Public Service
Electric and Gas
Company

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Vice President - Nuclear Operations

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United States Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

Gentlemen:

REPLY TO NOTICE OF DEVIATION
INSPECTION REPORT NO. 50-354/92-11
HOPE CREEK GENERATING STATION
DOCKET NO. 50-354

Public Service Electric and Gas Company (PSE&G) is in receipt of your letter, dated September 2, 1992, which transmitted a Notice of Deviation associated with the Hope Creek Erosion/Corrosion monitoring program. This letter was received by PSE&G on September 4, 1992.

In accordance with the directions provided in your letter, our response to this Notice of Deviation is provided in Attachment 1.

Your letter also identified Unresolved Item 354/92-11-1 and requested that PSE&G address this item in our Deviation Response. This response is included in Attachment 2.

Sincerely,

S. LaBruna
Vice President -
Nuclear Operations

Attachments

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ATTACHMENT 1

REPLY TO NOTICE OF DEVIATION
INSPECTION REPORT NO. 50-354/92-11
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I. INTRODUCTION

An NRC Region I inspector conducted an inspection at the Hope Creek Generating Station from August 3 through 7, 1992. The subject of the inspection was the Hope Creek Erosion/Corrosion (E/C) monitoring program. The inspector reviewed the Hope Creek E/C monitoring program to ensure that the program was being accomplished in accordance with the PSE&G responses to Bulletin 87-01, "Thinning of Pipe Walls in Nuclear Power Plants" and Generic Letter 89-08, "Erosion/Corrosion Induced Pipe Wall Thinning." The inspector reviewed systems and components selected for ultrasonic (UT) pipe thickness measurement, UT data results, PSE&G's analysis of the data and disposition of the components. During the inspection the NRC inspector identified a deviation from previous commitments and issued the Notice of Deviation below.

II. NOTICE OF DEVIATION

"The response to Generic Letter 89-08 included a commitment to implement a program addressed in your engineering evaluation which provides details of the measurement technique to determine the extent of wall thinning. The engineering evaluation for the Hope Creek refueling outage 3 specifies under paragraph 4.3 that a grid size of one inch shall be used for ultrasonic examination of pipe sizes six inches in diameter and under.

Contrary to this, the field data showed that a grid size of two inches was used for examination of six-inch diameter pipes and below. This is a deviation from the engineering evaluation provided in response to NRC Generic Letter 89-08."

III. PSE&G RESPONSE TO NOTICE OF DEVIATION

PSE&G does not dispute this Notice of Deviation except to clarify that the field data in question was limited to one pipe spool and taken during the Hope Creek second refueling outage as opposed to the third refueling outage.

Per PSE&G staff notes taken during the inspection, the NRC inspector identified a 6 X 4 inch pipe reducer (1-AF-202-SO3-T3) on the feedwater system as having been ultrasonically examined using a two inch grid. This pipe spool was not examined during the first Hope Creek refueling outage but was added as a new component during the second refueling outage.

PSE&G Engineering Evaluation H-1-VAR-MEE-0301-1, Paragraph 4.3 specifies the following grid sizes for new examination points:

Pipe sizes 6 inch and less - 1 inch grid size
Pipe sizes 8 to 12 inches - 2 inch grid size
Pipe sizes 14 inches and over - 4 inch grid size

Consequently, using a two inch grid on 6 X 4 inch pipe reducer 1-AF-202-S03-T3 was not in conformance to Paragraph 4.3. This is a deviation from PSE&G Engineering Evaluation H-1-VAR-MEE-0301-1. It should be noted that the UT data indicated this component had experienced little or no wall thickness reduction.

For existing examination points, i.e., those components ultrasonically examined during previous refueling outages, Paragraph 4.3 states that "Grid sizes used (2, 4 and 6 inch) on the pipe fittings initially examined during the first Hope Creek refueling outage shall be maintained for repeatability." Therefore, grid sizes used on pipe components ultrasonically examined during the first Hope Creek refueling outage were maintained unchanged during the second and third refueling outages to ensure repeatability.

PSE&G personnel reviewed the UT field data from the second and third Hope Creek refueling outages and determined that, except for reducer 1-AF-202-S03-T3, the component UT grid sizes were established in accordance with PSE&G Engineering Evaluation H-1-VAR-MEE-0301-1, Paragraph 4.3.

A. Reason for Deviation

This deviation was an isolated event caused by human error. Neither the PSE&G Inservice Inspection Supervisor nor the Engineering & Plant Betterment engineer reviewing the UT field data identified this single instance of the use of an incorrect grid

B. Corrective Steps Taken and Results Achieved

PSE&G has investigated this Notice of Deviation. The result achieved is that it was determined that the deviation was isolated to the incorrect grid size on one pipe reducer. The UT data for this reducer indicated little or no wall thinning and consequently, the use of a two inch grid size was not safety significant.

PSE&G has reemphasized to personnel involved in these measurements the importance of attention to detail and assuring compliance with requirements during each phase of the E/C monitoring program. The result achieved is that both PSE&G management and personnel have an increased sensitivity to E/C program requirements.

