POLICY ISSUE
INFORMATION

March 13, 2012 SECY-12-0037

FOR: The Commissioners

FROM: Catherine Haney, Director
Office of Nuclear Material Safety
and Safeguards

SUBJECT: BLUE RIBBON COMMISSION FINAL REPORT: STATUS OF RELEVANT NUCLEAR REGULATORY COMMISSION ACTIVITIES

PURPOSE:

To inform the Commission of the recommendations made in the report by the Blue Ribbon Commission on America's Nuclear Future (BRC) that are relevant to the U.S. Nuclear Regulatory Commission (NRC), identify potential implications for the NRC if the recommendations are implemented, and provide an overview of the status of current NRC staff activities related to those recommendations. This paper does not address any new commitments or resource implications.

SUMMARY:

The Department of Energy (DOE) is the lead agency for developing a response to the BRC report and for implementing any changes to the National Policy on nuclear waste management. Several of the BRC recommendations are related to ongoing areas of NRC regulatory activities and NRC is positioned to support National Policy changes in areas associated with its regulatory purview. The actual impacts on NRC's role and resources will depend on how National Policy is changed and implemented. The NRC staff will closely monitor the development of any changes and adjust its regulatory programs in accordance with Commission direction. The staff will provide policy papers to the Commission, when appropriate, to support any changes that would require Commission approval or direction (e.g., significant allocations of resources or initiation of rulemaking).

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BACKGROUND:

On January 29, 2010, President Obama directed the Secretary of Energy to establish the BRC to conduct a comprehensive review of policies for managing the back end of the nuclear fuel cycle and recommend a new strategy. Pursuant to its Charter, the BRC provided its final recommendations to the Secretary of Energy on January 26, 2012 (www.brc.gov). The Conference Report for the Energy and Water Development Appropriations Act for Fiscal Year 2012 (H.R. Rep. No. 112-331 at 850 (Dec. 15, 2011)) directed the DOE to respond to these recommendations by July 2012.

DISCUSSION:

The BRC proposed a national nuclear waste management strategy based on information it gathered and input gained from site visits, a variety of stakeholders, and experts including NRC staff. The enclosure lists the eight Key Elements of the BRC's proposed strategy and briefly notes potential implications for the NRC's regulatory framework and programs if those elements are implemented, including BRC-recommended legislative changes that may affect NRC activities. The BRC report also discusses core national interests and values, historical background, regulatory issues, and recommendations for near-term actions. Throughout the report, the BRC makes specific recommendations, suggestions, and observations. Potential implications may, however, change as a new national strategy is developed and implemented.

The eight Key Elements of the BRC recommended strategy are repeated here for convenience:

1. A new, consent-based approach to siting future nuclear waste management facilities.

2. A new organization dedicated solely to implementing the waste management program and empowered with the authority and resources to succeed.

3. Access to the funds nuclear utility ratepayers are providing for the purpose of nuclear waste management.

4. Prompt efforts to develop one or more geologic disposal facilities.

5. Prompt efforts to develop one or more consolidated storage facilities.

6. Prompt efforts to prepare for the eventual large-scale transport of spent nuclear fuel and high-level waste to consolidated storage and disposal facilities when such facilities become available.

7. Support for continued U.S. innovation in nuclear energy technology and for workforce development.

8. Active U.S. leadership in international efforts to address safety, waste management, non-proliferation, and security concerns.

Potential Implications for the NRC if BRC Recommendations are Implemented

DOE will be the lead federal agency responsible for developing a new national strategy for nuclear waste management; the NRC will play a supporting role in those areas associated with its regulatory purview. The NRC staff will assess potential implications to NRC's regulatory framework and processes during this development and will advise the Commission, with recommendations as appropriate, if any policy issues arise. Several of the BRC recommendations are consistent with currently ongoing regulatory activities and the NRC is well prepared to respond to implementation of the BRC key elements and recommendations as discussed below. Actual implications and NRC responses will be contingent upon those changes actually adopted in the National Policy.

For the purpose of this paper, staff has grouped NRC-related recommendations in Chapters 10 (Regulatory Issues) and 13 (Recommended Near-Term Actions) of the BRC report into the following discussions of the most closely associated Key Elements.

Key Elements 1 and 2

Implementation of the BRC recommendation for a new, consent-based approach to siting and developing future nuclear waste management facilities by a new waste management organization (WMO) could impact NRC regulatory processes, such as the need to modify its stakeholder engagement strategies or assess existing procedures for licensing a geologic repository (e.g., Title 10 of the *Code of Federal Regulations* [10 CFR] Part 2 Subpart J refers to an application from DOE). The BRC also suggested that this overall approach to siting and developing these facilities should be adaptable to new information or technical, social, and political developments. The NRC has a long history of comprehensive public outreach and can adjust, adapt, or improve interactions with stakeholders on these complex technical and regulatory issues.

