

U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-353/88-11

Docket No. 50-353

License No. CPPR-107

Licensee: Philadelphia Electric Company
2301 Market Street
Philadelphia, Pennsylvania 19101

Facility Name: Limerick Generating Station, Unit 2

Inspection At: Sanatoga, Pennsylvania

Inspection Conducted: April 18-22, 1988

Inspectors: E. H. Gray for RMCB 5/25/88
R. A. McBrearty, Reactor Engineer date

Approved by: E. H. Gray for JRS 5/25/88
J. R. Strosnider, Chief, Materials and Processes Section date

Inspection Summary: Inspection on April 18-22, 1988 (Report No. 50-353/88-11)

Areas Inspected: A routine, unannounced inspection was conducted of pre-service 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 qualifying and certifying visual examination personnel. Other areas of PSI activities which were inspected include implementing NDE procedures, NDE data, and tracking of PSI related nonconformance reports. An additional area that was inspected is the licensee's response to Generic Letter (GL) 84-11.

Results: The inspector concluded, based on the areas inspected, that the licensee's PSI activities were performed in compliance with applicable requirements of the ASME Code, Section XI. An area of improvement regarding the adequacy of the practical exam administered by the licensee for certification of visual inspectors was noted.

DETAILS

1.0 Persons Contacted

- *J. Corcoran, Manager, Quality, Limerick
- *D. DiPaolo, Quality Assurance Superintendent
- *J. Kerechman, Mechanical Construction Engineer
- G. Lauderback, Jr., Quality Control Supervisor
- *K. Meck, Assistant Superintendent, Quality Assurance (Mechanical)
- *R. Payne, Quality Assurance Engineer
- *D. Schmidt, Engineer, NDE Level III
- *G. Tepper, Electrical Construction Engineer
- *P. Tutton, Supervisor, Engineering Pipe Design Branch
- *R. Zong, Senior Engineer, Level III

Bechtel Construction Incorporated

- B. Foote, Lead Construction Quality Engineer
- *W. Hatton, III, Quality Engineer
- C. Headrick, Deputy PC Quality Control Engineer
- D. Jinnett, NDE Level III
- *R. Kerhin, Lead Quality Control, PSI
- *G. Kelly, Quality Assurance Engineer
- J. Khandhar, Quality Assurance Engineer
- *L. Pons, Resident Project Engineer
- *K. Stout, PC Quality Control Engineer
- E. Urbarowiz, Quality Control Staff

General Electric Company

W. Miller, NDE Level III

U.S. Nuclear Regulatory Commission

- *R. Fuhrmeister, Resident Inspector
- *R. A. Gramm, Senior Resident Inspector

*Denotes those present at the exit meeting.

2.0 Scope of Inspection

The licensee is performing preservice inspection to comply with the requirements of the ASME Boiler and Pressure Vessel Code, Section XI, and with its preservice inspection program plan.

The following areas were selected for inspection:

- Personnel Qualification/Certification records
- Tracing and closeout of PSI related nonconformance reports
- PSI examination data
- NDE implementing procedures
- Preservice Inspection program plan

3.0 Findings

Preservice Inspection (PSI) Program (73051)

The inspector determined that Limerick Unit 2 is subject to the requirements of the 1971 Edition of ASME Section XI through Winter 1973 Addenda, which was in effect 6 months prior to the June 19, 1974 issuance date of the facility construction permit. This is in accordance with the requirements of 10 CFR 50.55a(g)(2). The licensee has elected to use ASME Section XI 1980 Edition through Winter 1981 Addenda, in accordance with 10 CFR 50.55a(g)(2) which permits the use of later code editions providing they are referenced in 10 CFR 50.55a(g)(b)(2).

The program was prepared by Bechtel Power Corporation for the licensee, and nondestructive examinations are performed by Bechtel NDE personnel and General Electric Company NDE personnel. Bechtel performs manual ultrasonic examinations and General Electric performs manual ultrasonic examinations and automated ultrasonic examinations using the G.E. "Smart" UT system.

