

POLICY ISSUE INFORMATION

February 28, 2011

SECY-11-0029

FOR: The Commissioners

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

SUBJECT: PLAN FOR THE LONG-TERM UPDATE TO THE WASTE
CONFIDENCE RULE AND INTEGRATION WITH THE EXTENDED
STORAGE AND TRANSPORTATION INITIATIVE

PURPOSE:

The purpose of this paper is to (1) provide the plan to develop a long-term waste confidence (WC) rule, including an environmental impact statement (EIS) and updated WC decision, for the handling and extended storage of spent nuclear fuel (SNF) for more than 60 years after a reactor's licensed life, and (2) describe the integration of WC activities with the extended storage and transportation (EST) project plan activities. This paper responds to staff requirements memorandum (SRM-) SECY-09-0090, "Final Update of the Commission's Waste Confidence Decision," dated September 15, 2010, and SRM-COMSECY-10-0007, "Project Plan for Regulatory Program Review to Support Extended Storage and Transportation of Spent Nuclear Fuel," dated December 6, 2010.

SUMMARY:

In 2010, the Commission issued an updated WC rule and decision, and separately directed the staff to develop a longer term WC update to consider the storage of SNF and high-level waste (HLW) for more than 60 years after the licensed life for operation of any commercial power reactor. The WC update will consist of an EIS, a WC Decision (which includes updated safety findings), and the 10 CFR Part 51 rule update. The EIS will provide the basis for the generic environmental determination made in the updated rule. Much of the work to develop the supporting technical bases and environmental impact analyses will be similar to the work described in COMSECY 10-0007, dated June 15, 2010 (ADAMS No. ML101390216).

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SECY NOTE: THIS SECY PAPER (WITH THE EXCEPTION OF ENCLOSURE 3) WILL BE RELEASED TO THE PUBLIC IN 10 WORKING DAYS.

The staff will integrate activities into an EST Regulatory Program with two main goals: (1) update the WC decision and rule and (2) enhance the technical and regulatory basis of the existing regulatory framework for the regulation of SNF for extended periods. The staff will engage stakeholders through public meetings and workshops, as well as the National Environmental Policy Act (NEPA) scoping process, EIS development, and the Administrative Procedure Act notice-and-comment rulemaking processes.

The staff considers a timeframe of up to 300 years of storage to be appropriate for characterization and prediction of aging effects and aging management issues for EST. The staff may adjust this analytical period based on the expanded gap assessment results, expected in 2012, which will identify technical and regulatory needs to support the development of an EST framework and WC update.

The staff plans to complete a WC update in fiscal year (FY) 2016. The schedule depends, in part, on the results of technical analyses that the U.S. Nuclear Regulatory Commission (NRC) develops and applicable data collected during the same time by external organizations such as the U.S. Department of Energy (DOE). The Agency's proposed resources for this activity will need to be significantly augmented in FY 2012 and FY 2013 to conduct research and necessary analyses to support this schedule. In lieu of providing annual information papers to the Commission as directed by SRM-COMSECY-10-0007, the staff will inform the Commission of significant progress and any significant changes in plans, as appropriate.

BACKGROUND:

On June 15, 2010, the staff provided its detailed project plan in COMSECY-10-0007, which identified research needs and potential enhancements to the EST regulatory basis over a projected 7-year timeframe. The project plan would also make other near-term improvements to the storage and transportation regulatory framework.

The Commission issued SRM-SECY-09-0090 on September 15, 2010, which directed the staff to update Title 10 of the *Code of Federal Regulations* (10 CFR) 51.23, "Temporary Storage of Spent Fuel after Cessation of Reactor Operation—Generic Determination of No Significant Environmental Impact," and revise Findings 2 and 4 of the WC decision. On December 23, 2010, the NRC published the updated rule and decision in the *Federal Register* (75 FR 81032 and 81037). The SRM directed the staff to develop a plan for a long-term rulemaking effort to go beyond the updated WC rule to account for storage at onsite facilities, offsite facilities, or both, and address the impacts of storage beyond a 120-year timeframe. The SRM also directed the staff to recommend an appropriate timeframe for the technical analysis beyond 120 years and to prepare an EIS to serve as the environmental analysis to support this rulemaking effort. The SRM stated that the plans and resources for this longer-term rulemaking should be integrated and realigned, to the extent possible, with the staff's current efforts to examine EST of SNF in accordance with COMSECY-10-0007.