Key Element 3

Implementation of the BRC recommendation regarding access to the Nuclear Waste Fund (NWF) for nuclear waste management could give NRC access to the NWF to regulate the activities of the new WMO. The Nuclear Waste Policy Act provides for Congress to appropriate from the NWF for these activities. If funding derived from the NWF is not available to regulate activities of a new WMO, NRC may need to consider budget formulation and execution changes.

Key Element 4

Implementation of the BRC recommendation to develop one or more geologic disposal facilities would require that NRC update its generic, non-site-specific regulations for licensing geologic disposal facilities at sites other than Yucca Mountain (10 CFR 60). The NRC previously acknowledged the need for this revision in 2001 when it issued licensing criteria for a proposed geologic repository at Yucca Mountain (66 FR 55732, 55736), but a rulemaking effort is not yet underway and would require Commission approval to proceed. The NRC staff would need to update the technical basis for revising 10 CFR 60 to support a more risk-informed, performance-

based regulation. In addition, the BRC recommendation to begin work on a regulatory framework for deep borehole disposal would require development of a technical basis and rulemaking. In the BRC's opinion, no legislative changes are necessary for the NRC to develop these regulations. The staff is currently assessing the options and resource implications for these potential rulemakings.

The BRC notes the challenges in setting regulatory standards for disposal facilities, including the time-frame over which the standards must be met, and the methodology and standard of proof for demonstrating compliance with the standards. A number of recommendations are made regarding developing future disposal facility standards, including generic applicability, concurrent development of the standard for proof of compliance, finalization of the standards prior to the site-selection process, development of a regulatory framework for deep borehole disposal, and development of security guidance.

The BRC further recommended that NRC continue to maintain its regulatory role in licensing and oversight of waste management facilities in cooperation and coordination with the U.S. Environmental Protection Agency (EPA) and to work with EPA to define a process (with provisions for public input) to develop generic disposal facility standards and regulations.

The BRC endorsed and encouraged NRC efforts to review and potentially revise the U.S. waste classification framework toward a more risk-based approach. Such a revision would require extensive interaction with other stakeholders, including States and the Public.

Key Element 5

Implementation of the BRC recommendation for development of a consolidated storage facility is not likely to require significant changes to the current regulatory framework. The existing regulatory framework has assured safe and secure storage at 63 licensed independent spent fuel storage installations (ISFSIs), includes requirements for a Monitored Retrievable Storage installation (MRS - defined in 10 CFR 72.3). The NRC staff notes development of consolidated interim storage facilities could involve an increased NRC workload in licensing and inspection, and possibly in certification of new storage system designs. The NRC has previously granted a license to operate an ISFSI to Private Fuel Storage (PFS), LLC. NRC staff expects that licensing the type of storage facilities recommended by the BRC would be similar to the PFS licensing. However, the BRC notes that before its consolidated storage facility recommendation can be fully implemented by the federal government, Congress would need to amend the Nuclear Waste Policy Act[1].

The BRC notes the challenge of maintaining the safety performance of storage facilities over extended periods of time (120 years or more) and that NRC participates in the industry-led Extended Storage Collaboration Program. The staff is actively engaged in research associated with this issue, as discussed in the next section of this paper.

[1] Under current law, construction of an MRS cannot begin until the NRC has authorized construction of a repository. *See* 42 U.S.C. 10168(d). NRC regulations incorporate similar restrictions and would be revised to reflect any statutory revisions. *See* 10 CFR 72.44(g)(1).

The BRC recommended that National Academy of Sciences (NAS) conduct an investigation into the events at Fukushima and their implications for safety and security requirements at spent nuclear fuel (SNF) and high-level waste (HLW) storage sites in the United States. This is part of an NAS study initiated in 2012 by NRC at the direction of Congress. The staff is also implementing regulatory actions related to SNF safety in response to the Fukushima accidents as described in the next section of this paper.

