



# NRC NEWS

U.S. NUCLEAR REGULATORY COMMISSION

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## A YEAR LATER: MAINTAINING FOCUS

by

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U.S. Nuclear Regulatory Commission

Nuclear Non-Operating Owners Group

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### INTRODUCTION

Good afternoon everyone.

I am delighted to be here, with you, today.

Let me begin by thanking and congratulating the organizers and sponsors of this conference. I think you have done a wonderful job providing an informative and interesting agenda. This is the first time I have had the pleasure of meeting many of you and I am grateful for the opportunity.

I see that some of you had the opportunity to tour Newport News Shipbuilding Facility yesterday. It is an impressive complex. My technical assistant spent 13 long months working at Newport News shipyard during the overhaul of the USS Nimitz and informs me that, as impressive as it may be, about 8 hours is enough time.

In preparing for this discussion, I learned that approximately 20% of the US nuclear operating capacity is owned by non-operating owners and that over 46% of US nuclear plants have shared ownership capacity. We typically do not delve into the business side, but I was impressed by the

important role that you can play in helping to ensure a safe and appropriate national energy mix. Thank you.

About a year ago, I delivered a speech to a structural mechanics international meeting in Washington. I quoted Yogi Berra throughout my talk and used one of Yogi's quotes as the title for my speech: "The Future Ain't What It Used To Be." The theme of my discussion that day related to NRC's improvements and challenges and the role that NRC would likely be playing in an almost certain nuclear power resurgence. That was before September 11<sup>th</sup>. That was before the emergent safety issue at the Davis Besse nuclear plant.

A year later, the future still ain't what it used to be - - but it never is. In my view, the pace of any nuclear power resurgence has been slowed, to allow us to reflect on these events and seek further improvements. I still believe the future of nuclear power is bright - - as long as we continue to learn and focus on safe and secure operations.

## THE IMPACT OF SEPTEMBER 11TH

The challenges in a post-September 11<sup>th</sup> environment for the NRC and the nuclear industry have been daunting. The nuclear industry appears to be the relentless focus of political and public scrutiny. When one reflects on this, it is completely understandable, although perhaps not completely justified. But one thing is a certainty, the focus will always be there.

Nuclear power plants are among the most hardened potential targets of terrorist attacks. As you know, each nuclear plant has a well-trained and well-armed security force, a robust security plan, and design features which would make a successful terrorist attack unlikely. Nonetheless, in the light of September 11<sup>th</sup>, the NRC and the industry realized that vulnerabilities need be further reduced.

As a result, individual plant operators have taken actions which they deemed prudent and the NRC has imposed, by Order, additional requirements to further improve the security of these facilities. The specific actions are sensitive, but generally include requirements for increased patrols, augmentation of the number and capabilities of security guards, additional security posts, installation of additional barriers, enhanced coordination with law enforcement and military authorities, and restrictive site access controls for personnel.

The NRC has also re-organized to better meet the needs in a post-September 11<sup>th</sup> world. We recently established a new Office of Nuclear Security and Incident Response to provide a single focused organization for security, safeguards, and emergency response. The new Office also provides a central interface between the NRC and the Office of Homeland Security, other Executive Branch agencies, and Congress.

Just last month, NRC implemented a new Threat Advisory and Protective Measures System. The system corresponds to the color-coded national Homeland Security Advisory System and provides the NRC with the flexibility to advise protective measures for each threat level. Our first experience with the new system came just last week when the national threat level was raised from "Yellow" to "Orange."

One of the next, important steps, in considering appropriate NRC and industry actions is to consider revisions to the Design Basis Threat - - the threat to which nuclear power plants are required to defend against. The staff is currently working with other government agencies, the intelligence

community and the industry to consider appropriate revisions to the Design Basis Threat for commercial power reactors. It is certainly possible that, in order to defend against a revised Design Basis Threat, additional security enhancements would be required. Revising the Design Basis Threat is an ongoing process, with the next iteration scheduled to be completed in the near future.

## REACTOR OVERSIGHT PROCESS

I will not dwell on the seriousness of the reactor head degradation that was discovered at Davis Besse. This is an incredibly important issue that has caused NRC to look inward and outward into the process and events that lead up to this discovery. On a recent agenda, I noted two presentations related to Davis Besse. So I suspect you will be fully briefed on the technical details.

If the event at Davis Besse tells me anything, it affirms for me that defense-in-depth must always remain the foundation of safety. The event at Davis Besse also confirms for me that our regulatory process is sufficiently robust to handle emergent safety issues quickly and effectively. But, we must learn from Davis Besse and continue to look at ways to make our processes better.

