

## **REGULATING WITH EXCELLENCE IN THE 21<sup>ST</sup> CENTURY**

### **Remarks by Victor M. McCree Executive Director for Operations at the Regulatory Information Conference - March 13, 2018**

#### **Introduction**

Good morning. On behalf of the staff of the U.S. Nuclear Regulatory Commission, it gives me great pleasure to add my welcome to this, the 30<sup>th</sup> NRC Regulatory Information Conference.

What began as a small conference on nuclear safety regulation with about 500 attendees, is now an international public meeting with more than 3,000 attendees from the United States and over two dozen other countries and international organizations. Those of you who attended last year will fondly recall the late-season snow and ice that resulted in a shortened, albeit successful Regulatory Information Conference. Some refer to it as the Quick-RIC! Fortunately, we're experiencing much more "normal" March weather this year, so we will be able to explore and discuss the full range of topics on our agenda, as planned.

Each year, we at the U.S. Nuclear Regulatory Commission look forward to the opportunity to host and share information at this unique event. I thank you all for being here and I am excited about the healthy dialogue bound to occur at this year's conference. Of most importance, thank you as well for your ongoing commitment to ensuring safety and security in the use of radioactive materials and technology. I also would like to acknowledge, in particular, the presence of our many international counterpart regulators; welcome to Maryland and thank you for your participation. Finally, I want to echo Brian Holian's thanks to the many people in the Offices of Nuclear Reactor Regulation and Nuclear Regulatory Research, as well as other volunteers, whose work and planning has set the stage for another successful conference.

I will invest the bulk of my time this morning talking about the NRC's ongoing commitment to improving effectiveness, efficiency, and agility in accomplishing our safety and security mission. This remains a high priority for the NRC, as both the agency and the regulated industry in the United States continue to operate in a very dynamic environment. My goal is to make sure you are aware of our efforts, and invite your participation to further inform our decision-making and to clarify our shared expectations.

A few years ago, Mary Barra, the CEO of General Motors predicted that we would see more changes in the next 5 years than we've seen in the previous 50. And, in fact, when you consider camless engines, advanced electric vehicles, do-not-disturb-while-driving technology, and the prospect of driverless cars, she was right. The U.S. energy industry is certainly also evidencing such accelerating change and dramatic technological evolution — accident tolerant fuel, small-modular reactors, and advanced reactors are a few examples of such dramatic change.

#### **Recent Accomplishments and Current Areas of Focus**

As the nuclear safety regulator, the question we're faced with is why is change and managing change of significance to the NRC? As I indicated in my remarks at the RIC last year, I believe the answer is that — times of change and transition, introduce potential distractions, and we

must always be mindful of this and remain principally focused on carrying out our safety mission. But, we also see times of change as an opportunity for NRC to become even better — by **regulating with excellence in the 21<sup>st</sup> century**.

Let me begin by highlighting a number of accomplishments since we met last year that indicate our successful efforts to address the essential day-to-day work of the agency:

- Of most importance, we have continued to successfully oversee the safe and secure operation of nuclear power plants and fuel cycle facilities, as well as the possession and use of radioactive materials.
- In this regard, I would briefly note two accomplishments shared by NRC and the industry, given that operators have the primary responsibility for safety. NRC's operating experience reviews include every unplanned scram to determine the safety significance, and to identify any generic implications or trends. In 2017, our review shows that operating reactors finished the year with 39 unplanned scrams. This reflects a new low, both in terms of the absolute number of scrams and the ratio of scrams per unit. It also represents a significant drop of 28% from the previous low of 54 scrams in 2016.
- In addition, as this slide indicates, 66 plants had zero scrams in 2016. That number increased to 72 in 2017. Included in the 72 are four units that have not experienced a scram in 10 years, and two with no scrams since 2002.
- I included this information because, as you know, unplanned scrams can potentially challenge operators and safety equipment, and thereby introduce unintended consequences. But, also because this trend is illustrative of the nuclear power industry's ongoing efforts to identify and reduce the causes of scram initiators, and in doing so contribute to safety.
- Another topic I would briefly mention relates to early insights from the planned use of flexible and diverse (or FLEX) strategies to mitigate outage risk. Based on preliminary discussions with several licensees who have incorporated FLEX strategies into their outage risk management plans, the plans would significantly reduce, or eliminate altogether, the number of outage days in which the plant would be in a heightened risk condition. In light of the NRC and industry initiatives over the past three decades to reduce the risk associated with shutdown and low power operations, this is further indication of noteworthy progress.
- In the area of event response, we responded to a number of events in 2017, including providing support following the catastrophic hurricanes that caused widespread pain and suffering for people in the States of Texas, Florida, and Georgia, as well as the Caribbean, including Puerto Rico. Approximately 20 NRC employees were deployed at various times to support the Federal response to these tragic and destructive events.
- Regarding backfitting, we have completed our initial actions to improve our processes, training, and guidance, and continue our efforts to update associated guidance documents.
- Our efforts to improve the efficiency and consistency of our licensing reviews continue. We achieved significant improvement in the timeliness of operating reactor licensing reviews, reduced our backlog, and enhanced our effectiveness in monitoring work and assuring predictability.
- We also completed reviews of the remaining combined license workload, issuing combined licenses for North Anna Unit 3, the William Lee and Levy County sites, and completed the safety and environmental reviews for the Turkey Point 6 and 7 application.

- Regarding design certifications, we completed phases 2 and 3 of the APR1400 design certification review and are on schedule to complete this review in 42 months.
- We also achieved a number of significant milestones in the area of rulemaking, including developing the rulemaking regulatory basis for decommissioning reactors and emergency preparedness for small modular reactors. We also prepared a proposed rulemaking package and regulatory guide on cyber security for fuel cycle facilities.
- Finally, in the international arena, we developed the U.S. Country Report and provided significant leadership that contributed to a successful 7<sup>th</sup> Review Meeting for the Convention on Nuclear Safety.

We have also continued to look ahead at a number of other issues that, while perhaps no longer considered “emerging,” are nevertheless continuing to evolve. These include small modular reactors; advanced non-light-water reactors; accident tolerant fuel; and effectiveness, efficiency, and agility initiatives.

Regarding small modular reactors (or SMRs), we are currently reviewing NuScale Power’s application for an SMR design certification. We are also reviewing an application from the Tennessee Valley Authority for an early site permit at the Clinch River nuclear site to evaluate the suitability for potential new small modular reactors. Both reviews are proceeding on the established schedules.

In the area of advanced non-light-water reactors, we have already made significant progress in advancing the implementation of the near-term action items associated with the NRC’s non-light water reactor vision and strategy. For example, we recently issued our Regulatory Review Roadmap for advanced non-light-water reactors, providing guidance for implementing a flexible and staged regulatory review process with developers that better aligns the NRC’s activities with the developers’ needs. Based on stakeholder and Advisory Committee on Reactor Safeguards feedback, we are giving higher priority to the development of risk-informed and performance-based approaches, and are taking steps to resolve key policy issues. We also have engaged in some form of pre-application activities with five non-light-water reactor designers, while a number of other potential pre-applicants have participated in various industry activities and could formally engage in pre-application activities at a later date.

Another evolving issue is the use of accident tolerant fuel (ATF) for light water reactors. ATF is expected to exhibit improved safety margins under both normal and accident conditions, when compared with fuel types used today. The NRC has two focus areas for ATF: in the near-term, we will clarify the NRC’s position on the regulatory requirements associated with the irradiation of lead test assemblies, and in the longer-term, develop and implement an agency-wide ATF project plan that is informed by the industry’s and DOE’s timeline for introducing accident tolerant fuel.

