

POLICY ISSUE NOTATION VOTE

June 1, 2012

SECY-12-0079

FOR: The Commissioners

FROM: R. W. Borchardt
Executive Director for Operations

SUBJECT: PARTIAL CLOSURE OF PETITION FOR RULEMAKING (PRM-72-6) C-10
RESEARCH AND EDUCATION FOUNDATION, INC.

PURPOSE:

To obtain Commission approval for partial closure of the petition for rulemaking from the C-10 Research and Education Foundation (C-10 or the petitioner) by accepting one request for consideration in the rulemaking process, denying nine of the petitioner's requests, and reserving two requests for consideration in a future rulemaking determination. This paper does not address any new commitments or resource implications.

SUMMARY:

Based on a thorough and thoughtful review of the petitioner's requests and technical basis for proposing the changes, the staff proposes accepting one request for consideration in the rulemaking process, denying nine of the petitioner's requests, and reserving two requests for consideration in a future rulemaking.

BACKGROUND:

On November 24, 2008, the petitioner requested that the U.S. Nuclear Regulatory Commission (NRC or the Commission) revise its regulations for interim storage of spent fuel in a petition for rulemaking (Docket No. PRM-72-6) (Enclosure 1). A notice of receipt of the petition was published in the *Federal Register* on March 3, 2009 (74 FR 9178), with the comment period ending May 18, 2009. Specifically, the petitioner requested 12 rule changes concerning dry

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AFTER DISPATCH OF THE LETTER TO THE PETITIONER.

cask safety, security, transferability, and longevity. The requested rule changes would address concerns about failure of cask materials over long periods of time, the ability to detect these failures and assess storage cask construction materials with respect to long-term storage; the need for dose rate and temperature monitoring on storage casks at Independent Spent Fuel Storage Installation (ISFSIs); and storage cask vulnerability to weather-related deterioration and sabotage.

The petitioner asserted that by proposing to revise the Waste Confidence Decision (73 FR 59551, October 9, 2008), the NRC in effect will establish that there is no deadline for the Federal Government to take title to spent fuel and remove it from its point of origin at nuclear power facilities. The petitioner states that the NRC is allowing spent fuel storage to continue for an indefinite, prolonged period of time, and therefore, storage casks should be designed and constructed for a minimum of 100 years, as opposed to the 20 years permitted by licenses and certificates of compliance (CoCs). Subsequent to submission of PRM-72-6, the NRC extended the 20-year duration for licenses and CoCs to 40 years in the final rulemaking "License and Certificate of Compliance Terms" (76 FR 8872, February 16, 2011) and issued its Waste Confidence Decision Update (74 FR 81037, December 23, 2010).

The NRC received over nine thousand comment letters from industry, the American Society of Mechanical Engineers (ASME), non-governmental organizations, and members of the public. The majority of the comments were identical (form) emails. The Nuclear Energy Institute and the Strategic Team and Resource Sharing organization opposed the petition, while all form email comments, ASME, and the Berkeley Fellowship of Unitarian Universalists (BFUU) Social Justice Committee supported the petition. The draft *Federal Register* notice (Enclosure 2) summarizes the comments received on the petition.

While the NRC was considering the petition for rulemaking from C-10, it issued a draft technical basis for a future security rulemaking for ISFSIs and a final rule on terms and conditions for both ISFSI licenses and certificates of compliance. As described below, some aspects of both of these actions are pertinent to the petitioner's requests.

