



# NRC NEWS

**U.S. NUCLEAR REGULATORY COMMISSION**

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## **BUILDING ON SUCCESS: THE REGULATORY CHALLENGE**

**“Between a Rock and a Nice Place”**

**Nuclear Energy Assembly, New Orleans**

**Remarks of Chairman Nils J. Diaz**

**U.S. Nuclear Regulatory Commission**

**May 13, 2004**

### Introduction

Good morning, ladies and gentlemen. It is a great pleasure and honor to address this milestone gathering today. As the aptly chosen title of this conference reminds us, this is a year of fiftieth anniversaries: fifty years since President Dwight Eisenhower’s visionary and eloquent speech to the United Nations; fifty years also since a far-sighted Congress enacted the Atomic Energy Act, and opened the way to an era in which the atom would become an agent of human betterment rather than of destruction, bringing health to the sick; and safe, clean, affordable electrical power to an energy-deficient world.

Many things have changed in 50 years, but the NRC’s job has not changed. Our job is to enable the use and management of radioactive materials and nuclear fuels for beneficial civilian purposes in a manner that

1. protects public health and safety and the environment,
2. promotes the security of our nation, and
3. provides for regulatory actions that are open, effective, efficient, realistic, and timely.

In the context of this conference’s focus on “the next 50 years,” I have been asked today to address the “regulatory perspective.” I’d like to do so by reviewing where the NRC stands today in its regulation of nuclear power; the directions in which our regulatory program is moving; and the relationship between regulatory programs and industry’s own role in the further growth and development of a safe nuclear option. I have subtitled this presentation “Between a Rock and a Nice

Place.” It should be an interesting exercise for us to find the rocks, the hard places, and the nice places, looking at the past, the present, and the future of nuclear power. We can see occasionally difficult times, the improved safety and reliability of the industry’s performance, and, yes, the improved predictability and consistency of the regulator’s performance, as well as many challenges.

### Nuclear Power Today: A Regulator’s Viewpoint

From a regulator’s standpoint, there are grounds for cautious optimism with the state of the nuclear power industry today. The level of reactor safety, and with it of plant reliability, has increased steadily; from the standpoint of American public protection, the record is admirable, with not a single member of the public ever exposed to a harmful level of radiation from a U. S. nuclear power plant; and nuclear power continues to be an essential element of our energy supply and of the nation’s energy security. Indeed, we have reached a point at which, paradoxically, success itself could become a basis for concern. Too many years of excellent performance can all too easily bring on the kind of complacency that diminishes vigilance and puts that fine record in jeopardy. That this is a real issue, not a hypothetical one, was shown not long ago at Davis-Besse, where both the licensee and the NRC failed. This was a case where people failed to see a problem because they did not expect it and therefore did not look for it. It should be an object lesson to all of us, in industry and government, not to rest on our laurels -- indeed, not to rest, period. Success in the nuclear field has been achieved by maintaining vigilance, by being pro-active in inspection and surveillance, and by doing things rigorously and right.

Let me interject at this point that for the future viability and growth of nuclear power, a strong and credible regulator is a sine qua non (for us engineers, it’s an unyielding boundary condition), and there are no two ways about it. In a democracy, activities are either regulated or not. Nuclear power needs to be regulated. In fact, I believe that the nuclear power industry needs a strong, fair, predictable, and credible regulator. This is, after all, an industry where many in the public regard any lapse by any utility as an indictment of the entire industry and of nuclear technology in general. That may not be fair, it may not be reasonable, but realistically, that is the world we live in.

