U.S. Nuclear Regulatory Commission
Regulatory Information Conference
(As Prepared and Not Presented)

Chairman Christopher T. Hanson

March 8, 2021

Background

Thank you, Andrea, for that introduction. I generally like to start my remarks with some "thank-yous." First, thank you all for attending the RIC virtually this year. I want to welcome everyone who is tuning in from their homes and offices across the U.S. and the world.

This is the first RIC in two years as the public health emergency prevented a RIC in 2020. I've been incredibly impressed by the ingenuity and dedication of the NRC staff in putting on what I believe will be a fascinating four days of panel discussions, speeches, and other virtual events.

As much as I wish we could all be together in person, chatting in the halls and getting together for lunch, I'm looking at the positives. This virtual platform provides access to more people who might not otherwise be able to make it to Maryland. I hope you all take advantage of the technology, learn new things, and join conversations where you can. So, to Andrea and her team, the savvy folks in our CIO shop, and so many others at the NRC who made this event possible, let me extend a huge thank you.

Today is International Women's Day—an opportunity for us all to reflect on the incredible contributions that women continue to make to the world. I particularly want to recognize and thank the hard-working women of the NRC who have chosen to apply their talents and passion to our mission. Our agency is stronger because of you, and I am committed to working with you towards a more inclusive future.

I would also like to thank my colleagues on the Commission who have been welcoming, supportive, and gracious since I joined the agency in June and all the more so since I became Chairman.

Finally, I'd like to say a special thank you to my staff, not only for their efforts to prepare me for the RIC, but also for all their hard work over the last nine months. We hit the ground running and these incredible professionals have not let up. So, I would like to recognize Molly Marsh, Kathleen Blake, Cinthya Roman, Tony Nakanishi, Olivia Mikula, Mandy Mauer, Hipo Gonzales, Patty Jimenez, and Margaret Cervera for their service to the agency and for their contributions to my office.

One advantage of being virtual is that I am not looking out over the audience; I cannot see just how many of you there are watching me, although I was told we have a RIC attendance record. This is my first RIC, and I know there are thousands of seasoned professionals and international regulators watching and listening. But for the next hour, I can just pretend that I'm speaking only with Andrea.

Let me start at the beginning. I grew up around nuclear. Palisades Nuclear Power Plant—a 768-megawatt Combustion Engineering single unit Pressurized Water Reactor that in those days was owned by Consumer Power and started operation in 1973—was about 10 miles from my family's home in Southwest Michigan.

The resident inspector lived two houses down. Several plant employees lived in the neighborhood. During college summers, I worked at the state park adjacent to the plant, so we were always keenly aware of what was going on there. We trusted our friends and neighbors to operate the plant safely.

When deindustrialization hit its stride in the 1980s and walloped my little corner of Michigan, along with so many other rust belt communities, the plant kept the area going economically. So, I had an interest in nuclear early on—as a source of electricity, sure, and as a source of good-paying jobs.

I went off to college and earned a liberal arts degree; by the time I was done, I had an interest in environmental ethics. That's why I chose Yale—they had a good ethics program and it was a place where I could satisfy my other interests.

It was there that I took a course on regulatory risk management. And while my classmates were writing papers on pesticides and lead, my thoughts turned to Palisades and how it was one of the first plants in the country to have on-site dry storage for spent fuel, about the development of 10 CFR Part 60 and the 10,000-year standard, and problems with managing and communicating risks over very long time horizons.

Back then, I would never have thought in 10,000 years that I would be standing before you today in my current role. It is an incredible honor to be designated by President Biden as Chair of the NRC. It is the privilege of a lifetime to be given the opportunity to lead the women and men at this remarkable agency during such a dynamic time for nuclear energy in the United States.

Approach: Institutional Independence & Innovation

Over the last several months, I have been trying to define an approach to my tenure at the agency. So, let me share with you some of my thinking.

In some of my discussions with NRC staff, I've attempted to paint a picture of three inter-related efforts in the form of a triangle, with risk-informed regulation, agency transformation, and diversity and inclusion at each vertex. Undergirding that triangle are three pillars: regulatory independence, data, and our people—our people come first (although I'm going to talk about them last).

Risk-informed regulation

Let me begin with risk-informed regulation. Becoming a more modern, risk-informed regulator is still a key goal for the NRC. And reasonable assurance of adequate protection is still the standard to meet.

Fundamentally, for me, risk-informed regulation is an epistemological question:

- First, what do we know (and by extension what are the uncertainties around what we know)?
- Second, how do we know it (what's the basis of knowledge)?
- Third, what difference does it make? Are we focusing on gathering data and better understanding things that are important to safety?

