U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-277/85-01

Docket No. 50-277

License No. DPR-44 Priority -- Category C

Licensee: Philadelphia Electric Company

2301 Market Street

Philadelphia, PA 19101

Facility Name: Peach Bottom Atomic Station 2

Inspection At: Delta, Pennsylvania

Inspection Conducted: January 7 through February 1, 1985

Inspectors: Harry W. Kerch, Lead Reactor Engineer — 2/27/85 date

Richard H. Harris, NDE Technician — 2/27/85 date

Randy M. Campbell, NDE Technician — 2/27/85 date

Approved by: Jacque P. Durr, Chief, Materials and Processes Section, DRS — 3/13/85 date

Inspection Summary:

Inspection Conducted January 7 through February 1, 1985 (Report No. 50-277/85-01)

Areas Inspected: A special, announced inspection utilizing the NRC Mobile NDE Van to perform nondestructive examination of replacement pipe on the reactor recirculation system. Three regional based inspection personnel assisted by two contracted NDE personnel were utilized during this inspection. The inspection involved 486 onsite hours and 147 hours in the Region I offices.

Results: No violations were identified.

DETAILS

1. Persons Contacted

Philadelphia Electric Company (PECO)

N. Gazda, Health Physicist Supervisor
T. Bazzani, Lead Engineer/Pipe Replacement
J. Moskowitz, Power Plant Design Engineer
*J. O'Rourke, Pipe Replacement Project Manager
*J. Austin, Construction Superintendent
*F. Hoelzle, Jr., Construction Engineer
*R. Zong, R&T Division/NDE
J. Pizzola, E&R Quality Assurance
*J. Otto, E&R Quality Assurance
*D. Smith, Station Manager
*D. Fleischmann, Station Superintendent

Chicago Bridge and Iron Company (CBI)

K. Schoenleber, Engineer
C. Halfast, Project Manager
C. May, Welding and Quality Assurance Manager
C. Kirk, Quality Assurance/NDE

General Electric Company (GE)

S. Kepler, Engineer

U. S. Nuclear Regulatory Commission

*T. P. Johnson, Senior Resident Inspector
S. Reynolds, Jr., Lead Reactor Engineer
J. Grant, Project Engineer
*J. H. Williams, Resident Inspector
R. A. McBrearty, Reactor Inspector
*J. P. Durr, Chief, Materials and Processes Section

*Denotes those present at Exit Meeting:

2. Independent Measurements - NRC Nondestructive Examination and Quality Records Review of Safety Related Systems

During the period of January 7 through 11, and January 28 through 31, 1985, quality records received from Peach Bottom Power Station Unit No. #2 were reviewed in the regional office for completeness and compliance to the licensee's FSAR commitment to applicable codes, standards, and specifications. Subsequently, an onsite independent verification inspection was conducted during the weeks of January 14 through January 25, using the NRC Mobile

Nondestructive Examination (NDE) Laboratory. This inspection was conducted by regional based personnel in conjunction with NRC contract personnel. The purpose of this examination was to verify the adequacy of the licensee's welding quality control program during replacement of the Recirculation System piping. This was accomplished by duplicating those examinations required of the licensee by the regulations and evaluating the results. These test results were then compared to the licensee's quality assurance records for completeness, accuracy and correlation.

An NRC inspector made a selection of pipe weldments which provided a representative sample of the recirculation piping system replaced by the licensee. The selection represents various pipe sizes, shop and field weldments fabricated to ASME Class I Components requirements. The items selected were previously accepted by the licensee based on vendor shop and onsite QA/QC records.

This special inspection was scheduled to inspect replacement piping in the RHR and recirculation loop systems. The existing pipe that was replaced had (during plant operation) deteriorated from Intergranular Stress Corrosion Cracking (IGSCC).

2.1 Quality Documents Review

Twenty-two safety related piping system document packages were reviewed for compliance with licensee procedures, applicable codes and standards and regulatory requirements. The following types of documents were reviewed.

Document	Attributes Reviewed
Material Certification	Material chemical and (Base) physical properties compared to standards and code requirements.
NDE Records	Examinations meet codes and standards, licensee procedures and other commitments; personnel properly qualified; appropriate examinations performed.
Fabrication Records	Fabrication travelers and records were reviewed and compared against other corresponding records and sign off sheets.

