ENVIRONMENTAL ASSESSMENT AND FINDING OF NO SIGNIFICANT IMPACT ON PROPOSED AMENDMENT TO 10 CFR PART 72 "LIST OF APPROVED SPENT FUEL STORAGE CASKS: TN-32 REVISION"

Office of Nuclear Material Safety and Safeguards

U.S. Nuclear Regulatory Commission (NRC)

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I. THE PROPOSED ACTION

The proposed action is to amend 10 CFR Part 72 to revise the Transnuclear, Inc. TN-32 cask system listing within the 10 CFR Part 72 “List of Approved Spent Fuel Storage Casks” to include Amendment No. 1 to the Certificate of Compliance (CoC). This amendment will allow holders of power reactor operating licenses to store spent fuel in the cask under the revised conditions. The changes proposed for Amendment No. 1 to the TN-32 CoC include: (1) addition of B&W/FCF 17 x 17 Mark BW assembly to Technical Specification (TS) 2.1, “Fuel to be stored in the TN-32 Cask,” with revised bounding characteristics, and (2) revised TS 4.3.3, “Site Specific Parameters and Analysis” to allow analysis of verification of allowable seismic loads. The cask can be relied on to provide safe confinement of spent fuel at any reactor site when used in accordance with the CoC. 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 revise a cask system listing within the "List of approved spent fuel storage casks" in 10 CFR 72.214. On April 23, 1999, and February 29, 2000, the certificate holder (Transnuclear, Inc.) submitted applications to the NRC to amend CoC No. 1021 to permit a Part 72 licensee to (1) store an additional type of spent fuel in the TN-32 cask system, and (2) meet more performance-based technical specifications. No other changes to the TN-32 cask system design were requested in this application. The staff performed a detailed safety evaluation of the proposed CoC amendment request and found that the proposed changes to the CoC do not reduce the TN-32 safety margin. In addition, the staff has determined that the proposed changes do not pose any increased risk to public health and safety.

III. ENVIRONMENTAL IMPACTS OF PROPOSED ACTION

The potential environmental impact of using the TN-32 system was initially presented in the Environmental Assessment for the final rule to add the TN-32 to the list of approved spent fuel storage casks in 10 CFR 72.214 [65 FR 14790 (March 20, 2000)]. Furthermore, each general licensee must assess the environmental impacts of the specific Independent Spent Fuel Storage Installation (ISFSI) in accordance with the requirements of 10 CFR 72.212(b)(2)(iii). This section requires the general licensee to perform written evaluations to demonstrate compliance with the environmental requirements of 10 CFR 72.104, “Criteria for radioactive materials in effluents and direct radiation from an ISFSI or MRS [Monitored Retrievable Storage Installation].”

TN-32s are designed to mitigate the effects of design basis accidents that could occur during storage. Design basis accidents account for human-induced events and the most severe natural phenomena reported for the site and surrounding area. Postulated accidents analyzed for an ISFSI include tornado winds and tornado generated missiles, design basis earthquake, design basis flood, accidental cask drop, lightning effects, fire, explosions, and other incidents.

The changes proposed for Amendment No. 1 to the TN-32 CoC include: (1) addition of B&W/FCF 17 x 17 Mark BW assembly to Technical Specification (TS) 2.1, “Fuel to be stored in the TN-32 Cask,” with revised bounding characteristics, and (2) revised TS 4.3.3, “Site Specific Parameters and Analysis” to allow analysis of verification of allowable seismic loads. NRC staff review found that fuel/hardware weight planned for storage will remain within the design basis for the cask. NRC staff analysis of pressure from fission gas release in the fuel will stay within bounds found acceptable in the past. Thus, NRC staff concluded that storage of the new type of fuel will not change the structural analysis reported for the original TN-32 storage cask SAR. Proposed changes to the Technical Specifications for seismic requirements were also evaluated by NRC staff and found that there is assurance against both tipping over and sliding during the design basis earthquake at the storage site. The revised seismic requirements will not change the conclusions previously reached in the SER. The NRC staff also evaluated type of materials (fuel) for effects such as galvanic action, chemical reactions, and temperature and found cladding integrity to be sufficient during loading, long-term storage, or design accident conditions. Other factors evaluated and found to be acceptable included: Thermal: cask heat transfer; fuel cladding temperature; quench analysis; heat generation; and, free gas. Shielding: the NRC staff calculated that there is a slight increase in the cobalt source term due to the slight increase in mass of the cladding. The exposure therefrom is off-set by a smaller amount

of fuel, when compared with the original design. The NRC staff concluded that the system can meet regulatory shielding requirements under normal, off-normal, and accident conditions. Criticality: The applicants evaluation demonstrated that storage of Mark BW 17x17 fuel in the TN-32 cask is bounded by the criticality analysis performed by the FSAR. The NRC staff performed independent confirmatory calculations and is reasonably assured that the TN-32 will allow for safe, subcritical storage of the new type of fuel assembly during normal, off-normal, and accident conditions. Selected confirmatory calculations performed by the NRC staff lead to the conclusion that Mark BW 17x17 fuel confinement is within existing bounds. The proposed amendment includes conditions for cask use - operating controls, limits, or technical specifications to be incorporated into the CoC to ensure that the TN-32 storage cask system meets the requirements of 10 CFR Part 72.

Considering the specific design requirements for each accident condition, the design of the cask would prevent loss of containment, shielding, and criticality control. Without the loss of either containment, shielding, or criticality control, the risk to public health and safety is not compromised.

The occupational exposure is not significantly increased, and offsite dose rates remain well within the 10 CFR Part 20 limits. Therefore, the proposed action now under consideration would not change the potential environmental effects assessed in the initial rulemaking.

Therefore, the NRC staff has determined that there is no reduction in the safety margin nor significant environmental impacts as a result of the amendment.

IV. ALTERNATIVES TO THE PROPOSED ACTION

The no action alternative would be to deny the requested amendment. Because the NRC has determined that there are no significant environmental impacts associated with this action, any alternative with equal or greater environmental impacts need not be evaluated.

The NWPA directed that the NRC 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 the need for additional site-specific review to the extent practicable. The NWPA also directed that the NRC set forth procedures for licensing the technology by rulemaking. Regulations for accomplishing this are in place. Therefore, the no action alternative is unacceptable.

V. ALTERNATIVE USE OF RESOURCES

There were no irreversible commitments of resources determined in this assessment.

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

The environmental impacts of the proposed action have been reviewed in accordance with the requirements set forth in 10 CFR Part 51.

Based on the foregoing environmental assessment, the NRC concludes that this rulemaking entitled "List of Approved Spent Fuel Storage Casks: TN-32 Revision" 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 rule.

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 rulemaking website (http:\\ruleforum.llnl.gov).