

U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-277/84-13

Docket No. 50-277

License No. DPR-44 Priority --

Category C

Licensee: Philadelphia Electric Company
2301 Market Street
Philadelphia, Pennsylvania

Facility Name: Peach Bottom Atomic Power Station, Unit 2

Inspection At: Delta, Pennsylvania

Inspection Conducted: April 16-19, 1984

Inspectors: *S.D. Reynolds, Jr.*
S.D. Reynolds, Jr.
Lead Reactor Engineer
M&PS, EPB

5/14/84
date

Approved by: *J.P. Durr*
J. Durr, Chief
Materials and Process Section
EPB, DETP

5/31/84
date

Inspection Summary: Inspection on April 16-19, 1984 (Inspection Report 50-277/84-13)

Areas Inspected: Routine unannounced inspection of the licensee program for recirculating and RHR pipe replacement. The inspection involved 28 hours onsite by one region-based inspector.

Results: No violations were identified.

DETAILS

1. Persons Contacted

Philadelphia Electric Company (PECO)

- * D. Smith, Assistant Station Supervisor
- * F. Hoelzle, Construction Engineer, Construction Department
- J. DeLong, Materials Engineer, Engineering and Research Department
- J. O'Rourke, Pipe Replacement, Project Manager, Engineering and Research Department
- M. Christinziano, Engineer, Electric Production
- * A. Bazzini, Mechanical Engineer, Engineering and Research Department

Chicago Bridge and Iron (CB&I)

- * K. Schoenleber, Site Manager
- C. Halfast, Project Manager

- * the above designated personnel were in attendance at the exit interview on April 19, 1984

2.0 Review of Machine Orbiting Gas Tungsten Arc Welding (GTAW) Procedure Specification (WPS)

The inspector reviewed in detail CB&I WPS, GTAW - ER308L (A) - 34540 and discussed his findings with CB&I and licensee personnel. The WPS references GTAWX, which was not available for review. The WPS adequately addresses the essential variables for GTAW listed in ASME IX Code, Section IX QW-256. The document does not adequately provide "direction for the welder" as intended by QW-100.1 in the following areas: QW 404.3, 405.3, 408.3, 410.1, 410.7 and in the actual travel rate, primary current and background current necessary to control the process. CB&I stated that a method of providing this information was being evaluated and would be employed for training, performance qualification, and actual welding.

This is an unresolved item because the procedures for the pipe replacement are not completed and actual welding has not begun. CB&I and the licensee are determining the methods they will use to provide this information. This item must be resolved by the licensee prior to performance qualification and actual pipe welding to prevent an actual violation from occurring (UNR 50-277/84-13-01).

The inspector discussed with the licensee and CB&I personnel the proposed SCIX changes to QW360 that are applicable to the performance qualification testing of machine welding operators. The licensee indicated that they were evaluating this question and would decide this prior to performance qualification. At this time, CB&I is committed to the latest Revision of General Electric (GE) 23A4044 for performance qualification which will be formalized in CB&I Special Instructions 8, 13, and 14.

The inspector requested an engineering justification detailing why the longitudinal welds in the welded pipe will be made with 316L filler metal, whereas the circumferential welds will be made with 308L.

The licensee responded to this question in a phone call on May 1, 1984 from Mr. J. O'Rourke to the inspector. The licensee indicated that type 316L filler metal was utilized for welding the longitudinal seams in the pipe welds as it was a matching filler metal utilized for welds which would receive solution heat treatment. The 308L filler metal was selected for those weldments which will be utilized in the as welded condition. The inspector had no additional questions in this area.

No violations were identified.