Drawings (isometrics)	Drawings were reviewed for proper designation of weldments, location and classification.
Procedures	Procedures were reviewed for completeness, and licensee's commitment to code requirements.
Welding Material	Material certifications for welding materials were reviewed for physical and chemical properties as required by licensee's commitment to code and industry standards.

These documents were reviewed to verify compliance to NRC requirements and licensee's commitments to industry codes and standards. The document packages reviewed are listed in Attachment #3.

Results: No violations were identified.

2.2 Nondestructive Examinations

Examinations were performed using NRC procedures with addenda written specifically for compliance to the licensee's FSAR commitment. The intent was to duplicate, to the extent possible, the techniques and methods used during the original examination.

The following examinations were performed:

Radiographic Examination

Seventeen pipe weldments were Radiographically examined per NRC procedure NDE-5, Rev 0, addenda PB-1-5-1. These weldments were located in the RHR and Reactor Recirculation System.

Results: No violations were reported.

Liquid Penetrant Examination

Nine pipe weldments and adjacent base metals were examined per NRC procedure NDE 9, Rev 0 and addenda, PB-1-9-1. Samples examined were ASME Class 1 pipe.

Results: No violations were identified.

Visual Examination

Twenty pipe weldments and adjacent base materials were examined for weld reinforcement, surface condition and overall workmanship per NRC procedure NDE-14, Rev 0.

Results: No violations were identified.

2.3 Review of Procedures

The following procedures were reviewed for compliance with NRC and code requirements.

Weld Procedures

WPS - E308L/34540 Rev 3
WPS - E308L (HSW) 34540 Rev 2
WPS-GTAW-ER70S-2(M)/34540 Rev 6
WPS-GTAW-ER70S-3(A)/34540 Rev 9
WPS-GTAW-ER70S-3(M)/34540 Rev 5
WPS-GTAW-ER308L(A)/34540 Rev 6
WPS-GTAW-ER308L(M)/34540 Rev 8
WPS-GTAW-ER308L(HSW)/34540 Rev 2

Nondestructive Examination Procedures

MTIN	Rev 1
MT11X	Rev 3
PT14X	Rev 5
PTIN	Rev 3
RTIN	Rev 2
RT9X	Rev 3
VTIN	Rev 5
VTIX	Rev 7

Results: No violations were identified.

3.0 NDE Personnel Qualification:

The NDE qualification and certification records of twenty Chicago Bridge and Iron inspectors were reviewed. Records were reviewed for compliance to ASNT-TC-1A and ASME criteria.

Results: No violations were identified.

4.0 Radiographic Review

The inspector reviewed 110 shop welds and 16 field welds. (See attached Table 4.0) Listed below are the findings.

-- Shop weld 112D3303P004, tube 5, contained an indication 1" right of the radiographic location marker number 3, which was not identified on the radiographic report. Only one radiographic film of the weld is stored on site. The inspector was unable to resolve this issue with only one film. The second radiographic film was obtained and reviewed by the inspector. The second film did not contain an indication at film marker 3. The inspector had no further questions.

-- RHR "B" Loop, field weld 074 radiographic film report had the wrong indication block checked off. PECO film interpreter reevaluated and made the appropriate correction. The inspector had no further questions after the corrections had been made.

-- RHR "B" Loop, field weld 212, shop welds 2-10-30A-2WC and 112D3305G001M0177 had a root weld condition that could interfere with the ISI ultrasonic examination. The licensee informed the inspector that PECO would review and take the necessary action. The inspector had no further questions.

-- Longitudinal seam shop welds, in pipe fabricated by the Youngstown Welding and Engineering Co., contain indications in the radiographs. These indications were a series of transverse, white marks distributed along the longitudinal seam of the pipe radiograph. Metallurgical examinations performed on these pipe welds have classified the indications as transverse molecular alignment. Based on this report, the manufacturer declared the pipe acceptable. The inspector has requested a copy of the weld procedures used. Test reports and a sample of the weld in question were provided to the NRC for further metallurgical examination. The material will be evaluated by Region I Materials Engineers and will be tracked in report 50-277/85-04.

Results: No violations were identified.

5.0 Attachments

Attachment No. 1 is a tabulation of the specific welds examined and the results.

Attachment No. 2 is a list of specific radiographs reviewed and the results.

