U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-388/88-11

Docket No. 50-388

License No. NPF-22

Licensee: Pennsylvania Power & Light Company
2 North Ninth Street
Allentown, Pennsylvania 18101

Facility Name: Susquehanna Steam Electric Station, Unit 2

Inspection At: Berwick, Pennsylvania

Inspection Conducted: May 9 - 13, 1988

Inspector: Robert A. McBrearty — June 6, 1988
R. A. McBrearty, Reactor Engineer — date

Approved by: Jack Strosnider — 6/7/88
J. R. Strosnider, Chief, Material and Processes Section, EB, DRS — date

Inspection Summary: Inspection on May 9 - 13, 1988 (Report No. 50-388/88-11)

Areas Inspected: A routine, unannounced inspection was conducted of inservice inspection activities to ascertain whether the licensee's activities were conducted in compliance with applicable ASME code and regulatory requirements. Particular emphasis was placed on the licensee's program for controlling non-conforming items and inspection findings. Other areas of ISI activities which were inspected include the ten-year program, implementing NDE procedures, NDE personnel qualification/certification records, control of ISI data and Quality Assurance involvement in ISI activities.

Results: The inspector concluded, based on the areas inspected, that the licensee's ISI activities were performed in compliance with applicable requirements of the ASME Code, Section XI. No violations or unresolved items were identified.

Details

1.0 Persons Contacted

Pennsylvania Power and Light Company (PP&L)

* R.A. Baker, NDE Level III
* J.A. Blakeslee, Jr., Assistant Superintendent of Plant
* R.G. Byram, Superintendent of Plant
* T.C. Dalpiaz, Technical Supervisor
  N. Fedder, ISI Specialist
  R. Fenton, ISI Specialist
* M.M. Golden, Plant Engineering Supervisor
  D. Lemibach, NDE Level III (UT)
  J. Lindberg, QA Engineer
* D.F. McGann, Compliance Engineer
* R.J. Prego, QA Supervisor - Operations
* C. Smith, Senior Results Engineer
* T.K. Steingass, ISI Supervisor
* H.C. Webb, Supervisor Nuclear Maintenance Services

Nuclear Regulatory Commission

* F. Young, Senior Resident Inspector

* Denotes those present at the exit meeting.

2.0 Introduction

The facility's operating license was issued on June 27, 1984, and commercial operation commenced on February 12, 1985, which also is the commencement of the first ten-year inservice inspection interval. During the first and second refueling outages in 1986 and 1988, no evidence of intergranular stress corrosion cracking (IGSCC) was detected in piping systems at the plant, no piping systems were replaced, and no welds have required repair with weld overlay. The licensee has performed Induction Heat Stress Improvement (IHSI) on 113 welds in 4 stainless steel piping systems.

Generic Letter 84-11, "Inspections of BWR Stainless Steel Piping" was issued on April 19, 1984, and the licensee submitted its response on June 1, 1984. The licensee has not yet responded to Generic Letter 88-01, which enumerates the NRC position on IGSCC in BWR austenitic stainless steel piping, and was issued on January 25, 1988. The technical bases for these positions are detailed in NUREG-0313, Revision 2, "Technical Report on Material Selection and Process Guidelines for BWR Coolant Pressure Boundary Piping." This response is due 180 days from the licensee's receipt of the letter.

3.0 Scope

The licensee performed inservice inspection during this outage to comply with requirements of the ASME Boiler and Pressure Vessel Code, Section XI, and with its inservice inspection schedule for the 1988 outage.

The following areas were selected for inspection:

- Inservice inspection program
- NDE implementing procedures
- NDE personnel qualification/certification records
- Quality Assurance involvement in ISI
- Control of nonconforming items
- Control of ISI data

4.0 Inservice Inspection Program Review (73051)

Inservice inspection is mandated by the ASME B&PV Code, Section XI, and the code edition applicable to a specific facility is identified in 10 CFR 50.55a(g) based upon the issuance date of its construction permit. The code edition applicable to the inservice inspection requirements of a specific facility is identified in 10 CFR 50.55a(g)(4)(i) based upon the date of issuance of its operating license. The Susquehanna Unit 2 facility is committed to the 1980 edition through Winter 1981 Addenda which is the edition which was in effect 12 months prior to issuance of the operating license.

