

**Chairman Allison M. Macfarlane**

American Nuclear Society, DC Chapter

December Meeting

Thursday, December 6, 6-9PM

TWFN Auditorium

**Introduction:** Thank you for inviting me here tonight. I am pleased to address the American Nuclear Society's DC Chapter. I see a number of familiar faces in the audience from around the NRC offices and I look forward to interacting with those of you whom I haven't had the opportunity to meet.

It is important to have organizations like the American Nuclear Society that seek to unify industry, academic, and government professionals into a cohesive body that shares information and best practices. This type of collegiality is necessary for an efficient and safe nuclear industry. I would like to thank the ANS officers for their work, which is done in addition to their "day jobs," to gather us for events like this on a regular basis.

I value the collegiality demonstrated by your organization and in light of that I would like to begin by acknowledging my colleagues on the Commission; they are all talented professionals with a rich and diverse set of experiences and expertise. The Commission is charged by statute to work as a collegial body and our ability to collaborate enhances public trust and industry confidence in our work.

I'm going to talk tonight about three issues that I believe are important and then answer questions. The areas I will touch briefly on include: Waste Confidence, the status of post-Fukushima activities; and initial observations from my first few months on the job.

**Waste Confidence:** Starting with a topic of personal importance to me as well as to the Commission, I would like to discuss the Waste Confidence Decision. The Commission updated the Waste Confidence Decision in 2010. This update revised the time frames associated with NRC's confidence in the availability of a disposal site and confidence in the

length of time spent fuel could be safely stored. However, the U.S. Court of Appeals for the District of Columbia Court found that the certain aspects of NRC's environmental analysis for this revision did not comply with the National Environmental Policy Act. The remanded portions included the need to adequately address spent fuel pool fires and leaks, and the failure to address the possibility that a permanent geologic repository may never be constructed.

In response to these concerns, the NRC recently formed the Waste Confidence Directorate, a group charged with addressing the appeals court's concerns. The Waste Confidence Directorate will work to develop an environmental impact statement and revised Waste Confidence decision and rule within twenty-four months. While this work is under way, the Commission has directed that licensing activities continue but that no licenses dependent on the Waste Confidence decision be issued until the Court's remand is appropriately addressed. The Court's final decision could affect some applications for new reactors and license renewals for operating reactors.

Despite the uncertainties presented by the ongoing work on the Waste Confidence Decision, the NRC has experienced recent progress on new reactors. This year, we issued combined licenses for the construction of four new reactors of the Westinghouse AP1000 design, which are now under construction in Georgia and South Carolina. We are currently reviewing design certifications for three large light water reactor designs and have a number of combined license applications for large designs under consideration. Most recently, the Department of Energy announced plans to invest in small modular reactor design and commercialization. We anticipate small modular reactor design applications in 2014. The importance of new facilities for the industry is apparent in financial, technical, and symbolic terms. From our vantage point, these new plants challenged us to strengthen our regulatory framework and presented an opportunity to attract new talent.

I believe that it is irresponsible to discuss new reactors without consideration of the back-end of the nuclear fuel cycle. Because I was a member of the *Blue Ribbon Commission on America's Nuclear Future*, you will not be surprised to learn that I personally feel the

nation needs a rejuvenated focus on this aspect of the nuclear industry. Part of this focus will be manifest in an updated Waste Confidence Rule. It is my hope that while we work through the Waste Confidence issues, Congress and the Executive Branch will develop a renewed national policy for the back-end of the fuel cycle so that it is an integral part of the planning for new facilities.

As a country with a well established nuclear program, I believe we should continue to work domestically and internationally to stress the importance of spent fuel storage and disposal. I see this as particularly important for those countries that have emerging nuclear power programs. We have decades of expertise and experience that we should share with our international counterparts as they pursue nuclear energy.

**Fukushima Dai-ichi Accident:** The NRC's proactive engagement on issues surrounding spent fuel storage and disposal will ultimately enhance the safety of our nuclear fleet. In addition to implementing and updating current regulations, the NRC is in the process of integrating lessons learned from the Fukushima Dai-ichi nuclear power plant accident into our current regulatory framework. The size of earthquake and resulting tsunami that caused the nuclear accident were not incorporated into the design basis, resulting in a devastating accident. I believe there is an important intersection between the earth sciences and effective nuclear regulation that must be explored to further strengthen the safety of our country's facilities.

