



# NRC NEWS

**U.S. NUCLEAR REGULATORY COMMISSION**

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## **“Do Regulators Add Value?”**

**The Honorable Jeffrey S. Merrifield  
Commissioner  
U.S. Nuclear Regulatory Commission  
at the  
World Nuclear Fuel Cycle 2004 Conference  
Madrid, Spain  
March 31, 2004**

### **Introduction**

Good morning, ladies and gentlemen. It is my distinct pleasure to address you here at the World Nuclear Fuel Cycle 2004 conference. Albert Einstein once said, “The significant problems we face cannot be solved at the same level of thinking we were at when we created them.” I have found this statement to have considerable bearing on the problems the Nuclear Regulatory Commission has faced in the recent past. As a regulator, we have made considerable improvements in the last ten years, but only after critically looking at the way we do business and addressing our difficult areas from the past. At the same time, the U.S. nuclear industry entered a significant new phase. Today I would like to discuss several trends I have observed, both positive and negative, that have influenced how we have developed as a health and safety regulator and how our development has affected the nuclear industry we oversee.

The Nuclear Regulatory Commission currently regulates 103 operating nuclear units, which provide approximately 20 percent of the total electricity in the United States. This contribution to the national energy picture has remained fairly constant for more than 15 years. Yet in 1996, the Energy Information Administration (EIA), which is a government organization responsible for forecasting the United States’ energy needs, projected that by the year 2015, nuclear generation would be responsible for a mere 10 percent of total electricity generation. This pessimistic forecast was based on the view that nuclear power plants could not be competitive in a deregulated market, and that rather than relicensing nuclear units, utilities would shut them down at the end of their useful lives. Indeed, given

the shutdown of Maine Yankee, Yankee Rowe, and a handful of other plants in the early 1990's, it was reasonable at that time for the EIA to predict that at least 49 operating units would shutdown through 2015. In contrast, things have turned out much differently. In their 2004 report, the EIA predicts that all 103 units will continue to operate through 2025. Not only do I believe this view is correct, but I believe it is evidence that the competitive nuclear industry we have in the U.S. is much different from the bleak scenario that was postulated just a few short years ago. More importantly, I believe it demonstrates that there is a direct relationship between the industry becoming more productive and how we, as its regulator, have become more stable, consistent, and efficient while maintaining our focus on protection of public health and safety.

### Current Status

Today, the Nuclear Regulatory Commission is functioning at improved performance levels. I believe this improvement is a direct result of raising our expectations as to what it requires to be a successful regulator. While protection of public health and safety is our agency's mission, our goal for the NRC is to be a stable and predictable regulator. We hope to achieve this goal by expecting excellence from ourselves and continued safe operation from our licensees. The Commission has embarked on major initiatives in the area of reactor oversight, new plant licensing, and safe increased reactor performance. Most remarkably, we have used risk insights to ensure that our activities and those of our licensees are focused on the most risk-significant issues. This has permitted our licensees to reduce the effort spent on insignificant issues and to direct their efforts toward the more safety-significant matters.

The initiatives I've just mentioned have positively contributed to our evolution as a regulator. I have recently spent time attempting to sort out the connections between the evolution of the NRC, expansion of the nuclear industry, and how the electricity marketplace is impacted by these two factors. I believe that the positive trends I have discussed are both directly and indirectly tied to the NRC's performance as a regulator. Although we are a health and safety regulator, we will always have an impact on the development and shape of the industry. Our impact is most easily seen where we have significantly improved our regulations and worked with our licensees to move into new, dynamic directions. By demanding excellence in our regulation, we have given the industry confidence to pursue these new processes and to take regulatory risks where new initiatives are involved.

### Catalyst for Improvement

The NRC did not always inspire this kind of confidence, however. Like the facilities we regulate, we too experienced a downturn in the 80's and mid-90's that called into question our competence as a regulator and whether we, like the nuclear industry we oversee, would even be around in the future.

In the mid-90's, the NRC was the target of criticism from the industry, the private sector, and the United States Congress. The industry's complaints focused on the uncertainty of the NRC's regulatory processes and the high financial costs of these processes and associated hearings. Conversely, public interest groups raised concerns that we weren't stringent enough in our regulatory approach. Despite our best efforts, we still hear many of these same concerns today.

