



# NRC NEWS

**U.S. NUCLEAR REGULATORY COMMISSION**

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**“State of the Nuclear Renaissance – A Regulatory Perspective”**

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**U.S. Nuclear Regulatory Commission**

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Thank you, and good morning, everyone. I appreciate the opportunity to address this distinguished international gathering.

Around the world today, finding and developing new sources of energy continues to be a priority for all nations. These efforts encompass both traditional and new energy sources. Global energy supply and per capita energy use continue to increase. In his report entitled, “International Status and Prospects of Nuclear Power,” the Director General of the International Atomic Energy Agency described the past two years as “paradoxical” for nuclear power. Projections of future growth were revised upwards despite a worldwide financial crisis and a two-year decline in global installed nuclear capacity. Although no new reactors were connected to the grid in 2008 and only two were connected in 2009, there were 10 construction new starts in 2008 and twelve in 2009, which continues an upward trend begun in the year 2003.

As a member of a regulatory body whose job it is to enable commercial energy activities to proceed, provided that safety, environmental, security and other applicable requirements are met, I have come to appreciate the regulator’s vital role in contributing to the ultimate success of energy development activities. This role, if performed well, diminishes the likelihood of adverse consequences.

Today I will be commenting on the current status of the “nuclear renaissance” from the position of the regulator. As a nuclear regulator, it is not my role to advocate for the commercial uses of nuclear energy. My agency, the U.S. Nuclear Regulatory Commission, or NRC, is an independent nuclear regulatory body that is responsible for regulating the safe and secure use of nuclear technology and materials, and is separate from the Department of Energy, which is the

U.S. Government agency responsible for developing and promoting nuclear technologies. Also, the views I am about to express are my own and may not represent the collective view of the Commission on which I serve.

Let me begin by describing the objective evidence the U.S. regulator has seen, so far, of the “nuclear renaissance.” The NRC has received 18 license applications for 28 new nuclear power plants; of these, 13 applications for 22 units are under active NRC review. Five applications have been suspended or deferred by the applicants because of their changing business strategies. One of the five suspended applications has since been withdrawn and replaced with an application for an early site permit. These are the first applications for new reactors that the NRC has received in roughly three decades.

In addition, the Tennessee Valley Authority has decided to complete construction of its Watts Bar Unit 2, a current generation nuclear plant whose construction was deferred in 1985. The Tennessee Valley Authority is also evaluating whether it may pursue the same approach with respect to completion of either of its partially-completed Bellefonte units in Alabama. At the same time, there is growing interest in the development of more advanced reactors, including small modular reactor designs. Accompanying these developments is increased interest in the licensing of uranium recovery sites in the western United States, along with the licensing of two new uranium enrichment plants plus two more enrichment license applications that are under review.

Just a decade or so ago, the potential for these developments was not widely recognized. Now they represent a change in focus for the nuclear industry and the NRC. At this point, both the NRC and the industry are fully engaged in the safety reviews of the license applications. But reviewing new reactor applications is not our only role – and this is a key point in understanding the regulatory perspective.

The NRC’s safety oversight of the 104 currently operating reactors in the United States is of primary importance, and the great majority of our regulatory resources remain focused on these facilities. Just as the NRC’s credibility depends on our effective oversight, so, too, does the credibility of the nuclear industry depend on the continued safe operation of every one of its plants. Neither the NRC nor the U.S. industry can afford to lose sight of that fact.

Having said that, the NRC is fully capable of carrying out oversight of operating reactors and new reactor licensing tasks, and we are doing so. As we carry out these tasks, however, there are two key questions facing the NRC:

- First, is the NRC – both its people and its regulatory framework -- prepared to handle this substantial increase in new reactor licensing activity?
- Second, will the regulatory process be efficient, stable, and predictable?

As to the first question, the NRC has taken many steps in advance of the wave of new reactor applications to ensure that the agency will be positioned to handle the increased activity associated with new reactors. The Commission, starting in 1989, substantially modified its licensing process, which had not changed since the early days of the NRC’s existence. The new

process envisioned a modified reactor licensing process with three potential steps: certifying a plant design, obtaining an early site permit, and submitting an application for a combined license. A combined license authorizes the licensee to build *and* operate a nuclear power plant.

The purpose of the new process was to provide both applicants and the public with the opportunity to resolve siting and design issues before construction would begin and to provide a more predictable and stable licensing environment than had previously been available. The use of standardized designs would eventually ensure a more streamlined NRC review process since design features would be similar for license applications utilizing the same reference design. In addition, the NRC created the Office of New Reactors to focus solely on new reactor applications, while the existing licensing organization for reactors -- the Office of Nuclear Reactor Regulation -- would remain devoted to the task of ensuring the safe and secure operation of the currently operating reactors. We also substantially increased the number of agency staff involved in reviewing designs and new reactor license applications through an extensive three-year recruitment effort.

