NRC NEWS

U.S. NUCLEAR REGULATORY COMMISSION

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No. S-06-004

"FACING SAFETY AND SECURITY CHALLENGES, A NATIONAL AND INTERNATIONAL PERSPECTIVE"

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Given at IAEA Conference - Moscow

February 28, 2006

Good morning. It is indeed a pleasure and distinct honor to be here among fellow regulators and distinguished guests, to share my views on effective nuclear regulatory systems, with a few examples specific to the U.S., and a global perspective. We are all, one way or another, preparing to discharge new responsibilities in a changed and changing world; preparation appears to be turning quickly to implementation.

First, I want to thank the International Atomic Energy Agency (IAEA) for organizing this important conference. I especially want to thank IAEA Director General Dr. Mohamed ElBaradei for his direct role in making this meeting of senior nuclear regulators a reality, and Deputy Director General Tomihiro Taniguchi and the IAEA staff for their hard work and commitment to the effort. I would also like to express my sincere appreciation to our Russian colleagues, particularly Chairman Konstantin Pulikovsky, First Deputy Chairman Andrei Malyshev, for their extraordinary efforts in hosting this meeting, which is dedicated to the key role that national regulatory authorities should continue to play in society, supported by effective international bodies. And thank you, Mr. President, for laying out the necessary and sufficient components of an effective regulatory framework that will serve the international community of nuclear regulators.

I am confident that the resulting deliberations and recommendations will contribute to the effectiveness and sustainability of national regulatory systems, to new regulatory approaches for the use of advanced technologies and innovative designs, and to the development of additional instruments and mechanisms for cooperation among regulators in international forums.

Before I enter into the main topics I want to share with you, I would like to make a comment on the issue of nuclear proliferation, or better, on the issue of assuring nuclear non-proliferation. It is now unmistakably true that the overriding necessity to achieve nuclear non-proliferation - as a fait accompli - has become a dominant issue in international politics, and of course, at the IAEA. Its importance to

world peace, trade, and geopolitical activities cannot be overstated. Yet, I will dare to say, that in a grand scheme of world prosperity, commerce, and international law, proliferation should not be more important than nuclear safety and security. In fact, in a world where abundant, economic, and well distributed energy becomes a global cornerstone, safety, security, and non-proliferation are interdependent components of a better and reliable framework for peace and prosperity. Worldwide nuclear non-proliferation efforts should be integrated with the safe and secure utilization of civilian nuclear power, and not become its deterrent.

This international conference on "Effective Nuclear Regulatory Systems" is more than a gathering of senior regulators and of nuclear technologists; it is truly an international assembly of those who implement nuclear safety, security, and emergency preparedness. The sessions should have a definitive underlying theme and purpose that support the objectives of the conference. A common understanding of the purpose of regulation in general, and nuclear regulation in particular, should provide the connectivity between every one of us, independent of country or organization. A good starting point for the common understanding of regulation would be:

> Regulation is done for the well-being of our people, for the common good, with full consideration of the National interests, and of International law and agreements.

Nuclear regulation is a disciplined national tool for establishing predictable safety and security frameworks. It works by establishing and improving technical and legal structures to define the acceptable safety case that serves the public interest.

Senior nuclear regulators, you and I, are coming together in Moscow, in winter, in 2006, to make a statement regarding our responsibilities and to deliver a series of products, sustained by a common understanding of nuclear regulation. Moreover, we are here because we care about our nations and because we can and want to work together, better. In this regard, I present for your thoughtful consideration here, as a purpose, the objective stated by the U.S. Nuclear Regulatory Commission in its current Strategic Plan:

> Enable the use and management of radioactive materials and nuclear fuels for beneficial civilian purposes in a manner that protects public health and safety and the environment, promotes the security of our nation, and provides for regulatory actions that are open, effective, efficient, realistic, and timely.

