



# NRC NEWS

**U.S. NUCLEAR REGULATORY COMMISSION**

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## REMARKS OF

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**AT THE**

**SIXTEENTH ANNUAL  
KOREAN ATOMIC INDUSTRIAL FORUM/KOREAN NUCLEAR SOCIETY CONFERENCE**

**The Direction of Nuclear Regulatory Policy in the U.S.A.**

**SEOUL, KOREA  
APRIL 17, 2001**

## INTRODUCTION

I am pleased to participate in the annual conference of the Korea Atomic Industrial Forum and the Korean Nuclear Society during my first visit to Korea as Chairman of the United States Nuclear Regulatory Commission.

In his letter of invitation, Dr. Choi asked me to discuss my perspectives on the direction of nuclear regulatory policy in the U.S. I will thus share some thoughts with you on the U.S. NRC's regulatory activities - where we are now, and where we are headed in the future. I will also address the importance of international cooperation in enhancing our regulatory process, both at home and abroad. Before commenting on these matters, I want to take a moment to reflect upon the remarkable time in which we find ourselves in the United States.

## THE ENERGY CONTEXT

The U.S. is experiencing a period of changing attitudes toward nuclear power. Only a few years ago, pundits claimed that the deregulation of the electricity business would result in the premature shutdown of many nuclear plants and the eventual end of reliance on nuclear power in the U.S. In

striking contrast to these forecasts, we in fact have seen a renewed interest in nuclear energy. Many licensees seek to extend, rather than shorten, the expected lives of their plants. There also is a strong competition among a variety of bidders to acquire ownership of existing nuclear plants, in recognition of their economical, reliable, and environmentally benign performance. And we have even seen the first stirring of interest in the possibility of new construction -- a thought that would have been unthinkable even a year ago.

An important factor in the emerging attitudes toward nuclear power is the remarkable improvements in nuclear plant performance over the past decade. The average capacity factor for U.S. light water reactors was over 90 percent for the first 9 months of 2000, up from approximately 65 percent just 10 years ago. Performance indicators show that during the same period the overall safety performance of the industry has significantly improved. For example, the average number of automatic scrams has declined by approximately a factor of 3 in the past decade. This improved performance has resulted in significant increases in electrical output; in fact, nuclear electrical output has grown approximately 25 percent in the last decade without the introduction of any new plants. As a result, electricity production from U.S. nuclear plants is now second only to that produced from coal-burning plants.

These changing attitudes have been reinforced by the problems with electrical supply in the State of California. The core problem is rather elementary: there is insufficient generation capacity to meet growing electricity demands. The nuclear plants in the western U.S. are appropriately seen as the anchors of the grid. Even some of those who have opposed nuclear power in the past recognize and value the important contribution of the nuclear sector to electricity supply.

Although deregulation may be slowed in some states in the aftermath of the California situation, the supply problems in the western U.S. have prompted the start of the first careful scrutiny of national energy policy in the past 20 years. The new Administration in Washington has formed a task group chaired by Vice-President Cheney. And there is strong Congressional interest in energy legislation, as reflected in several bills that are already pending. The early discussions suggest that nuclear power will be a strong component in the mix of technologies that are shaped into a national strategy.

The NRC does not have a promotional role for nuclear power in this debate. Indeed, the NRC's fundamental mission and responsibilities remain unaltered. The NRC is obligated to regulate the Nation's civilian use of nuclear materials to ensure adequate protection of public health and safety, to promote the common defense and security, and to protect the environment. Because the viability of the nuclear option is absolutely dependent on the maintenance of safe operations, the NRC's -- and the industry's -- highest priority must be the protection of public health and safety. If we fail in ensuring safety, the emerging optimism about nuclear energy will quickly disappear.

