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No. S-96-22

"CHALLENGES FOR NUCLEAR REGULATION;
THE ASIAN FUTURE,
THE AMERICAN EXPERIENCE"

BY

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AT THE

10TH PACIFIC BASIN NUCLEAR CONFERENCE
IN KOBE, JAPAN
OCTOBER 21, 1996

INTRODUCTION

Good morning.

It is both an honor and a pleasure to address the Pacific Basin Nuclear Conference at this milestone 10th anniversary meeting.

This is the third time I have visited this part of the world since becoming NRC Chairman last year, and it is a pleasure to renew acquaintance with some of you whom I met on earlier visits to Japan, Korea, and China.

My travels to Asian nations are a reflection of a fact well known to all of you: that the cutting edge of nuclear development is here, in the vigorous and ambitious nuclear power programs of Pacific Rim nations. For those of us in the United States who regulate nuclear power, therefore, the interest in how you confront the various challenges facing you could not be higher. It is during periods of growth and development, of the kind that the Pacific Rim nuclear programs are experiencing today, that we see both technological innovation and creative thinking in a variety of spheres.

I believe that the future of nuclear power worldwide will be strongly influenced by how successful the nations of the Pacific Rim are in meeting the technological, managerial, and economic challenges ahead. Everything that I have seen on my visits to this region gives me great confidence in your ability to meet those challenges.

There are other challenges as well. The Convention on Nuclear Safety, which will enter into force on October 24 of this year, requires each contracting

party to establish or designate a regulatory body with adequate authority and resources to fulfill its responsibilities, and also to ensure an effective separation between the functions of that body and any other body or organization involved in promoting or utilizing nuclear energy.

That means that some nations may have to alter or reexamine their regulatory structures to make sure that they provide the regulators with sufficient independence to do their jobs effectively. Primarily, of course, this reflects a judgment that only by making the regulators independent can we assure that safety will always be their supreme consideration. But there is a side benefit as well. The existence of an independent regulator, doing its job in an open and straightforward way, is essential in the long run, if a nation's nuclear power program is to achieve and maintain the support of the public.

The United States now has considerable experience in managing an independent regulatory body, with a process that, by any standard, is remarkably open to public observation, understanding, and participation. In light of the issues likely to arise in implementing the new Safety Convention, it may be useful if I spend part of my time today talking about how we went about creating the regulatory structures and processes we have in the United States, and some of the lessons we have learned along the way.

THE NRC EXPERIENCE

In the United States, the starting point for the commercial use of nuclear energy came with the passage of the Atomic Energy Act in 1954. At that time, there was no U.S. Nuclear Regulatory Commission (NRC). The U.S. Atomic Energy Commission, created in 1946, had the responsibility both of promoting the growth of nuclear power and regulating its use.

Over the years, as nuclear power moved from being an experimental technology to being an established source of electric power production, concern grew that there was a potential conflict of interest when promotion and regulation were assigned to the same agency. In the 1960's and early 1970's, the rapid increase in the number of nuclear power plants brought a corresponding increase in concern over nuclear safety, waste disposal and other related issues.

Ultimately, there was a consensus that the nuclear power industry had outgrown the existing Governmental structures for its regulation. In 1974, therefore, the U.S. Congress enacted legislation that abolished the U.S. Atomic Energy Commission and created a new agency, the U.S. Nuclear Regulatory Commission, with an exclusively regulatory mandate.

The basic legal standards for the process that the NRC has today were set by the Atomic Energy Act of 1954. Specifically, that statute gave a right to the public for a hearing on certain kinds of agency action, including applications for permits to construct and then to operate nuclear power plants. Why? There were at least two considerations. The first was that the grant of this kind of license was a very significant action, and that there ought to be the opportunity for the public to be heard. (In the case of construction permits,

hearings were mandatory even if no one asked for a hearing.) The second consideration, and an important one, was that hearings informed the public and built public acceptance of the final decision.

Those were procedural requirements, set by the U.S. Congress. On substance, including the central question of "how safe is safe enough," the Atomic Energy Act did not provide guidance. Nor could it; in 1954, the U.S. Congress was laying a foundation for regulating a technology that did not yet exist. So the statutory mandate was extremely general: "protect health and safety," "minimize danger to life or property," and "provide adequate protection." Not unreasonably, the U.S. Congress left it to the Commission -- the U.S. Atomic Energy Commission and its successor, the NRC -- to apply those terms and to give them practical meaning.

