"Perspectives from Commissioner Baran"
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Thanks, Ray. Good morning. It's great to see everyone here.

After four RIC speeches, I have come to the conclusion that there aren't very many cheesy nuclear jokes out there, and most of them are quite bad. So I'm dropping them from the speech. I'm done with them. Frankly, I'm tired of the pained groans. They're demoralizing. But I am not going to leave you in a lurch. I'm going to meet your demands for comedic levity. Which brings me to NUREG-0544, NRC's legendary Collection of Abbreviations.

Now, I suspect that some of you might not believe that NRC has actually published a 37-page tome of impenetrable acronyms. So I brought it along. Here it is. It is real. I'm not making this up. This is revision 5. Which means we actually went through the exercise of assembling every imaginable nuclear abbreviation six times!

This latest version was lovingly put together by a working group of 20 NRC employees. To those 20 individuals: I don't know who you offended to get that assignment, but on behalf of the Commission, please allow me to formally apologize.

According to the abstract, "the goal of this NUREG is to improve communication with and within the NRC." Terrific goal. Not sure 37 pages of abbreviations get you there, but I digress. I actually got through the NUREG, and I still don't really understand what NUREG stands for. But this document is nothing short of riveting. It includes some great questions to ponder. One section is titled "Why use abbreviations?" Good question. Another section asks "What is plain language?" It was at that point I figured we were in real trouble.

But if you suspend your disbelief and temporarily accept the premise that the world can be made better through abbreviations, there's some great stuff in here.

When you hear the word "badger," you may think of a cute animal, or the act of pestering someone, or a student at the University of Wisconsin, Commissioner Caputo's alma mater. But at NRC, BADGER means Boron-10 Areal Density Gauge for Evaluating Racks.

If someone says "that's classy," you may think that you are the recipient of a nice compliment. Do not be fooled or flattered. That NRC employee is trying to tell you about a continuum linear analysis of soil-structure interaction (CLASSI).

At NRC, CPR is not a life-saving procedure. It is the common prioritization of rulemaking. Watch out for that.

If the mention of epicure makes you think a gourmet lunch is coming your way, you will be sorely disappointed to learn that what may be in the offing is an Experimental Program for Iodine Chemistry Under Irradiation (EPICUR).

That's four abbreviations. There are just over 1,000 to go. So we have something to look forward to next year!

Now, in fairness to the agency, the preface does say: "In an ideal environment, the NRC would not require a reference book of abbreviations." I would like to think we can all agree on

that. The NUREG also advises us to "avoid using abbreviations whenever possible." And, in all seriousness, I think that's good advice. As an independent safety regulator serving the public, transparency, openness, and clear communication are critical to NRC's success. When we share as much information as we can, describe the issues and the agency's work in understandable language, and are open to the feedback we receive, then interested stakeholders can meaningfully participate in regulatory discussions and NRC makes better decisions.

Since last year's RIC, a new conversation has started about transformation and innovation at NRC. The staff has begun to focus on how we, as an agency, make decisions and how we communicate with each other and external stakeholders. Regardless of whether we label it "transformation," I think this particular effort makes a lot of sense. We need to identify the full range of views early so that we can carefully consider them as we move through the decision-making process. Ultimately, we want the decision-maker to have an open-minded and thorough analysis of the different options and viewpoints. There's no question in my mind that, when we do this well, it improves the quality of the decisions we make.

In my time this morning, I want to share my thoughts about how NRC should approach transformation and give you some concrete examples of potential changes I see as positive and changes I believe would take us in the wrong direction.

In my view, it makes sense to consider transformational change when a new technology challenges NRC's existing regulatory approach or when the agency has historically struggled to regulate effectively in a particular area. On the other hand, when a regulatory process has worked well over the years, it's better to pursue targeted refinements aimed at solving clearly defined problems. Whether NRC is considering a major, transformational change or a more modest, incremental change, we must keep our focus squarely on our safety and security mission. Transformation at NRC can't be about rolling back safety and security standards to save money. And it can't be about fewer inspections or weaker oversight. That would take NRC in the wrong direction.

