

STATEMENT SUBMITTED
BY THE
UNITED STATES NUCLEAR REGULATORY COMMISSION
TO THE
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
SUBCOMMITTEE ON CLEAN AIR, CLIMATE CHANGE, AND NUCLEAR SAFETY
UNITED STATES SENATE

CONCERNING
NRC'S CAPABILITY TO REGULATE SPENT FUEL STORAGE AND DISPOSAL

PRESENTED BY
LUIS A. REYES
EXECUTIVE DIRECTOR FOR OPERATIONS

SUBMITTED: SEPTEMBER 14, 2006

Introduction

Mr. Chairman and Members of the Committee, it is a pleasure to appear before you today to discuss the U.S. Nuclear Regulatory Commission's (NRC's) capability to regulate long-term and short-term spent nuclear fuel storage and disposal. Specifically, I plan to address some of the national spent fuel management strategies that are being considered in S. 2589, the "Nuclear Fuel Management and Disposal Act;" S. 2610, a bill "to enhance the management and disposal of spent nuclear fuel and high-level radioactive waste, and for other purposes;" and Section 313 of H.R. 5427, the "Energy and Water Development Appropriations Act, 2007." I also plan to discuss some of the implications of the Global Nuclear Energy Partnership.

It is important to make clear at the outset that, because of the NRC's role in the regulation of spent nuclear fuel and the potential application for a high-level radioactive waste repository at Yucca Mountain, Nevada, the Commission has not taken a position on most of the provisions in these legislative proposals. Therefore, I would like to focus on the impact the following proposals would have on the NRC.

Interim Storage

Spent fuel storage and transportation are and can be accomplished both safely and securely, consistent with the current regulatory framework, regardless of the number of sites and their locations. The NRC has stated in its Waste Confidence Decision that, if necessary, spent fuel generated in any reactor can be stored safely and without significant environmental impact in its spent fuel storage pool or at either on-site or off-site interim storage facilities for at least 30 years beyond the licensed operational life of the reactor. In general, the Commission

concluded that, if stored properly, spent fuel presents a low risk to the public during normal operation or under potential credible accident conditions and can be stored safely in either wet or dry storage systems without significant environmental impact for at least 100 years.

It is important to note that the threat of sabotage has always been a factor in the design and licensing of spent fuel storage facilities. Following the September 11, 2001 terrorist attacks, the NRC issued Orders to licensees to implement additional security measures, and undertook a comprehensive reassessment of the security of commercial nuclear facilities including those for spent fuel storage. Since 9/11, NRC has issued Orders to licensees to implement additional security measures. Dry spent fuel storage casks are robust structures, which are highly resistant to significant damage, and we are confident that storage of spent fuel in dry casks remains a safe and secure spent fuel management strategy. Spent fuel pools are strong structures constructed of very thick steel-reinforced concrete walls with stainless steel liners located inside protected areas. The NRC's domestic safeguards program is focused on physically protecting and controlling spent nuclear fuel against sabotage, theft, and diversion.

The NRC supports efforts to address interim storage issues in a timely manner. Nuclear power plants need to increase their spent fuel storage capacity to support plant operations. In order to maintain operational capability in the spent fuel pool, including full core off-load capability, spent fuel must periodically be moved to dry cask storage. There are currently 43 licensed independent spent fuel storage installations (ISFSIs), and we expect in the next few years that this number will grow to over 50, as more power plants contend with filled spent fuel pools. The 43 current sites have successfully loaded and stored over 800 casks. An exceptional safety record has been achieved using dry cask storage technology.

Safety and security are the key elements in a comprehensive spent fuel management strategy. We must also be cognizant of the need for efficiency and effectiveness in every element of spent fuel handling, storage, and transport systems. The NRC believes that instituting canister and infrastructure standards will make storage and transportation both safer and easier, facilitating interoperability among handling and loading activities at different reactors and ISFSIs. Standards will also improve the ease with which these activities can be licensed. Canister and infrastructure standards should be developed with input from industry, taking advantage of lessons learned from previous designs.

