

STATEMENT SUBMITTED
BY THE
UNITED STATES NUCLEAR REGULATORY COMMISSION
TO THE
COMMITTEE ON ENERGY AND NATURAL RESOURCES
UNITED STATES SENATE

CONCERNING
NUCLEAR POWER PROVISIONS
ENERGY POLICY ACT OF 2005

PRESENTED BY
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CHAIRMAN

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Introduction

Mr. Chairman and Members of the Committee, it is a pleasure to appear before you today to discuss, on behalf of the Commission, the U.S. Nuclear Regulatory Commission's programs for new reactor regulation. We appreciate the support that we have received from the Committee, and we look forward to working with you in the future. We would also like to take this opportunity to thank Congress for the additional budgetary support that was provided last year. These resources are allowing the Agency to achieve earlier completion of safety and security programs and to begin structuring the Agency for reviewing new reactor applications. On a personal note, Mr. Chairman, I am grateful for the opportunity to serve this great country of ours for almost 10 years, first as a Commissioner and then as Chairman of the best nuclear regulatory agency in the world, and during extraordinary times. It has been my privilege to have worked with you to better serve the well-being of our people.

The NRC is dedicated to the mission mandated by Congress - - to ensure adequate protection of public health and safety, promote the common defense and security, and protect the environment - - in the application of nuclear technology for civilian use. We are committed to exercise this mandate with a regulatory framework that is effective, predictable, and that continues to meet the changing demands of the country. To achieve this goal, we have made preparations and continue to put in place the infrastructure needed to review the announced new reactor licensing and certification work, including the 13 announced combined license (COL) applications beginning in 2007. I would like to highlight our current and anticipated new reactor regulatory activities, a new system for licensing reviews, and new human capital and space planning initiatives designed to meet the new challenges posed by the dynamic nature of today's nuclear arena. The continued safe and secure operation of the current fleet of

operating nuclear power plants remains the Agency's top priority; therefore, the new reactor licensing activities are being carefully planned to ensure the continued safe operation of these facilities.

New Reactor Licensing Workload

The Commission's Strategic Plan establishes a fundamental objective to:

Enable the use and management of radioactive materials and nuclear fuels for beneficial civilian purposes in a manner that protects public health and safety and the environment, promotes the security of our nation, and provides for regulatory actions that are open, effective, efficient, realistic, and timely.

Consistent with this objective and our statutory responsibility, the NRC has been conducting reviews of Early Site Permit (ESP) and Design Certification (DC) applications, and is developing an efficient infrastructure to conduct the review of anticipated combined license (COL) applications in the future.

As a result of the passage of the Energy Policy Act of 2005 and concurrent developments in U.S. energy demands, the NRC is preparing for an increased number of potential COL, ESP and DC applications. The Energy Policy Act incentives for new reactor construction established a highly dynamic environment in which new nuclear power plants are being seriously considered to meet future generation capacity, the need for which is expected to increase by the year 2015. Last year at this time, the NRC had been notified of three

potential COL applications in the next few years. Today, the number of expected COL applications is 13 for a total of 19 units, and the number of applications is expected to increase in the near future. Some of these applications are expected to reference reactor designs already certified by the NRC, while others are expected to reference designs that are currently under NRC review. We also expect to be conducting reviews of additional ESP applications, or equivalent environmental reviews. We are preparing to review and act on applications anticipated to be submitted in the 2007-2008 time frame, and are organizing accordingly. We continue to assess our resource needs, which have increased significantly, in light of the very substantial increase in the number of anticipated COL applications and related work. The attached graph 1 shows the anticipated work schedule based on industry submittals, public announcements, and expected but as yet unannounced applications.

Current New Reactor Licensing Activities

Current new reactor licensing activities are expected to follow the processes established under 10 CFR Part 52. Part 52 establishes the framework to review ESP, CD, and COL applications.

