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NRC INITIATIVES FOR NUCLEAR REGULATION
IN THE NEW COMPETITIVE ENVIRONMENT

Remarks of

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Good morning. It is a great pleasure to be here to share my perspectives about NRC initiatives for nuclear regulation in the new competitive environment.

The theme of this conference -- "maximizing the value of nuclear assets" -- raises an immediate threshold question: What would a nuclear safety regulator have to say to a gathering on how to maximize the value of nuclear assets?

To answer that threshold question, let's start by looking at the mission of the NRC. These are the words that the NRC uses to summarize its mission: "to promote the common defense and security," "to ensure adequate protection of public health and safety," and "to protect the environment."

"The common defense and security," "the health and safety of the public," and "protection of the environment" -- these are terms that focus on the well-being of the nation and the public, not on the economic success of any industry.

The short answer, then, is that the economic fortunes of the nuclear industry are outside our direct concern. Our duty as regulators is to assure that nuclear uses are consistent with the stated mission.

And yet, the answer isn't quite so simple as that. As confirmed by decades of legislation, passed with the support of both parties, and signed into law by Presidents of both parties, nuclear energy is part of the nation's energy mix. The NRC is a licensing agency as well as a regulatory body; that in itself is a reflection of Congress's view that having safe nuclear power plants serves the national interest. To draw a hard-and-fast distinction between benefiting the public on the one hand, and benefiting the regulated industry on the other, would make sense only if there were no benefit to the public in having a safe and economic nuclear power industry in this country. Although we at the NRC should not and cannot be concerned with the economics of the industry independently of safety, we are concerned with the impacts of economics and financial performance on safety, and how they interact. In addition, as a by-product of sound regulation there should be a direct benefit to ratepayers, the economy of the United States and the competitiveness of the United States in the global market when regulatory actions achieve their health and safety objectives without undue burden. And, by now it seems indisputable that when you are talking about a technology that supplies about 20% of the nation's electricity, the common defense and security can be implicated.

For such reasons, it is incumbent on every regulatory body to do its job in such a way that the regulated community is burdened only to the extent necessary -- no more, no less. If the same regulatory objective can be achieved -- safety in our case -- with a lesser burden on industry and the public to whom costs are ultimately passed on, we have a responsibility to do it. And, of course, one can't make judgments about the regulatory burdens being imposed without being acutely conscious of the economic impacts of particular actions.

In short, I would answer my own threshold question on the role of a regulator at a conference on maximizing nuclear assets this way: Our goal as regulators is not to maximize nuclear assets; it is our goal to do the job of protecting the well-being of the American people in such a way that we do not unnecessarily impede industry's efforts to maximize its assets and be competitive in the American marketplace, with safety and health as the bottom line.

How is the NRC to accomplish this, as we approach the year 2000? The

answer, I believe, is to keep three principal objectives in mind:

- Developing 21st century regulations appropriate to the needs and capabilities of an industry that is both mature and evolving;
- Ensuring an uncompromising commitment to the maintenance and/or enhancement of safety; and
- Positioning the NRC structure for improved, across-the-board performance, with full accountability and transparency.

From the regulatory viewpoint, it is vital that both NRC and licensees have a clear definition of the factors that affect safety, and the connection between safety and operational tasks. Furthermore, utilities need to be able to establish the correlation between these tasks and productivity factors.

Understanding of the factors affecting safety is critical to ensure that the NRC and the industry are dealing appropriately with those matters that affect safety. By the same token, this understanding is also necessary to allow us to winnow out extraneous factors that have little or no impact on safety. This is important when the Commission explores proposals for additional regulation, considers changes in the inspection and assessment process, and reexamines the existing regulatory matrix for effectiveness.

Before I discuss policy on deregulation and restructuring, we should be clear that at least five major factors have significant impact on the performance of the nuclear power industry. These factors, forming matrices of issues, are part of what I would call the “nuclear loop.” [SLIDE 2.] The one that jumps out at me is the matrix of regulatory issues: a regulatory infrastructure in which the licensee’s tasks are driven by the NRC. It should be noted, though, that many of these same tasks would have to be performed by licensees even in the absence of NRC regulation, in order to operate safely and well.

Second, there is the matrix of technology and reactor safety tasks for nuclear power plants. While these would differ if there were no NRC regulations, productivity goals and adequate margins of safety would still have to be there. On the issue of reactor safety, the data indicate a mature and continuously improving industry. The nuclear power industry has just posted its best safety performance yet, as measured by NRC key safety indicators. [SLIDE 3.] Congratulations are in order!