Although the NRC's focus must remain on safety, this does not mean the NRC has no role in the resurgent interest in nuclear power. The NRC's regulatory system should not establish inappropriate impediments to the application of nuclear technology. The NRC's performance goals reflect this philosophy: they include the improvement of the efficiency and effectiveness of our regulatory process and the reduction of unnecessary regulatory burden. Many of our initiatives over the past several years have sought to maintain safety -- our primary performance goal -- while simultaneously simplifying and improving our regulatory system. The NRC also has an important obligation to establish and maintain public confidence -- another of our performance goals. In fact, we believe the NRC fosters a climate in which the nuclear option can be fairly evaluated by both being a strong regulator and by being seen by the public as fulfilling that role.

The role of nuclear energy in the U.S. over the coming decades is dependent on continuing safe operation of our existing fleet and, if society so decides, on new construction. Let me turn my discussion to certain NRC-related activities that bear on these matters.

## **LICENSE RENEWAL**

The limitation in U.S. law to a 40-year term for an initial operating license was not established on the basis of technical limitations, but rather was driven by antitrust and financial considerations. The law allows the NRC to consider a license renewal and we will grant such a renewal if, after a full evaluation, we conclude a plant can be safely operated for an extended period. The first license renewal applications, for Calvert Cliffs and Oconee, were received in 1998, and the NRC developed an ambitious 30-month schedule to complete the safety and environmental evaluation of each application. We met our schedules for both plants and approved 20-year extensions last year. We currently have three applications under review, including the first boiling water reactor, Southern Company's Hatch plant. Five additional applications are expected during the coming fiscal year. Roughly 40 percent of U.S. plants have formally expressed their intention to seek license renewal, and ultimately more than twice that many may apply. These renewal applications, if successful, will mean that nuclear energy will contribute significantly to U.S. energy supply well into this century.

The Commission recognizes that the simultaneous review of many renewal applications presents a considerable challenge in managing resources. But I am confident that we're up to the task. We must -- and shall -- fulfill our responsibilities to perform high-quality, technically sound reviews while maintaining the efficient, effective process that has been established in these first reviews.

## **CONSTRUCTION OF NEW NUCLEAR POWER PLANTS**

Increased demands for electricity in the future will need to be addressed by construction of new generating capacity of some type and, as I have mentioned, serious industry interest in new reactor construction in the U.S. has recently emerged. The Commission, working with current licensees and other stakeholders, has put in place a more efficient licensing procedure to avoid some of the delays incident to the processes under which the current fleet of plants was licensed. In the last few years, the NRC has certified three advanced reactor designs: the General Electric advanced boiling water reactor, the Combustion Engineering System 80+, and the Westinghouse AP600 light water reactors. In addition to these certified designs, there are new nuclear power plant technologies, such as the Pebble Bed Modular Reactor, which some believe can provide enhanced safety, improved efficiency, lower costs, as well as other benefits. Many of these designs are likely to first be built in other countries, and the NRC will be looking to our exchange programs to provide us with operational data which will be used in later licensing decisions. For example, I know that Korea may have early operational experience that bears particularly on the System 80+ design.

To ensure that the NRC is prepared to evaluate any applications to introduce these advanced nuclear reactors, the Commission is assessing its policies to identify where changes may be necessary. Particular emphasis is being placed on the early identification of regulatory issues. Moreover, the staff is assessing its technical, licensing, and inspection capabilities in order to identify enhancements that would be necessary to ensure that the agency can effectively carry out its responsibilities.

In order to confirm the safety of new concepts, the Commission believes that a strong nuclear research program must be maintained. A comprehensive evaluation of the NRC's research activities is underway with assistance from a group of outside experts and from the NRC's Advisory Committee on

Reactor Safeguards. With the benefit of these insights, it is my intention for the Commission to take steps to strengthen our research program over the coming months.

I cannot leave this topic without noting the invaluable work performed in our joint international research programs. With budgets that are inadequate for any single country to perform all phases of investigational and confirmatory research, our ability to engage in focused, global cooperation enables all of us to enhance our nuclear regulatory and safety regimes.

