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Remarks of
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Commissioner
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at the

28th Water Reactor Safety Meeting

October 25, 2000

Good Morning. Thank you very much for the opportunity to speak to you today. It is a pleasure to be here.

I would like to begin by reflecting on the speech I gave a year ago, and share with you my current views on the state of the NRC's research program. I also want to spend some time looking at the future and the role research will have in shaping our regulatory landscape. Frankly, my view of this landscape is remarkably different today than it was just one year ago.

Let me begin by reflecting on what I said last year and by giving you my current impressions of the NRC's research program. For the sake of those who are not familiar with my comments last year, I'll briefly summarize them. I challenged our Office of Research in 5 critical areas:

1. First, I stated that the growing economic pressures facing the NRC and our licensees would result in even greater scrutiny of each and every research dollar we spend. Given the fact that these economic pressures are undoubtably here to stay, I challenged our research staff to adapt to a higher standard of fiscal accountability and to more effectively demonstrate to their stakeholders that the NRC's research activities represent a valuable and prudent use of agency resources.

2. Second, I challenged our staff to reinvent the way in which they defend their research activities. Contrary to popular belief, good research does not speak for itself. I stated that if we have a defendable research program, our staff must learn to market it, sell it, and clearly make the case for why it should be funded. If research activities are not important to the NRC's mission or

closely linked to the agency's strategic and performance goals, then the NRC should sunset these activities and move on to higher agency priorities.

3. Third, I told our staff that while it is important to have a research program that is visionary in its approach and capable of providing an independent view on important agency matters, that independence must be carefully managed so that it does not lead to isolation. I challenged the research staff to work closely with our program offices - the primary end users of the research - to ensure that these parties share similar priorities and a consistent, or at least a compatible, vision of the future.

4. Fourth, I challenged our research staff and our stakeholders to stop their fixation with the bottom line of the research budget. From my perspective, the fact that the NRC's reactor research budget declined from over $100M in the early 1990s to around $40M in FY 2000 is not relevant to the decisions we are tasked with today. Budget realities dictate that we approach our research budget, line item by line item. I challenged those who argue that our research budget is too big, or too small, to move beyond the bottom line and instead make the case for either adding research initiatives that we **should** be doing but aren't, or for eliminating research initiatives that we **are** doing but shouldn't.

5. Fifth, I challenged our staff to seek ways to expand their efforts to capitalize on research work being conducted by the international nuclear community. As economic pressures drive greater fiscal restraint, we must leverage our international research efforts and not foolishly aspire to be the premier nuclear research agency in every discipline.

I believe the challenges I laid out last year were clear and meant to be constructive. However, some who attended the conference viewed my speech as an attack on research - somehow reflecting a lack of appreciation on my part for the contribution our research program makes to the effective fulfillment of our safety mission. With all due respect, I would argue that anyone who left last year's conference with that impression either did not listen carefully, felt threatened by the challenges, or did not recognize the realities we face. Let me make one thing perfectly clear - I believe our research program is absolutely essential to the long-term viability and success of our agency. However, if the program can't be managed properly, if its value can't be adequately conveyed to internal and external stakeholders, or if its links to the agency's strategic goals can't be clearly demonstrated, I assure you the agency will lose its ability to control the program's destiny. Others will decide that destiny for us. Like it or not, this **is** our reality.

With that said, let me now shift my focus to where I think our research program currently stands.

As I assess our research program today, I am pleased to say that it is healthier than it was just a year ago. Ashok and his management team deserve credit for what they have been able to accomplish in such a short period. While it is far too early to declare victory, the program has become more responsive to stakeholders, more fiscally disciplined, and frankly, more defendable. Given the importance of this matter, I believe it is essential that I articulate my thoughts more thoroughly.

First, let me focus on our external environment. The financial challenges facing our agency are greater today than they were last year, and I anticipate that these challenges will continue to intensify as our licensees - those that pay our fees - face greater competitive challenges associated with a deregulated electric market. This situation will only be compounded by the trend toward fewer reactor owners. It

would be naive to think that distributing the fees associated with our research program among far fewer licensees will not bring with it an escalation of external scrutiny.

In regard to the research program itself, the Commission recently completed its review of the agency's research budget for FY 2002. As I promised at last year's conference, I vigorously challenged the merits of every line item in that budget. I am pleased to say that my expectations were exceeded. There were clear links between proposed research activities and the NRC's strategic and performance goals. There was a clear and defensible articulation of why each research project was necessary. There was less focus on the bottom line and greater focus on the merits of each project. In fact, without divulging too much about the agency's internal matters, the Commission, with my full support, approved a research budget virtually unchanged from that requested by our staff. Nobody in this room should underestimate the significance of that action.

