

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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January 22, 1988

Docket No. 50-423
B12787

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

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington D. C. 20555

- References:
- (1) W. G. Council letter to B. J. Youngblood, Responses to RSB Draft SER Open Items, dated May 22, 1984.
 - (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.

Gentlemen:

Millstone Nuclear Power Station, Unit No. 3
Steam Generator Tube Rupture (SGTR) -
Plant Specific Information

The analysis for a design basis steam generator tube rupture (SGTR) accident is included in the Chapter 15 analyses of Final Safety Analysis Reports (FSARs). The accident which is analyzed is the complete severance of one steam generator tube which results in the leakage of reactor coolant into the secondary side of the steam generator. Based on the assumptions used previously in the FSAR analyses, it was concluded that the consequences of a design basis SGTR meet the appropriate acceptance criteria. However, following the SGTR which occurred at the Ginna Plant in January, 1982, the traditional assumptions which have been used for the FSAR analysis of a design basis SGTR have been questioned. In particular, it appears that the time required for the operator to terminate the leakage into the ruptured steam generator may be longer than the 30 minutes which has been assumed in the FSAR analysis. In addition, the qualification of certain equipment which is used to mitigate a SGTR may not conform to licensing basis criteria.

The consequences of a SGTR depend largely upon the ability of the operator to take the necessary actions to terminate the primary

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to secondary leakage. If the leakage continues significantly beyond the 30 minutes previously assumed in the FSAR accident analysis, the secondary side of the steam generator may become filled and water may enter the steamline. If the leakage continues, the release of liquid through the secondary side relief valves to the atmosphere could result in an increase in the radiological doses. The structural integrity of the main steamlines may also be of concern due to the accumulation of water in the steamline. Thus, one of the major concerns related to a SGTR is the possibility of steam generator overfill and the potential consequential effects.

In response to the Staff's concerns, a subgroup of utilities in the Westinghouse Owners Group (WOG) was formed to address the licensing issues associated with a SGTR event on a generic basis. Northeast Nuclear Energy Company (NNECO) as a member of the subgroup, committed to take necessary actions to conform with the WOG SGTR subgroup/NRC agreed upon resolutions of this issue (Reference (1)). The Subgroup submitted the following documents for NRC review:

- (1) WCAP-10698 (proprietary) and WCAP-10750 (non-proprietary), SGTR Analysis Methodology to determine the Margin to Steam Generator Overfill, December, 1984.
- (2) Supplement 1 to WCAP-10698, Evaluation of Off-site Radiation Doses for an SGTR Accident, May, 1985.
- (3) WCAP-11002 (proprietary) and WCAP-11003 (non-proprietary), Evaluation of Steam Generator Overfill due to a SGTR Accident, February, 1986.

WCAP-10698 evaluates the margin to overfill for a design basis SGTR. An analysis was performed for the design basis SGTR for the reference plant using the revised methodology, including the improved model, the operator action times, conservative assumptions, and assuming the worst single failure. The results of the analysis presented in WCAP-10698 demonstrate that there is margin to steam generator overfill for the reference plant. An evaluation was performed to determine the off-site radiation doses for the single failure cases considered in WCAP-10698 and the results are presented in Supplement 1 to WCAP-10698. In WCAP-11002, evaluations of the effects of steam generator overfill as a result of the design basis SGTR on the main steam systems were submitted. It was determined that the potential for water hammer does not exist in the ruptured steam generator and associated steamline and the loading on the safety valve will not be excessive during the overfill transient. It was also determined that the off-site radiation doses will only be a small fraction of the 10CFR100 guidelines.

On March 30, 1987 (Reference (2)), the Staff informed the SGTR subgroup that the Staff has completed its review of the Westinghouse topical report WCAP-10698 and found WCAP-10698 acceptable

for referencing in license applications to the extent specified and under the limitations delineated in the report and the associated NRC evaluation (Reference (2)). In Reference (2), the Staff also noted that there are design differences between the plants within the SGTR subgroup and there may be differences in emergency operating procedures (EOPs) and operator training. Also atmospheric dispersion factors vary for different plants. Therefore, in Reference (2), the Staff required each member of the SGTR subgroup to submit the plant specific information listed in Section D of Enclosure (1) of Reference (2).

The purpose of this letter is to inform you that NNECO is referencing topical report WCAP-10698 in order to resolve the specific Millstone Unit No. 3 licensing issue for both four loop and three loop plant operation. Attachment 1 provides responses to 5 items requested in the NRC safety evaluation of topical report WCAP-10698 (Reference (2)) for four-loop operation for Millstone Unit No. 3. This evaluation of the margin to steam generator overfill for Millstone Unit No. 3 is based on the following:

1. All the systems, components and instrumentation which are credited for accident mitigation in the design basis SGTR analysis are safety grade.
2. The operator action times for Millstone Unit No. 3 are assumed to be the same as the value utilized in the design basis SGTR analysis for the reference plant.
3. The delay in operator action times for Millstone Unit No. 3 for single failures of AFW flow control valve, MSIV for ruptured steam generator, emergency diesel, pressurizer PORV, and safety injection pump switch are the same as the values reported in the Table 4.4-4 of WCAP-10698.

Based on the evaluations performed, the margin to overfill for four-loop operation for Millstone Unit No. 3 is greater than that for the reference plant. An evaluation of the main steam lines and associated supports under water filled conditions has shown that the piping, pipe supports, containment penetration and equipment nozzles are not overloaded.

The evaluation of off-site doses presented in Attachment 1 demonstrates that the radiological consequences of a design basis SGTR for Millstone Unit No. 3 meet the acceptance criteria of Standard Review Plan (SRP) Section 15.6.3.

It is expected that the margin to steam generator overfill can also be demonstrated for three-loop operation for Millstone Unit No. 3, although the margin to overfill may be slightly less than four-loop operation. A slight reduction in the margin to overfill for three-loop operation is expected as a result of the differences in initial plant conditions and recovery times associated with the reduced power level for three-loop operation.

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It is also expected that radiological consequences of a design basis SGTR for three-loop operation would be bounded by the four-loop analysis presented in response to item 2 (Attachment 1).

As the response to item 5 contains information proprietary to Westinghouse Electric Corporation, it is supported by an affidavit signed by Westinghouse, the owner of the information. Enclosed is a Westinghouse authorization letter, CAW-88-009, Proprietary Information Notice, and accompanying affidavit. The affidavit sets forth the basis on which the information may be withheld from public disclosure by the NRC and addresses with specificity the considerations listed in paragraph (b)(4) of Section 2.790 of the NRC's regulations.

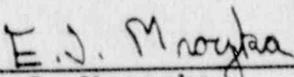
Accordingly, it is respectfully requested that the information which is proprietary to Westinghouse be withheld from public disclosure in accordance with 10CFR Section 2.790 of the NRC's regulations.

Correspondence with respect to the proprietary aspects of the Application for Withholding or the supporting Westinghouse Affidavit should reference CAW-88-009 and should be addressed to R. A. Wiesemann, Manager of Regulatory & Legislative Affairs, Westinghouse Electric Corporation, P. O. Box 355, Pittsburgh, Pennsylvania 15230-0355.

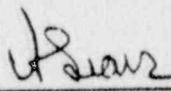
If you have any questions regarding this matter, please contact our licensing representative directly.

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
R. L. Ferguson, NRC Project Manager, Millstone Unit No. 3
W. J. Raymond, Senior Resident Inspector, Millstone Unit
Nos. 1, 2, and 3