U.S. Nuclear Regulatory Commission
Chairman Christopher T. Hanson
Remarks for INPO Senior Nuclear Plant Management Course

May 21, 2021

Introduction

Good morning, everyone. It's a great honor to be with you today. And congratulations on being the 138th cohort of the INPO's Senior Nuclear Plant Management course. I understand it's a very impressive and challenging 5-week course. I trust that you are gaining new perspectives and insights and building valuable networks.

I would prefer to be with you in person, to shake your hands, a virtual handshake will have to do for now. I am sure that as I visit the plants around the country, our paths will again cross.

As you must be acutely aware, the environment in which we work, nuclear energy and materials, is as dynamic today as ever. Market forces are reshaping the footprint of the operating reactor fleet; the industry is seeking to adopt new technologies to improve plant reliability, safety and economics; federal, state, and international initiatives are spurring greater interest in the development of advanced reactors; and the next generation of a skilled nuclear workforce, which is indispensably needed, is emerging.

At the Nuclear Regulatory Commission, we are continuing to adapt our regulatory obligations to meet the evolving challenges presented by a rapidly changing nuclear energy industry to achieve our important mission of assuring the public of adequate protection of health and safety. It is an exciting time for our agency, as everyone is involved in transforming the NRC, its people and processes, into a more modern risk-informed regulator. So, what does that mean? Let me explain.

You earlier received updates from a few of the members of our senior leadership team – Dan, Mike and Mirela. I felt it necessary and important for me to briefly share my thoughts on the operating reactor fleet, the agency's broader transformation initiatives and the challenges we face in the facilitation of our work. I then will open it up for your questions. I would much rather spend time learning more about what is on your minds.

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Operating Fleet

Let's begin with the operating fleet. I view the safe, reliable, and economic operation of the existing fleet as a prerequisite for nuclear power today and into the future. There is a social license to use nuclear technologies, and to the extent nuclear will remain a viable option for the nation, which is likely, the NRC and the industry will continue to share a common goal in ensuring nuclear effectiveness, efficiency and most importantly – safety, albeit with different roles.

From the agency's perspective, we need to continue to implement our licensing and oversight functions effectively and efficiently for our nation's operating nuclear power reactors to ensure that all plants operate safely and securely.

The industry is aggressively pursuing new technologies, such as accident tolerant fuel and digital I&C to improve plant reliability as well as economics, which is under great public and Congressional scrutiny.

The NRC and the industry have made significant progress in developing guidance for licensing these technologies. I am closely following the digital I&C projects at Limerick and elsewhere. I am also watching deployment efforts for near-term accident tolerant fuel designs.

For my part, I will make sure the agency is not an unnecessary impediment to innovation, but rather an enabler of advanced technologies that can be implemented safely. For its part, the industry will need to demonstrate that it has data ready to warrant safe implementation.

The NRC and the industry continue to make substantial progress with risk-informed initiatives such as 10 CFR 50.69 on regulatory treatment of SSCs, and risk-informed technical specifications. Consistent with the Commission's policy statement on the use of probabilistic risk assessment methods, the industry and the NRC should continue to expand the use of properly reviewed PRAs to support risk-informed decision making in other licensing activities.

Properly implemented risk-informed applications improve safety while providing operational flexibility. This is an absolute necessity if the NRC is going to show agility in its regulatory responsibilities and authorities.

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The NRC's reactor oversight process is a mature and effective oversight program that I believe is serving our stakeholders well. The ROP now has a couple of decades of run time, and we have accumulated many reactor-years of operational experience and inspection data. I believe there is room to make targeted refinements to further focus our inspection resources on areas of greatest safety significance, always taking risk into consideration. Being more risk-informed, with optimal performance as a key motivator, arguably will further enhance our oversight program.

Safety Culture

So, you might ask, how can you as plant managers ensure continued safety at your plants? For one, you can emphasize your, and the industry's commitment to safety culture. And I'd like to highlight one additional point on this, something that I observed recently which continues to stick with me. It's the concept of ownership.

Earlier this year, I visited a nuclear power plant that demonstrated this concept well. As I was observing plant operations and making various stops, whether it was the technical support center, or the central alarm station, for example, at each stop, the plant personnel would greet me with a "welcome to *my* TSC" or "welcome to *my* CAS." *pause* "my"

It obviously resonated with me. This mindset is very powerful, and it sent a clear message that those individuals are not only empowered, but also responsible for making certain their areas of plant perform as intended. These managers were totally engaged, and I could sense their pride and enthusiasm in their work.

