U. S. NUCLEAR REGULATORY COMMISSION

REGION I

Report No. 50-412/83-17

Docket No. 050-412

License No. CPPR-105 Priority -- Category B

Licensee: Duquesne Light Company

Robinson Plaza Building No. 2

Suite No. 210, PA Route 60

Pittsburgh, Pennsylvania

Facility Name: Beaver Valley Power Station, Unit 2

Inspection At: Shippingport, Pennsylvania

Inspection Conducted: December 1, 1983 - January 16, 1984

Inspector: G. A. Walton
G. A. Walton, Senior Resident Inspector — Jan. 20, 1984 date

Approved by: L. E. Tripp
L. E. Tripp, Chief, Reactor Projects Section No. 3A, Reactor Projects Branch No. 3, Division of Project and Resident Programs, Region I — 1/27/84 date

Inspection Summary: Routine, unannounced inspection by one resident inspector of activities pertaining to previously identified unresolved items, information notices, IE Bulletins, nondestructive examinations, hydrostatic test, fabrication processes, installation of supports, welding interpass temperature checks, storage of batteries, pumps and heat exchangers; and daily site tours. The inspection involved 190 hours onsite.

Results: The need to assure that all water is removed from components after performing hydrostatic testing was identified as a potential problem. Concerns about installation of flow restrictors in piping was made an unresolved item. All other areas were found acceptable.

DETAILS

1. Persons Attending Exit Interview

Duquesne Light Company

L. Arch, Senior Project Engineer
R. Coupland, Director, Quality Control
H. Crooks, Assistant Director, Quality Control
F. Curl, Director, Construction
C. Davis, Director, Quality Assurance
C. Ewing, Quality Assurance Manager
H. Good, Senior SQC Weld Specialist
E. Horvath, Senior Project Engineer
J. Stabb, Compliance Engineer
R. Wallaver, Compliance Engineer
J. Waslousky, Senior Quality Assurance Engineer
R. Swiderski, Manager, Nuclear Construction

Stone and Webster

C. Bishop, Construction Manager
R. Faust, Principal Structural Engineer
A. McIntyre, Superintendent, Engineering

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) - Unresolved Item, 83-09-03 - Nonconformities With Materials Supplied by Tube Line Corporation

(Closed) - Information Notice 83-07 - Same Subject

(Closed) - Bulletin 83-06 - Same Subject

A review, performed by the licensee and contractor, has identified six end caps which were supplied by Tube Line Corporation. Four of the items are 18 inch diameter pipe caps. Two of the items are 6 inch diameter pipe caps. All were scheduled to be installed on the containment liner spare piping penetrations. After analysis by the licensee, the following disposition on the pipe caps was made:

- The four 18 inch diameter pipe caps were returned to the vendor and replaced with new material which meets ASME requirements.

- One 6 inch diameter pipe cap previously installed will be removed and replaced with material which meets ASME requirements.

- One 6 inch diameter pipe cap has been retested using chip samples taken from the material. Certification has been provided which shows the material meets ASME requirements.

The inspector reviewed the documentation associated with this item. This included reviewing material test reports, nonconformance and disposition reports, and internal memoranda associated with this subject. The inspector found all items reviewed acceptable. This item is considered closed.

(Open) Unresolved Item 83-13-02: Procedure to Assure A325 Structural Steel Bolts are Retightened and Reinspected When Loosened by Construction.

This item was unresolved pending review of procedures and inspection plan written by the licensee to assure structural steel bolts would be retightened and reinspected by Quality Control (QC) if they were loosened after the initial tightening. The inspector had found bolts loose after acceptance by QC.

The inspector reviewed FCP-127 dated December 21, 1983, titled "Retorquing of Structural Steel Bolts" and inspection procedure IP-6.3 dated December 19, 1983, titled "Structural Steel Erection and Bolting". These documents establish controls and reinspection of structural steel bolts which are loosened after initial installation and verification. These procedures establish the following controls:

- ASTM A325 high strength steel bolts shall only be initially torqued and retorqued once. Bolts loosened after having been retorqued once shall be scrapped.

- A490 bolts and galvanized A325 bolts shall not be retorqued. Bolts loosened after initial torque shall be scrapped.

- ASTM-A325 or A490 high strength steel bolts shall not be loosened nor shall any installed structural steel be removed without prior written authorization of the responsible Stone and Webster Area Manager.

- Specific inspection reports, shall be issued for each structural steel erection activity involving retightening of bolting material.

