

NUCLEAR REGULATORY COMMISSION

10 CFR Part 72

[Docket No. PRM-72-6]

[NRC-2008-0649]

C-10 Research and Education Foundation, Inc.;
Receipt of Petition for Rulemaking

AGENCY: Nuclear Regulatory Commission.

ACTION: Petition for rulemaking; Notice of receipt.

SUMMARY: The Nuclear Regulatory Commission (NRC) has received and requests public comment on a petition for rulemaking dated November 24, 2008, filed by the C-10 Research and Education Foundation, Inc. (petitioner). The petition was docketed by the NRC and has been assigned Docket No. PRM-72-6. The petitioner is requesting that the NRC amend the regulations that govern licensing requirements for the independent storage of spent nuclear fuel, high-level radioactive waste, and reactor-related greater than class C waste. The petitioner believes that the current regulations do not provide sufficient requirements for safe storage of spent nuclear fuel in dry cask storage or in independent spent fuel storage installations (ISFSIs). The petitioner states that the NRC does not adequately enforce the current regulations that govern dry cask storage by allowing manufacturers, vendors, and licensees to use alternatives to the American Society of Mechanical Engineers (ASME) Code. The petitioner also states that the NRC has not specified license requirements for multiple cask designs under different expiration dates at the same ISFSI, has not adequately considered age-related degradation of dry cask systems, and has no requirements in place to address sabotage and adverse environmental effects on ISFSIs and current and future dry cask storage systems.

DATE: Submit comments by (75 days following publication in the *Federal Register*).

Comments received after this date will be considered if it is practical to do so, but assurance of

consideration cannot be given except as to comments received on or before this date.

ADDRESSES: You may submit comments on this petition by any one of the following methods.

Please include PRM-72-6 in the subject line of your comments. Comments on petitions submitted in writing or in electronic form will be made available for public inspection. Personal information, such as your name, address, telephone number, e-mail address, etc., will not be removed from your submission.

Federal eRulemaking Portal: Go to <http://www.regulations.gov> and search for documents filed under Docket ID [NRC-2008-0649]. Address questions about NRC dockets to Carol Gallagher, 301-492-3668; e-mail Carol.Gallagher@nrc.gov.

Mail comments to: Secretary, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, ATTN: Rulemakings and Adjudications Staff. E-mail comments to: rulemaking.comments@nrc.gov. If you do not receive a reply e-mail confirming that we have received your comments, contact us directly at 301-415-1677.

Hand deliver comments to: 11555 Rockville Pike, Rockville, Maryland 20852, between 7:30 a.m. and 4:15 p.m. Federal workdays, telephone number 301-415-1677.

Fax comments to: Secretary, U.S. Nuclear Regulatory Commission at 301-415-1101.

Publicly available documents related to this petition may be viewed electronically on the public computers located at the NRC's Public Document Room (PDR), Room O1 F21, One White Flint North, 11555 Rockville Pike, Rockville, Maryland. The PDR reproduction contractor will copy documents for a fee. Selected documents, including comments, may be viewed and downloaded electronically via the Federal eRulemaking Portal <http://www.regulations.gov>.

Publicly available documents created or received at the NRC, are available electronically at the NRC's Electronic Reading Room at <http://www.nrc.gov/reading-rm/adams.html>. From this page, the public can gain entry into the NRC's Agencywide Documents Access and

Management System (ADAMS), which provides text and image files of NRC's public documents. If you do not have access to ADAMS or if there are problems in accessing the documents located in ADAMS, contact the NRC PDR Reference staff at 1-800-397-4209, 301-415-4737 or by e-mail to pdr.resource@nrc.gov

For a copy of the petition, write to Michael T. Lesar, Chief, Rulemaking, Directives and Editing Branch, Division of Administrative Services, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001. The petition is also available electronically in ADAMS at ML083470148.

FOR FURTHER INFORMATION CONTACT: Michael T. Lesar, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, DC 20555. Telephone: 301-492-3663 or Toll-Free: 1-800-368-5642 or E-mail: Michael.Lesar@NRC.Gov.

