

U. S. NUCLEAR REGULATORY COMMISSION

REGION I

Report No. 50-412/85-25

Docket No. 50-412

License No. CPPR-105 Priority -- Category B

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

Facility Name: Beaver Valley Power Station, Unit 2

Inspection At: Shippingport, Pennsylvania

Inspection Conducted: October 23 - December 2, 1985

Inspectors:

<u>G. A. Walton</u> G. A. Walton, Senior Resident Inspector	<u>12/6/85</u> date
<u>L. J. Prividy</u> L. J. Prividy, Resident Inspector	<u>12/6/85</u> date
<u>G. W. Meyer</u> G. Meyer, Project Engineer	<u>12/17/85</u> date
Approved by: <u>L. E. Tripp</u> L. E. Tripp, Chief, Reactor Projects Section 3A	<u>12/17/85</u> date

Inspection Summary: Inspection on October 23 - December 2, 1985 (Report No. 50-412/85-25.)

Areas Inspected: Routine, unannounced inspection by two resident inspectors and one region-based inspector (174 hours) of activities pertaining to previously identified unresolved items, inspection of electrical terminations and monorail systems, environmental qualification of safety-related junction boxes, electrical rework control, re-review of radiographic films of main steam piping field welds and inservice inspection procedures, review of licensee action on Information Notices, Part 21 Reports, Bulletins and disposition of Nonconformance and Disposition Reports, and daily site tours.

Results: One violation was identified during this inspection concerning conflicting information on two design documents - Electrical Installation Specification, 2BVS-931, and Wiring Diagram 10080-RE-18EC, Rev. 2A - which resulted in the use of the wrong type of terminal block in the wiring installation for the feedwater isolation valve actuators (Details Section 4). Also, a deviation was identified concerning a failure to implement FSAR commitments to Regulatory Guide 1.29, Revision 3, pertaining to seismic design and construction of non-safety-related systems such as monorails whose failure during a seismic event could potentially cause failure of safety-related systems (Details Section 5). Additionally, during this inspection, the rework control program for electrical work was improperly controlled in that conduit supports were removed without proper approval (Details Section 6). Acceptable results were found in the review of radiographic film and inservice inspection procedures.

DETAILS

1. Persons Attending Exit Interview

Duquesne Light Company

L. E. Arch, Senior Project Engineer
D. W. Denning, Assistant Director, Quality Control
C. E. Ewing, Manager, Quality Assurance
R. Fedin, Senior Project Engineer, Regulatory Affairs
E. J. Horvath, Senior Project Engineer
C. E. Kirschner, Supervisor, Quality Assurance
J. Konkus, Project Engineer
C. S. Majumdar, Assistant Director, Quality Control

Stone and Webster Engineering Corporation

A. A. Dasenbrock, Senior Construction Manager
H. W. Durkin, Superintendent of Engineering
D. B. Lamson, Assistant Resident Engineer
R. C. Wittschen, Licensing Engineer

2. Construction Site Walk-Through Inspections

Daily tours of the construction site were made to observe work activities in progress, completed work, and plant status of the construction site. The inspector noted work in progress to correct the latch mechanism for the main steam isolation valve actuators as identified in CDR 85-00-02. The presence of Quality Control inspectors and quality records was observed. During the site tours, the inspector found a violation and deviation which are discussed in paragraphs 4 and 5 and one unresolved item which is discussed in paragraphs 6. Other areas observed were found acceptable.

3. Licensee Action on Previous Inspection Findings

(Closed) Unresolved Item (84-10-02). Coverage of spare components in program for maintenance of stored equipment. An inspector had found inconsistencies in the maintenance requirements in Specification 2BVS-981 for the spare boric acid transfer pump motors. The licensee has corrected this entry in the specification. No other inconsistencies were found. The inspector reviewed corrected item 2SMR-1E(3) and inspected the storage of the motors. The storage conditions continue to be acceptable. This item is closed.

(Closed) Construction Deficiency Report (83-00-09). Improper load spring in diesel generator temperature control valve. The licensee had discovered that although the two diesels are identical designs and installations, the load springs in the temperature control valves for the water jacket cooling systems were different. The improper spring was documented to the NRC in Construction Deficiency Report (CDR) 83-09 dated September 13, 1983. The licensee replaced the improper spring on July 15, 1985. The inspector reviewed Nonconformance and Disposition (N&D) Report 6799A and Inspection Report ME-AB-1112 which covered the replacement. This item is closed.