The Commission recently proposed a revision to 10 CFR Part 52, to clarify it and enhance its usability. The proposed amendments incorporate the lessons learned from previous regulatory reviews, to enhance regulatory predictability at the COL stage. Furthermore, in the Part 52 rulemaking, the Commission is soliciting comments on an approach that would facilitate amendments to design certification rules after the initial certification. With such a provision, a detailed standard certified reactor design would be able to incorporate

additional features that are generic to the design and thereby encourage further standardization. Also, changes to the limited work authorization process are being considered to expand the ability to initiate site preparation work in advance of COL issuance. The Commission plans to issue the final rule by January 2007.

NRC's licensing reviews are supported by regulatory guides and standard review plans. The NRC staff is reviewing and revising the regulatory guidance documents associated with new reactor licensing. These guidance documents include a planned combined license application regulatory guide which contains the information that COL applicants need to provide in their applications, and an update of pertinent standard review plan (SRP) sections for use by NRC staff reviewing COL applications. The Draft Regulatory Guide, which has been the subject of numerous public meetings and workshops, will be formally issued for comment in June 2006. The NRC staff estimates that the final regulatory guide will be completed by December 2006, to support prospective applicants who are planning to submit COL applications in late 2007 and 2008. This schedule is consistent with the schedule for the promulgation of the revised Part 52 rule. Complementary to the COL application regulatory guide, the NRC staff is updating the standard review plan to support the anticipated new site and reactor licensing applications. The staff is working with the industry to complete the standard review plan updates by the Spring of 2007.

To date, the NRC has received three ESP applications, focusing on environmental implications and emergency preparedness, for sites in Virginia, Illinois, and Mississippi which currently have operating reactors on them. The NRC staff has prepared safety evaluation reports for all three sites, and has issued draft environmental impact statements for public comment for two of the sites and has issued a final environmental impact statement for one of

the sites. The agency will complete its remaining regulatory reviews in an effective, efficient, timely, and predictable manner. I note that additional work is being performed in connection with one application that was recently significantly revised and resubmitted by the applicant. Adjudicatory proceedings associated with the ESP applications are currently ongoing. From our experience with the ESP reviews, we have identified numerous lessons learned, for both the NRC and industry, that will be used to improve the staff's new reactor licensing process in the future and will be implemented prior to the next ESP application, expected during the summer of 2006.

The agency's work on new reactor standardized design certification has also intensified. Three designs were previously certified: General Electric's Advanced Boiling Water Reactor, Westinghouse's AP600, and System 80+ designs. The NRC recently certified the Westinghouse AP1000 reactor and codified it in the NRC's regulations, as Appendix D to 10 CFR Part 52. The NRC is currently reviewing the General Electric Economic Simplified Boiling Water Reactor (ESBWR) design certification application and is on schedule with respect to its review. The NRC is conducting pre-application activities for AREVA's U.S. Evolutionary Power Reactor (EPR) design whose design certification application is expected in 2007. The NRC is also conducting limited pre-application work for the Pebble Bed Modular Reactor (PBMR) and the International Reactor Innovative and Secure (IRIS), and is expecting additional design certification applications in the future.

To effectively review multiple COL applications in parallel, the staff is planning to implement a design-centered review approach. We believe this approach is crucial to achieving effective, efficient, and timely reviews for multiple applications. This approach is founded on the concept of "one issue-one review-one position for multiple applications" to optimize the

review effort and resources needed to perform these reviews. The NRC staff would use a single technical evaluation for each reactor design to support reviews of multiple COL applications for the same technical area of review, assuming that the relevant components of the applications are standardized. The design-centered approach will focus its reviews by: 1) using standardization and coordination of approaches and applications; 2) requiring complete and high-quality applications; 3) increasing the use of the DC rulemaking to codify issue closure; and 4) using single technical evaluations to support multiple COL applications. In addition, to achieve consistency of the staff reviews, the process for implementing the design-centered review program will require a multi-layered project management team for each design, and will use dedicated technical review resources. The plans and schedules of these reviews include an increased level of detail and integration to achieve the requisite level of control and documentation. The benefits of this approach would be enhanced by the full participation of multiple entities in ensuring that pertinent components of the applications are standardized. A schematic representation of the sequencing and use of the design-centered review approach is shown in graph 2. Significant efficiencies are expected to be gained through the use of the design-centered approach.