They were noticeably committed and certainly accountable. I had no doubt they would hold others in *their areas of responsibility* accountable as well. I believe this sense of ownership at every level of any organization is quite important and should be strongly encouraged in workforce development initiatives, whether it's owning a piece of equipment, a specific process, or a program.

I hope you all recognize areas of ownership in your own organizations, and that you continue to encourage and foster that mindset.

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Philosophy

When I spoke at the NRC Regulatory Information Conference in March, I discussed how I'm trying to define an approach to my tenure at the agency. I 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, in no particular order. I won't revisit all of the details today, but I will touch on few of these elements that I believe are critical to NRC's mission in today's ever evolving environment. And, while these philosophies are specific to the NRC, I hope you'll be able to draw some correlations to your organizations.

Risk-Informed Regulation

I'll begin with risk-informed regulation. As I said earlier, becoming a more modern, risk-informed regulator is a key goal for the NRC. And reasonable assurance of adequate protection is still the standard to meet. While potentially redundant in my thinking, these are critical to our success in carrying out our mission.

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 what elements of our work are important to safety?

I recognize that it's often more complex than this. You function in areas where 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 must remain a key tool for ensuring adequate protection.

Risk-informed, performance-based licensing represents a fundamental shift in thinking from the traditional deterministic approach the NRC has used in the past for large light water reactors. It is also an important step in modernizing our licensing approach and in accommodating a wide range of reactor designs within a consistent framework.

Risk assessments are becoming much more important in our decision-making processes. Therefore, it will be critical that underlying assumptions are validated with real-world data whenever possible. NRC needs to continue to work on establishing independent modeling, simulation, and analysis capabilities to support the licensing efforts. We are also focused on making sure our workforce has the necessary knowledge, skills, capabilities, and tools to support effective technical reviews.

Transformation

When I talk about the NRC's work on transformation, I am talking about the NRC's ongoing effort to rethink its outward and inward facing processes through technology development and employee engagement. Let me be clear -- I am not suggesting a staff reduction or cutting regulations. Rather, I am strongly encouraging outside of the box, strategic thinking to achieve our safety and security mission most effectively.

One transformation example with far-reaching potential is our Mission Analytics Portal, which integrates data from different sources into visual tools that staff can use to better manage licensing, oversight, and support activities. Externally, we are redesigning the portal to empower stakeholders with data analytics tools and regulatory information, like ROP data, through a web browser.

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.

In my view, the challenge, and opportunity, for agency transformation going forward is to:

- First, keep the safety mission front and center. Safety NEVER can or will be compromised;
- Second, sustain the culture of innovation that has been created without forcing change 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

The third side of my triangle is diversity and inclusion, which is key to our transformation efforts. An understanding and acceptance of diversity and inclusion is 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 brings forward good ideas, making them more visible to the agency's leadership more quickly. I believe that this has resulted in an enormous amount of staff acceptance and participation.

Diversity and inclusion are also the final, and maybe the most important, ingredients in risk-informed regulation, which really is 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 also rely on them. Which is why it is so important to get culture change and therefore diversity initiatives right.

Public Trust

The final point I want to make is something that I sense we all know. Public trust is essential in the use of nuclear generated power, and all of us here have a role to play in gaining and maintaining the public trust. The NRC must always conduct its work in a way that instills public trust. Our greatest critics are public supporters and interveners. It is imperative that we maintain this public trust by not only ensuring independence and transparency in our regulatory approaches but also recognizing the importance of listening to and responding to the public's concerns.

Equally important, the public should be comfortable in trusting industry to deliver on its promise of developing and operating safe, reliable, and economic nuclear power. It's that social license I mentioned earlier. The utility industry cannot expect a future for nuclear power without the assurances of safe operation of the current fleet.

I believe people are paying more attention to the nuclear power industry today than just a few years ago because of the strong emphasis on climate change.

While the NRC has a critical oversight role to ensure safe operations, and we take the role seriously, the primary responsibility for safety still rests with you, as the women and the men who operate the plants. And I know that you take your roles seriously. I, and all of my colleagues at the NRC, appreciate your commitment to nuclear safety.

I'll leave it there and I look forward to your questions.