3.0 Hot Bent Double Bends and Riser Piping

The inspector discussed with the licensee's metallurgical specialists, the current status of material procurement for the subject bent pipe. The licensee indicated that this material was being purchased from Sumitomo through CE. The licensee will order the material to the GE specification with additional special requirements on low melting and nonmetallic inclusion forming elements. They indicated the material will meet the basic

316 chemistry and the 316 NG chemistry of NUREG 0313 Revision 1. The material will be seamless pipe melted by electric furnace practice, will be given AOD processing and will be rotary cast in a solid ingot. The rotary casting is believed by the licensee to provide good grain size control and to expel the constituents promoting low melting and inclusion forming problems. Electroslag remelting will not be employed and is not considered to be necessary because of the rotary casting process. The ID and OD of the pipe will be machined prior to bending. The pipe will be bent with the continuous-incremental induction bending process using the Sumitomo and GE lower temperature and travel rate proprietary parameters. It was reported that Sumitomo routinely conducts Gleeble tests on each heat of this material to evaluate hot ductility characteristics prior to bending and has not experienced microfissuring on OD surface tearing problems at the lower bending temperatures. (The licensee attributes the surface tearing problem to ductility dips due to low melting constituents.)

The licensee is formulating plans to have both metallurgical and QA personnel present for the actual bending operations. The licensee reported that they have spent a considerable amount of effort in evaluating the hot ductility characteristics of 316 type materials as a necessary part of the Eddystone #1 (fossil.) piping replacement program. The licensee indicated that Sumitomo is an ASME Section III qualified material supplier, with Stamp No. QSC275 and a renewal date of May 25, 1986. The finished bent piping material will be ultrasonically examined using the GE sensitive microfissuring UT examination method.

No violations were identified.

3.0 CB&I Activities

The licensee has obtained the services of CB&I for the recirculation piping replacement. CB&I will use GAPCO for equipment and supervision of the machine pipe cutting and pipe welding operations. GAPCO will obtain welding operators from their own experienced personnel and will train, qualify and supervise welding operators obtained from the local union. MCI equipment will be utilized for the automated machine cutting. Plasma arc cutting will be done by CB&I using their own specially designed orbiting glove box system. Currently, Dimetrics equipment will be used exclusively for the orbital direct and remote, fiber optics TV welding of the pipe. CB&I welding procedures will be employed as well as all QC inspectors for CB&I and GAPCO work.

The CB&I program will be to rough machine cut the pipe at the vessel and where valves and pumps need to be protected. Following this rough cut, the piping, valves, and pumps will be decontaminated by London Nuclear. The pipe runs will then be cut and removed by plasma arc cutting. The machined weld joint preparations will be completed and the pipe welding process will commence. CB&I plans to complete special finished machining operator training and qualification with mockup conditions tentatively during the 2nd week in May. Welding operator performance qualification is

planned to start on the 2nd week in June. They plan to qualify 18 GAPCO and 18 non-GAPCO welding operators. Details on the welding performance qualification are not finalized at this time. The CB&I procedures receive CB&I Corporate approval, GE review and approval and final licensee review and approval in accordance with the PECO Project Interface Manual. The NRC inspector reviewed the current CB&I Contract Quality Assurance (QA) Handbook Index on approved procedures, Revision 8, dated March 13, 1984. This document lists only standard CB&I welding NDE procedures and the CB&I Quality Assurance Manual, Issue 10 as currently approved. Also approved, are welding filler material specifications for ER308L, IN308L (Class 5-rectangular), E7018, E309-15, ER705-3, INMs-2 (Class 5) and E308L-15. These documents were reviewed by the inspector who noted that the licensee's requirement for delta ferrite in austenitic filler metals is Ferrite Number FN8-20, whereas CB&I indicates FN8-15 (which is more correct).

The inspector reviewed copies of the latest CB&I document writing, approval and review schedule and he reviewed the CB&I Special Instruction Index, Section II, Revision 0. The inspector also reviewed a copy of the CB&I proposed craft schedule requirements.

No violations were identified.