When considered with these criteria in mind, some of the transformational changes proposed by the staff or external stakeholders pass muster and others do not. There are ideas we should explore as part of this effort -- and other ideas we should reject as inconsistent with our mission as an independent safety regulator.

A strong case for transformation can be made when it comes to updating NRC's regulations to account for non-light-water reactor technologies. NRC's current power reactor regulations were written for light-water reactors, which make up the entire existing fleet. So it makes sense to update those requirements to address different technologies. NRC is already doing a lot of work in this area. And I support developing a performance-based, technology-inclusive regulation for the licensing of non-light-water reactors. As the agency proceeds with this effort, it will be important to balance the broad rulemaking activities with the need to focus sufficient resources on the design-specific work for particular applications.

The staff also recommends developing a new digital instrumentation and control regulation based on high-level, performance-based safety design principles rather than on highly prescriptive standards. The new rule likely would move away from exclusive reliance on one set of consensus standards and establish a process by which applicants could meet alternative standards that have been successfully used in other industries and countries.

NRC's regulatory approach to digital instrumentation and control would seem to be a strong candidate for transformational change. Over the years, NRC has struggled with this complex set of issues. It has proven to be a real challenge to ensure that digital upgrades are done safely and do not introduce any unacceptable risks, while establishing a reliable regulatory framework for making these upgrades. Although digital technology has been around for decades and is used extensively in other sectors of the economy, U.S. nuclear power plants still rely primarily on analog technology and components. As a practical matter, digital represents a "new" technology that challenges our existing regulatory framework. Because digital instrumentation and control technology has rapidly evolved in recent decades and will continue to do so, it is particularly ill-suited to rigid standards and prescriptive guidance. If other sectors of the economy or nuclear regulators in other countries have had success with alternative consensus standards, it makes sense for NRC to evaluate whether compliance with these standards could be an acceptable way of meeting NRC's safety and security requirements.

On the other hand, I am concerned that a near-term rulemaking to establish this new regulatory framework could shift focus away from the current efforts to improve key guidance documents, at a time when significant progress is being made. I do not want to lose the momentum we have right now. And if updated guidance is able to effectively resolve the major regulatory challenges and provide a predictable framework for making digital upgrades, I have a hard time seeing the case for setting that guidance aside and starting from scratch with a new rule. Instead of deciding now whether to initiate a rulemaking sometime down the road, I think it would be better to first see whether updating the guidance proves to be an effective solution. Although I am open-minded about ultimately pursuing a transformative digital instrumentation and control rulemaking, I believe the staff should complete the ongoing efforts, allow the new guidance to be used for a period of time, and then determine the extent to which the new guidance has resolved the challenges in this area. At that point, we can decide whether a rulemaking is still needed.

There are a lot of ideas for making changes to the engineering inspection program – some good and some not so good. Engineering inspections are an essential part of the suite of baseline inspections conducted at every operating nuclear power plant across the country. They "play an important role in verifying that safety systems are capable of performing their intended safety functions under accident conditions."

NRC began conducting engineering inspections in response to a significant safety event at Davis-Besse in 1985, and these inspections have evolved over the years to confront emerging issues and new findings. As the NRC staff's Engineering Inspection Working Group concluded, "the current suite of engineering inspections is effective in identifying safety issues." In fact, since the year 2000, these inspections have resulted in over 2,000 inspection findings. Most of the findings were green, but several were white or even yellow. The Working Group explained that one of the reasons the engineering inspection program "added value to reactor safety was its ability to identify latent conditions that would not manifest themselves through routine plant surveillance activities." This helped NRC inspectors identify defective components before they failed. So although many of the performance deficiencies identified over the years were of lower risk significance, some of these deficiencies would have become more risk significant if NRC hadn't caught them early, before component failure.