## **RISK-INFORMING NRC REGULATORY ACTIVITIES**

An important NRC initiative relates to the reexamination of the foundations of our regulatory system. Improved probabilistic risk assessment (PRA) techniques combined with over 4 decades of accumulated experience with operating nuclear power reactors have caused us to recognize that some regulations may not serve their intended safety purpose. This situation arises because, when many NRC regulations were initially formulated, the NRC did not yet have much practical experience with commercial reactors. As a result, the Commission generally proceeded very cautiously, relying on conservative engineering judgment and defense in depth. We have learned much in the intervening years and now recognize that some of our regulatory requirements may not be necessary to provide adequate protection of public health and safety. Where that is the case, we should revise or eliminate the requirements. On the other hand, we must be prepared to strengthen our regulatory system where risk considerations reveal the need. We are presently evaluating the technical bases of our main body of requirements and modifying them, as appropriate, to focus on risk-significant issues.

One particularly important activity is our effort to risk-inform our reactor inspection process. This new oversight process uses a combination of objective performance indicators and risk-informed inspections to measure plant performance. The new program also incorporates a simplified PRA to determine the risk significance of inspection findings so that the NRC can focus attention on those matters that are most important.

We are close to completion of the first year of initial industry-wide implementation of this new program and, overall, we find that the new process has been a remarkable success. The process has provided a more objective and understandable evaluation of plant performance, with a focus on operational aspects that are of the highest safety significance. And the new process has also improved public access to assessment information and has reduced unnecessary regulatory burden. Notwithstanding our successes in this area, we recognize that improvements can still be made and we seek to engage all of our stakeholders, including the public, in our self-assessment efforts.

I should note that there has been intense interest internationally in our move to risk-informing our regulations, in part because the trend in other countries has been toward a more prescriptive approach. While this difference is real, I do not believe that the contrast is as stark as it is often portrayed. We are building on a long history of prescriptive regulation in the U.S., not eliminating that knowledge base. We use risk insights to supplement or inform modification of our prescriptive requirements. It is for this reason that we urge other countries which may be considering a move to a risk-informed regulatory system to establish a strong safety foundation on which to build risk-informed approaches. The process of risk-informing regulations is not a means to diminish necessary regulatory oversight; rather, with the appropriate safety basis, it is a way to allow the more effective use of resources.

## **PROGRESS ON HIGH LEVEL WASTE STORAGE AND DISPOSAL**

Solutions for high level waste storage and disposal continue present challenges to the NRC. In the past several years, the NRC has responded to numerous requests to approve cask designs for onsite dry storage of spent fuel. These actions have provided an interim approach pending implementation of a program for the long-term disposition of spent fuel. We anticipate that the current lack of a final disposal site will result in a large increase in on-site dry storage capacity during this decade.

There currently are two potential alternatives to on-site storage -- centralized interim storage, and disposal in a geologic repository. Delays have been encountered with both alternatives. The staff is currently reviewing an application for an Independent Spent Fuel Storage Installation in the State of Utah. And certain matters also need to be resolved in order to make progress on the proposed deep geologic repository at Yucca Mountain in Nevada. I am cautiously optimistic that the regulatory framework for consideration of a possible repository at Yucca Mountain can be in place within the next several months.

## **MAINTAINING LONG TERM SUCCESS**

I want to spend a few minutes in discussing two areas that affect the long-term success of the NRC. The first is the need to maintain the core competency of the NRC staff. My close exposure to the staff over the 17 months I have been with the Commission has served to deepen my appreciation of the dedication, thoughtfulness, and technical skill of the staff. But I am worried about the future. In some important offices, nearly 25 percent of the staff is eligible to retire today. In fact, the NRC has six times as many staff over the age of 60 as it has staff under the age of 30. And it is becoming increasingly difficult for the NRC to hire personnel with the knowledge, skills and abilities to conduct the safety reviews, licensing, and oversight actions that are essential to our safety mission. The number of individuals with the skills critical to the achievement of our safety mission is rapidly declining in our Nation and our educational system is not replacing them. In response to this important issue, the NRC is now seeking systematically to identify future staffing needs and to develop strategies to address the gaps. I mention this issue because I believe this is an international issue that confronts all of us.