The legislative proposal in H.R. 5427, as approved by the Senate Committee on Appropriations, includes new consolidation and preparation (CAP) facilities as part of a new national spent fuel management strategy. This proposal would significantly affect the NRC's spent fuel storage oversight program and resource needs. Specifically, H.R. 5427 calls for a high number of new storage facilities to be reviewed and licensed by NRC in a very short time span. Currently, the NRC has neither the monetary resources nor the necessary employee resources to support the technical review and adjudication of a large number of concurrent storage license applications as considered in H.R. 5427. Also, the time frames in the draft legislation, which must allow for license preparation by the applicant, environmental and safety reviews by NRC and completion of associated hearings before the Atomic Safety and Licensing Board Panel, are very short and likely not achievable.

The NRC has reviewed the proposed legislation and believes that the existing regulatory infrastructure could accommodate the alternative approaches outlined in H.R. 5427.

Although the NRC believes that it may be able to review and license a large number of new facilities anticipated in H.R. 5427 concurrently, the following items would be necessary prerequisites for success: sufficient funding; receipt of complete, high-quality license applications; and considerably more time to review and adjudicate the applications. NRC believes that centralized storage or storage at multiple sites in different locations can be achieved safely, consistent with our regulatory system. One must approach spent fuel management as an integrated system, balancing the very small risks associated with storage and transportation components. The Commission is open to working with our stakeholders in support of a systematic and integrated approach that is safe, timely, and efficient.

Transportation

The NRC believes that the current, well-established transportation regulatory system is protective of public health and safety. Spent nuclear fuel has been safely transported in the United States for more than 30 years. There has never been an accident involving the transportation of spent fuel resulting in a radiological release or death or injury from radiation. The National Academy of Sciences recently completed a three-year study that concluded that the radiological risks of spent fuel transportation are low and well understood and that the existing regulations are adequate to ensure safety.

Any of the changes to a national spent fuel management strategy that are being considered (such as in S. 2589, S. 2610, and H.R. 5427) will involve shipping spent fuel. Federal regulation of spent fuel transportation is shared by the U.S. Department of Transportation (DOT) and the NRC. Generally, NRC does not regulate the U.S. Department of

Energy's (DOE's) shipments of radioactive material; however, the Nuclear Waste Policy Act requires DOE to utilize NRC-certified casks for spent fuel shipments to a repository and to follow NRC's advance notification requirements. The Commission has reviewed and certified a number of package designs which could be used to transport spent fuel. Provisions of S. 2589, S. 2610, and H.R. 5427 may affect the transportation roles of DOE and DOT, but do not appear to affect the NRC role to certify casks as specified in the Nuclear Waste Policy Act. Section 313(c) of H.R. 5427 calls for licensing of DOE's spent fuel shipments by NRC and DOT. This means that NRC's physical protection requirements would be applicable to all of the DOE's shipments of spent nuclear fuel, and to this extent H.R. 5427 will increase NRC's responsibilities.

The NRC believes that the existing transportation regulatory infrastructure can accommodate the various legislative actions being considered. The transportation aspects of the various options and facilities do not present new or inherently different technical challenges. New transportation packages will need to be designed and certified to address: DOE initiatives on transport, aging, and disposal canisters; new types of spent fuel; or existing spent fuel that is not covered by current designs. As with the other topics addressed in this testimony, the NRC's ability to complete this work will depend upon sufficient appropriations and the submittal of complete, high quality applications.

Disposal

The NRC understands the importance of addressing disposal of high-level radioactive waste in a manner that is both safe and timely. The NRC has a record of moving responsibly

and promptly to meet its obligations under the Nuclear Waste Policy Act. To prepare for conducting an independent safety review of a Yucca Mountain application, the Commission continues to conduct pre-license application activities aimed at providing guidance so that DOE can provide a high quality application. NRC is confident that we will be ready to receive an application if submitted in 2008 as is currently proposed by DOE. We are also confident that we will reach a timely decision on the application provided that the application is complete and of high-quality.