The inspector found the procedures acceptable. This item will continue unresolved pending the licensee's review of the following concern.

The program listed above was not put into effect until December, 1983. The majority of the structural steel was installed prior to this and concern exists regarding bolting already installed which possibly was loosened by construction. The licensee has performed random bolt torquing verification in the Reactor Containment, Fuel, Safeguards, Main Steam, and Auxiliary Buildings. The sample was approximately 10 percent of 6,460 Category 1 connections. This inspection found bolts missing and loose in two symmetrical platforms in the Auxiliary Building. Bolt torque inspection for all other areas were found satisfactory. Stone and Webster Engineering is presently evaluating this sample inspection program to determine if additional sampling is warranted. This item will remain open pending the analysis by the licensee and subsequent review by the inspector.

4. Inplace Storage of Components

The inspector reviewed the documentation and visually examined the following listed components to assure compliance with applicable requirements:

- Quench Spray Pumps
- Steam Driven Auxiliary Feedwater Pump and Driver
- Component Cooling Heat Exchangers

The documents reviewed by the inspector include the following;

- ANSI N45.2.2, Packaging, Shipping, Receiving, Storage and Handling of Items for Nuclear Power Plants.
- Stone and Webster Specification Number 2BVS-981, Addendum 1, titled "Storage and Maintenance During Storage of Permanent Plant Equipment During the Construction Phase."
- Stone and Webster Specification Number 2BVS-12B, 2BVS-24, 2BVS-208, "Requirements During Storage".
- Field Construction Procedure, FCP-201.

The inspection included, but was not limited to the following:

- Pumps, Motors and Turbine Driver

  Assured that Level B storage is maintained, temporary caps and covers are inspected periodically, repainting and resealing is performed yearly, pump bearings are inspected, motor space heaters are energized and maintained, shafts are rotated periodically, and equipment is protected from airborne contaminates.

- Primary Component Cooling Heat Exchangers

  Assured that Level D storage is maintained, monthly visual examination for paint damage was accomplished, checks for water in the primary and secondary sides were performed by periodically opening drain valves.

The inspector found all records acceptable. In addition, all hardware was visually inspected and found acceptable to the requirements listed above.

No violations were identified.

5. Inspection and Protection of Category 1 Batteries

A 50.55(e) report, from another nuclear site, reported a deficiency in Exide, Class 1E batteries. The deficiency consisted of cracking of the plastic seals around the terminal posts which would allow electrolyte to come in contact with the battery terminal post connections and lead to corrosion at the connection. Exide, the battery manufacturer, also informed the licensee of this problem by a technical bulletin.

Inspection of the batteries was performed by Site Quality Control (SQC) and documented in "Receipt Inspection Reports." The inspection performed by SQC found no cracking or scratching on the cell containers and covers, and no leakage or seepage of electrolyte occurred around connecting posts. One battery, Number 3460A found corrosion on intercell connector. Engineering determined the corrosion occurred because corrosive resistant grease was not properly applied. The connectors were cleaned and corrosive resistant grease was applied to the affected areas.

The inspector reviewed the associated documentation, including the inspection results, and found all documents reviewed acceptable. In addition, the inspector visually examined the batteries in the four Category 1 Battery Rooms. All areas inspected were found acceptable.

6. Protection of Category 1 Storage Batteries

During a daily site tour, the inspector observed the battery room doors had been removed and no protection to the batteries or the workers was provided. This was noted on return inspections performed over a two week period. Protection is necessary in the battery room to prevent workers from harm, especially when the batteries are on charge and in addition to potential hydrogen buildup, high electrical amperage is present in the area. In addition, the batteries must be protected to prevent damage.

When the inspector questioned the licensee about the need to protect the batteries from damage, he was advised that the doors removed were temporary and were removed in preparation for the permanent door installation. However, when the permanent doors were to be installed, it was discovered that certain hardware was missing which prevented installation.

The contractor reinstalled the four battery room doors, with locks, on January 12, 1984. On subsequent tours, the inspector noted the doors were installed and locked to prevent unauthorized entry. The inspector finds the corrected situation acceptable.

7. Installation of Lightning Rods on Containment Building

During one of the inspector's routine discussions with craft personnel, a craftsman informed the inspector that the lightning rods attached to the containment steel liner was not filled with concrete or grout as the Unit 1 lightning rods were. As a result, six 8 inch openings through the concrete dome existed and the only protection from inside containment to atmosphere in these areas was the steel containment liner. No additional reinforcement of the steel containment liner was provided.