With that purpose in mind, it becomes clear why our presence here today is important. In fact, as inevitable as day and night, there is supply and there is demand. Unfortunately, there are also imbalances that may occur in supply and demand. The world is again experiencing that almost forgotten enemy: expensive and/or unreliable energy supply. Many times we have seen that society is disrupted and people suffer when energy is costly, scarce, or not available. The solutions to economic and reliable energy supply are surely important worldwide. In America's case, dependence on energy is somewhat unique; solutions are needed for the short term and solutions are needed that will endure the test of time and crises. Therefore, the U.S., like many other countries, is reviewing the strategic, economic, and environmental considerations of the Nation's overall energy supply and openly considering the contributions of nuclear power to meet its present and future energy needs. In fact, in America, President Bush and the Congress have taken positive steps to ensure that America's energy mix includes the reliability of supply, the environmental benefits, and the steady costs that are now

ascribed to operating nuclear power plants. Maintaining the requisite focus on safety and security, the NRC has the obligation and responsibility to respond to the needs of the country. Although our particular needs may differ, you are surely being asked to be ready to implement a set of effective regulatory tools that are responsive to the energy, economic, and security demands of the present and the near future. I believe that we can agree that every Nation of the world would be better served by reducing imbalances in the energy supply and demand, and by supporting safe, economical and environmentally friendly electrical energy supply that meets the global demand.

Furthermore, our presence here is important because nuclear regulatory authorities have a key role to play in resolving the effectiveness and sustainability, indeed the predictability and reliability of regulatory decision making, and therefore, the role that nuclear power could play. Of course we, as regulators, have important duties regarding security and radiological materials safety in addition to reactors. We all need the instruments; mechanisms; resources; and the international, multinational, and bilateral cooperation that will strengthen our capability to serve our people better with regulatory resolution of issues, with openness, and credibility.

I want to summarize for you where the U.S. is in two areas that are important to the viability of nuclear power generation: safety and economics. These two interdependent factors have seen major improvements in the last 15 years with respect to the consideration of nuclear power in the energy mix for many countries. I believe that safe, reliable, and secure nuclear energy has been and can continue to be part of the solution to energy security and environmental stewardship, and thus contribute to the well-being of all our people. We have played and should continue to play a key role in ensuring the safety of nuclear installations, with the technical know how and regulatory practices of today for today's needs.

For over twenty years, specifically during the decades of the 1970s and 1980s, the economics of nuclear power did not fulfill the early expectations of the U.S. or the world. The reality is that commercial nuclear power did not have much of a chance to meet expectations during those years. In the U.S., and most other places, nuclear power deployment took place during the worst possible time for large capital-intensive projects. Financial, technical, or regulatory predictability was lacking.

The economic situation for nuclear power plants has changed significantly and the prospects for new plants have become more promising. Low inflation and low interest rates have been the norm for the last few years, and low production costs of nuclear generated electricity, including fuel, are now frequently highlighted in the press and in the halls of government. Today, there is stability in regulatory requirements. The U.S. plant capacity factor and total electrical generation are sustained at, or near, all time highs; nuclear production costs, at $0.0168/kw-hr, are now lower than coal.

I discussed economics as a necessary part of the global nuclear scenario, but assurance of safety is an essential component. The sociopolitical reality is that nuclear power needs to be safer than other forms of generation. In fact, it needs to be "safe" in both actual and perceived terms. To achieve "safe" status, the U.S. nuclear power industry needs to over-achieve both in actual safety performance and in how safety is regarded. According to the performance safety indicators used by the NRC, the U.S. nuclear industry has achieved overall better-than-ever performance. Beyond individual safety indicators, I can tell you with confidence that the U.S. nuclear power industry is performing with adequate safety margins, and that NRC oversight is resulting in reasonable assurance of the protection of the public health and safety, the environment, and national security. One of the key responsibilities

of nuclear regulators is to define "safe enough." We all realize that there is no such thing as zero risk; therefore, we need to establish adequate safety margins while enabling the safe use of nuclear technology.

