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"Thoughts on Spent Fuel Storage"

Prepared Remarks for

The Honorable Gregory B. Jaczko
Commissioner
U.S. Nuclear Regulatory Commission

at the

Nuclear Energy Institute's Dry Storage Information Forum
Bonita Springs, Florida

May 13, 2008

I am pleased to join you in Florida for this important conference. You represent the members of the public, licensees, vendors, and manufacturers and technical experts who will help determine – along with regulators – the future of spent fuel storage and transportation. The issues that you are addressing here this week are important to public health and safety and they are also integral to site operations at nuclear power plants. That is why it is important for you to be here and I am pleased to be able to participate and share some of my thoughts with you.

Before I go any further, I should mention that I am one of four Commissioners of the NRC and the views I offer here are my own – not necessarily the agency's.

With that in mind, I would like to begin by offering some context for our discussions. Currently, there are 65 operational power reactor sites and under the agency's license renewal program over half the reactor units have either had or are currently undergoing a license renewal review by NRC staff. Additionally, nine combined license applications for 15 new reactor units have been submitted to the agency for review that may, if they meet safety requirements and are approved, potentially lead to new construction at primarily existing sites.

As of February 2008 there are 34 operating generally licensed Independent Spent Fuel Storage Installations (ISFSIs) and 15 specifically licensed ISFSIs at or away from reactor sites. Currently, 16 sites are pursuing generally licensed ISFSIs, which leave 19 sites that have not announced their intentions concerning dry fuel storage. This amounts to 30 states having at least one ISFSI.

Those statistics show that over the last half century licensees have demonstrated spent fuel can be safely and securely managed onsite at nuclear power plants. That, coupled with the fact that long-term disposition of this material remains a challenge in the United States, leads me to believe that the focus should remain on shorter-term storage and any additional safety and security improvements that can be made there.

The most clear-cut example of an area where additional safety margins can be gained involves additional efforts to move spent nuclear fuel from pools to dry cask storage. I imagine I may be 'preaching to the choir' on this point, as this is the dry storage information forum after all.

The risk at a nuclear power plant site is centered on the operating plant, not the spent fuel stored in massive casks and passively cooled in concrete bunkers. The threat of terrorism is the one element which complicates the risk to stored fuel. However, the NRC is also formally addressing the security of dry cask storage through a rulemaking the Commission ordered last December 2007. The proposed rule to be developed by the staff will seek to codify the protective measures in the Orders issued after September 11, 2001 and resolve regulatory differences between specifically and generally licensed ISFSIs.

The staff's proposal would set a 5 rem dose limit at the control area boundary for both acts of radiological sabotage and for design basis events. The staff also proposed establishing a 1 rem dose limit at the site boundary for both events consistent with NRC's 1995 ISFSI emergency planning basis. I supported that proposal but the majority of the Commission did not.

The staff is working on the technical basis for the rule and plans to hold public meetings in Las Vegas, Nevada and Rockville, Maryland in September 2008 that I would encourage everyone to participate in. The staff then expects to complete the technical basis sometime this summer and provide the Commission with a proposed rule by the summer of 2009.

I also believe that the recent pilot probabilistic risk assessment (PRA) developed by NRC provides additional supporting evidence of the benefits of having more of the spent fuel held in dry storage. The staff's PRA was done to serve as a guide for assessing the risk to the public and identifying the dominant contributors to that risk which could be used for performing similar PRAs in the future. Ultimately, the staff's risk estimates of an individual probability of a latent cancer fatality were negligibly small in the first year of operation. The largest contributor to risk was found to be the actual transfer of the fuel from wet to dry storage prior to being placed on the pad. The staff's report also evaluated the risk of a latent cancer in the subsequent years of operation to be so small it might as well have been "zero."

Therefore, in an effort to be ever vigilant about the safety of spent fuel, I believe the NRC should develop new regulations which require spent fuel be moved to dry cask storage after it has been allowed to cool for five years. This step, recognizing the inherent safety benefits of dry storage and combining that knowledge with the new ISFSI security regulations under development, will provide a safer and more secure disposition for spent fuel in the short term.

I have spent a fair amount of time talking about the storage issues important to this conference, so now let me take a few minutes to discuss a transportation issue. I understand licensees' interest in maximizing the number of fuel assemblies that can be placed in fuel canisters for shipment – thereby decreasing costs and minimizing the number of shipments required. The current safety margin is established in part by the requirement that licensees demonstrate no criticality event would occur ever if the fuel were involved in a transportation accident and water (which can act as a moderator for a nuclear fission reaction) were to enter a fuel canister.

There are two approaches licensees could use to attempt to demonstrate that the safety margin can be maintained even with more dense canisters.

1) Use probabilistic analyses that attempt to show the chances of an accident that allow water to infiltrate the casks is so low it isn't worth considering; or

2) Do the real technical work looking at the actual material composition of spent fuel to demonstrate that even with more fuel assemblies, water infiltration would not cause a criticality accident.

The Commission recently affirmed the NRC staff's decision that the first approach was not acceptable.

Licensees seeking to put more fuel in transportation packages are, therefore, going to have to do the sound science and provide the NRC with technical data that clearly demonstrates adding more assemblies does not degrade safety. Such an analysis would be based on the actual physical properties of the fuel rather than hypothetical assumptions about potential accident scenarios. In my view, modifying existing regulations based on an improved understanding of spent fuel composition would be the only way the agency could proceed in a manner that is consistent with its public health and safety mandate.

In conclusion, I believe that spent fuel can be safely and securely managed at reactor sites for many years to come. I also believe the agency's approach to this issue could be enhanced by a rulemaking to require spent fuel to be moved from pools to dry storage, combined with the ISFSI security rulemaking currently underway. As far as the issue of how densely transportation casks are packed is concerned, licensees have an opportunity to proactively submit technical data and analyses that demonstrate a continued adequate safety margin.

My closing message would be to encourage all stakeholders to continue to engage the agency on these important issues. This forum is a good forum for that dialogue and I appreciate the opportunity to be here with you today.

I would welcome any questions you may have.