

Request for Additional Information
Docket No. 72-1015
Certificate of Compliance No. 1015
Model No. NAC-UMS Storage System

By letter dated December 18, 2019 (Agencywide Documents Access and Management System [ADAMS] Package Accession No. ML20006D749), as supplemented on April 24, 2020 (ADAMS Package Accession No. ML20122A201, NAC International (NAC) submitted an application for Amendment No. 8 to the Model No. NAC-UMS storage cask. This request for additional information identifies information needed by the U.S. Nuclear Regulatory Commission staff in connection with its review of the application. The requested information is listed by chapter number and title in the applicant's safety analysis report (SAR). The NRC staff used NUREG-2215, "Standard Review Plan for Spent Fuel Dry Storage Systems and Facilities – Final Report," in its review of the application.

Each question describes information needed by the staff for it to complete its review of the application and to determine whether the applicant has demonstrated compliance with regulatory requirements.

2.0 Principal Design Criteria

- 2-1 Justify changing the quality category for the NAC-UMS vertical concrete cask lid bolts from category B to category NQ.

The guidance in NUREG/CR-6407, "Classification of Transportation Packaging and Dry Spent Fuel Storage System Components According to Importance to Safety" indicates that the concrete structure access bolts should be quality category B and the SAR didn't provide a justification for the change.

This information is needed to determine compliance with Title 10 of the *Code of Federal Regulations* (10 CFR) 72.236(b).

4.0 Structural Evaluation

- 4-1 Revise the stress evaluations in Section 3.9.1.3 of the application for the top and bottom weldment ligaments adjacent to the increased, 6.428-inch square, corner slot opening.

Page 3.9-4 of the application states: "The sectional stress intensity at section S_{tw} of the ligament for the top weldment of BWR DF [boiling-water reactor damaged fuel] configuration is determined to be 17.0 ksi ($=12.1 \times 1.178 / 0.839$), using the ratio of the ligament widths of both configurations." The staff notes that maximum stress intensity, as previously analyzed in Section 11.2.4 of the final safety analysis report (FSAR) (ADAMS Accession No. ML041040397), is likely to be associated primarily with bending rather than membrane stress. As such, the increased stress intensity will not be linearly proportional to the decreased ligament dimension, and the reported sectional stress of 17.0 ksi could be markedly underestimated. A more conservative stress estimate based on the section modulus needs to be considered to demonstrate adequate stress performance for the subject ligaments.

This information is needed to determine compliance with the regulatory requirements in 10 CFR 72.236(l).

Enclosure

Shielding Evaluation

- 5-1 Provide the burnup, enrichment and cooling time that correspond to the source terms used to determine the dose rates reported in Tables 5.8.2-4 to 5.8.2-7, Section 5.8.2, of the SAR.

This section contains tables showing the maximum dose rates for the transfer cask and concrete cask. Maximum dose rates for 56 undamaged BWR fuel assemblies in the NAC-UMS system were calculated using the MCNP response function method with source terms in Calculation Package EA790-4601. Section 6.2.2 of this calculation package shows all of the combinations of burnup, enrichment and cooling times that were analyzed, however, the staff requests that the applicant provide the limiting combination(s) and gamma and neutron source terms from these combinations so that it may verify that the bounding source term was selected for dose rate calculation.

This information is needed to determine compliance with 10 CFR 72.236(d).