The improved industry performance has enabled the NRC to initiate and implement reforms that are progressively more safety-focused. A look at license renewal is indicative of the profound changes made by the Commission to regulatory effectiveness and efficiency. U.S. nuclear plants were initially licensed for 40 years, and license renewal authorizes an additional 20 years of operation after safety requirements for passive components and aging are met. The picture for the survival of nuclear power in the U.S. was not pretty in 1997; predictions of the accelerated demise of half of the licensed plants were abundant. The Commission undertook the task of reviewing the requirements for protecting public health and safety in deciding the renewal of licenses, and thus, served the National interest as articulated in the Commission's authorizing legislation. The resulting improvements in the license renewal process that the Commission put in place, along with changes to the hearing process, assured the Nation that a fair, equitable, and safety-driven process would be used for those applying for extension of their licenses. Today, 39 licenses have been renewed and 12 are being processed. Twenty-seven other licensees have announced their intention to apply for renewal of their licenses. The NRC is completing these license renewal approvals in approximately 22 months after receiving the applications. This process is focused on verifying the adequacy of licensee aging management programs. Moreover, the program has resulted in significant investments by industry that directly contribute to enhancing operational safety. In today's energy environment, the 20-year license renewal of 39 nuclear power plants provides a great value to the United States in terms of energy, national, and economic security, as would be the probable renewal of another 39 nuclear power plant licenses in the near future.

In today's world, to ensure protection of public health and safety, the assurance of security is essential. I believe that the NRC has established, using a risk-informed approach, the key regulatory requirements needed to provide added assurance of the security of civilian nuclear facilities and materials in the United States. We started early, progressed methodically, and are currently incorporating requirements into our regulations. These include three important security rulemakings planned or underway to codify security requirements for power reactors. The first is the rulemaking on the design basis threat for radiological sabotage, and a final rule will be issued later this year. The second rulemaking will amend the power reactor security regulations to align them with the series of orders the Commission issued following September 11, 2001, and to ensure safety-security interface issues are properly considered in plant operations. Finally, the Commission's expectations on security design for new reactor licensing activities are to be codified in a third rulemaking by September 2007. The expectation of the Commission is that the lessons learned by the agency and reactor licensees pre- and post-9/11 should be considered by the vendors at the design stage. We have learned much, and I believe improvements can be realized without major design or construction changes.

With this backdrop, I would like to discuss what the NRC is facing and doing to address the renewed commitment of the U.S. Administration and Congress to civilian nuclear energy as a means to address the demand for economic and environmentally benign electric power, and the expressed intentions of the U.S. nuclear power industry. To date, 11 potential Combined License (COL) applications for a total of 17 new nuclear power plant units, distributed among the three major reactor vendors now competing for the U.S. marketplace, have been publicly announced. They appear to be "bunched up" for submittal and review in a short period of time. There are, of course, significant

infrastructure and logistic issues to be resolved by the industry and by the NRC, and a short time to do it.

In order to review effectively multiple COL applications in parallel, the NRC staff is now preparing to implement a design-centered approach for reviews of COL applications, to the extent possible, for as many issues as possible. This approach involves the use, for each issue, of one review and one position for multiple applications. It could also be called the "one-for-all" approach. It is ready for use now; however, it needs the nuclear industry's commitment. One-for-all is one thorough, comprehensive, NRC safety evaluation to be used repeatedly, as appropriate. Using the design-centered approach, the NRC staff would use a single technical evaluation to support multiple combined license applications for the same technical area of review, as long as the applications standardize the licensing basis to a level that would make this approach viable. For technical review areas amenable to this approach, the staff can complete the evaluation for a "reference" case, can determine if the design proposed by other applicants is the same as the design reviewed, and proceed to issue the evaluation without further review. Let me emphasize, that for each certified design, standardization is the key to making this approach work. Standardization is everybody's business in reactor licensing.

The design-centered approach could also be applied to parallel reviews of a design certification application and COL applications referencing the design. For example, NRC reviews for the ESBWR and the EPR designs are likely to be conducted in parallel with reviews of the first few COL applications referencing these designs. The NRC could proceed with its review of each design and issue a safety evaluation report with open items, just as was done in the case of the AP1000 and earlier designs. Using the design-centered approach, the resolution of generic open items in the NRC safety evaluation report could be coordinated between the vendor and the applicants for COLs referencing the vendor's design. The resolution of these generic issues could then be incorporated into the design and included in the rulemaking certifying the design. In this manner, they would be available to future applicants referencing the design.

