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SUBJECT: Submits 90-day response to GL 97-05, "Steam Generator Tube Insp Techniques."

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NRC-98-21

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March 17, 1998

10 CFR 50.54(f)

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

Ladies/Gentlemen:

Docket 50-305
Operating License DPR-43
Kewaunee Nuclear Power Plant
Response to NRC Generic Letter 97-05: Steam Generator Tube Inspection Techniques

On December 17, 1997 the Nuclear Regulatory Commission (NRC) issued Generic Letter 97-05 entitled "Steam Generator Tube Inspection Techniques." The attachment to this letter provides Wisconsin Public Service Corporation's (WPSC) 90-day response to the information requested by this Generic Letter.

If you have any questions or require additional information please contact a member of my staff.

Sincerely,

Clark R. Steinhardt
Senior Vice President-Nuclear Power

TPO

Attach.

cc - US NRC, Region III
US NRC Senior Resident Inspector

Subscribed and Sworn to
Before Me This 17th Day
of March 1998

Jeanne M. Ferris
Notary Public, State of Wisconsin

My Commission Expires:
June 13, 1999

1/1

A001

ADD: AL DROMERICK

ATTACHMENT 1

Letter from C. R. Steinhardt (WPSC)

To

Document Control Desk (NRC)

Dated

March 17, 1998

WPSC Response to Generic Letter 97-05

Required Information:

Addressees are required to submit a written response that includes the following information:

(1) Whether it is their practice to leave steam generator tubes with indications in service based on sizing,

(2) If the response to item (1) is affirmative, those licensees should submit a written report that includes, for each type of indication, a description of the associated nondestructive examination method being used and the technical basis for the acceptability of the technique used.

WPSC Response to Generic Letter 97-05 Item (1):

The Kewaunee Nuclear Power Plant (KNPP) steam generators are Westinghouse Model 51 with Inconel alloy 600 tubing material.

It is the practice at KNPP to leave steam generator tubes with wear indications at anti-vibration bar locations in service based on sizing. Indications of anti-vibration bar wear are left in service if they are sized at less than the KNPP Technical Specification value of 50% through wall.

In addition, although there are currently no indications of cold leg tube support plate thinning in service, if indications of cold leg thinning are identified in future outages, they may be left in service based on sizing. Indications of cold leg thinning may be left in service if they are sized at less than the KNPP Technical Specification value of 50% through wall.

Indications at tube support plate intersections are left in service in accordance with the 2.0 volt alternate repair criteria as authorized by the KNPP Technical Specifications.

WPSC Response to Generic Letter 97-05 Item (2):

Introduction

The nuclear power industry recently adopted an initiative requiring each utility to implement the guidance provided in NEI 97-06, Steam Generator Program Guidelines, no later than the first refueling outage starting after January 1, 1999. As specified in NEI 97-06, each utility is required to follow the inspection guidelines contained in the latest revision of the EPRI PWR Steam Generator Examination Guidelines.

Appendix H, "Performance Demonstration for Eddy Current Examinations," of the PWR Steam Generator Examination Guidelines, Revisions 3 through 5, provides guidance on the qualification of steam generator tubing examination techniques and equipment used to detect and size flaws. Damage mechanisms are divided into the following categories: thinning, pitting, wear, outside diameter intergranular attack/stress corrosion cracking (IGA/SCC), primary side SCC, and impingement damage.

For qualification purposes, test samples are used to evaluate detection and sizing capabilities. While pulled tube samples are preferred, fabricated samples may be used. If fabricated test samples are used, the samples are verified to produce signals similar to those being observed in the field in terms of signal characteristics, signal amplitude, and signal-to-noise ratio. Samples are examined to determine the actual through wall defect measurements as part of the Appendix H qualification process.

The procedures developed in accordance with Appendix H specify the essential variables for each procedure. These essential variables are associated with an individual instrument, probe, cable, or particular on-site equipment configurations. Additionally, certain techniques have undergone testing and review to quantify sizing performance. The sizing data set includes the detection data set for the technique with additional requirements for number and composition of the grading units.

Sizing Techniques

At KNPP, the following sizing techniques are used during steam generator inspections to leave indications in service. The basis for application of these sizing techniques is the conduct of the examinations under the KNPP Quality Assurance Program following the requirements of Sections XI and V of the ASME Code, 1989 Edition and Regulatory Guide 1.83. Additional support for sizing degradation-specific mechanisms is provided by the EPRI Appendix H qualification data sets.

Wear

For wear at anti-vibration bars, sizing is accomplished using the bobbin probe 200/100 kHz absolute mix. A calibration curve for vertical maximum amplitude is determined based on the applicable standards replicating the damage mechanism type and quantity. The calibration curve must represent the full range of expected depths.

This sizing qualification is based on 64 sample data points. The samples ranged in depth from 4% to 78% through wall.

Thinning

For thinning at non-dented tube locations, the bobbin probe 400/100 kHz differential mix is used to size the extent of the wall thinning. A calibration curve is established using the 20%, 60% and 100% holes of the ASME calibration standard. The depth of the thinning is called from the 400/100 kHz differential mix using the maximum rate of change.

The above sizing technique is based on the analysis of 32 sample data points. Of the 32 data points, five (5) are from pulled tubes. The samples ranged in depth from 9% to 100% through wall.

Tube Support Plate Alternate Repair Criteria

The KNPP Technical Specifications allow for implementation of a 2.0 volt alternate repair criteria at tube support plate intersections in accordance with NRC Generic Letter (GL) 95-05. Voltage "sizing" of tube support plate intersections is performed in accordance with GL 95-05.