During this time period, Congressional criticism of the NRC was widespread and focused on a variety of issues. In 1996, some in Congress criticized the agency for failure to sufficiently oversee safe operations by our licensees. Specifically, Congress placed significant pressure on the Commission to discipline agency employees who were involved in allowing the Millstone plant to operate in violation of regulatory requirements. These Congressional concerns were symbolic of the widely held view that the NRC was failing in our fundamental mission to protect the public health and safety through proper regulation of nuclear power.<sup>1</sup>

From a different point of view, other members of Congress criticized the NRC for its “cycle of ridiculous regulations and roadblocks to common sense,” focusing specifically on the license renewal program. Then-NRC Chairman Shirley Jackson defended the agency, stating that the NRC was reformed and that its licensing process was much improved over the deliberative procedures of years past. She believed that the NRC was unable to change its reputation because it was being unfairly judged by its past manner of conducting business. Unsatisfied by these assurances, one member stated that Congress would need to continue to work with the NRC to ensure that plant relicensing becomes a less burdensome process, and urged the NRC to “become a partner in renewing licenses rather than an obstacle.”

As you can see, the NRC was being pressured from all angles to do a better job regulating the safety of the industry, while at the same time improving our regulatory procedures. This was not an easy task the agency was facing. But we endured these criticisms and used them to perform a self-assessment of our past performance. The NRC came to the conclusion that there was significant room for improvement.

### License Renewal

Understandably, in light of this history, a major area we focused on for improvement was license renewal. The NRC’s license renewal program is one of the major cornerstones of our regulatory work these days. NRC approval of a license renewal allows a plant to extend the life of a facility for twenty years past its original 40-year license term. We have done significant work honing our renewal process to make it one of the most efficient programs we operate. This program didn’t always run so smoothly, however. In the mid-80’s, it was a widely held view in the nuclear industry that were a utility to go to the NRC with a license amendment requesting extended life on a plant, the NRC would not know what to do with it.<sup>2</sup> To counter these concerns, the NRC assessed its program and decided to completely redevelop the license renewal process.

Consequently, the NRC promulgated new and improved regulations pertaining to the safety and environmental reviews associated with license renewal. These new regulations provided much needed stability and consistency.

Today, the license renewal program is one of which I am justifiably proud, and you would be hard pressed to find Congressional criticism of this NRC process. We are consistently completing our licensing action reviews in a timely manner, typically averaging about 30 months or less for a review

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<sup>1</sup> *Inside N.R.C.*, Sept. 20, 1996; Vol. 18, No. 20; Pg. 6.

<sup>2</sup> “To Retire—or Revitalize,” *Nuclear Industry*, Feb. 1985; Vol. 32, Pg. 3-9.

from start to finish. In addition, there continues to be sustained, strong interest in license renewal from utilities. Some other highlights of the program's success include consistently meeting or exceeding all scheduled milestones, reducing our original budgeted resources for a single site review by 40%, and a continuing dedication to further improve the efficiency and effectiveness of the license renewal process. There were many benefits of the renewal program that we had not anticipated. When the industry was declining and licensees were not planning to renew their licenses, expensive maintenance projects were often delayed. Today, as plants plan for license renewal, licensees are completing significant component upgrades and refurbishments. These activities have significantly enhanced the safety and inspection procedures of plants with renewed licenses.

Developing a successful license renewal process breathed new life into the nuclear industry in the U.S. and helped put the NRC back on track at a time when we were the target of much criticism.

### Power Upgrades

A second initiative by which the NRC and the industry are moving in new directions is with power upgrades. A power upgrade request is where a licensee seeks approval from the NRC to operate a plant at a higher power level than the level authorized in the original license. The NRC has actually been reviewing and approving power upgrades since the 1970's. With the advent of license renewal, however, we have received more of these requests due to the refurbishment and replacement of major components that would enable operation at a higher power level. To date, the NRC has approved over 100 power upgrade increases resulting in a gain of almost 4,200 megawatts electric at existing plants. Collectively, an equivalent of more than four large nuclear power plants has been gained through implementation of power upgrades at existing facilities. Over the next five years or so, our licensees anticipate requesting power upgrades which, if approved, would add the equivalent of another two large nuclear plants to our nation's power supply.

I must mention that unanticipated operational concerns have resulted from our approval of plants operating at these extended power levels. Several boiling water reactor units have experienced cracking in non-safety related steam dryer parts. The NRC is working closely with both the affected licensees and the BWR owners group to ensure the operational concerns are being addressed and any appropriate regulatory issues are fully addressed. While one can understand the desire of a licensee to maximize the power output from these operating reactors, we must make sure that these upgrades are consistent with our requirement for adequate protection of public health and safety. Given these recent outcomes, the NRC is working to ensure our review of power upgrade requests is both rigorous and thorough.