I am confident that applying the design-centered approach to parallel design certification and COL reviews, and relying on disciplined standardization, will result in a better, more detailed, and more thorough safety evaluation for each design. When an applicant references a standard design certified by rulemaking, all design matters within the scope of the design certification rule have been resolved using a fair and equitable process and need not be readdressed in the COL proceeding. The design-centered approach could also lead to a significantly higher level of efficiency in the licensing process, thereby reducing the amount of staff resources necessary to conduct each review.

Could it be done differently? Of course it could, and the law clearly says so. In another world, in another time, it might be different. But, here and now, the path forward for nuclear power safety, security, predictability, and growth seems clear: standardization.

The worldwide expectation for large scale deployment of nuclear power is approaching decision making time in many places. However, uncertainties remain. The solution to new reactor deployment includes thorough, timely, and safety-focused decisions by nuclear regulatory authorities. I believe that we would agree that this time around nuclear power plant deployment should be carefully planned, and key issues and interfaces, including regulatory issues must be resolved at the front end, on budget and on schedule, with all the safety and engineering know-how developed and learned over the last 25 years. Obviously, there are many ways and various scenarios on how we make decisions in the

regulatory process. Yet, it is essential that we ensure regulatory predictability by handling applications in a manner that is expeditious, in a manner that assures that decisions on safety and security are clear, and in a manner that is fair to all parties.

We should be ready to utilize fully international and multinational resources, including technical capabilities and research efforts, to deal with the realities of the increasing "internationalization" of nuclear technology. We must recognize that changes in the marketplace, technology, and regulation have taken place; international partnerships of industry and international partnerships of independent regulators are needed to make a difference.

At the same time, we should recognize that the world's regulatory authorities and nuclear operators need to maintain a steadfast focus on the safety and security of existing nuclear power reactors. In order to meet this challenge and the added burden of new reactor licensing and construction, innovative approaches will need to be considered to make the best use of regulatory and industrial resources. It is frequently stated by the IAEA that the safety and security of nuclear reactors, in many respects, should have no borders. We need to increase effectiveness by adding international solutions to issues, as appropriate.

As a key example of an international solution to a global issue, the U.S. Department of Energy recently announced a Global Nuclear Energy Partnership (GNEP) as a comprehensive strategy to increase U.S. and global energy security, encourage clean development around the world, reduce the risk of nuclear proliferation, and improve the environment. GNEP is intended to develop and demonstrate new and improved proliferation-resistant technologies to recycle nuclear fuel and reduce waste. The U.S. will work with other nuclear nations to develop a fuel supply and services program for developing nations. In return, this would necessitate their commitment to refrain from developing enrichment and recycling technologies. In the 1980s, "do it once, do it right, do it internationally," became a mantra of the industrial sector in the European community. This sounds like a usable path for developing meaningful effective and efficient approaches for new technologies, including their regulatory treatment.

We will share four days in the beautiful city of Moscow; the cold weather only highlights the warmth of our relationships and the strength of our purpose. Some worry that our differences would impede lasting and effective solutions and that turf battles would diminish the benefits we could accrue from converging on safety and security practices and predictable decision making. I disagree. It matters not whether your entry point or outcome is through the IAEA, or the Nuclear Energy Agency (NEA), or you used tripartite or bilateral agreements, or multiple combinations thereof. We need them all, and I believe we use them all, and will need them even more in the future. What matters is the resolve of nuclear regulatory authorities to ensure fair, predicable, safety-driven outcomes for the well-being of our people, for the common good, enabling the safe and secure use of nuclear energy and radioactive material for beneficial civilian purposes. Furthermore, it matters that international and multinational agencies provide strong and sustained support to the efforts of nuclear regulatory authorities.

I am confident that our expectations of this conference will become a reality, with increased regulatory effectiveness and responsibility, by addressing key challenges and strengthening nuclear safety and security through lasting partnerships.

Thank you.