NRC NEWS

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A ROAD LESS TRAVELED . . .
A ROAD NOT FAR . . .
SOON

Remarks by Dr. Nils J. Diaz, Chairman
U.S. Nuclear Regulatory Commission
to the
18th Annual NRC Regulatory Information Conference
March 7, 2006

I. Introduction

My fellow Commissioners, NRC staff, industry and public stakeholders, and distinguished national and foreign guests: it is my pleasure to participate with you in the NRC's 2006 Regulatory Information Conference. This is my tenth RIC, and I am beginning to understand the well-meaning remark of someone who told me years ago: "same place, next year?" It is my distinct privilege, as Chairman of the Nuclear Regulatory Commission, to welcome you and to share with you my views on the NRC's activities and obligations. It would be presumptuous of me to insinuate that I could present to you, the state of the NRC in a short talk. Having said that, the state of the NRC is good.

The state of the NRC is good because we continue to discharge our responsibilities for licensing and regulating civilian nuclear facilities and materials in accordance with the country's mandate, in an open, balanced, risk-informed, and ever more effective manner. These are not just words, they are facts. No member of the public has ever been injured by a radioactive release from a US nuclear power plant; the plants' safety performance indicators have been, over the last several years, close to all-time highs, and the incident precursors at all-time lows. Safety, security, emergency preparedness, and reliability are synergistically improving. More than one third of the U.S. power reactor fleet has applied for, and received, 20-year extensions of their licenses after rigorous safety reviews. Risk-informed and performance-based regulation is now ingrained in the agency's and the industry's operational plans. A safety and security framework for reactors and materials is in place, tested, and being improved, commensurate with the post-9/11 threat and potential consequences. The agency's research programs have been focused on the agency's defined needs, integrated with operational safety and licensing priorities, leveraging resources and expertise with international partners. Research is providing sound technical leadership and results with a foothold in the future. Our many international obligations are executed well, our leadership is apparent, and our cooperative efforts continue to

expand and serve our nation and our international partnerships. Our fiscal affairs are in order, our financial needs have been supported by the Congress, and we continue to manage and prioritize resources, investing in the present and the near future, while exercising appropriate fiscal restraint.

I could go on for a while, but my message should be clear: we are now on a well-marked road. We have done what needed to be done, we know what we have to do, we are getting better at what we do, and we communicate it better. We know we are accountable and, throughout the agency, we perform our work under that premise. We have structured the agency to be true to our strategic objective, we accept and discharge our responsibilities to contribute to the well-being of our people by protecting the public, the environment, and our Nation's security. As the oft-quoted saying goes: "we've come a long way, baby."

The NRC has come a long way because of the joint efforts of the Commission and the agency's staff in using a road less traveled, a path where sound safety judgment overcame the reactive or the arbitrary, a path where unity in purpose and policy became clear, as established by majority vote and honored by all, a path where Commission decisions were executed by the staff with increased accountability, connected to the pertinent decision-making interfaces and supported by the distinct roles of policy and management under the Reorganization Plan. I am proud of the strength and stability of the institution we have forged together.

At this point, it is fitting to recognize the work of the Commission as a whole, and of my fellow Commissioners individually: Commissioner McGaffigan, Commissioner Merrifield, Commissioner Jaczko, and Commissioner Lyons. As I have said, in recent years the Commission has shown, or better said, has carved, a road not frequently traveled. By this I mean, by its numerous policy and adjudicatory decisions on difficult and novel issues, the Commission has mapped the directions for improved licensing and regulation in nearly every area of the agency's mission. Gentlemen, I am deeply honored to work with you.