I know it's often more complicated than this. There are multiple layers of safety and protection. Where we have significant uncertainties in our risk models with regard to likelihood or consequence, defense in depth should remain a key tool for ensuring adequate protection.

The NRC needs to ensure the safety of both the existing fleet and current materials users, as well as new technologies, not by confining ourselves to historical frameworks but building off of them to identify and focus on the most risk-significant components and systems.

So much of our transformation efforts are aimed at looking hard at our data and identifying areas where we can shift focus to the most risk-significant aspects of materials users, current reactors, and new technologies. Indeed, NRC's "Be riskSMART" initiative is developing and implementing consistent guidance and practices that give NRC staff confidence in accepting well-managed risks in their decision-making without compromising safety.

Transformation

When I talk about transformation, I am talking about the NRC's ongoing effort to rethink our outward and inward facing processes through technology and employee engagement. I do not mean cutting people or regulations. I mean innovating and achieving our safety mission more effectively.

The agency is working hard to meet the challenges presented by a rapidly changing and innovating nuclear industry. We have been reevaluating the way we conduct our business to optimize processes and procedures to better serve the American public. The initiatives are taking place both across the agency as well as within program offices.

And to leverage innovations developed within program offices, the agency is encouraging a culture open to sharing ideas and creating tools to easily do that. The Executive Director for Operations has supported crowdsourcing initiatives and even created a challenge campaign to identify alternative and more efficient ways of collaborative engagement—and staff named winners for best-in-class innovations. Those all involved process simplification, which allows the staff to focus its resources where they are most needed.

At the office level, the Office of Nuclear Reactor Regulation created Embark Venture Studio dedicated to implementing ideas and turning them into practical tools. They are developing some exciting tools that harness data and put it to work.

Transforming our business processes is a great way to test our ability to transform our regulatory processes. One example with far-reaching potential is the Mission Analytics Portal, which integrates data from different sources into visual tools that staff can use to better manage licensing, oversight, and support activities.

In the future, we should be able to use these same tools to mine data from available sources, such as inspection reports, so that data can provide insights we would not otherwise see, leading to more transparent and informed decision-making.

The Be riskSMART framework I mentioned earlier was recently used to help assess the risks that COVID-19 introduced to licensees and inspectors. In addition, Embark Studio currently has two initiatives aimed at risk informing exemption requests and subsequent license renewal.

In my view, the challenge for agency Transformation going forward is to:

- First, keep the safety mission front and center;

- Second, sustain the culture of innovation that has been created without forcing change just for the sake of change;
- Third, institutionalize successes to reap returns on investment; and
- Finally, more fully explore transformation efforts in the regulatory arena, particularly for new reactor technologies.

Diversity and Inclusion

Transformation is directly related to diversity and inclusion because our Transformation efforts are at their best inherently democratic—it is about the value of ideas instead of where someone sits in the organization. Likewise, Transformation flattens the organization in a way that empowers staff and makes good ideas more visible to the agency's leadership more quickly. This has resulted in a tremendous amount of staff buy-in and participation.

Diversity and inclusion are also the final, and maybe the most important, ingredients in risk-informed regulation. Risk-informed regulation is really about characterizing uncertainty. There is necessarily a lot of professional and personal judgment implied in that. Data is critical, but we all know data can be interpreted in a wide variety of ways. Having staff of diverse backgrounds and viewpoints helps ensure that uncertainties are fully understood and characterized.

Let me be even more clear: risk-informed regulatory approaches not only benefit from diverse viewpoints and backgrounds, they rely on them. Which is why it is so important to get culture change and therefore diversity initiatives right.

I have touched on the efforts at the three vertices of the triangle, now let me say a few words about the pillars I see supporting that triangle—independence, data, and people.

Independence & Public Trust

Public trust is essential for the future of nuclear power and use of nuclear materials. And to ensure the public trust, it is necessary that the government act as an independent, impartial regulator.

Additionally, the public should be comfortable in trusting industry to deliver on its promise of developing and operating safe, reliable, and economic nuclear power plants and facilities, and ensuring the safe and secure use of nuclear materials. The utility industry cannot expect a future for nuclear power without safe operation of the current fleet.

It is also important to recognize that independence does not mean isolation. Working with scientists, international counterparts, industry, public interest groups, and others is key to the safe use of nuclear energy in the future. It is important to build trust in science and increase reliance on operational experience.

Furthermore, as we move forward, we need to recognize that the traditional approaches to safety are simpler to communicate than those that are risk-informed and performance-based. To that end, as we move toward more risk-informed approaches, in order to maintain public confidence, we must ensure transparency and clear communications in our licensing reviews and other activities.

With less than three days to the ten-year anniversary of the disaster that occurred in northeast Japan, I want to take a moment to address the events of March 2011 at the Fukushima Dai-ichi nuclear power plant.