### Nuclear Safety Regulation: Evolving Approaches

In discussing the NRC’s evolving approach to nuclear safety regulation, it may be appropriate to begin by mentioning another anniversary: the Three Mile Island accident, which took place 25 years ago this spring. There is no doubt that the industry and the NRC were at the time between a rock and a hard place. That event, as we all know, was a milestone in the history of commercial nuclear power, and not a happy one. Notwithstanding that the reactor was ultimately brought to safe shutdown without physical harm to any member of the public, it dealt a major setback to the development of the nuclear option in this country, largely because of the impact on public opinion. Public opinion can become a “rock” if the public is not given the factual information it needs. Even this setback was not without its benefits, however, for it was a wake-up call, shaking the industry and the NRC out of some complacency about the safety of nuclear plants, and it resulted in important advances in the way that both the industry and its regulators did business. The creation of the Institute for Nuclear Power Operations (INPO), providing internal industry discipline to identify weaker performers and bring them up to the mark, was a major step forward. For the NRC, the post-accident reviews confirmed the soundness of the approach employed several years earlier in WASH-1400, the “Reactor Safety Study”: namely, the use of risk analysis and risk insights to ensure that resources are targeted optimally, to

identify the types of accidents which are most important and the best ways to reduce their probability and consequences. In the years since 1995, we have made major strides in integrating the use of PRA into our regulatory structures, though much remains to be done.

Today, we have both the technical information and the analytical tools that we need to make substantial additional progress toward a risk-informed and performance-based regulatory framework. Furthermore, the will is there to move forward. Both in the NRC and in the nuclear industry, risk-informed decision-making has become an everyday tool. There is therefore no reason why these approaches cannot be taken to the next level, and incorporated in the basic design requirements as well.

In the near future, we will see two important steps in this area: 10 CFR 50.69, addressing special treatment requirements, and 50.46, addressing emergency core cooling system requirements. The proposed rule on the emergency core cooling system and loss of coolant accident (LOCA), now in preparation, will provide that the very low probability large break LOCA should be treated not as the design basis accident, but in the context of a required severe accident management program, as one of the severe accident scenarios to be addressed. This means that the really important accident scenarios, the ones with risk significance, would remain within the design basis; this approach would mean a new focus on them and should result in an increase in safety.

### Integrating Safety, Security, and Emergency Preparedness

The events of 9/11 brought to this country a new recognition of the importance of physical security and emergency preparedness in the world of 21st century America. In the case of the NRC and the nuclear industry, this awareness had come already decades ago, and to that extent, we were, so to speak, ahead of the curve: for a generation, our regulations had postulated the existence of a terrorist threat, as part of defense-in-depth. Thus the kind of drastic changes in security seen in the airline industry, for example, were not required for nuclear plants, because we had put those structures in place long ago. To be sure, significant enhancements were made, and security orders were issued that tightened existing policies and procedures in the light of the most current information, but it was not a wholesale revamping of our entire regulatory structure.

What the post-9/11 review of security issues highlighted is how tightly interconnected reactor safety, security and emergency preparedness are. Many of the same issues are involved in avoiding and mitigating reactor accidents as in preventing and mitigating acts of terrorism. Though the initiating events may differ, defense-in-depth applies in very similar ways to both. The same principles are applicable -- high quality of design, fabrication, and testing; multiple barriers to fission product release; redundancy and diversity in safety equipment; and procedures and strategies in place for addressing expected as well as unexpected events. The essence of the problem is the same in both cases: to shut down the reactor, cool the core, and maintain the integrity of protective barriers. This industry as a whole has literally centuries of operating experience in doing just that.

Allow me to frame for you, and the American public, where we are with respect to our assessment of safety, security, and emergency preparedness. As you may know, the NRC has conducted an extensive analysis of the potential vulnerability of nuclear power plants to aircraft attacks. While this analysis is classified, the NRC remains convinced that nuclear power plants are among the most heavily protected civilian facilities in the United States. Our vulnerability studies confirm that the likelihood of damaging the reactor core and releasing radioactivity that could affect public health and safety is low. The reasons for this are clear. Nuclear reactor design requirements for

structures to withstand severe external events (hurricanes, tornadoes and floods), and for safety systems to include redundant emergency core cooling, redundant and diverse heat removal, fire protection features, and station blackout capabilities, provide built-in means of dealing with attempted terrorist attacks. Existing emergency operating procedures and enhanced severe accident management guidelines are well suited for mitigating the effects of accidents or intentional attacks on nuclear power plants. In addition, all nuclear power plants have been required to enhance their safety, security, and emergency preparedness. Given these enhancements made to safety, security, and emergency preparedness, the potential radiological consequences to the public of an aircraft attack are low.

