[7590-01-P]

NUCLEAR REGULATORY COMMISSION

10 CFR Parts 26, 50, 52, 73, and 140

[NRC-2015-0070]

RIN 3150-AJ59

Regulatory Improvements for Decommissioning Power Reactors

AGENCY: Nuclear Regulatory Commission.

ACTION: Advance notice of proposed rulemaking; request for comment.

SUMMARY: The U.S. Nuclear Regulatory Commission (NRC) is issuing this advance notice of proposed rulemaking (ANPR) to obtain input from stakeholders on the development of a draft regulatory basis. The draft regulatory basis would support potential changes to the NRC's regulations for the decommissioning of nuclear power reactors. The NRC's goals in amending these regulations would be to provide an efficient decommissioning process, reduce the need for exemptions from existing regulations, and support the principles of good regulation, including openness, clarity, and reliability. The NRC is soliciting public comments on the contemplated action and invites stakeholders and interested persons to participate. The NRC plans to hold a public meeting to promote full understanding of the questions contained in this ANPR and facilitate public comment.

DATES: Submit comments by **[INSERT DATE 45 DAYS FROM PUBLICATION IN THE *FEDERAL REGISTER*]**. Comments received after this date will be considered if it is practical to do so, but the NRC is able to ensure consideration only for comments received on or before this date.

ADDRESSES: You may submit comments by any of the following methods (unless this document describes a different method for submitting comments on a specific subject):

- **Federal rulemaking Web site:** Go to *http://www.regulations.gov* and search for Docket ID **NRC-2015-0070**. Address questions about NRC dockets to Carol Gallagher; telephone: 301-415-3463; e-mail: Carol.Gallagher@nrc.gov. For technical questions contact the individual listed in the FOR FURTHER INFORMATION CONTACT section of this document.
- **E-mail comments to:** Rulemaking.Comments@nrc.gov. If you do not receive an automatic e-mail reply confirming receipt, then contact us at 301-415-1677.
- **Fax comments to:** Secretary, U.S. Nuclear Regulatory Commission at 301-415-1101.
- **Mail comments to:** Secretary, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, ATTN: Rulemakings and Adjudications Staff.
- **Hand deliver comments to:** 11555 Rockville Pike, Rockville, Maryland 20852, between 7:30 a.m. and 4:15 p.m. (Eastern time) Federal workdays; telephone: 301-415-1677.

For additional direction on obtaining information and submitting comments, see "Obtaining Information and Submitting Comments" in the SUPPLEMENTARY INFORMATION section of this document.

FOR FURTHER INFORMATION CONTACT: Jason B. Carneal, Office of Nuclear Reactor Regulation, U. S. Nuclear Regulatory Commission, Washington, DC 20555-0001; telephone: 301-415-1451; e-mail: Jason.Carneal@nrc.gov.

SUPPLEMENTARY INFORMATION:

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I. Obtaining Information and Submitting Comments

A. Obtaining Information

Please refer to Docket ID **NRC-2015-0070** when contacting the NRC about the availability of information for this action. You may obtain publicly-available information related to this action by any of the following methods:

- **Federal Rulemaking Web Site:** Go to http://www.regulations.gov and search for Docket ID **NRC-2015-0070**.

- **NRC's Agencywide Documents Access and Management System (ADAMS):** You may obtain publicly-available documents online in the ADAMS Public Documents collection at http://www.nrc.gov/reading-rm/adams.html. To begin the search, select "ADAMS Public Documents" and then select "Begin Web-based ADAMS Search." For problems with ADAMS, please contact the NRC's Public Document Room (PDR) reference staff at 1-800-397-4209, 301-415-4737, or by e-mail to pdr.resource@nrc.gov. The ADAMS accession number for each document referenced (if it is available in ADAMS) is provided the first time that it is mentioned in the SUPPLEMENTARY INFORMATION section. For the convenience of the reader, instructions about obtaining materials referenced in this document are provided in Section IX, "Availability of Documents," of this document.

- **NRC's PDR:** You may examine and purchase copies of public documents at the NRC's PDR, Room O1-F21, One White Flint North, 11555 Rockville Pike, Rockville, Maryland 20852.

B. Submitting Comments

Please include Docket ID **NRC-2015-0070** in your comment submission.

The NRC cautions you not to include identifying or contact information that you do not want to be publicly disclosed in your comment submission. The NRC posts all comment submissions at http://www.regulations.gov as well as entering the comment submissions into ADAMS. The NRC does not routinely edit comment submissions to remove identifying or contact information.

If you are requesting or aggregating comments from other persons for submission to the NRC, then you should inform those persons not to include identifying or contact information that they do not want to be publicly disclosed in their comment submission. Your request should state that the NRC does not routinely edit comment submissions to remove such information before making the comment submissions available to the public or entering the comment submissions into ADAMS.

II. Background

A. Regulatory Actions Related to Decommissioning Power Reactors

Significant regulations for the decommissioning of nuclear power reactors were not included in NRC rules promulgated before 1988. The NRC published a final rule in the *Federal Register* on June 27, 1988 (53 FR 24018), establishing decommissioning requirements for various types of licensees. By the early 1990s, the NRC recognized a need for more changes to the power reactor decommissioning regulations and published a proposed rule to amend its regulations for reactor decommissioning in 1995 (60 FR 37374; July 20, 1995). In 1996, the NRC amended its regulations for reactor decommissioning to clarify ambiguities, make generically applicable procedures that had been used on a case-by-case basis, and allow for

greater public participation in the decommissioning process (61 FR 39278; July 29, 1996). However, as an increasing number of power reactor licensees began decommissioning their reactors, it became apparent in the late 1990s that additional rulemaking was needed on specific topics to improve the efficiency and effectiveness of the decommissioning process.

In a series of Commission papers issued between 1997 and 2001, the NRC staff provided options and recommendations to the Commission to address regulatory improvements related to power reactor decommissioning. In the Staff Requirements Memorandum (SRM) to SECY-99-168, "Improving Decommissioning Regulations for Nuclear Power Plants," dated December 21, 1999 (ADAMS Accession No. ML003752190), the Commission directed the NRC staff to proceed with a single, integrated, risk-informed decommissioning rule, addressing the areas of emergency preparedness (EP), insurance, safeguards, staffing and training, and backfit. The objective of the rulemaking was to clarify and remove certain regulations for decommissioning power reactors based on the reduction in radiological risk compared to operating reactors. At an operating reactor, the high temperature and pressure of the reactor coolant system, as well as the inventory of relatively short-lived radionuclides, contribute to both the risk and consequences of an accident. With the permanent cessation of reactor operations and the permanent removal of the fuel from the reactor core, such accidents are no longer possible. As a result of the shutdown and removal of fuel, the reactor, reactor coolant system, and supporting systems no longer operate and, therefore, have no function. Hence, postulated accidents involving failure or malfunction of the reactor, reactor coolant system, or supporting systems are no longer applicable.

During reactor decommissioning, the principal radiological risks are associated with the storage of spent fuel onsite. Generally, a few months after the reactor has been permanently shut down, there are no possible design-basis events that could result in a radiological release

exceeding the limits established by the U.S. Environmental Protection Agency's (EPA) early-phase Protective Action Guidelines of 1 roentgen equivalent man at the exclusion area boundary. The only accident that might lead to a significant radiological release at a decommissioning reactor is a zirconium fire. The zirconium fire scenario is a postulated, but highly unlikely, beyond-design-basis accident scenario that involves a major loss of water inventory from the spent fuel pool (SFP), resulting in a significant heat-up of the spent fuel, and culminating in substantial zirconium cladding oxidation and fuel damage. The analyses of spent fuel heat-up scenarios that might result in a zirconium fire are related to the decay heat of the irradiated fuel stored in the SFP. Therefore, the probability of a zirconium fire scenario continues to decrease as a function of the time that the decommissioning reactor has been permanently shut down.

On June 28, 2000, the NRC staff submitted SECY-00-0145, "Integrated Rulemaking Plan for Nuclear Power Plant Decommissioning" (ADAMS Accession No. ML003721626) to the Commission, proposing an integrated decommissioning rulemaking plan. The rulemaking plan was contingent on the completion of a zirconium fire risk study provided in NUREG-1738, "Technical Study of Spent Fuel Pool Accident Risk at Decommissioning Nuclear Power Plants" (ADAMS Accession No. ML010430066), on the accident risks at decommissioning reactor SFPs. The NUREG was issued on February 28, 2001.

Although NUREG-1738 could not completely rule out the possibility of a zirconium fire after a long spent fuel decay times, it did demonstrate that storage of spent fuel in a high-density configuration in SFPs is safe, and that the risk of accidental release of a significant amount of radioactive material to the environment is low. The study used simplified and sometimes bounding assumptions and models to characterize the likelihood and consequences of beyond-design-basis SFP accidents. Subsequent NRC regulatory activities and studies

(described in more detail below) have reaffirmed the safety and security of spent fuel stored in pools and shown that SFPs are effectively designed to prevent accidents.

Because of uncertainty in the NUREG-1738 conclusions about the risk of SFP fires, the NRC staff faced a challenge in developing a generic decommissioning rule for EP, physical security, and insurance. To seek additional Commission direction, on June 4, 2001, the NRC staff submitted to the Commission SECY-01-0100, "Policy Issues Related to Safeguards, Insurance, and Emergency Preparedness Regulations at Decommissioning Nuclear Power Plants Storing Fuel in Spent Fuel Pools" (ADAMS Accession No. ML011450420). However, based on the reactor security implications of the terrorist attacks of September 11, 2001 (9/11), and the results of NUREG-1738, the NRC redirected its rulemaking priorities to focus on programmatic regulatory changes related to safeguards and security. In a memorandum to the Commission, "Status of Regulatory Exemptions for Decommissioning Plants," dated August 16, 2002 (ADAMS Accession No. ML030550706), the NRC staff stated that no additional permanent reactor shut downs were anticipated in the foreseeable future, and that no immediate need existed to proceed with the decommissioning regulatory improvement work that was planned. Consequently, the NRC shifted resources allocated for reactor decommissioning rulemaking to other activities. The NRC staff concluded that if any additional reactors permanently shut down after the rulemaking effort was suspended, establishment of the decommissioning regulatory framework would continue to be addressed through the license amendment and exemption processes.

Between 1998 and 2013, no power reactors permanently ceased operation. Since 2013, five power reactors have permanently shut down, defueled, and are transitioning to decommissioning. For these decommissioning reactor licensees, the NRC has processed various license amendments and exemptions to establish a decommissioning regulatory framework, similar to the method used in the 1990s.