On December 6, 2010, the Commission issued SRM-COMSECY-10-0007, which approved the EST project plan in part and provided additional direction to the staff. Specifically, the Commission directed the staff to integrate WC update and EST activities, to reflect the resources available in the FY 2012 budget, to include a prioritization of the main elements of

the EST project plan, to provide general resource estimates for the years beyond FY 2012, and to discuss the impacts of the WC activities on EST activities (e.g., EST activities that may be deferred).

DISCUSSION:

Based on Commission direction, the staff is integrating the current EST project plan activities and long-term WC update activities into an EST Regulatory Program with two main goals: (1) update the WC decision and rule to ensure the continued long-term stability of the generic safety and environmental findings in the rule by developing a NEPA analysis (in this case an EIS) that continues to be informed by current circumstances and scientific knowledge, and (2) enhance the technical and regulatory basis of the existing regulatory framework (i.e., 10 CFR Parts 71, 72, and 73) to identify and resolve technical, environmental, and regulatory issues associated with regulation of SNF for extended periods. While the two goals share common elements, they have different timing, scope, depth, and analysis of some key research activities.

Enhancement of the EST regulatory framework is focused on ensuring that the NRC is able to regulate extended storage facilities and extended aging management programs, if necessary. The research and analyses will address important aging phenomena and aging management issues (including maintenance, monitoring, and mitigation) associated with the regulatory oversight of EST operations. For the WC update, the research and analyses will highlight the impacts of aging effects and aging management needs on the affected environment (e.g., human health, natural resources, socio-economic, etc.), and will examine important environmental characteristics for longer periods of time. The EST Regulatory Program will supersede the current EST project plan and is under development. It will integrate the scope and timing of activities to efficiently and effectively support both goals to the extent practical. Enclosure 2 describes the strategy for developing the technical basis for WC and integrating ongoing EST project plan activities with WC update activities.

In 2010, the staff began an assessment, referred to as a gap assessment, to identify technical and regulatory needs to expand the basis for regulating EST. The staff plans to issue the draft gap assessment in November 2011 for comment and finalize it in April 2012. The staff has already identified three key areas that will need to be assessed and is adjusting ongoing research plans to address these areas. These areas include long-term canister shell and weld integrity, metallic seal and lid bolt integrity, and concrete overpack integrity in various external environmental conditions. These key areas provide fundamental confinement of SNF and protection against normal environmental conditions and accident events. Understanding the integrity of SNF cladding for extended periods of wet and dry storage and long-term cask monitoring capabilities are also high priority areas. One significant outcome of the various research studies may be the identification of failure modes and storage times that require significant mitigation (e.g., replacement of major cask components or fuel repackaging) to ensure continued safe storage and transportability. However, the staff has not yet identified the need for significant mitigation.

By April 2012, the staff will identify any additional needs to specifically develop the WC EIS (e.g., future HLW waste forms and storage effects on the surrounding environment). DOE Office

of Nuclear Energy is concurrently identifying and prioritizing technical gaps for the EST of SNF. Separately, the Blue Ribbon Commission on America's Nuclear Future (BRC) intends to issue draft and final recommendations on national spent fuel management issues in July 2011 and January 2012, respectively. To the extent practical, the staff will consider the results of those assessments and BRC recommendations.

The staff will continue to define and integrate its research activities, perform environmental scoping assessments, prioritize research, and begin the formal NEPA scoping process in April 2012 to support the WC rule. Upon publication of the final WC rule in FY 2016, the staff may need to continue research activities and complete any appropriate EST regulatory framework rulemakings for an additional two years.

