STATEMENT
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UNITED STATES NUCLEAR REGULATORY COMMISSION
TO THE
SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
SUBCOMMITTEE ON CLEAN AIR AND NUCLEAR SAFETY
ON
NEW REACTOR LICENSING AND LICENSE RENEWAL

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Good morning Chairman Carper, Senator Voinovich, and distinguished members of the Subcommittee. I want to thank you for inviting Commissioner Jaczko, Commissioner Lyons, Commissioner Svinicki and me to appear before you today to discuss license renewals and new reactor licensing. I would also like to take a moment to thank you, Mr. Chairman, Senator Voinovich, and the other members of the Subcommittee, for your continuing support of the NRC's activities. Because of your leadership and support, the NRC stands ready today to handle the emerging new reactor workload. I am pleased to report to you that NRC has successfully made the transition from preparing to actual performance of new reactor technical reviews. More importantly, your help has assisted us in making this transition while maintaining our focus on the agency's top priority – ensuring the safety and security of our existing licensees.

Let me begin with the subject of power uprates and license renewals.

U.S. utilities have applied for power uprates since the 1970s as a way to generate more electricity from their nuclear plants. As of June 2008, the NRC has approved 119 power uprates, resulting in a gain of approximately 5,430 MWe at existing plants. Collectively, these uprates have added generating capacity at existing plants that is equivalent to about five new nuclear power plants. Applicants for uprates totaling more than 2,500 MWe are under review or expected in the near future.

In the eight years since the first license was renewed for Calvert Cliffs, over half (65 of 104) of the current fleet of operating reactors have received or are in the process of applying for

license renewals. The Atomic Energy Act limits the initial term of a nuclear reactor operating license to 40 years. However, because the initial term was based on economic and antitrust considerations, not technical limitations, the regulations allow a license to be renewed for an additional 20 years if technical and safety requirements are met. Through technical research and analysis, NRC has concluded that licensees can and have implemented effective aging management programs and therefore this provides reasonable assurance that plants will continue to operate in accordance with their current licensing basis for the period of extended operations.

An NRC Office of the Inspector General (OIG) report issued in September of 2007 examined the effectiveness of NRC's license renewal safety reviews. The OIG concluded that the NRC has developed a comprehensive review process to evaluate applications for renewed licenses. The OIG, however, identified a number of areas for improvement. In response, the NRC staff is updating report-writing guidance, enhancing the report review process, and otherwise establishing additional guidance and management controls on the conduct and depth of the reviews.

In a May 2008 memorandum following the September report, the OIG examined the review process as applied to four license renewal applications and two aging management programs for each of those facilities. The results of this additional OIG review indicate that the NRC staff's license renewal reviews are, in fact, quite extensive. The OIG observed that the NRC safety review process included technical reviews in NRC headquarters and the use of on-site audits of supporting documentation, the results of which are incorporated in the NRC staff's safety evaluation reports. Although the OIG found that the staff does not obtain copies of all applicant documents reviewed during on-site audits and reviewers typically do not retain their "working papers," the audit reports indicated that the staff reviewed approximately 280 applicant documents on average during each audit. OIG's analysis of work hour data indicated that the staff spent approximately 10,582 hours per reactor unit review.

Pending before the Commission are petitions to suspend four license renewal adjudicatory proceedings on the basis of the September OIG report and the May follow-up memorandum. The Commission is currently deliberating on these petitions. The Commission will issue its decision in a memorandum and order for these four adjudicatory dockets. Therefore, I am limited in what I may say about these issues and in particular the arguments presented in those petitions.

Let me assure you that the continued safety and security of all of the operating reactors in the U.S. is of utmost importance to the NRC regardless of the age of the reactor. This focus on safety and security holds true in the NRC's license renewal program. Plants that are approved to operate for an additional 20 years beyond their original 40 year license will be required to maintain the same level of safe and secure operation throughout the extended license period.

Now let me address the subject of new reactors.

The Congress has provided the NRC with the resources needed to meet the growing interest in additional nuclear energy in our country. These resources have enabled the NRC to successfully complete significant new reactor licensing activities, to date, on schedule; however, significant challenges remain.

The new licensing process (as detailed in 10 CFR Part 52) was designed to enable an effective and predictable licensing process. In establishing Part 52, the NRC provided for a detailed technical review of safety and environmental issues before authorizing construction. In addition, the licensing process provides for timely and meaningful public participation. The NRC created this process to provide both applicants and the public with the opportunity to resolve site and design issues before construction.