Following the 9/11 attack, the NRC took several actions to further reduce the possibility of a SFP fire. In the wake of the attacks, the NRC issued orders that required licensees to implement additional security measures, including increased patrols, augmented security forces and capabilities, and more restrictive site-access controls to reduce the likelihood of an accident, including a SFP accident, resulting from a terrorist initiated event. The NRC's regulatory actions after the terrorist attacks of 9/11 have significantly enhanced the safety of SFPs. A comprehensive discussion of post 9/11 activities, some of which specifically address SFP safety and security, is provided in the memorandum to the Commission titled, "Documentation of Evolution of Security Requirements at Commercial Nuclear Power Plants with Respect to Mitigation Measures for Large Fires and Explosions," dated February 4, 2010 (ADAMS Accession No. ML092990438).

In addition, the NRC amended § 50.55(hh)(2) of title 10 of the *Code of Federal Regulations* (10 CFR) to require licensees to implement other mitigating measures to maintain or restore SFP cooling capability in the event of loss of large areas of the plant due to fires or explosions, which further decreases the probability of a SFP fire (74 FR 13926, March 27, 2009). The Nuclear Energy Institute (NEI) provided detailed guidance in "NEI-06-12: B.5.b Phase 2 & 3 Submittal Guideline," Revision 2, dated December 2006 (ADAMS Accession No. ML070090060). The NRC endorsed this guidance on December 22, 2006 (non-publicly available), for compliance with the § 50.54(hh)(2) requirements. Under § 50.54(hh)(2), power reactor licensees are required to implement strategies such as those provided in NEI-06-12. The NEI's guidance specifies that portable, power-independent pumping capabilities must be able to provide at least 500 gallons per minute (gpm) of bulk water makeup to the SFP, and at least 200 gpm of water spray to the SFP. Recognizing that the SFP is more susceptible to a

release when the spent fuel is in a nondispersed configuration, the guidance also specifies that the portable equipment is to be capable of being deployed within 2 hours for a nondispersed configuration. The NRC found the NEI guidance to be an effective means for mitigating the potential loss of large areas due to fires or explosions.

Further, other organizations, such as Sandia National Laboratory, have confirmed the effectiveness of the additional mitigation strategies to maintain spent fuel cooling in the event the pool is drained and its initial water inventory is reduced or lost entirely. The analyses conducted by the Sandia National Laboratories (collectively, the "Sandia studies"), are sensitive security related information and are not available to the public. The Sandia studies considered spent fuel loading patterns and other aspects of a pressurized-water reactor SFP and a boiling water reactor SFP, including the role that the circulation of air plays in the cooling of spent fuel. The Sandia studies indicated that there may be a significant amount of time between the initiating event (i.e., the event that causes the SFP water level to drop) and the spent fuel assemblies becoming partially or completely uncovered. In addition, the Sandia studies indicated that for those hypothetical conditions where air cooling may not be effective in preventing a zirconium fire, there is a significant amount of time between the spent fuel becoming uncovered and the possible onset of such a zirconium fire, thereby providing a substantial opportunity for both operator and system event mitigation.

The Sandia studies, which account for relevant heat transfer and fluid flow mechanisms, also indicated that air-cooling of spent fuel would be sufficient to prevent SFP zirconium fires at a point much earlier following fuel offload from the reactor than previously considered (e.g., in NUREG-1738). Thus, the fuel is more easily cooled, and the likelihood of an SFP fire is therefore reduced.

Additional mitigation strategies implemented subsequent to 9/11 enhance spent fuel coolability, and the potential to recover SFP water level and cooling prior to a potential SFP zirconium fire. The Sandia studies also confirmed the effectiveness of additional mitigation strategies to maintain spent fuel cooling in the event the pool is drained and its initial water inventory is reduced or lost entirely. Based on this more recent information, and the implementation of additional strategies following 9/11, the probability of a SFP zirconium fire initiation is expected to be less than reported in NUREG-1738 and previous studies.

The NUREG-2161, "Consequence Study of a Beyond-Design-Basis Earthquake Affecting the Spent Fuel Pool for a U.S. Mark I Boiling Water Reactor," dated September 2014 (ADAMS Accession No. ML14255A365), evaluated the potential benefits of strategies required in § 50.54(hh)(2). The NUREG-2161 found that successful implementation of mitigation strategies significantly reduces the likelihood of a release from the SFP in the event of a loss of cooling water. Additionally, NUREG-2161 found that the placement of spent fuel in a dispersed configuration in the SFP, such as the 1 x 4 pattern, would have a positive effect in promoting natural circulation, which enhances air coolability and thereby reduces the likelihood of a release from a completely drained SFP. An information notice titled, "Potential Safety Enhancements to Spent Fuel Pool Storage," dated November 14, 2014 (ADAMS Accession No.ML14218A493), was issued to all licensees informing them of the insights from NUREG-2161. This information notice describes the benefits of storing spent fuel in more favorable loading patterns, placing spent fuel in dispersed patterns immediately after core offload, and taking action to improve mitigation strategies.

In addition, in response to the Fukushima Dai-ichi accident, the NRC is currently implementing regulatory actions to further enhance reactor and SFP safety. On March 12,

2012, the NRC issued Order EA-12-051, “Issuance of Order to Modify Licenses with Regard to Reliable Spent Fuel Pool Instrumentation,” (ADAMS Accession No. ML12054A679), which requires that licensees install reliable means of remotely monitoring wide-range SFP levels to support effective prioritization of event mitigation and recovery actions in the event of a beyond-design-basis external event. Although the primary purpose of the order was to ensure that operators were not distracted by uncertainties related to SFP conditions during the accident response, the improved monitoring capabilities will help in the diagnosis and response to potential losses of SFP integrity. In addition, on March 12, 2012, the NRC issued Order EA-12-049, “Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events,” (ADAMS Accession No. ML12054A735), which requires licensees to develop, implement, and maintain guidance and strategies to maintain or restore SFP cooling capabilities, independent of alternating current power, following a beyond-design-basis external event. These requirements ensure a more reliable and robust mitigation capability is in place to address degrading conditions in SFPs.

The NRC believes that much of the information in the SFP studies that have been accomplished since NUREG-1738, as discussed previously, will contribute to the development of a regulatory basis for the current power reactor decommissioning rulemaking effort.

In the SRM to SECY-14-0118, “Request by Duke Energy Florida, Inc., for Exemptions from Certain Emergency Planning Requirements,” dated December 30, 2014 (ADAMS Accession No. ML14364A111), the Commission directed the NRC staff to proceed with rulemaking on reactor decommissioning and set an objective of early 2019 for its completion. The Commission also stated that this rulemaking should address the following:

- Issues discussed in SECY-00-0145 such as the graded approach to emergency preparedness;

- Lessons learned from the plants that have already (or are currently) going through the decommissioning process;
- The advisability of requiring a licensee's post-shutdown decommissioning activity report (PSDAR) to be approved by the NRC;
- The appropriateness of maintaining the three existing options (DECON, SAFSTOR, and ENTOMB[1]) for decommissioning and the timeframes associated with those options;
- The appropriate role of State and local governments and nongovernmental stakeholders in the decommissioning process; and
- Any other issues deemed relevant by the NRC staff.

In SECY-15-0014, "Anticipated Schedule and Estimated Resources for a Power Reactor Decommissioning Rulemaking," dated January 30, 2015 (ADAMS Accession No. ML15082A089-redacted), the NRC staff committed to proceed with a rulemaking on reactor decommissioning and provided an anticipated schedule and estimate of the resources required for the completion of a decommissioning rulemaking. In SECY-15-0127, "Schedule, Resource Estimates, and Impacts for the Power Reactor Decommissioning Rulemaking," dated October 7, 2015, (non-publicly available), the staff provided further information to the Commission on resource estimates and work that will be delayed or deferred in fiscal year (FY) 2016 to enable

[1] These options were first identified in the 1988 Generic Environmental Impact Statement and defined as follows:

> DECON: The equipment, structures, and portions of the facility and site that contain radioactive contaminants are promptly removed or decontaminated to a level that permits termination of the license shortly after cessation of operations.
> SAFSTOR: The facility is placed in a safe, stable condition and maintained in that state (safe storage) until it is subsequently decontaminated and dismantled to levels that permit license termination. During SAFSTOR, a facility is left intact, but the fuel has been removed from the reactor vessel, and radioactive liquids have been drained from systems and components and then processed. Radioactive decay occurs during the SAFSTOR period, thus reducing the quantity of contaminated and radioactive material that must be disposed of during decontamination and dismantlement. The definition of SAFSTOR also includes the decontamination and dismantlement of the facility at the end of the storage period.
> ENTOMB: Radioactive systems, structures, and components are encased in a structurally long-lived substance, such as concrete. The entombed structure is appropriately maintained, and continued surveillance is carried out until the radioactivity decays to a level that permits termination of the license.

the staff to make timely progress consistent with Commission direction to have a final rule submitted to the Commission by the end of FY 2019.

B. Licensing Actions Related to Decommissioning Power Reactors

In 2013, four power reactor units permanently shut down without significant advance notice or pre-planning. These licensees and the associated shut down reactors are: Duke Energy Florida for Crystal River Unit 3 Nuclear Generation Plant; Dominion Energy Kewaunee for Kewaunee Power Station; and Southern California Edison for San Onofre Nuclear Generating Station, Units 2 and 3.

On December 29, 2014, Entergy Nuclear Operations, Inc., shut down Vermont Yankee Nuclear Power Station (VY), and on January 12, 2015, the licensee certified that VY had permanently ceased operation and removed fuel from the reactor vessel. Furthermore, Exelon Generation Company, the licensee for the Oyster Creek Nuclear Generating Station, has indicated that it is currently planning to shut down that facility in 2019.

Both the decommissioning reactor licensees and the NRC have expended substantial resources processing licensing actions for these power reactors during their transition period to a decommissioning status. Consistent with the power reactors that permanently shutdown in the 1990s, the licensees that are currently transitioning to decommissioning are establishing a long-term regulatory framework based on the low risk of an offsite radiological release posed by a decommissioning reactor. The licensees are seeking NRC approval of exemptions and amendments, to reduce requirements no longer needed or no longer relevant for permanently shutdown reactors.

The NRC has not identified any significant risks to public health and safety in the current regulatory framework for decommissioning power reactors. Consequently, the need for a power reactor decommissioning rulemaking is not based on any identified safety-driven or security-driven concerns. When compared to an operating reactor, the risk of an offsite radiological release is significantly lower, and the types of possible accidents are significantly fewer, at a nuclear power reactor that has permanently ceased operations and removed fuel from the reactor vessel. Although the need for a power reactor decommissioning rulemaking is not based on safety concerns, the NRC understands that the decommissioning process can be improved and made more efficient and predictable by reducing its reliance on processing licensing actions to achieve a long-term regulatory framework for decommissioning. Therefore, the primary objective of the decommissioning rulemaking is to implement appropriate regulatory changes that reduce the number of licensing actions needed during decommissioning.