(Closed) IE Bulletin 81-03 (81-BU-03). Flow blockage of cooling water to safety system components by biofouling. Corbicula (Asiatic clam) and Mytilus (mussel) have caused significant flow blockages in safety system components (e.g., heat exchangers) at some licensed facilities due to rapid population increases within the components. The inspector reviewed licensee letters dated July 9, 1981, and February 9, 1983, which addressed the bulletin at Unit 2, and licensee information concerning biofouling at Unit 1. The licensee has concluded that Mytilus, being a salt water organism, will not occur in the Ohio River and Corbicula is present in the Ohio River, but will not present the potential of significant flow blockages. Corbicula has been present in low concentrations in environmental monitoring samples over the last ten years. However, its concentration and growth rates are low enough to present only a nuisance and not a significant potential for flow blockage. The Unit 1 experience has shown that periodic surveillance testing of the components is sufficient to detect the increased pressure drops due to biofouling and that periodic manual cleaning is adequate to control the nuisance. This item is closed.

(Open) Bulletin 80-03 (80-BU-03). This bulletin identified a problem on certain charcoal adsorber cells used in ventilation systems. The problem existed on certain adsorber cells where the spacing between rivets securing the perforated screen to the casing was too great to ensure adequate contact between the casing and the screen, thus allowing charcoal to escape. The particular adsorber cells were Flanders Type II pre-1974 fabrication.

The inspector reviewed documentation where the licensee confirmed that Flanders Type II tray adsorber cells in charcoal filter assemblies will not be used at Beaver Valley, Unit 2. Tray type absorber cells furnished by American Air Filter Company in accordance with Specification 2BVS-157 will be used in the Supplementary Leak Collection and Control Room Pressurization Air Filtration Systems which are safety-related. While the filter housings for these units are installed, the adsorber cells and charcoal media will not be installed until approximately six months prior to commercial operation of the plant. This is done to gain optimum use of the charcoal. The licensee will perform a visual inspection of the adsorber cells when they are received at the site which will close out the followup effort committed to in the licensee's response to Bulletin 80-03 and contained in Specification 2BVS-157.

(Open) Unresolved Item (85-19-01). This unresolved item addresses the general method of the disposition of 10 CFR Part 21 reports. The inspector noted that a Part 21 report had been issued on snubber brackets furnished by Paul Monroe Hydraulics. It is suspected that incorrect bracket material was supplied to Beaver Valley, Unit 2. Stone and Webster issued a stop work order on related work until Paul Monroe evaluates the situation and provides a disposition. This disposition has not yet been received. The inspector noted that this specific Part 21 report item will be reviewed in conjunction with Unresolved Item 85-19-01.

4. Hydraulic Feedwater Isolation Valves 2FWS*HYV 157A, 157B, 157C Terminal Blocks

While conducting some routine inspections during daily site tours, the inspector reviewed the construction details for several safety-related electrical junction boxes in the vicinity of the 773' elevation in the Main Steam Valve House. Junction box 2JB*3603 serves several cables which terminate various wiring connections for the operator for feedwater isolation valve 2FWS*HYV 157C. The inspector reviewed Sargent Electric Drawing SECO-1-510-C143, Rev. 17, which shows the junction box mounting details, conduit and conduit supports, and the type of terminal blocks to be mounted inside junction box 2JB*3603. This drawing calls for a Mark No. "rbb-59" terminal block which corresponds to a commercial grade Marathon 1512 terminal block. This is consistent with the current wiring diagram 10080-RE-18EC, Rev. 2A "Hydraulic Feedwater Isolation Valves 2FWS*HYV 157A, 157B, 157C" which specifies commercial grade Marathon 1512 terminal blocks for junction boxes 2JB*3601, 3602 and 3603. The inspector determined that a commercial grade Marathon 1512 terminal block was installed in 2JB*3603. However, the governing Electrical Installation Specification, 2BVS-931, Page 3-51, lines 31 and 32, requires the use of Marathon Type 1500-NUC and 142-NUC for this application. These are nuclear grade terminal blocks which are in the process of being environmentally and seismically qualified. The inspector noted this conflict of criteria in design documents to Stone and Webster, Site Engineering Group personnel. It was noted that this conflict may not be an isolated case and a thorough review must be made to ensure that only nuclear grade terminal blocks are being used in safety-related applications.

