

U. S. NUCLEAR REGULATORY COMMISSION

Region I

Report No. 50-412/83-02

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: Shippingport, Pennsylvania

Inspection Conducted: January 3 - 31, 1983

Inspectors: *L. Tripp* 2/9/83  
G. Walton, Senior Resident Inspector date signed

*J. Grant* 2/9/83  
J. Grant, Projects Inspector date signed

Approved by: *L. Tripp* 2/9/83  
L. Tripp, Chief, Reactor Projects Section date signed  
No. 2A, Projects Branch No. 2

Inspection Summary: Inspection on January 3 - 31, 1983 (Report No. 50-412/83-02).  
Areas Inspected: Routine, unannounced inspection by one resident inspector and one regional based inspector of electrical cable, tray connections, installation of spare penetration covers, repairs to piping, control of contaminants on stainless steels, site tours, circulars and information notices, and unresolved items. The inspection involved 167 hours onsite by two inspectors.

Results: Of the six areas inspected, no items of noncompliance were identified.

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## DETAILS

### 1. Persons Contacted

#### Duquesne Light Company (DLC)

- \* R. Coupland, Director, Q.C.
- \* H. N. Crooks, Assistant Director, Q.C.
- \* F. G. Curl, Director, Construction
- \* C. E. Ewing, Q.A. Manager
- \* H. R. Good, Weld Specialist
- \* J. M. Markovich, Compliance Engineer
- E. Majumdar, Assistant Director, Q.C.

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

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

- \* Present at exit meeting January 31, 1983

### 2. Construction Site Walk-Through Inspection

Daily tours of the construction site were made to observe work activities in progress, completed work and plant status of the construction site. The presence of quality control inspectors and quality records were observed. The areas observed were found acceptable and no violations were identified.

### 3. Licensee Action on Previous Findings

(Closed) 77-C1-11 Circular "Leakage of Containment Isolation Valves with Resilient Seats."

(Closed) 82-09-01 Noncompliance "Failure to Follow Procedure for Preserving Valve Seats."

The inspector reviewed the documentation associated with the corrective actions taken as a result of this violation. Specification 2BVS-981 "Storage and Maintenance During Storage of Permanent Plant Equipment During the Construction Phase," has been revised to add an attribute for verification and application of grease on a yearly basis to seats of affected valves. Initial inspection and application of grease has been performed on the affected valves. Individual inspection cards were made for each valve to assure inspections would be performed on a yearly basis as required. The inspector audited the "Equipment Maintenance History Cards" and verified that proper maintenance controls are being implemented.

(Closed) 80-02-04 Unresolved Item, "Radiography of Class Three Pipe Repairs."

Inspection Report 80-02, dated March 18, 1980, questioned whether the practice of making a weld buildup on piping ends prior to machining should be considered a base metal repair. Further, if it is a base metal repair, shouldn't radiography be performed on the repaired area?

To resolve the issue, a code case, N-292, was published by ASME III in January, 1981 and approved by the NRC in April, 1982, via NRC Regulatory Guide 1.84, Revision 19.

Code Case N-292 states that weld buildups on pipe ends deposited prior to machining for the purpose of meeting alignment and/or thickness requirements is not considered base metal repair if certain dimensional requirements are met. If the dimensional requirements are met, radiography of this buildup on Class 3 piping is not required. If the buildup exceeds the dimensional limitations, that portion outside the limits is considered as base metal repair and shall comply with the requirements for a base metal repair. Code Case N-292 also requires the deposited weld metal on Class 3 piping to be liquid penetrant examined.

The licensee has determined that the buildup weld metal dimensional requirements are within the limits specified in Code Case N-292 and the only additional inspection necessary is to perform a magnetic particle or liquid penetrant examination on the weld deposit. Therefore, no radiographic requirements are imposed on the Class 3 weld build-up. Other concerns on this buildup are presently being reviewed by the NRC to determine if any additional inspections are necessary. These are: (1) possible sensitization of base material and (2) inservice inspection restrictions. If this review indicates any concerns, they will be identified and discussed in a future report. This item is resolved.

(Closed) 82-04-04 Unresolved Item "Qualified Thickness Ranges for Multi-Process Welding."

The inspector reviewed the licensee's actions taken on the Schneider welding procedure technique sheets and welding procedure specifications to control the qualified thickness ranges when using a multi process welding technique.

As stated in ASME Section IX, QW482, it is the intent of the code to record the data required by Q.W-403 for each base metal-filler metal combination individually. The total thickness permissible in a welded joint is the actual qualified thickness deposited for each process. The licensee's contractor has revised each welding procedure technique sheet to reflect the qualified thickness for each process.

The inspector audited the below listed technique sheets to assure compliance.