4.0 Licensee QA/QC Activities for the Pipe Replacement

The inspector reviewed the licensee's commitments for their multi-departmental organization for the pipe replacement program. The licensee's Electric Production Department has committed to the following:

<u>QA</u>		<u>QC</u>	
<u>ACTIVITY</u>	<u>METHOD</u>	<u>ACTIVITY</u>	<u>METHOD</u>
• DECONTAMINATION	AUDIT	DECONTAMINATION	MONITOR
		ALARA	MONITOR
• ALARA	AUDIT	FIRE PREVENTION- IGNITION SOURCE CONTROL	MONITOR
• HOUSEKEEPING	AUDIT	HOUSEKEEPING	MONITOR
• PLANT RESTORATION/ OPERATION VERIFICATION	AUDIT	RADIATION PROTECTION (RWP)	MONITOR
		BASELINE ISI	MONITOR
• PLANT STARTUP	AUDIT	PREOPERATIONAL TESTING	MONITOR

The inspector obtained the following information from the licensee's cognizant Engineering and Research QA Engineer concerning their committed QA activities for third level QA audits. The licensee stated that no QC activities would be conducted for the MOD 1278 pipe replacement program. They committed to the following:

QA

<u>ACTIVITY</u>	<u>METHOD</u>
• Contractor QA program	Audits (complete) on Bechtel, GE and Taylor Forge
• Procurement documents originating at PECO	Review and approve (R&A) all documents
• CB&I Personnel Qualifications	Review on sample basis
• Stop work orders	Follow QAI-2-4 Revision 2
• Receipt Inspection	Audit of the 100% PECO construction review and approvals
• CB&I interference removal	Audit to CSGM-IN
• CB&I NDE	Audit of in process activities and documents
• Welding	Audit of WPS & PQR documents, in process activities, welder and welding operator qualifications
• Walkdown Inspections	Program being formulated
• Engineering review requests	Audit
• NCR's	Audit. Also approval required in all "use as is" and "repair" documents
• Installation Specifications compliance	Audit
• Filler metal control	Audit

- Radiographs Audit of Construction QC
100% R&A activities on
review of CB&I radiography

The licensee Engineering and Research QA Engineer indicated that to conduct a thorough inspection of all QA activities associated with the pipe replacement the inspection should be conducted at the 23rd Street Headquarters.

Codes and Standards

The applicable dates for codes and standards for the pipe replacement are as follows:

CONTROLLING AND INSTALLATION :	ASME B & PV CODE, SECTION XI, 1980 EDITION + WINTER 81 ADDENDA
DESIGN AND ANALYSIS :	ASME B & PV CODE, SECTION III 1980 EDITION + WINTER 81 ADDENDA
NEW MATERIAL AND FABRICATION : (LARGE PIPE)	ASME B & PV CODE, SECTION II 1980 EDITION + WINTER 80 ADDENDA

EXCEPT:

TEES, CROSSES ANSI/ASME STANDARD
AND REDUCERS : B16.9 - 1978

SHORT RADIUS ANSI/ASME STANDARD
ELBOWS : B16.28 - 1978

NEW MATERIAL AND FABRICATION : (SMALL PIPE)	ASME B & PV CODE, SECTION II 1980 EDITION + WINTER 81 ADDENDA
INSERVICE INSPECTION :	ASME B & PV CODE, SECTION XI 1974 EDITION + SUMMER 75 ADDENDA

Mockups

The licensee will utilize specially built mockups for training and qualification as applicable to assist in preparation for work and minimize exposure. The following will be mocked up:

- Temporary valve supports
- Cutting for pipe removal
- Weld preparation
- Joint fit-ups

- Welding Equipment set-up and welding/NDE
- Templating and fit-up of closure spools
- Limited access or special method NDE

No violations were identified.

Bent Pipe Purchase Order Specifications

The inspector requested copies of the PECO purchase order to GE and the GE specifications to Sumitomo which state the special chemistry requirements, bending temperature requirements, and special acceptance standards. The licensee's Project Manager indicated that to obtain copies of these documents, the inspector would be required to request the information in writing from Mr. R. Logue in Mechanical Engineering.

No violations were identified.

5.0. Unresolved Items

Unresolved items are matters which more information is required in order to ascertain whether they are acceptable items, items of noncompliance or deviations. Unresolved items disclosed during this inspection are discussed in paragraph 2 of this report.

12. Exit Interview

The inspector met with licensee representatives (denoted in Paragraph 1) on April 19, 1983. The inspector summarized the scope and findings of the inspection. No written information was given to the licensee by the inspector during the course of the inspection.