The inspector determined that the licensee's first ten-year interval ISI program has been approved by the NRC as evidenced by the NRR Safety Evaluation Report (SER) transmitted to the licensee by letter dated February 12, 1987. In addition to approving the ISI program plan, related requests for relief from ASME Code requirements which the licensee considered impractical were evaluated and granted by NRR.

The program incorporates Section XI requirements of Tables IWB-2500-1 for Class 1 items, IWC-2500-1 for Class 2 items, IWD-2500-1 for Class 3 items, and IWF-2500-1 for component supports. The scope of the program is defined by ASME Section XI, and augmented examination commitments are made with respect to NUREG-0803, "Integrity of BWR Scram Discharge Piping"; NUREG-0313, Revision 1, "Material Selection and Processing Guidelines for BWR Coolant Pressure Boundary Piping"; NUREG-0619, "BWR Feedwater Nozzle and Control Rod Drive Return Line Nozzle Cracking" and FSAR Section 6.6.8, "Volumetric Examination of High Energy Piping Between Containment Isolation Valves."

Procedure AD-QA-413, Revision 3, "Nuclear Support Inservice Inspection Program" establishes administrative controls and defines the interfaces between Plant Staff and Nuclear Support necessary for implementation of the ISI program. The procedure additionally defines how ISI contractor generated nonconformance reports shall be controlled.

No violations were identified.

5.0 Review of NDE Impelementing Procedures (73052)

The inspector reviewed selected procedures for compliance with code and regulatory requirements, and for technical adequacy. The following procedures were included in the inspector's review:

- NLP-1, Revision 3, "Procedure for Color Contrast Liquid Penetrant Examination"
- NMTWD-1, Revision 0, "Wet and Dry Magnetic Particle Examination"
- NVT-G-3, Revision 1, "Visual Examination VT-3 (Mechanical and Structural)"
- NUT-1, Revision 0, "Manual Ultrasonic Examination of Similar and Dissimilar Metal Welds for IGSCC"
- NUT-2, Revision 0, "Manual Ultrasonic Examination of Ferritic Welds"

The inspector determined that the aforementioned procedures were in compliance with the 1980 edition of Section V and XI through Winter 1981 Addenda regarding calibration, examination volume/area, acceptance criteria, and the reporting of examination results.

The ultrasonic examination procedure NUT-1 was qualified by detecting an intergranular stress corrosion crack in a test sample. The individual who performed the procedure qualification examination was certified at the EPRI NDE Center at Charlotte, North Carolina, for the detection of IGSCC. The NRC/EPRI requirements for the detection of IGSCC mandate that personnel and procedures be qualified by demonstrating their ability to detect natural cracks. The ASME Code Sections V and XI do not define how ultrasonic examination procedures must be qualified, although Section XI requires that a qualified procedure must be used. Ultrasonic examination procedures which are not intended for the detection of IGSCC are qualified by demonstrating their ability to detect the calibration reflectors in a calibration block which is consistent with past industry practice.

The procedures were found to be in compliance with applicable requirements and were further determined to be technically adequate for their intended use.

No violations were identified.

6.0 Control of ISI Data (73755)

The results of inservice inspection are documented by data reports for each examination. General Electric Company personnel are responsible for the performance of examinations, and the preparation of examination data reports at the Susquehanna facility. Subsequent to the preparation of the data report, the data are reviewed by designated personnel to determine their acceptability and the acceptability of the related component. The review process is controlled by licensee Instruction PE-ISI-003, Revision 3, entitled "ISI Data Review and Approval."

The inspector tracked selected data through the review process to ascertain compliance with Instruction PE-ISI-003. Data associated with the automated ultrasonic examination of the RPV nozzle weld N1A nozzle to safe end weld were included in the inspector's review.

Based on the inspector's review he determined that the aforementioned Instruction was complied with during the data review process and included the following:

- General Electric Company NDE technician (Level II) preparing the data report
- General Electric Company Level III data review
- Licensee Level II data review
- ANII data review
- Data are sent to Document Control Center for safe keeping.

