of the many accomplishments over the past year that I think are worth celebrating.

I know I've talked about "transformation" and "innovation" a lot in the past, and some of you may feel that the terms have been overused. But hear me out: we continue to operate in a very dynamic environment.

First, let's recognize the significant achievement of Vogtle Unit 3 reaching criticality last week, while Southern Nuclear continues startup testing. Not only is this important for Southern, it is also important for us. I want to recognize the tremendous work and dedication of the NRC staff to get to this point, especially the resident and regional inspectors in Region II's Division of Construction Oversight, the experts in headquarters' Vogtle Project Office, and all the partners of the Vogtle Readiness Group who have helped put safety first.

Second, let's consider just some of the other policy, economic, and technological developments out there:

- Passage of the Inflation Reduction Act that is spurring new investments in nuclear power;
- The bipartisan infrastructure law, which incentivizes continued operation of existing plants;
- Advances in fusion science; and
- Invention of new medical technologies; just to scratch the surface.

It is therefore imperative that we truly rethink what needs to be done, why, and which parts of our agency are best suited to the task. And from what I've seen based on my interactions with agency staff, we've made "transformation" more than just a buzzword. As I've said before, the deep thinking we're doing about what changes we're making and why will allow us to meet the demands coming our way.

There are many great Albert Einstein quotes suitable to this topic, but perhaps one that particularly resonates here is this: "Life is like riding a bicycle. To keep your balance, you must keep moving."

What I hope you take away from this speech are two things: yes, we're preparing for the nuclear future. But more than planning, we're doing. We are balancing and moving forward.

We are developing the tools necessary to adapt to the range of possible futures that might unfold. Amidst that preparation, we are continuing to accomplish our core mission—protecting people and the environment, as we've always done.

## **II. The NRC's Large-Scale Initiatives – Embracing Changes to Our Agency Culture**

The NRC already has a culture rooted in teamwork and collegiality, which will continue to serve us well as we evolve. But we're seeing cultural change happening in real time. We're embracing risk-informed thinking. Across our mission and corporate support offices, we're implementing new processes to accomplish our work effectively and efficiently.

We've recently seen this play out in several ways, but today I'll specifically highlight what I've seen in four of the agency's larger-scale initiatives: Accident Tolerant Fuel, Advanced Reactors, Materials Security, and Human Capital.

### **Accident Tolerant Fuel**

In a Commission meeting this January, we heard from the NRC staff and an external panel representing a range of perspectives on accident tolerant fuel technologies, which hold the promise of increased safety and improved economics for existing reactors. A common thread ran through the discussion: the importance of early, frequent communication.

Not only are NRC staff working across offices—they're also working with our federal and international counterparts and sharing information with applicants, licensees, and members of the public. This collaboration has already been instrumental in getting an accident tolerant fuel testing plan in place at Idaho and Oak Ridge National Laboratories.

While we want to make sure we do not get out in front of the research, we are taking a flexible, risk-informed approach to prepare and enhance staff knowledge to ensure safety across the entire fuel cycle.

For example, we recently:

- issued three license amendments to enrichment and fuel fabrication facilities for possession and use of greater than five percent Uranium-235;
- issued four certificates of compliance and one letter of authorization allowing the transportation of accident tolerant fuel and fuels with increased enrichment up to eight percent; and
- approved two topical reports that may be used by licensees in support of license amendment requests to incorporate certain accident tolerant fuel technologies.

I applaud the staff for their accomplishments and risk-informed efforts to ensure continued readiness for future accident tolerant fuel developments. They're doing the job in front of them at the same time they're preparing for the next applications.

### **Advanced Reactors**

In advanced-reactor space, the NRC is likewise getting today's work done while preparing for tomorrow's applications. Indeed, we are interacting with 15 companies. We have already

dispositioned 51 topical reports and white papers, and currently have 33 under review. Vendors, utilities, and project sponsors tell us to expect more than 20 applications in the 2025-27 timeframe.

For the applications currently pending before us, the staff has set ambitious, yet achievable review schedules. We're focusing on the more risk- and safety-significant aspects of advanced reactor designs, without compromising our safety, security, and environmental mission.

With high-quality submittals from applicants, the staff's pre-application review and approval of several topical reports, and early engagement with the Advisory Committee on Reactor Safeguards, the staff has already met several significant milestones. For example, the NuScale design certification rule went into effect last month.

The staff reports that it is ahead of its 21-month review schedule for the Kairos Hermes test reactor. And the staff is already making progress on its 18-month schedule for Abilene Christian University's research reactor.