The Commission is currently considering options for modifying the engineering inspections. The staff recommends replacing the current Design Bases Assurance Inspection and some other regional team engineering inspections with a Comprehensive Engineering Team Inspection complemented by Focused Engineering Inspections. The Comprehensive

Engineering Team Inspection would verify the ability of plant components to perform their licensing basis functions following plant modifications. The staff recommends performing them on a four-year cycle. In the years they are not performed at a plant, a Focused Engineering Inspection would be performed instead. These inspections would more narrowly focus on a particular engineering area, which would change each year.

So there are two basic changes being contemplated here. First, a shift in the content and focus of each year's engineering inspection; and second, a reduction in the frequency of the comprehensive engineering inspection. I believe the first change would improve both safety and efficiency. The second change would do neither; NRC would just be doing less.

There is a solid safety basis for moving from the current inspection to the newly designed inspections, which were developed based on feedback from inspectors in the field. The safety advantage of the Focused Engineering Inspection is that it will focus on different and often uninspected, safety-significant areas each year. This provides the NRC staff with the flexibility to shift the engineering inspection focus to areas of emerging need as the nuclear power plant fleet ages.

On the other hand, reducing the frequency of the comprehensive engineering inspection from once every three years to once every four years would reduce inspections solely to reduce costs. The baseline inspection program is at the heart of what NRC does to ensure that nuclear power plants operate safely. There is no persuasive rationale rooted in safety for reducing the frequency of comprehensive engineering inspections. NRC should not inspect less in order to save money.

Some stakeholders argue that NRC should accept licensee self-assessments in lieu of independent NRC engineering inspections. They suggest that NRC allow industry self-assessments to replace NRC inspections in other areas too, such as radiation protection, emergency preparedness, and security.

NRC should not head in this direction. These are foundational, baseline inspections that, since the beginning of the Reactor Oversight Process, have been viewed by NRC as necessary for every nuclear power plant in the country, regardless of licensee performance. These baseline inspections are essential, and NRC inspectors need to be independently conducting them. We should not allow licensees to inspect themselves in lieu of NRC inspections.

We need to ask ourselves: why does NRC conduct inspections in the first place? Because our independent inspectors find problems that licensees don't. Because licensees perform better and more safely with us performing rigorous independent oversight. Because the public has entrusted NRC, a public agency that works for them, with the responsibility of establishing standards to protect their health and safety and enforcing those standards impartially. None of those purposes are met when licensees are allowed to inspect themselves. This concept is fundamentally inconsistent with our mission as an independent safety regulator.

There is nothing wrong with licensees performing self-assessments for their own purposes. In fact, licensees routinely conduct self-assessments in advance of significant NRC inspections to gauge their readiness. But when NRC inspectors then conduct those inspections, our inspectors still identify issues that the self-assessments did not. The thousands of engineering inspection findings over the years conclusively demonstrate that.

Several other transformation concepts being discussed involve different aspects of the Reactor Oversight Process. As a general matter, I would be wary of making any radical changes to the Reactor Oversight Process because it has generally been an effective safety framework. The program is not static; adjustments are routinely made to inspection focus areas, inspection samples, and inspection procedures. When problems do emerge, we need to clearly define and address them. But in a program that is generally working well, it will usually make sense to address specific, well-analyzed challenges through targeted refinements rather than sweeping transformations.

Let me give you a few examples of potential Reactor Oversight Process changes that raise concerns for me.

One proposal is for NRC to conduct fewer baseline inspections for plants that are performing well. Since the very beginning of the Reactor Oversight Process, the basic premise of baseline inspections has been that these are the minimum inspections that should be performed for every plant in the country, regardless of performance. So this would be a huge change. I worry that, if we went down this road, we would see more cyclical, up and down performance from plants. We know that performance doesn't improve with less oversight. It declines. That's why NRC performs oversight in the first place. I strongly believe that we should not do less than the minimum on inspections.

