

U. S. NUCLEAR REGULATORY COMMISSION

Region I

Report No. 50-412/82-14

Docket No. 50-412

License No. CPPR-105 Priority -- Category A

Licensee: Duquesne Light Company  
Robinson Plaza Building No. 2  
Suite #210, PA Route 60  
Pittsburgh, Pennsylvania 15205

Facility Name: Beaver Valley Power Station, Unit 2

Inspection at: Snippingport, Pennsylvania

Inspection conducted: November 2 - December 10, 1982

Inspectors: *Ebe McCabe, for* 12/30/82  
G. Walton, Senior Resident Inspector date signed

Approved by: *Ebe McCabe, for* 12/30/82  
L. Tripp, Chief, Reactor Projects Section date signed  
No. 2A, Projects Branch No. 2

Inspection Summary:

Inspection on November 2 - December 10, 1982 (Report No. 50-412/82-14)

Areas Inspected: Routine, unannounced inspection by one resident inspector of repair welds, nondestructive examination of electrical penetrations and primary coolant piping, hystostatic tests, 50.55(e) reports, and IE bulletins, painting and coating applications, and daily site tours. The inspection involved 112 hours onsite by one resident inspector.

Results: In the six areas inspected, one violation was identified (improper NDE requirements for electrical penetration welds - Details, Section 6).

## DETAILS

### 1. Persons Contacted

#### Duquesne Light Company

- P. Cadena, Senior Project Engineer
- \* R. Coupland, Director, Q.C.
- \* H. Crooks, Assistant Director, QC
- \* F. Curl, Senior Construction Specialist
- \* C. Davis, Director, QA
- \* C. Ewing, QA Manager
- \* R. Fedin, Compliance Engineer
- \* W. Glidden, Senior QA Engineer
- G. Kaloy, QC Engineer
- C. Majumdar, Senior QC Engineer
- \* J. Markovich, Compliance Engineer
- P. Orr, Deputy Project Manager
- \* V. Voitko, Project Engineer
- \* J. Waslousky, Senior QA Engineer

#### Stone and Webster (S&W)

- \* S. Adams, Superintendent of Construction
- \* C. Bishop, Resident Manager
- \* R. Faust, Site Structural Engineer
- \* R. Harris, Material Engineer
- \* A. McIntyre, Head, Site Engineering Office

#### Schneider, Inc.

- \* T. Biernat, Project Manager
- J. Sekely, Chief Welding Engineer
- G. Tinko, Superintendent, Welding

#### Stuart Painting

J. Macken, Site QC Supervisor

\*Present at exit meeting held December 10, 1982.

### 2. Construction Site Walk-Through Inspection

Numerous tours of the construction site were made to observe work activities in progress, completed work, and plant sites of the construction site. The presence of quality control inspectors and quality control records were observed. No violations were identified.

3. Licensee Actions on Previous Findings

(Closed) CDR 80-00-06 "Westinghouse Motor Operated Gate Valves".

(Closed) Bulletin 81-02 "Failure of Gate Valves to Close Against Differential Pressure".

On October 29, 1980, the NRC was notified by a 50.55(e) report that Westinghouse manufactured gate valves had encountered problems during preoperational testing at other power stations. The three inch gate valves failed to completely close under preoperational test conditions. The valves stroked to significantly restrict flow, but the full stroke was not enough to trip the "closed" position indication contacts in the motor operator or to seat the valve disc within the whole body. Beaver Valley Unit 2 received several of the same type valves.

On April 9, 1981, IE Bulletin No. 81-02 was issued on the same subject; and, on August 18, 1981, a "Supplement" to IE Bulletin 81-02 was issued. The supplement stated that closure problems could be anticipated with the entire line of Westinghouse Electro-Mechanical Division manufactured motor operated gate valves.

It was identified by Westinghouse that modification would be required on 37 gate valves for Beaver Valley. In addition, six motor shaft keys were found sheared and required rework.

The valve modification involved either a torque switch adjustment or a torque control to limit control closure adjustment accompanied by a gear ratio change on the valve operator. Eight valves required a gear change.

Beaver Valley Unit 1 had requested transfer of three affected valves, complete with motor operators, for application as power operated relief valves (PORV). These valves were excess Unit 2 material. Prior to transfer, the required modification was accomplished per disposition of nonconformance and disposition report number 6380 by Westinghouse supervision under the Westinghouse approved QA program.