Key Element 6

Implementation of the BRC recommendation for preparations for large-scale transport is not likely to require significant changes to the current regulatory framework, but might entail more public outreach if state, tribal, and local officials were more extensively involved in the associated planning. The BRC also recommended that NRC re-examine and address those recommendations from the 2006 NAS *Going the Distance* study that have not yet been implemented, in particular the value of performing a Package Performance Study (PPS) (i.e., large-scale rail transport crash test of a shipping container). The previous disposition of the three NAS recommendations that applied to NRC would be re-evaluated as changes in the National Policy emerge. For example, the NRC previously suspended funding for PPS based on a judgment of insufficient regulatory benefit relative to cost, uncertainties associated with the Transport, Aging, and Disposal canister, and funding constraints imposed through Congressional appropriations. Changes in the National Policy that alter this judgment will be evaluated by the staff when those changes occur and any decision to proceed with PPS would need to be integrated with the overall regulatory changes.

Key Element 7

The BRC recommendation to support continued U.S. innovation in nuclear energy technology specifically included a recommendation for increased effort of ongoing work by the NRC to develop a regulatory framework for advanced nuclear energy systems. The implications of increasing the current level of effort for ongoing regulatory framework development for advanced reactor designs and reprocessing technologies are primarily budget-related. The BRC noted the potential benefits from advanced fuel cycle technologies, but stated that such systems would likely not fundamentally alter the waste management challenge over the next several decades. Language was included in the House report for the Energy and Water Development Appropriations Act for 2012 requesting that the NRC submit a report by June 30, 2012, addressing (1) the anticipated scope of advanced reactor licensing over the next one to two decades, (2) regulatory research that would be needed, (3) projected resource requirements for both experienced personnel and development facilities to support NRC for the anticipated scope of advanced reactor licensing, and (4) an overall plan for sharing national resources to pursue the licensing scope. The NRC staff is currently preparing that report. Many of the associated advanced reactor technologies that can be anticipated over this timeframe are consistent with the BRC characterization of advanced nuclear energy systems.

Key Element 8

Implementation of the BRC recommendation to maintain active U.S. leadership in international efforts to address safety, waste management, non-proliferation, and security concerns would not likely require a change in the staff's current international engagements.

The BRC recommended that NRC (with DOE and industry) continue vigorous research efforts in areas such as spent fuel and storage system degradation phenomena, and vulnerability to sabotage and terrorism. The staff is actively engaged in research associated with development of a regulatory framework for long-term storage, as discussed in the next section of this paper.

Status of Ongoing Staff Activities Relevant to BRC Recommendations

For Key Elements 1 through 3 there are currently no staff activities relevant to BRC recommendations.

Alternative Disposal Options (Key Element 4)

The NRC staff has initiated work on technical areas related to alternative disposal options for HLW and SNF, with the intent to revise the existing regulatory framework to prepare for future regulatory actions and possible geologic disposal sites other than Yucca Mountain. Work thus far has focused on examining different geologic media and alternative engineered barrier systems. This work has included preliminary consideration of alternative approaches to disposal, such as the use of deep boreholes. In 2011, the NRC staff completed a computer-based performance assessment model (ML112650601) as a scoping tool to provide risk and performance insights for a range of disposal alternatives, potential geologic media, waste inventories, waste forms, and engineered barrier materials. The NRC staff is discussing with EPA the potential implications of the BRC report on coordination and collaboration between EPA and NRC. The staff is currently assessing options, resource implications, and timing for engaging the Commission on these potential rulemakings.

Waste Classification (Key Element 4)

The staff plans to begin working on revisions to the 10 CFR Part 61 waste classification, as directed by SRM-SECY-08-0147, “Response to Commission Order CLI-05-20 Regarding Depleted Uranium, dated March 18, 2009,” beginning in FY 2015. This is consistent with the Commission guidance in SRM-COMWDM-11-0002/COMGEA-11-0002, “Revision to 10 CFR Part 61, dated November 3, 2011,” where the Commission expanded the scope of the limited-scope rulemaking effort for Part 61 but delayed issues including revision of the waste classification system until after the completion of the limited rulemaking.

Storage and Transportation of HLW and SNF (Key Elements 5 and 6)

The NRC staff is currently assessing technical uncertainties and information needs for the longer term performance of storage facilities in response to Commission direction to review the technical basis for safe and secure storage and transportation of SNF for periods beyond 120 years Staff Requirement Memorandum (SRM-COMDEK-09-0001,”Revisiting the Paradigm for Spent Nuclear Fuel Storage and Transportation Regulatory Programs,” dated February 18, 2010). NRC staff intends to issue for public comment a draft analysis of technical information gaps to support development of a regulatory framework for long-term storage. In addition to completing this draft analysis, NRC is also conducting research related to development of improved consequence analysis data and tools for extended storage periods, identification of risk information needs to support development of a risk-informed framework, the impact from residual moisture inside of storage casks, and investigation of specific long-term degradation issues such as stress corrosion cracking of storage canisters, concrete degradation, the need

for improved peak fuel clad temperature profiles, and evaluation of options for a possible long-term cask demonstration project. The NRC staff is actively participating in the Extended Storage Collaboration Program, which is led by industry to coordinate its efforts with DOE, academic researchers, and international partners to resolve technical issues associated with extended storage. The NRC staff has also held several public meetings to discuss planned activities related to extended storage and transportation (e.g., ML12006A182, ML11300A170).