The NRC offers the following comments on provisions in the proposed legislation, S. 2610, that could affect the timing of the NRC's review of a DOE application for an authorization to receive and possess spent nuclear fuel and high-level radioactive waste at Yucca Mountain. The proposed legislation would require the NRC to reach a final decision on receipt and possession within one year (with the possibility of a six-month extension). This proposed requirement does not give the NRC sufficient time to complete its necessary proceedings. First, the NRC cannot complete both its safety review and the adjudicatory proceeding in one year. In particular, NRC will need to conduct a hearing. Even under the informal hearing process proposed in S. 2610, the NRC would need to adjudicate issues raised by participants that are admitted as contentions by the licensing board. It is difficult to predict the amount of time it will take to complete the review and adjudicate issues in controversy without knowing the scope and number of issues that will require adjudication as well as the number of parties involved. Second, the proposed legislation's provision regarding surface facilities could be read to provide for staged consideration of surface facilities. In this case, the NRC would review certain facilities during the construction authorization phase and other facilities during the later receipt and possession phase. Facilities that otherwise could have

been reviewed in the construction authorization phase might be shifted to the receipt and possession phase, increasing the scope of review for that phase despite the reduced time allowed for that review.

S. 2589 and S. 2610 also contain a provision requiring the NRC, in deciding whether to permit the construction or operation of a nuclear reactor or any related facilities, to deem, without further consideration, that sufficient capacity will be available in a timely manner to dispose of spent nuclear fuel and high-level radioactive waste. H.R. 5427 contains a similar provision. The NRC does not object to these provisions of the legislation.

The Global Nuclear Energy Partnership

I would like to turn now to another facet of integrated high-level radioactive waste management, the Global Nuclear Energy Partnership (GNEP). The NRC has been meeting regularly with DOE to keep informed of and discern the NRC's role in the GNEP program as it unfolds. The DOE recently announced its interest in partnering with private industry in the development and deployment of a spent fuel separations/fuel fabrication facility (called the Consolidated Fuel Treatment Center (Center)) and an Advanced Burner Reactor (ABR). The DOE has indicated that its goals are to have the Center operational in 2018 and the ABR operational in 2020.

If the Center is considered to be a commercial facility, rather than a DOE facility, and if the ABR is a commercial facility or a demonstration reactor of the type described in Section 202(2) of the Energy Reorganization Act, it will require the NRC to be involved in GNEP much

sooner than originally expected. DOE had previously planned to operate smaller scale demonstration facilities prior to developing commercial scale facilities. If the NRC is to have licensing responsibilities, and the Center and ABR are to be completed and ready for operation according to DOE's schedule, the NRC could receive a Center application as early as 2009 or 2010. To that end, the NRC must make changes now to ensure that our regulations and guidance documents provide appropriate stability and predictability in our regulatory reviews.

Existing NRC regulations have been tailored over the years to be efficient for licensing the technologies commonly used in the United States (e.g., light-water reactors, uranium fuel facilities). Although these regulations could be used to license both the Center and the ABR, both reprocessing and advanced burner technologies (such as liquid metal-cooled reactors) have significantly different safety and technical considerations than light-water reactors. To facilitate the technical review and ensure a timely licensing process for these new technologies, NRC will need to revise existing regulations or develop new regulations and associated guidance documents.

In preparing to license these facilities and new technologies, NRC would need to begin recruiting for new employees, while developing expertise among existing staff in separations and advanced reactor technologies. This is no small task given the limited number of qualified individuals in this field and the significant hiring efforts already being undertaken by the NRC to meet its obligations related to new reactor applications.

Sufficient funding is needed to support regulatory infrastructure activities and increased staffing for GNEP. Funding for the NRC to develop the regulatory infrastructure for the Center and ABR in FY 2007 should be provided from the General Fund, because currently there are

no licensees to support fee-recovery of the funds and because the NRC cannot be reimbursed for licensing activities that it is required to do by statute.

Conclusion

The NRC fully understands the importance of addressing the storage, transportation and disposal of high-level radioactive waste in a systematic and integrated manner that is safe, timely, and efficient. We would urge the Congress to assure that sufficient appropriations be made available to adequately fund regulatory infrastructure activities and increased staffing prior to the receipt of license applications initiating licensing activities. Provided sufficient resources and staffing levels are maintained and appropriate time is given to the Agency to conduct the necessary technical reviews and adjudications, we believe that we can reach decisions on the relevant applications in a timely fashion, assuming high-quality license applications are received.

On behalf of the Commission, I appreciate the opportunity to testify today and look forward to working with you on this legislation.