

U. S. NUCLEAR REGULATORY COMMISSION

REGION I

Report No. 50-412/84-09
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: July 24 - August 24, 1984

Inspector: G. A. Walton Sept. 7, 1984
G. A. Walton, Senior Resident Inspector date

Approved by: J. E. Tripp 9/12/84
 J. E. Tripp, Chief, Reactor Projects Section
No. 3A, Reactor Projects Branch No. 3,
Division of Project and Resident Programs,
Region I date

Inspection Summary: Inspection No. 50-412/84-09 on July 24 - August 24, 1984

Areas Inspected: Routine, unannounced inspection by one resident inspector of activities pertaining to previously identified noncompliances, unresolved items and 50.55(e) reports, in-place storage, reactor vessel internals, disposing N&D's, fire protection, record review of steam generator tube rolling, and daily site tours. The inspection involved 135 hours by one resident inspector.

Results: Management was not responsive to their commitments for implementing procedure control of cable tray overflow. This has been a concern to the NRC since July, 1983, and no apparent actions were implemented. This is a Deviation. In-place storage of certain equipment was not adhered to as required by specification. This is a noncompliance. All other areas were found acceptable.

DETAILS

1. Persons Attending Exit Interview

Duquesne Light Company

H. Crooks, Jr., Assistant Director - Quality Control
E. Horvath, Senior Project Engineer
M. Howman, Associate Compliance Engineer
D. Hunkele, Director - Quality Assurance
C. Majumdar, Assistant Director - Quality Control
J. Stabb, Compliance Engineer
R. Swiderski, Startup Manager
L. Urda, Quality Assurance Engineer

Stone and Webster Engineering

C. Bishop, Construction Manager
A. Champagne, Assistant Superintendent
R. Faust, Principal Structural Engineer
R. Wittschen, Licensing Engineer

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. Except as identified in paragraph 5, the areas observed were found acceptable.

3. Licensee Action on Previous Inspection Findings

(Closed) Unresolved Item 83-07-02, Specification Code Requirements Less Restrictive than FSAR Commitments

NRC Inspection Report 83-07 identified that design specifications endorsed and applied ASME Boiler and Pressure Vessel Code addenda which contained less restrictive construction rules than the ASME Code specified in the Final Safety Analysis Report. For example, site specification 2BVS-33 endorses the Summer 1975 Addenda for constructing the refueling water storage tank. The FSAR specifies the Winter 1972 addenda. The 1972 Addenda requires 100 percent radiography of the tank, whereas, the 1975 Addenda substitutes vacuum box testing for radiography in certain areas.

The licensee resolved this matter by performing a 100 percent review of all safety related specifications and ascertained the specific code and addendum used, plus ASME Code cases used. A document titled "ASME Code Baseline Document" was generated which lists each applicable item and corresponding code and addendum along with code cases applied. The reference to applicable codes was removed from the FSAR and the ASME Code Baseline Document was formally submitted as part of the FSAR. The Inspector found this document has corrected various discrepancies found by the inspector. This item is closed.

(Open) Deviation 83-05-02, Identification of Qualified Engineers Authorized To Sign Key Design Documents

ANSI N45.2.11 required identification of personnel/positions responsible for preparing, reviewing, approving and issuing documents. Contrary to that, the inspector had identified that Stone and Webster Engineering had failed to identify all personnel as qualified reviewers who were signing design documents.

Inspections were performed in this area to ascertain the licensee's corrective actions on this matter and determined the following:

- Approved memoranda are issued from Boston Engineering and kept on file at the Site Engineering Office which indicates the qualified individual and the discipline that he is authorized to review and sign. This document is updated periodically (presently on Revision G) to reflect the current qualifications. As stated in each memorandum, the named individual is authorized to sign E&DCR's, N&D's, specifications, drawings and PEL's.

The inspector audited the approving signatures on numerous N&D's, E&DCR's and drawings to assure proper authorization was shown on the authorization document. In addition, the inspector held a discussion with the "Head" of the Site Engineering Office to clarify basis of the qualification document. The inspector found the programs acceptable. All documents reviewed were properly signed by an authorized person.

