

ENVIRONMENTAL ASSESSMENT AND FINDING OF
NO SIGNIFICANT IMPACT
ON
PROPOSED AMENDMENT TO 10 CFR PART 72
"LIST OF APPROVED SPENT FUEL STORAGE CASKS: STANDARDIZED ADVANCED
NUHOMS®-24PT1 ADDITION"

Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
October 2001

I. THE PROPOSED ACTION

The proposed action is to amend 10 CFR Part 72 to add the Standardized Advanced NUHOMS®-24PT1 Horizontal Modular Storage System for Irradiated Nuclear Fuel (Standardized Advanced NUHOMS®-24PT1 Storage System) to the list of NRC-approved cask systems. In so doing, the proposed action would, therefore, provide a greater selection of NRC-approved cask systems for the storage of spent nuclear fuel at commercial nuclear power reactor sites under a general license without the need for additional site-specific approvals. These cask systems can be relied on to provide safe confinement of spent fuel at any reactor site when used in accordance with their certificates of compliance. In order to use an NRC-approved cask system, the reactor licensee must ensure that the reactor site parameters and potential site-boundary doses are within the scope of the cask system safety analysis report and reactor license.

II. THE NEED FOR THE PROPOSED ACTION

This rulemaking is needed to add a cask system to the "List of approved spent fuel storage casks" in 10 CFR 72.214. Transnuclear West, Inc. (TN-West) has requested a certificate of compliance for the Standardized Advanced NUHOMS®-24PT1 Storage System in

accordance with the procedures in 10 CFR Part 72, Subpart L, for obtaining NRC approval of new spent fuel storage cask system designs. The NRC has completed a preliminary safety evaluation report for the cask system and, based upon that evaluation, has determined that commercial nuclear power reactors will be able to use the cask system under a general license after the cask system is listed in 10 CFR 72.214. Additionally, on October 4, 2001, Transnuclear, Inc. (TN), the parent company of TN-West, requested that the name on the certificate be changed from TN-West to TN.

III. ENVIRONMENTAL IMPACTS OF PROPOSED ACTION

There are over 30 years of experience with dry storage of spent fuel in the United States and other countries. The environmental impacts associated with storage of light water reactor (LWR) spent fuel (including dry storage) have been previously considered in other Commission rules and licensing actions on which this assessment is tiered. In a proceeding entitled "Review and Final Revision of Waste Confidence Decision," published in the Federal Register on September 18, 1990 (55 FR 38474), the Commission found "reasonable assurance that, if necessary, spent fuel generated in any reactor can be stored safely and without significant environmental impacts for at least 30 years beyond the licensed life for operation (which may include the term of a revised or reviewed license) of that reactor at its spent fuel storage basin, or at either onsite or offsite independent spent fuel storage installations." The "Environmental Assessment for 10 CFR Part 72 'Licensing Requirements for the Independent Storage of Spent Supplementary Information of a proposed rule published in the Federal Register on May 27, 1986 (51 FR 19106), contain specific analyses showing that the potential environmental impacts from dry storage of spent fuel in casks are small. The "Environmental Assessment for Proposed Rule Entitled 'Storage of Spent Nuclear Fuel in NRC-Approved Storage Casks at

Fuel and High-Level Radioactive Waste," NUREG-1092¹ (August 1984), and the Nuclear Power Reactor Sites" for the proposed rule published in the Federal Register on May 5, 1989 (54 FR 19379), discussed the environmental impact of dry cask storage and the finding of no significant impact.

The major nonradiation environmental impacts for dry cask storage of spent fuel would be those related to fabrication of the casks. The steel required for these casks is expected to have very little impact on the steel industry. The amounts of lead and iron needed would not have significant incremental impacts on the mining and use of these metals. For concrete cask systems, the amount of concrete required would be small compared to industrial and construction uses. The amount of plastic, most commonly polyethylene used as a neutron shield, would not be more than about a ton per cask and would be insignificant compared to the millions of tons produced annually.

Incremental impacts caused by the operation of dry cask system storage of spent fuel under a general license are not considered significant. No effluents are expected from the sealed, dry-storage cask systems. However, activities associated with cask loading and decontamination may result in some small incremental liquid and gaseous effluent. These operations will be conducted under 10 CFR Part 50 reactor operating licenses, and effluents will be controlled to be within existing reactor technical specifications. Because of the relatively large reactor sites, any incremental doses offsite due to direct radiation exposure from the spent fuel storage casks are expected to be small and, when combined with the contribution from reactor operations, will be well within the annual dose equivalent of 0.25-mSv (25-mrem)

¹Copies of NUREG-1092 may be purchased from the Superintendent of Documents, U.S. Government Printing Office, P. O. Box 37082, Washington, DC 20013-7082. Copies are also available from the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161. A copy is also available for inspection and/or copying at the NRC Local Public Document Room, 2120 L Street, NW (Lower Level), Washington, DC.

limit to the whole body specified in 10 CFR 72.104. Incremental impacts in collective occupational exposure due to dry cask storage of spent fuel under a general license are expected to be only a small fraction of that occurring from operation of the nuclear power station.