Another set of proposals focuses on minimizing the importance of white findings. Some argue that only a yellow or red finding should result in a column change in the action matrix and an increase in NRC oversight. They also say that white findings should be quickly closed so that they don't accumulate and that follow-up NRC inspections should be optional rather than automatic. I'm not sure what problem all of these changes are supposed to be solving. But major changes like these could have significant unintended consequences. One of the basic premises of the Reactor Oversight Process is that green and white findings can be leading indicators of larger, more safety significant problems. Pilgrim is a textbook example of that. Pilgrim was in Column 4 from September 2015 until earlier this month. And it got there from three white findings. It didn't have any yellow or red findings. But the white findings caused NRC to take a closer look at performance at Pilgrim, and when we looked more closely, our inspectors found major problems. If the changes being discussed today had been made four years ago, Pilgrim wouldn't have even moved to Column 2, let alone Column 4. That clearly would have been the wrong safety outcome. And it highlights the risks of discounting the importance of white findings.

I want to mention one more proposed change to the Reactor Oversight Process. Currently, NRC maintains its own independent models – referred to as SPAR models – to evaluate the risk significance of findings at plants. These are separate from the licensees' probabilistic risk assessments. Some stakeholders are arguing that NRC should discontinue its SPAR models and rely on the licensees' PRAs. I think this would be a mistake. The SPAR models are vital tools that enable independent decision-making by the regulator. Not every licensee PRA would meet NRC's needs, and agency reliance on the PRAs would require NRC to play a much greater role in the development and maintenance of those models. As risk information is used more and more by NRC and licensees, risk models become increasingly critical. NRC experts need a set of models that they know inside and out, that they can modify to meet their specific regulatory needs, and that can provide analytical defense-in-depth in case there are flaws in licensee PRAs. NRC's SPAR models have served these important purposes well over the years. I don't see the need for a big change to the SPAR models.

As we think about areas where the agency has repeatedly struggled over the years and where significant changes may be warranted, I believe we should focus additional attention on two areas: the rulemaking process and the agency's ability to quickly access and understand the licensing basis of each nuclear power plant.

During my time on the Commission, I've seen several rulemakings that have taken a decade or longer to complete. I think everyone agrees that this is far too long, even for a complex rule. Rulemaking is an important regulatory tool, and we need to ensure that it is an effective tool at NRC. In some cases, we may use rulemaking to address a pressing safety or security problem. In other cases, a rule may be necessary to allow for greater technological innovation or new approaches to longstanding regulatory issues. We should not allow unnecessarily protracted rulemakings to become an obstacle to getting the right standards in place. In order to improve the timeliness of NRC rulemakings, I believe we should look at what processes, practices, and strategies have worked well at NRC and other federal regulatory agencies and which have not. For example, we should assess whether targeted rulemakings focused on one or two regulatory changes proceed more smoothly than broad rulemakings that make many, sometimes unrelated changes to a regulation. We should also assess whether all of the current steps in NRC's rulemaking process are appropriate for every rule. NRC's rulemaking process includes steps, such as the draft regulatory basis and regulatory basis, that other agencies' rulemaking processes do not. For highly technical rules, these steps may add considerable value. For rules that are not technically complex, they may unnecessarily slow down the process. Based on an evaluation of the factors and practices that have been shown to contribute to timely, effective rulemakings (and those that have not), we could decide whether we should make any changes to the rulemaking process.

To be a successful regulator, NRC also must be able to promptly access and understand the regulatory requirements applicable to each individual nuclear power plant. A solid understanding of each plant's licensing basis is a prerequisite for effective oversight and enforcement. However, because these requirements are often contained in voluminous microfiche documents that are decades old, this foundational regulatory step is too often a challenge for the agency. Digitization of licensing basis documents is underway and may assist in quickly locating records of license requirements. And the staff is looking at whether the Task Interface Agreement process can be updated to provide more timely answers to questions from inspectors about the licensing basis of a plant. But I believe we should perform a holistic review of how to enhance the agency's capabilities in this area.

To do the best job for the American people, NRC needs to be open to new ideas and new approaches. But we also need to carefully and thoroughly evaluate proposed regulatory changes to ensure that they will have a positive impact on safety. That's our core mission and must remain our top priority. Stakeholder feedback can help us to identify the ideas we should pursue -- and those we should not. So please stay engaged. I look forward to talking with many of you this week and in the future. We also have time for some questions right now. Thank you.