This item is one part of a three part deviation and will remain open pending resolution of one other item. Inspection Report 84-07 addressed one item.

(Closed) Unresolved Item 83-15-02, Broken Spring Tangs on Pacific Scientific Mechanical Shock Arrestors Model PSA-1 and PSA-3

This unresolved item identified that certain Pacific Scientific Model PSA-1 and PSA-3 Mechanical Shock Arrestors might have broken capstan springs. A Nonconformance and Disposition Report, Number 4042 was generated. Disposition was to return the snubbers to Pacific Scientific for inspection.

The NRC inspector reviewed the following documents:

- a. "Mechanical Shock Arrestors", by Pacific Scientific Kintech Division, 1346 South State College Blvd., Anaheim, CA 92803.
- b. Pacific Scientific Memo on Pacific Scientific Mechanical Shock Arrestors Model PSA-1 and PSA-3 by P. A. Hadnagy dated September 21, 1983, Service Report No. SR83-01.
- c. Duquesne Memo on Pacific Scientific Mechanical Shock Arrestors by E. F. Kurtz, Jr., to C. E. Ewing, dated November 10, 1983, 2NCO-02472.
- d. Pacific Scientific Memo on Service Report SR83-01 by P. A. Hadnagy dated November 22, 1983.

The inspector verified that the affected snubbers with microcracks developed on the capstan springs were returned to the job site after necessary rework performance (replacement of the capstan springs) by Pacific Scientific. Pacific Scientific - performed NDE tests manifested that the microcracks were only superficial and the affected parts could withstand the design stress. The inspector made a visual inspection of a returned sample: MK#2FWE-PSSP241S, SN: 27279, in the warehouse and determined that the repairs had been completed.

This item is closed.

(Closed) Unresolved Item 83-05-03, Weakness In Direction of Performance and Documentation by Duquesne Light Engineering

In December, 1982, Duquesne Light Nuclear Construction Division formed a new engineering department (NCED) located in the Robinson Plaza Office complex located approximately twenty miles from the site. The NCED was formed to provide engineering support to construction activities. This item was unresolved because design reviews were part of the NCED function and were being performed, but were not being documented. Additionally, procedures to accomplish these reviews had not been established. In addition, a written charter for the NCED had not been established.

The inspector reviewed the actions taken to resolve this item. The Nuclear Construction Division Procedure 1.2, Revision 1, dated June 1, 1983, is the charter for the Engineering Department. This document establishes the Division Organizational Structure and delineates the responsibilities of the Engineering Manager. The Engineering Department Procedure 2.1, is issued and dated July 19, 1983. It provides a detailed charter of the Engineering Department and establishes the organizational structure of the Engineering Department and defines the responsibilities and functions of key positions within the Engineering Department. Additionally, other NCED procedures including design review procedures have been issued.

The inspector reviewed Procedure 1.2, 2.1 and 2.4 "Engineering Department Indoctrination and Training"; 2.5 "Initiation of Engineering Documents"; 2.6 "BV-2 Design Basis Document Acceptance"; 2.7 "Engineering Document Review and Action" and 2.10 "Engineering Change Control".

The inspector found all procedures reviewed acceptable. This item is considered closed.

(Closed) Unresolved Item 84-01-02, On-Site Post Weld Heat Treatment

The planned post weld heat treatment of main steam and feedwater piping originally was scheduled to be performed to the requirements of Stone and Webster FCP 601.15 Change Number 6. A review performed by the inspector of this procedure found several apparent deficiencies regarding its application. The item was unresolved pending resolution of these apparent deficiencies. The licensee and contractor has taken the following actions:

- FCP 601.15 Change Number 9, was issued June 21, 1984, and addresses the inspector's concerns.
- Schneider Power Corporation issued procedure SPPWHT-2, Revision 0, dated June 8, 1984, which addresses all post weld heat treatment requirements for ASME Section III, and ANSI-B31.1 components.