This item is a violation of 10 CFR 50, Appendix B, Criterion III, Design Control, which requires in part that measures shall be established to ensure that applicable regulatory requirements and the design bases are correctly translated into specifications, drawings, procedures and instructions. (85-25-01).

5. Compliance With Regulatory Guide 1.29 Revision 3

Inspector reviews were performed on monorail systems installed in safety-related buildings to determine compliance with Regulatory Guide 1.29, "Seismic Design Classification," Positions 2 and 4. Position 2 requires those portions of structures, systems, or components whose failure could reduce the functioning of any safety-related system to an unacceptable safety level should be designed and constructed so that a Safe Shutdown Earthquake (SSE) would not cause such failure. Regulatory Position 4 requires that the pertinent quality assurance requirements of Appendix B to 10 CFR Part 50 be applied to all activities affecting the safety-related function of those structures, systems and components.

A review of Specification 2BVS-17, the ordering requirements for twenty-eight monorail systems of which twenty-three appear to be installed in safety-related buildings, revealed the design, construction and inspection of these monorail systems was Category III. Category III as defined in the FSAR, Paragraph 3.2.2.3, is applied to those plant systems or portions of systems, structures, and equipment which are not essential for a safe shutdown or the reliable generation of electric power. As a result of the Category III designation, none of the monorails ordered contained any of the pertinent requirements of Appendix B to 10 CFR 50, such as; the monorail manufacturer is not on either Duquesne Light's or Stone and Webster's approved vendors' list, no approved quality assurance program was in effect by the vendor, no vendor inspection was performed at the manufacturer by the licensee, and no audits were made of the manufacturer during manufacture of the monorails. These monorails are installed and from visual observations performed by the inspector, certain portions of the monorails are located directly above equipment needed for emergency shutdown of the reactor. For example, monorails 2MHP-CRN220A, B, C are located directly above the three high head safety injection pumps. Failure of these monorails during an SSE could sever the electric safety-related cables supplying power to the pump motors and prevent the emergency pumps from performing their intended function. The inspector further determined that many of the monorails were not analyzed or planned to be analyzed to seismic requirements by Stone and Webster Engineering, and were not inspected on site under a Seismic Category I or II quality assurance program.

Visual inspections of the monorail installed above the high head safety injection pump, Cubicle C, revealed questionable weld quality in load carrying members of the monorails. Porosity and undercut were present on the weld surface.

The installation of these monorails above safety-related components without applying the pertinent portions of Appendix B, and without designing the systems to seismic requirements is a deviation from your commitment stated in the FSAR, Table 1.8-1 to Regulatory Guide 1.29, Revision 3 (85-25-02).

6. Rework Control Program

Reviews were made to ascertain controls in the electrical area, particularly supports, where rework is performed on an item previously accepted by Quality Control. The governing procedure for control of the rework program is specified in Field Construction Procedure 41.1 (FCP 41.1). The rework program is monitored by the Site Q.C. personnel. When a deficiency is found, a Construction Deficiency Report (CDR) is issued by Q.C. to implement corrective actions.

The inspector performed a review of issued CDRs in this area to determine the effectiveness of FCP 41.1. This review found a continuing violation was occurring in the area of conduit support rework. For example, CDR Numbers SE-4448, SE-4451, SE-4493, SE-4500, and SE-4501, were written by QC during the period of September 11, 1985 thru September 24, 1985, and each was written because a violation occurred where conduit supports were removed without implementation of a rework notification form as required by FCP 41.1.

The inspector met with Quality Control Supervision and the Stone and Webster Construction Superintendent to discuss these continuing deficiencies and their planned corrective actions to prevent their continuing recurrence. In subsequent meetings with the S&W Construction Superintendent, he advised the deficiencies recurred due to lack of understanding of the requirements contained in FCP 41.1. He further advised that a training program was being developed and would be given to all Sargent Electric Company Field Engineers and Area Coordinators before the end of the current inspection period. The licensee advised this training would be completed by November 19, 1985.

On December 2, 1985, the inspector performed a review of the training attendance report for the training given to the foremen, engineers and coordinators. One hundred and fourteen persons attended during the period from November 6, 1985 thru November 15, 1985. The training session was approximately 30 minutes and highlighted the steps to follow whenever work is requested that involves: repair, rework, replacement, assembly, disassembly or alteration of a system component or structure which has been accepted previously by a Site Quality Control Inspection.