Third, there is the issue matrix for waste disposal and decommissioning

tasks, and there is the fourth matrix of public acceptance issues which clearly influences all of the above. I will not discuss these issues today unless you want to spend the whole day on them. Finally, there are economic and financial factors, including the costs of performing all tasks associated with nuclear power generation. Thus, economics is intimately interwoven into every aspect of the nuclear arena. The fact that economics is at the center reflects the role that it plays in this country, and I'm sure that is evident to you. It might even be the subject of this conference.

The NRC and the regulated industry understand, I believe, how closely interconnected these various matrices are, such that a major change in any one of them can cause cascading ripples -- and even turbulent waves -- in the other factors. Technology, design, quality control, operational standards, operational events and regulation will always play a role, and they all affect one another, and they are always reflected in what the ratepayers pay. Just consider how one event -- the accident at TMI -- drove regulatory requirements, which in turn influenced technology and greatly increased costs of operation and maintenance.

I think you will see, in the NRC's actions in recent times, evidence of a more holistic approach to regulatory issues. The agency has already taken a number of actions to streamline regulations and decrease burden while maintaining the envelope of adequate protection of health and safety, and I hope this trend will continue and accelerate. How effective will these actions be? That will depend largely on how they are implemented. To make clear, these particular initiatives have not been directed to economic matters per se, but they do have the objective of making the Commission's processes and requirements more efficient and responsive to future regulatory issues, and should help both industry and the Commission plan for the future.

Let's look at a few examples:

- The PRA Implementation Plan.

The Commission has been active in implementing the PRA Policy Statement that was issued in August, 1995. It is the Commission's intent that implementation will improve the regulatory process in three areas:

1. enhancement of safety decision making by the use of PRA insights;
2. more efficient use of agency resources; and
3. reduction or elimination of unnecessary burdens on licensees.

How have we gone about implementing these initiatives? Last year, steps

toward implementation included publication of draft Regulatory Guides and draft Standard Review Plans for use of PRA in:

- risk-informed decisions on plant-specific changes to the current licensing basis;
- risk-informed decisions on in-service inspections;
- risk-informed decisions on in-service testing;
- risk-informed decisions regarding technical specifications; and,
- risk-informed decisions regarding graded QA (Regulatory Guide only).

The Commission also made available for comment a reference report on the scope and attributes of PRA (NUREG-1602).

More broadly, the Commission has been engaged in a wide-ranging examination of ways to make risk information an integral part of the agency's activities in many areas, including: the integration of inspection and assessment; the process for changes to facilities and procedures (50.59); and in the use and content of a plant's updated Safety Analysis Report (USAR).

In my view, the best way to provide predictable and balanced regulatory requirements, where safety is always dominant, is to make the entire regulatory fabric risk-informed, consistent with present Federal efforts to make risk a key decision-making regulatory tool. A nuclear industry in which risk-information is a constant consideration can manage power plants with clearer, more precise, safety-focused operational and regulatory requirements, forming an integrated and cohesive net. I also feel strongly that risk-informed regulation could go a long way to fostering greater public understanding of the industry's operational issues and of the NRC's. However, there is only one way to make risk-informed regulation effective: the industry has to buy, bite and be bullish about its implementation.

- The revised Maintenance Rule, with inclusion of shutdown activities.

Recently, the Commission approved the development of a proposed rulemaking which would require that licensees "shall" assess the effect on plant safety of entering into various equipment configurations to perform maintenance or testing activities during all phases of plant operation. By clarifying the important and comprehensive purposes of the maintenance rule, I believe that we have increased the contribution of this rule to the long-term stability of our regulations. Further, this leading application of risk information in NRC regulation may serve as a pathway to expanded use of risk information in other

regulatory contexts.

- 50.59 Implementation.

Last May, the NRC published proposed regulatory guidance on implementation of 50.59 that prompted substantial industry concern. The Commission listened, and in the intervening months has begun to take steps to add greater stability, accountability and safety insights to the 50.59 process. Most notably, the Commission issued Revision 1 to Generic Letter No. 91-18, and altered inspection guidance to make clear that NRC approval for the final resolution of a degraded or nonconforming condition does not affect the licensee's authority to continue operation, or restart a shutdown plant, provided that necessary equipment is operable and the degraded equipment is not in conflict with any technical specification. Additional changes are under consideration.

- Senior Management Meeting Process.