The inspector found that program status is tracked by Bechtel Q.A. with the help of a computer data base which is updated on a daily basis. This includes completed examinations, completion dates, and a unique examination log number which can be used to retrieve data. Additionally, all incomplete and/or partially completed examinations are identified.

PSI Data Review

Data associated with the following welds were selected for review by the inspector:

Reactor Water Cleanup System

- DCA-201-1-FW1, 20"x6" sweepolet to 6" diameter pipe
- DCA-201-1-FW14, 6" diameter pipe to elbow

- DCA-201-1-FW3, Valve 2F027 to 6" diameter pipe
- DCA-201-1-FW20, 6" diameter pipe to pipe

Residual Heat Removal System

- DCA-204-2-FW12, 12" diameter pipe to pipe
- DCA-204-3-1-FW5 LU, 12" diameter pipe seam
- DCA-205-1-FW10, 20" diameter pipe to 20" diameter pipe bend
- HBB-218-1-FW8, 20" diameter pipe to pipe (Bimetallic)

High Pressure Coolant Injection System

- DBA-206-1-1-SW1, 10" diameter pipe to elbow

Reactor Recirculation System

- VRR-2RD-2A-WA6, Recirculation pump 2AP-201 to 28" diameter pipe
- VRR-2RS-2A-WA2, 28" diameter pipe to pipe
- VRR-2RS-2A-WA5, 28" diameter elbow to recirculation pump 2AP-201
- VRR-2RS-2A-4-SWB, 28" diameter pipe to elbow
- VRR-2RS-2A-4-SWB LD MIN, elbow seam minimum

The examination data were found to be complete, and easily retrievable. Bechtel Q.A. maintains data files, including data resulting from the examinations performed by the General Electric Company, which are identified and retrieved by weld number or by the unique log number previously mentioned.

Based on the reviewed data, the inspector determined that the related examinations, which included ultrasonic and liquid penetrant, were performed in accordance with the governing NDE procedure, and with applicable ASME code and regulatory requirements. He further determined that limitations to the examinations were documented, and that reportable conditions were properly documented, evaluated and dispositioned.

A review of material certification records representing the liquid penetrant and ultrasonic couplant material ascertained that the materials contained permissible amounts of halogens and sulfur.

Review of Implementing NDE 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:

- PT (SR) - ASME III/XI, Revision 5, "Nondestructive Examination Standard Liquid Penetrant (Solvent Removable)"
- UT - Austenitic, Revision 9, "Manual Ultrasonic Examination Procedure for Austenitic and Dissimilar Metal Piping Welds"
- UT - Ferritic, Revision 10, "Manual Ultrasonic Examination Procedure for Ferritic Steel Piping Welds"

The inspector determined that the aforementioned procedures were in compliance with code and regulatory requirements regarding calibration, examination volume/area, acceptance criteria, and the reporting of examination results. The liquid penetrant procedure qualification for use in the temperature range of 40°F to 125°F was documented by NDE-PQR-001 which confirms that the basis for qualification complies with ASME code requirements. The procedures were determined to be technically adequate for their intended function.

Qualification of Visual Inspection Personnel (73051)

The ASME Section XI, 1980 Edition through Winter 1981 Addenda references ANSI N45.2.6-1973 for the qualification of personnel performing visual examinations VT-2, VT-3, and VT-4 of IWA-2212, IWA-2213, and IWA-2214, respectively. The Limerick Unit 2 FSAR Sections 1.8, 17.2A.II and 17.2B.II commits the licensee to conform to Regulatory Guide (R.G.) 1.58, Revision 1, and ANSI N45.2.6-1978, which is referenced by the R.G., with clarifications as delineated by the FSAR.

The inspector reviewed the Bechtel requirements for Level I, II, and III visual examination personnel, which are included in the Bechtel Quality Control Manual for LGS Operations. The requirements control the qualification and certification of Bechtel quality control personnel as VT Level I, II and III in the visual examination methods VT-1, VT-2, VT-3, and VT-4.

The inspector selected qualification/certification records of seven Bechtel visual inspectors for review to ascertain that applicable requirements were met. The records confirmed that each individual had the required training and experience for certification, and that each successfully completed the practical examination required by the Bechtel Level III examiner.

