U. S. NUCLEAR REGULATORY COMMISSION **REGION I**

REPORT/DOCKET NOS.	50-387/93-17 50-388/93-17
LICENSE NOS.	NPF-14 NPF-22
LICENSEE:	Pennsylvania Power and Light Company 2 North Ninth Street Allentown, Pennsylvania 18101
FACILITY NAME:	Susquehanna Steam Electric Station, Units 1 and 2
INSPECTION AT:	Berwick, Pennsylvania
INSPECTION DATES:	October 12-14, 1993

INSPECTOR:

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Movember 9 1993

Date

Robert A. McBrearty, Reactor Engineer, Materials Section, EB, DRS

APPROVED BY:

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Michael C. Modes, Chief Materials Section, EB, DRS

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<u>Areas Inspected</u>: An announced inspection was conducted of the licensee's inservice inspection activities.

<u>Results</u>: The automated ultrasonic examination of intergranular stress corrosion cracking (IGSCC) susceptible stainless steel piping welds, that were subjected to the IGSCC mitigating Mechanical Stress Improvement Process (MSIP), was performed by examiners who were certified at the Electric Power Research Institute (EPRI) to be qualified to detect IGSCC and analyze data acquired with the G.E. SMART-2000 UT system. The licensee's evaluation and disposition of detected UT indications was supported by the examination data.

The examination results verified that the welds were acceptable for continued safe operation.

DETAILS

1.0 INSERVICE INSPECTION ISI ACTIVITIES (IP 73753)

During the Fall 1993 refueling outage at Susquehanna Unit 1, the licensee selected stainless steel welds on the residual heat removal system and the reactor recirculation system for the application of the Mechanical Stress Improvement Process (MSIP) for the mitigation of intergranular stress corrosion cracking (IGSCC). Post MSIP ultrasonic examinations, as mandated by NUREG-0313, Revision 2, and Generic Letter 88-01, were performed by the licensee's ISI contractor, the General Electric Company, using the G.E. SMART-2000 automated ultrasonic examination system. No examinations were in progress during this inspection.

Two of the General Electric Company nondestructive examination procedures were selected for review to determine whether the procedures complied with regulatory requirements and were technically capable of performing their intended function. Each procedure, GE-ISI-439, Revision 0, "Procedure for Automated Ultrasonic Examination of Similar and Dissimilar Piping Welds for IGSCC," and GE-ISI-440, Revision 0, "Procedure for Automated Ultrasonic Examination of Dissimilar Metal Nozzle to Safe End Welds," was reviewed by the appropriate licensee staff member and was approved for use at the site. The procedures were determined to be in compliance with the applicable regulatory requirements and additionally, were determined to be technically capable of performing their intended use.

The ultrasonic examination of weld N2F-NOZ-SE, a 12" diameter safe end to recirculation system inlet nozzle weld, was completed prior to this inspection, and the examination results became available during the inspection. The data were inspected to ascertain that sufficient information was recorded to permit meaningful evaluation of the weld condition, and to permit examination repeatability. Ultrasonic reflectors requiring evaluation and disposition were detected by the ultrasonic examination, which was performed using 45° shear wave and refracted longitudinal wave, and 60° refracted longitudinal wave transducers. The locations of the reflectors in the material were plotted and, in conjunction with related data, showed that the ultrasonic indications were caused by weld geometry. After examining all of the available data, the inspector agreed with the licensee's evaluation. Additional welds were examined prior to the inspection, but the examination results were not available during the inspection.

The qualification/certification records of General Electric Company personnel, including those who were responsible for examining the N2F nozzle safe end to nozzle weld were inspected to determine whether those individuals were qualified to perform the examinations for which they were responsible. NUREG-0313, Revision 2, and Generic Letter 88-01 require that personnel performing the mandated ultrasonic examinations for the detection of IGSCC must be qualified and certified for that activity at the Electric Power Research Institute (EPRI) Nondestructive Evaluation Center at Charlotte, North Carolina. A prerequisite to obtaining EPRI IGSCC certification is that each candidate for EPRI certification must be certified to at least Level II qualification in accordance with SNT-TC-1A. The inspector verified that the personnel responsible for performing the IGSCC examinations using the G.E. SMART-2000 automated ultrasonic data acquisition system were certified at the EPRI NDE Center to be qualified to use the equipment. Additionally, the data analysts were EPRI certified to analyze data acquired with the automated system. The EPRI certification was verified by reviewing the latest Registry of Qualified Personnel for UT of IGSCC, published by the EPRI NDE Center.

Conclusions

The ultrasonic examination of intergranular stress corrosion cracking susceptible stainless steel welds that were subjected to the Mechanical Stress Improvement Process (MSIP) were governed by appropriate procedures that were approved by the licensee. Personnel who performed the examinations and analyzed the examination data were certified in accordance with SNT-TC-1A, 1980 Edition, the governing document, to at least Level II qualification and, as required by NUREG-0313, Revision 2, and Generic Letter 88-01, were certified at the EPRI NDE Center to be qualified to use the General Electric SMART-2000 automated ultrasonic data acquisition system for the examination of the welds and to analyze the resulting data. The available examination data were complete and properly documented permitting meaningful analysis and disposition.

2.0 EXIT MEETING

The inspector met with licensee representatives, denoted in Attachment 1, at the conclusion of the inspection on October 14, 1993. The inspector summarized the scope and findings of the inspection and the licensee acknowledged the inspector's remarks with no further comments.

ATTACHMENT 1

Persons Contacted

Pennsylvania Power and Light Company

- * R. Baker Nuclear Quality Assurance/Quality Control Coordinating Engineer
- * R. A. Breslin Supervisor Chemistry
- * T. Dalpiaz Manager Nuclear Maintenance
- * N. Fedder Inservice Inspection Engineer
- * J. J. Graham Supervisor Quality Control
- * D. Hagan Supervisor Health Physics
- * G. J. Kuczynski Manager Nuclear Plant Services
- * S. J. Laskos Supervisor Plant Scheduling
- * D. F. McGann Supervisor Nuclear Compliance
- * R. J. Prego Supervisor Site Quality Verification
- * R. A. Saccone Manager Nuclear Systems Engineering
- * G. Stanley Vice President Nuclear Operations
- * F. K. Steingass Supervisor Testing Maintenance
- * H. L. Weiss Nuclear Plant Technical Supervisor
- * H. Woodeschick Special Office of the President

U.S. Nuclear Regulatory Commission

- * D. Mannai Resident Inspector
- * Denotes those attending the exit meeting.