The potential benefits from the Part 52 process are predicated on two important assumptions: 1) applicants will be referencing NRC-certified designs in their Combined License (COL) applications, and 2) the NRC will receive complete and high quality COL applications for

review. Both are necessary to maximize the benefits of the new licensing process and enable an effective and predictable licensing process to be implemented. The Part 52 requirements are designed to provide a predictable licensing process, and resolve safety and environmental issues before authorizing construction; are structured to encourage standardization of nuclear plant designs; and are intended to reduce financial risk to nuclear plant licensees, allow limited work to be authorized before COL issuance, and optimize public participation. However, so far, only one of the five designs currently being referenced in the COL applications -- the Advanced Boiling Water Reactor -- is a certified design and is only referenced in one COL application. In addition, the design certification applications and some COL applications received to date initially lacked information that the staff needs to complete its review. Our reviews have been further complicated because some applicants are revising submission dates and submitting modifications to their applications, often with late notice to the staff, which is disruptive to the work planning process. The result of these problems is that the early COL applications are unlikely to achieve the full benefits of the Part 52 process. We are, of course, working with stakeholders to overcome these challenges. As this process matures, we seek continued support of Congress and this Subcommittee to support and sustain the continued successful execution of the NRC's mission.

I would like to focus my comments briefly on where we are today, and what we expect down the road in new reactor licensing.

The NRC has strategically positioned itself to be ready to respond to new reactor licensing workload. To meet the growing need, the Commission created the Office of New Reactors, or NRO, to lead the agency effort to establish the regulatory and organizational foundation necessary to safely meet the new reactor licensing demand. The office was aggressively staffed, and today has over 425 employees. To ensure our readiness to handle the new reactor workload, we have developed a qualification program for all technical and

project management staff. Each staff member is required to achieve the certification for their position by meeting the requirements of the associated qualification program.

With NRO in the lead, the NRC has taken great strides to prepare for the new reactor licensing challenge:

- We published a revised 10 CFR Part 52 (titled, "Licenses, Certifications, and Approvals for Nuclear Power Plants") last August to clarify the applicability of various requirements to each of the licensing processes and to enhance regulatory effectiveness and efficiency in implementing the licensing and approval processes. We also incorporated lessons learned from our reviews of the first design certification and early site permit applications.
- Similarly, we published a final rule on Limited Work Authorizations, or LWAs, which supplements the final rule on 10 CFR Part 52. This rule revised the regulations applicable to LWAs, which allow certain pre-construction activities on production and utilization facilities to commence before a construction permit or combined license is issued. The final rule specifies the scope of construction activities that may be performed under an LWA, as well as specifying those activities that no longer require NRC approval, and changes the review and approval process for LWA requests. Like the Part 52 revision, these changes were adopted to enhance the efficiency of the licensing and approval process and to more clearly reflect NRC's authority with no compromise to safety.
- In March 2007, we completed the first comprehensive update to the NRC's Standard Review Plan (SRP), which provides guidance to the staff on how to perform technical reviews. The update brought the SRP into conformance with the Part 52 revision, and extends the applicability of the SRP to the Part 52 licensing process.

- We issued guidance for applicants and NRC staff. For instance, we issued a new regulatory guide, RG 1.206 (titled, "Combined License Applications for Nuclear Power Plants"), which provides guidance to potential applicants on standard format and content of new reactor combined license applications. We also recently issued draft guidance for applicants on complying with the LWA rule.
- We've implemented an Enterprise Project Management Solution, a server based software which significantly enhances NRO's ability to plan and schedule work.
- In 2004, we promulgated substantially revised rules of practice intended to streamline and make more effective our hearing process.
- We promulgated an electronic filing rule that should further increase the efficiency of our hearing process.
- We created a new reactor construction inspection office in our Region II Office in Atlanta, Georgia. The new construction staff has performed inspections and observed new construction activities in China, Finland, France, Japan, Korea, and at Browns Ferry Unit 1 and Watts Bar Unit 2 in the United States.
- And finally, we are working on a "lean six sigma" project to streamline the design certification rulemaking process to increase its efficiency.

With these activities, I think that the NRC has established the regulatory foundation necessary to review new reactor license applications, and has positioned itself to respond to the incoming new reactor workload.

I should also mention that consistent with its lead responsibility for offsite nuclear emergency planning and response, the Federal Emergency Management Agency (FEMA) continues to support the NRC's ongoing application reviews by providing timely input to ensure that the offsite emergency plans will be an effective element of licensees' overall defense-in-depth strategy.

In addition to our preparations for the incoming workload that I just described, we have already made significant progress in our new reactor licensing activities. Just to mention a few highlights, we have completed the review of three early site permit applications, and we are proceeding with the review of the fourth application for Southern Nuclear's Vogtle site.

For design certifications, we are continuing our review of General Electric's Economic Simplified Boiling Water Reactor, commonly referred to as the ESBWR. We are currently evaluating schedule impacts of supplemental information recently submitted by the applicant. We have also recently completed acceptance reviews for three additional designs (Areva Nuclear Power's U.S. Evolutionary Power Reactor, or U.S. EPR; Mitsubishi's U.S. Advanced Pressurized Water Reactor, or US-APWR; and an amendment to Westinghouse's AP1000 design certification) and have begun detailed technical reviews of these applications.