The inspector determined that the Bechtel requirements comply with R.G. 1.58, Revision 1, and ANSI N45.2.6-1978 with regard to training and experience, and with ASME Section XI, IWA-2300 with regard to the practical examination in that the examination is performed using procedures and parts representative of the Limerick Generating Station. However, the inspector determined that the practical examination was performed using production parts previously installed in the plant which had been previously inspected and accepted per the applicable construction code. The records showed that the test samples did not contain flaws or defects. This was discussed by telephone with the Bechtel Level III who administered the practical tests. The inspector found that the Level III actively participated in the examination in that he selected the test samples, reviewed the candidate's inspection check list to ascertain whether essential attributes were included, and questioned the candidate as the examination progressed. The resulting grade was based on completeness of the check list, documentation of the inspection report, and on the candidate's response to the oral questions asked by the Level III.

The inspector stated that the qualification/certification program was excellent, with the exception of the practical test because of the use of unflawed test samples. It is the industry practice to use samples containing defects, and the EPRI visual inspection training and test program, which has been endorsed by much of the industry, uses flawed samples for testing purposes, and strongly recommends their use to others. The inspector noted that the Bechtel program would be improved with the adoption of the EPRI recommendation, and the Bechtel Level III agreed. The purpose of the practical test is to demonstrate the candidate's ability to report and evaluate nonconforming conditions which are revealed by the inspection. It is not clear how this ability is demonstrated by a test using unflawed test samples. The licensee agreed to review the program with regard to the practical test, and to consider the future use of flawed test samples. The inspector had no further questions at this time.

PSI Related Nonconformance Reports (NCR) (73055)

Nonconformance reports (NCRs) are written to document PSI results which do not meet applicable requirements, or require further evaluation to determine their status. PSI related NCRs are written by General Electric Company and by the Bechtel Corporation at Limerick Unit 2.

The inspector reviewed selected NCRs to ascertain that corrective action and disposition was provided, and that the closeouts were based on the completion of the corrective action. Nonconformance reports which were opened during the period from August 1986 to January 1988 were selected for review by the inspector.

The inspector determined that the NCRs, opened by G.E. and Bechtel, were written for a variety of reasons, and with one exception no particular trend was established. The exception involved five G.E. Company NCRs which were opened based on the failure of automated "Smart" UT system technicians to document on data sheets that calibration was verified within the required time. The related examinations were performed during the period from July 21, 1986 to August 6, 1986. The NCRs were opened as a result of the data review by the G.E. Level III during the period from October 1986 to January 1987. In addition to the data sheets, the automated examinations are documented on video tape and on computer disks. A review of the tapes confirmed that the intermediate calibration verifications were performed at the proper time, thereby permitting closeout of the NCRs without requiring reexamination of the components. Corrective action was to retrain the technicians regarding calibration requirements. No instances of the failure to document calibration were found subsequent to the retraining. The inspector further determined that Bechtel QA is responsible for tracking NCRs and that the status of all NCRs can be provided at any given time.

Generic Letter 84-11 (25589; TI-80)

Inspections which were conducted pursuant to IE Bulletins 82-03, Revision 1, and 83-02, and the NRC August 26, 1983 Orders revealed intergranular stress corrosion cracking (IGSCC) in large diameter recirculation and residual heat removal piping. As a result of these inspections, Generic Letter 84-11 was issued on April 19, 1984 to require an on-going program for similar reinspections at all operating BWRs. Because the Limerick Generating Station Unit 2 has not yet commenced operations, the letter is not applicable at the facility.

On January 25, 1988, Generic Letter 88-01 superseded Generic Letter 84-11, and was issued to all licensees of operating BWRs, and holders of construction permits for BWRs. The licensee is presently formulating its response to 88-01, which is due 180 days from the receipt of the letter, and will cover Limerick Units 1 and 2.

4.0 Exit Meeting

The inspector met with licensee representatives (denoted in paragraph 1) at the conclusion of the inspection on April 22, 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 inspection.