In the last year, the Commission took steps to increase the transparency and objectivity of the SMM process. The agency is studying ways of improving the linkage between NRC's assessment processes and decisions that are made at the SMM. I expect the results of the assessment to come to the Commission in the near future.

- Enforcement Policy.

In 1995, the agency streamlined the process for the review of escalated enforcement actions to add predictability and clarity, particularly to the way in which credit is given when licensees identify and correct problems on their own. Now that a two-year review has been completed, I hope to see further improvements, especially in the area of identifying and communicating the safety significance of the violations for which enforcement action is taken.

- Decommissioning Process.

In 1996, the Commission revised decommissioning procedures to reflect the increased knowledge and experience base of the agency and the industry. These changes clarified ambiguities in the previous rule and codified procedures intended to reduce the regulatory burden and provide greater flexibility in the decommissioning process. Under the revised rule, licensees can undertake

substantial decommissioning activities within the scope of their existing licenses.

- Radiological Criteria for Decommissioning.

In 1997, after many years of debate -- including debate within the Federal Government itself -- the Commission took a decisive step in defining "how clean is clean enough" for decommissioning purposes. As you know, the debate continues; for example, the Environmental Protection Agency does not agree with all parts of the Commission's approach, and the Commission is seeking remedies through the Congress that would effectively ratify the Commission's standards.

- License renewal.

At present, license renewal may be the single most important issue affecting the future of the nuclear option in this country. If the current generation of nuclear plants is allowed to shut down, without plant life extension, that may have deep and broad implications for the future of nuclear power in this country. It would be a clear signal to the public, the financial institutions, the technological infrastructure, and the Congress that the odds of nuclear energy being part of the energy mix in the 21st century have lengthened.

In 1995, the Commission clarified the standards and procedures for renewal of operating licenses for nuclear power plants. The NRC staff also prepared a Generic Environmental Impact Statement that addressed over 90 potential impacts of license renewal on the environment. Licensees can rely on the analysis in this generic statement for approximately two-thirds of the potential impacts that were identified.

In 1996, the Commission published for comment a draft regulatory guide on License Renewal, proposing to endorse guidelines developed by NEI on implementing the license renewal rule. And, the NRC staff, in advance of the submission of any license renewal applications, is currently reviewing the technical reports that licensees and owners' groups have submitted to substantiate the basis for renewal.

Chairman Jackson recently acknowledged, in a speech to the Institute of Nuclear Power Operations, concerns that have been expressed about the efficiency of the NRC's license renewal processes, including the length and complexity of hearings on licensing matters. I raised similar issues at the meeting of the American Nuclear Society in November, 1997. It is obvious that

the Commission is focused on the processes that will improve the efficiency of NRC reviews, safety evaluations and other aspects of the license renewal process, including the hearing process. In this last regard, Senator Murkowski recently wrote to the NRC requesting information for further discussion of how the NRC can ensure an effective and strong licensing renewal process, with high standards of safety as well as timely and efficient reviews. Further streamlining of the NRC's hearing process may, of course, be important for licensing proceedings that are required in connection with changes in plant ownership and operating control, as well as for license renewal.

- Decisions Not to Impose New Requirements.

Late last year, the Commission rejected a proposed rule on shutdown and fuel storage pool operations. And very recently, the Commission approved the staff's suggestion that the Commission withdraw the February, 1997 notice on new proposals regarding a safety-conscious work environment. What this reflects, I believe, is the Commission's deliberate review of proposed new regulatory initiatives, to make sure that they are justified in terms of improving safety.

I am well aware that there are some who would view some of the economic problems of the nuclear industry as stemming from excessive NRC regulation. I'd like to address this issue head-on, and to do so, I'd like to review some painful history.

While the regulatory issues matrix influences economics, many significant economic factors are beyond the control of the NRC -- and often beyond the control of the industry as well. Interest rates, the money markets, inflation rates, mandated deregulation -- these are all phenomena with profound effects on the economics of nuclear power. Whether industry can maximize its assets is driven in part by these factors and how effectively the industry responds to such factors. [SLIDE 4.]

Looking at the 1970's, two major global events -- two energy crises -- elevated capital costs, way beyond expectation. They really were global financial crises that changed profoundly the way we look at energy, economics, and related social and political scenarios. They drove up interest rates, drove up inflation, thereby increasing the cost of power plant construction and led to construction delays, which compounded all these problems. The impact is visible on the next slide. [SLIDE 5.]