C. Corrective Steps to be Taken to Avoid Further Deviations.

PSE&G had previously committed to upgrading the administrative control of the PSE&G E/C monitoring program with the issuance of a Programmatic Standard by September 30, 1992. This has occurred. The E/C Programmatic Standard and associated detailed procedures describe the E/C program review requirements and responsibilities in greater detail. Included are specific instructions regarding UT grid size, examination, data review/approval and analysis. These procedures provide the necessary technical guidance and review requirements to avoid further E/C program deviations in the future.

E. Date When Corrective Steps Will be Completed

All corrective steps have been completed.

ATTACHMENT 2

RESPONSE TO UNRESOLVED ITEM 354/92-11-1
INSPECTION REPORT NO. 50-354/92-11
HOPE CREEK GENERATING STATION
DOCKET NO. 50-354

UNRESOLVED ITEM 354/92-11-1

During an inspection of the Hope Creek Erosion/Corrosion (E/C) monitoring program from August 3 through 7, 1992, the NRC inspector identified an open item concerning Hope Creek CHEC E/C computer records. (CHEC is the EPRI developed computer program PSE&G utilized to assist in selecting components for E/C monitoring.) Specifically, the inspector stated the following in Inspection Report 354/92-11:

> "The licensee's analysis for selection of components for ultrasonic thickness measurement was to be based on the EPRI CHEC computer program along with engineering judgement. This was a commitment in response to NRC Bulletin 87-01 and Generic Letter 89-08 and was reflected in the program. The licensee stated that selection of components for erosion/corrosion measurements was performed in accordance with these commitments.
>
> During the inspection, however, the EPRI CHEC analysis for the condensate, the feedwater and the extraction steam systems were not available for inspector's review. The licensee was unable to provide documentation of having met the above commitments on the condensate, feedwater and extraction steam systems; therefore, this item is unresolved pending recovery of the records (URI 354/92-11-1)."

In the cover letter to NRC Inspection Report 354/92-11, PSE&G was requested to advise the NRC when these CHEC records will be available for their review. This is provided in the following:

PSE&G RESPONSE

During the NRC inspection PSE&G files contained handwritten CHEC input sheets and the printouts of the CHEC output analysis for the feedwater and condensate systems. The output sheets contained an echo of the input data.

The extraction steam system contains two phase flow. Since the CHEC program is limited to single phase flow modeling, engineering judgment and industry experience were used to select extraction steam components for UT examination.

The CHEC output analysis qualitatively ranked the pipe components based on susceptibility to E/C. It also predicted the time to minimum wall thickness. However, the pipe component identifiers appearing in the CHEC output analysis were not the identifiers used on PSE&G isometric drawings and UT field data sheets. Consequently, the NRC inspector was not able to confirm whether the feedwater or condensate pipe components ranked by CHEC as

highly susceptible to E/C degradation were the components selected for UT examination. The missing analyses referred to by the inspector in Inspection Report 354/92-11 are understood to be the isometric drawings annotated with the identifiers used in the CHEC analyses.

PSE&G personnel have reconstructed the major part of the CHEC feedwater and condensate system analyses using computer files, the available documentation and plant system knowledge with the following results:

Feedwater System:

The feedwater isometric drawings were recreated and re-labeled with both the assigned CHEC component identifiers and the pipe component identifiers used in the UT field data sheets. Twenty-one feedwater components were modeled in CHEC. Five components were predicted as undergoing a HI-RATE of E/C. These five components were UT examined with satisfactory results. The remaining sixteen components were ranked by CHEC to be in the PROBABLE category. Three of these components were UT examined with satisfactory results. Also, the eight feedwater components that were UT examined included five of the top six components predicted by CHEC to have the shortest time to minimum wall thickness.

Condensate System:

Twenty-five condensate system components were modeled in CHEC with all being listed in the PROBABLE category. Four out of the twenty-five CHEC identifiers could not be located on isometric drawings. The condensate system isometric drawings were re-labeled with the twenty-one assigned CHEC component identifiers and the pipe component identifiers used in the UT field data sheets.

Eight of these condensate components were UT examined with satisfactory results. The eight condensate components that were UT examined included the top four components predicted by CHEC to have the shortest time to minimum wall thickness.

These files are available for review. PSE&G is working to complete verification efforts with regard to CHEC data input and inspection history in the near future.

PSE&G management has recognized that increased control of E/C program documentation is necessary. An E/C programmatic standard and implementing procedures have been issued requiring that E/C program model inputs/outputs be controlled in much the same way as a PSE&G calculation. This will provide increased control over

E/C model analyses to ensure this documentation is maintained and retrievable in the future.

Also it should be noted that PSE&G is remodeling Hope Creek pipe systems included in the E/C program using the latest version of CHECMATE, Version 1.1B. This remodeling is being performed in accordance with the upgraded documentation and control standards in the E/C Programmatic Standard. Consequently, this CHECMATE analysis, and not the CHEC analyses reviewed by the NRC inspector, will be used as the basis for identifying components to be UT examined during future Hope Creek refueling outages (fifth refueling outage and beyond).

Finally, it should be noted that PSE&G has complete UT field data documentation from previous Hope Creek outages for these three systems. This data indicates that these pipe components have experienced minimum wear and their structural integrity has been maintained.