The NRC anticipates that a power reactor decommissioning rulemaking will require substantial interactions with all stakeholders. The information developed in SECY-00-0145 provides a historical perspective on the regulatory challenges that the NRC is facing for those licensees currently transitioning to decommissioning. In addition, SECY-00-0145 serves as a good starting point for the current reactor decommissioning rulemaking effort. However, as a result of the changes to operating reactor regulations in the areas of EP and security after September 11, 2001, and the earthquake and tsunami affecting the Fukushima Dai-ichi nuclear power station in Japan, there will likely be many differences in the current rulemaking effort as compared to the rulemaking approach proposed in SECY-00-0145. The proposed decommissioning rulemaking effort needs to be carefully scoped to ensure an efficient and timely rulemaking process. Incorporating too broad of a regulatory scope into a single rule was one of the challenges encountered during the prior rulemaking effort.

Until a new decommissioning rulemaking is complete, licensees that are considering decommissioning can use recently completed decommissioning licensing actions as a template for beginning decommissioning activities. In addition, the NRC can use these recent licensing action evaluations as a precedent when processing similar decommissioning actions. The recently completed licensing actions will also provide supporting information for the framework and context of a power reactor decommissioning rulemaking. The NRC has also completed interim staff guidance on processing EP license exemptions (NSIR/DPR- ISG-02, "Emergency Planning Exemption Requests for Decommissioning Nuclear Power Plants," ADAMS Accession No. ML13304B442), and has issued draft interim staff guidance for physical security license exemptions (NSIR/DSP-ISG-03, "Review of Security Exemptions/License Amendment Requests for Decommissioning Nuclear Power Plants," ADAMS Accession No. ML14294A170).

The NRC intends to work closely with all stakeholders to ensure that the decommissioning rulemaking can be achieved within a reasonable timeframe.

III. Discussion

The NRC has determined that interaction with the public and stakeholders will help to inform the development of a regulatory basis for the power reactor decommissioning rulemaking. This ANPR is structured around questions intended to solicit information that: 1) defines the scope of stakeholder interest in a decommissioning rulemaking, and 2) supports the development of a complete and adequate regulatory basis. Commenters should feel free to provide feedback on any aspect of power reactor decommissioning that would support this ANPR's regulatory objective, whether or not in response to a question listed in this ANPR.

IV. Regulatory Objectives

The NRC is developing a proposed rule that would amend the current requirements for power reactors transitioning to decommissioning. Experience has demonstrated that licensees for decommissioning power reactors seek several exemptions and license amendments per site to establish a long-term licensing basis for decommissioning. By issuing a decommissioning rule, the NRC would be able to establish regulations that would maintain safety and security at sites transitioning to decommissioning without the need to grant specific exemptions or license amendments in certain regulatory areas. Specifically, the decommissioning rulemaking would have the following goals: 1) Continue to provide reasonable assurance of adequate protection of the public health and safety and common defense and security at decommissioning power reactor sites; 2) Ensure that the requirements for decommissioning power reactors are clear and appropriate; 3) Codify those issues that are found to be generically applicable to all decommissioning power reactors and have resulted in the need for similarly-worded exemptions or license amendments; and 4) Identify, define, and resolve additional areas of concern related to the regulation of decommissioning power reactors.

A. Applicability to NRC Licenses and Approvals

The NRC would apply these updated requirements to power reactors permanently shut down and defueled and entered into decommissioning.

Accordingly, the NRC envisions that the requirements would apply to the following:

- Nuclear power plants currently licensed under 10 CFR part 50;

- Nuclear power plants currently being constructed under construction permits issued under 10 CFR part 50, or whose construction permits may be reinstated;
- Future nuclear power plants whose construction permits and operating licenses are issued under 10 CFR part 50; and
- Current and future nuclear power plants licensed under 10 CFR part 52.

B. Interim Regulatory Actions

The NRC recognizes that it will take several years to issue a final rule. If additional reactors begin decommissioning before implementation of the final rule, the NRC anticipates that licensees will continue to use existing regulatory processes (for example, exemptions and license amendments) to establish their decommissioning regulatory framework.

V. Specific Considerations

The NRC is seeking stakeholders' input on the following specific areas related to power reactor decommissioning regulations. The NRC asks that commenters provide the bases for their comments (i.e., the underlying rationale for the position stated in the comment) to enable the NRC to have a complete understanding of commenters' positions.

A. Questions related to Emergency Preparedness requirements for decommissioning power reactor licensees

The EP requirements of 10 CFR 50.47, “Emergency Plans,” and appendix E, “Emergency Planning and Preparedness for Production and Utilization Facilities,” to 10 CFR part 50 continue to apply to a nuclear power reactor after permanent cessation of operations and removal of fuel from the reactor vessel. Currently, there are no explicit regulatory provisions distinguishing EP requirements for a power reactor that has been shut down from those for an operating power reactor. The NRC is considering several changes to the EP requirements in 10 CFR part 50, “Domestic Licensing of Production and Utilization Facilities,” including § 50.47, “Emergency Plans;” appendix E to 10 CFR part 50, “Emergency Planning and Preparedness for Production and Utilization Facilities”; § 50.54(s), (q), and (t), and § 50.72(a) and (b). These areas are discussed in more detail in this section. The questions on EP have been listed in this document using the acronym “EP” and sequential numbers.

EP-1: The NRC has previously approved exemptions from the emergency planning regulations in § 50.47 and appendix E to 10 CFR part 50 at permanently shut down and defueled power reactor sites based on the determination that there are no possible design-basis events at a decommissioning licensee’s facility that could result in an offsite radiological release exceeding the limits established by the EPA’s early-phase protective action guidelines of 1 rem at the exclusion area boundary. In addition, the possibility of the spent fuel in the SFP reaching the point of a beyond-design-basis zirconium fire is highly unlikely based on an analysis of the amount of time before spent fuel could reach the zirconium ignition temperature during a SFP partial drain-down event, assuming a reasonably conservative adiabatic heat-up calculation. A minimum of 10 hours is the time that was used in previously approved exemptions, which allows for onsite mitigative actions to be taken by the licensee or actions to be taken by offsite

authorities in accordance with the comprehensive emergency management plans (i.e., all hazards plans). For licensees that have been granted exemptions, the EP regulations, as exempted, continue to require the licensees to, among other things, maintain an onsite emergency plan addressing the classification of an emergency, notification of emergencies to licensee personnel and offsite authorities, and coordination with designated offsite government officials following an event declaration so that, if needed, offsite authorities may implement protective actions using a comprehensive emergency management (all-hazard) approach to protect public health and safety. The EP exemptions relieve the licensee from the requirement to maintain formal offsite radiological emergency preparedness, including the 10-mile emergency planning zone.

a. What specific EP requirements in § 50.47 and appendix E to 10 CFR part 50 should be evaluated for modification, including any EP requirements not addressed in previously approved exemption requests for licensees with decommissioning reactors?

b. What existing NRC EP-related guidance and other documents should be revised to address implementation of changes to the EP requirements?

c. What new guidance would be necessary to support implementation of changes to the EP requirements?

EP-2: Rulemaking may involve a tiered approach for modifying EP requirements based on several factors, including, but not limited to, the source term after cessation of power operations, removal of fuel from the reactor vessel, elapsed time after permanent defueling, and type of long-term onsite fuel storage.

a. What tiers and associated EP requirements would be appropriate to consider for this approach?

b. What factors should be considered in establishing each tier?

c. What type of basis could be established to support each tier or factor?

d. Should the NRC consider an alternative to a tiered approach for modifying EP requirements? If so, provide a description of a proposed alternative.

EP-3: Several aspects of offsite EP, such as formal offsite radiological emergency plans, emergency planning zones, and alert and notification systems, may not be necessary at a decommissioning site when beyond-design-basis events—which could result in the need for offsite protective actions—are few in number and highly unlikely to occur.

a. Presently, licensees at decommissioning sites must maintain the following capabilities to initiate and implement emergency response actions: classify and declare an emergency, assess releases of radioactive materials, notify licensee personnel and offsite authorities, take mitigative actions, and request offsite assistance if needed. What other aspects of onsite EP and response capabilities may be appropriate for licensees at decommissioning sites to maintain once the requirements to maintain formal offsite EP are discontinued?

b. To what extent would it be appropriate for licensees at decommissioning sites to arrange for offsite assistance to supplement onsite response capabilities? For example, licensees at decommissioning sites would maintain agreements with offsite authorities for fire, medical, and law enforcement support.

c. What corresponding changes to § 50.54(s)(2)(ii) and 50.54(s)(3) (about U.S. Federal Emergency Management Agency (FEMA)-identified offsite EP deficiencies and FEMA offsite EP findings, respectively) may be appropriate when offsite radiological emergency plans would no longer be required?

EP-4: Under § 50.54(q), nuclear power reactor licensees are required to follow and maintain the effectiveness of emergency plans that meet the standards in § 50.47 and the requirements in appendix E to 10 CFR part 50. These licensees must submit to the NRC, for prior approval, changes that would reduce the effectiveness of their emergency plans.

a. Should § 50.54(q) be modified to recognize that nuclear power reactor licensees, once they certify under § 50.82, "Termination of License," to have permanently ceased operation and permanently removed fuel from the reactor vessel, would no longer be required to meet all standards in § 50.47 and all requirements in appendix E? If so, describe how.

b. Should nuclear power reactor licensees, once they certify under § 50.82 to have permanently ceased operation and permanently removed fuel from the reactor vessel, be allowed to make emergency plan changes based on § 50.59, "Changes, Tests, and Experiments," impacting EP related equipment directly associated with power operations? If so, describe how this might be addressed under § 50.54(q).

EP-5: Under § 50.54(t), nuclear power reactor licensees are required to review all EP program elements every 12 months. Some EP program elements may not apply to permanently shut down and defueled sites; for example, the adequacy of interfaces with State and local government officials when offsite radiological emergency plans may no longer be required.

Should § 50.54(t) be clarified to distinguish between EP program review requirements for operating versus permanently shut down and defueled sites? If so, describe how.

