

November 30, 2000

Ms. Tara J. Neider
Vice President-Engineering
Transnuclear, Inc.
Four Skyline Drive
Hawthorne, NY 10532-2176

SUBJECT: ACCEPTANCE OF ASME CODE ALTERNATIVE REQUEST FOR THE TN-32
DRY STORAGE CASK, DOCKET NO. 72-1021 (TAC NO. L23222)

Dear Ms. Neider:

By letter dated October 26, 2000, Transnuclear, Inc. (TN) submitted a request to the Nuclear Regulatory Commission (NRC), in accordance with the TN-32 Certificate of Compliance, Technical Specification 4.1.3, to accept an alternative to the requirements of the ASME B&PV Code, Section III, Subsection NB, paragraph NB-5210. This request applies only to three of the five TN-32A casks currently being fabricated for Duke Energy's McGuire Nuclear Station (serial numbers TN-32A-50, -51, and -52).

Paragraph NB-5210 requires that Category A welded joints in vessels be examined by a radiographic (RT) examination. Furthermore, NB-5120 requires that the RT examination be performed after post weld heat treatment, and NB-5111 requires that the RT examination be performed in accordance with Section V, Article 2, with some added requirements.

TN's proposed alternative applies to only a small part (1.63 inch) of the longitudinal seam weld (69.25 inch total length) at the bottom end. This is necessary because the post stress relief RT examination technique failed to meet the density requirements of Section V, Article 2, paragraph T-282 for this small section of the weld due to the presence of the bottom plate of the inner shell. This condition arose because the fabrication sequence for these three casks fabricated at Ranor was different than previously fabricated TN-32s. Subsequent to the discovery of this problem, a technique was developed which permitted complete examination of the subject area in accordance with NB-5000. This technique was successfully applied to the fourth TN-32A inner shell and will be applied to all subsequent casks fabricated at Ranor.

The requested alternative substitutes an ultrasonic (UT) examination of the entire weld prior to stress relief and a fracture mechanics evaluation for the limited section of the welds (1.63 inch long) where the post stress relief RT examination does not meet the density requirements of Section V, Article 2, paragraph T-282. The pre-stress relief UT examination was applied to the entire length of the subject weld for the three casks, with only one reportable indication, which was repaired and re-examined prior to stress relief. Further, the fracture mechanics evaluation for the small area of the weld not examined by the post stress relief RT examination (1.63 inch) determines the maximum allowable flaw sizes for various postulated weld flaws for the weld to retain its structural integrity. The analysis shows that the likelihood of flaw sizes larger than acceptable in the subject area is extremely low, considering the results of the pre-stress relief

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UT examination of the entire weld and the post stress relief RT examination of the remainder of the subject weld. Independent calculations performed by the NRC staff using the computer code PRODIGAL confirmed that the probability of the subject area containing flaws that are larger than acceptable is $< 1 \times 10^{-5}$.

Additional weld integrity assurance is provided by the post stress relief RT examination of the remainder (97%) of the subject weld joint. The post stress relief RT examination found no reportable flaw indications for the three casks. In addition, a supplemental post stress relief UT examination of the limited section of the weld (1.63 inch) that is not in compliance with the RT examination for the two casks still in fabrication was found acceptable (i.e., no reportable flaws). Further, for all three casks in question, the weld preps and final surfaces were examined by the magnetic particle method in accordance with NB-5130 and NB-5210. This final surface examination was performed after stress relief.

This letter is to inform you that the staff finds that the proposed alternative to the requirements of the ASME B&PV Code, Section III, Subsection NB, paragraph NB-5210, provides an acceptable level of quality and safety and accepts this alternative only for the three of the five TN-32A casks currently being fabricated for the Duke Energy's McGuire Nuclear Station, serial numbers TN-32A-50, -51, and -52. If you have any questions, please contact Mary Jane Ross-Lee of my staff at 301-415-3781.

Sincerely,
/RA/ original signed by /s/
E. William Brach, Director
Spent Fuel Project Office
Office of Nuclear Material Safety
and Safeguards

Docket No. 72-1021
cc: Mr. Keith Waldrop
Duke Energy Corp.

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