Regarding our efficiency, effectiveness, and agility initiatives, since the last RIC, the NRC completed the major deliverables for each of the 19 discrete Project Aim tasks approved by the Commission in June 2015 to improve the NRC’s performance, right-size our workforce commensurate with the workload, retain employees with the skills necessary to accomplish our safety and security mission, and streamline processes. NRC remains committed to leveraging the innovation that began under Project Aim to identify new initiatives and enhance our regulatory process. But, we also recognize that continuing to deliver on our safety and security mission is enabled by better collaboration, improved planning, and more effective change management.

Bob Iger, the CEO of Disney, once said, *“the riskiest thing we can do is just maintain the status quo.”* But I subscribe to the notion that there’s no such thing as the status quo — you’re either

improving or declining. Each of these ongoing activities provides evidence of our focus on improvement, and our commitment to **regulate with excellence in the 21<sup>st</sup> century**. To be clear, this commitment does not alter our reasonable assurance of adequate protection standard for public health and safety, it simply reaffirms our NRC value of excellence in all we do.

## **Strategic Plan 2018-2022**

The foundation for regulating with excellence is established in our just-published strategic plan for 2018-2022. It provides the blueprint for the agency to plan, implement, and monitor the work needed to achieve our mission. And, I want to thank those members of the NRC staff, as well as external stakeholders, who contributed to its development.

This latest Strategic Plan continues to emphasize our focus and commitment to the NRC's mission and strategic goals of safety and security. It also includes a new vision statement that highlights the agency's commitment to our Principles of Good Regulation (independence, clarity, openness, reliability and efficiency) in performing our mission.

## **Three Key Initiatives supporting Regulation with Excellence in the 21<sup>st</sup> Century**

With the strategic plan as our foundation, there are three new NRC organizational initiatives that I want to briefly introduce: development of an explicit NRC leadership model, enhancing our process for strategic workforce planning, and stimulating innovation and transformation at the NRC. I consider these three key initiatives to be pillars that will support and further institutionalize regulating with excellence in the 21<sup>st</sup> century, and ensure continued success in meeting the NRC's safety and security objectives.

### **Leadership Model**

Early last fall, I directed the staff to begin work to create an explicit NRC Leadership Model. The leadership model, the first pillar, will describe in a single document the organizational approaches, activities, and behaviors that the NRC uses (individually and collectively) to demonstrate leadership in fulfilling the NRC mission, achieving the NRC vision, and applying the NRC organizational values.

The Leadership Model will describe who we are by describing — why we do what we do (centered on our values), how we conduct ourselves (as demonstrated by our fundamental behaviors), what we do (as reflected in our key programs and processes), and what we aspire to be (as shown in our vision and principles of good regulation).

The Leadership Model will also recognize the fact that every NRC employee is a leader. And, it will articulate the kind of leaders we aspire to be. For example, we seek to obtain tangible results, while guided by our principles and organizational values.

Finally, the NRC Leadership Model will focus on behaviors, recognizing that leaders are expected to apply effort across the three core areas of Processes, Partnerships and People to execute the strategies supporting our safety and security goals.

Although the NRC Leadership Model is an internal NRC organizational initiative, I wanted to discuss it today because this unique investment in institutionalizing our expectations and providing clarity through an explicit Leadership Model will not only contribute to our effort to fulfill our mission, but also strengthen our commitment to continuous improvement and sustaining

high performance. In other words, it is an essential part of regulating with excellence in the 21<sup>st</sup> century.

### **Enhanced Strategic Workforce Planning**

The second pillar supporting regulating with excellence in the 21<sup>st</sup> century is **Strategic Workforce Planning**. Our ability to fulfill our safety and security mission requires having the right number of people, with the right skills and competencies, in the right time and place. While we are already performing workforce planning, fulfilling our mission in an environment where work and workload forecasts change, skills required of the workforce evolve, and onboard skills inventories shift, it is imperative that we better integrate our human capital planning with broader agency operational strategies.