Attachment No. 3 is a list of specific documentation packages reviewed.

6.0 Exit Interview

The inspector met with the licensee representatives (denoted in paragraph 1) at the conclusion of the inspection. The inspector summarized the scope and applicable findings of this inspection. No written information was given to the licensee by the inspector during the course of this inspection.

INDEPENDENT MEASUREMENT PROGRAM

SITE: Peach Bottom Unit 2

WELD NUMBER Line/ISO	CLASS	R.T.	P.T.	VISUAL	REMARKS
		RHR PIPING REPLACEMENT PROGRAM			
JT 083	1	ACC	ACC	ACC	
JT 084	1	ACC	N/A	ACC	
JT 074	1	ACC	ACC	ACC	
JT 042	1	ACC	ACC	ACC	
JT 076	1	ACC	N/A	ACC	
JT 075	1	N/A	ACC	ACC	
JT 034	1	ACC	ACC	ACC	
JT 204	1	ACC	N/A	ACC	
JT 210	1	ACC	N/A	ACC	
JT 402C	1	ACC	N/A	ACC	
JT 301	1	ACC	N/A	ACC	
JT 303	1	ACC	N/A	ACC	
JT 003	1	ACC	N/A	ACC	

INDEPENDENT MEASUREMENT PROGRAM

SITE: Peach Bottom Unit 2

WELD NUMBER Line/ISO	CLASS	R.T.	P.T.	VISUAL	REMARKS
JT 007	1	ACC	ACC	ACC	
JT 030	1	N/A	ACC	ACC	
JT 033	1	N/A	ACC	ACC	
JT 041	1	ACC	ACC	ACC	
JT 004	1	ACC	N/A	ACC	
JT 502	1	ACC	N/A	ACC	
JT 032	1	ACC	N/A	ACC	

Attachment #2

RADIOGRAPHIC REVIEW
TABLE 4.0

SYSTEM/LINE	WELD ID	ACC	REJ	C	SL	P	T	LF	IP	LI	UI	A	S	CC	CV	COMMENTS
RHR "B" Loop	CBI 84	✓														
						CBI SITE FILM										
RHR "A" Loop	CBI 204	✓														
RHR "B" Loop	CBI 210	✓														
RHR Elbow	CBI 303	✓														
RHR "B" Loop	CBI 074	✓														Wrong Indica-tiod Marked
RHR Tee	CBI 004	✓														
RHR "B" Loop	CBI 212	✓														Root Condition
RHR Elbow	CBI 302	✓														
2-10-30A-5	WA	✓				JOHNSON CONTROLS, INC.										
2-10-30A-5	WB	✓														
2-10-30A-4	WA	✓														
2-10-30A-4	WB	✓														
2-10-30A-4	WC	✓														
2-10-30A-4	WD	✓														
2-10-30A-4	WE	✓														
45° L/R ELL #8	WA	✓														
45° L/R ELL #8	WB	✓														
45° L/R ELL #9	WA	✓														
45° L/R ELL #9	WB	✓														
45° L/R ELL #12	WA	✓														
45° L/R ELL #12	WB	✓														
90° L/R ELL #2	WA	✓														
90° L/R ELL #2	WB	✓														
90° L/R ELL #1	WA	✓														

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90° L/R ELL #1	WB	✓		JOHNSON CONTROLS, INC.												
90° L/R ELL #4	WA	✓														
803462	1C-LS-1	✓		TAYLOR FORGE, INC.												
112D3303P002	TUBE 8	✓		JOHNSON CONTROLS, INC.												
112D3303P004	TUBE 5	✓														Film Artifact
112D3305G001	TUBE 4 2 - 5	✓														
112D3305G001	TUBE 4 6 - 11	✓														
112D3306P002	TUBE 11 1 - 5	✓														
S/N M0434	WA	✓														
S/N M0434	WB	✓														
2-10-29A-7	WA	✓														
2-10-30A-4	WF	✓														
2-10-30A-8	WE	✓														
2-10-30A-8	WF	✓														
2-10-32A-5	WA	✓														
2-10-32A-6	WB	✓														
2-10-32A-7	WA	✓														
2-10-32A-1	WB	✓														
2-12-3A-10	WC	✓														
112D3305G001	M0178 WC	✓														
803462	1C1	✓														
803462	2A1	✓														
112D3314G001	M0173 WA	✓														
2-10-30A-2	WC	✓														Root Condition
8034622	2A-N1	✓														

