UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

October 30, 1990

Docket No. 50-336

Mr. Edward J. Mroczka
Senior Vice President
Nuclear engineering and Operations
Connecticut Yankee Atomic Power Company
Northeast Nuclear Energy Company
P. O. Box 270
Hartford, Connecticut 06141-0270

Dear Mr. Mroczka:

SUBJECT: PLUG IN PLUG (PIP) REPAIRS FOR STEAM GENERATOR TUBE PLUGS
MILLSTONE UNIT 2

This is to confirm our conversation with your staff on October 18, 1990, concerning the possibility of an unanalyzed condition relating to the PIP repairs made on the steam generator plugs in March 1989. We are providing this to more clearly identify our concerns.

PIP repairs to 446 plugs were performed in March 1989 at Millstone 2. The PIPs were of an initial design that was tested to exhibit an average leak rate of 0.003 gpm (Reference WCAP-12244 Rev. 1, "Steam Generator Tube Plug Integrity Summary Report, April 1989"). A later design was tested to exhibit average leak rates of two orders of magnitude less than 0.003 gpm. These repairs were developed pursuant to 10 CFR 50.59.

PIPs are intended to provide "leak limiting" rather than "leak tight" repairs of steam generator tube plugs. Should the original plug fail (such as at North Anna 1), the PIP ensures that there is insufficient energy imparted to the plug top (by the primary fluid) to cause the plug top to become a high energy projectile. If either the plug or the affected tube is not cracked entirely through wall, there will be no leakage through the PIP. If both the plug and the affected tube are cracked through wall, then the PIP will leak at an average of .003 gpm as established by test.

Taking no credit for the leak tight integrity of the repaired plugs or the affected tubes, total primary-to-secondary leakage through the 446 PIPs would be 1.33 gpm. This number could be somewhat higher during steam line break (SLB) accidents due to the larger pressure differential.

As a practical matter, many of the repaired plugs and affected tubes will be leak-tight during normal operation such that the Technical Specification limit is not likely to be exceeded. However, it should be noted that the tubes were plugged because they were no longer fit to serve as the reactor coolant system boundary. The plugs were repaired for the same reason. There is no reason to expect that the tubes and plugs will not leak under the larger pressure loadings associated with a SLB.

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In addition to the 446 PIPs installed in March 1989, hundreds of additional PIPs have recently been installed at Millstone. These PIPs are of the more recent design that exhibit two orders of magnitude less leakage than 0.003 gpm and they do add to cumulative postulated primary-to-secondary leakage.

Based on the above, we are concerned that leakage through the PIPs during a SLB accident could exceed the 1.0 gpm value assumed in the safety analyses for purposes of assessing the consequences of a SLB relative to Part 100. We believe this issue should be resolved and request that you advise us accordingly. Please provide us a schedule for resolving this issue within 15 days from receipt of this letter.

Sincerely,

original signed by

Guy S. Vissing, Senior Project Manager
Project Directorate I-4
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

cc: See next page

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