

NORTHEAST UTILITIES

THE CONNECTICUT LIGHT AND POWER COMPANY
WESTERN MASSACHUSETTS ELECTRIC COMPANY
HOLYOKE WATER POWER COMPANY
NORTHEAST UTILITIES SERVICE COMPANY
NORTHEAST NUCLEAR ENERGY COMPANY

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April 6, 1989

Docket No. 50-423
B13192

Re: Millstone Unit No. 3
SER, NUREG-1031

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

- References:
- (1) J. F. Opeka letter to B. J. Youngblood, Steam Generator Tube Rupture (SGTR), dated October 25, 1985.
 - (2) C. H. Rossi letter to A. Ladieu, Chairman, SGTR Subgroup, Acceptance for Referencing of Licensing Topical Report WCAP-10698, SGTR Analysis Methodology to Determine the Margin to Steam Generator Overfill, dated March 30, 1987.
 - (3) E. J. Mroczka letter to U.S. Nuclear Regulatory Commission, Steam Generator Tube Rupture (SGTR) - Plant Specific Information, dated January 22, 1988.
 - (4) D. H. Jaffe letter to E. J. Mroczka, Generic Steam Generator Tube Rupture Analysis, dated February 15, 1989.

Gentlemen:

Millstone Nuclear Power Station, Unit No. 3
Generic Steam Generator Tube Rupture (SGTR) Analysis (TAC No. 67054)

In Reference (1), Northeast Nuclear Energy Company (NNECO) proposed to use the results of the Westinghouse Owners Group (WOG) generic program to resolve the Millstone Unit No. 3 SGTR licensing issue. On March 30, 1987, (Reference (2)), the NRC Staff informed the WOG-SGTR Subgroup that the NRC had completed its review of the Westinghouse Topical Report WCAP-10698 and found WCAP-10698 acceptable for reference in license applications. In Reference (2), the Staff also required each member of the SGTR Subgroup to submit plant-specific information requested in Section D of Enclosure (1) of Reference (2). In Reference (3), NNECO provided responses to five items requested in the NRC's Safety Evaluation for the SGTR issue (Reference (2)) for Millstone Unit No. 3. In Reference (4), the Staff requested that NNECO provide additional information concerning the use of the Westinghouse generic steam generator tube rupture analysis. Attachment 1 provides that requested information.

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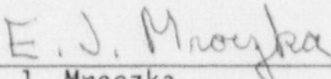
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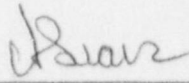
If there are any questions regarding this submittal, please contact our licensing representative directly.

Very truly yours,

NORTHEAST NUCLEAR ENERGY COMPANY



E. J. Mroczka
Senior Vice President



By: C. F. Sears
Vice President

cc: W. T. Russell, Region I Administrator
D. H. Jaffe, NRC Project Manager, Millstone Unit No. 3
W. J. Raymond, Senior Resident Inspector, Millstone Unit Nos. 1, 2, and 3

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Attachment 1

Millstone Unit No. 3

Responses to Request for Additional Information
Generic Steam Generator Tube Rupture Analysis

April 1989

REQUEST FOR ADDITIONAL INFORMATION
GENERIC STEAM GENERATOR TUBE RUPTURE ANALYSIS
MILLSTONE UNIT NO. 3

Item No. 1

Provide a schedule for supplying operator response time data, via the Millstone Unit 3 simulator, for the following actions associated with control of a steam generator tube rupture.

- * Identifying and isolating the ruptured steam generator. (The applicable time is from tube rupture to isolation completion).
- * Initiating cooldown.
- * Initiating depressurization.
- * Initiating safety injection termination.

Response time data for the above must be provided separately for each activity. In addition, provide a comparison of operator response data with the assumptions in the Westinghouse generic analysis (WCAP-10698).

Response

The Millstone Unit No. 3 operator training programs for control room operators include practice and evaluation in various steam generator tube rupture (SGTR) events. The training and performance evaluations of operating staff have all been administered on the Millstone Unit No. 3 plant reference simulator since February 1985, and part of the success criterion for these simulated events has been the termination of break flow within 30 minutes of the event initiation, and prevention of steam generator overfill.

This criterion is derived from the Millstone Unit No. 3 FSAR as well as Millstone Unit No. 3 Emergency Operating Procedure E-3 (Steam Generator Tube Rupture) requirements.

Through this facility's Cold License Training Program, as well as the subsequent and ongoing Licensed Operator Requalification Training Program, our operating crews have demonstrated the ability to consistently meet this 30-minute requirement.