- SPBV 115A Revision 7
- SPBV 115G Revision 9
- SP 309G Revision 0
- SPBV 402F Revision 3
- SPBV 409G Revision 0
- SPBV 410A Revision 0

All documents were found in compliance with the requirements of ASME Section IX and no violations with regulatory requirements were identified. This item is resolved.

(Closed) IE Information Notices 82-54, 82-55

A. Information Notice 82-54; Westinghouse Nbfd Relay Failures In Reactor Protection Systems.

On December 7, 1982, another nuclear facility notified NRC that replacement relays and coils for W Nbfd relays installed at that facility had experienced a higher than expected failure rate following post installation tests. The relays had been replaced to correct deficiencies discussed in IE Information Notice 82-02.

Westinghouse and Duquesne Light SQC personnel inspected the affected cabinets and determined that the Nbfd relay coils are not installed on Beaver Valley, Unit 2.

On January 12, 1983, the inspector, accompanied by Westinghouse and SQC, opened the Train A cabinets in the Solid State Protection System and the Auxiliary Safeguard Cabinet and verified there were no Nbfd relays installed. All of the relays installed were observed to be type AR.

The inspector found the installed type AR relays are not affected by this Information Notice.

B. Information Notice 82-55; Seismic Qualification of Westinghouse AR Relay With Latch Attachment Used in Westinghouse Solid State Protection System.

Another nuclear facility reported that one of the two types of latch mechanisms used with the Westinghouse type AR relay is not qualified for seismic Category 1 use.

Westinghouse and Duquesne Light SQC personnel inspected the affected cabinets and determined that the ARLA latch attachment are used in the Solid State Protection Systems and there are no relay functions in the Auxiliary Safeguards Cabinets.

On January 12, 1983, the inspector opened the Train A cabinets in the Solid State Protection System and Auxiliary Safeguards Cabinet and verified there were no ARMLA magnetic latch attachments installed.

4. Unresolved Items

The below listed unresolved items were identified during this inspection period.

a. Electrical Cable Tray To Tray Connections

The inspector performed an audit of the electrical tray to tray connectors to ascertain compliance with the applicable specification 2-BVS-931 and drawings identified as; T. J. Cope 47-02CS-CP (Cover Plate) and SA576-120 (Trays). To determine the acceptance of hole sizes, the cover plates had to be removed. Under observation of SQC and the inspector, the cover plates at one location were removed by construction from trays 2TX373N and 2TX354N. The drawing specified a hole size of .390 inch diameter. No tolerances were specified.

The measurements, performed by SQC, found the holes slightly elongated with worst case dimensions of .435 inch on one tray and .440 inch on the other one. Without specified tolerances, acceptance of this condition could not be determined.

Site Quality Control has transmitted this information to engineering for evaluation to determine disposition of this type condition and to establish tolerances on the hole size for all work performed and future inspection requirements.

This item is unresolved pending further review, 83-02-01.

b. Incorporating Engineering and Design Coordination Report (E&DCR).

Inspection Plan - 7.2 (IP-7.2), Section 4.4.2 requires the Duquesne Light Company - Site Quality Control Inspector (DLC-SQC) to measure a pipe's wall thickness at the end prep to ensure that it is not below the minimum wall thickness required by the specifications. DLC-SQC inspects the wall thickness against that dimension called for by the relevant weld data sheet. The information on the weld data sheet is generated from the control copy of the isometric drawing containing the pipe spool piece in question.

On October 25, 1982, following inspection of the end preps of spool piece RHS-1-7, DLC-SQC initiated Nonconformance and Disposition Report (N&D) No. 6586 for a minimum wall violation. Both ends of RHS-1-7 were below the minimum wall thickness of 1.148 inches as stated on the weld data sheet. Following analysis of N&D 6586, Stone & Webster (S&W) Engineering issued a rework for the affected areas. Both ends were to be weld built-up followed by uniform blending into the surrounding area. S&W further noted that Spec 2BVS-939A for pipe class 1502 allowed a minimum wall thickness of 1.10 inches at the weld-end preps, not the 1.148 inches as stated by the isometric drawing details (ISO 107120). The weld repair was made on December 2, 1982, and later accepted by DLC-SQC.

Prior to issuance of N&D 6586, on February 12, 1982, E&DCR 2P-3776 was initiated by Power Piping Company, subcontractor to S&W. Power Piping Company had identified that pipe spools requiring end preparations to Schedule 160 (Sch 160) per the S&W pipe classes were being mated with valves requiring end preparations to Sch 140. E&DCR 2P-3776 requested S&W Engineering to determine whether it was acceptable to prep Sch 160 pipe ends to Sch 140. S&W Engineering responded that although the manufacturer's minimum wall thickness for 10" and 12" Sch 140 pipe did not meet the Sch 160 requirements, it did meet the ASME III requirements based on system conditions, and therefore, was acceptable. The RHS-1-7 weld-ends were to be prepared to a minimum wall thickness of 0.984 inches (1.125 nominal). Therefore, based on E&DCR 2P-3776, no minimum wall violation existed for RHS-1-7. E&DCR 2P-3776, however, was never incorporated into the control copy of ISO 107120. As a result, an unnecessary N&D (N&D 6586) was issued and an unnecessary weld repair was made on RHS-1-7.