I also want to recognize the consistent, connected, communicating, enabling EDO management and staff offices under the leadership of Luis Reyes. They take care of countless everyday issues with ease, handle the surprises with care, and address the crises with dedication and resolve. Moreover, often unnoticed by many, the overall work of the Commission is effectively conducted, in fair or foul weather, by many dedicated managers and staff agency-wide that keep us, literally, together and functional, by guiding, counseling, preparing, structuring, and communicating. In more ways than one, they protect the agency while carrying out indispensable functions with professionalism and dedication. These offices include: the Office of the Secretary of the Commission, directed by Annette Vietti-Cook; the Office of the General Counsel, directed by Karen Cyr; the Office of the Chief Financial Officer, directed by Jesse Funches; the Office of Congressional Affairs, directed by Becky Schmidt; the Office of Public Affairs, directed by Eliot Brenner; the Office of the Inspector General, directed by Hubert Bell; the Office of Commission Appellate Adjudication, directed by John Cordes; the Office of International Programs, directed by Janice Dunn Lee; the Chairmen and members of the Advisory Committee on Reactor Safeguards and the Advisory Committee on Nuclear Waste, and; the Atomic Safety and Licensing Board Panel, directed by Chief Administrative Judge Paul Bollwerk.

To summarize my introductory remarks, I believe the agency has achieved, and will continue to achieve, results that leave no doubt of the agency-wide commitment to the objective of enabling the beneficial uses of nuclear energy, within the proven and improving safety framework for which we are responsible, in an effective, efficient, realistic, and timely manner. In fact, we have the record to prove it, and any occasional mistake or deficiency becomes obvious because it is the exception to the rule.

And when such a mistake occurs, we take care of it, and will continue to do so.

In fact, I also believe that, taken as a whole, the nuclear industry is performing well, in accordance with its obligations, committed to the need for safe operations, and responsive to regulatory requirements. The US nuclear power industry is performing with adequate safety margins. And yes, there are mistakes, deficiencies, and problems which become obvious because there are fewer of them. When such a deficiency occurs, the industry takes care of the issue, and proactively works to prevent recurrence, and it must continue to do so. Peer pressure is working well for safety in the United States of America, and most, if not all, of the industry strives first for safe and secure operations. Yet, we know that complacency is to safety and reliability what realization is to humility: once you realize you have it, you just lost it.

The road less traveled of ten years ago is now clearly marked by the toil of many. Ladies, gentlemen, I thank you for your contribution to the well-being of our Nation.

I will frame the rest of my remarks today on the present and near term implementation of the agency's mission to license and regulate nuclear fuels and radioactive materials, focusing on nuclear and radiological safety issues, distinct progress on the physical security framework, and the preparations for new reactor licensing and the portfolio of issues set in motion by the Energy Policy Act of 2005.

It is a well-discussed fact that the United States of America must holistically address national security, energy security, economic security, and environmental stewardship. Now, nuclear energy generation is once again being proposed by the President and the Congress of the United States, and by many other leaders of this Nation and abroad. The need to balance the energy portfolio gave the impetus for the Energy Policy Act, which then provided a foundation for the nuclear power industry to seriously consider new plants. It appears that the private sector is very interested in new nuclear units, not only because of the Energy Policy Act's incentives, but also because of the need for additional baseload generation by about 2015, of the continuing strategic importance of a diverse mix of energy sources, and of the low and stable production costs of nuclear electric generation. There are, of course, many national and international issues developing, including the new Federal government initiative to resolve the front and back ends of the fuel cycle. I believe that the Global Nuclear Energy Partnership, or GNEP, would positively affect nonproliferation, waste disposal, and, indeed, the entire infrastructure of the nuclear fuel cycle, both here and abroad. It could certainly impact many key areas of the Commission's responsibilities and we are closely following its development. It is my opinion that closing the fuel cycle would serve the best interests of the Nation, and that GNEP presents a broad opportunity to address it in an integral manner, including the eventual safe deep-geologic disposal of highly radioactive material.

II Nuclear Reactor Safety

The agency's overall nuclear reactor safety functions are executed in a variety of distinct yet interdependent components, including licensing, inspection and oversight, rulemaking, enforcement, and investigations. Every one of these areas has undergone major overhauls over the past few years, and we are now preparing for the transition from regulating an operating fleet without new construction, to a potential scenario that includes new construction. Having said that, reactor licensing has not exactly been dormant. On the contrary, the work load from license amendments, license renewals, and power uprates has been significant, and will be so for several more years. The review of license amendments was one of the agency's functions affected and improved by the Commission's

commitment to a risk-informed regulatory framework.