During the promulgation of the amendments adding the new Subpart K to 10 CFR Part 72 (55 FR 29181; July 18, 1990), the NRC staff assessed the public health consequences of dry cask system storage accidents. The NRC staff has also determined that the release from dry cask system storage is of a comparable magnitude to that from a spent fuel storage basin. The staff also assessed public health consequences from acts of radiological sabotage and concluded that, to be successful, it would have to be carried out with the aid of explosives. The public health consequences from an explosive sabotage event would stem almost exclusively from the release of respirable particles. In an NRC study, an experiment was carried out to evaluate the effects of a severe, perfectly executed sabotage scenario against a simulated storage cask containing spent fuel assemblies. The whole-body dose to an offsite individual was calculated based on the release data and found to about 10 mSv (1 rem). The experiment and calculations led to the conclusion of low public health consequences. As a result of these evaluations, the staff determined that, because of the physical characteristics of the storage casks and the conditions of storage that include specific security provisions, the potential risk to public health and safety due to accidents or sabotage is extremely small.

Decommissioning dry cask spent fuel storage under a general license would be carried out as part of the power reactor site decommissioning plan. It would consist of removing the spent fuel from the site and decontaminating cask surfaces. The casks would then be released for reuse or disposal. No residual contamination is expected to be left behind on supporting structures. The incremental cost associated with decommissioning is expected to represent a small fraction of the cost of decommissioning an entire nuclear power station.

Because this amendment to 10 CFR Part 72 will not change the existing safety and environmental requirements for the storage of spent nuclear fuel, and dry cask system spent fuel storage under a general license will still have to meet these requirements, no change in environmental impact is anticipated. In previous rulemaking proceedings, the Commission determined that compliance with the requirements of 10 CFR Part 72 would ensure adequate protection of public health and safety. The NRC, through a safety evaluation report for the cask system in this rulemaking, has determined that if the conditions specified in the certificate of compliance are met, adequate protection of public health and safety will be maintained. Based on the above assessment, the Commission finds that adding the Standardized Advanced NUHOMS®-24PT1 Storage System to the list of approved storage cask systems will not have a significant environmental impact.

IV. ALTERNATIVES TO THE PROPOSED ACTION

The alternative to this proposed action is to withhold generic approval of this new design and require a site-specific licensing proceeding for each utility proposing to use this cask system. Although this would involve a different process for approving the cask design, the environmental impacts of approving this cask design would be the same. In light of this consideration, and given the insignificance of the environmental impacts, implementation of the proposed action is reasonable.

The Nuclear Waste Policy Act of 1982 (NWPA) directed that the Commission approve one or more technologies that have been developed and demonstrated by DOE for the use of spent fuel storage at the sites of civilian nuclear power reactors without, to the maximum extent practicable, the need for additional site-specific approvals by the Commission. The NWPA also directed that the Commission, by rulemaking, set forth procedures for licensing the technology.

Regulations for accomplishing this are in place. Therefore, the no action alternative is unacceptable.

V. ALTERNATIVE USE OF RESOURCES

The only irreversible commitments of resources determined in this assessment were those materials needed for the cask systems.

VI. AGENCIES AND PERSONS CONTACTED

No agencies or persons outside the NRC were contacted in connection with the preparation of this environmental assessment.

VII. FINDING OF NO SIGNIFICANT IMPACT

Based on the foregoing environmental assessment, the NRC concludes that this rulemaking, entitled "List of Approved Spent Fuel Storage Casks: Standardized Advanced NUHOMS®-24PT1 Addition," will not have a significant incremental effect on the quality of the human environment. Therefore, the NRC has determined that an environmental impact statement is not necessary for this rulemaking.

Certain documents related to this rulemaking, including comments received by the NRC, may be examined at the NRC Public Document Room, 11555 Rockville Pike, Rockville, MD. These same documents may also be viewed and downloaded electronically via the interactive rulemaking website established by NRC for this rulemaking (<http://ruleforum.llnl.gov>).