The inspector performed a detailed review of the above listed procedures and determined they adequately address the inspector's concerns. This item is closed.

(Closed) Noncompliance, 83-11-01, Failure to Perform Post Weld Heat Treatment in Accordance with ASME Requirements

This item identified that post weld heat treatment of piping welds performed at Power Piping failed to meet the requirements of ASME, B&PV Codes, Section III and IX and Power Piping Procedure N-1141-P-8. Heating rates were exceeded, temperatures were taken higher than qualified by the welding procedure, the proper amount of temperature recording devices were not used during the heat treating cycle, and repairs were made to post weld heat treated material without receiving a required re-post weld heat treatment.

On May 22, 1984, a meeting was held onsite between Duquesne Light Company, Stone and Webster Engineering, and NRC to discuss the licensee's corrective actions. This is documented in NRC Inspection Report 50-412/84-05. The item remained open after that meeting pending an NRC review of the presented documentation and review of a final report which the licensee committed to submit. The licensee issued the final report to the NRC on August 8, 1984.

The inspector reviewed the documentation associated with all corrective actions taken and determined acceptance of the items based on the following:

- The FSAR was revised by the "ASME Code Baseline Document" to show the ASME rules of Section III Winter 1973 Addenda.
- All applicable specifications were revised to reflect the correct code requirements.
- A furnace survey performed at Power Piping demonstrated that equal heating occurred throughout the furnace and adequate thermocouples were attached to the piping for recording weld temperatures.
- The Authorized Nuclear Inspector has recertified those piping which were found acceptable to the rules of ASME, Section III, Winter 1973 Addenda.
- Welding procedures were revised to permit temperatures between 1100 degrees and 1250 degrees fahrenheit as allowed by Table NB-4623.1-1, Section III, Winter 1973 Addenda.
- Re-post weld heat treatment will be performed on twelve pipe spools to bring them in compliance with ASME Section III requirements.

This item is considered closed.

4. Commitments For Implementing Cable Raceway Fill

On May 17, 1984, a meeting was held onsite between Duquesne Light Company, Stone and Webster Engineering and NRC to discuss Unresolved Item 83-05-09 "Cable Raceway Fill." An NRC region based specialist and the resident inspector attended the meeting.

This item was unresolved because the licensee had insufficient controls on the amounts of cable overfill allowed. Also, the FSAR did not adequately describe the amount of tray fills for certain cables and the licensee was not performing inspections to determine when trays were overfilled. Tray fill controls are necessary to assure support adequacy, ampacity rating, and access for tray covers to meet cable separation requirements.

At the meeting held May 17, and subsequent telephone conversations on May 24 between DLC Engineering Manager and the resident inspector, the following commitments by the licensee were made:

- (a) 2BVM 88 "Cable Schedule Information System" will be revised to give the engineer clear direction when overriding the computer to allow additional cable fill beyond the 100 percent level. This includes actions to attempt to reroute to other trays when above 130 percent fill. Between 100 - 130 percent, the engineer must determine if the actual fill would be 1-1/2 inches above the top rail. If above 1-1/2 inches, the engineer would not be authorized to proceed with fill. The engineer would also notify the structural engineer when the weight per linear foot of cable is over a certain amount. A commitment was made by the licensee to revise and issue 2BVM 88 by June 29, 1984.
- (b) Specification 2BVS-931, "Specification for Electrical Installation," and 2BVM-88 will be revised to only allow the actual cable fill above the side rails in the following conditions:
 - Any actual fill more than 1-1/2 inches above the side rails is unacceptable.
 - Any actual fill above 0 inches to 1-1/2 inches over side rails requires engineering approval.

Fills above 0 inches to 1-1/2 inches will require a raised tray cover. Raised tray covers cannot accommodate cable fills above 1-1/2 inches. A commitment was made by the licensee to revise and issue Specification 2BVS-931 by June 8, 1984.