The improvements in the license renewal process that the Commission has put in place over the last several years, along with changes to the hearing process, assured the Nation that a fair, equitable, and safety-driven process would be used to review renewal applications. In the last year, we have renewed 9 licenses at 5 sites, and 12 applications are currently being reviewed. Twenty-seven other licensees have announced their intention to apply for renewal of their licenses. The NRC is completing these license renewal reviews within 22 months after receiving the applications. We have also issued 6 power uprates over the past year or so, bringing the cumulative total to 108 approved uprates for an additional 4593 Mwe of installed capacity.

On the regulatory oversight front, we continue to refine our risk-informed processes for inspecting and for assessing licensee performance. The Reactor Oversight Process has matured and improved, but it is still a work in progress. We are interacting closely with stakeholders on changes to the performance indicators; for example, the Mitigating Systems Performance Indicator is working its way toward implementation, slowly but surely. We are also working with stakeholders to develop a functional approach to enhance the ROP and better align it with those aspects of plant performance that are important to safety culture. One of the oldest, yet still dominant, issues in our risk-informed safety framework is the need for reliable offsite power. The broader issue of grid reliability has taken on new importance in recent years, when economic security and public safety have been more closely linked to national security. The NRC recently issued a Generic Letter on Grid Reliability, and we are working with the Federal Energy Regulatory Commission and the industry to achieve resolution of important issues shortly. I believe that the industry needs to aggressively pursue operational agreements with transmission system operators to improve further the reliability of offsite power sources.

The NRC continues to work with its stakeholders to strengthen the risk-informed regulatory framework through rulemaking. We have published a proposed alternative to 10 CFR 50.46 to incorporate risk-informed requirements for emergency core cooling systems. We continue to improve the implementing guidance for special treatment requirements in 10 CFR 50.69. We are also working with stakeholders to develop guidance for implementation of NFPA-805 as a risk-informed alternative to the fire protection requirements and to conduct pilots at nuclear power plants. These risk-informed initiatives will require continued attention by the NRC staff and licensees to ensure that they are effectively implemented. Finally, broad efforts are in progress to develop a risk-informed and technology-neutral framework for new nuclear power plant licensing.

It is my risk-informed opinion that 50.69 and 50.46 are the cornerstones of an encompassing risk-informed framework that is true to the fundamental principle: focus on what is realistically important to safety. They are needed.

Two important issues that require industry attention to drive them to closure are Generic Safety Issue 191, which deals with the potential impact of debris accumulation on PWR sump performance, and the need to maintain an aggressive program to preemptively identify material degradation mechanisms and take proactive measures to repair or replace affected components.

One oversight issue that requires attention is the management of tritium from a radiological protection standpoint. The NRC is diligently reviewing recent and ongoing instances of groundwater contamination involving tritium at operating and decommissioning power reactors. Tritium contamination is currently being addressed at power reactor sites in several States, including Illinois, New York, and Arizona. Tritium is a weak beta emitter and is found extensively in nature. From my

perspective, the fundamental issue in these cases is that, regardless of the minimal public health and environmental impacts of these contamination events, the releases were uncontrolled and identified after the fact. Beyond tritium and these particular cases, I believe that the industry as a whole should proactively address unanticipated radioactive releases from the technical and environmental standpoints.

III Nuclear Materials Safety

The agency conducts comprehensive safety activities regarding nuclear materials and facilities, radioactive materials, and waste disposal. These include, at present, the most significant new NRC licensing activities, including the MOX facility, the proposed LES and USEC enrichment facilities, and the potential Yucca Mountain high-level waste repository.

In March 2005, the NRC issued the Construction Authorization for the Mixed Oxide Fuel Fabrication Facility, which is being built at the Department of Energy's Savannah River Site. In June, the staff issued the safety evaluation report and final environmental impact statement on the Louisiana Energy Services license application for the proposed National Enrichment Facility, a gas centrifuge uranium enrichment facility, to be located in Eunice, New Mexico. The agency also made significant progress in our review of the USEC application for its proposed American Centrifuge Facility. In September, the NRC published a proposed rule to amend its Yucca Mountain regulations to reflect the new proposed Environmental Protection Agency standards. Also, during 2005, the NRC staff oversaw decommissioning activities at numerous complex sites and power reactor sites. On September 9, the Commission concluded the agency's adjudication in connection with the Private Fuel Storage license application and authorized the agency staff to issue a license upon resolution of any outstanding issues; this license was issued on February 21, 2006.

