UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555

COMMISSIONER

April 19, 2013

The Honorable Ed Whitfield
Chairman, Subcommittee on Energy
and Power
Committee on Energy and Commerce
United States House of Representatives
Washington, D.C. 20515

The Honorable John Shimkus
Chairman, Subcommittee on Environment
and the Economy
Committee on Energy and Commerce
United States House of Representatives
Washington, D.C. 20515

Dear Chairman Whitfield and Chairman Shimkus:

Thank you for the opportunity to appear before the Subcommittee on Energy and Power and the Subcommittee on Environment and the Economy at the February 28, 2013 hearing entitled "Nuclear Regulatory Commission: Policy and Governance Challenges." By letter dated March 22, 2013, you provided additional questions for the record related to this hearing; my responses to these questions are enclosed. In developing these responses I have worked closely with my colleagues and expect that my responses will be consistent with those provided by Chairman Macfarlane and other members of the Commission.

Please do not hesitate to contact me should you or the members of your subcommittees have any additional questions.

Sincerely,

William D Magwood IV

William D. Magwood, IV

cc: The Hon. Bobby L. Rush, Ranking Member, Subcommittee on Energy and Power
The Hon. Paul Tonko, Ranking Member, Subcommittee on Environment and the Economy

Enclosure

Questions from Representative Ed Whitfield

QUESTION 1 **In our hearing last July, Commissioner Magwood referred to the post-Fukushima actions the Commission approved on March 9, 2012, and stated: "We still have much work to do but the steps taken thus far represent a very significant increase in safety based on the Fukushima experience."**

a) Has any effort been made to account for the increase in safety inherent in those actions?

b) Shouldn't this new, higher level of safety provide the threshold against which the benefits of any future actions should be analyzed?

ANSWER

a) The Commission approved actions taken in March of 2012 on the basis, in part, of ensuring adequate protection of the health and safety of the public. Site-specific studies would be needed to evaluate the increase in safety for each individual reactor, but the Commission qualitatively considered the significant safety benefit that would be gained from these actions if an extreme external event were to cause challenges at a reactor in the United States similar to that at Fukushima. There is much benefit to planning for unexpected events. As the accident at Fukushima taught us, you cannot prevent or predict every natural disaster or every accident. But we can better prepare for how we will recover from unexpected events.

b) The Commission will consider the safety benefit for any future post-Fukushima actions. Included in these considerations would be any necessary cost/benefit analyses.

QUESTION 2 **I understand that there are several domestic companies developing small modular reactors (SMRs) that have engaged NRC staff about design certification activities. Which designs have been endorsed by potential license applicants who have written to the NRC indicating their intent to build such a design?**

a) **Does the NRC currently have adequate staff resources to address its small reactor licensing work?**

b) **If the NRC is faced with limited resources for licensing activities, how will the NRC prioritize its licensing efforts with regard to small reactors?**

c) **Please provide the status of the NRC's progress on aligning the exiting regulatory framework developed primarily for large light water reactors with that needed for SMR technologies including any issues that might require rulemaking.**

ANSWER

NRC annually publishes a Regulatory Information Summary to request information from industry about plans to submit design certification applications and license applications. Industry responses to NRC's December 2012 request indicate that four domestic companies plan to submit design certification applications to the NRC for small modular light water reactor designs. Those companies are B&W mPower™, NuScale, Westinghouse, and Holtec. Two utilities responded expressing their intent to submit license applications. They are the Tennessee Valley Authority referencing the mPower™ design to be constructed at the Clinch River site in Tennessee, and Ameren referencing the Westinghouse design to be constructed at the

Callaway site in Missouri. There are also some companies, both foreign and domestic, that have informed NRC of plans to submit design certification applications and various license applications for non-light water designs. These include Toshiba for their liquid sodium cooled reactor, the 4S, and STL, a South African company, for their pebble bed high temperature gas cooled reactor. Finally, the Next Generation Nuclear Plant Alliance, a consortium of domestic and foreign companies, have informed us of their plans to submit a construction permit application for a high temperature gas cooled reactor based on the Areva design.

a) The NRC's FY2013 budget and FY2014 budget requests were predicated on conducting reviews of two small modular reactor designs that use light water reactor technology. However, neither the current budget nor the FY2014 budget request would support all of the work that has been identified. In addition to NRC staff resources, the agency had planned to rely on contractor support for parts of the reviews. However, impacts from budget sequestration, which resulted in reductions to contractor support, will challenge the ability of the NRC to move forward on these projects.

b) The NRC's budget for new reactor licensing activities accommodates licensing and design certification for both large reactor and the small modular reactor designs. NRC prioritizes the full range of new reactor work (large and small designs) to the extent budgeted resources are available. Within this larger context, NRC will prioritize the small modular reactor review work to first support the projects selected by the Department of Energy (DOE) through its SMR Licensing Technical Support Program.

c) NRC's existing regulatory framework is appropriate for reviewing the small modular light water reactor designs and license applications. Through pre-application activities principally with mPower™ and NuScale, design-specific review guidance is being developed by the NRC to facilitate review of these designs and their unique features. These design-specific review

standards are supplemented by NRC's continuing effort to maintain and update its Standard Review Plan.

Based on responses received to the December 2012 Regulatory Information Summary that indicate that some entities plan to submit design certification applications for non-light water reactor technologies, the NRC has identified approaches that could be implemented to support the review of these "advanced non-light water reactor" designs. Last year, in response to a request from Congress, the NRC staff prepared a document entitled "Report to Congress: Advanced Reactor Licensing", which details the NRC's efforts and plans regarding advanced reactors. The Commission transmitted this report to Congress on August 22, 2012.