Further, the studies confirm that even in the unlikely event of a radiological release due to terrorist use of a large aircraft, NRC's emergency planning basis remains valid. Thus, we believe that nuclear power plant safety, security, and emergency planning programs continue to provide reasonable assurance of adequate protection of the public health and safety.

The analyses, conclusions and insights that I just presented for nuclear power plants also apply to spent fuel pools, since they are also well engineered and protected structures, and are amenable to simple and effective mitigative actions, if needed. For a dry spent fuel storage cask, it is highly unlikely that aircraft impacts on a cask would cause a significant release of radioactive material. In addition, results to date show that a large commercial aircraft crashing into a transportation cask would not result in a release of radioactive material.

In summary, I believe that the NRC and the industry have done their jobs well. The NRC has assessed what needed to be done and the industry has done it well. The NRC, other government organizations, and the licensees have taken action to provide adequate protection of the people of our nation.

#### Looking to the Present

I believe that this gathering has a strong interest in the NRC priorities today, as outlined in my recent address to the senior managers of the agency. The list is not all-inclusive, and these are key items:

- - Preparing a plan to enhance internal communication and ensuring that everyone in the agency has the information to do their job effectively and efficiently;
  - - Completing the Davis Besse Lessons Learned Task Force recommendations;
  - - Enhancing oversight of reactor engineering issues, including increased use of risk insights, operating experience and increased staff training;
  - - Developing and implementing a pro-active approach to prevention, detection, mitigation, passivation, and repair of reactor materials degradation;
  - - Preparing a plan to enhance the effectiveness of emergency preparedness and incident response, including implementing an improved training program for NRC responders;
  - - Conducting a review of the scope, schedules with milestones, and deliverables of all research projects, and assuring alignment with Commission policies;
  - - Completing a final action plan and milestone schedule to match tasks and resources for the potential review of an application for the licensing of the high-level waste repository;
  - - Preparing a plan to enhance the training and execution of the staff's critical thinking skills.
- This should include the use of risk information, realistic conservatism, and other insights to help identify what issues are truly important, how they relate to other issues, and how they can be

approached in an integrated and holistic manner; and

- - Completing an initial national inventory of high-risk sources, and proposing a plan for continuing its management.

Another high priority agency activity concerns rulemaking for export/import of high-risk radioactive sources, implementing the IAEA Code of Conduct.

### Looking to the Future

The question may be asked, what do we as regulators expect from the nuclear industry in the years ahead. I would answer by saying that we must demand of the industry the same thing we demand of ourselves: an unconditional commitment to safety, security, and preparedness.

Both industry and the NRC must have a comprehensive safety management approach, focused on safety engineering, operations, and maintenance, and driven by a safety management program. For these purposes, a safety management program implies three central elements: a functional, executable commitment to operational, maintenance, and engineering safety; applying technical expertise where and when it should be; and, utilizing the people and resources that are needed to make it happen.

I personally believe that the nuclear option will have a growing part to play in this country's energy mix, as the nation -- the private sector, the public sector, and the American people -- soberly weighs the costs and benefits of different energy options. The NRC, as a regulator, is ready to do its part in ensuring that nuclear technology continues to be a safe and reliable source of power for the needs of our democracy and its citizens. For our part, we have been efficiently conducting, and will continue to conduct, the appropriate safety reviews in such areas of high priority agency activity as power updates, license renewal, and new reactor design certifications. I believe these actions have been extremely important for maintaining an infrastructure for the safe use of nuclear energy. We must always bear in mind, however, that no technology is better, in the end, than the human beings who sit at the controls and oversee its operations, both in the sense of managerial direction and regulatory oversight.

The responsibility is an awesome one. Nuclear energy can continue to be an essential component of our energy supply, energy security, and environmental stewardship, and its use can expand, but only if a rigorous and dedicated commitment to safety is maintained. If we meet our various responsibilities -- as I know we can and feel sure that we will -- then 50 years from now, our successors will look back on the centennial of President Eisenhower's great vision, which ushered in the civilian nuclear era, in an America where nuclear power, safe and environmentally responsible, is ever more vitally a bulwark of our national security and prosperity.

Thank you.