And we're not losing sight of the fuel-cycle applications that are directly tied to advanced-reactor deployment: last November the staff accepted TRISO-X's application to manufacture high-assay low-enriched uranium fuel, and the staff's review is well underway.

The staff has also achieved several advanced-reactor rulemaking milestones. Since the last RIC, the staff submitted a proposed-rule package to align the licensing requirements in Parts 50 and 52 for any new or advanced reactor technology, based on lessons learned from recent reviews.

With respect to our new framework for advanced reactors under Part 53, the staff provided the draft proposed rule to the Commission two weeks ago.

The Part 53 rulemaking effort reflected a true dialogue with our stakeholders. Since September 2020, the staff held some two-dozen public meetings to develop a risk-informed, performance-based licensing framework.

Incorporating the varying, diverse, and sometimes conflicting views shared during the iterative process, the staff developed two frameworks with general provisions governing both, to cover a range of possible advanced reactor technologies.

Let me be clear: we are in the middle of the rulemaking process—not at the end. The Commission will review the proposed language and weigh in on key policy issues—no doubt there will be things we agree on and others we don't, and we'll provide direction back to the staff as expeditiously as possible. That's our job.

The staff will revise the proposed rule and get it out to the public for a formal comment process. So, there's more to come. We're not nearly done. But I applaud the staff for adopting a uniquely iterative approach to its public outreach and for achieving this significant project milestone.

The staff has also prepared for Commission consideration rulemaking packages addressing emergency-planning and physical security for advanced reactors. I commend the staff for continuing to provide the Commission with a range of options to address the big issues and novel

questions facing the agency with our future licensing and oversight of advanced reactor technologies. Again, the staff is doing and preparing at the same time.

The NRC is accomplishing all these domestic obligations at the same time it is collaborating with its international counterparts on new design reviews. Our efforts overseas are geared toward more effective and efficient technical reviews as several American SMR and advanced reactor companies endeavor to deploy their reactors in more than one country simultaneously.

## **Materials Security**

We're also taking an in-depth look at our security framework for special nuclear and radioactive materials.

For special nuclear materials, we're evaluating potential changes to our regulations to ensure regulatory stability, clarity, and reliability. Fuel-cycle facilities and materials have changed in the years since we last amended our physical-protection rules. With that in mind, the staff has proposed a risk-informed approach that would, if approved by the Commission, combine performance-based and prescriptive requirements by tying physical-security requirements to a material's attractiveness, thereby promoting a consistent level of protection regardless of location.

For radioactive source security and accountability, we have two efforts underway. The first is focused on ensuring the validity of licenses for category 3 quantities of material through commonsense verification measures. The second revises the financial assurance requirements for higher activity category 1 and 2 sources to ensure proper end-of-life handling and disposal. If approved by the Commission, both efforts would constitute relatively small changes that could significantly improve the nation's security framework.

## **Workforce of the Future**

None of what I've just described would be possible without our dedicated employees. It's imperative that we ensure we're building and sustaining our workforce. To that end, we've ramped up our hiring efforts—we are looking at hiring roughly 200 people per year just to maintain current staffing levels.

And in 2022, we did just that: we welcomed 205 new employees to the agency, with an additional 66 hired and awaiting start dates, and we've met approximately 20% of our hiring goal for fiscal year 2023.

Our overarching goal is to have the staff on hand, with a range of skill sets, to make sure the agency is ready for the future. To achieve that goal, the staff has commendably been thinking critically about how, who, and where we are recruiting, to ensure we have an adaptable, diverse workforce.

Here's a good example: staff's efforts to build a "health-physics pipeline," by working in collaboration across our regional offices and at headquarters to address a critical staffing need shared by the NRC and Agreement States. We established the Health Physics Specialties/Graduate Fellowship Program that provides current staff members the option to pursue a degree in Medical

Health Physics or other specialties to make certain we have sufficient staff to carry out mission roles in specialty functions when needed.

And last July, we welcomed our second “NRAN Cohort.” “NRAN” stands for “Nuclear Regulator Apprenticeship Network.” It’s a developmental program for entry-level employees that offers mentoring opportunities and a series of four- to six-month apprenticeships with NRC offices and the Regions, to grow the next generation of regulators and inculcate a shared appreciation for the NRC’s organizational culture. Like the first NRAN Class in 2020, they are an energized and ambitious group. I’m incredibly optimistic for the future of this agency.

Finally, I’m pleased to share that there’s an upcoming direct hire event right here at the Marriott on Thursday, May 11. Be sure to check out the #HIRENRC! posters and stop by our recruitment booth to learn more about that event and the various career opportunities at the NRC.