Today the NRC mission remains adequate protection of public health and safety, and the environment; and the common defense and security, in the use of nuclear materials in the United States. Our mission encompasses the regulation of more than nuclear power plants and includes research, test and training reactors, fuel cycle facilities; the use of radionuclides in medicine, research and industry; as well as low-level and high-level radioactive waste facilities. My remarks encompass all of these, but are of special relevance for nuclear power development. Over the decades, since its inception, the Commission's approach to safety and safeguards has developed and matured: through regulations, adjudicatory decisions, and a variety of policies and practices. All of this has taken place under the eye of the U.S. Congress, which oversees the activities of Government agencies. In addition, court decisions from time to time have contributed to shaping the NRC's interpretation of its responsibilities.

THE NRC SAFETY PHILOSOPHY

Just this year, the NRC developed and published its "Safety Philosophy," which represents a crystallization of NRC policy and practice, as it has evolved during this period. We thought it would be valuable for the public, for those we regulate, and for our own staff to have a written, concise statement of how we see our mission, what we expect of those we regulate, and how we do the public's business.

As we at the NRC see it, a safety philosophy comprises five closely interrelated elements: defense-in-depth, licensee (or operator) responsibility, safety culture, regulatory effectiveness, and accountability to the public. I would like to discuss safety culture and accountability to the public in some detail, and will mention the others very briefly.

Defense-In-Depth and Regulatory Effectiveness

Defense-in-depth is a concept with which you are all familiar, with redundant layers of protection, and it requires no extensive discussion here.

Regulatory effectiveness describes the NRC's approach for determining whether safety improvements are worthwhile. Succinctly stated, the NRC's approach is that because safety is and must be paramount, standards and practices needed

to assure "adequate protection" will be required regardless of cost. Over and above that baseline level, however, further upgrades to improve safety will be required only if the incremental gain in safety outweighs the cost. The cost/benefit analysis of such upgrades are performed in accordance with the NRC "Backfit Rule," promulgated in 1985. More broadly, the NRC currently is looking not only at whether a particular regulation or set of regulations is necessary, but also considering the ease of its implementation, its consistency with other applicable statutes and regulations, its fairness, its cost-effectiveness, and its place within the overall regulatory program. Efficiency and the use of risk insights within a performance-based framework, also are important components of regulatory effectiveness.

Licensee Responsibility

On the subject of licensee responsibility, the NRC's Safety Philosophy explains that, "although the NRC develops and enforces the standards governing the use of nuclear installations and materials, it is the licensee (nuclear operator) who bears the primary responsibility for conducting those activities safely." It goes on to state that the NRC's role is not to monitor all nuclear operator activities. It cannot. Rather, the NRC oversees and audits the actions of those we regulate, so that it can focus its activities where the regulatory need is greatest.

This element of the Safety Philosophy is intended to make clear, beyond any possibility of misunderstanding, that the primary responsibility never shifts from the nuclear operator. If an operator's activities are not in accordance with its license, or with the NRC's regulations, it is responsible and accountable -- whether or not the NRC could or should have detected the noncompliance and required corrective action.

Safety Culture

I would like now to discuss the elements of a safety culture. A safety culture includes, of course, sound practices and procedures, but as the phrase suggests, it goes far beyond that. It means, in essence, a set of attitudes ingrained in the nuclear institution, from top to bottom. What are those attitudes? That safety has the highest priority, always; that when safety problems arise, they are dealt with appropriately and swiftly; that complacency is resisted at all costs; and that within the organization, each person has adequate training for his or her tasks, with clear lines of authority and communication.

Dealing with safety problems when they arise -- promptly, soundly, and honestly, is crucial. It may be human nature not to want to hear bad news, or to be the bearer of bad news. But in the nuclear arena, that is a luxury that cannot be indulged.

It is human, of course, not to want to admit to problems that could lead to regulatory sanctions, cause adverse public comment, and cost money to fix. But there is not a single case I can think of -- in any country -- in which concealing a problem and procrastinating in correcting it will not wind up costing a nuclear operator substantially more in every category: enforcement

action, public concern, and economic loss, not to mention the potential consequences of an accident.

Complacency is a particular danger, because the safety record of nuclear power is generally so good. Years of mishap-free operation can lead to diminished vigilance, and to the assumption that because no serious accidents have occurred recently, none will occur. All of us -- nuclear operators and regulators too -- need to maintain a questioning attitude, one that never takes safety for granted.