### New Plant Licensing

A third initiative I will discuss today is new plant licensing. It has been many years since the Nuclear Regulatory Commission licensed a new reactor. But in the past three years, we have seen renewed interest in new plant construction in the U.S.

To prepare for the possibility of new plant licensing, the NRC instituted a number of initiatives aimed at updating and streamlining our regulatory licensing structure. First, we developed an early site permit process, which allows licensees to seek pre-approval of sites for new reactor units. We have already received three applications for early site permits from existing licensees. Next, we have

certified reactor designs, which the NRC reviews extensively and then approves the design for general use. This allows a licensee to use a pre-approved design so that they will not have to go through the NRC review process on design aspects of their application. Finally, we streamlined our regulations to incorporate a one-step licensing process, which replaced our old two-step process that required licensees to be issued both a construction permit and then, after construction is completed, an operating license.

We are pioneering these efforts and looking forward to smooth and timely reviews of applications in all three of these areas. We are committed to improving our procedures as we gain more knowledge and experience with the review process. It is entirely feasible, that given the right economic conditions, the NRC will receive an application for a new power reactor in the next three to seven years.

### Other NRC Activities

Today, I have focused primarily on reactor issues, but as this is a fuel conference, I would also like to highlight for you the major licensing activities we are reviewing in this area. We currently have several applications in-house involving the nuclear fuel cycle that could have significant impacts on fuel fabrication in the U.S.

Louisiana Energy Services has submitted an application to build a new centrifuge enrichment facility in New Mexico, and we anticipate receiving a second equivalent application from the U.S. Enrichment Corporation in late summer. These are important applications and they will receive a focused and disciplined review by our agency.

Currently, we are reviewing an application filed by Duke, Cogema, Stone and Webster to operate a mixed oxide fuel fabrication facility in South Carolina. If approved, this facility would disposition 25 metric tons of weapons grade plutonium into mixed oxide fuel, which could then be used in commercial reactors.

We are also reviewing an application from Nuclear Fuel Services to operate a blended low-enriched uranium facility in Tennessee that would be capable of dispositioning highly-enriched uranium from the weapons program that could also be used as fuel in commercial reactors.

Storing used reactor fuel continues to be a challenge for our licensees, as there remains no permanent repository in the United States. To address these challenges, the NRC continues to review applications for Independent Spent Fuel Storage Installations (ISFSIs) at reactor sites which store spent fuel in above ground dry storage casks. There have been 30 ISFSIs licensed to date, which is more than double the number that were licensed just five years ago. We have certified 14 cask designs, submitted by five vendors, for the storage of spent fuel.

Private Fuel Storage, L.L.C., has submitted a first-of-a-kind application for an ISFSI, not co-located with a reactor, to be built in the state of Utah. This facility would be capable of storing 4,000 spent fuel canisters until a permanent repository can be completed. The Commission should make a final decision on this matter later in calendar year 2004.

And finally, the Commission may receive as early as December of this year an application from the Department of Energy to construct a permanent high-level waste repository in Nevada. The review of this application will be intense and will require considerable agency resources. There is also a mandatory hearing associated with the application that could result in many years of litigation.

As you can see, there are many challenges facing us in the near future, but I am confident we will be able to meet them successfully.

### Conclusion

My message to you today, particularly those of you from Europe, is that things may not always be as they seem at first blush. If you had asked anyone in the U.S. eight years ago how the NRC and the industry would be doing today, you might have received a very pessimistic answer. Given all of the activities and initiatives I have mentioned, it is clear that our program is alive and well.

It took considerable work on our part, however, for the agency to achieve this success. We focused on what we had learned from many years of operating experience and decided that we needed to be regulating more intelligently. We reviewed our programs, conducted research into how we could improve, and redeveloped our processes to reflect what we had learned. By raising our expectations for the agency's performance, we greatly enhanced our reputation as a competent regulator. In addition, our revamped procedures provided a new sense of stability and predictability for our licensees. We continue to assess our performance and look for new ways to improve, because although we have come far, there are always areas in which we can go farther.

Based on the NRC's experiences, I would encourage you to demand excellence from your own regulators. It is reasonable for you to expect stability and predictability from their procedures and regulations. The NRC was only able to remake itself after we were pressured by our stakeholders in the industry, the public, and in Congress. Looking back at our experiences, I am thankful that we did receive such harsh criticism, because without it, it is hard to say where we would be right now. Today, unlike eight years ago, I believe I can safely say that a strong, disciplined regulator can add value. While our principal focus as a regulator must always be health and safety, that does not mean we should be disengaged from the state of the industry. In my view, a strong, healthy nuclear industry is much more likely to be a safe one, than an industry that is threatened with extinction.