Staff is also preparing a draft environmental impact statement (EIS) to support a potential longer-term update of the Waste Confidence Rule (10 CFR 51.23), in response to Commission direction in SRM SECY-09-0090, "Final Update of the Commission's Waste Confidence Decision," dated September 15, 2010. The NRC staff held several public meetings for early stakeholder involvement and is seeking public comment on a draft background and assumptions document (ML11340A141). The NRC staff is also addressing technical issues related to long-term storage and subsequent transportation that contribute to the environmental impact analyses in the EIS. The staff plans to brief the Advisory Committee on Reactor Safeguards and in May 2012 provide a paper to the Commission to address status and an updated integrated plan for these activities (i.e., Extended Storage and Transportation Regulatory Plan). Stakeholder engagements are also planned for the Regulatory Information Conference this month, and the Nuclear Energy Institute Used Fuel Management Conference in May 2012.

Actions in Response to the Fukushima Dai-ichi Nuclear Emergency (Key Element 5)

An NRC Near-Term Task Force (NTTF) conducted a review of the events at Fukushima Dai-ichi and issued its recommendations in July 2011 (ML111861807). The staff is taking action on the highest priority recommendations through proposed orders and requests for information (SECY-12-0025, "Proposed Orders and Requests for Information in Response to Lessons Learned from Japan's March 11, 2011, Great Tohoku Earthquake and Tsunami," dated February 17, 2012). One of the NTTF's recommendations is related to SNF. A high priority (i.e., Tier 1) recommendation to enhance the reliability of spent fuel pool instrumentation is the subject of the NRC order issued to licensees on March 12, 2012. In addition, staff will provide a notation vote paper to the Commission in July 2012 to provide proposals on additional recommendations from stakeholders, including the timing of transferring spent fuel to dry storage. The staff views these activities as responsive to the BRC recommendation to apply lessons learned from this event. The NRC staff will continue implementing the recommendations of the NTTF and related activities as directed by the Commission.

Advanced Nuclear Energy Systems – Reactors (Key Element 7)

There are several advanced reactor designs being proposed that could be characterized as one of the advanced nuclear energy systems referenced by the BRC. The staff previously reviewed one such system and prepared a draft safety evaluation, NUREG-1368 "Preapplication Safety Evaluation Report for the Power Reactor Innovative Small Module Liquid-Metal Reactor (January 1994)." That system has not yet been formally submitted for certification.

The NRC staff has also been developing a more risk-informed review approach for advanced technologies. For example, in response to SRM-COMGEA-10-0001/COMGBJ-10-0004, "Use of Risk Insights to Enhance Safety Focus of Small Modular Reactor Reviews," dated August 31, 2010, the staff developed a plan, described in SECY-11-0024, "Use of Risk Insights to Enhance

the Safety Focus of Small Modular Reactor Reviews," dated February 18, 2011, for a framework and design specific review plans for the integral pressurized water reactor class of small modular reactors. The plan includes activities for the development of a new risk-informed and performance-based regulatory structure for the licensing of advanced reactor designs.

Advanced Nuclear Energy Systems - Reprocessing (Key Element 7)

NRC staff initiated efforts to develop a regulatory framework for reprocessing facilities in 2008 and in November 2011, the NRC staff completed a draft regulatory basis document (SECY-11-0163, "Reprocessing Rulemaking: Draft Regulatory Basis and Path Forward," dated November 18, 2011). This matter is currently pending before the Commission. The staff continues to work with DOE under an Interagency Agreement (IAA) to resolve Regulatory Gap 5 identified in the Draft Regulatory Basis (Safety and Risk Assessment Methodologies) and in April 2012 will provide an annual status report on IAA activities to DOE. In addition, the staff continues to engage international counterparts on operational experience with their reprocessing facilities.

International Activities (Key Element 8)

NRC staff continues to work closely with other U.S. agencies, including the Departments of State, Defense, Commerce and Energy to encourage and enable the safe and secure utilization of nuclear energy systems and the safe management of nuclear waste through existing agreements for peaceful cooperation, bilateral and multilateral meetings and agreements, and through support of, and participation with numerous international organizations, such as the International Atomic Energy Agency, World Institute for Nuclear Security, World Association of Nuclear Operators, Nuclear Suppliers Group, and Nuclear Energy Agency.

