## U.S. NUCLEAR REGULATORY COMMISSION Region I

Report No.	50-353/86-13			
Docket No.	50-353			
License No.	CPPR-107 Cate	egory	_ <u>A</u>	
Licensee:	Philadelphia Electric Company	/		
	2301 Market Street			
	Philadelphia, Pennsylvania 1	9101		
Facility Name:	Limerick Nuclear Generat	ing Stat	tion, Unit 2	
Inspection At:	Limerick, Pennsylvania			
Inspection Con	ducted: August 4-8, 1986			
Inspector:	H. I. Gregg, Lead Reactor Eng	ineer		8/20186 date
Approved By:	J. J. Wiggins, Chief, Materia Section, Engineering Branch	1 and Pr , DRS	rocesses	8/1/86 date

Inspection Summary: Inspection on August 4-8, 1986 (Report No. 50-353/86-13)

Areas Inspected: Routine unannounced inspection of completed work and work in process associated with: 1) reactor vessel and internals installation, 2) reactor coolant pressure boundary piping, and 3) safety related mechanical components. The major effort during this inspection involved direct observations and evaluation of work. Also, verification was made that installation specifications, procedures and drawing requirements were met, and that adequate controls were in place.

Results: No violations were identified.

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# DETAILS

## 1.0 Persons Contacted

- 1.1 Philadelphia Electric Company (PECo)
  - \* D. Bowie, QA Document Coordinator
    - R. Crofton, QA Engineer
    - L. Dyer, QA Engineer
  - \* G. Lauderback, Field QA Branch Head
  - \* K. Meck, QA Engineer
    - J. Niemanski, Field Engineer
    - W. Ramer, Field Engineer
  - \* R. Sheibley, QA Engineer

# 1.2 Bechtel Corporation

- \* M. Drucker, Lead Resident QA Engineer M. Fisher, Senior Contract Engineer
  - J. Fraim, Senior Contract Engineer
- \* D. Harder, Quality Engineer D. Henry, QC Engineer
- H. Johnson, Welding Engineer
- \* G. Kellv, Lead QA Engineer
- \* D. Madden, Lead Quality Engineer J. McVeigh, Piping QC Engineer
- \* B. Mukherjee, Resident Project Engineer
  - G. Perry, QC Engineer
  - D. Roof, Valve Engineer Lead
  - D. Trent, Piping Engineer
  - N. Wypych, Level II Film Reviewer

## 1.3 General Electric (Nuclear Field Service)

D. DiFilippo, Site QC Lead C. Vandepass, Welding Supervisor

### 1.4 U.S. Nuclear Regulatory Commission

\* R. Gramm, Senior Resident Inspector

\*Denotes presence at exit meeting

## 2.0 Reactor Vessel and Internals Installation

The inspector reviewed GE Specification 22A4111, "General Instructions for Reactor Vessel Installation," with specific attention directed to the shroud installation since this major work effort was in process. Work traveler #2-140T which detailed the operations, examination, hold points, and sign off requirements was also reviewed.

The inspector went into the reactor vessel and observed the shroud being welded to the shroud support base. The weld was being made by 4 welders, each welding in a separate quadrant. The weld was presently in its 19th pass which represented approximately 9/16" of the 2" weld groove. These weld passes were being made with MMA process using 1/8" Inconel 182 rod (root pass was TIG).

The radial and plumb measurements that are taken each morning were reviewed and compared to the specified allowed tolerance of 0.030" on the radius and 0.060" on plumbness. The measurement of roundness had gone under tolerance and the inspector discussed the changing of weld start and stop location being utilized to bring the out of round condition back into tolerance. The inspector reviewed NCRs and FDDRs relating to the vessel installation (at this time there were only 26 FDDRs) to verify appropriateness of the corrective actions.

