

Maine Yankee

RELIABLE ELECTRICITY FOR MAINE SINCE 1877

EDISON DRIVE • AUGUSTA, MAINE 04336 • (207) 622-4868

December 28, 1990
MN-90-127

GDW-90-103

UNITED STATES NUCLEAR REGULATORY COMMISSION
Attention: Document Control Desk
Washington, DC 20555

Reference: (a) License No. DPR-36 (Docket No. 50-309)

Subject: December 1990 Mid-Cycle Steam Generator Inspection - Proposed Change to
Technical Specification 4.10

Gentlemen:

Maine Yankee conducted a controlled shutdown on December 17, 1990 when calculated primary to secondary leak rate in the #1 steam generator exceeded the administrative limit (0.03 gpm) requiring a shutdown. Maine Yankee has experienced very small leakage (0.0001 gpm) since the last refueling shutdown. This leak rate did not vary greatly between July and December 1990. Just prior to the plant shutdown, calculated leak rate increased to approximately 0.1 gpm. Upon completion of the shutdown, temperature was stabilized, and measured and calculated leak rate indicated approximately 1.0 gpm from the #1 steam generator. At no time during the operating cycle have blowdown radiation monitors or samples indicated leakage from the #2 or #3 steam generators.

Following isolation and cooldown of the #1 steam generator, a low pressure leak (steam side) test was conducted. This test resulted in the identification of a tube leak in the tube on tube row 6, line 43 at the apex of the tube's u-bend. Tube R6, L43 is located in a steam blanketed region where generator supports (batwings) depress flow permitting creation of a steam void at the apex of the u-tubes. We believe that moisture entering this region flashes to steam and any contaminants are deposited on the tube surface. The buildup of contaminants combined with residual stress in the tube material from construction result in tube degradation which we believe is due to some form of corrosion cracking.

The first inspection sample bounded the steam blanket region of the #1 steam generator by conducting 100% inspection of the suspect region, and 100% inspection of the tubes in the four rows below the region and the three rows above the region. In total, Maine Yankee inspected 525 tubes using a standard bobbin coil eddy current test probe. Rotating pancake coil inspections were also conducted on selected tubes. The results of the inspection are found in Table 1. In addition to the thru-wall defect, one tube was plugged due to axial cracking at the u-bend apex. Two tubes were plugged due to pitting approximately twelve inches above the tube sheet. These tubes had previously exhibited pitting degradation. The pitting on one tube grew by less than 10% thru-wall (TW) and the pitting grew on the second tube by approximately 15% TW. Pitting at Maine Yankee has not resulted in any thru-wall defects. Further, tube pitting at Maine Yankee progresses slowly. The pitting identified during this inspection is believed to have been uncovered by the chemical cleaning conducted in 1987.

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Maine Yankee Technical Specifications would require us to expand the inspection campaign in the #1 steam generator to include an additional 1,028 tubes. Because Maine Yankee has already inspected 100% of the suspect region, and because pitting is not expected to degrade to significant tube leakage, we do not believe that additional inspections in the #1 generator are warranted. We believe that a 100% inspection of the steam blanket region of the #2 generator during this shutdown is appropriate in lieu of further inspections in the #1 generator. Additionally, we believe that a similar inspection of the #3 generator is warranted if additional tube inspections in the #2 generator identify defective tubes similar to those found in the #1 generator. Otherwise, a similar inspection of the #3 generator will be conducted at the end of the current operating cycle. A detailed action list and schedule are provided as Attachments A and B respectively.

A temporary change to Maine Yankee's Steam Generator Tube Surveillance Technical Specification is provided as Attachment C for your review and approval. This change to Table 4.10-2 provides a one time exception to the inspection requirements for the current inspection campaign. This exception permits a 100% inspection of the steam blanket region in the #2 steam generator, and possible expansion into the #3 steam generator for a similar inspection in lieu of additional inspections in the #1 steam generator. We believe that further inspections in the steam blanket region of #2 steam generator would benefit plant reliability and public health and safety more than additional inspections in the #1 steam generator.

Additionally, Maine Yankee has shown that tube leaks of very small magnitude (0.0001 gpm) can be detected. We have established administrative controls which require a plant shutdown and in advance of Technical Specification requirements.

This proposed change has been reviewed by the Plant Operations Review Committee and the Nuclear Safety Audit and Review Committee. The Plant Operations Review Committee has determined that no unreviewed safety question exists.

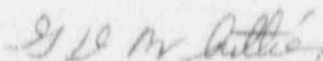
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This matter was discussed with members of the NRC staff on December 26, 1990, and we understand that this approach is acceptable. We trust this information is satisfactory. Please contact us should you have any questions regarding this matter. A copy of this submittal is being sent to a State of Maine representative.

Very truly yours,



G. D. Whittier, Vice President
Licensing & Engineering

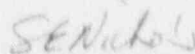
GDW/sjj

Attachment

c: Mr. Thomas T. Martin
Mr. E. H. Trottier
Mr. Charles S. Marschall
Mr. Clough Toppan, State of Maine

STATE OF MAINE

Then personally appeared before me, G. D. Whittier, who being duly sworn did state that he is Vice President of Maine Yankee Atomic Power Company, that he is duly authorized to execute and file the foregoing response in the name and on behalf of Maine Yankee Atomic Power Company, and that the statements therein are true to the best of his knowledge and belief.



Notary Public

STEVEN E. NICHOLS
NOTARY PUBLIC, MAINE
MY COMMISSION EXPIRES MARCH 8, 1991