Security and Nonproliferation (Key Element 8)

The NRC staff continues to support nuclear safety, security and non-proliferation objectives. For example, in January 2012, the NRC staff submitted to the Commission, for approval, the final rule to amend the security requirements for SNF in transit. This rulemaking would establish generically applicable security requirements and acceptable performance standards and objectives for the protection of SNF shipments from theft, diversion, or radiological sabotage. For facilities storing SNF and HLW, the NRC staff is developing a regulatory basis to support rulemaking to enhance security requirements to: (1) improve the consistency and clarity of the 10 CFR 73 regulations for both types of ISFSI licenses (i.e., general and specific), (2) make generically applicable requirements similar to those imposed on ISFSI licensees by the post-9/11 ISFSI security orders, and (3) to use a risk-informed, performance based structure in updating storage security regulations.

CONCLUSION:

The NRC staff plans to monitor and coordinate, as appropriate, with DOE and industry, and engage public stakeholders to ensure that NRC's regulatory framework, processes, and programs support any changes in the National Policy on nuclear waste management. The NRC staff will keep the Commission informed of any emergent policy issues or need for rulemaking through Commission policy papers and briefings, and budget formulation activities.

RESOURCES:

Beyond the ongoing NRC staff activities described in this paper, the staff has not currently budgeted or planned for any change in resources arising from the potential implications of the implementation of the BRC's recommendations. As noted above, the staff is assessing the options and resources necessary for proceeding with a 10 CFR 60 rulemaking.

COORDINATION:

The Office of the General Counsel has reviewed this package and has no legal objection. The Chief Financial Officer reviewed this package and determined that there is no financial impact.

/RA/

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Enclosure:
Summary of Potential Implications for
NRC of the Blue Ribbon Commission
Key Elements

Summary of Potential Implications for NRC of the Blue Ribbon Commission Key Elements

Key Element of Blue Ribbon Commission's Strategy	**Legislative Change(s) Identified by BRC**	**Potential Implication for Nuclear Regulatory Commission's Regulatory Framework Identified by NRC staff**	**Potential Implication for Nuclear Regulatory Commission's Program Activities Identified by NRC staff**
(1) "A new, consent-based approach to siting future nuclear waste management facilities."	Change to the Nuclear Waste Policy Act.	None.	Adapt public outreach strategies.
(2) "A new organization dedicated solely to implementing the waste management program and empowered with the authority and resources to succeed."	Change to the Nuclear Waste Policy Act.	May need to assess existing procedures for licensing a geologic repository (e.g., 10 CFR 2 specifies an application from DOE).	None.
(3) "Access to the funds nuclear utility ratepayers are providing for the purpose of nuclear waste management."	Change to the Nuclear Waste Policy Act.	Contingent upon adopted National Policy (e.g., Nuclear Waste Policy Act currently requires Congress to appropriate funds to the NRC for regulatory activities).	NRC budget formulation and execution process changes may be needed.
(4) "Prompt efforts to develop one or more geologic disposal facilities."	Change to the Nuclear Waste Policy Act to permit consideration of sites other than Yucca Mountain.	Rulemaking to update current non-site-specific disposal regulation (i.e.,10 CFR Part 60) to be risk informed and performance based. Rulemaking for deep borehole disposal and waste classification.	Continue alignment with EPA. Update regulatory basis for disposal in a repository. Develop regulatory basis for borehole disposal.
(5) "Prompt efforts to develop one or more consolidated storage facilities."	Change to the Nuclear Waste Policy Act to allow the federal government to construct a Monitored Retrievable Storage installation independent of the schedule for licensing a geologic disposal facility.	Rulemaking to revise conditions for licensing a monitored retrievable storage facility that are consistent with the Nuclear Waste Policy Act.	Potential increased licensing, oversight, security plan approvals.
(6) "Prompt efforts to prepare for the eventual large-scale transport of spent nuclear fuel and high-level waste to consolidated storage and disposal facilities when such facilities become available."	None.	None.	Potential increased licensing, oversight, route approvals, security plan approvals and state interactions. Reassess plans for the Package Performance Study.
(7) "Support for continued U.S. innovation in nuclear energy technology and for workforce development."	None.	Regulatory framework development for advanced technologies (e.g., reprocessing facilities).	Continued regulatory research program on advanced nuclear technologies.
(8) "Active U.S. leadership in international efforts to address safety, waste management, non-proliferation, and security concerns."	None.	None.	Continued cooperation and assistance in international efforts. Review existing waste classification system.

ENCLOSURE