EP-6: The Emergency Response Data System (ERDS) transmits key operating plant data to the NRC during an emergency. Under § 50.72(a)(4), nuclear power reactor licensees are required to activate ERDS within 1 hour after declaring an emergency at an “Alert” or higher emergency classification level. Much of the plant data, and associated instrumentation for obtaining the data, would no longer be available or needed after a reactor is permanently shut down and defueled. Section VI.2 to appendix E of 10 CFR part 50 does not require a nuclear power facility that is shut down permanently or indefinitely to have ERDS. At what point(s) in the decommissioning process should ERDS activation, ERDS equipment, and the instrumentation for obtaining ERDS data, no longer be necessary?

EP-7: Under § 50.72(a)(1)(i), nuclear power reactor licensees are required to make an immediate notification to the NRC for the declaration of any of the emergency classes specified in the licensee's NRC-approved emergency plan. Notification of the lowest level of a declared emergency at a permanently shut down and defueled reactor facility may no longer need to be an immediate notification (e.g., consider changing the immediate notification category for a Notification of Unusual Event emergency declaration to a 1-hour notification). What changes to § 50.72(a)(1)(i) should be considered for decommissioning sites?

EP-8: Under § 50.72(b)(3)(xiii), nuclear power reactor licensees are required to make an 8-hour report of any event that results in a major loss of emergency assessment capability, offsite response capability, or offsite communications capability (e.g., significant portion of control room indication, emergency notification system, or offsite notification system). Certain

parts of this section may not apply to a permanently shut down and defueled site (e.g., a major loss of offsite response capability once offsite radiological emergency plans would no longer be required). What changes to § 50.72(b)(3)(xiii) should be considered for decommissioning sites?

B. Questions related to the physical security requirements for decommissioning power reactor licensees

Currently, the physical protection programs applied at decommissioning reactors are managed through security plan changes submitted to the NRC under the provisions of §§ 50.90 and 50.54(p) and exemptions submitted to the NRC for approval under § 73.5. All physical protection program requirements contained in the current § 73.55, appendix B to 10 CFR part 73, "General Criteria for Security Personnel," and appendix C to 10 CFR part 73, "Licensee Safeguards Contingency Plans," are applicable to operating reactors and decommissioning reactors unless otherwise modified. The questions on physical security requirements (PSR) have been listed in this document using the acronym "PSR" and sequential numbers.

PSR-1: Identify any specific security requirements in § 73.55 and appendices B and C to 10 CFR part 73 that should be considered for change to reflect differences between requirements for operating reactors and permanently shut down and defueled reactors.

PSR-2: The physical security requirements protecting the spent fuel stored in the SFP from the design basis threat (DBT) for radiological sabotage are contained in 10 CFR part 73 and would remain unchanged by this rulemaking. However:

a. Are there any suggested changes to the physical security requirements in 10 CFR part 73 or its appendices that would be generically applicable to a decommissioning power reactor while spent fuel is stored in the SFP (e.g., are there circumstances where the minimum number of armed responders could be reduced at a decommissioning facility)? If so, describe them.

b. Which physical security requirements in 10 CFR part 73 should be generically applicable to spent fuel stored in a dry cask independent spent fuel storage installation?

c. Should the DBT for radiological sabotage continue to apply to decommissioning reactors? If it should cease to apply in the decommissioning process, when should it end?

PSR-3: Should the NRC develop and publish additional security-related regulatory guidance specific to decommissioning reactor physical protection requirements, or should the NRC revise current regulatory guidance documents? If so, describe them.

PSR-4: What clarifications should the NRC make to target sets in § 73.55(f) that addresses permanently shut down and defueled reactors?

PSR-5: For a decommissioning power reactor, are both the central alarm station and a secondary alarm station necessary? If not, why not? If both alarm stations are considered necessary, could the secondary alarm station be located offsite?

PSR-6: Under § 73.54, power reactor licensees are required to protect digital computer and communication systems and networks. These requirements apply to licensees licensed to operate a nuclear power plant as of November 23, 2009, including those that have subsequently shut down and entered into decommissioning.

a. Section 73.54 clearly states that the requirements for protection of digital computer and communications systems and networks apply to power reactors licensed under 10 CFR part 50 that were licensed to operate as of November 23, 2009. However, § 73.54 does not explicitly mention the applicability of these requirements to power reactors that are no longer authorized to operate and are transitioning to decommissioning. Are any changes necessary to § 73.54 to explicitly state that decommissioning power reactors are within the scope of § 73.54? If so, describe them.

b. Should there be reduced cyber security requirements in § 73.54 for decommissioning power reactors based on the reduced risk profile during decommissioning? If so, what would be the recommended changes?

PSR-7: Under § 73.55(p)(1)(i) and (p)(1)(ii), power reactor licensees suspend security measures during certain emergency conditions or during severe weather under the condition that the suspension "must be approved as a minimum by a licensed senior operator." Literal interpretation of these regulations would require that only a licensed senior operator could suspend certain security measures at a decommissioning reactor facility. However, for permanently shut down and defueled reactors, licensed operators are no longer required, and licensees typically eliminate these positions shortly after shut down. Decommissioning licensees create a new certified fuel handler (CFH) position (consistent with the definition in § 50.2) as the senior non-licensed operator at the plant. These positions cannot be compared directly, so licensees typically are unable to demonstrate that the CFH position meets the "as a

minimum" criteria in § 73.55(p). Because the regulation does not include a provision that authorizes a CFH to approve the suspension of security measures for permanently shut down and defueled reactors (similar to § 50.54(y) authorizing the CFH to approve departures from license conditions or technical specifications), licensees have requested exemptions from § 73.55(p)(1)(i) and (p)(1)(ii) to allow CFHs to have this authority.

Based on this discussion, are there any concerns about changing the regulations to include the CFH as having the authority to suspend certain security measures during certain emergency conditions or during severe weather for permanently shut down and defueled reactor facilities? If so, describe them.

PSR-8: Regulations in § 73.55(j)(4)(ii) require continuous communications capability between security alarm stations and the control room. The intent of § 73.55(j)(4)(ii) is to ensure that effective communication between the alarm stations and operations staff with shift command function responsibility is maintained at all times. The control room at an operating reactor contains the controls and instrumentation necessary to ensure safe operation of the reactor and reactor support systems during normal, off-normal, and accident conditions and, therefore, is the location of the shift command function. Following certification of permanent shut down and removal of the fuel from the reactor, operation of the reactor is no longer permitted. Although the control room at a permanently shut down and defueled reactor provides a central location from where the shift command function can be conveniently performed because of existing communication equipment, office computer equipment, and access to reference material, the control room does not need to be the location of the shift command function since shift command functions are not tied to this location for safety reasons, and modern communication systems permit continuous communication capability from anywhere on the site.

The NRC is considering revising the requirements of § 73.55(j)(4)(ii) for a permanently shut down and defueled reactor. The revised requirements would be focused on maintaining a system of continuous communications between the shift manager/CFH and the security alarm stations (rather than the control room). Such a change would provide the facility's shift manager/CFH the flexibility to leave the control room without necessitating that other operational staff remain in the control room to receive communications from the security alarm stations. Personal communications systems would permit the shift manager/CFH to perform managerial and supervisory activities throughout the plant while maintaining the command function responsibility, regardless of the supervisor's location.

Based on the discussion above, are there any concerns related to changing the regulations in § 73.55(j)(4)(ii) to allow another communications system between the alarm stations and the shift manager/CFH in lieu of the control room at permanently shut down and defueled reactors? If so, describe them.

C. Questions related to fitness for duty (FFD) requirements for decommissioning power reactor licensees

The NRC's regulations at § 26.3 lists those licensees and other entities that are required to comply with designated subparts of 10 CFR part 26, "Fitness for Duty Programs." Part 26 does not apply to power reactor licensees that have certified under § 50.82 to have permanently shut down and defueled. The questions on fitness for duty (FFD) have been listed in this document using the acronym "FFD" and sequential numbers.

FFD-1: Currently, holders of power reactor licenses issued under 10 CFR part 50 or 10 CFR part 52, “Licenses, Certifications, and Approvals for Nuclear Power Plants,” must comply with the physical protection requirements described in § 73.55 during decommissioning. Under § 73.55, each nuclear power reactor licensee shall maintain and implement its Commission-approved security plans as long as the licensee has a 10 CFR part 50 or 52 license. Furthermore, § 73.55(b)(9) requires the licensee to establish, maintain, and implement an insider mitigation program (IMP) that contains elements from various security programs, including the FFD program described in 10 CFR part 26. Each power reactor licensee has committed within its security plan to using NEI 03-12, “Security Plan Template,” revision 7, as the framework for developing its security plans to meet the requirements of § 73.55. NEI 03-12, which was endorsed by NRC Regulatory Guide (RG) 5.76, “Physical Protection Programs at Nuclear Power Reactors (Safeguards Information (SGI)),” letter dated November 10, 2011, states that the IMP is satisfied when the licensee “implements the elements of the IMP, utilizing the guidance provided in RG 5.77, ’Insider Mitigation Program.’” The NRC is in the process of revising RG 5.77 in order to clarify those FFD elements needed for the IMP.

a. Should the NRC pursue rulemaking to describe what provisions of 10 CFR part 26 apply to decommissioning reactor licensees or use another method of establishing clear, consistent and enforceable requirements? Describe other methods, as appropriate.

b. As an alternative to rulemaking, should the drug and alcohol testing for decommissioning reactors be described in RG 5.77, with appropriate reference to the applicable requirements in 10 CFR part 26? This option would be contingent on an NEI commitment to revise NEI 03-12 to include the most recent revision to RG 5.77 (which would include the applicable drug and alcohol testing provisions) and an industry commitment to update their security plans with the revised NEI 03-12.

c. Describe what drug and alcohol testing requirements in 10 CFR part 26 are not necessary to fulfill the IMP requirements to assure trustworthiness and reliability.

d. Should another regulatory framework be used, such as a corporate drug testing program modelled on the U.S. Department of Health and Human Services' Mandatory Guidelines for Federal Workplace Drug Testing or the U.S. Department of Transportation's drug and alcohol testing provisions in 49 CFR part 40? If this option is proposed, describe how (i) the laboratory auditing, quality assurance, and reporting requirements would be met by the proposal; (ii) licensees would conduct alcohol testing; and (iii) the performance objectives of 10 CFR 26.23(a), (b), (c), and (d) would be met.