Plan for Developing the Waste Confidence Update and EST Activities

Enclosure 1 describes the plan for completing the WC update by FY 2016, including the preliminary scope of the EIS. The plan for developing the WC update consists of three key activities: (1) developing the technical information needed to understand the significant safety issues and environmental impacts of EST, (2) developing an EIS and updated WC decision for long-term storage and handling of SNF, and (3) revising the WC rule, as appropriate. Because the WC rule is a generic environmental determination, the regulatory basis for the rule (the EIS, WC decision, and relevant EST technical analyses) will take the most time and resources to complete. Once the basis is in place, the rulemaking process itself will rely on the EIS (with appended WC decision) to provide the regulatory basis for the WC rule.

The following table shows the schedule for major activities leading to the WC update and EST rulemaking, if needed.

Schedule of Major Activities

Activity	Start	Complete
Expanded EST & WC Gap Assessment	Ongoing	April 2012
Supporting Research and Analyses (WC & EST)	Ongoing	2015
Scoping and draft EIS Development	April 2012	2014
Final EIS and WC Rule	2014	2016
Additional Activities		
Additional EST Framework Research	2014	2015
EST Regulatory Basis and Guidance	2014	2016
EST Rulemaking (if needed)	2016	2018

Preliminary Scope of the Environmental Impact Statement and Long-Term Update of the Waste Confidence Rule

The EIS will provide the regulatory basis for the update to the WC rule. The staff will comply with the NRC regulations for implementing NEPA in 10 CFR Part 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Functions," and will follow NRC NEPA guidance, as appropriate. The staff considers periods of up to 300 years to be appropriate for the technical analyses of cask system performance considering the current knowledge of potential aging phenomena and the cumulative increase of uncertainties over long

timeframes. The EIS will initially consider the impacts of SNF and HLW handling, storage, and associated transportation from approximately the years 2050 to 2250. This timeframe is based on the greater uncertainties that accompany environmental characteristics and environmental impacts for longer periods and considerations for the 300 years of cask aging analyzed in the technical analysis for EST. The staff selected 2050 as the starting point for the NEPA analysis to approximate the minimum storage periods contemplated in the current Waste Confidence rule (“at least” 60 years after the expiration of licensed life) and an end-date of 2250 to approximate the time when this fuel could approach 300 years of total storage time (in a combination of wet and dry storage). The timeframe could be shortened if uncertainties are greater than expected. Alternatively, the timeframe could be expanded if the uncertainties of impacts for longer periods are not significant. The staff will be conducting pre-EIS scoping assessments of the 2050–2250 timeframe and intends to solicit stakeholder feedback on this timeframe.

The staff is also considering the use of segmented periods of time for the environmental analysis (e.g., 2050–2150 and 2150–2250). The analyses may show that some environmental impacts can be more easily characterized or graded by different time periods. When updating the rule, the staff will correlate the EIS analyses of impacts to generic safety and environmental findings for some period of storage after reactor licensed life (e.g., 100 or 200 years after reactor licensed life instead of the current 60 years). The EIS will consider the range of impacts typically included in NRC environmental analyses, as appropriate. These may include impacts on human health, natural and cultural resources, land use, socioeconomic conditions, and an analysis of cumulative impacts. The Appendix to Enclosure 1 describes the preliminary scenarios and initial scoping assumptions that will be considered in development of the EIS.

Near-Term Regulatory Improvements

The staff is implementing near-term licensing, inspection, and enforcement program improvements as described in COMSECY-10-0007. These activities include a comprehensive review of the current regulations, guidance, and standards to identify and implement near-term efficiency and effectiveness enhancements within the current regulatory technical bases. The ongoing reviews, which are budgeted separately from EST and WC, will address current challenges with dual-purpose cask certification and will enhance the effectiveness of the licensing, inspection and enforcement programs in an integrated manner. As directed in SRM-COMSECY-10-0007, the staff will develop performance measures to track efficiency and effectiveness gains from near-term improvements. Progress on these regulatory activities is not integral to addressing the technical and environmental challenges of the WC update and enhancing the EST regulatory framework. As a result, the staff will implement and track separately from the new EST Regulatory Program the licensing, inspection, and enforcement regulatory program improvements defined in the EST project plan.