SUPPLEMENTARY INFORMATION:

Background

The NRC has received a petition for rulemaking dated November 24, 2008, submitted by Sandra Gavutis on behalf of the C-10 Research and Education Foundation, Inc. (petitioner). The petitioner requests that the NRC amend 10 CFR Part 72, "Licensing Requirements for the Independent Storage of Spent Nuclear Fuel, High-Level Radioactive Waste, and Reactor-Related Greater than Class C Waste." The petitioner requests that Part 72 be amended to require licensees to strictly adhere to ASME code requirements for design and use of spent fuel storage casks. The petitioner also requests that 10 CFR 72.42 be amended to clarify requirements for "renewal" and "reapproval" of certificates of compliance (CoCs) of spent fuel storage casks and to address license requirements for multiple cask designs under different expiration dates at the same ISFSI. The petitioner is also concerned that NRC requirements allow 20-year CoCs for spent fuel storage casks to be arbitrarily extended up to 60 years without adequate evaluation for protection of public health and safety. The petitioner also states

that the NRC does not require control systems for dry cask storage systems at ISFSIs and that the NRC allows licensees numerous exemptions from design and construction requirements for dry cask storage systems that result in unresolved fabrication and performance issues. The petitioner is also concerned that the requirements for spent fuel storage casks do not adequately consider or address long term degradation of casks. Lastly, the petitioner states that NRC regulations do not adequately specify requirements for protection of ISFSIs and dry storage casks systems from terrorist attacks or environmental elements.

The NRC has determined that the petition meets the threshold sufficiency requirements for a petition for rulemaking under 10 CFR 2.802. The petition was docketed by the NRC as PRM-72-6 on December 11, 2008. The NRC is soliciting public comment on the petition for rulemaking.

Discussion of the Petition

The petitioner states that because the Federal Government for over 50 years has not resolved the long-term need to protect the public from exposure to irradiated nuclear fuel by creating a permanent high-level waste repository, the States will inherit the responsibility to store spent nuclear fuel indefinitely. The petitioner believes that the NRC is proposing to change the Nuclear Waste Confidence rule so there is no deadline for storage of spent nuclear fuel and that current NRC regulations are inadequate and not properly enforced. The petitioner states that the NRC allows licensees of dry cask storage systems to use alternatives to ASME Code requirements and grants numerous exemptions to cask designs instead of requiring strict compliance with current ASME Code requirements. The petitioner states that required design specifications have not been updated because no current complete studies exist.

The petitioner also states that the renewal process for spent fuel cask designs in 10 CFR Part 72 is unclear. Specifically, the petitioner states that §72.42(a) clearly specifies that the initial term for a site-specific ISFSI must be for a fixed term not to exceed 20 years from the

date of issuance. The petitioner states that an application for reapproval of a spent fuel storage cask design implies that the NRC would reevaluate the design basis of the original cask design with current standards and code requirements for the 20-year CoC storage cask license. The petitioner believes that current NRC practice under §72.42 uses the term “renewal” which implies that the design requirements remain the same as in the original CoC and “simply replaces the original license.” The petitioner states that the NRC has no clear requirements that distinguish between “renewal” versus “reapproval” and has not addressed what the license requirements are for multiple cask designs under different expiration dates at the same ISFSI.

The petitioner is also concerned that the NRC arbitrarily extends CoCs for spent fuel casks beyond the 20-year term up to 60 years without evaluating technical data or regulatory implications to adequately protect public health and safety. The petitioner’s chief concerns are that NRC requirements have not been updated; manufacture of spent fuel storage casks is not consistent with ASME Code requirements; ISFSIs are not required to be built to withstand a terrorist attack; and that spent fuel storage casks are not safeguarded against accidents, adverse weather-related events, and leakage caused by age-related degradation.