FFD-2: On March 31, 2008, the NRC published a final rule in the *Federal Register* (73 FR 16966) adding subpart I, "Managing Fatigue," to 10 CFR part 26. The addition of subpart I in the revised rule provides reasonable assurance that the effects of fatigue and degraded alertness on an individual's ability to safely and competently perform his or her duties are managed commensurate with maintaining public health and safety. The fatigue management provisions also reduce the potential for worker fatigue (e.g., that associated with security officers, maintenance personnel, control room operators, emergency response personnel, etc.) to adversely affect the common defense and security. The 2008 rule established clear and enforceable requirements for operating nuclear power plant licensees and other entities for the management of worker fatigue. Power reactor licensees that had permanently shut down and defueled were not considered within the scope of that rulemaking effort. This is because the scope of activities at a facility undergoing decommissioning is much less likely to create a public health and safety concern due to the significantly reduced risk of a radiological event.

a. Should any of the fatigue management requirements of 10 CFR part 26, subpart I, apply to a permanently shut down and defueled reactor? If so, which ones?

b. Based on the lower risk of an offsite radiological release from a decommissioning reactor, compared to an operating reactor, should only specific classes of workers, as identified in § 26.4(a) through (c), be subject to fatigue management requirements (e.g., security officers or certified fuel handlers)? Please provide what classes of workers should be subject to the requirements and a justification for their inclusion.

c. Should the fatigue management requirements of 10 CFR part 26, subpart I, continue to apply to the specific classes of workers identified in response to question b above, for a specified period of time (e.g., until a specified decay heat level is reached within the SFP, or until all fuel is in dry storage)? Please provide what period of time workers would be subject to the requirements and the justification for the timing.

d. Should an alternate approach to fatigue management be developed commensurate with the plant's lower risk profile? Please provide a discussion of the alternate approach and how the measures would adequately manage fatigue for workers.

D. Questions related to training requirements of certified fuel handlers for decommissioning power reactor licensees

Reactor operators are licensed under 10 CFR part 55 to manipulate the controls of operating power reactors. The regulations at § 55.4 define "controls" to mean, "when used with respect to a nuclear reactor . . . apparatus and mechanisms the manipulation of which directly affects the reactivity or power level of the reactor." "Controls" are not relevant at decommissioning reactors because the reactors are permanently shutdown and defueled and no longer authorized to load fuel into the reactor vessel. Consequently, without fuel in the

reactor vessel, decommissioning reactors are in a configuration in which the reactivity or power level of the reactor is no longer meaningful and there are no conditions where the manipulation of apparatus or mechanisms can affect the reactivity or power level of the reactor. Therefore, licensed operators are not required at decommissioning reactors. The NRC regulations do not explicitly state the staffing alternative for licensed operators after a reactor has permanently shutdown and defueled under § 50.82(a)(1). When licensees permanently shut down their reactors, they must continue to meet minimum staffing requirements in technical specifications and regulatory required programs (e.g., emergency response organizations, fire brigade, security, etc.). Given the reduced risk of a radiological incident once the certifications of permanent cessation of operation and permanent removal of fuel from the reactor vessel have been submitted, licensees typically transition their operating staff to a decommissioning organization. This transition includes replacing licensed operators with CFHs as the on-shift management representative responsible for supervising and directing the monitoring, storage, handling, and cooling of irradiated nuclear fuel in a manner consistent with ensuring the health and safety of the public. Regulations in § 50.2 define a CFH for a nuclear power reactor as a non-licensed operator who has qualified in accordance with a fuel handler training program approved by the Commission. The transition to the use of CFHs from licensed operators at decommissioning reactors occurs following the NRC's approval of a licensee's CFH training program and an amendment to the administrative and organization section of the licensee's defueled technical specifications.

However, the NRC regulations do not contain criteria for an acceptable CFH training program. Because of the reduced risks and relative simplicity of the systems needed for safe storage of the spent fuel, the Commission stated in the 1996 decommissioning final rule that

"[t]he degree of regulatory oversight required for a nuclear power reactor during its decommissioning stage is considerably less than that required for the facility during its operating stage" (61 FR 39278). In the proposed rule, the Commission also provided insights as to the responsibilities of the CFH position. Specifically, the CFHs are needed at decommissioning reactors to ensure that emergency action decisions necessary to protect the public health and safety are made by an individual who has both the requisite knowledge and plant experience (60 FR 37374, 37379).

In previous evaluations of licensee CFH training programs (ADAMS Accession Nos. ML14104A046, ML13268A165), the NRC has determined that an acceptable CFH training program should ensure that the trained individual has requisite knowledge and experience in spent fuel handling and storage and reactor decommissioning, and is capable of evaluating plant conditions and exercising prudent judgment for emergency action decisions. In addition, since the CFH is defined as a non-licensed operator, the NRC staff has also evaluated the CFH training program in accordance with § 50.120, which includes a requirement in § 50.120(b)(2) that the training program must be derived from a systems approach to training as defined in § 55.4.

However, as previously noted, the specific training requirements for the CFH program are not in the regulations. In addition, § 50.120 specifies the training and qualification requirements for non-licensed reactor personnel but does not address the CFH staffing position. Because the regulations are silent on the training attributes of the CFH, regulatory uncertainty regarding the CFH training program exists. In addition, because the NRC's regulations do not address the replacement of licensed operators by CFHs, licensees also have questions regarding the transition from licensed operator training programs to CFHs' training programs. The questions on CFH have been listed in this document using the acronym "CFH" and sequential numbers.

CFH-1: Based on the NRC's experience with the review of the CFH training/retraining programs submitted by licensees that have recently permanently shutdown, the following questions are focused on areas that may need additional clarity. Specifically:

a. When should licensees that are planning to enter decommissioning submit requests for approval of CFH training/retraining programs?

b. What training and qualifications should be required for operations staff at power reactors that decommission earlier than expected and that do not have an approved CFH training/retraining program?

c. Should the NRC issue new requirements that prohibit licensees from surrendering operators' licenses before implementation of an approved CFH training/retraining program, or should other incentives or deterrents be considered? If so, what factors must be included?

d. Should the contents of a CFH training/retraining program be standardized throughout the industry? If so, how should this be implemented?

e. Should a process be implemented that requires decommissioning power reactor licensees to independently manage the specific content of their CFH training/retraining program based on the systems and processes actually used at each particular plant instead of standardization? If so, how should this work?

f. Is there any existing or developing document or program (from the Institute of Nuclear Power Operations, NEI, NRC, or other related sources) that provides relevant guidance on the content and format of a CFH training/retraining program that could be made applicable to CFH training?

g. Should the requirements for CFH training programs be incorporated into an overall decommissioning rule, or addressed using other regulatory vehicles such as associated

NUREGs, regulatory guides, standard review plan chapters or sections, and inspection procedures?

E. Questions related to the current regulatory approach for decommissioning power reactor licensees

In the SRM to SECY-15-0014, the Commission directed the staff to determine the appropriateness of (1) maintaining the three existing options for decommissioning and the timeframes associated with those options, and (2) address the appropriate role of State and local governments and non-governmental stakeholders in the decommissioning process. Based on the Commission's direction, the NRC staff is seeking additional information on the need for any regulatory changes concerning the use of decommissioning options, the timeframe to complete decommissioning, and the role of external stakeholders in the decommissioning process. The questions on regulatory approach (REG) have been listed in this document using the acronym "REG" and sequential numbers.

REG-1: The NRC has evaluated the environmental impacts of three general methods for decommissioning power reactor facilities, DECON, SAFSTOR, or ENTOMB, as described in Section II.A, footnote 1 of this document. The choice of the decommissioning method is left entirely to the licensee, provided that the decommissioning method can be performed in accordance with NRC's regulations. The NRC would require the licensee to re-evaluate its decision on the method of the decommissioning process that it chose if it (1) could not be completed as described, (2) could not be completed within 60 years of the permanent cessation of plant operations, (3) included activities that would endanger the health and safety of the public by being outside of the NRC's health and safety regulations, or (4) would result in a

significant impact to the environment. The licensee's choice is communicated to the NRC and the public in the PSDAR. To date, most utilities have used DECON or SAFSTOR to decommission reactors. Several sites have performed some incremental decontamination and dismantlement during the storage period of SAFSTOR, a combination of SAFSTOR and DECON as personnel, money, or other factors become available. No utilities have used the ENTOMB option for a commercial nuclear power reactor.

a. Should the current options for decommissioning—DECON, SAFSTOR, and ENTOMB—be explicitly addressed and defined in the regulations instead of solely in guidance documents, and how so?

b. Should other options for decommissioning be explored? If so, what other technical or programmatic options are reasonable and what type of supporting documents would be most effective for providing guidance on these new options or requirements?

c. The NRC regulations state that decommissioning must be completed within 60 years of permanent cessation of operations. A duration of 60 years was chosen because it roughly corresponds to 10 half-lives for cobalt-60, one of the predominant isotopes remaining in the facility. By 60 years, the initial short-lived isotopes, including cobalt-60, will have decayed to background levels. In addition, the 60-year period appears to be reasonable from the standpoint of expecting institutional controls to be maintained. Completion of decommissioning beyond 60 years will be approved by the NRC only when necessary to protect public health and safety. Should the requirements be changed so that the timeframe for decommissioning is something other than the current 60-year limit? Would this change be dependent on the method of decommissioning chosen, site specific characteristics, or some other combination of factors? If so, please describe.

REG-2: In support of decommissioning planning for a permanently shut down and defueled power reactor, the licensee submits to the NRC a PSDAR that: (1) informs the public of the licensee's planned decommissioning activities; (2) assists in the scheduling of NRC resources necessary for the appropriate oversight activities; (3) ensures that the licensee has considered the costs of the planned decommissioning activities and has funding for the decommissioning process; and (4) ensures that the environmental impacts of the planned decommissioning activities are bounded by those considered in existing environmental impact statements. After receiving a PSDAR, the NRC publishes a notice of receipt, makes the PSDAR available for public review and comment, and holds a public meeting in the vicinity of the plant to discuss the licensee's plans and address the public's comments. Although the NRC will determine if the information is consistent with the regulations, NRC approval of the PSDAR is not required. However, should the NRC determine that the informational requirements of the regulations are not met in the PSDAR, the NRC will inform the licensee, in writing, of the deficiencies and require that they be addressed before the licensee initiates any major decommissioning activities. Any decommissioning activities that could preclude release of the site for possible unrestricted use, impact a reasonable assurance finding that adequate funds will be available for decommissioning, or potentially result in a significant environmental impact not previously reviewed, must receive prior NRC approval. Specifically, the licensee is required to submit a license amendment request for NRC review and approval, which provides an opportunity for public comment and/or a public hearing. Unless the NRC staff approves the license amendment request, the licensee is not to conduct the requested activity. Consistent with Commission direction, the NRC staff is seeking comment on the appropriate role for the NRC in reviewing and approving the licensee's proposed decommissioning strategy and associated planning activities.

a. Is the content and level of detail currently required for the licensee's PSDAR, adequate? If not, what should be added or removed to enhance the document?

b. Should the regulations be amended to require NRC review and approval of the PSDAR before allowing any "major decommissioning activity," as that term is defined in § 50.2, to commence? What value would this add to the decommissioning process?

