VERMONT YANKEE
NUCLEAR POWER CORPORATION

RD 5, Box 169, Ferry Road, Brattleboro, VT 05301

FVY 84-18

REPLY TO:
ENGINEERING OFFICE
1671 WORCESTER ROAD
FRAMINGHAM, MASSACHUSETTS 01701
TELEPHONE 617-872-8100

March 2, 1984

U.S. Nuclear Regulatory Commission
Region I
631 Park Avenue
King of Prussia, PA 19406

Attention: Mr. Thomas E. Murley
Regional Administrator

References: (a) License No. DPR-28 (Docket No. 50/271)
(b) Letter, USNRC to VYNPC, dated February 1, 1984 and Inspection Report No. 83-30, Appendix A (Notice of Violation)

Dear Sir:

Subject: Response to Inspection Report 83-30

This letter is written in response to Reference (b), which indicates that one of our activities was not conducted in full compliance with Nuclear Regulatory Commission requirements. The alleged Level III violation and Level IV violation were identified as a result of an inspection conducted by your Mr. J. Johnson and the State of Nevada in August and September of 1983.

Information is submitted as follows in answer to the alleged violations contained in the Appendix to your letter.

Item:

A. 10 CFR 71.5 prohibits delivery of licensed material to a carrier for transport unless the licensee complies with applicable regulations of the Department of Transportation in 49 CFR Parts 170-189. 49 CFR 172.441(a) requires that each package of radioactive materials offered for transportation shall be designed and prepared for shipment so that under conditions normally incident to transport the radiation level does not exceed 200 millirem per hour at any point on the external surface of the package.

Contrary to the above, on September 1, 1983, the licensee delivered for shipment to the Beatty, Nevada, burial site, 7.2 curies of licensed material in the form of spent resin, and upon receipt at the Beatty, Nevada, burial site on September 12, 1983, the radiation level on the external surface of the package was determined to be 250 millirems per hour.

Response:

Vermont Yankee admits to the alleged violation.

At the time of the shipment, Vermont Yankee used Eberline RO-2 ionization chambers, to monitor the casks leaving the site. No readings during this survey detected radiation levels in excess of the Regulatory Limits (Note: The RO-2 is designed to measure exposure rate). The detection volume is a right circular cylinder 68mm high and 75mm in diameter. The distance between the center of the detection volume and the external surface of the instrument case is approximately 32mm.

Upon arrival at the Beatty Site, the cask was surveyed by a representative from the State of Nevada, using Eberline E-520 Geiger Mueller Detectors. With this instrumentation, contact pulse rate readings obtained were interpreted to be in excess of 200 mR/hr (Note: The E-520 is designed to measure pulse rate). The detection volume in the E-520 is a right circular cylinder 40mm long and 8mm in diameter. The center is approximately 20mm from the external surface of the instrument case.

Given these differences in detection volume and geometry (i.e., minimum attainable detection volume and centerline to source distances), and the fact that the RO-2 is designed to measure exposure rate, whereas the E-520 is designed to measure pulse rate with proportionality to exposure rate highly dependent upon the energy of the radiation and the sourse to detector geometry, the discrepancies in radiation levels detected on the shipping package appear to be a result of the differences in the instrumentation used. This conclusion was further substantiated when the results of a re-survey (conducted by Vermont Yankee personnel and a representative from the State of Nevada) using RO-2 and E-520 instrumentation yielded respective contact exposure rates of 160 mR/hr and 220 mR/hr.

For reasons previously mentioned, it is Vermont Yankee's position that the instrument of choice for this type of survey is the RO-2. However, to avoid repeated noncompliance due to the use of different instrumentation by others, the following correction measures have been incorporated into Vermont Yankee Procedure AP 0504.

1. Radiation surveys required to determine compliance with shipping requirements are to be made using both Eberline RO-2 and Eberline E-520 instrumentation. The highest radiation levels detected are to be used for determining compliance.

2. Health Physics management approval will be required for shipment of material found to be within 25% of regulatory limits.

In addition, Vermont Yankee's Corporate Radiation Policy has been revised to prohibit shipments of radioactive materials $\geq$ 90% of applicable Federal Limits.

It is our belief that these corrective measures will be sufficient to prevent further violations of this nature.

Item:

B. 10 CFR 71.5 prohibits delivery of licensed material to a carrier for transport unless the licensee complies with applicable regulations of the Department of Transportation in 49 CFR Parts 170-189. 49 CFR 173.425(b)(1) requires that low specific activity materials must be packaged in strong, tight packages so that there will be no leakage of radioactive materials under conditions normally incident to transportation.

Contrary to the above, on August 23, 1983, the licensee delivered to a carrier for transport 47.93 millicuries of low specific activity licensed material in a package that was not strong and tight in that radioactive material leaked from the package onto its external surface and onto the bed of the trailer (a closed, exclusive-use vehicle) as it was being transported to Plymouth, Massachusetts.

Response:

Vermont Yankee admits to the alleged violation.

Four double blade guides, which had been borrowed from Pilgrim for use during Vermont Yankee's 1983 refueling outage, were prepared for return shipment to Pilgrim during the week of August 21, 1983. This preparation included wrapping the blade guides in the box in which they were received from Pilgrim. Pre-shipment surveys were conducted on August 23, as required by Plant Procedure. Surveys for smearable contamination detected less than 1000 dpm/100cm^2 on the package, the trailer bed, and the trailer wheels. The highest exposure rate detected was 150 mR/hr at contact with the package. The total activity in the package was determined to be 47.93 mCi. The van in which the package was transported was sealed closed after final radiation surveys were conducted.

On August 24, 1983, Vermont Yankee was contacted by representatives of Pilgrim Nuclear Station's health physics staff and was informed that contamination levels of from 60,000 to 300,000 dpm had been detected on the bed of the transport vehicle, and levels of up to 12,000 dpm per 100cm^2 had been detected on the package during receipt surveys conducted at Pilgrim. The contamination on the vehicle was present in small, localized areas approximately 1.5 inches in diameter. Normalizing these spots for areas, the contamination on the vehicle was equivalent to 7,000 to 35,000 dpm/100cm^2 when averaged over 300cm^2.

Examination of the box in which the blade guides were packaged revealed that there were narrow gaps between the boards which constituted the box body. Apparently, contamination escaped from the package via these gaps during transport. Upon receipt at VY, the blade guides had been unwrapped from their plastic covering and removed from the box. This plastic, which was highly contaminated, was then stored in the box, potentially contaminating its interior surfaces. When the blade guides were packaged for return shipment to Pilgrim, great care was taken to wrap the guides so that any contamination present on them would be contained. Consequently, the apparent source of the contamination that was ultimately detected on the exterior surface of the box and on the vehicle was most probably the contamination from the interior surfaces of the box.

Successful decontamination of the package and shipping trailer was accomplished by Pilgrim Nuclear Station personnel.

AP 0504, "Shipment and Receipt of Radioactive Materials," has been revised to include: 1) design and manufacture criteria for shipping packages; 2) guidance for determining whether a package qualifies as a "strong, tight container"' and 3) a requirement for Health Physics management to inspect any questionable package.

We trust that this information will be satisfactory; however, should you have any questions or desire additional information, please contact us.

Very truly yours,

VERMONT YANKEE NUCLEAR POWER CORPORATION

Warren P. Murphy
Vice President and
Manager of Operations

WPM/dm