Since much of this training and evaluation has occurred prior to issuance of the WCAP, specific time-dependent subdivision of various operator actions

within this procedure was neither required nor documented. However, since the operators have demonstrated their ability to reach the identical end point of the WCAP (break flow termination and prevention of overfill) ten minutes sooner than listed, we believe that its underlying concern has been adequately addressed.

However, as indicated in our letter dated November 10, 1988,⁽¹⁾ the existing Millstone Unit No. 3 License Operator Requalification Training will contain a minimum of 20 SGTR events in calendar years 1989 and 1990 for which the above requested data will be collected and documented. This documented data will be utilized to provide a comparison of operator response data with the assumptions in the Westinghouse generic analysis (WCAP-10698). This information will be available for Staff review by the end of April 1991.

Item No. 2

Following the steam generator tube rupture at North Anna, Unit 1 on July 14, 1987, VEPCO modified the flow resistance of the steam generator downcomers at North Anna by the addition of flow baffle plates. This modification necessitated the reanalysis of certain design basis events including rupture of a steam generator tube. The new analysis utilized a revised Westinghouse method for calculating steam generator water mass and indicated that during the event, the water level on the secondary side could potentially fall below the top of the steam generator tubes for up to a 10-minute period at the beginning of the event.

VEPCO and Westinghouse reanalyzed the design basis steam generator tube rupture accident for Surry using the revised methods and determined that the steam generator tubes at Surry could also become uncovered even though the Surry plants were not modified by the addition of flow baffle plates. The licensee further concluded that the offsite dose consequences exceeded those calculated in the Surry updated FSAR because tube uncover, combined with a tube rupture at the top of the tube bundle, could produce a direct path for fission product release without iodine partition.

This is a potentially worse design basis accident than submitted for Millstone Unit No. 3.

- a. Utilizing the revised method for calculating water mass, determine if tube bundle uncover is possible with the Millstone Unit No. 3 steam

(1) E. J. Mroczka letter to U.S. Nuclear Regulatory Commission, Steam Generator Tube Rupture, Plant Specific Information, dated November 10, 1988.

generator. If it is possible, provide reanalysis of the steam generator tube rupture accident, utilizing appropriate mass flow analysis and assuming a break at the top of the tube bundle. Provide details of this analysis along with the results through the potential dose impact to the public.

- b. Provide a summary of integral mass releases including, but not limited to, the following:
 - (1) Steam released from intact steam generators to the environment for 0-2 hours and 2 to 8 hours.
 - (2) Steam released from ruptured steam generator to the environment for 0-2 hours and 2 to 8 hours.
 - (3) Leakage from the Reactor Coolant System to ruptured steam generator for 0-2 hours and 2 to 8 hours.
- c. Provide the primary coolant flashing fractions (into the ruptured steam generator) as a function of time after the SGTR accident.

Response

In December 1987 Westinghouse notified⁽²⁾ utilities of a potential unreviewed safety question regarding an increase in radioactivity release to the environment due to the uncovering of the steam generator tubes following reactor trip. Failure to maintain the secondary water level above the tube bundle could potentially increase the radioactivity release to the environment during the uncovering period. NNECO initiated a reportability evaluation on December 28, 1987, and concluded that the potential consequences of a SGTR with an uncovered break is not reportable for Millstone Unit No. 3.

We are unable to complete the analysis at this time, as requested by the Staff, since this generic issue is being resolved as a part of the Westinghouse Owners Group (WOG) activity.

In response to this concern, in July 1988, WOG initiated a program to evaluate the effect of steam generator tube uncovering on radioactivity release on a generic basis. On March 29, 1989, the WOG Analysis Subcommittee briefed the

(2) D. L. Fuller (Westinghouse) letter to C. H. Clement, Increased Radioactivity Release to the Environment following Reactor Trip, dated December 28, 1987.

NRC on the status of the program to address the steam generator tube uncover issue.

The objective of the program was to evaluate, utilizing the MB-2 test results, the impact of tube uncover on previous analysis results for accidents involving secondary side steam release.

The NRC agreed with the overall approach and the results to date, however an additional effort appears to be necessary to provide final resolution of the issue. The additional effort will be presented to the WOG Analysis Subcommittee on April 11, 1989, for approval.

As you know, NNECO is a member of the WOG and is actively participating in this program. NNECO will take the necessary actions to conform with the WOG/NRC agreed upon resolutions of this issue.