The inspector reviewed the corrective actions taken on the remaining 34 valve operators. The modifications were made per FCN 10544A and Westinghouse procedure 730RP488. Additional rework was required to correct the problem of sheared motor shaft keys on the six operators referenced on FCN 10544A. The inspector found that all rework met the requirements of Westinghouse procedure 730RP488 except for testing per paragraph 6.0, which the licensee had identified as incomplete. Paragraph 6.0 requires an "Operational Check" (stroke test) as a final acceptance test on the valves. In accordance with memorandum DLC-SQCL #0669C, it was determined this test would be done in the normal pre-op test program. These items are considered closed.

#### 4. Painting and Coating Application

The inspector reviewed the painting and coating activities associated with prime coating and topcoating of steel within the reactor containment building. The contractor, Stuart Painting, performs the surface preparation and coating application in accordance with Stone and Webster "Field Construction Procedures". (FCPs).

A review was made of the below listed FCPs to determine compliance with the PSAR.

- ° FCP-802, Qualification of Painters For Steel Substrates.
- ° FCP-805, Prime Coating of Steel Within the Reactor Containment, Using Carbo-Zinc II.
- ° FCP-809, Topcoating of the Steel Within the Reactor Containment Using Carboline 191 HB.

The procedures meet the applicable documents described above.

The inspector discussed the requirements contained in specifications 2 BVS-950 and 950A titled, "Application of Protective Coatings Within Reactor Containment" with the Q.C. supervisor. In addition, the following items were audited.

- ° Two inspection reports for coating application.
- ° Paint identification, traceability, and storage. The storage audit included a review of cleanliness, paint, and coating markings for material traceability plus compliance with shelf life requirements and temperature controls.
- ° Qualification records of six painter applicators.
- ° Application of the seal coat on the containment liner at elevation 718, azimuth 72° to 118°.
- ° Vacuum blasting on the containment liner in preparation for coating application.
- ° Protection of items such as stainless steel piping, valves, and cable trays from damage during the blasting and coating operations.

The inspector found all items in compliance with the applicable procedures and specifications. No violations were identified.

#### 5. Weld Repairs of Pressure Boundary Material

The inspector audited the piping contractor, Schneider, Inc., for control of weld repairs made to pressure boundary material.

After completion of weld 2 FWS-106 F-02, a defect was observed by Q.C. on the radiographic filing which appeared to be in the weld material. A reject, which described the unacceptable condition along with the location of the defect, was issued. The cavity was excavated, then the area was re-radiographed for confirmation that the defect had been removed. The re-radiograph found the defect still present. It was then determined that the defect was actually in the base material of the valve body and not in the deposited weld material.

A nonconformance and disposition report identifying the defect in base material was issued by Q.C. The disposition of the N&D was to grind into the base material, remove the defect, liquid penetrant, test the cavity, repair, then radiograph the repaired area.

To remove the defect, the cavity was grounded completely through the total wall. For repair, the contractor had used the same weld procedure as for the original weld. This weld procedure, number SPBV 115G, was qualified using a consummable insert. In accordance with paragraph QW 40413 of ASME Section IX, the addition or deletion of the consummable insert is an essential variable and requires requalification of the procedure when a change to an essential variable occurs. In this case, a consummable insert was not used; instead, the weld was repaired as an open butt. Upon further review, it was found that the contractor had already qualified another procedure, number SPBV 115A, which meets all of the essential variables associated with this type repair. It is their intent to change the reference from SPBV 115G to SPBV 115A on the weld data sheet. The correction of the weld data sheet to reflect weld procedure SPBV 115A will adequately qualify the weld repair in accordance with ASME Section IX.

The repair, designated a "base material repair" will require additional work as compared to a repair of weld material. ASME Section III, paragraphs NB 4132 and NC 2579, states that repairs to base material must be charted showing the location and extent of the area to be repaired. In addition, the repaired areas shall receive a liquid penetrant or magnetic particle examination. The repair data sheet does not reflect these requirements, although some charting of the cavity had been done. The weld data sheet had not received final QC inspection.

This item is unresolved (82-14-01), pending review of the following areas:

- (a) Resolution of the code requirements to chart base material cavities and MI or PT the final surface after repairs are complete.
- (b) Confirmation that all weld repairs have been made with a procedure qualified to all essential and nonessential variables of the code for each welding technique used.

- (c) A program/procedure which addresses specific instructions for "special cases" weld repairs. For example, thru-wall cavities, base material repairs, nondestructive test requirements, post weld heat treatment applicability, minimum wall verification, and all essential and nonessential variables of ASME Code, Section IX.

No violations were identified.