First and foremost, I want to extend my heartfelt sympathy to the people of northeast Japan for the incredible hardship they have endured. Needless to say, the human and societal impacts of the tsunami and nuclear accident have been tremendous, affecting the lives and livelihoods of so many people.

As I was preparing for this morning's remarks, I was reviewing what some people of the town of Okuma experienced following the events of March 2011. You may know that Okuma is one of two towns where the Fukushima Dai-ichi nuclear power plant is located. I was reminded the entire town was forced to evacuate, and the local government had to be relocated for eight years to a city 100 kilometers away; and town leaders reluctantly accepted the government's request to convert areas of their hometown to interim storage sites.

I also want to express my strongest support for the ongoing, herculean efforts of the government of Japan, Tokyo Electric Power Company, and all supporting organizations as they continue to tackle the unprecedented technical challenges to decommission the Fukushima Dai-ichi reactor. Indeed, the progress made to date has been truly remarkable.

Not surprisingly, the Fukushima accident severely challenged the Japanese public's trust in nuclear power, and the industry continues to face challenges today, ten years later. However, I want to acknowledge the extraordinary efforts by the government of Japan and the industry to rebuild this trust, and in particular, our Japanese regulatory counterpart, J-NRA's, unwavering commitment to the principles of independence and transparency.

I encourage all of us at the NRC to reaffirm that regulatory independence and transparency remain our foundation. If we lose sight of these principles, we lose public trust and, it follows, our effectiveness as a regulator.

Data

Now, let me address what I see as one of the most exciting aspects of NRC's transformation and risk-informed efforts, and that is the focus on data.

First, we have a veritable treasure trove of data from 50 years of plant operations that we are beginning to systematically analyze. My hope is that by expanding efforts to draw on the data held by NRC, licensees, the Department of Energy, academia, and others, we can better focus our regulatory efforts on realism.

Second, as we move forward with the development of the regulatory framework for advanced reactors, I recognize the importance of using risk-informed, performance-based approaches. However, with much more reliance on risk assessment, it is critical that underlying assumptions and computer models are validated with real-world data whenever possible. Demonstrating, not just asserting, the performance of inherent safety features will be key to effective and efficient reviews.

As I have noted before, risk-informed decision-making requires us to adequately characterize uncertainty. And to the maximum extent possible, such characterizations have to be grounded in the real world.

People

Members of the Commission routinely say that our people are our greatest asset—I say it too because I believe it. The agency is made up of about 2,700 career professionals with expertise in nuclear and chemical engineering, physics, geology, and materials science, among other incredibly complex disciplines. Not to mention the men and women who keep us functioning every day. And the Information Technology support that enabled us to take our work home during the public health emergency and make the RIC happen virtually.

NRC has historically ranked high among federal agencies as a great place to work due to, but not limited to, staff engagement and recognition of the importance of our mission. I was impressed with the NRC staff before I joined the agency, and I find them even more impressive as I rely on them as Chairman.

But our workforce is changing while the agency faces other external challenges. Forty percent of NRC employees are eligible to retire in the next five years; that is about 1,100 people. We are bringing a lot of sustained focus to recruitment and retention programs at the NRC to meet that challenge. And yet, even with a changing workforce, the overall mission remains—if anything, it is becoming more complex and challenging.

I recognize the value of building and sustaining an agile workforce capable of tackling the regulatory challenges of the future. We had our first class of apprentice regulators last summer, and I hope we can build on that success and use other recruiting strategies as well as skill-building and retraining for more senior employees.

Without a strong NRC staff, we cannot accomplish our important mission. I want to make sure we continue to invest in our people.

Conclusion

So, what does this all add up to—a triangle supported by three pillars?

Picture it. It looks like an institution, right? When you see that symbol on a sign, you might think financial institution, or cultural institution, or institution of higher learning. An organization that has a special mission, that serves the public, that has longevity and constancy.

It sounds like the NRC, too.

I am an institutionalist by nature. After my initial tenure at the NRC during a public health emergency and a time of social and political upheaval, that is truer than ever. Institutions provide the culture and structure necessary for human flourishing.

That does not mean I am overly rigid or that I do not believe institutions need to be in a constant process of reform. We are humans after all, and our institutions often reflect back on us our frailties, prejudices, and short-sightedness. Therefore, we must be dedicated to ensuring our institutions live up to our ideals.

So, transformation, innovation, and modernization, absolutely, yes. But also maintaining public trust through independence, transparency, predictability, and a commitment to reasonable assurance of adequate protection based on sound data analyzed by a diverse workforce, so that the benefits we have all enjoyed can be passed on.

With the help of my colleagues and the unparalleled workforce of the NRC, I believe we can realize this vision together.

Thank you all for listening.