Our revised reactor oversight process has dramatically improved our oversight of commercial nuclear power plants. As one of our Regional Administrators put it: the revised reactor oversight process is “relentless”. The process helps focus resources on those areas that are most important to safety and then keeps the pressure on to ensure that there is demonstrated and sustained improvement in deficient areas. Recently, Indian Point Unit 2 moved down into the “Degraded Cornerstone” column of the Action Matrix. Oconee Unit 1 and Cooper Nuclear Station has moved up into the “Multiple or Repetitive Degraded Cornerstone” column of the Action Matrix - - requiring a higher level of Agency oversight.

## THE FUTURE OF NUCLEAR POWER

The future of nuclear power depends on maintaining safety. We must never compromise safety as we continue to demonstrate creativity, openness, resolve and resilience in meeting each and every new challenge. The NRC and the industry will play a key role. The NRC’s role is to provide stable and predictable processes, provide independent and vigorous oversight, and thus ensure that the public remains confident that we are a strong and effective regulator. The industry’ role is to operate safely by setting and maintaining high standards, even above those required by regulation.

Chairman Meserve has indicated that viability of the nuclear option is absolutely dependent on the maintenance of safe operations, the NRC's -- and the industry's -- highest priority must be the protection of public health and safety. If we fail in ensuring safety, the emerging optimism about nuclear energy will quickly disappear. I agree.

Licensing of a new plant, whether under 10 CFR Part 50 or Part 52, will be a significant challenge to the NRC. While we currently do not anticipate a return to the feverish pace of licensing for new plants that occurred in the mid-1970’s, we are taking prudent steps to ensure that NRC is prepared to meet a potential new plant licensing submittal.

Both the Office of Nuclear Reactor Regulation and the Office of Regulatory Research have re-organized to support increased interaction with the industry and stakeholders, establish a new plant licensing infrastructure, support timely identification and resolution of technical and policy issues, and prepare for an effective transfer of technology.

Recently, with the renewed interest in future plant licensing, the staff began the AP-1000 design certification review and has interacted with Exelon and the Department of Energy (DOE) to identify key issues related to the pebble bed modular reactor (PBMR) and an approach for their resolution. In addition, General Atomics (GA) has expressed interest in conducting pre-application activities on their gas turbine modular helium reactor (GT-MHR), a 600 Mwt high-temperature gas-cooled reactor (HTGR), and DOE is considering licensing issues in their Generation IV reactor development program. DOE's 2010 initiative foresees a possible application for a combined license as early as 2005.

The US industry support for pebble-bed technology has stepped back some in the recent months. Changes in industry leadership and some difficult technical issues are resulting in a slower than anticipated pace of activity on the pebble-bed. But, overall the pace of interest in future reactors designs has increased. The staff has recently met with representatives from Atomic Energy of Canada, Limited to discuss pre-application review activities for the ACR-700 design and also met with representatives from Framatome to discuss the SWR-1000 design.

The companion element of building new nuclear power plants is the siting process - - finding a place. Much effort is underway to "exercise" our early site permit process, work out some of the issues, and within the next few years, possibly have an approved site for construction of a new reactor.

The sites that are the primary focus of these reviews are existing reactor sites that can accommodate an additional facility. Dominion's North Anna site, Entergy's Grand Gulf site and as-yet-unspecified Exelon site are in the mix of possible early site permit review candidates.

Of course, associated with some of the newer designs will likely be a host of technical and policy challenges. Some of these challenges include high-temperature materials performance, qualification of accident analysis codes and methods, qualification of coated particle fuel, and the need for "containment or confinement". To meet these challenges, we must continue to have a strong nuclear research program. I am, and I believe that the Commission is, committed to strengthening our research program.

## LICENSE RENEWAL

A year ago, I characterized our experience with the license renewal process as - "our initial experience."

Today, I think we are experienced veterans. Our process remains stable and efficient. We have completed the reviews for Calvert Cliffs Units 1 and 2; Oconee Units 1, 2 and 3; and Arkansas Nuclear One Unit 1; Hatch Units 1 and 2; Turkey Point Units 3 and 4. License renewal reviews for fourteen other units are underway.

The license renewal reviews completed to date have emphasized safety and been completed ahead of schedule. We believe that this is a noteworthy accomplishment and recognize that potential challenges lie ahead with the simultaneous review of many renewal applications. We continue to work to improve the effectiveness and efficiency of our license renewal process.

A year ago, circumferential cracking around control rod drive penetrations found at Oconee and Arkansas Nuclear One nuclear plants was prominent. This year, the reactor head degradation found at Davis Besse is at the forefront of technical and regulatory issues. These examples should serve to remind us that age-related degradation is an issue that can affect all operating reactors. It should also

help emphasize the importance and strength of our current processes to deal effectively with emergent safety concerns. Ongoing efforts to further our understanding of age-related degradation are important and we should continue to vigorously explore new techniques that help us better detect, characterize, and assess the impact of these degradations. Analytical tools for assessing the risk significance of degradation help ensure the actions we take are appropriate, coherent, and timely.