#### 6. Welding On Electrical Penetrations

The inspector audited the welding activities in process on the electrical penetrations at elevation 740 of the cable vault area. The welding involved closing welds of the containment penetrations and is a containment pressure boundary weld.

The licensee's commitment to the ASME Code, Section III, for such welding is as stated below from the PSAR, Amendment 9. The ASME Boiler and Pressure Vessel Code, Section III, Nuclear Vessels is used as a guide in the selection of materials and fabrication of the steel containment liner. The containment liner construction includes provisions for nondestructive testing and inspection in accordance with AEC Regulatory Guide 1.19.

Further requirements are contained in Stone and Webster specification 2 BVS-931, Appendix J, which states, "All welding, welding procedure qualification, and welder qualifications shall be in accordance with the requirements of ASME III, 1971 Winter 1972 Addenda for the penetrations."

- ° Preheat above 50°F minimum
- ° Interpass temperature controlled at 225°F maximum
- ° Welding accomplished in accordance with weld procedure SP-BV 125Z, Revision 1, and procedure qualification 82425b.
- ° Visual examinations were specified.
- ° Weld issue slips and portable rod warmers were issued and controlled as required.
- ° Nondestructive examination requirements.

The areas audited meet all applicable requirements, except for compliance with Reg. Guide 1.19 for performing nondestructive examinations on the pressure boundary welds. As stated in the Reg. Guide 1.19, the following nondestructive examinations apply; all welds in penetrations and access openings that are not backed by concrete should be fully examined in accordance with examination methods of NE 5120 of Section III of the ASME B&PV code employing the techniques prescribed in Section V of that code.

Paragraph NE 5120 (NE 5220 in code editions after Winter 1971 Addenda) requires radiography of butt-welded joints. Para. NE 5231.1 further states, "When the joint detail does not permit radiographic examination to be performed in accordance with Code procedure, ultrasonic examination plus liquid penetrant or magnetic particle examination of the completed weld may be substituted for the required radiographic examination for the closing seam within an electrical penetration assembly".

The present requirements, contained in 2 BVS-931, Appendix J, specify either a liquid penetrant or magnetic particle examination of the root and final weld. Subsequent to the inspector's identification of this situation, the licensee started fabricating ultrasonic calibration blocks containing welds of the same type as the electrical penetrations to determine the feasibility of performing ultrasonic examination on these welds.

Specification of nondestructive examination requirements which do not specify volumetric NDE for penetration welds is a violation of ASME Code requirements and 10 CFR 50, Appendix B, Criterion IX (82-14-02).

7. Hydrostatic Test of Control Rod Drive Mechanism (CRDM) Canopy Seal Welds

The inspector audited and witnessed the below listed activities associated with the hydrostatic test of CRDM canopy seal weld number 24, shown on drawing 110-466.

- ° E&DR number 2PS-2300.
- ° Hydrostatic test procedure 2-MPT-11.
- ° Field construction procedure FCP-903.7.
- ° Witnessed the pressure test which was performed in the following manner.

The pressure was raised to 3110 plus 90, minus 0 psig and observed on two calibrated gages, held for 10 minutes, then lowered to 2490 plus 115, minus 0 psig, with subsequent inspection. To prevent overpressure, a relief valve set at 3250 plus 20, minus 0 psig was provided.

The inspector found all areas in accordance with regulatory requirements. No violations were identified.

8. Observation of Work on Safety-Related Piping

The inspector audited (by direct observation and data review) the below listed activities on the reactor coolant loop pipe to pump casing weld 2 RCS-8-F4, shown on ISO-110-234.

- ° Work activities were performed in accordance with construction specifications.
- ° Nondestructive examination personnel are qualified by certification, experience, and training.
- ° The work complied with Q.C. procedures.
- ° Nonconforming items were properly dispositioned.

The inspector found all areas acceptable. No violations were identified.

9. Review of Radiographic Film

The inspector reviewed the radiographic film for the reactor coolant loop piping weld 2 RCS-029-4-1, shown on ISO 110230, for compliance with regulatory requirements. The below listed areas were reviewed and found acceptable.

- ° Penetrameter selection and placement.
- ° Film densities taken through the penetrameter and weld.
- ° Visibility of 2T hole in the penetrameter.
- ° Weld quality.
- ° Film artifacts.
- ° Recording and disposition of all indications.

No violations were identified.

10. Unresolved Item

Areas for which more information is required to determine acceptability are considered unresolved. An unresolved item is included in paragraph 5.

11. Exit Interview

A meeting was held with the licensee representatives indicated in paragraph 1 on December 10, 1982, to discuss the inspection scope and findings.