Northeast Nuclear Energy

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The Northeast Utilities System

AUG 10 2000

Docket No. 50-423
B18190

Re: 10 CFR 50.90

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

Millstone Nuclear Power Station, Unit No. 3
Revision to Response to Request for Additional Information
Spent Fuel Pool Rerack (TAC No. MA5137)

In a letter dated March 19, 1999,[1] Northeast Nuclear Energy Company (NNECO) submitted proposed revisions to the Millstone Unit No. 3 Technical Specifications to support an increase in the storage capacity of the Spent Fuel Pool. On May 2, 2000,[2] the Nuclear Regulatory Commission (NRC) requested additional information related to various radiological considerations associated with this proposal. In a letter dated June 16, 2000,[3] NNECO provided the answers to those questions. Subsequent discussions with the staff have resulted in a request for further clarification of NNECO's response to question No. 7 of the May 2, 2000, memorandum. Attachment 1 contains NNECO's revised response to that question.

There are no regulatory commitments contained within this letter.

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(1) R. P. Necci letter to U.S. Nuclear Regulatory Commission, "Millstone Nuclear Power Station, Unit No. 3, Proposed Revision to Technical Specification, Spent Fuel Pool Rerack (TSCR 3-22-98)," dated March 19, 1999.

(2) Memorandum from Victor Nerses to James W. Clifford, "Millstone, Unit No. 3, Draft Request for Additional Information, Spent Fuel Rerack Amendment (TAC No. MA5137)," dated May 2, 2000.

(3) R. P. Necci letter to U.S. Nuclear Regulatory Commission, "Millstone Nuclear Power Station, Unit No. 3, Response to Request for Additional Information, Spent Fuel Pool Rerack (TAC No. MA5137)," dated June 16, 2000.

A001

If the NRC Staff should have any questions or comments regarding this submittal, please contact Mr. David Dodson at (860) 447-1791, extension 2346.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY

Raymond P. Necci
Vice President - Nuclear Technical Services

Subscribed and sworn to before me

this 10th day of August, 2000

Notary Public

Date Commission Expires:

SANDRA J. ANTON
NOTARY PUBLIC
COMMISSION EXPIRES
MAY 31, 2005

Attachment (1)

cc: H. J. Miller, Region I Administrator
V. Nerses, NRC Senior Project Manager, Millstone Unit No. 3
A. C. Cerne, Senior Resident Inspector, Millstone Unit No. 3

Director
Bureau of Air Management
Monitoring and Radiation Division
Department of Environmental Protection
79 Elm Street
Hartford, CT 06106-5127

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Attachment 1

Millstone Nuclear Power Station, Unit No. 3

Revised Response to Draft Request for Additional Information
Dated May 2, 2000, Question No. 7

7. The re-racking of the SFP will result in storage space for roughly 1100 additional fuel assemblies. Discuss what effect the storage of additional fuel assemblies in the SFP will have on the overall evaporation rate from the SFP area and whether this increased evaporation rate will result in an increase in the amount of gaseous tritium released from the SFP.

Response

In its March 19, 1999 submittal, NNECO identified that a revised thermal hydraulic analysis of the spent fuel pool (SFP) cooling system had been prepared and submitted for NRC review on January 18, 1999,[1] in support of adopting the practice of conducting full core offload as a normal refueling practice for Millstone Unit No. 3. That analysis and the underlying assumptions form the bounding case for evaluation of gaseous tritium release from the SFP.

To address the Staff's question a calculation[2] was performed to estimate the release of tritium from the SFP and the associated dose rate. The calculation used several conservative assumptions to obtain bounding (worst case) release and dose estimates.

Assumptions include:

1. A linear extrapolation of post-refueling outage SFP tritium concentrations to predict concentrations at the end of plant life (i.e. 18 cycles beyond the most recent refueling conducted at Unit No. 3),
2. A full year of operation at 150°F when actual operation at this temperature is expected to be no more than two months,
3. Zero humidity in air above the pool for the same one year period which maximizes the evaporation rate, and
4. A dose conversion factor based on the highest ratio of dose to radioactivity release in a calendar quarter.

Relative to assumption 1, it is NNECO's observation that the largest contributor to tritium concentration in the SFP is tritium produced in the reactor coolant system and transferred to the SFP when these volumes are co-mingled during the refueling process. Tritium production directly from the storage of spent fuel when these volumes are separated is considered to be negligible; therefore; only the number of refueling intervals need be considered. Additionally, the linear extrapolation of historical tritium data is conservative in that the removal mechanism is essentially a feed and bleed type of process which would result in the long term tritium concentration reaching a plateau at some concentration below that used in the calculation.

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[1] Martin L. Bowling letter to U. S. Nuclear Regulatory Commission, "Millstone Nuclear Power Station, Unit No. 3, License Amendment Request and Technical Specification Changes For Full Core Offload (PTSCR3-16-98)," dated January 18, 1999.

[2] Calculation M3SFP-01796R3, Rev 0, "MP3 Spent Fuel Pool Tritium Dose Projection," dated July 25, 2000.

The results show a total of 1,360 curies of tritium released from the pool in the last 18-month period following the final core discharge. On an annual basis this equates to 910 curies/year at an equivalent organ dose rate of 3.54 mrem/year. This dose estimate is well below 10 CFR 50 Appendix I and Technical Specification limits and will have no detectable impact to public health.

It should also be noted that tritium release from buildings other than the containment is an input to the plant design basis for radiological effluent controls as defined by the requirements contained in 10 CFR Part 20, 10 CFR Part 50 Appendix I and the plant Technical Specifications. Emission of residual tritium from the SFP is a contributor to this input. Any increased emission of tritium from the SFP is limited by these regulatory standards. Millstone Station is required to maintain a monitoring program for radiological effluents. This monitoring program includes measurements of radioactivity in effluents and in the environment. It also includes on-going evaluations of changes in patterns of radioactive releases in order to assess the need to make changes to the program. If the magnitude of release of tritium from the SFP should become significant, changes would be initiated to ensure releases to the environment remain within appropriate regulatory and Technical Specification limits.