New Reactor Construction Oversight

To prepare for the construction of new reactors licensed in accordance with 10 CFR Part 52, a new construction inspection program (CIP) is being developed. The new CIP builds on the lessons learned from the construction of the existing fleet of operating reactors. The CIP comprises four different parts, early site permit inspections; pre-combined license (Pre-COL) inspections; inspections, tests, analyses and acceptance criteria (ITAAC) inspections; and non-

ITAAC Inspections. These inspections will cover all aspects of new plant construction and operation from early site preparation work, through construction, to the transition to inspections under the reactor oversight process (ROP) for operating reactors. Half of the associated inspection procedures are in place and the remaining procedures are under development and are scheduled to be in place well before the start of on-site construction activities.

Successful implementation of the CIP will require four main functions: 1) day-to-day inspections at the construction site by resident construction inspectors; 2) on-site inspections by specialist inspectors; 3) off-site inspections (e.g., vendor inspections); and 4) documentation of inspection results and public notification of the successful completion of the ITAAC. ITAAC are part of the combined license and define specific requirements to be met prior to operation. To gain staff efficiencies and facilitate knowledge transfer, all construction inspection management and resources will be located in a single region which will schedule all construction inspectors nationwide.

The NRC performed an initial assessment of the existing ROP for use with new reactor designs which confirmed that the overall ROP framework could be used, including utilizing performance indicators and the significance determination process for evaluating inspection findings. The Construction Inspection Program will specifically address each new reactor to be built, detailing the steps that will be employed to integrate that plant into the ROP as it transitions from the construction phase into the startup and operations phase.

Multinational Design Approval Program (MDAP)

The NRC is working with international regulators on a multinational design approval program intended to leverage worldwide nuclear knowledge and operating experience in a cooperative effort to review reactor designs that have been or are being reviewed and approved in other countries. The first stage of the MDAP has already begun. It involves enhanced cooperation with the regulatory authorities in Finland and France to assist NRC's future design certification review of the US EPR. Follow-on stages of the MDAP could foster the safety of reactors in participating nations through convergence on safety codes and standards, and other technical matters while maintaining full national sovereignty over regulatory decisions. Preliminary work to more fully develop the framework for consideration of a Stage 2 is underway at the NRC and the Organization for Economic Co-operation and Development's Nuclear Energy Agency.

Challenges to Success

The NRC recognizes that many challenges for new reactor licensing activities exist. Key challenges include effective communication between the NRC and the applicants, and the interrelationship between the technical review and the associated adjudicatory process. To successfully complete the reviews within the anticipated schedule, continuous clear, effective, and timely communication between the NRC and the applicant must occur. Delays in providing or responding to requests for information must be avoided and any modifications to the application need to be conveyed immediately so that products can be appropriately coordinated. In addition, the technical review and adjudicatory process for the application are

interrelated and both are required for the final decision making process. Multiple products are also needed to maximize the early resolution of issues leading to a final determination, including an ESP, DC and COL. An applicant may decide to submit a license application in a manner different from the originally contemplated sequence, such as choosing not to apply for an ESP prior to applying for a COL or selecting a design that has not been certified through rulemaking. In such cases, the technical review and adjudicatory process performed for an ESP or DC review will need to be included in the COL review and could challenge the predictability of the process and the application review schedule. To meet these challenges, we have implemented organizational changes in our legal and technical organizations, recruited personnel, and are developing an integrated planning tool to assist in coordinating the applicant schedules.

