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“A Fresh Look at Legacy Issues”

**Prepared Remarks
by the Honorable Gregory B. Jaczko
Commissioner
U.S. Nuclear Regulatory Commission**

**at the
Nuclear Fuel Supply Forum
Washington, DC**

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Good morning. I would like to thank the Nuclear Energy Institute, specifically Felix Killar, for the opportunity to be here today. This forum gives me an opportunity to speak to various licensee and federal representatives who are involved in writing a new chapter on nuclear energy in the United States. Looking at the agenda, I see that there will be discussion ranging from the potential construction of additional nuclear power plants to one of the newest topics of the day - the Department of Energy's Global Nuclear Energy Partnership.

I would like to spend some time talking to you about a few of the issues that I have focused my attention on since arriving at the Commission. I believe we sometimes allow our thinking to be constrained by the legacies of the past, so I want to spend a few minutes looking at some old issues in a new way.

The first area I would like to discuss is the Nuclear Regulatory Commission's (NRC) fuel facilities oversight program. While the current process relies primarily upon inspections, the process is not risk informed and the performance evaluation process is somewhat subjective in nature. I would argue that our current oversight program, which includes inspections and performance evaluations, would be improved by being more structured and similar to the oversight process for reactors. Having a more structured process that is risk-informed would help NRC focus its limited resources on what is important at fuel facilities. Likewise, a structured oversight process would be clear and predictable for NRC licensees.

The Commission has started down this road by requiring licensees to submit integrated safety assessments (ISAs). Since ISAs identify items relied on for safety and provide details of the consequences of accidents, the NRC staff could leverage this information to develop performance indicators. Therefore, the ISAs would help facilitate the creation of a more structured oversight program for fuel facilities.

Granted, developing such a program will be difficult because fuel cycle facilities are unique. Notwithstanding the challenges presented by facility differences, I continue to believe the Commission should change its current framework to be structured similarly to the reactor oversight process.

Another area at which I think the Commission should take a fresh look at is how we regulate source material, or uranium and thorium. The NRC's licensing requirements for these materials can be found in 10 CFR Part 40. Parts of this regulation are a result of rules and criteria developed during the years of the Atomic Energy Commission (AEC). Consequently, a lot of the requirements in Part 40 have not evolved since the days of the AEC. In particular, the criteria for what makes source material unimportant, and therefore not subject to a license, have not changed since 1960. The basis for what makes source material unimportant has to do with what makes uranium and thorium economically viable. These criteria are archaic, particularly for an agency with such a strong public health and safety focus. The challenge posed by this holdover from the days of AEC is that the public could potentially be exposed to radiation levels up to and exceeding the Commission's public dose limits.

Ultimately, the Commission has authority over all source material in the United States after removal from its place of deposit in nature. There are a number of facilities the Commission is dealing with in the decommissioning arena which inadvertently extracted uranium and thorium in their waste streams. These companies, without knowledge of the Commission's regulations, concentrated these materials in their waste streams at or above 0.05-percent by weight, thereby making them subject to those regulations.

Source material below 0.05-percent by weight is unlicensable, and the Commission does not require remediation of material containing less than this amount at decommissioning sites. The material left behind at these sites, which is slightly below the criteria, could expose the public to levels of radiation that exceed our regulations. This became clear to me last year when the Commission was deliberating on the staff's recommendations to terminate the license of Heritage Minerals Site in Manchester Township, New Jersey. The Commission approved terminating the license for the site leaving behind material extracted from the operations - not meeting our licensing standards - in which the dose estimates may have approached our public limits.

Anyone who extracts this material purposefully or inadvertently in a manner in which the public can be exposed should be required to follow the public health and safety regulations established by the Commission. A health based, risk-informed approach to our source material regulations would allow the Commission to better protect the public from exposure to uranium and thorium that might approach or exceed our public dose limits.

Source material extracted for its use as commercial fuel is also a primary focus of NRC's regulatory program. In February of 2006 the Commission held a hearing on materials degradation issues and fuel reliability. The meeting was principally focused on the reliability of fuel. Licensees have come a long way since the early days when fuel failures were a normal occurrence. In fact, when I

visited the Areva facility in Richland, Washington, I had the opportunity to discuss Areva's experience and efforts to minimize fuel failures for its customers.

What intrigues me about the low number of fuel failures is that during the Commission meeting in February I kept hearing how licensees wanted to set a goal of zero fuel failures. Granted, fuel is the first line of defense against fission product release - an important factor in our defense-in-depth philosophy. I think we really ought to be looking at the failure rate of individual pins. The failure rate is low and getting to zero would be very challenging and probably not very realistic in my view. Licensees should be setting more realistic goals and expectations in this area to better help them continue to improve their performance.

The Commission, through its reactor oversight process, utilizes performance indicators to monitor fuel performance. Specifically, reactor coolant system activity is a performance indicator (PI) in the barrier integrity cornerstone. PIs should be leading indicators of plant performance. The barrier integrity cornerstone, however, is always green. Thus, it is unclear if the Commission is getting the results from this PI that it expects given licensees are looking to have zero fuel defects. Fundamentally the NRC and stakeholders should reexamine how we talk about this issue and how we measure fuel performance. Therefore, I think the Commission should reevaluate this particular PI, and maybe others, to ensure that they are true leading indicators of plant performance.

The last example of how we allow our thinking to be constrained by the legacy of the past has to do with how we handle spent fuel. The radioactive decay of spent fuel and the associated risk to the public from that fuel changes on a time scale similar to that of the earth's geology. While long-term disposition remains a difficult issue, there are many viable options to the short term management of spent fuel. I believe there is value in focusing efforts on better short-term strategies. Given that the risk to the public from the potential exposure to spent fuel will last more than one million years, I would define the short-term as a few generations or at least the next 200 years.

The last half-century has shown that spent fuel can be safely and securely maintained onsite at nuclear power plants. The license renewal effort currently underway, coupled with the potential for new plants to be built mostly at existing reactor sites, mean that current sites will likely be active and occupied for many decades to come. Spent fuel can continue to be safely managed at those sites. It is precisely when spent fuel is being attended to over the short term that we have the highest level of confidence about its properties and behavior. Long-term disposal should be divorced from short-term management because it is not beneficial to focus more on the ultimate resting form of unmanaged spent fuel than on strategies to continue to safely manage the spent fuel over realistic time frames. Licensees should not miss an opportunity to implement better short-term management strategies.

In conclusion, I look forward to continuing to work with stakeholders to explore ways to improve how the agency oversees fuel facilities, how we regulate source material, and how we ensure the safe management of spent fuel. Thank you for the opportunity to speak to you today and I welcome any questions you may have.

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