To accomplish this, in January of last year I formed a working group to develop a comprehensive, integrated, and systematic strategic workforce planning process. Our objective is to enhance the existing process by developing a more clear, coherent, comprehensive, and consistent approach to integrating the agency's workload projection, skills identification, human capital management, individual development, and workforce management activities. With a strategic view of the future that provides us with data to perform a gap analysis to identify shortages and surpluses in the short- and long-term, we can develop strategies to align workload, competencies, and organizational structure to meet emerging needs and workload fluctuations.

A pilot of our enhanced strategic workforce planning process is already underway; and, if all goes as planned, we will deploy the enhanced strategic workforce planning process across the agency in 2019.

### **Innovation and Transformation**

The third and final pillar is Innovation and Transformation. Many of the NRC's processes and much of our regulatory framework were developed to serve mid-20<sup>th</sup> century nuclear technologies and needs. While they have, and continue to, serve us well in accomplishing our mission, we recognize that the changes occurring in the nuclear industry will challenge this framework and additional regulatory change is needed. The staff believes this can best be facilitated through a combination of innovative and transformative change.

In my view, many of the activities that I discussed earlier in my remarks, and other recent accomplishments represent **innovative change initiatives**. These include, for example, the creation of centers of expertise to more effectively and efficiently conduct work; improvements in the licensing process and requests for additional information (or RAIs); and clarification of the guidance, training, and expectations for backfits. Generally, I think of innovative changes as those that improve regulatory efficiency and effectiveness through new or modified ways of conducting work within our existing regulatory framework. Such proactive innovation is important and we remain committed to advancing change in this very meaningful way.

However, we also recognize that innovation typically involves incremental change. We now believe we have to do even more to respond to the expected use of new and novel technologies in the nuclear industry, in the regulation of areas such as digital instrumentation and control in safety-related applications; accident tolerant fuels; new materials and new manufacturing approaches; Big Data; as well as small modular reactors and advanced reactor designs.

These new challenges compel us to consider making transformative changes; that is, change evidenced by significantly different ways to regulate, and that produces marked enhancements in our effectiveness, efficiency, and agility.

Now, we do recognize that transformation is not new to the NRC. We showed our ability to transform when we developed and implemented the reactor oversight process, as well as when we developed and applied the 10 CFR Part 52 regulation to license, certify, and approve new nuclear power plants.

To advance transformational change at the NRC, at the end of January I created a Transformation Team with members from across the agency, and tasked it to:

- Gather innovation techniques, ideas, and methodologies to successfully implement transformation, including strategies to enhance and sustain a transformative organizational culture.
- Develop and recommend specific area(s) to initiate transformative change within NRC.
- Create a strategy and change management plan to foster and sustain an innovative and transformative culture at NRC.
- Finally, I directed the Team to submit a paper to me that will seek Commission support to advance this initiative.

The Team has already begun to engage a variety of stakeholders both internal and external to NRC and a RIC session will be held this afternoon to discuss this important topic.

## **Closing**

In closing, when I think about excellence I'm reminded of college football in the United States. And, particularly, the accomplishments of one of my two favorite teams — The Crimson Tide of the University of Alabama. In response to a question about what he does to position his team to win, Nick Saban, Alabama's Head Coach, said that my job is to *"make sure we're ready for the next task, the next situation, anticipate what that's going to be...[and] make sure those responsible understand their responsibility to correct any errors made on the last play."*

All measures indicate that the NRC has continued to successfully achieve its safety and security mission. However, we recognize that nuclear technology and the industry we regulate are changing. The recent and ongoing activities I have highlighted today are key parts of our proactive strategy to be ready for the next task and situation, anticipate what is going to be, and enable the NRC to continue to fulfill its safety and security mission with excellence in the 21<sup>st</sup> century.

Thank you for listening; I would be happy to take a few questions.