No violations were identified

### 3.0 Reactor Coolant Pressure Boundary Piping

Observations of the Recirculation Pump Base "B" being automatic welded (28" joint B-5, 1.291" min. wall) were made during several of the weld passes. The inspector also reviewed the on-location Work Package VRR-2RS-2B which contained the general instructions and the WR5 weld card specific requirements of weld rod, shielding gas, and interpass temperature. The inspector verified that the pump base alignment was being monitored. Upon completion of the weld pass being observed, the plane of the pump base was determined to be 0.025" off horizontal (0.030" is allowed). By changing the next pass weld start and stop location, this condition was decreased to 0.022". The inspector noted that there were dirt inclusions on the pump base casting side of the weld groove after each pass and none on the pipe side (the pump base is cast 300 series St. Stl. and the pipe is made from plate). These inclusions were filed away after each pass.

The inspector also observed the work being performed on the 30" removable spool piece on the suction side of RHR pump 2DP202 and the installation of piping work being performed on the reactor core isolation cooling system at butt weld joint (Field Weld 2) of Valve M02F084.

In addition to the work observations in the plant, the inspector reviewed the "In-process Rework Notice Log" to determine if there were major

problem areas. The log indicated minor type work. Additionally, the inspector reviewed specific rework notices to verify that corrective action was appropriate.

No violations were identified.

## 4.0 Safety Related Components

## 4.1 MSIV Installation

The inspector reviewed the QC Inspection Record for the 26" Atwood Morrill MSIV installation, and observed the in process installation of the outboard MSIVs. The outlet side of valve C was being welded by automatic machine TIG, and the outlet side of valve B was being welded by manual TIG. The inspector observed the filing of the weld stop, the wire brushing of an intermediate pass, and the grinding to remove the positioning lug tack welds on valve C. The valve A outlet grinding clean-up of the weld preparation and the tack welding of the insert ring on the outlet of valve D were also observed. (Joi ts made with automatic machine utilize inserts and joints made man illy don't).

During a subsequent walk-through of this same area, the inspector observed part of the valve C weld being ground out because the informationa RT showed an indication thought to be a tungsten inclusion. Upon further examination, it was determined that there was one spot of insert build-up in the pipe I.D. This was ground out and blended smooth from the I.D. and the O.D. weld was repaired and the next weld pass was made. The inspector independently verified that the radiograph of the repaired weld was satisfactory.

No violations were identified.

### 4.2 RCIC Pump

The inspector observed the preliminary alignment of the RCIC pump at 177' elevation. The determination was that the pump was high/turbine was low; and that additional shimming of the turbine may be performed. The construction forces were observed to be carrying out the alignment procedure using acceptable methods.

No violations were identified.

### 4.3 Limitorque Rework Program

The inspector observed the work in progress typical of that being performed on all limitorque operators under the plant's Limitorque Rework Program. The work is performed by Bechtel under Procedure 8031-FM-4 and includes total cleaning of the operator, changing the grease to Exxon Nebula EP-0, inspection of the operating mechanism,

removal of tandem torque switches, verification that O rings are viton or they are replaced, verification of correct color coded terminal block material, replacement of all improper parts, and bench testing after assembly.

No violations were identified.

#### 4.4 Adjustment and Setting of Limitorque Operators

Within the Limerick 2 program, all value assemblies (value with operator) with limitorque operators are shop tested and set for torque and or limit by PECo personnel. Each value assemble with rising stems are tested with MOVATS equipment. The work is performed under PECo Procedure FE-14.

The inspector observed the MOVATS testing of a 4" Walworth Gate Valve with a 000 Limitorque Operator. Oscilloscope traces are used to determine spring pack motion and thrust loads. The minimum and maximum thrusts are determined and the torque switches are set at the minimum load. Then a blocking plate is set in place so that maximum thrust cannot be exceeded.

No violations were identified.

## 5.0 Exit Meeting

The inspector met with the licensee's representative (identified in paragraph 1.0) at the conclusion of the inspection on August 8, 1986, to summarize the findings of this inspection. The NRC Resident Inspector, R. Gramm, was also in attendance.

During this inspection, the inspector did not provide any written material to the licensee.