As a geologist, I know that the Earth's systems are dynamic and our understanding of them continually progresses. For instance, prior to the Sumatra earthquake that caused the devastating Indian Ocean tsunami in 2004, seismologists thought only some subduction zones could cause megaquakes, or earthquakes with a magnitude larger than 8.8. Now, especially after the Tohoku quake of 2011, we know that all subduction zones of sufficient length can create megaquakes. We are continually surprised by Earth processes, which is why I believe it is essential to require licensees to update their natural hazard assessments

periodically. We need to incorporate new data from these analyses into our safety requirements.

The lessons the international community has learned from the Fukushima accident will enhance safety at U.S. nuclear facilities. The NRC developed an effective three-tiered framework for our response to the Fukushima accident. I will briefly touch on the status of each tier as well as some additional actions that have resulted from our lessons-learned efforts.

First, Tier One activities are our top priority and are already well underway. These activities, which require seismic and flooding reevaluations, address station blackout actions, develop mitigation strategies for beyond design basis events, require reliable hardened vents for Boiling Water Reactor Mark I and II containments, require new spent fuel instrumentation, and strengthen emergency operations procedures were identified as the most essential to ensuring that there will not be a similar event in the United States. We will continue to closely monitor industry progress with implementing Tier One changes and make certain that established schedules are adhered to.

Related to the tier one recommendations are improvements in the mitigation of external flooding threats and seismic hazards that the NRC began several years ago. Licensees are being asked to re-evaluate the flood and seismic hazards at their sites. Plant operators are re-examining the seismic hazards using more modern analysis techniques and updated seismic source data. If the new analyses reveal that the ground motion spectrum exceeds the original design basis, plants will need to reevaluate the risks associated with the updated data.

The second tier deals with spent fuel pool makeup capability and several aspects of emergency preparedness, as well as evaluation of other external hazards beyond those posed by seismic and flooding events. This work has begun and will continue as information and resources from Tier One become available.

Finally, Tier Three consists of recommendations that require further study to support a regulatory action or are dependent on resolution of Tier One and Tier Two actions. Some planning and research on Tier Three items has begun, and more will be initiated in the coming year.

The prioritization of post-Fukushima activities into multiple tiers does not suggest that the NRC considers Tier Two and Three as “low priorities.” It means that we have taken into consideration the need to integrate these steps with other important ongoing safety enhancements.

Embedded within all regulatory requirements is safety culture. This is cross-cutting issue that is a top priority at the NRC. However, I’ve observed that this topic is understood differently in various communities. International organizations like the IAEA understand safety culture in a different context than we do. Also opaque is how organizations view the relationship between safety and security. I believe it is important to reach a common understanding of not just the definition of safety culture but how it affects nuclear security and vice versa. For a matter that is fundamental to the domestic and international safety regime, we need to all be on the same page. Domestically, I feel that we need to ensure that Safety Culture has a consistent application for reactors and plants as well as in the NRC’s offices. Assurance of an effective safety culture must underlie every operational and regulatory consideration at nuclear facilities in the U.S. and worldwide.

**The NRC:** In the short time that I have been Chairman of the NRC I have encountered areas where the agency can improve but I have also been extremely impressed by the agency’s commitment to the mission, dedication to the job, and interest in growth. While the NRC’s safety philosophy remains unchanged, elected officials’ and the public’s interest in what we do has increased significantly as a result of the Fukushima accident. I believe it is our responsibility as regulators to communicate transparently with interested groups and listen to their concerns. Simple and effective communication at all levels, both internal and external, is essential. Written materials should use plain language that is free

of acronyms to succinctly convey the NRC's mission, regulations, and actions. I believe that clearly explaining our actions and motivations to the public enhances public trust and fulfills of our safety mission.

I also believe that the satisfaction of our employees and the health of our internal operations are central to successfully carrying out our Agency's mission. Prior to starting at the NRC, I was aware of our employees' reputation for their commitment to their work and I have come to see just how committed everyone is to the agency's mission. I have been impressed not only by the talented staff but also the work we do to ensure professional growth and personal satisfaction. I have come to understand why the NRC is consistently ranked as one of the best places to work.

**Conclusion:** The NRC has some big challenges on the horizon but I strongly believe that we have the talent, dedication, and capabilities to tackle them. In doing so, we will enhance the health and safety of the public and protect the environment. A revised Waste Confidence Decision and Rule will guarantee that the back-end of the fuel cycle is safely maintained. Updating our regulations using information gained through accidents like Fukushima or other natural disasters will help protect our nuclear facilities against unforeseen events. Communicating effectively with the public, media and government will increase trust in our mission. We wouldn't be able to address these important issues without our staff. I think this is an exciting time to be a part of the NRC family and I look forward to 2013 optimistic about what we'll accomplish.

Thank you for the opportunity to speak to you today. At this time, I'd like to open up the discussion to the group and take any questions you may have.