NRC NEWS

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REMARKS OF CHAIRMAN NILS J. DIAZ
UNITED STATES NUCLEAR REGULATORY COMMISSION
before the
GENERATION IV INTERNATIONAL FORUM REGULATORS MEETING
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Paris, France

Good Morning. It is a great pleasure and honor to chair this meeting today. I wish to thank NEA, and especially Dr. Magwood, for this opportunity to share some of my thoughts with you. Last September, I had the privilege of meeting with you during the Generation IV International Forum meeting in Toronto, Canada, where I spoke about improving the safety and reliability of nuclear power plants, and the potential to use design certification processes internationally. Today, a question for us to consider in the context of Generation IV is, "are we regulators doing what needs to be done to fulfill our responsibility to enable the safe and beneficial uses of nuclear energy and radioactive materials?" And, of course, I will offer my thoughts on the usefulness of design certification, based on our experience with design certifications reviews.

Before I launch into the theme, let me offer some general comments. Principles often do not change, even when the application changes. As regulators, we must expect and demand from the nuclear industry the same thing we expect and demand of ourselves: an unconditional commitment to safety, security, and preparedness. Moreover, we must require that our actions, both those of the regulators and the regulated, be consistent, predictable, realistic, and appropriately conservative -- using what I call "realistic conservatism."

By "realistic conservatism," I mean the decisions that are informed by the real world of advancing scientific knowledge, technological capabilities, and experience in order to preserve appropriate and prudent safety margins and to regulate in a manner that corresponds to the actual risk presented and not to worst case assumptions. Being realistically conservative is in the best interest of the public safety and the environment, by ensuring that we maintain the right balance between under-regulating -- which puts the public safety and the licensees' investment at risk -- and over-regulating, which could divert resources from important safety issues while increasing costs to licensees and thus to consumers, without a matching safety or security benefit.

Design Certification Process

I would now like to expand further on my Toronto comments, and discuss the need for an effective and efficient regulatory framework that is risk-informed and performance-based, and that could have international use. Looking ahead to the potential technologies that may be employed over the next 30 - 50 years, I fully recognize that some, perhaps many, of our current regulations may not be directly applicable. This implies to me that we will need a regulatory framework that will adequately address design and operational issues associated with future reactors that may be distinctly different from current LWRs.

As I suggested last September, I believe that the path forward should include the development and international adoption of a regulatory framework that can establish the appropriate safety requirements, compatible with the on-going evolutionary nature of today's nuclear technologies. The NRC has been putting in place a regulatory framework that should allow for the safe and beneficial use of nuclear power in the future.

In this regard, the NRC has developed a design certification process under 10 CFR Part 52 to bring about enhanced safety and the early resolution of licensing issues. It provides a more stable and predictable licensing process by: (1) resolving safety issues for an essentially complete nuclear power plant design; (2) placing these resolutions under a restrictive change process that applies to both the regulator and the applicant for design certification and thereby reducing licensing uncertainty; and, (3) extending the approval duration to 15 years. This process resolves safety and environmental issues before authorizing construction, thus reducing licensees' financial risk while allowing for timely and meaningful public participation.

By using rulemaking for these certifications, the Commission assures license applicants who reference a certified design that the safety issues already resolved will not be reconsidered during the plant licensing process. This has led to the development of licensing processes which are ready to be used, and the NRC has issued rules certifying standard designs - the Advanced Boiling Water Reactor (ABWR), System 80+, and the AP-600. And soon, the AP-1000 design may be added to this list.

The design certification review (DCR) process examines: (1) an essentially complete design, thus facilitating standardization; (2) the final design information, which is equivalent to the information in a Final Safety Analysis Review (FSAR); (3) the postulated site parameters; (4) interface requirements; and (5) inspections, tests, analyses, and acceptance criteria (ITAAC). It does not review site safety issues, like seismology, environmental impact issues, operational programs, site-specific design features, or selected design areas. Site-specific issues are bounded to allow for separation of siting reviews from the design reviews. We have developed a design certification process that has been tested and proven to meet our needs. It is the design certification process that could serve as a benchmark for the potential acceptance of a certified design by a group of signatory countries participating in its development. The site-specific issues could be resolved by each country's regulatory authority in accordance with their own regulatory framework.

These siting reviews lead to Early Site Permits (ESP), which allow for the "banking" of a site for up to 20 years. The review looks at site safety, environmental impact issues, and emergency preparedness and reduces licensing uncertainty by resolving site-related issues.

A utility can elect to use a certified design in conjunction with a combined license application. A Combined License (COL) contains both a construction permit and an operating license with conditions for a nuclear power plant that has a 40-year duration. It can reference the ESP, DCR, both, or neither, and is the fundamental licensing process in Part 52 for reducing regulatory uncertainties. The review process includes extensive opportunities for public participation as well as independent technical advice from the ACRS. The DCR regulatory framework is risk-informed and performance-based, and could be adopted for international use.

Technology-Neutral Framework

Substantial progress has been made on the development of a technology-neutral framework for new plant licensing, including its overall structure, scope, approach, and content. Allow me to briefly describe what the NRC has been developing in this area.

The framework provides the technical basis for developing a hierarchical, risk-informed technology-neutral set of requirements for new plant licensing on both a generic and a plant-specific basis, utilizing the Commission's 1986 Safety Goal Policy Statement as the top-level expression of the NRC's expectations for safety. It establishes an overall safety objective that defines the region that may be deemed to provide adequate protection and beyond, if appropriate. That is, future regulatory requirements can be written to achieve the necessary level of safety defined by the Commission's Safety Goal Policy.

The framework's technical approach is a risk-informed approach that blends probabilistic and deterministic criteria in establishing four "protective strategies" -- barrier integrity, limit initiating event frequency, protective systems, and accident management -- to address uncertainties through the use of a defense-in-depth philosophy and provide reasonable assurance that the overall mission of protecting the public health, safety, security, and preparedness is met. It identifies those areas that need to be addressed to ensure plant design, construction, and operation meet the safety objective.

Administrative requirements will need to be established to ensure that the implementation of the technical requirements by licensees is done in a consistent, controlled, and documented fashion. These will include format and content of applications, PRA quality, reporting and record keeping, change control, and license amendments.

I would like to note that defense-in depth no longer includes just an array of structures, systems, and components capable of performing the intended safety function - it is broader in philosophy and in practice. It now also incorporates design, engineering, and operating experience, and is complemented by risk-informed and performance-based decision making. As a parallel issue, I have been emphasizing lately the "big three" interrelated components of defense-in-depth -- safety, security, and emergency preparedness. All three are essential components of regulatory predictability and are factors on which the NRC and our licensees depend for adequate assurance of safety.

Summary

We have developed a design certification process that has been tested and proven to meet our needs, allowing for a more stable and predictable licensing process. We are making considerable progress in developing a technology-neutral framework that will ensure an acceptable level of safety

for future designs, irrespective of the type of reactor being licensed.

I believe that the design certification process and technology-neutral framework I have described offers a considerable opportunity that is available to the international community. I offer for your consideration the option of reviewing and further developing this process as a potential basis for an international standard that could ensure the safety and global utilization of any reactor technology through-out the first half of this new century.

Thank You.