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112D3305G001	MO177 WC	✓	JOHNSON CONTROL, INC.													Root Condition
112D3299P001	GO3462-18	✓														
803462	2B1	✓														
2-10-29A-10	WA	✓	JOHNSON CONTROL, INC.													
2-10-29A-10	WB	✓														
2-10-29A-10	WC	✓														
2-10-30A-7	12-13	✓														
2-10-32A-1	10-16	✓														
2-10-32A-1	WA	✓														
2-10-30A-1	WA	✓														
2-10-30A-1	WB	✓														
2-10-30A-2	5-9	✓														
2-10-30A-2	WA	✓														
2-10-30A-2	WB	✓														
2-10-30A-6	1-4	✓														
2-10-30A-6	WA	✓														
2-10-30A-6	WB	✓														
2-10-30A-6	WC	✓														
112D3305G001 MO177	WA	✓														
112D3305G001	WB	✓														
112D3304G001	7B 11-22E	✓														
112D3314G001	1A-LS-1 EO-2E	✓														
2-10-30A-8	WD	✓														
2-10-30A-8	WC	✓														
112D3308G001 MO179	WA	✓														

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803462	1B-LS-1	✓		TAYLOR FORGE, INC.												
803462	1A-1	✓														
803462	1D-LS-1	✓														
803462	2B-1	✓														
Recirc "A" Loop	CBI 032	✓		CBI (SITE FILM)												
Recirc "B" Loop	CBI 083	✓														No Tech Sheet
Recirc "A" Loop	CBI 042	✓														No Tech Sheet
Recirc "A" Loop	CBI 003	✓														
Recirc "A" Loop	CBI 034	✓														
Recirc "A" Loop	CBI 007	✓														
Recirc "A" Loop	CBI 041	✓														
Recirc "B" Loop	CBI 076	✓														No Tech Sheet
2-10-32A-6	WA	✓		JOHNSON CONTROLS, INC.												
2-10-32A-6	WC	✓														
2-10-29A-Z	WA	✓														
2-10-29A-Z	WB	✓														
2-10-29A-4	WA	✓														
2-10-29A-4	WB	✓														
2-10-29A-4	WC	✓														
2-10-29A-5	WA	✓														
2-10-29A-5	WB	✓														
2-10-29A-5	WC	✓														
2-10-29A-8	WA	✓														
2-10-29A-8	WB	✓														

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2-10-29A-8	WC	✓														
2-10-29A-8	WD	✓														
2-10-29A-8	WE	✓														
2-10-32A-3	WA	✓														
2-10-32A-6	16-20	✓														
2-10-30A-3	9-11	✓				JOHNSON CONTROL, INC.										
90° L/R ELL #4	WB	✓														
90° L/R ELL #5	WA	✓														
90° L/R ELL #5	WB	✓														
90° L/R ELL #6	WA	✓														
90° L/R ELL #6	WB	✓														
90° L/R ELL #7	WA	✓														
90° L/R ELL #7	WB	✓														
90° L/R ELL #3	WA	✓														
90° L/R ELL #3	WB	✓														
112D3361P002	WA	✓														
112D3361P002	WB	✓														
112D3308G001	WB	✓														
112D3361P002	WA	✓														
112D3308G002	WA	✓														
112D3361P002	WB	✓														
112D3308G002	WB	✓														
2-10-30A-8	WA	✓														
2-10-30A-8	WB	✓														
45° L/R ELL #11	WA	✓														

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45° L/R ELL #11	WB	✓														
45° L/R E11 #10	WA	✓														
45° L/R ELL #10	WB	✓														

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Attachment #3

REVIEW OF DOCUMENTATION PACKAGES

Site: Peach Bottom

Docket No.	Review	Comments
J41	ACC	
J42	ACC	
J32	ACC	
J34	ACC	
J03	ACC	
J04	ACC	
J302	ACC	
J303	ACC	
J07	ACC	
J84	ACC	
J83	ACC	
J212	ACC	
J210	ACC	
J204	ACC	
J76	ACC	
J402C	ACC	
J301	ACC	
J003	ACC	
J007	ACC	
J004	ACC	
J502	ACC	
J74	ACC	