On December 16, 2009 (74 FR 66589), the NRC issued Draft Technical Basis for Rulemaking Revising Security Requirements for Facilities Storing Spent Nuclear Fuel and High-Level Waste. In this draft technical basis, the NRC describes the objectives, conceptual approaches, and potential solutions for the future rulemaking on ISFSI security. The NRC staff expects that the rulemaking, when completed, will result in risk-informed, performance-based regulations, with both site-specific and generally licensed ISFSIs having consistent regulations. The NRC staff received comments on the draft technical basis from several stakeholders who were opposed, for different reasons, to the draft technical basis. For this reason, the NRC staff in SECY-10-0114 NRC's (Agencywide Documents Access and Management System (ADAMS) Accession No. ML101880013) recommended that the schedule for the rulemaking effort be extended to allow the NRC staff to further evaluate these comments and their implications. The Commission approved the NRC staff's recommendation in its staff requirements memorandum, (SRM), SRM-SECY-10-0114 (ADAMS Accession No. ML103210025), and reaffirmed direction for the ISFSI security rulemaking in SRM-SECY-07-0148 (ADAMS Accession No. ML073530119). This rulemaking extended the duration of ISFSI licenses and storage cask CoCs to 40 years, clarified the difference between "renewal" versus "reapproval" terminology in

Title 10 of the *Code of Federal Regulations* (10 CFR) Part 72 and codified the requirements for an aging management plan for both general and specific licensees.

DISCUSSION:

The petitioner requested NRC to make 12 revisions to NRC regulations. The NRC staff proposes denying Requests 1, 2, 3, 5 through 8, 10, and 12, considering request 11 in the rulemaking process, and deferring action on requests 4 and 9.

Requests which Staff Proposes Denying

Request 1 – Prohibit non-conforming pre-built full-scale casks, specifically built for NRC certification testing, from being put into production under industry pressure to ‘accept-as-is’.

Response to Request 1 – The NRC staff determined that the petitioner did not provide any new or significant information indicating that any storage casks have been loaded and placed on a storage pad that do not conform to the design approved by the NRC. The NRC’s regulations provide that only those casks that have been approved under the procedures of 10 CFR Part 72, Subpart L and subsequently listed in 10 CFR 72.214, “List of Approved Spent Fuel Storage Casks,” may be used under a 10 CFR Part 72 general license. Pursuant to 10 CFR 72.48, “Changes, Tests and Experiments,” the applicant must evaluate any part or material that does not conform to its specification in the Final Safety Analysis Report to ensure that its use will not affect the ability of the storage cask to safely store spent fuel and to determine if an amendment request and revision to the storage cask certificate of compliance is needed.

Request 2 – Require that NRC certification of casks be based on upgraded code requirements, which include design criteria and technical specifications for a 100-year-minimum age-related degradation timeframe, upgraded from the current inadequate 20-year design specification. The NRC must also require an NRC regulatory and public review of an in-depth technical evaluation of the casks done at the 20-year certificate of compliance reapproval interval to effectively catch and address cask deterioration.

Request 5 – Require the most current ASME Codes and Standards be adopted for all spent fuel storage containers without exception.

Request 6 – Require ASME Code stamping for fabrication.

Request 7 – Require that all materials for fabrication be supplied by ASME-approved material suppliers who are certificate holders.

Request 8 – Require that current ASME Codes and Standards for conservative heat treatment and leak tightness are adopted and enforced.

Response to Requests 2 and 5 through 8 – The NRC staff determined that amending the regulations to incorporate the most recent version of the ASME Boiler and Pressure Vessel Code (ASME Code) is not necessary to ensure that adequate codes and standards are applied for the material selection, fabrication, design, examination, and testing of dry cask storage systems. The industry has adopted, and the NRC has accepted, ASME Code Section III, Division 1, “Rules for Construction of Nuclear Facility Components,” as an acceptable standard

for the design and fabrication of dry storage casks within the requirements of 10 CFR Part 72. However, dry storage casks are not active pressure vessels and, as such, ASME Code Section III, Division 1 cannot be implemented without allowing some exceptions to its requirements. Therefore, the NRC allows specific exceptions, with appropriate safety bases, to the ASME Code for those requirements that are not applicable or practical to implement for dry cask storage systems. The NRC staff is reviewing ASME Code Section III, Division 3, "Containments for Transportation and Storage of Spent Nuclear Fuel and High-Level Radioactive Waste," and, if endorsed, the NRC staff intends to develop guidance for use of this code in future fabrication of dry storage casks.