This slide shows the capital costs of nuclear power plants versus the time of getting an operating license, in constant 1992 dollars, changes in the discount rate and the consumer price index, along with the patterns of demand for electricity. We see that the costs of nuclear power plants under construction rocketed as a result of the so-called energy crises of 1973-74 and 1978-79. The bottom line is that we had a building boom, involving very expensive assets, at the worst possible financial time for interest rates and cost escalation, at a time in which the demand for the product -- electricity -- was either decreasing or uncertain. If you had to select the worst possible period in this country's history in which to build nuclear power plants, this was it. Nothing on either side of the curve is worse. Both before and after this financial trauma, these factors were stable, predictable, and within historic bounds.

To further complicate the picture, during that period of financial turmoil, the NRC licensing process was also far from being stable and predictable. Officially, it was a two-step process; but in practice, we know it was really a multi-step process. Lack of definition in the regulatory process, coupled with lack of experience in the handling of the hearing process and many aspects of licensing, complicated the scenario further. And, in 1979 there was TMI.

It is important to learn from the facts depicted on this figure. The key point is that very expensive industrial complexes -- and specifically nuclear power plants -- should not be built in times of financial turmoil, high inflation scenarios, unstable or unknown demand, and regulatory instability. When the energy and financial crises of the Seventies and Eighties were over, the industry nonetheless still encountered spiraling production costs. It was not the fuel. [SLIDE 6.] As expected, those costs were low, they increased with inflation and decreased with global recession, aided by low demand. However, where regulation did play a part in increasing costs for nuclear utilities was in the area of operation and maintenance (O &M). [SLIDE 7.] These cost increases, which industry had not expected, were due largely to regulatory requirements imposed by the NRC, including the response to the TMI accident and a few subsequent events at American reactors. In fact, the correlation between NRC regulatory actions and O&M costs is quite striking: according to a 1995 report of DOE's Energy Information Administration, a 1% increase in NRC regulatory actions was associated with a 0.5% increase in real O&M costs. O&M continued to increase until about 1987, when nuclear production costs became more expensive than coal. [SLIDE 8.] It is also clear that many of these regulatory actions resulted in measurable increases in safety and should be applauded by all. Other regulatory actions did not. Risk insights will help us to tell the difference.

I believe that a dispassionate analysis makes clear that most of the increases in the capital costs of nuclear plants were not the result of regulatory processes but rather of the energy and financial crises of the Seventies and early Eighties. Looking at present trends, it appears that the factors that were so negative in the period I was just describing have largely stabilized at “good” levels, including the operating costs [SLIDE 9.] Moreover, other factors appear to be economically attractive, including reactor fuel cost and the capital costs that would be involved in license renewal processes and new plant construction. The inflation rate and interest rate scenarios are now good for the American taxpayers, the American ratepayers, and the American industry, and suggest little escalation in the near future.

But now comes a new factor, deregulation, and it casts a shadow over the financial arena. It is potentially de-stabilizing and offers both burdens and opportunities. For the NRC, a principal concern is the possible effect of deregulation on safety; it is essential that the need to pare costs not result in any diminution of safety-related activities. I would observe, however, that from a broader national perspective, it is important that deregulation not have the unintended result of de-stabilizing the energy mix that now provides this country’s electricity and has contributed to the nation’s economic growth and to the stability of the grid. A balanced energy portfolio has served the national interest well. The next slide shows the changes in the nation’s electric generating capacity with extension of nuclear power plant licenses, and without those extensions. [SLIDE 10.] As shown, starting in the year 2008 about 1% of the nation’s installed electric capacity will disappear at the rate of 1% every year for the next 20 years unless the licenses of nuclear power plants are extended. It might be worth asking financial analysts: What is the likely impact on the market economy of the nation? With license renewal, the nation would have a 20-year cushion to decide its best course.

Of course, there are a number of specific NRC initiatives that relate directly to the economic deregulation of the electric power industry. Mr. Robert Wood, the NRC’s Licensee Financial Policy Advisor, is scheduled to address the Conference on Friday morning, and I understand that he will be provide a detailed review of some specific, important initiatives and requirements that relate to economic deregulation.

Addressing the subject of economic deregulation, the Commission last year published a “Final Policy Statement on Restructuring and Economic Deregulation of the Electric Power Industry.” It is important to note that the Commission reaffirmed its view that the primary tool for evaluating and ensuring

safe operations at its licensed facilities is through the agency's inspection and enforcement program. Further, the Commission also observed that it has not found a consistent relationship between a licensee's financial health and general indicators of safety performance. Indeed, I think it is well-established that the best operating nuclear power plants from the safety perspective are the best economic performers. Thus, the issue is not whether licensees are lean and mean, but how they get there. If licensees plan to be lean, they must do so as part of an integrated plan that keeps safety as the first priority.