Discussions with DLC-SQC, S&W, and Schneider revealed that provisions do not exist for the transmittal and incorporation of E&DCRs into the affected isometric drawings. The licensee is investigating to determine actions necessary to ensure that E&DCRs are incorporated in the control isometric drawings. The licensee is also investigating to determine why the specification requirements of 2BVS-939A for minimum wall thickness had not been correctly reflected on the control isometric drawing (ISO 107120).

On January 6, 1983, NRC inspectors took direct thickness measurements of the end-weld prep areas using a Nortec NDT-124D UT machine. The inspectors verified that the minimum wall thickness requirements had been met.

This item will remain open pending further discussions and review. (83-02-02).

c. Engineering Disposition of Piping Installed Without Supports

The inspector performed an audit of an ASME Section III, Class 3 pipe, identified as 2-CCP-018-031-3 to ascertain compliance with the installation drawings. Isometric drawings 110701-1E and 110702-3E show the pipe to be 18" diameter, .375 inch nominal wall and anchored to the containment liner where it penetrates the containment building at penetration X-5, elevation 728'0". The next support is a restraint, PSR 737 which has been partially installed. As installed, it does not give the pipe any support. Also, there are no temporary supports used at this location to support the pipe. The next support, PSR 742, is installed. The distance between penetration X-5 and the installed support, PSR 742 is approximately 45'. This length of pipe also contains a motor operated butterfly valve which contains no support. Also, at the location for restraint PSR 737, a beam, which is part of the restraint, appears to be applying a downward load on the piping and increasing the loads at the containment penetration.

The inspector questioned whether this large diameter pipe containing a motor operated gate valve and connected to the containment by welding to a penetration and then suspended for a distance of approximately 45 feet without further supports might damage the pipe by exceeding the yield of the pipe material.

The S&W Engineering group has stated that they will perform an analysis and determine a disposition for this condition.

The inspector also noted an E&DCR 2PS-2361 issued December 12, 1982, controls the installation of restraints described above. This document states that a clearance is permissible between the pipe and the supports and in some cases, it gives a minimum clearance of 1/16" to 1/4" between the pipe and support. The inspector expressed concern that in cases where the pipe is welded to the penetrations and installed without proper supports, that when the supports are later installed in accordance with E&DCR 2PS-2361, the load would not be removed at the penetration connection and would remain with this dead load during operation. The inspector was informed by S&W Engineering that the design calculations for the penetration assumes the pipe would be supported from below at support PSR 737 and no dead loads such as described above would exist.

To resolve this issue, engineering has agreed to revise the E&DCR to reflect contact of restraints at the bottom location on horizontal run piping. In addition, if the piping is determined by engineering to be acceptable based on stress calculations, the support will be installed by lifting the pipe up until there are no loads on the penetration and then installing the support so that it will be in contact with the pipe and hold the load.

This item remains unresolved pending review of the corrective actions to be taken by the licensee. (83-02-03).

d. Installation of Shims on Electrical Supports Installed with Anchor Bolts

The inspector audited the installation of the electrical cable trays in the Service Building, Elevation 760', identified as Tray 2TX307Y, shown on drawing RE-34DU-4A. The support connection for this tray was inspected and accepted by SQC on February 23, 1982, Inspection Report No. QC-189. The inspector noted this support was installed so that it connected to the wall by partially setting on an embedment plate and partially on concrete. The embedment plate is not flush with the concrete and the support plate as installed, has a gap between the support foot and the concrete. No shims were added.

The inspector then reviewed field construction procedure (FCP) 403 which states in paragraph 5.5.6.4 "Where the embedded plate is recessed in the wall, either complete plate or at junction where two plates butt together, shims (1/2" max.) to be added per SK-831B".

When the inspector questioned SQC about the requirements to use shims, their reaction was that this had been missed as a requirement in their inspection procedures. However, after further discussions with SQC and S&W engineering, it is not clear that this requirement applies to supports outside the containment building. At present, engineering is reviewing their requirements to determine the applicability of shims.

This item is unresolved pending further review. (83-02-04).

e. Installation of Caps on Spare Containment Penetrations

The inspector performed a record review of the installation procedures for installing pipe caps on the spare electrical and piping containment penetrations. During this review, the inspector found a memorandum from S&W Engineering (DY8110300004) which stated the caps should be treated as temporary attachments.