The inspector verified the above condition was the as-installed condition. It was verified that the installation was in accordance with applicable drawings. The inspector also verified that Unit 1, did in fact, contain grout in the free air space.

The inspector questioned Stone and Webster Engineering about the adequacy of this design. After analysis, the inspector was advised of the following:

- The structural adequacy of the portions of the containment liner, within the lightning rod base, which are unbacked by concrete have been analyzed and determined to be structurally adequate.

- The lightning rods were intended to be duplicates of BVPS, Unit 1.

- The annular space of the lightning rods shall be filled with grout to the level of the exterior surface of the reinforced concrete dome. This will make the Unit 1 and Unit 2 liner details essentially identical in the area of the lightning rods.

- Drawing Number 12241-RV-1A was revised to reflect the new details.

Based on the revised fabrication rework, the inspector found this item acceptable.

8. Interpass Temperature Checks

The inspector reviewed the licensee's practices for checking and recording weld interpass temperature checks on pipe welds. Piping welders are required to monitor interpass temperatures during welding to assure maximum interpass temperatures are not exceeded. This check is documented on the weld data sheet. In addition, Quality Control performs surveillance interpass temperature checks to assure compliance with the weld procedures. The results are documented in Q.C. inspection reports.

The inspector found the areas reviewed acceptable.

9. Welding Activities on Safety Related Storage Tanks

The inspector selected welds Number 67, 68, 69, 73, 74 and 75 of the QSSTK21 tank fabricated by Richland Engineering Company (RECO) to ascertain compliance with applicable requirements. The following attributes were examined:

- Work is being conducted in accordance with a process checklist which coordinates and sequences operations, references procedures, establishes hold points, and provides for production and inspection approval.

- Weld identification and location are shown on drawings.

- Welding procedures, detailed drawings, weld data sheets are available at the work location.

- Welding procedure, P8MMA-253 meets the ASME Section IX requirements. Essential and nonessential variables are shown on the welding procedure specification.

- Welding technique, sequence requirements, welding filler materials are of the specified type and grade, and properly tested and traceable, weld joint geometry is specified, parts to be welded are assembled and held in place within specified gap and alignment tolerances, temporary attachments are welded by qualified welders and when removed, are surface prepared and surface examined, preheat is maintained in accordance with the weld procedure, welding electrodes are used in position qualified, welding procedures are qualified in accordance with Regulatory Guide 1.44 and ASTM-A708, interpass temperatures are controlled to 350 degrees fahrenheit maximum, repairs are controlled in accordance with the Q.C. 4A Nonconformance Report, and qualification of inspection personnel are adequate.

- Delta ferrite of welds is controlled within a range of 3 - 15 percent.

The inspector found all items reviewed acceptable.

10. Radiographic Film Review

The inspector reviewed the radiographic film for six welds, on the RECO safety related tank, QSSTK21, Numbers 74, 75, 76, 80, 81 and 83 for compliance with applicable ASME, Section III, Class 2 requirements. This review included, but was not limited to the following:

- Radiographic film adequately identifies the weld, film densities are correct, penetrameter is the correct size and correct hole is discernible on the film, source to film distance is maintained and geometric unsharpness requirements are met.

- Indications are evaluated and recorded on reader sheet.

Review of weld 81, station 6-7 revealed an indication, located 3 inches from station 7, which was not recorded on the reader sheet. To resolve this issue, the contractor performed surface grinding on the weld in the area in question, then reradiography of the weld was made. The indication was not present on the new film. In addition, the contractor rereviewed all radiographic film on safety related tanks and verified all indications were properly recorded.

The inspector reviewed the re-X-ray of the suspect area and sample selected eight additional areas and verified that correct film interpretations were made and properly recorded.

The items as discussed above, were found acceptable.

11. Installation of Supports

The inspector reviewed the installation of supports, specifically, the bolting of HVAC supports and the use of unistrut clamps on electrical conduit supports.

The inspection of HVAC supports was made to assure compliance with Specification 2BVS-935 in the area of locking devices on the bolts. Specification 2BVS-935, requires bolting be installed by the use of lock washers, double nuts, or upsetting of the threads to prevent the bolts from loosening during operation.

The inspector visually observed approximately 75 bolts in the Auxiliary Building, and approximately 50 bolts in the Containment Building to ascertain compliance in this area.