As you know, I am a lawyer, not an engineer. Nonetheless, I understand the hazards associated with trying to identify a trend from a single data point, and I recognize that the recent budget cycle was but one data point. For me, another significant data point came during a recent visit I made to the Argonne National Laboratory, a lab that performs about $5.5M of research annually for the NRC. As you might expect, I was briefed on the status of the research initiatives they are conducting for the NRC. To my surprise, however, I was also briefed on how these initiatives are linked to the strategic and performance goals of the agency, and how the Argonne staff is exercising the fiscal discipline necessary to obtain the greatest return from every dollar the NRC spends. To me, this was especially gratifying because it demonstrated that the expectation of greater fiscal accountability that I and the other members of the Commission have been preaching has been embraced not only by our staff but also by our contractors.

A third data point came during a recent trip I made to Norway where I had the opportunity to visit the Halden Reactor Project. Over 100 nuclear organizations from around the world participate in research activities at Halden on such important matters as high burn-up fuel, MOX fuel, material properties, and human performance. While we spend less than one million dollars annually on research at Halden, our participation provides us with access to tens of millions of dollars of international research activities. My experience at Halden left me with little doubt that our staff is placing greater emphasis on leveraging our research dollars by looking for opportunities to capitalize on the research carried out by our international counterparts.

Data point #4 is not so encouraging because it represents a challenge that remains unanswered - a challenge requiring greater management attention. I voice this as constructive criticism in the hope that significant progress can be made this coming year. Despite efforts by our research staff, our attempts to reach out to stakeholders have resulted in limited success. Frankly, some of our internal and external stakeholders still do not have an appreciation of the value provided by our research initiatives. When the research management team attempts to articulate the value of the agency's research program, they are met with significant skepticism among our stakeholder communities - skepticism that is centered around the critical question, "Valuable to whom?" The accuracy of the perception is irrelevant. When you are dealing with stakeholders, perception **is** reality and thus it cannot be ignored.

Let me give you an example that illustrates my point.

In the May 8th edition of **Inside NRC**, Oliver Kingsley, Unicom's President of Nuclear Generation, provided his views of the NRC's research program. Mr. Kingsley stated that he does not support more money for the NRC's research program. More importantly, Mr. Kingsley added, "What would [the]

NRC need research for? We've been operating plants for decades. Unless there's some type of advanced reactor program, I don't see a great deal of need [to fund NRC research]." Now, I have not talked to Mr. Kingsley about the article or the context in which his comments were made, but, assuming the article is accurate, the NRC cannot afford to underestimate the significance of his comments. As most of you know, Mr. Kingsley is responsible for the largest commercial nuclear program in the U.S.; a stakeholder that is well-respected throughout the industry for his emphasis on operational safety and technical excellence. The fact that such a well-informed and respected stakeholder does not see a need to fund NRC research should serve as a wake-up call to our agency. The fact that he made those comments in the same article that he discussed license renewal, the new reactor oversight process, and risk-informed regulation - all matters in which NRC research initiatives were instrumental - only serves to highlight just how high a hurdle our research program must overcome.

The message I want to leave today is that the NRC's research team has been successful in meeting many of the challenges I put before them last year. Nevertheless, challenges remain. Maintaining fiscal discipline and accountability requires continuous vigilance. Cultural changes of this magnitude typically take years before sustainable benefits are recognized. Our research staff must redouble their efforts to ensure that our stakeholders understand the value the agency hopes to derive from each and every research initiative. Frankly, if we are not successful in clearly defining the value of our research program, our critics will undoubtably define it for us. I am not willing to accept such a scenario.

The Future Landscape

I'm now going to change course and share my views on the future research needs of the agency. From my perspective, the future landscape of the nuclear industry, and the research associated with it, look much different today than just a few years ago. There are challenges looming on the horizon that could serve to reshape the commercial nuclear industry in the United States - challenges that will tax the NRC's technical capabilities. While some of these challenges may never come to fruition, I believe it is essential that the Commission assess our staff's readiness for them, and take the steps necessary to develop our capabilities at a rate commensurate with the pace of change we face. I'll take a few minutes to discuss some of these challenges.

1. If you have been reading the trade press, I am sure you are aware that several utilities are exploring the option of building new nuclear plants in the United States. Joe Colvin, the President of the Nuclear Energy Institute, recently told a gathering in London that a new plant may be ordered in the United States within 5 years, but that conditions for doing so may be ready in as little as 2 years. I am not prepared to address the likelihood of such an initiative, and I certainly do not want to give the impression that I am promoting it - as I am not. As a Commissioner of the NRC, to do so would be irresponsible. However, it would be just as irresponsible for us not to take the initial steps necessary to ensure that the staff is prepared to carry out its responsibilities should new plant orders emerge. We must critically assess our staff's technical and licensing capabilities to ensure that we can effectively and efficiently carry out our responsibilities. Given that we have not overseen the construction of a new plant in many years, we must assess our inspection assets to determine where there are gaps in knowledge and expertise. We must also critically assess the quality and stability of the regulatory infrastructure supporting Part 52. These tasks simply cannot be accomplished overnight. Thus, the NRC cannot wait until a licensee knocks on our door with an application. I believe the Commission must act soon to reallocate the funds necessary to at least assess

whether the agency is up to the challenges associated with new plant orders. Clearly, the Office of Research will play a critical role in this effort.