Accountability to the Public

In our Safety Philosophy, the NRC discussed Accountability to the Public in some detail. We explained that the nuclear operators' (our licensees) accountability to the NRC is matched with the NRC's accountability to the public and the U.S. Congress. This entails, we said, "being candid with the public about what we are doing and why, as well as acknowledging the public's interest in safety issues and its right to know." We further explained that under the Atomic Energy Act, the public has an important role to play as the NRC addresses issues of safety and health, and "for members of the public to perform that role, they need sound, complete, and up-to-date information from the NRC." We added, "A key element of the NRC's safety philosophy is that nuclear regulation is the public's business."

If there is one single piece of advice above all others that I would offer you today, it is that candor -- "transparency" -- is a must, for nuclear operators and for regulators. The public may forgive nuclear operators and its regulators the occasional error but it will not tolerate lack of candor.

Technical experts, not just in the nuclear field, need to guard against the attitude that people lacking technical expertise are unnecessary, or even a hindrance, when it comes to resolving issues. Where can that attitude lead? First, to thinking that if people cannot contribute to resolving an issue, then there is no need to inform them about it. From there, it is an easy step to the thought that information that might be misunderstood by or alarm the public, or be misused by one's adversaries, should be concealed.

That is a path of thinking that must be resisted. For if the public once loses confidence in the veracity and straightforwardness of those in the nuclear business, that confidence may never be fully regained.

So far I have been talking mainly about the need for "transparency" as it applies to nuclear operators. But as our Safety Philosophy recognizes, this need applies to regulatory bodies as well.

TRANSPARENCY AT THE NRC

I have been at the NRC only since last year, but I know enough of the agency's history to appreciate the importance for a regulatory body to act in an open and straightforward way, and to be seen as doing so. I think that our record of openness has, in reality, been excellent. The NRC has made a point of

trying to explain its actions fully, and to accept and, indeed, to seek out public comment and participation in its decisionmaking process.

Appearance matters as well as reality, however. On the rare occasions when it has appeared to the public that the NRC was trying to keep the public in the dark about what it was doing, or to accomplish its objectives without giving the public a voice, the reaction has been sharply negative. Two examples come to mind in this regard: 1) the controversies over the Government in the Sunshine Act, in the 1980's, and 2) the "below regulatory concern" issue in the early 1990's. In the first instance, the NRC amended its regulations governing open meetings to take account of a recent Supreme Court decision interpreting the Sunshine Act. Not realizing how controversial the rule change would be, the Commission made the change without the usual opportunity for prior public comment. The reaction from press, the Congress, and the public was swift and highly critical -- in large part, because the NRC had tried to take a procedural shortcut.

The second example -- "below regulatory concern" -- was a similar situation. The issue was to establish the level of radioactivity or radiological dose associated with an activity, below which the NRC would declare that it was not "concerned" about that activity as a regulatory matter. Fairly or unfairly, the perception was widespread that the NRC had rushed the policy into place without adequate prior public notice.

What does that tell us? It tells us that we must be straightforward with the public at all times; that we should discuss publicly what we are planning before the fact, not after the fact; that we should explain our actions in language the public can understand, and that we should have confidence in the public's ability to make intelligent judgments.

As an independent regulatory agency, we have learned that if we ask: "What is the minimum we have to do on this issue to comply with the law?", we are asking the wrong question. We should ask, "What should we do on this issue to reach out to, inform, and involve the public?"

Today, when policies are under review, or new rules are under development, the NRC staff will conduct outreach to the affected public; will hold public meetings to explain what we are planning; and will conduct workshops for more in-depth discussions. The public learns from that process, and we learn too. The resulting decisions are better, and better accepted, for our having learned about and responded to areas of public concern.

Just a few weeks ago, the NRC took a major step in advancing public participation in its processes, when we asked for public comment on a series of documents laying out the most significant policy issues confronting the NRC in the years ahead.

This was an outgrowth of the "Strategic Assessment and Rebaselining" that I initiated soon after becoming Chairman last year. While the NRC's overall mission of protecting public health and safety has not changed, the nature of the agency's work has continued to evolve, largely in response to changes in

the industries we regulate. In addition, every U.S. Federal Government agency has had to consider ways to reduce the size and cost of government.

My view, therefore, was that the NRC needed to look at its mission "from scratch," to use an American colloquial expression -- that is, to think about the agency and its functions as though we were starting with a blank slate, and to rethink our assumptions, goals, and strategies.