REG-3: The NRC's regulations currently offer the public opportunities to review and provide comments on the decommissioning process. Specifically, under the NRC's regulations in § 50.82, the NRC is required to publish a notice of the receipt of the licensee's PSDAR, make the PSDAR available for public comment, schedule separate meetings in the vicinity of the location of the licensed facility to discuss the PSDAR within 60 days of receipt, and publish a notice of the meetings in the *Federal Register* and another forum readily accessible to individuals in the vicinity of the site. For many years, the NRC has strongly recommended that licensees involved in decommissioning activities form a community committee to obtain local citizen views and concerns regarding the decommissioning process and spent fuel storage issues. It has been the NRC's view that those licensees who actively engage the community maintain better relations with the local citizens. The NRC's guidance related to creating a site-specific community advisory board can be found in NUREG-1757, "Consolidated Decommissioning Guidance," Appendix M, "Overview of the Restricted Use and Alternate Criteria Provisions of 10 CFR Part 20, Subpart E," Section M.6 (ADAMS Accession No. ML063000243). Appendix M does not require licensees to create a community advisory board, but only provides recommendations for methods of soliciting public advice. Nonetheless, Section M.6 contains useful guidance and suggestions for effective public involvement in the decommissioning process that could be adopted by any licensee.

a. Should the current role of the States, members of the public, or other stakeholders in the decommissioning process be expanded or enhanced, and how so?

b. Should the current role of the States, members of the public, or other stakeholders in the decommissioning process for non-radiological areas be expanded or enhanced, and how so? Currently, for all non-radiological effluents created during the decommissioning process, licensees are required to comply with EPA or State regulations related to liquid effluent discharges to bodies of water.

c. For most decommissioning sites, the State and local governments are involved in an advisory capacity, often as part of a Community Engagement Panel or other organization aimed at fostering communication and information exchange between the licensee and the public. Should the NRC's regulations mandate the formation of these advisory panels?

F. Questions related to the application of backfitting protection to decommissioning power reactor licensees

In the SRM to SECY-98-253, "Applicability of Plant-Specific Backfit Requirements to Plants Undergoing Decommissioning," dated February 12, 1999 (ADAMS Accession No. ML12311A689), the Commission approved development of a Backfit Rule for plants undergoing decommissioning. The Commission directed the staff to continue to apply the then-current Backfit Rule to plants undergoing decommissioning until the final rule was issued. The Commission ordered the development of a rulemaking plan, which became SECY-00-0145. In SECY-00-0145, the staff proposed amendments to § 50.109 to clearly show that the Backfit Rule applies during decommissioning and to remove factors that are not applicable to nuclear power plants in decommissioning. As explained in section II.A of this document, that

rulemaking never occurred, but the Commission, in SRM-SECY-14-0118, directed the staff to proceed with a rulemaking that addresses, among other things, the issues discussed in SECY-00-0145.

The questions on backfitting protection (BFP) have been listed in this document using the acronym “BFP” and sequential numbers.

BFP-1: The protections provided by the backfitting and issue finality provisions in 10 CFR parts 50 and 52, respectively, can apply to a holder of a nuclear power reactor license when the reactor is in decommissioning. Backfitting and issue finality during decommissioning can be divided into two areas:

a. When a licensee’s licensing basis for operations continues to apply during decommissioning until: (1) the licensee changes the licensing basis, (2) the NRC’s regulations set forth generic criteria delineating when changes can be made to the licensing basis, or (3) the NRC takes a facility-specific action that changes the licensee’s licensing basis. Why would backfitting protection apply in this area?

b. When a licensee engages in an activity during decommissioning for which no prior NRC approval was provided. The activity could be required by an NRC regulation or new NRC approval (through an order or licensing action). Why would backfitting protection apply in this area?

BFP-2: Should the NRC propose amendments to § 50.109 consistent with the preliminary amendments proposed in SECY-00-0145 that would have created a two-section Backfit Rule: one section that would apply to nuclear power plants undergoing decommissioning and the other section that would apply to operating reactors?

G. Questions related to decommissioning trust funds

The questions on decommissioning trust fund (DTF) have been listed in this document using the acronym “DTF” and sequential numbers.

DTF-1: The Commission’s regulation at § 50.75 includes the reporting requirements for providing reasonable assurance that sufficient funds will be available for the decommissioning process. The regulation at § 50.82 contains, in part, requirements on the use of decommissioning funds. Every 2 years each operating power reactor licensee must report to the NRC the status of the licensee’s decommissioning funding to provide assurance to the NRC that the licensee will have sufficient financial resources to accomplish radiological decommissioning. After decommissioning has begun, licensees must annually submit a financial assurance status report to the NRC.

The NRC’s authority is limited to assuring that licensees adequately decommission their facilities with respect to cleanup and removal of radioactive material prior to license termination. Activities that go beyond the scope of decommissioning, as defined in § 50.2, such as waste generated during operations or demolition costs for greenfield restoration, are not appropriate costs for inclusion in the decommissioning cost estimate. The collection of funds for spent fuel management is addressed in § 50.54(bb) where it indicates that licensees need to have a plan, including financing, for spent fuel management.

The NRC has not precluded the commingling of the funds in a single trust fund account to address radiological decommissioning, spent fuel management, and site restoration, as long as the licensee is able to identify and account for these specific funds. In the 1996

decommissioning rule, the Commission indicated that the rule "does not prohibit licensees from having separate subaccounts for other activities in the decommissioning trust fund if minimum amounts specified in the rule are maintained for radiological decommissioning." Similarly, in the 2002 Decommissioning Trust Provisions Rule, the Commission stated that it "appreciates the benefits that some licensees may derive from their use of a single trust fund for all of their decommissioning costs, both radiological and not; but, as stated above, a licensee must be able to identify the individual amounts contained within its single trust. Therefore, where a licensee has not separately identified and accounted for expenses related to non-radiological decommissioning in its DTF, licensees are required to request exemptions from § 50.82(a)(8)(i)(A) and either § 50.75(h)(1)(iv) or § 50.75(h)(2), to gain access to monies in the decommissioning trust fund for purposes other than decommissioning (e.g., spent fuel management). The NRC has approved exemptions from the requirements of §§ 50.82 and 50.75 allowing withdrawals to be made from decommissioning trust funds for spent fuel management in instances where the level of funding needed to complete decommissioning is not adversely affected. In each instance, the NRC found, pursuant to § 50.12, the exemptions were authorized by law, presented no undue risk to public health and safety, and were consistent with the common defense and security, and found that the application of the rules was unnecessary to achieve the underlying purpose of the rules.

In some cases, a licensee will not need an exemption. Those cases exist when a licensee can clearly show that (1) its decommissioning trust includes State-required funds and (2) the amount of radiological decommissioning funds in the trust exceeds the amount of money estimated to be needed for radiological decommissioning in the licensee's site specific decommissioning cost estimate (or if the licensee does not have a site specific decommissioning cost estimate yet, then the minimum amount necessary to provide financial assurance under § 50.75). If the licensee meets these criteria, then reasonable assurance of

adequate radiological decommissioning funding still exists after removal of the State-required funds, and the licensee does not need an exemption to use those State-required funds.

The NRC issued Regulatory Issue Summary (RIS) 2001-07, Revision 1, "10 CFR 50.75 Reporting and Recordkeeping for Decommissioning Planning," on January 8, 2009 (ADAMS Accession No. ML083440158), to clarify the need for licensees to preserve the distinction in their decommissioning trust accounts between the radiological decommissioning fund balance and amounts accumulated for other purposes, such as paying for spent fuel management and site restoration, when using the trust for commingled funds. However, based on NRC experience with the power reactors that have recently and permanently shut down and entered into decommissioning, licensees continue to report funds they have accumulated to address spent fuel management and site restoration as part of the amount of funds reported for radiological decommissioning.

Should the regulations in §§ 50.75 and 50.82 be revised to clarify the collection, reporting, and accounting of commingled funds in the decommissioning trust fund, that is in excess of the amount required for radiological decommissioning and that has been designated for other purposes, in order to preclude the need to obtain exemptions for access to the excess monies?

DTF-2: The regulation at § 50.82(a)(8)(i)(A) states that decommissioning trust funds may only be used by licensees if their withdrawals "are for expenses for legitimate decommissioning activities consistent with the definition of decommissioning in § 50.2." In accordance with § 50.2, decommission means to remove a nuclear facility or site safely from service and reduce residual radioactivity to a level that permits: (1) release of the property for unrestricted use and termination of the license; or (2) release of the property under restricted

conditions and termination of the NRC license. Thus, “legitimate decommissioning activities” include only those activities whose expenses are related to removing a nuclear facility or site safely from service and reducing residual radioactivity to a level that permits license termination and release of the property for restricted or unrestricted use.

While the regulations are silent with regards to what specific expenses are related to legitimate decommissioning activities, the NRC’s guidance documents identify some specific expenses that may or may not be paid from the decommissioning trust fund. For example, Regulatory Guide (RG) 1.184, Revision 1, “Decommissioning of Nuclear Power Reactors” (ADAMS Accession No. ML13144A840), states that the amount set aside for radiological decommissioning as required by § 50.75 “should not be used for: (1) the maintenance and storage of spent fuel in the spent fuel pool, (2) the design, construction, or decommissioning of spent fuel dry storage facilities directly related to permanent disposal, (3) other activities not directly related to radiological decontamination or dismantlement of the facility or site.” Similarly, other NRC guidance explain that the NRC’s definition of decommissioning does not include other activities related to facility deactivation and site closure, including operation of the spent fuel storage pool, construction and/or operation of an ISFSI, demolition of decontaminated structures, and/or site restoration activities after residual radioactivity has been removed. The NRC also has additional guidance that states that removing uncontaminated material, such as soil or a wall, to gain access to contamination to be removed would be a legitimate decommissioning cost. Finally, guidance also exists that provides examples of activities outside the scope of decommissioning including, “(1) the maintenance and storage of spent fuel, (2) the design and/or construction of a spent fuel dry storage facility, (3) activities that are not directly

related to supporting long-term storage of the facility, or (4) any other activities not directly related to radiological decontamination of the site."

a. What changes should be considered for §§ 50.2 and 50.82(a)(8) to clarify what constitutes a legitimate decommissioning activity?

b. Regulations in § 50.82(8)(ii) states that 3 percent of the decommissioning funds may be used during the initial stages of decommissioning for decommissioning planning activities. What should be included or specifically excluded in the definition of "decommissioning planning activities?"