The Policy Statement acknowledged that, to date, the Commission's concerns about deregulation and restructuring lie primarily in the area of the adequacy of decommissioning funds, whatever restructuring or competitive models come about. Following publication of an advance notice of proposed rulemaking, in September, 1997, the Commission proposed amendments to its rules on financial assurance requirements for decommissioning of power reactors.

The proposed amendments would have three principal effects: the amendments would allow licenses to take credit for the earnings on decommissioning trust funds from the time of the fund's collection through the decommissioning period; the amendments would require periodic status reports on changes in decommissioning funds and external trust accounts; and, the proposed amendments would revise the definition of "electric utility" to address potential impacts of deregulation. Under the revised definition, a licensee would still meet the NRC's definition of "electric utility" for purposes of decommissioning funding so long as decommissioning costs are recoverable through rate-regulated activities, including not only traditional cost of service regulation but, under the proposed rule, such other cost-recovery mechanisms as non-bypassable rates, fees or mandatory charges. With this additional flexibility for meeting the definition of a "electric utility," an "electric utility" licensee could continue to use the external sinking fund approach to accumulation of decommissioning funds over the life of the facility, without the necessity of an up-front method of assurance (e.g., a letter of credit or surety method) for the unfunded balance. The NRC staff is currently analyzing the many comments on the proposed rule.

With respect to the issue of decommissioning and stranded costs, the Commission noted in the Final Policy Statement that many States were considering securitization as a non-bypassable charge mechanism to fund the recovery of decommissioning and other stranded costs. As to this development, the Commission stated that "securitization has the potential to provide an

acceptable method of decommissioning funding assurance, although other mechanisms that involve non-bypassable charges may provide comparable levels of assurance and should not be excluded from consideration by State authorities.”

In the Final Policy Statement, the Commission also indicated that it would separately examine whether NRC needs to enhance its financial qualifications requirements for power reactor licensing. In 1984, the Commission eliminated financial qualifications reviews at the operating license stage for those applicants that qualify as “electric utilities.” A key part of the rationale was the presumption that “cost of service” regulation would guarantee that PUCs would allow utilities to recover their prudently incurred costs, plus a return on equity capital. It was also expressly recognized that a financial disability is not a safety hazard *per se* because, for instance, the license can cease operations if it does not have sufficient funds to operate safely and would be obligated to do so under the Commission’s regulations.

Now deregulation raises some question about the underpinnings of this approach. The question needs to be addressed promptly but also soundly; everyone will benefit from clear, predictable, and rational criteria in this area, as restructuring goes forward. Alternative methods of establishing financial qualification may need to be established in lieu of cost-of-service regulation. Any new or altered criteria regarding financial qualifications to operate need to rest on links to the assurance of health and safety of the public in power plant operation, and they need to avoid unintended, adverse financial impacts.

There are, of course, other NRC initiatives to enhance NRC requirements and guidance relating to issues that restructuring and deregulation will bring to the Commission. For instance, in the past year the NRC notified licensees that they should seek early NRC threshold review of a proposed agreement to contract with a non-owned service company for operations management support, so that the licensee and the NRC could determine whether formal NRC review and consent is required under its license transfer regulation. And, the NRC is moving to develop clearer guidance and criteria for the determination of whether such review is required in its case-by-case analysis of the extent of the transfer of control over operations.

In conclusion, I have tried today to outline some of the issues that confront the NRC as it adjusts its regulatory programs to meet the changing conditions affecting the nuclear industry. I would like to end by noting one common thread that links all these issues: they affect all NRC stakeholders, and all stakeholders

have major roles to play in their resolution as well as in helping to shape the direction of NRC regulation generally. It is essential that all stakeholders, including members of industry, provide rigorous and candid analyses of the NRC's proposed rules and plans. That means, when concerned parties arrive at a better way to achieve a particular goal, give us -- and the American public -- the benefit of your thinking. Every regulatory agency depends for its sound functioning on hearing from those affected.

The NRC places due emphasis on this right and responsibility, whether at the workplace, in our halls, or on our Web site. Today, in a time of transition in the electricity generating industry, with implications still far from certain, it is all the more essential that the Nuclear Regulatory Commission acts being fully informed, with the best facts available, using by the best tools available, to fulfill the mandate to promote the common defense and security, to protect the health and safety of the public, and to protect the environment.