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

Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission (NRC)

November 2000

I. THE PROPOSED ACTION

The proposed action is to amend 10 CFR Part 72 to revise the NAC International (NAC) Universal Storage System (NAC-UMS) listing within the “List of approved spent fuel storage casks” to include Amendment No. 1 to Certificate of Compliance (CoC) No. 1015. This amendment will allow holders of power reactor operating licenses, as general licensees under Part 72, to store PWR design basis fuel assemblies in accordance with revised technical specifications and Maine Yankee site-specific spent fuel in the NAC-UMS. Amendment No. 1 includes: (1) changes to authorized contents to allow Maine Yankee site-specific spent fuels within the PWR basket, including damaged or consolidated fuel in a Maine Yankee fuel can and burnups up to 50,000 MWd/MTU; (2) changes to allow longer times for PWR spent fuel cask loading operations based on reduced heat loads; (3) authorization to store, without canning, intact PWR assemblies with missing grid spacers (up to an unsupported length of 60 inches); (4) editorial clarifications to the technical specifications (TS); and (5) deletion of a certificate reference to the NS-4-FR trade name of the solid neutron shielding material in the VCC shield plug. The cask system 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, the reactor licensee must ensure that the reactor site parameters and potential site-boundary doses are within the scope of the cask safety analysis report (SAR) 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. The certificate holder (NAC International) submitted an application to the NRC, dated July 16, 1999, to amend CoC No. 1015 to authorize changes to the technical specifications affecting PWR design basis fuel assemblies and the storage of Maine Yankee site-specific fuel (MYSSF) that is configured differently or that has different fuel parameters (i.e., enrichment or burnup) than the authorized design basis fuel assemblies. Amendment No. 1 includes: (1) changes to authorized contents to allow Maine Yankee site-specific spent fuels within the PWR basket, including damaged or consolidated fuel in a Maine Yankee fuel can and burnups up to 50,000 MWd/MTU; (2) changes to allow longer times for PWR spent fuel cask loading operations based on reduced heat loads; (3) authorization to store, without canning, intact PWR assemblies with missing grid spacers (up to an unsupported length of 60 inches); (4) editorial clarifications to the technical specifications; and (5) deletion of a certificate reference to the NS-4-FR trade name of the solid neutron shielding material in the VCC shield plug. 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 NAC-UMS 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 NAC-UMS storage system was initially presented in the Environmental Assessment for the final rule to add the NAC-UMS system to the list of approved spent fuel storage casks in 10 CFR 72.214 (65 FR 62581); October 19, 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].”

The NAC-UMS storage system is 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 earthquakes, design basis flood, accidental cask drop, lightning effects, fire, explosions, and other incidents.

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, and criticality control, the risk to public health and safety is not compromised.

The staff reviewed the proposed changes and confirmed that the changes provide reasonable assurance that the spent fuel can be stored safely and that the changes meet the

acceptance criteria specified in 10 CFR Part 72. The staff documented its findings in a Safety Evaluation Report.

The NRC staff's review included an evaluation of the certificate holder's Safety Analysis Report, Chapter 5, Shielding Evaluation. The NRC staff agrees that the MYSSF assemblies and the non-fuel hardware source terms are bounded by the standard design-basis fuel for the NAC-UMS cask. The dose rates that would be measured from the Maine Yankee contents are also bounded by the dose rates for design basis fuel. Therefore, the on-site and off-site doses from the Maine Yankee fuel assemblies will be less than from the standard NAC-UMS design basis fuel and will also be bounded. Because the occupational exposure is not significantly increased and off-site dose rates remain well within the 10 CFR Part 20 limits, 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 or significant environmental impacts as a result of the amendment. Because the proposed changes will not change the environmental requirements for the storage of spent fuel, no change in environmental impact is anticipated.

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 Nuclear Waste Policy Act (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: NAC-UMS 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 rule, 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 (http:\\ruleforum.llnl.gov).