In the event that recordable indications are detected, the licensee's Level III becomes involved with the review process. Conditions which exceed code acceptance criteria are submitted to the PP&L NQA NDE Level III for review and interpretation. If the Level III determines that the condition requires an engineering disposition, a nonconformance report (NCR) is generated and processed per procedure AD-QA-120, entitled "Nonconformance Reports - Control and Processing."

No violations were identified.

7.0 Control of Nonconforming Items

Findings related to inservice inspection are controlled at Susquehanna with the use of nonconformance reports (NCRs). Procedure AD-QA-413, Revision 3, entitled "Nuclear Support Inservice Inspection Program" requires that the licensee ISI Supervisor be notified in writing by the ISI contractor when contractor NDE examinations reveal recordable indications. In the event the recordable indications are determined to

exceed ASME code acceptance standards, a PP&L NCR must be generated and processed in accordance with Procedure AD-QA-120. Revision 4 of the latter procedure entitled "Nonconformance Reports - Control and Processing," is in effect during the current refueling outage.

Responsibilities for engineering support for the evaluation and disposition of nonconformances, approving the disposition of nonconformances, approving the disposition of NCRs that have been dispositioned as "repair," or "use-as-is," and of all ASME Section XI ISI program NCRs are provided by AD-QA-120.

The licensee tracks ISI related NCRs with computer lists generated on a daily basis covering the following categories:

- Open NCRs having outage impact.
- Open NCRs not having outage impact.
- Closed NCRs.

In addition to the above lists, an NCR Tracking Summary Report is issued daily which provides by subject matter, the status of ISI related open and closed NCRs.

The inspector reviewed selected NCRs to ascertain that corrective action and disposition was provided, and that the closeouts were based on completion of the corrective action. The following NCRs were selected for review:

- NCR 88-0115 Opened on March 15, 1988 as a result of underwater camera remote visual examination relevant indications on the Steam Dryer Support Ring. Closed on April 30, 1988.
- NCR 88-0129 Opened on March 16, 1988 as a result of a linear liquid penetrant indication on RPV Nozzle N1A nozzle to safe end weld which exceeded Section XI acceptance standards. Closed on April 19, 1988.
- NCR 88-0138 Opened on March 16, 1988 as a result of the visual examination of hanger GBB-204-HNGR#100 which revealed that the cold set exceeded tolerance. Closed on April 25, 1988.
- NCR 88-0176 Opened on March 25, 1988 as a result of rejectable magnetic particle indications on the RPV Closure Head. Closed on April 22, 1988.

- NCR 88-0264 Opened on April 13, 1988 as a result of linear liquid penetrant indications on weld DCA-210-1-A which were considered to be non-relevant but precluded adequate evaluation of the weld condition. Closed on April 23, 1988.

- NCR 88-0266 Opened on April 13, 1988 as a result of visual examination finding regarding an undersize fillet weld on hanger DCA-210-HIH S/N 9477. Closed on April 27, 1988.

By tracking the above listed NCRs through the system, the inspector determined that the licensee adequately documented the nonconforming condition, provided technically correct disposition and corrective action, and provided proper QA closeout in a timely manner. Engineering approval was documented by signature of the responsible individual. The licensee's processing of the NCRs was determined to comply with applicable requirements of the governing procedures.

No violations were identified.

8.0 Staffing and Personnel Qualification/Certification Records (73051)

The ISI staff is comprised of eight members who report to the Supervisor of Nuclear Maintenance Services. The responsibilities of the staff are divided in the following manner:

- ISI Supervisor
- ISI Analyst, computer support and production tracking
- ISI Specialist, snubber functional testing
- ISI Specialist, piping and components
- ISI Specialist, RPV, erosion, nozzle examinations
- ISI Specialist, NDE data review
- ISI Coordinator, (NDE contractor) - snubber data review/NCR
- Project Engineer, (temporary) - invessel examinations

In addition to the staff, the licensee uses contractors for various types of examinations and ISI outage activities including invessel inspections, piping and component examinations, RPV automated examinations, inservice system leak tests, snubber functional tests, and erosion examinations.