2. We must also be prepared to address advanced reactor designs. It is not inconceivable that one day it may be more appropriate to call this conference the Water and Pebble Bed Reactor Safety Meeting. Again, I am not prepared to address the likelihood of such an eventuality, nor am I promoting the ongoing Pebble Bed initiatives; however, it would be irresponsible for us to stick our head in the sand and ignore reality. The reality associated with this issue is that one of our licensees, PECo Energy (PECo), is actively involved in Pebble Bed reactor initiatives in South Africa. According to recent comments attributed to Corbin McNeill, PECo's President and CEO, PECo could apply for a design certification in as few as 15 months. Such a development would be a real challenge for the NRC. The fact is, expertise associated with such a new reactor technology cannot be developed overnight. We must take steps now to develop this expertise so that we do not one day find ourselves incapable of carrying out our responsibilities associated with Part 52. I believe that our Offices of Research and NRR must, at a minimum, follow the activities in South Africa so that we can gradually build a prudent regulatory foundation and an appropriate level of expertise commensurate with the rate of progress made on the Pebble Bed initiative. One should not underestimate the safety and public confidence ramifications of falling short in our preparations.

   Clearly, our responsibilities in the area of new plant designs will not be limited to the Pebble Bed reactor. As you know, the NRC has already been approached by Westinghouse on an AP-1000 design. With escalating global warming concerns and the growing emphasis being placed around the world on energy independence, there is little doubt in my mind that domestic and international initiatives related to advanced reactor designs will intensify and that the NRC will be called upon to play a significant role in the safety reviews associated with these designs.

3. Another area that undoubtably will dot our landscape is the issue of extended power uprates. As many of you know, Alliant Energy is pursuing a 15% power uprate for their Duane Arnold facility. In addition, it appears that the Dresden and Quad Cities plants may submit similar licensing amendment requests in late 2000 and that the Brunswick plant may do the same in 2001.

   I am confident that the NRC is prepared to meet the technical challenges associated with 15% uprates. However, we should not kid ourselves that this represents the limit of future uprate requests. In a deregulated environment, our licensee's will look to squeeze as many megawatts as prudently possible out of their existing nuclear plants. How this incentive will manifest itself in the power uprate arena, I simply do not know. However, I do not believe it is unrealistic to expect that licensees could seek power uprates that extend beyond 15%. Should we face uprate requests of this magnitude, we have an obligation to all of our stakeholders to maintain safety and carry out our regulatory responsibilities in an effective, efficient, and realistic manner. In order to do that, we must ensure that our engineering analyses, our thermal-hydraulic code expertise, and our understanding of plant systems and safety margins, are sound. It is clear to me that our research program must be at the forefront of the NRC's efforts to address the realities we likely will face in the power uprate arena.

4. Steam generator research must also be a significant component of the NRC's research program in the future. It is essential that both we and our licensees develop better tube inspection methods, improve the accuracy of our data evaluation processes, and make further progress in our understanding of flaw growth predictions. Our goal must be to prevent, with greater certainty, tube failure events like the one that recently occurred at Indian Point 2. Now, some may argue that the Indian Point event was <u>not</u> of particularly high risk significance and thus preventing such events should <u>not</u> receive higher priority by the agency. I could not disagree

more, and here's why. While we can argue risk numbers until we are blue in the face, I believe it would be irresponsible to assess the significance of such events so narrowly. This event certainly was significant to the public. It certainly was significant to the media. It certainly was significant to the New York Congressional delegation. It certainly was significant to our staff who faced the wrath of stakeholders and who ultimately will spend thousands of hours conducting event follow-up activities. It certainly was significant to ConEd, which is not only bearing the financial implications of an extended plant shutdown, but also the heavy burdens associated with facing a public that has lost confidence in their ability to operate the plant safely. So, as the NRC and our licensees go about assessing risk in the traditional safety sense, we must not ignore the enormous business, social, and political risks associated with a steam generator tube failure. Events like the one at Indian Point 2 could damage our credibility as a regulator and serve to erode public, Congressional, and to some extent, regulatory confidence in each of the 103 reactors operating throughout the U.S. Therefore, I believe we owe it to our staff and our stakeholders to continue the valuable steam generator research we are sponsoring at Argonne and to provide the resources necessary to further enhance our knowledge and capabilities in this very important area.