The NRC radioactive materials licensing and oversight program includes direct regulation over their use in 16 States, plus import and export controls. Moreover, the agency, in partnership with our 34 Agreement States, conducts comprehensive programs to ensure the safe use of radiological materials in a variety of medical, industrial and research settings. Some of NRC's responsibilities, including inspection and licensing actions, have been assumed by Agreement States, and we closely coordinate our activities with the States.

IV Research

For reactor, materials, and security programs, the NRC's research program will have an essential role in ensuring our ability to carry out the agency's mission. The Commission remains committed to having an effective and forward-looking research program that will produce timely and practical support to the NRC's day-to-day regulatory programs. In the past year, NRC's research program has: analyzed the effects of chemicals used in containment on the head loss across sump screens; implemented significant improvements in fire safety analysis techniques; developed the technical bases for risk-informed rule changes, including 10 CFR 50.46 for ECCS requirements and 10 CFR 50.61 concerning pressurized thermal shock; and, developed the safety bases for operations of fuel to high burnup levels and for the use of burnup credit for fuel in storage. These accomplishments provide the underpinnings for practical resolution of issues by the NRC staff in concert with its licensees and external stakeholders.

As I mentioned earlier, technical work remains to be done to resolve the concerns related to PWR sumps, including the effects on downstream components. Another research area we will

continue pursuing is the implementation of a proactive materials degradation management program. Both of these initiatives will require close coordination between industry, stakeholders, and the NRC.

In the coming year, NRC's research program will address the performance of a state-of-the-art reactor consequence analysis that can be used to support more realistically conservative technical analyses of nuclear power reactors. Also, we will work on developing a risk-informed regulatory infrastructure for non-light-water reactors, including those for DOE's Global Nuclear Energy Partnership and the Next Generation Nuclear Plant.

V Security

The NRC continues to evaluate and inspect security plans, procedures, and systems to ensure that acceptable security measures remain in place to protect the health and safety of the public. The NRC also continues to conduct force-on-force exercise inspections to evaluate licensees' defensive capabilities and identify areas for improvement. In the materials arena, the NRC continues to devote considerable effort to determine if additional actions should be used to enhance the security of radioactive material of greatest concern. In addition, the NRC maintains close communication and coordination with the Department of Homeland Security and other agencies in the intelligence and law enforcement communities.

The NRC has 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. The comment period for the proposed rule ended recently 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 that safety-security interface issues are properly considered in plant operations. The Commission intends to issue a final rule as early in calendar year 2007 as possible. Finally, the Commission's expectations on security design for new reactor licensing activities are scheduled 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 modifications.

VI International

The NRC carries out an active international program of cooperation and assistance involving thirty-eight countries with which it exchanges nuclear safety information. The NRC continues to strongly support bilateral and multinational programs for enhancing the level of nuclear safety worldwide, and serves in leadership roles on technical committees that develop and monitor best practices, and in implementing certain treaties and conventions that encourage the wider adoption of basic standards and practices.

I recently spoke at an international conference on "Effective Nuclear Regulatory Systems" in Moscow, where regulators shared expectations and concerns. The U.S. is not the only country that is preparing for expanded deployment of nuclear power plants, nor are we alone in making sure that strong and balanced oversight is continued, and enhanced if necessary, over existing nuclear facilities.

At the IAEA Moscow Conference, I noted that national nuclear regulatory authorities 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. It is worth noting that the NRC's proposed Multinational Design Approval Program, focusing on leveraging the expertise and resources of regulators for reviewing new reactor designs, in a bilateral, trilateral, or multilateral setting, received a lot of attention and support. I refer you to the IAEA Conference website for an update.