Stakeholder Interaction

The staff has engaged some stakeholders through industry meetings, workshops, public meetings, and conferences related to EST and will continue to engage various stakeholder groups, such as the public, State, local, and tribal governments, industry, and international

counterparts. For example, the staff has interacted on EST issues at the Nuclear Energy Institute dry cask storage forum, NRC Storage and Transportation Licensing Workshop, Electric Power Research Institute Extended Storage Collaboration Program meetings, DOE used nuclear fuel program technical meetings, Council of State Governments and National Conference of State Legislators meetings, and several national and international conferences. The staff has also participated with stakeholders in BRC meetings to provide regulatory perspectives on the safety and security of storage and transportation. The staff has used the information from these meetings to identify regulatory and technical issues and high-priority research activities for the EST project plan. Enclosure 2 provides additional description of EST activities of external stakeholders and NRC coordination efforts.

The staff will continue to interact with stakeholders and share information to develop the technical basis for the WC update and EST regulatory framework. The staff plans to hold a public workshop in the summer of 2011 to solicit input on technical and regulatory issues. The staff will publish for public comment its draft gap assessment results and the preliminary scope of the EIS. The staff will hold public meetings as part of the NEPA public scoping process and after the draft EIS is published. As the WC update progresses, the staff will seek more opportunities to engage stakeholders.

Future Adjustments to Plan for WC Update and EST Regulatory Program

As the staff develops its scoping assessments over the coming year, it will consider the data and analyses that the NRC can either develop itself or leverage from external organizations within the schedule established for the WC update. The uncertainties in aging phenomena, cask performance, and environmental impacts may increase over longer fuel aging periods, and the resulting limitations in the technical analyses will influence the final scope of the WC update. However, by April 2012, the staff will have an improved understanding of the scope of the technical analyses that should be developed, the research plans of external parties that can be effectively leveraged, and potential changes that are needed in the scope and schedule of the EIS. By this time, the staff will have received stakeholder feedback and developed insights from the final gap assessments, the BRC will have completed its final recommendations, and DOE's Office of Nuclear Energy will likely have completed its gap assessments and started developing research plans to address EST.

The staff may also need to update the EST Regulatory Program at that time and consider changes in the scope or completion times for the WC update, as appropriate. In lieu of providing annual information papers to the Commission as directed by SRM-COMSECY-10-0007, the staff would inform the Commission of any significant changes in the scope of these projects or schedules, as appropriate.

RESOURCES:

Enclosure 3 describes resource needs for a FY 2016 completion of the WC update and the potential impacts on scope and schedule if sufficient resources cannot be provided, including delayed completion dates for the WC update (e.g., 2018 and 2020).

The staff considered the feasibility of completing an update before FY 2016, should additional resources be made available. However, the minimum amount of time needed to plan and complete limited research, adequately engage stakeholders, and develop a comprehensive EIS precludes a shorter timeframe.

COORDINATION:

The Office of the General Counsel has reviewed this paper and has no legal objection. The Office of the Chief Financial Officer has reviewed this paper for resource implications and has no objection. The required funding in future years will be addressed during the Planning, Budgeting and Performance Management process at the agency level.

The staff requests that this paper, with the exception of Enclosure 3, be made publicly available to facilitate future dialogue with stakeholders on WC activities.

Catherine Haney, Director **/RA/**
Office of Nuclear Material Safety
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Enclosures:

1. Plan for the Long-Term Update of the Waste Confidence Rule
2. Strategy for Integrating Extended Storage and Transportation Project Plan and Waste Confidence Rule Update Activities
3. Projected Resource Needs for the Extended Storage and Transportation Regulatory Program

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