That process is now far along. The documents we published last month -- and they are all available to anyone through the Internet -- include issue papers on the oversight of operating reactors; risk-informed, performance-based regulation; the role of industry; public communication initiatives; regulatory research; reactor decommissioning; and a number of other topics. These are issues which affect both the regulated industries and the general public. We want to hear from both groups, and we are holding three public meetings this fall, in cities in different parts of the U.S., to do just that.

Candor with the public, listening to the public, accepting the public's right to know and its desire to be involved in the decisions that affect the general public -- this is the only way to do business.

COMPUTERS AND COMMUNICATIONS

Today, thanks to information technologies, we live in an age of extraordinary growth in the capacity to gather, disseminate, and exchange information and views. And as that capacity grows, so does the public's desire to know and to communicate.

During the past year, the NRC has taken the lead among agencies in the U.S. Government in using computer-based communications to foster public and industry participation in the regulatory process. This past February, we launched what we called "RuleNet," an interactive process designed both to gather information about nuclear power plant fire protection and to demonstrate the use of computer-based communications.

First, we made relevant documents available over the Internet. In succeeding weeks, issues were defined, alternatives were debated, and possible solutions developed and presented to the participants for their views. Anyone who wanted to participate was free to do so, on a level playing field with everyone else. Afterwards, most of the participants gave "RuleNet" high marks, and recommended more such projects in the future.

This was only an initial effort. But it implies a future in which our citizens will expect that the Government will routinely use information technologies to make vast amounts of information available to them, and to listen to the public's views.

My recommendation to you, therefore, would be to consider carefully how you, in your governments and also in nuclear industries, can use computer-based communications to get information to the public. Again, the more open you are with information, the more likely it is that you will win and hold the public's trust.

THE INTERNATIONAL PERSPECTIVE

So far today I have talked about the NRC's domestic experience and its applicability to the programs of other nations. But as all of us in this room are aware, nuclear development is an international undertaking, and likewise, nuclear safety and safeguards are issues of international reach. In that context, I would like to take the opportunity to commend Japan, for its decision, to host a conference on nuclear safety in Asia. The United States will be attending this important meeting as an observer. I have no doubt that this conference will serve to further the cause of nuclear safety worldwide.

The nuclear industry has long recognized the benefits of sharing information in the design, development, and construction of nuclear power plants, and of cooperating in reactor research. Industry representatives have banded together in domestic and international operators' groups to share information and experiences relating to safety.

I believe the world's nuclear regulators should follow suit. I know that significant technical exchanges already take place on an ad hoc basis and sometimes in the context of meetings at the International Atomic Energy Agency (IAEA) or the Nuclear Energy Agency (NEA). However, these efforts do not always reflect the policies or priorities of regulators. An international organization of nuclear regulators would serve to identify common themes and approaches and provide greater support for safety at a high policy level.

Towards this end, I recently proposed an international initiative which would address the common challenges which we as regulators are encountering. At the Senior Regulators Meeting in Paris in September, I led a discussion on "International Cooperation Among Regulatory Bodies: Mechanisms to Meet Current and Future Needs." International regulators present were supportive of a more regular policy-focused forum for the exchange of views and information on topics of mutual interest. I will be pursuing this subject in the next weeks and months with regulatory colleagues around the world to bring form and substance to this undertaking by early next year.

Another effective mechanism for sharing information is through the international Convention on Nuclear Safety (CNS), negotiated over a three-year period by representatives from over 65 states. This binding instrument will help to ensure a safer global environment. The Convention also establishes a system of periodic meetings to conduct peer review of national reports as a means of demonstrating adherence to recognized fundamental safety principles. We congratulate those countries -- including, among Asian nations, Japan, China and the Republic of Korea -- that have completed their internal ratification procedures. In the United States, the Convention is currently before the Senate, and we hope that ratification will be achieved early next year.

CONCLUSION

In conclusion, I would like to observe how far we have come in just ten years in breaking down what might be called nuclear isolationism. This laudable development is, in part, attributable to our greatest nuclear calamity, a

decade ago. The Chernobyl accident, by demonstrating that an accidental nuclear release in one country can reach many other countries and territories, helped to teach the world that cooperation for nuclear safety and security must also cross national boundaries. This conference and others like it are testimony to our commitment to share our technological and governmental expertise toward our mutual goal, which is to ensure the safety and security of the people of all our countries.

Thank you.