H. Questions related to offsite liability protection insurance requirements for decommissioning power reactor licensees

The questions on offsite liability protection insurance (LPI) have been listed in this document using the acronym "LPI" and sequential numbers.

LPI-1: The Price Anderson Act of 1957 (PAA) requires that nuclear power reactor licensees have insurance to compensate the public for damages arising from a nuclear incident, including such expenses as those for personal injury, property damage, or the legal cost associated with lawsuits. Regulations in 10 CFR part 140, "Amounts of Financial Protection for Certain Reactors," set forth the amounts of insurance each power reactor licensee must have. Specifically, § 140.11(a)(4) requires a reactor licensee to maintain $375 million in offsite liability insurance coverage. In addition, the primary insurance is supplemented by a secondary insurance tier. In the event of an accident causing offsite damages in excess of $375 million, each licensee would be assessed a prorated share of the excess damages, up to $121.3 million per reactor, for a total of approximately $13 billion.

Regulations in § 140.11(a)(4) do not distinguish between a reactor that is authorized to operate and a reactor that has permanently shut down and defueled. Most of the accident scenarios postulated for operating power reactors involve failures or malfunctions of systems that could affect the fuel in the reactor core, which in the most severe postulated accidents, would involve the release of large quantities of fission products. With the permanent cessation of reactor operations and the permanent removal of the fuel from the reactor core, such reactor accidents are no longer possible with a decommissioning reactor.

The PAA requires licensees of facilities with a rated capacity of 100,000 electrical kilowatts or more to have the primary and secondary insurance coverage described above, which the NRC establishes in 10 CFR part 140. Typically, the NRC will issue a decommissioning licensee a license amendment to remove the rated capacity of the reactor from the license. This has the effect of removing the reactor licensee from the category of licensees that are required to maintain the primary and secondary insurance amounts under the PAA and 10 CFR part 140.

Most permanently shut down and defueled power reactor licensees have requested exemptions from § 140.11(a)(4) to reduce the required amount of primary offsite liability insurance coverage from $375 million to $100 million and to withdraw from the secondary insurance pool. As noted above, these licensees are no longer within the category of licensees that are legally required under the PAA to have these amounts of offsite liability insurance. The technical criteria for granting these exemptions are based on the determination that there are no possible design-basis events at a licensee's facility that could result in an offsite radiological release exceeding the limits established by the EPA's early-phase Protective Action Guidelines of 1 rem at the exclusion area boundary. In addition, the exemptions are predicated on the licensee demonstrating that the heat generated by the spent fuel in the SFP has decayed to the point where the possibility of a zirconium fire is highly unlikely. Specifically, if all coolant were

drained from the SFP as the result of a highly unlikely beyond design-basis accident, the fuel assemblies would remain below a temperature of incipient cladding oxidation for zirconium based on air-cooling alone. For a postulated situation where the cooling configuration of a highly unlikely beyond design basis accident results in an unknown cooling configuration of the spent fuel, analysis should demonstrate that even with no cooling of any kind (conduction, convection, or radiative heat transfer), the spent fuel stored in the SFP would not reach the zirconium ignition temperature in fewer than 10 hours starting from the time at which the accident was initiated. The NRC has considered 10 hours sufficient time to take mitigative actions to cool the spent fuel. Based on this discussion:

a. Should the NRC codify the current conservative exemption criteria (i.e., 10 hours to take mitigative actions) that have been used in granting decommissioning reactor licensees exemptions to § 140.11(a)(4)?

b. As an alternative to codifying the current conservative exemption criteria (i.e., 10 hours to take mitigative actions), should the NRC codify a requirement to allow decommissioning reactor licensees to generate site specific criteria (i.e., time period to take mitigative actions) based upon a site specific analysis?

c. The use of $100 million for primary liability insurance level is based on Commission policy and precedent from the early 1990s. The amount established was a qualitative value to bound the claims from the Three Mile Island accident. Should this number be adjusted?

d. What other factors should be considered in establishing an appropriate primary insurance liability level (based on the potential for damage claims) for a decommissioning plant once the risk of any kind of offsite radiological release is highly unlikely?

I. Questions related to onsite damage protection insurance requirements for decommissioning power reactor licensees

The questions on onsite damage protection insurance (ODI) have been listed in this document using the acronym “ODI” and sequential numbers.

ODI-1: The requirements of § 50.54(w)(1) call for each power reactor licensee to have insurance to provide minimum coverage for each reactor site of $1.06 billion or whatever amount of insurance is generally available from private sources, whichever is less. The insurance would be used, in the event of an accident at the licensee’s reactor, to provide financial resources to stabilize the reactor and decontaminate the reactor site, if needed.

The requirements in § 50.54(w)(1) do not distinguish between a reactor authorized to operate and a reactor that has permanently shut down and defueled. With the permanent cessation of reactor operations and the permanent removal of the fuel from the reactor core, operating reactor accidents are no longer possible. Therefore, the need for onsite insurance at a decommissioning reactor to stabilize accident conditions or decontaminate the site following an accident, should be significantly lower compared to the need for insurance at an operating reactor.

Based on NRC policy and precedent, permanently shut down and defueled reactor licensees have requested exemptions from § 50.54(w)(1). The exemption granted to a permanently shut down reactor licensee permits the licensee to reduce the required level of onsite property damage insurance from the amount established in § 50.54(w)(1) to $50 million. The NRC has previously determined that $50 million bounds the worst radioactive waste contamination event (caused by a liquid radioactive waste storage tank rupture) once the heat generated by the spent fuel in the SFP has decayed to the point where the possibility of a

zirconium fire in any beyond design-basis accident is highly unlikely, and in any case, there is sufficient time to take mitigative actions. The technical criteria used in assessing the possibility of a zirconium fire, as discussed in question LPI-1 above, is also used for exemptions from § 50.54(w)(1). Based on this discussion:

a. Should the NRC codify the current exemption criteria that have been used in granting decommissioning reactor licensees exemptions from § 50.54(w)(1)? If so, describe why.

b. The use of $50 million insurance level for bounding onsite radiological damages is based on a postulated liquid radioactive waste storage tank rupture using analyses from the early 1990s. Should this number be adjusted? If so, describe

c. Is the postulated rupture of a liquid radioactive waste storage tank an appropriate bounding postulated accident at a decommissioning reactor site once the possibility of a zirconium fire has been determined to be highly unlikely?

J. General questions related to decommissioning power reactor regulations

The general (GEN) questions related to decommissioning power reactor regulations have been listed in this document using the acronym “GEN” and sequential numbers.

GEN-1: Section 50.51, “Continuation of License,” states in paragraph (b)(1) that all permanently shut down and defueled reactor licensees shall continue to take actions to maintain the facility, and the storage and control and maintenance of spent fuel, in a safe condition beyond the license expiration date until the Commission notifies the licensee in writing that the license is terminated. The NRC has recently focused on the licensee’s maintenance of long lived, passive structures and components at decommissioning reactors. The NRC expects that many long-lived, passive structures and components may generally not have performance and

condition characteristics that can be readily monitored, or could be considered inherently reliable by licensees and do not need to be monitored under § 50.65(a)(1). There may be few, if any, actual maintenance activities (e.g., inspection or condition monitoring) that a licensee conducts for such structures and components. Treatment of long-lived, passive structures and components under the maintenance rule is likely to involve minimal preventive maintenance or monitoring to maintain functionality of such structures and components in the original licensing period. The NRC is interested in the need to provide reasonable assurance that certain long-lived, passive structures and components (e.g., neutron absorbing materials, SFP liner) are maintained and monitored during the decommissioning period while spent fuel is in the SFP.

Based on the discussion above, what regulatory changes should be considered that address the performance or condition of certain long-lived, passive structures and components needed to provide reasonable assurance that they will remain capable of fulfilling their intended functions during the decommissioning period?

GEN-2: Section 50.54(m) of the NRC's regulations for operating reactors specifies the minimum licensed operator staffing levels (e.g., minimum staffing per shift for licensed operators and senior operators) for power reactors authorized to operate. The regulations define the duties of licensed operators as either the manipulation of controls or supervising the manipulation of controls that directly affect the reactor reactivity or power level of the reactor. A decommissioning plant is clearly not operating and no manipulation of controls that affect reactor reactivity or power can occur at a permanently defueled reactor. Therefore, the requirements in § 50.54(m) concerning licensed operator staffing levels for operating reactors are not applicable to a decommissioning plant. For a decommissioning power reactor, the senior on-shift management representative is a certified fuel handler who, as stated in § 50.2, is

a non-licensed operator that has qualified in accordance with a fuel handler training program approved by the Commission. However, there are no regulatory provisions similar to § 50.54(m) concerning operator staffing levels for a power reactor licensee once it has certified that it is permanently shut down and defueled under § 50.82(a)(1). Because the decommissioning regulations are silent regarding staffing levels, licensees have sought amendments in their defueled technical specifications to specify minimum non-licensed operator staffing. Based on precedent used at most previous permanently shut down reactors, and considering the demonstrated safety performance of reactor decommissioning sites over many years, the NRC has found that an operations staff crew complement consisting of one certified fuel handler and one non-certified operator is an acceptable minimum staffing level.

Considering the discussion above, should minimum operations shift staffing at a permanently shutdown and defueled reactor be codified by regulation?

GEN-3: Related to the decommissioning plant operator staffing levels is the requirement for and the use of a control room during decommissioning. Section 50.54(m) specifies the control room staffing requirements for licensed operators at an operating reactor with a fueled reactor vessel. No such requirements exist for the location of operations staff at a permanently shutdown and defueled reactor. The control room at an operating reactor contains the controls and instrumentation necessary for complete supervision and response needed to ensure safe operation and shutdown of the reactor and support systems during normal, off-normal, and accident conditions and, therefore, is the location of the shift command function. Following permanent shutdown and removal of fuel from the reactor, operation of the reactor is no longer permitted and the control room no longer performs all of the functions that were required for an operating reactor. There are no longer any activities at a permanently shutdown and defueled reactor that require a quick decision and response by operations staff in the control room. For

most decommissioning reactors, the NRC has approved license amendments to the technical specifications that require at least one non-licensed operator to remain in a control room. This technical specification change is primarily based on precedent. However, the NRC has noted in the license amendment safety evaluations that the primary functions of the control room at a permanently shutdown reactor are monitoring, response, communications, and coordination. Specifically, the control room at a decommissioning reactor is where many plant systems and equipment parameters are monitored (for operating status and conditions, radiation levels, electrical anomalies, or fire alarms for example). Control room personnel assess plant conditions; evaluate the magnitude and potential consequences of abnormal conditions; determine preventative, mitigating and corrective actions; and perform notifications. The control room provides a central location from where the shift command function can be conveniently performed because of the availability of existing monitoring and assessment instrumentation, communication systems and equipment, office computer equipment, and ready access to reference material. The control room also provides a central location from which emergency response activities are coordinated. When activated, the emergency response organization reports to the control room.