### **III. Day-to-Day Transformation**

So far today I’ve spoken about some of the major projects currently before us and how they demonstrate that we are continually evolving the way we do our work. Along with the large-scale, multi-office projects I’ve just shared, there are changes taking place daily at the NRC on an office, team, and individual staff level that are no less significant because they enable us to do our jobs better.

To quote Einstein again, “The measure of intelligence is the ability to change.” I think that’s true for organizational intelligence too.

In the past, I’ve talked about our “Be riskSMART” program—a framework the agency developed to introduce the concept of risk in decision-making. The agency-wide completion rate for the “Be riskSMART” training is now 92%. And we’re seeing more and more staff taking this framework to heart, incorporating risk-informed thinking in their day-to-day work.

For example, staff are using “Be riskSMART” to update inspection guidance for fuel cycle facilities, materials, and uranium recovery decommissioning projects. Anecdotally, I’ve heard “Be riskSMART” mentioned more frequently in staff conversations, showing that we’ve become more confident in taking well-managed risks while remaining steadfast in our safety, security, and environmental mission.

Our risk-informed thinking is further enhanced by our love of data at the NRC. We’re making more use of data dashboards to enhance the way we collect, analyze, and share data to facilitate information sharing with our government partners and streamlined communication with licensees, applicants, and members of the public. For example, staff in the Regions are using dashboards to track licensing and inspection activities for materials users.

And technology has enhanced our work lives in other ways. Staff in the Office of Nuclear Material Safety and Safeguards successfully transferred data from its decommissioning and low-level waste licensing activities to a web-based licensing system. The system is also being used for deploying inspection enhancements and for tracking and reporting licensing activities and performance metrics for fuel facilities.

On an agency-level, we're continuing to improve the way we work using the "Innovate NRC 2.0" IdeaScale platform. IdeaScale provides an open space for employees to share and promote ideas, along with a "success gallery" to highlight achievements. The platform provides a real sense of community, where sharing an idea can inspire other employees or offices to try it out or improve upon it.

The point here is to create and sustain a culture of ongoing innovation and improvement. To that end, in June the Executive Director for Operations is hosting an "NRC Futures Jam 2.0," where we'll spend a couple of days focused on crowdsourcing new ideas from our agency staff.

There's great opportunity to see our innovation efforts in action tomorrow afternoon:

"TAYtalks LIVE! Innovation Education," with our very own Taylor Lamb. Kudos to the Office of the Chief Information Officer for continuing to make the right tools available to allow us to maintain our working relationships and get the job done.

We're also fostering our relationships to ensure we sustain our culture of openness. It is vital that we cultivate appreciation for individual views and create space for employee connections. One program I'm especially proud of at the NRC is our Diversity DIALOGUE project, championed by our Office of Small Business and Civil Rights. DIALOGUE stands for "Diversity Inclusion Awareness, Leading Organizational Growth, Understanding, and Engagement." As part of this project, employees from across the agency gather to learn and share their diverse experiences and perspectives.

I applaud the staff for their continued efforts to create space for individual perspectives.

It is my strong belief that an agency workforce that listens, communicates, and respects differences will have the adaptability and flexibility to meet the challenges of the future.

## **Conclusion**

Believe it or not, I'm not wearing rose-colored glasses up here. I know we have challenges in front of us. And while I admire Einstein, I admire Marie Sklodowska Curie even more. And she said, "I was taught that the way of progress was neither swift nor easy."

But also, I agree with the late Secretary of State Colin Powell who believed that "Optimism is a force multiplier." By highlighting where we're making progress, and celebrating where we are improving, we create additional opportunities to make better, more risk-informed, more durable decisions that protect people and the environment.

And that's what I hope you take away—that we're accomplishing our mission today and developing the toolkit and culture that will allow us the flexibility to adapt to our future work—to navigate the nuclear future. We're not standing still. We're working effectively across offices. We're working closely with our government and international partners.

One last quote from Einstein: "You never fail until you stop trying."



I thank our dedicated staff for their many accomplishments over this past year as we remain committed to building our flexibility and adaptability, all while remaining focused on serving the public. I'm impressed and proud every day of what we are accomplishing together.

Thank you for listening and for attending this year's RIC. Stay right where you are to join me in our next session, where I'll be speaking with International Atomic Energy Agency Director General Rafael Mariano Grossi. And please be sure to tune in tomorrow for my fireside chat with former NRC Commissioner and Nuclear Energy Agency Director-General Bill Magwood.

I'm looking forward to hearing their views on navigating the nuclear future from an international perspective.

Andrea, back to you for questions from the audience.