The petitioner states that although the NRC has determined that spent fuel storage casks design and construction is as important as that of a reactor vessel, the NRC makes distinctions between wet and dry storage requirements. The petitioner cites §72.122(i) as an example that requires instrumentation and control systems be provided to specifically monitor and control heat removal, but states that the NRC does not require control systems for dry cask storage systems at ISFSIs. The petitioner also notes that §72.124(b) requires specific methods for criticality control but that the NRC has concluded that the potentially corrosive environment in wet storage conditions does not apply to dry storage systems. The petitioner notes that in 1998 the NRC determined that because air and moisture are removed from dry storage casks and replaced with helium, the spent nuclear fuel is then inert and there is no reasonable basis to

assume degradation will occur. "Miscellaneous Changes to Licensing Requirements for the Independent Storage of Spent Nuclear Fuel and High-Level Radioactive Waste" (63 FR 31364, 31365; June 9, 1998). However, the petitioner states that this determination is refuted by the May 1996 incident at Point Beach, evidence from the reactor vessel inner seal failures at the Surry facility, and NRC reports of corrosion resulting from salt water air at other reactor sites.

The petitioner also states that vital adequate technical radiation and heat monitoring data is not included in the regulations that govern dry storage casks and that this data is needed to protect nuclear workers and the public, and for future dry cask design and fabrication. The petitioner is also concerned that a lack of vendor compliance with ASME Code design requirements exists and that the NRC has allowed exemptions to vendors. The petitioner states that the NRC's remedy for this situation has been to simultaneously cite vendors and manufacturers with numerous violations and later approve repeated corrective actions. The petitioner believes that dry cask design, fabrication, and performance issues remain unresolved by this practice.

The petitioner states that limited data exists to determine the extent of the long-term degradation of dry storage casks and the fuel cladding of the fuel in some dry cask designs. The petitioner notes that the NRC did support a research program, "The Dry Cask Storage Characterization Project" conducted at the Idaho National Engineering and Environmental Laboratory; but that this study was never completed because it was cancelled 15 years into the planned 20-year study timeframe. According to the petitioner, this study revealed that degradation of stored fuel was present when a dry cask at the Surry facility was opened, but the NRC reported that the condition of the stored fuel was acceptable. The petitioner believes that the study's inconsistencies did not provide conclusive data for either the cask integrity or condition of the stored spent fuel.

The petitioner also cites a videotape provided by the Union of Concerned Scientists of

an incident at the Point Beach facility; a copy of the videotape was included with the petition. The petitioner states that the video shows that the adverse effects of chemical reactions in a cask could cause heat build up within the cask. The petitioner suggests that a sampling of dry casks certified by the NRC should be opened periodically and studied for at least 60 years because the NRC has permitted extension of 20-year dry cask licenses up to 60 years.

The petitioner lists the following technical concerns regarding dry storage casks: failure of cask materials over long periods of time; inadequate ability to observe and detect those failures because there is no active maintenance in place; difficulty assessing some construction materials for long-term integrity; lack of a formal aging management program; lack of dose rate and heat monitoring for increased heat and radiation levels on ISFSIs and individual casks; and vulnerability to weather-related deterioration and sabotage; and ISFSIs and dry casks are outdoors in plain sight (unlike reactor vessels and spent fuel pools) and are not designed to withstand various terrorist attack scenarios. The casks are the only barrier between radioactive nuclear fuel and the public and the environment while reactor vessels are in a containment building in a controlled environment with a trained team of operators, inspectors, and maintenance staff.

The petitioner suggests that the NRC regulations be amended as follows:

(1) Prohibit dry storage cask systems that do not meet NRC certification requirements from being produced under what the petitioner states is industry pressure to “accept-as-is.”

(2) Base certification of casks on code requirements to include design criteria and technical specifications on a 100-year timeframe instead of the current 20-year design specification that the petitioner views as inadequate. The petitioner also suggests that the NRC conduct a regulatory review of an in-depth technical evaluation for public comment at the 20 year CoC reapproval interval to address cask deterioration issues.

(3) Approve a method for dry cask transfer capacity as part of the original ISFSI

certification process and construction license that will allow for immediate and safe maintenance on a faulty or failing cask. The petitioner states that stored irradiated fuel in dry casks approaches approximately 400 degrees Fahrenheit while the irradiated waste storage pool water is kept at 100 degrees Fahrenheit. The petitioner subsequently asserts that the re-submersion of dry casks and resultant steam flash threaten workers, and may thermally shock the irradiated nuclear fuel rods. The petitioner also states that the ability to perform maintenance safely should be a regulatory priority and that procedures to act promptly in an emergency situation and safely transfer spent fuel must be outlined in NRC regulations.