VII Organization and Staffing

In preparing to continue exercising all the agency's licensing and regulatory responsibilities, including the potential new roles we may take on in the next few years, we continue to improve the organization, to prioritize, manage, and use resources well, and to revisit and create ways to better implement every major agency function. We will have to accurately anticipate upcoming needs and their timing and prepare effectively to meet those needs. We will have to properly connect resources to functions, and ensure that necessary information is communicated clearly among the doers and all stakeholders. For example, the current projection is that more than 400 additional staff will be devoted to new work by FY 2008.

The NRC will be challenged to continually identify emerging critical skill needs, sustain hiring momentum into the future, and obtain sufficient space. I believe the agency is poised to successfully meet these challenges with our ongoing human capital planning, implementation and assessment process, and space planning program and the various tools provided by the Energy Policy Act of 2005.

I believe we are ready for the changes. Since I am a fiscal conservative and I do not have to pay for advertising here, I refer you to the U.S. News and World Report article on the best places to work in the Federal government and to the just-released Inspector General's report on the safety culture of the agency's work force.

VIII Energy Policy Act and New Reactor Licensing

We all are, one way or another, preparing to discharge our responsibilities in a changed and changing world. Momentum is building, and preparation appears to be turning quickly to implementation. A new road is not far off. Among the most important and sweeping changes to the NRC and its licensees is the Energy Policy Act of 2005.

In creating this Act, President Bush and the Congress took 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. The NRC has the obligation and responsibility to respond to the needs of the country. Therefore, the agency has a key role to play regarding the effectiveness and sustainability, indeed the predictability and reliability of regulatory decision making, and therefore, the role that nuclear power could play. Having said that, I hope we share in the conviction that, for the announced upcoming wave of construction activity, nuclear power plant deployment should be carefully planned and key issues and interfaces resolved at the front end, executed on budget and on schedule, with all the safety and engineering know-how developed over the last 25 years. The development, review, and potential deployment of reactors must contain all the safety checks and balances required by the law and demanded by the need to ensure the protection and security of our people.

To set the stage for my next set of comments, I would like to discuss where potential applicants

are today, in the dynamic front of new reactor applications. To date, 11 potential COL applications for 17 reactors have been publicly announced, distributed among the 3 major reactor vendors now competing for the U.S. marketplace. They appear to be "bunched up" for submittal and review in a short period of time. The schedule calls for completion of any contested proceeding, as well as the mandatory hearing, within 9 months to a year after completion of the staff's review. In anticipation of all these activities, we recently reorganized the Office of Nuclear Reactor Regulation to ensure that we can efficiently perform our reviews in a timely manner.

In order to effectively review 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, which is one thorough, comprehensive, NRC safety evaluation to be used repeatedly, as appropriate. Using the design-centered approach, the NRC staff could 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 to 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.

Another effectiveness improvement can be achieved by amendments to Design Certification Rules to add significant and specific design details not included in the original rulemaking. Amendments to Design Certification Rules and implementation of the design-centered approach are consistent with the goal of standardization and the safety benefits associated with such standardization, as envisioned by the developers of Part 52 and the Congress of the United States. They are also consistent with the U.S. Department of Energy 2010 Initiative, which is centered on standardization. I also note that rulemaking affords the benefit of broad public participation and allows interested parties to focus on particular areas of concern.

Clearly, I am extolling the predictability and benefits of standardization, including increased resolution and closure of design safety issues. I know that the NRC staff is emphasizing the use of standardized reviews, and that utility executives are also seriously interested in standardization.

IX Conclusion

Having said all that, it is time to conclude my remarks by briefly discussing why I used a road less traveled . . . a road not far . . . as a backdrop. It is not based only on my experiences at the NRC,

but on the many turns, some dramatic, in my journeys. There are so many roads in life, and sometimes, it is good to use the well-laid out one, sometimes it is not. There are times when solutions are only found in the dynamics of a road less traveled, where you inch your way up, jump an obstacle, or even build a new road. And, like most things in life, it is important to be able to discern the different outcomes, and then make decisions. The Nuclear Regulatory Commission chose a road less traveled, difficult but rewarding. I am convinced the nation, the people and the agency are better off because we did; it is now open for traffic. Yet, the journey never ends. There is always a new road, not too far away, that often needs to be surveyed, engineered, built, and used. I believe there is such a road just ahead, maybe soon, that will require again the best the NRC can offer; the best many can offer.