## HUMAN CAPITAL INITIATIVES

Whether there is resurgence of nuclear power or not, the changing nuclear workforce provides enormous management challenges that must be addressed today. The current inflow of new talent does not equal the outflow of experienced workers. Even when we are able to attract talented young men and women, the lack of upward mobility or lack of variety in career paths may result in segments of the workforce moving outside the nuclear area. Maintaining and cultivating core competencies in nuclear-related areas is a key concern for the industry and the NRC.

Two years ago, at the NRC, the ratio of NRC employees who are over 60 years of age to those under 30 was between 5 and 6 to 1. The same ratio at NASA, for comparison, was approximately 2:1. Moreover, approximately fifteen percent of NRC's engineers are already eligible for retirement and another four percent of the current workforce of engineers will become eligible for retirement each year for the next few years.

Today, a focus on entry-level hiring and our two-year Nuclear Safety Intern Program have served to shift the age ratio of the workforce from 6:1 to 2:1, with a total of 121 intern program participants. Twenty-three percent of the employees in the Office of Nuclear Regulatory Research and 21 percent of the employees in the Office of Nuclear Reactor Regulation are eligible for retirement today. While the number of employees eligible to retire remains proportionally high, the percent of those employees who decide to retire is down slightly. In 2001, actual retirements at NRC were 15 percent of those eligible.

In addition, we appear to be stemming the adverse trend of engineering capability loss by exercising a number of human capital strategies to recruit, hire, develop, and retain a talented, diverse workforce. NRC uses targeted recruitment, "signing bonuses" for applicants with critical skills, student loan repayment benefits, fellowships, technical training, and leadership development programs. The downturn in other segments of the economy and the excitement about the future of nuclear power appears to contribute to an improved outlook at NRC. But, the human capital crisis is not over. Demand still outnumbers supply.

Should the resurgence of new nuclear power plant flourish, I think the Agency will be faced with at least two competing forces that will affect NRC resources. One force will be good for the agency and would involve establishing new positions, reviewing cutting-edge technology, and increasing upward mobility. The other force would be from outside the agency resulting from government and industry competing, under different rules, for the same resources.

It is clear that both the NRC and the industry must be pro-active and aggressive in seeking out talent early, training them and planning smartly for what the future may bring. We need to be able to respond to emerging technology, deal with emerging issues, and deal effectively in the international environment. Our credibility as an effective, competent regulator and the industry's credibility as effective and competent operators hinges on maintaining a strong technical expertise.

## YUCCA MOUNTAIN

A year ago, the Department of Energy had not made its recommendation regarding the location for a high-level waste repository. Today, Yucca Mountain has been approved by the President, withstood the Governor of the State of Nevada's "veto" and is the designated site for disposal of the nation's spent fuel and high-level waste from civilian reactors. DOE has indicated that it intends to submit an application to NRC to construct the Yucca Mountain facility in December of 2004. The law then gives NRC up to four years to decide whether to grant the license, including the completion of the administrative proceeding.

As the Chairman has stated, it is not an exaggeration to say that no single NRC decision or set of decisions since the response to Three Mile Island is likely to be scrutinized as closely, from a technical, legal, and public confidence standpoint, as those concerning this one-of-a-kind facility at Yucca Mountain.

The NRC has for several years been making preparations for the eventuality of an application for a high-level waste repository. Although our regulations that will govern the review of the high-level waste repository are risk-informed and performance-based, major challenges exist in demonstrating compliance with the requirements.

The system contains both natural and engineered barriers and the system of barriers must function effectively for 10,000 years -- longer than recorded human history. As you can understand, this is unlike any licensing proceeding the agency has faced in the past. Probably the most complex aspects of the review will be the post-closure period of performance, because it involves estimations of repository performance over thousands of years.

## CONCLUSION

In summary, a year ago, our focus shifted to security of nuclear facilities and materials. Major changes occurred at the NRC and within the nuclear industry and some ongoing initiatives slowed to support the surge in effort toward security. More security-related changes will likely be necessary and our focus remains high in the security area - - as it should.

However, our safety focus never changed. It cannot. A successful terrorist attack or a reactor accident carry similar devastating effects on public confidence and potential public health and safety issues. In the aftermath of September 11<sup>th</sup>, we continued to move forward to improve our regulatory processes and focus resources on safety.

The trade-off between safety and security is not a zero-sum game. We cannot rob Peter to pay Paul.

Again, thank you and I would be pleased to answer any questions that you may have.