(4) Ensure that dry casks are qualified for transport at the time of onsite storage approval certification. The petitioner states that transport capacity of shipment offsite must be required if an environmental emergency occurs or for security purposes to an alternative storage location or repository as part of the approval criteria. The petitioner suggests that Chapter 1 of the NRC's Standard Review Plan (NUREG 1567) should clearly define the transport requirements in §§72.122(i), 72.236(h), and 72.236(m).

(5) Specify that the most current ASME codes and standards be adopted for all spent fuel storage containers with no exceptions. The petitioner states that the NRC should no longer issue "justifications and compensatory measures" for ASME codes or allow the industry to design or manufacture casks that conform to safety regulations to "the maximum extent practical" instead of actual ASME Code requirements. The petitioner also states that ASME Code requirements should be enforced unconditionally, with no exceptions or exemptions.

(6) Require ASME code stamping for fabrication, which would specify that an ASME-certified nuclear inspector, who is independent from the manufacturer and vendor, must be onsite at the fabrication plant. The petitioner also suggests that code stamping activities be subject to unannounced NRC inspections.

(7) Require that all fabrication materials be supplied by ASME-approved material

suppliers who are certificate holders. The petitioner is concerned that if a supplier who is not certified is used, material certification under the NG/NF-2130 ASME standard is not possible and means that material traceability is not achieved.

(8) Require that the current ASME Codes and standards for conservative heat treatment and light tightness are adopted and enforced.

(9) Require a safe and secure hot cell transfer station coupled with an auxiliary pool to be built as part of an upgraded ISFSI certification and licensing process. The petitioner states that the licensee must have a dry cask transfer capability for maintenance and during emergency situations after decommissioning for as long as the spent fuel remains on site.

(10) Require real-time heat and radiation monitoring at ISFSIs at all nuclear power plant sites and storage facilities that are not located at reactor sites maintained by the utilities and that the monitoring data be transmitted in real-time to affected State health, safety, and environmental regulators.

(11) Require what the petitioner describes as "Hardened Onsite Storage" to fortify ISFSIs and dry casks from terrorist attacks. The petitioner cites a study by the National Academy of Sciences entitled, "Safety and Security of Commercial Nuclear Fuel Storage," supported by the NRC (Grant No. NRC-04-04-067). According to the petitioner, this study states that the NRC should upgrade the requirements in 10 CFR Part 72 for dry casks, specifically to improve resistance to terrorist attacks. The petitioner also quotes from a paper describing the potential of terrorist attacks on dry casks by Gordon Thompson, the Director of the Institute for Resource and Security, entitled, "Assessing Risks of Potential Malicious Actions at Commercial Nuclear Facilities: A Case of a Proposed ISFSI at Diablo Canyon Site" (June 27, 2007): "the dry cask storage modules used at ISFSIs are not designed to resist attack. At all recently established ISFSIs in the USA, spent fuel is contained in metal canisters with a wall thickness of about 1.6 cm. Each canister is surrounded by a concrete over pack, but the over

pack is penetrated by channels that allow cooling of the canister by convective flow of air.

Attackers gaining access to an ISFSI could employ readily available skills and explosives to penetrate a canister in a manner that allows free flow to the spent fuel, and could use incendiary devices to initiate burning of fuel cladding, leading to a release of radioactive material to the atmosphere.”

(12) Establish funding to conduct ongoing studies to evaluate the effects of age-related material degradation on dry casks and to assess the structural integrity of the casks and fuel cladding. The petitioner has stated that these studies would gather the data necessary for the management of future damage and to determine design specifications for future irradiated nuclear waste storage.

Dated at Rockville, Maryland, this 25th day of February 2009.

For the Nuclear Regulatory Commission.

/RA/

Annette L. Vietti-Cook,
Secretary of the Commission.