If treated as temporary attachments in accordance with ASME Section III MC, no material traceability is necessary, the Authorized Nuclear Inspector inspection is not required, nondestructive testing requirements are different than for permanent attachments and the design of the weld may be different than required for a permanent attachment.

The inspector stated these caps could only be classified as temporary if they were removed before the plant goes operational.

On December 17, 1982, the S&W Resident Manager issued a memorandum stopping all work associated with the spare electrical penetrations until the matter is investigated and resolved.

This item is unresolved pending further review. (83-02-05).

f. Control of Stainless Steel Brushes Used on Aluminum Conductors

During a drawing review, the inspector noted on drawing SECO-1.2.3.4.A6 Revision 8, Note 9, that aluminum conductors shall be wire brushed with a stainless steel wire brush. The inspector questioned SQC if controls were implemented to assure that wire brushes used on aluminum conductors would not be reissued for use on stainless steel welding. The inspector was informed that the contractor using the stainless steel brushes on aluminum would only be doing a very minimal amount of stainless steel welding.



This contractor, Sargent Electric Company, had generated an RI, Request for Information No. 0839-QC to engineering on August 16, 1982, asking if any requirements exist for segregation of tools when welding stainless steel in accordance with site non-code welding procedures. Engineering responded stating specification 2BVS-975 would be revised to clarify the requirement of tool control.

In addition, SQC has stated they will revise FCP 432 to specify control on stainless steel brushes used in electrical installation. This item is unresolved pending review of these changes. (83-02-06).

5. Acceptable Items

a. Nondestructive Examinations

The inspector witnessed the magnetic particle examination of weld preps 2FWS-017-F-04A on line 2-FWS-016-17-2 to ascertain compliance with regulatory requirements. The following areas were found acceptable:

- Correct procedure (MT-11-2282) was applied.
- Equipment was properly calibrated and identified for recalibration requirements.
- Personnel were properly qualified.
- Inspection coverage was adequate.
- Results were properly interpreted.
- Inspection was properly documented.

No items of noncompliance were identified.

b. Conditional Releases

The inspector reviewed the licensee's system for installation of items by a conditional release. The inspector selected the feed-water isolation trip valve ordered by purchase order 2BV-92. The valve was found unacceptable when receipt inspected because a nondestructive examination was performed without the procedure being properly approved. A noncomformance and disposition report (N&D 6545) was issued.

To facilitate installation, conditional release number 237 was generated which allowed installation in place, but no welding on the valve was authorized. Subsequently, the N&D was dispositioned, and the conditional release was reviewed and changed to allow further installation by welding. The inspector reviewed the following documentation associated with the conditional release:

- Inspection Report P-2-5207
- Deficiency Report 1546
- Purchase Order 2BV-92
- N&D Report 6545

The inspector found all documentation associated with the conditional release acceptable. No items of noncompliance were identified.

c. Electrical Cable Pulls Versus Bend Radius

The inspector reviewed the licensee's controls for limiting the pull pressure on cable when bends in the cable raceways are involved. A reduction of pull pressure is necessary because of cable sidewall pressure. The inspector found the licensee has implemented the following control in this area.

Each cable manufacturer's recommended maximum pull tension and the minimum bend radius (based on cable side wall pressure) data is entered in the Stone & Webster Cable/Raceway Computer System. When a particular manufacturer's cable is scheduled for a run between two items, a computer printed Cable-Pull Ticket is issued which contains the specific manufacturer's recommended maximum pull tension/minimum bend radius data.

The procedure by which the cable is pulled is contained in specification 2BVS-931. Stone & Webster's approach was to determine a worst case condition for each specific cable size and perform calculations. This approach includes the engineer's review of each cable order to determine manufacturer allowable pull tension, bend radii, and allowable sidewall pressure. The worst case approach assumes 360° of bends at the end of a conduit run which assures the allowable tensions are never approached. The actual cable pulling is 100 percent monitored by site quality control inspectors to assure the allowable pull pressures are not exceeded.

The inspector found the controls on cable pressure versus bend radius acceptable. No items of noncompliance were identified.

d. Welding of Piping Penetrations

The inspector audited the data for weld number 2-SWS-290-F02 for compliance with ASME Section III, Class 2 and regulatory requirements. The following items were reviewed.

- Welder qualifications.
- Nondestructive examinations performed correctly.
- Welding was performed in accordance with approved weld techniques, SPBV115G, Revision 8.

- Minimum wall was specified.
- ANI had reviewed data sheet prior to work commencing and indicated hold points.
- Issuance of consumable insert, and E70S and 7018 electrodes.

The inspector found all areas reviewed acceptable. No items of noncompliance were identified.

6. Unresolved Items

Areas for which more information is required to determine acceptability are considered unresolved. Six unresolved items are included in paragraph 4.

7. Exit Interview

A meeting was held with the licensee representatives indicated in paragraph 1 on January 31, 1983, to discuss the inspection scope and findings.