Additionally, the NRC staff notes that aging issues beyond 100 years will be considered in the context of SECY-11-0029, "Plan for the Long Term Update to the Waste Confidence Rule and Integration with the Extended Storage and Transportation Initiative" (ADAMS Accession No. ML110330445).

With respect to the petitioner's second proposal in Request 2 regarding an evaluation of the casks at the CoC reapproval interval, the NRC addressed some of the petitioner's concerns in the February 2011 Final Rulemaking, "License and Certificate of Compliance Terms" (76 FR 8872). This rulemaking clarified the difference between "renewal" versus "reapproval" terminology and codified the requirements for an aging management plan for both general and specific licensees. As discussed in the February 2011 final rulemaking, the NRC did not intend to use the term reapproval to mean that all the initial design bases were reviewed and reapproved prior to extending a CoC expiration date, as stated in the July 18, 1990, Final Rulemaking, "Storage of Spent Fuel in NRC-Approved Storage Casks at Power Reactor Sites" (55 FR 29181), which added the general license option to 10 CFR Part 72.

Request 3 – Require that the NRC approve, as part of the original ISFSI certification process and construction license, a method for dry cask transfer capacity that will allow for immediate and safe maintenance on a faulty or failing cask.

Response to Request 3 – The NRC staff determined that the petitioner did not provide any new or significant technical information to indicate how spent fuel assemblies would be damaged if placed back into the spent fuel pool. Additionally, pursuant to 10 CFR 72.236(h), "Specific Requirements for Spent Fuel Storage Cask Approval and Fabrication," the applicant must ensure that the spent fuel storage cask is compatible with wet or dry spent fuel loading and unloading facilities. As described in NUREG-1536 "Standard Review Plan (SRP) for Dry Cask Storage Systems" (ADAMS Accession No. ML010040237), a reflood analysis can be used to show that the thermally induced stresses on fuel rods are not sufficient to damage the rods.

Request 10 – Require real-time heat and radiation monitoring at ISFSIs at all nuclear power plant sites and away-from-reactor storage sites maintained by the utilities and that the monitoring data be transmitted in real-time to affected State health, safety, and environmental regulators.

Response to Request 10 – The NRC staff determined that the petitioner did not provide any new or significant technical information to justify a change in NRC regulations. The NRC's regulations in §§ 72.122(h)(4) and (i) require continuous monitoring for storage designs that utilize active systems. The NRC revised its regulations in June 1999 (64 FR 33178) to allow

periodic monitoring and instrumentation systems consistent with the storage design requirements for designs that rely on passive design features to ensure safety.

Regular monitoring for radiation at and near ISFSIs is required by § 72.44(d)(2), "License Conditions," with reporting required at 12-month intervals as specified in § 72.44(d)(3), and similarly for general licensees as specified in 10 CFR 50.36a(a)(2), "Technical Specifications on Effluents from Nuclear Power Reactors." The technical specifications for concrete storage casks with vents for natural convection to provide cooling to the canister can include temperature-monitoring devices or periodic visual monitoring to ensure that the inlet and outlet vents are free of blockage that would inhibit convective airflow. Either of these methods is acceptable to confirm that dry cask heat removal systems are performing as designed and to help ensure that cask system component temperature limits are not being exceeded.

In addition, an applicant must demonstrate the performance of the thermal design and thermal limits in analyses submitted with the certification or license application. Licensees also periodically survey the cask systems to verify there are no adverse conditions that would impede thermal performance. Given the surveillance, monitoring, and inspection programs, the risk of immediate failure or emergency is remote. Accordingly, the NRC staff has determined that the current regulatory requirements provide adequate protection of public health and safety and the environment.

Request 12 – Establish funding to conduct on-going studies to provide the data required to accurately define and monitor for age-related material degradation, assess the structural integrity of the casks and fuel cladding in 'interim' waste storage.