The framework for review of combined license applications establishes a reference design from the lead plant of each particular type, with subsequent plants of each type building off of their respective reference designs. This approach is intended to provide a greater degree of predictability in licensing reviews compared to the U.S. experience in our first round of power reactor construction.

On the human capital and workforce front, at the same time that we have been hiring new staff, we have also lost many of our most experienced personnel to retirements. This phenomenon is also affecting the U.S. nuclear industry. Half of the agency's staff has now been employed with the NRC for 6 years or less. This shift in the composition of the agency's staff poses significant human capital and knowledge management challenges. Early in the new millennium, the Commission recognized that these challenges were looming. In order to get ahead of the curve, the NRC established a Human Capital Strategic Plan in 2004, and began implementing a formal knowledge management program in 2006.

While structure and resources are quantifiable, efficiency and stability are more subjective. With respect to the second question I posed – that of whether the regulatory process will be efficient, stable, and predictable – I would like to examine this question through the prism of the NRC's Principles of Good Regulation.

Originally issued by the Commission in 1991, the Principles of Good Regulation are intended as a guide to both agency decision-making and the individual conduct of NRC employees. They are described as fundamental guideposts in ensuring “the quality, correctness, and consistency of our regulatory activities.” I believe these principles articulate the standards by which the regulated community and the broader public is asked to judge the NRC as a regulator and as an institution charged with ensuring the public trust.

The first principle – that of independence – calls for the “highest possible standards of ethical performance and professionalism,” and notes that independence “does not imply isolation.” All available facts and opinions must be sought openly. Conflicting public interests

must be considered and final decisions must be based on objective, unbiased assessments of all information, and documented with reasons explicitly stated.

The second principle – openness – describes nuclear regulation as the public’s business. The public must have the opportunity to participate in the regulatory process and open channels of communication must be maintained.

The third principle – that of efficiency – notes that the taxpayer, the rate-paying consumer, and licensees are all entitled to the best possible management and administration of regulatory activities, which should also be consistent with the degree of risk reduction they achieve. Regulatory decisions should be made without undue delay.

The fourth principle – clarity – calls for regulations that are coherent, logical, and practical. Agency positions should be readily understood and easily applied.

The fifth and final principle – reliability – states that regulatory actions should always be fully consistent with written regulations and should be promptly, fairly, and decisively administered so as to lend stability to the nuclear operational and planning processes. Most importantly, this principle supports the objective that – once established – regulation should be perceived to be reliable and not unjustifiably in a state of transition.

By publicly declaring these principles and by conducting its regulatory business according to them, the NRC seeks to promote public confidence in its oversight of the U.S. nuclear industry.

As noted by the OECD’s Nuclear Energy Agency, in its report, entitled “Comparing Nuclear Accident Risks with Those from Other Energy Sources”: “In addition to the main responsibility of the operator, the excellent safety performance of nuclear power generation is, at least in part, related to the efforts of nuclear regulatory bodies over the years in setting demanding standards of design and operation. Opinion polls also show that trust in the regulators and regulations is correlated with confidence that nuclear power plants can be operated safely. It is important that governments continue to ensure that regulatory bodies have the resources and competencies they need to maintain the necessary high standards.”

Complementing the regulator’s necessary high standards, it is important that I make note of the U.S. industry organization that embodies the nuclear power industry’s willingness to strive for excellence in operations. Created in the wake of the Three Mile Island accident and having achieved its thirtieth year of operation last year, the Institute of Nuclear Power Operations, or “INPO,” works in concert with its global counterpart, the World Association of Nuclear Operators, to maximize the safety and reliability of nuclear plants worldwide by working together to benchmark and improve performance through mutual support, exchange of information, and emulation of best practices.

In my view, the industry’s sustained commitment to striving for excellence in operations, complemented by the existence of strong and independent regulators worldwide, provides an important foundation for public confidence in the safety of nuclear power. The presence of so

many of us coming together at a conference such as this one is another example of how regulators and industry participants continue to advance this dialogue.

Being in this wonderful city, I was inspired to conclude my remarks with the words of Winston Churchill who is rumored to have said, “Courage is what it takes to stand up and speak; courage is also what it takes to sit down and listen.”

But before I sit down and listen, I will repeat another bit of his wisdom, which is this: “True genius resides in the capacity for evaluation of uncertain, hazardous, and conflicting information.” He also admonished, however, that “It is no use saying, ‘We are doing our best.’ You have got to succeed in doing what is necessary.”

And therein, lies the double burden confronted by all of us standing at the crossroads of nuclear technology and public policy. As a global community of scientists, business leaders, and public officials, we must find the “true genius” to evaluate the uncertainties while succeeding always in doing “what is necessary” to ensure the safety, security, and well-being of current and future generations. Working together on these issues will give us our best hope of success.