The review of the training course found it was completed as scheduled and attended by the necessary personnel.

The inspector was also advised that Quality Control had recently commenced increased surveillance in the rework control area to assure implementation would occur. The inspector found the contractor and licensee has implemented corrective actions in this area which should preclude its recurrence. This item is unresolved pending a review by the inspector to assure implementation of the licensee's corrective actions are effective (85-25-03).

7. Environmental Qualification of Safety-Related Electrical Junction Boxes

During the conduct of several daily site tours, the inspector reviewed the construction details of safety-related junction boxes, 2JB*3601, 3602, 3603, which are located at elevation 773' in the Main Steam Valve House (MSVH). The inspector reviewed the mounting and construction details for 2JB*3603 as shown on Sargent Electric Drawing SECO 1-510-C143, Rev. 17 and SECO 5-D-90. Currently, these junction boxes are mounted and they have been inspected by SQC to the extent that their mounting and support details are correct. The electrical construction pertinent to cable runs to the boxes and terminations inside the boxes is incomplete. Hinged covers are provided for the junction boxes which provide a relatively loose fit to seal off the box internals from the environment.

The inspector was concerned that no gasketed closure is provided for these junction boxes and, thus, the terminations to be made at the terminal blocks inside the junction boxes could be exposed to high temperature and high humidity under postulated accident conditions. The inspector raised this concern with Stone and Webster Engineering Corporation (SWEC) and Duquesne Light Company (DLC) personnel who indicated their awareness of this concern also. In February, 1985, DLC authorized SWEC to proceed with construction in harsh environment areas outside containment (such as the 773' elevation of the MSVH) such that safety-related cable terminations were to be made in non-gasketed junction boxes using Marathon 1500-NUC and Marathon 142-NUC terminal blocks. In-line cable splicing techniques were not to be used at this time. In parallel with this construction effort, an equipment qualification effort was initiated to qualify these same terminal blocks for use in the non-gasketed junction boxes being provided for Beaver Valley, Unit 2.

The inspector questioned SWEC personnel concerning how this item was being formally tracked in their environmental qualification and construction effort so that if gasketed closures or other details of construction had to be performed due to the lack of qualification of the terminal blocks, such later efforts would be visible to management. SWEC responded by indicating that there were several items of written correspondence between SWEC and DLC on this subject. The inspector noted that this item should be tracked in a more formal method such as an Open Items List within the Environmental Qualification Program.

DLC Licensing and Engineering personnel met with the inspector on December 5, 1985, to discuss this item. The DLC personnel noted that DLC Nuclear Construction Division Procedure 2.7.3 "Equipment Qualification Review and Action" formally reviews and tracks equipment qualification items. DLC implements Nuclear Construction Division Procedure 2.7.3 by the execution of various engineering instructions and their accompanying forms. DLC presented a copy of Figure E103-4 from Engineering Instruction No. 103 which is a comment/resolution sheet that was generated on February 26, 1985, when DLC conducted an equipment qualification review of certain equipment in Stone and Webster Document 2701.170-821-0893. One comment in Figure E103-4 stated "There is no information to support that the cabinets and junction boxes used at BV-2 are NEMA-4 as used in the report or that the use of a non-NEMA cabinet is justified". DLC indicated that this comment was presented to the SWEC equipment qualification group for their resolution and its resolution by SWEC was still pending. This status was evidenced by a blank section with an empty signature block on Figure E103-4 pertinent to this item indicating that this comment is still in the process of resolution by SWEC. The DLC Nuclear Construction Procedure 2.7.3 requires that technical reviews of equipment qualification documents shall be documented by completing forms in the Engineering Instructions.

Based on this information, the inspector was assured that this item had been properly identified previously and was being tracked correctly by the DLC equipment qualification group. The inspector found the review of this item acceptable.

8. Review of Radiographic Film

The inspector performed a review of the radiographic film for two safety-related pressure retaining welds. The film reviewed, selected at random, was for main steam welds 2-MSS-035-F05 and F06. The review was made to determine compliance with the ASME, B&PV Code, Section III in the areas of radiographic technique, film speed and quality, film density, penetrameter selection and placement, weld coverage and weld quality. The associated reader sheet for each weld was reviewed to assure relevant and/or nonrelevant acceptable indications were properly recorded. The inspector found all areas reviewed acceptable.