Response to Request 12 – Rulemaking is not the appropriate mechanism to establish funding to conduct research. The NRC staff addressed age-related material degradation for both the storage cask and spent fuel in the final rulemaking that extended the duration of storage licenses and CoCs to 40 years. Additionally, the NRC staff intends to address age-related degradation in the context of the plan for extended storage in SECY-11-0029.

Request which Staff Proposes to Consider in the Rulemaking Process

Request 11 – Require Hardened On-Site Storage (HOSS) at all nuclear power plants as well as away-from-reactor dry cask storage sites; and that all nuclear industry interim on-site or off-site dry cask storage installations or ISFSIs be fortified against terrorist attack. In addition, all sites should be safeguarded against accident and age-related leakage.

Response to Request 11 – The NRC is already considering the petitioner's Request 11 as part of the ongoing ISFSI security rulemaking effort. The rulemaking effort is described in the December 16, 2009 (74 FR 66589), Spent Nuclear Fuel and High-Level Waste Security Requirements Revisions Draft Technical Basis.

Requests Which NRC Staff Proposes to Reserve for Future Rulemaking Determination

Request 4 – Require that dry casks are qualified for transport at the time of onsite storage approval certification.

Response to Request 4 – The NRC staff is evaluating Request 4, whether storage casks should be certified for both storage and transportation simultaneously, as part of COMSECY-10-0007, “Project Plan for the Regulatory Program Review to Support Extended Storage and Transportation of Spent Nuclear Fuel” (ML101390413). The NRC staff identified storage and transportation compatibility as a potential policy issue in COMSECY-10-0007, Enclosure 1, Appendix A (ADAMS Accession No. ML101390426).

Request 9 – Require a safe and secure hot cell transfer station coupled with an auxiliary pool to be built as part of an upgraded ISFSI design certification and licensing process.

Response to Request 9 – The NRC staff is evaluating Request 9 to determine whether additional rulemaking or guidance for existing regulations is appropriate for ISFSIs at decommissioned reactors, which have no spent fuel pool for use in the event a storage cask would need to be unloaded. Additionally, as discussed in Section 3.1 of Enclosure 1 to COMSECY-10-0007, research needs to be performed to develop the safety basis for the behavior of high burnup fuel during extended storage periods. Whether the fuel retains sufficient structural integrity for extended storage and eventual transportation may affect whether the NRC would require dry transfer capability at decommissioned reactors storing high burnup fuel.

After NRC staff completes its evaluation of the issues related to the petitioner’s Requests 4 and 9, the petitioner’s requests will either be accepted into the rulemaking process or will be denied. The docket for PRM-72-6 will remain open and consist of the petitioner’s Requests 4 and 9 pending a final disposition by the Commission, at which time the NRC will publish another document in the *Federal Register* to notice the Commission’s decision.

RECOMMENDATIONS:

The NRC staff recommends that the Commission:

1. Approve partial closure of the petition by considering one request in the rulemaking process (Request 11), denying nine requests (Requests 1, 2, 3, 5 through 8, 10, and 12), and reserving two requests for future rulemaking determination (Requests 4 and 9);
2. Approve for publication the partial closure of the petition for rulemaking in the *Federal Register*;
3. Note:
 - a) The appropriate Congressional committees will be informed;
 - b) A letter is enclosed for the Secretary’s signature (Enclosure 3), informing the petitioner of the Commission’s decision on the petition; and
 - c) Office of Public Affairs does not plan to issue a press release.

The Commissioners

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COORDINATION:

The Office of the General Counsel has reviewed this paper and has no legal objection to the partial denial of this petition.

/RA/

R. W. Borchardt
Executive Director
for Operations

Enclosures:

1. Letter from Petitioner
2. *Federal Register* notice
3. Letter to Petitioner

COORDINATION:

The Office of the General Counsel has reviewed this paper and has no legal objection to the partial denial of this petition.

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