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Good Morning esteemed colleagues, it is indeed an honor for me to be here speaking to you today. I would like to recognize the outstanding job performed by the conference organizers and thank them for the invitation to speak to you.

When I sat down to outline this speech, I reviewed the speech given by former NRC Chairman Klein at PATRAM 2007. Two of his key points, the need for the next generation of packages to be developed to coincide with the nuclear renaissance and extending the reactor Multinational Design Evaluation Program, or MDEP, to transportation are likely to be slowly accomplished since the need for new packages for the nuclear renaissance will be many years in the future. While the nuclear renaissance appears to be continuing in the U.S., albeit at a more measured pace, other fundamental changes in the landscape have driven us to take a closer look at both the transportation and storage of spent nuclear fuel. Just this June the NRC staff submitted a proposal to the NRC Commission for a plan that supports extended storage and subsequent transportation of spent nuclear fuel. The Commission has the plan under active consideration and we await their decision. I'll talk more about the plan a little later.

First, let me say a few words about Yucca Mountain and the growing U.S. accumulation of spent fuel. I am sure many of you are interested in the Yucca Mountain licensing process, so I thought I would provide a brief update on its status. The NRC began its review of the license application for Yucca Mountain in September 2008. In February 2010, President Obama directed the Department of Energy to discontinue its support for the application for Yucca Mountain. Consequently, the Department of Energy filed a motion seeking to withdraw its license application, with prejudice, the following month. The NRC's Atomic Safety Licensing Board denied the motion to withdraw the license application at the end of June 2010, and this decision is currently under review of the NRC Commission. The expectation is that any Commission decision will be appealed to the federal courts at the appropriate time. Absent a final decision, the NRC staff will continue to review the application consistent with its available resources. In August, the NRC published Volume 1 of the five-volume safety evaluation report. The first volume covers the staff's evaluation of the "General Information" section in the license application.

As a first step in determining a new national policy with respect to spent nuclear fuel, President Obama charged the Department of Energy with nominating the Blue Ribbon Commission on America's Nuclear Future. The Blue Ribbon Commission is actively engaging stakeholders as it develops its recommendations on future spent fuel disposition in the United States. The Blue Ribbon Commission is scheduled to provide its draft report in July 2011 with a final report coming January 2012.

John F. Kennedy said, "The Chinese use two brush strokes to write the word "crisis." One brush stroke stands for danger, the other for opportunity. In a crisis, be aware of the danger, but recognize the opportunity." I didn't choose this quote to indicate or tell you that we

are in a crisis over spent fuel transportation, storage and disposal, but rather that the NRC has taken this time of uncertainty as an opportunity to be proactive. Over the past 9 months, we have developed an Integrated Strategy for the Regulation of Spent fuel. The strategy should position us to be ready, when necessary, to license any facilities recommended by the Blue Ribbon Commission. The integrated strategy includes components for recycling, disposal, storage, and transportation of spent fuel. The extended storage and transportation component of the Integrated Plan currently before the Commission for review is responsive to direction received from the Commission in February 2010. The Commission had directed staff to "... revisit the paradigm for spent nuclear fuel storage and transportation, and to undertake a thorough review of the associated regulatory programs, and evaluate the adequacy of the programs for extended storage periods beyond 120 years." This includes evaluation of the NRC's regulations, guidance, standards, and processes that make up our regulatory framework. The Commission also directed the staff to undertake research to bolster the technical bases of the regulatory framework in support of extended periods.

While it may seem that most of our ongoing work for extended storage and transportation is directly related to only to storage, there is a great deal of effort being expended on the transportation front. Our goal is to minimize the number of already loaded spent fuel storage casks that cannot be subsequently transported. In other words, we would like to have a framework that minimizes the need for repackaging and allows for transportation of the storage casks or their internal canisters that are being loaded today and will be loaded in the future. As an example, I would like to highlight the work we are doing at Oak Ridge National Laboratory testing high burn-up fuel assemblies to determine their strength and ductility. The goal is to understand how these assemblies would behave during a transcontinental trip to a repository, interim storage, or reprocessing facility, and also, how they would respond during any hypothetical transportation accident. The staff recognizes that the uncertainty associated with maintaining cladding integrity in both extended wet and dry storage modes, and eventual transportation, may require consideration of new strategies.

The first goal of the extended storage and transportation plan is to implement near-term regulatory process improvements to our current storage and transportation regulatory framework to become more effective and efficient. The improvements will target streamlining, integrating, and enhancing the current regulatory program to meet emergent needs for interim storage and transportation. The process improvement reviews will include a thorough review of the internal procedures, guidance, and regulations that staff uses in certification, licensing, and inspection activities for both our spent fuel storage and transportation programs. While this review is being performed under the auspices of extended storage and transportation program, any recommended improvements will likely result in improvements in our non-spent fuel program.

The staff intends to focus on several areas, one of which is the compatibility and integration of the transportation and storage review processes. It has become clear to us, along with a number of other Member States, that the interface between long-term storage and transportation is at best fuzzy and at worst, has no easily distinguishable transition. For example, two areas that we are looking to evaluate are containment boundary seal integrity and spent fuel cladding condition after long-term spent fuel storage. Ensuring the containment seal integrity is crucial to meeting the regulations on maximum allowable releases of radioactive material during transport.