With regard to COLs, we have received 9 applications for 15 units. As I noted earlier, however, we are experiencing some significant challenges in this area.

For the Next-Generation Nuclear Plant, or NGNP, the NRC and DOE are currently on target to deliver the licensing strategy to the Congress by August 2008, as required by the Energy Policy Act of 2005. To implement this strategy, however, the NRC will require additional resources beginning in Fiscal Year 2009 and continuing through Fiscal Year 2017.

I should mention that in addition to our new reactor activities, the NRC also completed extensive licensing efforts and authorized the restart of Tennessee Valley Authority's (TVA's) Browns Ferry Unit 1 nuclear power plant on May 15, 2007. This 1065 MWe unit – shutdown in 1985 to address performance and management issues – resumed commercial operation and began generating power to the grid on June 2, 2007. This authorization required substantial effort and review by NRC licensing and inspection staff.

While we have accomplished a great deal so far, the toughest part is yet to come. Based on industry information submitted to the NRC, we are expecting to receive 11 more applications for 16 more units by the end of 2009. This will bring our projected total workload for

new reactors to 20 COL applications for 31 units by the end of 2009. In addition, I should note that the TVA has recently decided to complete construction of Watts Bar Unit 2 using the original 10 CFR Part 50 licensing process. When you consider the COL workload combined with the three design certifications, the design certification amendment for the AP1000, the Watts Bar Unit 2 construction, and the Vogtle Early Site Permit currently under review by the staff, you can see that we have a significant challenge over the next several years in the area of new reactors. Additionally, many of the early applications will be entering the most substantial and resource intensive portions of their review – and adjudication – during this period.

I would like to touch briefly on the GAO's recent audit of the NRC's readiness to conduct reviews of COL applications. In general, the GAO's findings were positive assessments, acknowledging our extensive preparations and the quality of our plans. The NRC continues to believe that the GAO assessments provide useful insights to the agency's management. As I noted in my letter to you, Senator Carper, on December 31, 2007, the GAO identified four recommendations. I am pleased to report to you that the NRC has completed its work in response to these recommendations.

We are building upon our experience, including lessons learned during the construction of the current operating fleet. There are numerous historical lessons that have provided insights related to quality and oversight problems during the previous period of construction in the United States, as well as current insights from our international partners. The most important of these is that regardless of the licensing process and the type of construction, a commitment to quality, instilled early in a nuclear construction project, is important to ensure that the facility is constructed and will operate in conformance with its license and the NRC's regulations. We are working with the industry to ensure that a strong commitment to quality is part of the foundation of every new reactor project.

We are also working with our international partners through the Multi-national Design Evaluation Program (MDEP) to leverage their experience in licensing and constructing two EPR

plants in Europe to assist the NRC in its review of the US EPR. We are also working towards establishing agreements with international partners on cooperation on licensing reviews of proposed AP1000 reactors in the U.S. and abroad.

Our preparations for licensing new reactors include the development and implementation of a new Construction and Vendor Inspection Program. The program is utilizing enhanced international cooperation to assist the NRC's oversight of component manufacturing. NRC inspectors are visiting vendor facilities in many other countries, as I mentioned earlier. Quality assurance (QA) inspections of engineering and site activities are contributing to our ability to conduct effective reviews of design certifications, COLs and early site permit applications. We have endeavored to obtain a wide range of stakeholder involvement, and to make construction and vendor inspection a timely, accurate and transparent process.

While we are satisfied that we have in place a stable, efficient regulatory process, the Commission is always looking for ways to improve. Further enhancements could take place with the enactment of legislation. The Commission recently submitted to Congress proposed legislation which would eliminate the requirement for the Commission to conduct uncontested hearings. Under current law the Commission is required to hold a hearing on each application for a construction permit or a combined construction permit and operating license for a reactor, even if no person has requested a hearing or been granted intervention. The Commission has concluded that there is very little added value in holding uncontested hearings and that the Commission's resources could be better utilized. Just as industry can become more efficient, the NRC is working to improve its efficiency with no compromise in safety. We are implementing a variety of measures, including Lean Six Sigma management principles.

Once again, I would like to thank the members of this Subcommittee for their support. With your help, the NRC worked to prepare for the new reactor review activities in a timely and effective manner. As I noted earlier, increased resources are needed in the future (Fiscal Year 2009 and beyond) to support the Next Generation Nuclear Plant program. If DOE and other

parties demonstrate a strong interest in advanced non-light water reactors, we will work closely with this subcommittee and the Congress to address the resource needs for those efforts.