The inspector found all bolts were secured by either a lock washer or the threads were upset on the bolt. The latter method was the common method employed. The locking methods being used were found acceptable. The inspector also reviewed the support methods used on electrical conduits in the Reactor Containment Building, adjacent to the bottom of the reactor pressure vessel and neutron shield tank. The inspection included verification that proper size pipe clamps were used in relation to conduit size to assure the clamps would properly tighten and hold the conduit as well as firmly connect to the base support. The inspector verified the supports were installed in accordance with drawings, manufacturer's instructions and specifications. In addition, the inspector reviewed the Quality Control Inspection Reports to assure all scheduled attributes were accomplished in accordance with Inspection Procedure 8.1.4. The inspector found the installation acceptable.

No violations were identified.

12. Review and Observation of Work Activities in the Primary Intake Structure

The work activities in the primary intake structure, common to Unit 1 and 2, was inspected in the pump cubicle rooms to determine compliance in the area of pipe and electrical supports. The pipe baseplate supports, 2-SWS-PSR-207R, 2-SWS-PSR-208-R, installed by hilti quik-bolts, are shown on isometric drawings C1-311-021-2 and 311021-64-004. The design of the above two baseplates requires one inch of grout between the concrete and baseplate. Although the grout has not been installed, provisions were made by installing spacer plates under the baseplates with a minimum distance of one inch. The grout is scheduled to be installed later. The inspector verified the electrical and piping supports were as specified on the drawing in the following areas:

- Hilti bolts were of the correct diameter and length, torqued, and properly identified, and contained lock washers where specified.

- Baseplates were the proper size, correct material, properly identified and installed in accordance with drawing tolerances.

During this inspection, Site Quality Control performed inspection on other baseplate installations in pump cubicle "B". The inspector verified she was using the correct inspection plan, had proper inspection tools, and was knowledgeable of the inspection requirements and acceptance standards.

The inspector found all areas inspected acceptable.

13. Post Hydrostatic Test

The inspector found a 36 inch service water line, Category II (non safety related), being flame cut for removal of a defective section which contained approximately 6 to 8 inches of water. It was obvious, from the condition of the water, that the water had been in the line for an extended period of time. This was not a safety related component; however, the inspector determined that upstream, on the same centerline elevation of 724'8", the line contained a valve which was safety related.

Further analysis by the licensee and the inspector determined the only plausible explanation for the water being present in the line was from the hydrostatic test performed on the pipe June 8, 1981, 2-1/2 years ago. It was also determined that no draining provisions existed below the existing water level.

Although the Category II pipe and the Category I were on the same centerline elevation, the Category I valve was 6" higher than the 36 inch Category II line due to a pipe diameter change. The valve line is a 24 inch diameter. The review of the isometric and pressure test report shows the water was removed by draining the 24 inch line. There are no other drains provided below the 24 inch outlet level; therefore, the 6 inches of water remained after the hydro was completed.

The inspector questioned the licensee regarding controls to assure this type of condition does not exist on Category I systems. Stagnant Ohio River water left in the systems could damage the piping and valves by corroding, if left for long periods of time; conceivably up to five years or longer.

The licensee agreed to investigate the concern and would determine what action, if any, is required. This item is Unresolved pending further review. (83-17-02).

14. Fabrication of Class 1 Branch Connections

The inspector reviewed specification 2BVS-920, sketch SK 12241-P-2, Revision 1, which details the fabrication requirements for Class 1 flow restrictors on safety injection systems. This sketch references paragraph NB 3352.4-2(a). The sketch also shows welding of a blind nipple to the outside surface of the pipe, then drilling through the nipple and pipe wall with a .375 inch diameter drill. This is the only guidance provided except the welding procedure gives details of the weld. The inspector questioned the adequacy of this process in the following area:

- Paragraph NB 3352.4-2(a) of ASME Section III, Class 1, shows a minimum radius (ri) required on the drilled hole where it intersects the inside pipe diameter.

- No controls are specified to assure the drilled through hole meets any surface finish requirements, holes are deburred, and steel chips from the drilling process are either kept from inside the pipe or removed from the piping interior.

This item is Unresolved pending further discussion of these concerns with the licensee (83-17-01).

15. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, or violations. Unresolved items identified during this inspection are discussed in paragraph 13 and 14.

16. Exit Meeting

The inspector met with licensee and contractor representatives (denoted in paragraph 1) at the conclusion of the inspection on January 16, 1984. The inspector summarized the scope and findings of the inspection as described in this report.

During this inspection, no written material was provided to the licensee by the inspector.