5. Our research program will also face challenges associated with the growing use of risk insights to support operational and maintenance decisions, licensing actions, and regulatory reforms. While we have started down the road toward risk-informing Part 50, I believe we are just now scratching the surface. At some point, licensees will undoubtably attempt to use risk-insights in applications that we cannot even imagine today, and the NRC will be called upon to effectively and efficiently carry out its regulatory responsibilities related to those applications. The NRC's research program must ensure that the agency's risk capabilities are sound and evolve in a manner commensurate with the applications they are being called upon to support. Our research program must proactively identify vulnerabilities and knowledge gaps, and ensure that our program offices recognize them, respect them, and compensate for them in their regulatory decisions. Let's face it, the use of risk insights is here to stay. The NRC can either manage them, or be managed by them. From my perspective, I believe our research program must be especially robust in this area so that our capabilities and expertise stay one step ahead of the applications we are being called upon to address. One should not underestimate the safety implications or the difficulty of this task.

6. Last but not least, I believe that the time has come for our research program to reassess whether the NRC's quality assurance (QA) requirements are continuing to produce outcomes that are consistent with the agency's performance goals. As most of you know, Appendix B to Part 50 lays out the quality assurance criteria for nuclear power plants. It is a regulation that has served an important role in our regulatory framework for many years. However, during my visits to 60 nuclear units over the last 2 years, it has been common to see maintenance activities involving the replacement of plant components and equally common to hear licensee concerns over the difficulty they face finding suppliers that maintain an Appendix B QA program. During a recent briefing I received from our staff, I learned that the number of suppliers with Appendix B QA programs has declined. I also learned that this type of problem is not new to the nuclear industry. In our discussions on related matters like the ASME Code and the N-stamp process, I learned that during the 1989 time-frame, a number of utilities experienced difficulties obtaining replacements for components that were originally constructed in accordance with Section III of the ASME Code. In that case, the NRC was compelled to issue Generic Letter 89-09 to provide appropriate regulatory relief.

Here's my concern. Are the agency's quality assurance requirements inappropriately discouraging high-quality component suppliers from participating in the U.S. nuclear market, and if so, do we fully understand the consequences? Are these requirements unwittingly inhibiting potential safety enhancements? More broadly, are the agency's QA requirements consistent with our performance goals of maintaining safety, reducing unnecessary regulatory burden, increasing public confidence, and carrying out our responsibilities more effectively, efficiently, and realistically? I understand the commercial-grade dedication process and I am familiar with our ongoing efforts in the risk-informed arena. While these are important initiatives, I believe the time has come to take a more fundamental look at our quality assurance requirements to determine whether they are effectively and efficiently achieving their intended outcomes.

I believe our staff should take a fresh look at Appendix B and our regulatory framework surrounding quality assurance. The staff should also assess whether there are insights that can be drawn from more widely utilized national and international quality standards. For example, the ISO 9000 family of standards has become one of the most widely utilized quality standards in the world, already adopted by thousands of organizations, many of which have outstanding quality records. While I understand the staff has conducted some limited comparisons between Appendix B and ISO 9001, quite frankly, that's simply not enough. I want to know why ISO banners are rapidly going up as Appendix B banners are coming down. I want a better understanding of what is driving suppliers away from Appendix B quality assurance programs. We owe it to our stakeholders to critically assess Appendix B, compare it to more widely accepted quality standards like ISO 9001, identify where there are differences, and assess whether these differences are meaningful in our efforts to protect public health and safety. If particular Appendix B requirements cannot be linked to safety or to the NRC's performance goals, we should consider eliminating them. To the extent feasible and prudent, we must seize opportunities to bring Appendix B in line with widely accepted quality standards. Simply put, I believe the Commission must provide the resources necessary to ensure the agency's quality assurance requirements <u>are not</u> inappropriately driving high-quality component suppliers from the U.S. nuclear market, <u>are</u> aligned with our performance goals, and <u>are</u> in the best interests of the American people.

In closing, these are very dynamic times for the NRC and the U.S. nuclear industry, and the future promises to be even more dynamic. As I have outlined, there are many challenges on the horizon - challenges that bring with them opportunities. For us to seize these opportunities, the NRC must have the vision and leadership to not only recognize them, but to be prepared for them. Our research program must play an instrumental role in this process. It must be visionary in its approach and must provide the technical foundation necessary to support the bold decisions our agency will be called upon to make. I believe the next 10 years will prove to be some of the most challenging and rewarding our research program has ever faced. Winston Churchill once said, "A pessimist sees the difficulty in every opportunity; an optimist sees the opportunity in every difficulty". I am an optimist and I truly see tremendous opportunities embedded in the difficulties facing our research program. As a Commissioner, I believe I have an obligation to ensure that our research program and our staff are well-positioned to seize these opportunities. I assure you, I take that obligation very seriously.