## **NEED FOR PUBLIC OPENNESS**

The second matter of importance is the need for public openness. None of the changes that I have described will serve their intended purpose without public confidence in the NRC and in the industry. As we have seen time and again, the willingness of the regulator and the industry to respond quickly to an incident and to keep the public fully informed has had a dramatic impact on the public's response.

There are segments of our society that are very concerned about the risks -- real and imagined -- that nuclear technology presents to the public health and safety and the environment. Others worry about the need to safeguard nuclear materials so that untoward uses are avoided. And others are worried about the risk attendant to nuclear waste. Many of those holding strong views on such matters may not be technically knowledgeable and cannot engage the agency at the level of technical sophistication with which our staff is most comfortable. If the NRC is to be successful, however, the concerns of the public must be openly acknowledged and directly confronted.

Equally important, there is a procedural imperative to make decisions through processes that are accessible to the public. No matter how careful a job we do, if our work is performed behind a wall of

secrecy, the public will not have confidence that the result is fair, objective, honest, or in the public interest. There will always be the corrosive suspicion that decisions made outside the sight of the public serve to protect those favored by the decisions, to conceal dangers, or to cloak imprudent acts.

As a result of these considerations, the Commission has strived to maintain open communication with all its stakeholders and seeks to ensure the full and fair consideration of issues that are brought to our attention, whatever the source. Occasionally this means that our decision processes are slow. But, we believe that public confidence in any increased reliance on nuclear power will not be achieved unless the NRC engages the concerned public and thereby both acts to ensure safety and is seen to act responsibly for that purpose.

## **INTERNATIONAL COOPERATION**

I would like to conclude by discussing a goal that we all share -- ensuring nuclear safety. Nuclear technology is now pervasive throughout the globe. Over 400 nuclear power plants are now operating in more than thirty nations, supplying about one-sixth of the world's electricity. In several countries, nuclear power supplies over 70 percent of domestic electricity production. And new nuclear capacity is planned or is being considered in a wide range of nations.

The decision whether to use nuclear power, the determination of the number, size, and location of plants, and the designation of the methods to be applied by plant operators and regulatory agencies to ensure safety and public protection are matters of sovereign concern. But there also is a vital need for international cooperation to ensure that safety is the fundamental consideration in the use of nuclear technology.

The nuclear industry has clearly recognized the need for and value of international cooperation and technical information exchange. Indeed, the nuclear business is now international in nearly every aspect: design, construction, operation and regulation. It is imperative that cooperation continue and expand to promote good safety practices and to discourage poor ones.

I am firmly committed to continuing the U.S. NRC's role in international cooperative exchanges at all levels. NRC staff members participate in many international conferences and on many international working groups. The contributions of our international research partners are essential to the vitality of the NRC's research program. On the Commission level, my fellow colleagues and I have met with many of our counterparts around the world to discuss perspectives on nuclear regulation and ways in which to promote adherence to the highest degree of safety assurance. The NRC's Office of International Programs coordinates technical information exchange agreements with 34 other nations.

I am sure that we can do more. It is through interactions such as those provided by this conference that we each can learn from each other.

## **CONCLUSION**

I hope that my remarks have provided you with a sense of the direction of the NRC's regulatory policies. The assurance of public health and safety undoubtedly remains our foremost obligation. With the renewed interest in nuclear power in the U.S., the achievement of safety will require the NRC to anticipate the challenges and to adapt to them. Our continued success benefits greatly from international cooperation and, thus, I am particularly pleased to have had the opportunity to speak with you today. Thank you.