Staff will undertake development of a methodology to determine the condition of the spent fuel cladding after long-term storage, since knowing the condition of the spent fuel is

essential for ensuring safety during transport and opening the package afterwards. We will be participating in a Joint Transport Safety Standards Committee and Waste Safety Standards Committee consultancy meeting at the IAEA next month that will start to address the issues of common interface between waste management and transportation.

In addition to streamlining our processes for domestic transportation, we expect several improvements that will translate to improved international cooperation. For example, we have committed to looking at ways to make NRC regulations more compatible with TS-R-1 as part of the extended storage and transportation plan. As you may know, the U.S. Department of Transportation, Canadian Nuclear Safety Commission, and NRC co-developed a U.S.-Canada applicant's and reviewer's guide for approval of Type B packages. After completing this guide, NRC was approached by other countries about developing a similar document. Instead of seeking to develop a guide unilaterally with each country, we propose using the IAEA processes to develop a standard review guidance document that would have the multilateral support.

Another goal is enhancing the technical bases that underpins the regulatory framework to support future extended storage and transportation needs, which we envision being a 7-year program; followed by rule changes, if needed, to codify any regulatory changes. Many of our "dual purpose" storage casks are first certified for storage and loaded with spent fuel by licensees to meet storage capacity needs. The cask designers then later request certification of the dual-purpose components for transportation. For some designs, it is the entire cask for others the canister is the only dual-purpose component. The staff reviews this request under a separate process and different set of regulations. This approach results in a certain risk taken by the licensee. Namely, what happens if the storage cask components cannot be certified for transportation? It is worth noting at this point that we have a small number of sites that, with the exception of the spent fuel in dry storage, have been completely decommissioned. That number is expected to grow over time absent the selection and development of a repository or central interim storage site. To address this concern, the staff will evaluate approaches for integrating the storage and transportation review procedures, and the associated regulatory requirements. Integrating the storage and transportation review processes may present both advantages and disadvantages to staff and the industry.

Spent fuel cladding has traditionally provided defense-in-depth as the primary fission product barrier in the nuclear fuel cycle, and has been relied upon to provide geometry control for criticality safety during transportation. The regulations require consideration of cladding integrity during storage operations. However, little data exists with respect to long-term behavior of high-burnup fuel stored in spent fuel pools and dry storage casks. Potential degradation of other storage cask components could also impact safety; therefore, another element of our program is evaluation of potential long-term degradation phenomena of cask components, such as concrete, steel, resins, seal materials, and unique basket materials. For long-term storage, these materials and structures will be credited with providing adequate structural integrity, spent fuel confinement, criticality safety, shielding, and heat removal. These components will need to continue to perform their safety functions for normal conditions, accidents, and natural phenomena during the entire storage timeframe.

The project plan is comprehensive in nature and achieves both near-term improvements in the regulatory program, and enhances the technical bases and regulatory framework for extended storage and transportation beyond 120 years. We believe that it will position the NRC to be able to effectively respond to any licensing actions that may come to us in the foreseeable future.

While it may look like we have a significant amount of work in the future to inform our program, you will find out that we have not been sitting idle since PATRAM 2007. Over the past 3 years, we have been continually evaluating our both our regulatory program and the technical bases that underpin the regulations. In 2007, there were two severe fire accidents in the state of California, known as the "MacArthur Maze" fire and the second at the Newhall Pass bypass. The MacArthur Maze fire burned so hot that it caused a portion of the Interstate 580 overpass to collapse, while the Newhall Pass fire damaged portions of the concrete walls of the tunnel. NRC studied both of these fires to understand whether there are any implications for the 30-minute fire tests required by regulation. You will hear more about this work in one of the technical sessions.

Our transportation program includes a rigorous inspection program to ensure that designers, fabricators, and transporters have an adequate quality assurance program to provide assurance that fabrication and design activities will result in a package that meets the regulations and will perform satisfactorily in service. NRC views quality assurance activities as having the same degree of importance as design and fabrication. As you will hear, the results of some of our inspections have found marginally implemented quality assurance programs. Typically, this results in a meeting between the company and NRC management, where NRC stresses the importance of supporting implementation of the quality assurance program from the top down.

Finally, as computers have become inexpensive and much more powerful over the past decade we have witnessed a quantum leap in our ability to perform structural calculations and predict the results of hypothetical accident conditions on transportation packages. Over the past several years, we have put forth a significant level of effort in developing the structural mechanics technical bases that underpin our regulations for both storage and transportation. We are in the process of evaluating a number of issues, such as cladding integrity for high-burnup fuel, mesh convergence for thin-shelled elements, seismic response of storage casks as well as championing strain-based acceptance criteria within the American Society of Mechanical Engineers, Boiler & Pressure Vessel Code, Section III, for energy limited events.

In addition to hearing about some of the work we have done in the U.S., I know that many of our colleagues have also performed some very significant work and I am looking forward to learning about the work you have done since the last conference. Thank you.