The NRC has completed substantial preparation activities and executed reviews of supporting elements for COL applications. We continue to incorporate the lessons learned from current reviews into the regulatory process to create a stable and predictable regulatory process. As such, the NRC is preparing to conduct thorough and timely reviews of ITAAC and, therefore, the use of the Energy Policy Act Risk Insurance Program, due to NRC delays should not be necessary. As noted previously, when COL applications are submitted, they should be high quality, essentially standardized applications that contain the safety case and other required components in the level of detail that will support staff review and the adjudicatory process. Anything less may challenge the predictability of the licensing process.

The NRC understands and accepts its role in new reactor licensing, the success of which depends on many factors, most notably the submittal of high quality applications by the industry. With the continued support of Congress, we will carry out our responsibilities and meet the challenges ahead.

Human Capital and Space Planning

As you know, the NRC's ability to accomplish its mission depends on the availability of a highly skilled and experienced work force. In a recent ranking of the Top 10 Federal Work Places by the Partnership for Public Service and American University's Institute for the Study for Public Policy Implementation, the NRC was designated one of the top three places to work in the Federal government. In addition, the NRC was ranked first by people surveyed who are under 40 years of age. The Commission is very proud of these rankings and strives to improve the quality of the work environment for NRC employees. Nonetheless, the NRC continues to be challenged by the substantial growth in new work at a time when increasing numbers of experienced staff are eligible to retire. To address these challenges, the agency has developed human capital strategies to find, attract, and retain staff with critical-skills and has developed a space acquisition plan to accommodate these additional employees.

The NRC is aggressively recruiting a mixture of recent college graduates and experienced professionals to meet the agency's emergent work activities. The current projection is that over 400 additional FTEs will be devoted to new work by FY 2008. The Commission is striving to hire approximately 350 new employees in FY 2006 to cover the loss of personnel and to support growth in new work. To date during this fiscal year, we have already succeeded in recruiting and hiring almost 300 new employees toward this goal. Our aggressive efforts to recruit, hire, and develop staff will continue throughout Fiscal Year 2007 as we prepare for receipt of the first COL applications. The agency expects to have a critical hiring need for at least the next five years.

The NRC closely monitors its voluntary attrition rate including retirements, which has historically been below six percent, and will continue to monitor this rate because it could increase as industry competition for skilled individuals increases and as eligible staff retire. The agency uses a variety of recruitment and retention incentives to remain competitive with the private sector. We continue to experience success utilizing the provisions of the Federal Workforce Flexibility Act of 2004 and the Energy Policy Act of 2005. The NRC has budgeted for continued and increased use of these recruitment and retention tools in the coming years.

Our steady growth and accelerated hiring program have exhausted available space at our Headquarters buildings. We have developed and are implementing strategies to obtain adequate space to accommodate our expanding work force. We are creating additional workstations within our Headquarters buildings, including building workstations in conference rooms, and are moving our Professional Development Center off-site to use the space it currently occupies for new employees. We are also seeking additional office space in the immediate vicinity of our headquarters complex to support the expected growth of the agency.

The NRC will be continually challenged to maintain adequate infrastructure and the personnel needed to accomplish its mission. However, with Congress' help, the Commission is poised to meet these challenges successfully through the ongoing human capital planning, implementation, and assessment process, the space planning program, and the various tools provided by the Energy Policy Act of 2005.

Conclusion

The Commission continues to be committed to ensuring the adequate protection of public health and safety and promoting common defense and security in the application of nuclear technology for civilian use. To that end, the Commission is dedicated to ensuring that our agency is ready to meet the expected demand for new reactor licensing. NRC's Part 52 processes are safety focused and are stable, efficient, and predictable. We have taken action to clarify Part 52, to ensure a clear regulatory and oversight framework; to reorganize the Agency and put in place the processes to ensure timely review; to meet the NRC's human capital and office space needs, and to seek additional funding as necessary. The Agency is prepared to meet the challenge associated with new reactors while maintaining strong oversight of the current operating reactors. I am convinced that the Agency has the technical and legal know-how to make the right decisions in a timely manner.

I appreciate the opportunity to appear before you today, and I look forward to continuing to work with the Committee. I welcome your comments and questions.