Questions from Representative John Shimkus

QUESTION 1 **I understand the NRC is analyzing the safety of using dry cask storage for extended periods of time. What is the time frame currently being analyzed?**

a) Is the NRC considering a requirement that Independent Spent Fuel Storage Installations maintain or reinstate the capability to repackage dry cask storage canisters?

ANSWER

The NRC is examining the technical needs and potential changes to the regulatory framework that may be needed to continue licensing of spent nuclear fuel storage beyond the initial and first renewal licensing periods. In May 2012, the NRC issued for public comment a report identifying and prioritizing the technical information needs affecting potential regulation of extended storage and transportation of spent nuclear fuel. This report noted that, for this evaluation, the NRC has considered performance of the storage systems over an initial 300 year period following removal of the spent nuclear fuel from the reactor. The NRC staff selected the long period for analytical purposes in order to capture potential effects of relatively slow-acting degradation processes.

a) The NRC is not currently considering a requirement that Independent Spent Fuel Storage Installations maintain or reinstate the capability to repackage dry cask storage canisters.

QUESTION 2 **In Finding #2 of the Commission's 2010 waste confidence determination, the NRC found that a repository would be available**

"when necessary". The court vacated the NRC's determination, and now the Commission is forced to initiate a new waste confidence proceeding.

a) Since the scope of the NRC waste confidence proceeding seems focused on environmental impact issues, how will you gather evidence to support Finding 2, which addresses repository availability, not environmental impact?

b) Will DOE provide evidence for the record on its plans for a repository?

c) Without evidence from DOE, what sort of evidence do you think would support a repository availability finding?

d) In vacating the NRC's Waste Confidence rule, the court directed the NRC to examine the environmental impact if a repository is never available and the period of storage on site is indefinite. Isn't the Finding #2 determination of repository availability a necessary element of determining the time period to be examined by the environmental impact statement?

e) To what extent will the Commission consider the "No Action" alternative documented in the Yucca Mountain Environmental Impact Statement?

ANSWER

a) Consistent with the National Environmental Policy Act, the NRC will make reasonable assumptions regarding the availability of a repository. The NRC's reasonable assumptions will include an assessment of repository availability within 60 years beyond the licensed life for operation of the reactor, and within 160 years beyond the licensed life for operation of the reactor, and indefinite storage (i.e., a repository is never available). The information that the NRC is considering in the generic environmental impact statement includes international and domestic experience in siting a geologic repository, the January 2013 DOE report, "Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste," and the 2012 report of the Blue Ribbon Commission on America's Nuclear Future.

b) In January 2013, DOE published its "Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste," which will be used as part of the analysis in the generic environmental impact statement that will support the updated Waste Confidence Rule. The DOE Strategy Report states that it is the Administration's goal to have a repository sited by 2026, licensed by 2042 and constructed and open by 2048. The NRC also plans to consider other publicly available information.

c) The generic environmental impact statement will make a number of reasonable assumptions regarding repository availability. In addition to the DOE's recently published "Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste" (January 2013), the NRC will rely on a variety of information and analyses to support any conclusion on repository availability. This information includes international and domestic experience in siting a geologic repository and the 2012 report of the Blue Ribbon Commission on America's Nuclear Future.

d) The Finding #2 determination of repository availability is not a necessary element of determining the time period to be examined by the environmental impact statement. The NRC is planning to analyze three scenarios in the environmental impact statement. These scenarios are the short-term period of continued storage (a repository available after 60 years), a long-term period of continued storage (repository available after 160 years), and indefinite storage (a repository is never available). The environmental impact statement will determine the impacts of continued storage for each of the scenarios.

e) As directed by the Commission on September 6, 2012, the NRC staff will use available information from a number of sources, including the Yucca Mountain Environmental Impact Statement. The NRC will consider the Yucca Mountain Environmental Impact Statement "no-action" alternative in the Waste Confidence generic environmental impact statement.

Questions from Representative Doris O. Matsui

QUESTION 1 **Can you outline for me what challenges the Commission faces in moving spent fuel to interim storage?**

ANSWER

The Department of Energy is the lead agency for implementing any changes to the national policy on nuclear waste management, which includes moving fuel to dry interim storage. This topic is addressed in the recently released *Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste,* which provides the Administration's framework for implementing a long-term solution for fuel storage and disposal. The NRC has the regulatory infrastructure in place to license dry interim storage facilities and has licensed such a facility. As the national policy evolves, the NRC's mission remains the same – to ensure the safe and secure use of radioactive materials while protecting people and the environment.

QUESTION 2 **Do you believe that independent progress can be made on developing interim storage facilities even though we cannot currently reach a consensus on a permanent repository?**

ANSWER

The Department of Energy is the lead agency for implementing any changes to the national policy on nuclear waste management, which includes moving fuel to dry interim storage. This topic is addressed in the recently released *Strategy for the Management and Disposal of Used Nuclear Fuel and High-Level Radioactive Waste,* which provides the Administration's framework for implementing a long-term solution for fuel storage and disposal. The NRC is not responsible for implementing the national policy on nuclear waste management including development of interim storage facilities. NRC's responsibility is independent licensing, regulation, and

oversight of interim storage facilities. NRC is not responsible for site selection, but will consider the suitability of the site as part of the licensing process. The NRC has in place the appropriate regulatory framework to license and regulate future interim dry storage facilities.

QUESTION 3 **Can you tell me what challenges the NRC or DOE would face if the federal court orders work to resume on Yucca? In particular do you see impediments to reacquiring the permits, or finding the personnel and knowledge base to resume where work was left off?**

ANSWER

If the federal court directs NRC to resume work on the Yucca Mountain license application, the agency will comply, to the extent that funds are currently available. The NRC's principal challenge would be to reconstitute its review team with individuals from within and outside the Agency who possess the critical skills and knowledge base.