9. Review of Preservice Inspection Procedures

The inspector performed a review of the licensee's preservice inspection procedures to ascertain compliance with the requirements of ASME, B&PV Code Section XI. The licensee is presently performing preservice examinations of those piping welds contained within the boundaries of the planned secondary system hydrostatic test. The procedures reviewed were:

- GP-101, Revision 0, Establishment of Reference Points and Data Recording.
- GP-102, Revision 0, General Inspection Requirements.
- UT-300, Revision 0, General Requirements for Ultrasonic Examinations.
- UT-301, Revision 0, Screen Height and Amplitude Control Linearity.
- UT-302, Revision 0, Procedure for Ultrasonic Examination of Ferritic Piping Systems.
- A3.6, Revision 0, Control of Preservice Inspection at Beaver Valley Power Station, Unit 2.

The review included verification that the below listed items were accomplished:

- Procedures were approved by licensee personnel and Level III examiners.
- Personnel performing tests were required to be qualified in accordance with SNT-TC-1A.
- Ultrasonic procedures specify the method of examination and the extent of the examinations as delineated in the ASME Section XI Code.
- The type of apparatus to be used including frequency range, instrument linearity and signal attenuation accuracy requirements is specified.

- The extent of coverage including beam angle, scanning surface, scanning rate and directions as well as the scanning techniques are specified and consistent with ASME, Section XI Code.
- Calibration requirements, methods and frequency including type, size, geometry and material of calibration blocks, as well as location and size of calibration reflectors within the block are specified and consistent with ASME Section XI Code requirements.
- Methods of compensation for the distance traversed by the ultrasonic beam as it passes through the material is provided consistent with ASME Section XI Code requirements.
- The reference and recording levels for noting discontinuities is defined and the scanning gain setting specified are consistent with ASME Section XI Code requirements.
- Acceptance limits are specified in accordance with ASME Section XI Code requirements.

All areas reviewed by the inspector were found consistent with the specified commitments. No items of noncompliance were identified.

10. Information Notice No. 85-15 - Nonconforming Structural Steel for Safety-Related Use.

This information notice was written to alert various utilities of a potentially significant problem concerning structural material provided by steel suppliers for safety-related use, especially plate that the steel suppliers cut into small pieces. Several instances were noted where nonconforming structural steel had been supplied to Illinois Power Company by Interstate Steel Supply Company (ISSC) of Philadelphia, Pennsylvania.

In their letter 2DLS-25464 to Duquesne Light Company dated June 5, 1985, Stone and Webster has documented the results of their review of this potential problem. Stone and Webster Procurement Quality Assurance (PQA) reviewed the ISSC's records of cut plate supplied by ISSC to Beaver Valley, Unit 2 and other Stone and Webster projects. This review was performed to determine if ISSC did the actual cutting of the material or had contracted this operation to another supplier similar to that which was reported in Information Notice No. 85-15. Of the 58 purchase orders identified by the Beaver Valley, Unit 2, Stone and Webster site purchasing group, 35 were reviewed and no discrepancies were identified. Because ISSC maintains records for only four years, the documentation for the remainder of the purchase orders was not available.

Stone and Webster PQA concluded that the concern described in Information Notice No. 85-15 does not apply to the material furnished to Beaver Valley, Unit 2. As a result of this assessment, ISSC was reinstated on the Stone and Webster Quality Rating List.

The inspector found the review of this item acceptable.

11. Safety-Related Component Inspection

The inspector reviewed the QC inspection reports (IRs) for the three service water system pumps (2SWS*P21 A, B, and C). The installation and fitup inspection of the A, B, and C pumps were accomplished under IRs ME-MW-0070, 0071, and 0072, respectively. The inspector also reviewed subsequent IRs covering periodic maintenance (e.g., motor lubrication replacement). The inspector visually examined the B pump and reviewed its installation inspection with the applicable QC inspector. Also, the inspector reviewed N&D 6861 and its A and B revisions, which evaluated the need for a filtered water supply to the bearings of the pump bowl assembly. The inspector found the installation inspection acceptable.

12. Exit Interview

A meeting was held with the licensee's representatives indicated in paragraph 1 on December 2, 1985, to discuss the inspection scope and findings.