During reactor decommissioning, the control room may be subject to extensive changes, which are evaluated by the licensee for safety implications under the § 50.59 process. There is precedent among some previous decommissioning reactor licensees to design and construct a decommissioning control room that is independent of the original operating control room. Most decommissioning reactors can probably demonstrate that the command, communications, and monitoring functions performed in the control room could be readily performed at an alternate onsite location, based on the site-specific needs of a licensee during its decommissioning process. Consequently, several decommissioning licensees have questioned the meaning of the control room as it relates to decommissioning nuclear power plants.

Based on the discussion above, what regulatory changes should be considered for a permanently shutdown and defueled reactor to prevent ambiguities concerning the meaning of the control room for decommissioning reactors and should minimum staffing levels be specified for the control room?

GEN-4: Are there any other changes to 10 CFR Chapter I, "Nuclear Regulatory Commission," that could be clarified or amended to improve the efficiency and effectiveness of the reactor decommissioning process?

GEN-5: The NRC is attempting to gather information on the costs and benefits of the changes in the regulatory areas discussed in this document as early as possible in the rulemaking process. Given the topics discussed, please provide estimated costs and benefits of potential changes in these areas from either the perspective of a licensee or from the perspective of an external stakeholder.

a. From your perspective, which areas discussed are the most beneficial or detrimental?

b. From your perspective, assuming you believe changes are needed to the NRC's reactor decommissioning regulatory infrastructure, what are the factors that drive the need for changes in these regulatory areas? If at all possible, please provide specific examples (e.g., expected savings, expectations for efficiency, anticipated effects on safety, etc.) about how these changes will affect you.

c. Are there areas that are of particular interest to you, and for what reason?

d. Please provide any suggested changes that would further enhance benefits or reduce risks that may not have been addressed in this ANPR.

VI. Public Meeting

The NRC will conduct a public meeting to discuss the contents of this ANPR and to answer questions from the public regarding the contents of this ANPR. The NRC will publish a notice of the location, time, and agenda of the meeting on the NRC's public meeting Web site at least 10 calendar days before the meeting. Stakeholders should monitor the NRC's public meeting Web site for information about the public meeting at: http://www.nrc.gov/public-involve/public-meetings/index.cfm. In addition, the meeting information will be posted on www.regulations.gov under Docket ID **NRC-2015-0070**. For instructions on how to receive alerts when changes or additions occur in a docket folder, see Section IX of this document.

VII. Cumulative Effects of Regulation

The NRC has implemented a program to address the possible Cumulative Effects of Regulation (CER), in the development of regulatory bases for rulemakings. The CER describes the challenges that licensees, or other impacted entities (such as State partners) may face while implementing new regulatory positions, programs, and requirements (e.g., rules, generic letters, backfits, inspections). The CER is an organizational effectiveness challenge that results from a licensee or impacted entity implementing a number of complex positions, programs or requirements within a limited implementation period and with available resources (which may include limited available expertise to address a specific issue). The NRC is specifically

requesting comment on the cumulative effects that may result from this potential rulemaking. In developing comments on the development of the regulatory basis for revisions to the requirements for decommissioning power reactor licensees relative to CER, consider the following questions:

1) In light of any current or projected CER challenges, what should be a reasonable effective date, compliance date, or submittal date(s) from the time the final rule is published to the actual implementation of any new proposed requirements including changes to programs, procedures, or the facility?

2) If current or projected CER challenges exist, what should be done to address this situation (e.g., if more time is required to implement the new requirements, what period of time would be sufficient, and why such a time frame is necessary)?

3) Do other (NRC or other agency) regulatory actions (e.g., orders, generic communications, license amendment requests, and inspection findings of a generic nature) influence the implementation of the potential proposed requirements?

4) Are there unintended consequences? Does the potential proposed action create conditions that would be contrary to the potential proposed action's purpose and objectives? If so, what are the consequences and how should they be addressed?

5) Please provide information on the costs and benefits of the potential proposed action. This information will be used to support any regulatory analysis performed by the NRC.

VIII. Plain Writing

The Plain Writing Act of 2010 (Pub. L. 111-274) requires Federal agencies to write documents in a clear, concise, and well-organized manner. The NRC has written this document to be consistent with the Plain Writing Act as well as the Presidential Memorandum, "Plain

Language in Government Writing," published June 10, 1998 (63 FR 31883). The NRC requests comment on this document with respect to the clarity and effectiveness of the language used.

IX. Availability of Documents

The documents identified in the following table are available to interested persons through one or more of the following methods, as indicated.

Date	Document	ADAMS Accession Number/*Federal Register* Citation
May 10, 1993	SECY-93-127, "Financial Protection Required of Licensees of Large Nuclear Power Plants during Decommissioning"	ML12257A628
July 20, 1995	Proposed Rule: Decommissioning of Nuclear Power Reactors	60 FR 37374
July 29, 1996	Final Rule: Decommissioning of Nuclear Power Reactors	61 FR 39278
December 17, 1996	SECY-96-256, "Changes to Financial Protection Requirements for Permanently Shutdown Nuclear Power Reactors, 10 CFR 50.54(w)(1) and 140.11"	ML15062A483
June 30, 1998	SRM to SECY-98-075, "DSI-24 Implementation: Risk-Informed, Performance-Based Concepts Applied to Decommissioning"	ML003752383
November 4, 1998	SECY-98-258, "DSI-24 Implementation: Decommissioning Licensing Actions and Priorities and Milestones for Addressing Rulemaking and Guidance Development"	ML992870144
February 24, 1999	SRM to SECY-98-258	ML003753861
June 30, 1999	SECY-99-168, "Improving Decommissioning Regulations for Nuclear Power Plants"	ML992800087

December 21, 1999	SRM to SECY-99-168	ML003752190
June 28, 2000	SECY-00-0145, “Integrated Rulemaking Plan for Nuclear Power Plant Decommissioning”	ML003721626
September 27, 2000	SRM to SECY-00-0145	ML003754381
February 2001	NUREG-1738, “Technical Study of Spent Fuel Pool Accident Risk at Decommissioning Nuclear Power Plants”	ML010430066
June 4, 2001	SECY-01-0100, “Policy Issues Related to Safeguards, Insurance, and Emergency Preparedness Regulations at Decommissioning Nuclear Power Plants Storing Fuel in Spent Fuel Pools”	ML011450420
August 16, 2002	Memorandum to the Commission: Status of Regulatory Exemptions for Decommissioning Plants	ML030550706
September 18, 2002	SECY-02-0169, “Annual Update Status of Decommissioning Program”	ML022120432
February 4, 2010	Memorandum to the Commission, “Documentation of Evolution of Security Requirements at Commercial Nuclear Power Plants with Respect to Mitigation Measures for Large Fires and Explosions”	ML092990438
December 2006	NEI-06-12, “B.5.b. Phase 2 & 3 Submittal Guideline, Revision 2”	ML070090060
December 22, 2006	Response to December 14, 2006 request to endorse NEI 06-12, “B.5.b Phase 2& 3 Submittal Guideline”	Non-publicly available
August 8, 2008	The Attorney General of Commonwealth of Massachusetts, the Attorney General of California; Denial of Petitions for Rulemaking	73 FR 46204

November 12, 2013	COMSECY-13-0030, “Staff Evaluation and Recommendation for Japan Lessons-Learned Tier 3 Issue on Expedited Transfer of Fuel”	ML13329A918
September 2014	NUREG-2161, “Consequence Study of a Beyond-Design-Basis Earthquake Affecting the Spent Fuel Pool for a U.S. Mark I Boiling Water Reactor”	ML14255A365
November 14, 2014	IN-2014-14, “Potential Safety Enhancements to Spent Fuel Storage”	ML14218A493
December 30, 2014	SRM to SECY-14-0118, “Request by Duke Energy Florida, Inc., for Exemptions from Certain Emergency Planning Requirements”	ML14364A111
January 30, 2015	SECY-15-0014, “Anticipated Schedule and Estimated Resources for a Power Reactor Decommissioning Rulemaking”	ML15082A089
December 23, 2013	NSIR/DPR-ISG-02, “Emergency Planning Exemption Requests for Decommissioning Nuclear Power Plants”	ML13304B442
November 25, 2014	NSIR/DSP-ISG-03, “Review of Security Exemptions / License Amendment Requests for Decommissioning Nuclear Power Plants”	ML14294A170
November 10, 2011	Letter Endorsing NEI 03-12, Revision 7	ML112800379
March 2009	RG 5.77, “Insider Mitigation Program”	Non-publicly available
March 31, 2008	Final Rule: “Fitness for Duty Programs”	73 FR 16966
March 12, 2012	Order EA-12-051, “Issuance of Order to Modify Licenses with Regard to Reliable Spent Fuel Pool Instrumentation”	ML12054A679

March 12, 2012	Order EA-12-049, “Issuance of Order to Modify Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events”	ML12054A734
October 7, 2015	SECY-15-0127, “Schedule, Resource Estimates, and Impacts for the Power Reactor Decommissioning Rulemaking”	Non-publicly available

The NRC may post additional materials to the Federal rulemaking Web site at www.regulations.gov, under Docket NRC-2015-0070. The Federal rulemaking Web site allows you to receive alerts when changes or additions occur in a docket folder. To subscribe: 1) navigate to the docket folder [NRC-2015Y-0070]; 2) click the “Sign up for E-mail Alerts” link; and 3) enter your e-mail address and select how frequently you would like to receive e-mails (daily, weekly, or monthly).

X. Rulemaking Process

The NRC does not intend to provide detailed comment responses for information provided in response to this ANPR. The NRC will consider comments on this ANPR in the rule development process. If the NRC develops a regulatory basis sufficient to support a proposed

rule, there will be an opportunity for additional public comment when the draft regulatory basis and the proposed rule are published. If supporting guidance is developed for the proposed rule, stakeholders will have an opportunity to provide feedback on the guidance as well. Alternatively, if the regulatory basis does not provide sufficient support for a proposed rule, the NRC will publish a *Federal Register* notice withdrawing this ANPR and summarizing the public comments received on this ANPR.

Dated at Rockville, Maryland, this 6th day of November 2015.

For the U.S. Nuclear Regulatory Commission.

Frederick D. Brown, Acting
Executive Director for Operations.

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