The licensee's ISI staff was ascertained to be technically capable of performing their assigned duties, and staff size was adequate to meet the scheduled outage work load.

In addition to the staff review discussed above, the inspector selected NDE personnel qualification/certification records for review with particular attention given to visual examination certification methods used by the licensee. The inspector selected for review records of eight licensee staff members, including five visual inspectors and three individuals who are certified to other NDE methods including ultrasonic, liquid penetrant, magnetic particle and radiography. The records verified that the individuals were properly qualified and certified in accordance with applicable requirements of ASME Section XI, SNT-TC-1A, ANSI N45.2.6 and the licensee's program.

Visual inspectors are provided onsite training by an individual who was qualified at the EPRI NDE Center at Charlotte, North Carolina, prepared a portion of the EPRI visual examination training manual, and has taught visual techniques at the NDE Center. Certifying examinations, including written and practical, are administered at the site by EPRI examiners using a portion of the EPRI library of defect containing samples which are brought to the site for use during the practical examination.

No violations were identified.

9.0 Assurance of Quality (73051)

Licensee Procedure NQAP 12.1, Revision 4, entitled "QA Surveillance Program" establishes the system by which QA Surveillances are controlled. The procedure applies to activities performed by Nuclear Quality Assurance (NQA) at the plant or offsite. In addition to surveillances the licensee performs QA audits of prospective vendors to determine the vendor's qualification to perform the required service. Once the vendor is placed on the approved vendor's list, repeat audits are performed every three years and vendor evaluation is performed on a yearly basis.

QA Surveillance Number 88-080 and NQA Audit Number 87-058 was selected for inspection.

The inspector determined that Surveillance 80-080 was initiated at the beginning of vendor ISI onsite activities during the current refueling outage, and was still in progress at the time of this inspection. A report will be issued at the conclusion of the surveillance although findings are issued when they are identified.

Finding 88-080-01 regarding automated ultrasonic examination data for RPV nozzle weld N1A documented that incorrect information was used to evaluate indications. This resulted from incorrect evaluation data in the General Electric computer which was used to perform the evaluation. The finding

was promptly responded to by General Electric who determined that the indications were acceptable after re-evaluation, the information was corrected in the General Electric computer, and a review was performed to ascertain the validity of other computer evaluation data.

Audit Number 87-058 was performed on August 3 - 7, 1987 to verify the adequacy and implementation of General Electric Nuclear Plant Services NDE qualification and certification program as it pertains to inservice inspection activities that will be performed at Susquehanna. The audit was performed at General Electric's Nuclear Plant Services Department offices at King of Prussia, Pennsylvania and Norcross, Georgia which are the offices providing NDE personnel who will perform NDE activities at Susquehanna. The audit scope included a review of the following documentation:

- Certification of Qualification Forms
- Personnel Qualification and Certification Summary Forms
- NDE Certification Examinations and Results
- NDE Training Records
- NDE Experience Records
- Vision Activity Records
- Personnel Resumes
- General Electric procedures for the qualification and certification of NDE and visual examination personnel reviews

One finding resulted from the audit regarding the documentation of visual examination level II personnel training hours in their NDE training records. General Electric Company responded to the finding and submitted to PP&L supporting documentation which the licensee considered adequate for closure of the finding. The inspector reviewed the finding and supporting General Electric documentation and determined that the finding was properly closed.

A second finding concerned errors in the computation of test scores for two General Electric Level III individuals certified in ultrasonic examination and magnetic particle testing. The errors were identified to the General Electric Level III who reviewed the tests and the grading and made the appropriate corrections to the documentation. The change in grades did not affect the individuals' certifications. The corrections were verified by the auditor and the finding was closed at the time of the audit.

The inspector reviewed the surveillance and audit findings and close out actions, and determined that the findings were properly documented, and the close out of each was based on appropriate corrective action, and was done on a timely basis.

No violations were identified.

10.0 Exit Meeting

The inspector met with licensee representatives (denoted in paragraph 1.0) at the conclusion of the inspection on May 13, 1988. The inspector summarized the scope and findings of the inspection.

At no time during the inspection was written material provided by the inspector to the licensee. The licensee did not indicate that proprietary information was involved within the scope of this information.