- (c) Field Construction Procedures (FCPs) and Inspection Procedures (IPs) will be revised and require construction to comply with the requirements described above. Also, Quality Control will perform inspections to assure compliance. A commitment was made by the licensee to revise and issue FCP 431 and IP 8.4.1 by July 30, 1984.
- (d) Table 8.3-4 of the FSAR will be revised to describe the present wording of trays "K", "C", and "X", which state the maximum tray fill is 50 percent. The revised description will state; 50 percent of all cables routed in a tray section being equal to 50 percent of the cross sectional area of the tray. In a typical installation, 50 percent cross sectional fill will result in cable being level to, or below, the top of the tray rails. In the design-basis computer system, 100 percent fill is equal to the values under the "Maximum Tray Fill" described in Table 8.3-4. In no cases will the tray fill exceed 1-1/2 inches above the side rails.

The licensee committed to issue a "Licensing Document Change" to NRR by June 15, 1984.

On August 1, 1984, the inspector audited the status of the above listed commitments to assure they had been revised and implemented as necessary.

The inspector found that only the "Licensing Document Change" letter was submitted to NRR as required by June 15, 1984. The BVM 88 document, Specification 2BVS-931, field construction procedure FCP 431 and inspection procedure IP 8.4.1 were not revised to include the above listed commitments.

In addition, the inspector found a Nonconformance and Disposition Report, Number 15456, issued by DLC Site Quality Control on July 27, 1984, because cables in trays 2TC3360 and 2TC3010 were 2 to 3 inches above the side rails in some portions of the trays. This N&D was dispositioned "No nonconformance exist" by Stone and Webster Engineering. The basis used was; I (S&W Engineer) know of no engineering criteria which considers the reported condition to be in violation of the engineers' instructions. The N&D was then returned to Quality Control on July 31, 1984, as a "no nonconforming condition" with no further action required.

Failure to meet the commitments and implement the procedures, as discussed in the meeting on May 17, 1984, and documented by the licensee in letters 2 ASR-01126 and 2 ASR-01135 and as documented in NRC Inspection Report 50-412/84-05 is a "Deviation" (84-09-01).

5. Inplace Storage of Personnel Air Lock

Specification 2BVS-65 of Purchase Specification 2BVS-981 stipulates inplace storage requirements for the personnel air lock to prevent damage of this component. The specification requires, among other things, that after the personnel air lock doors are opened, adequate protection of equipment shall be furnished and installed. Door seals and sealing surfaces are to be properly protected. Doors shall be supported to prevent sagging.

During daily site tours, the inspector noted the doors were open during the period from July 26, 1984, until August 10, 1984. There was no apparent work activities being done on the air lock and the sealing surfaces were not protected as required by the specification. In addition, no supports were provided to prevent the doors from sagging.

On August 10, 1984, the inspector advised licensee management of the above described condition. Corrective actions to protect the sealing surfaces and support the door were not taken until August 23, 1984.

Failure to store and protect the personnel air lock as required by Specification 2BVS-981 is a violation of 10 CFR 50, Appendix B, Criterion V, (84-09-02).

6. Reactor Vessel Internals

The inspector reviewed the work activities being done in the reactor vessel and internals for both the reactor vessel and the primary coolant pump. The review included a direct observation of work being done, establishing and maintaining proper cleanliness zones, and review of work documentation and procedures.

The upper internal work, while the inspector was present, consisted of welding locking devices on the bolts of the thermocouples. The work was being performed by Westinghouse under their quality assurance program. All activities were documented on a process traveler. Weld wire issuance was controlled and documented. The work area was designated a Zone II cleanliness area in accordance with field construction procedure FCP-5.1. The area required access control for both personnel and tools. The areas are enclosed to control airborne containments. Signs stipulating no smoking, eating, drinking or use of tobacco are posted and the rules are enforced.

Paragraph 6.1.2i requires that all loose tools shall be tethered to prevent loss of small items within the internals and to prevent damage to the internals if a tool is advertently dropped. The inspector noted craft personnel working on the top of the upper internals with "C" clamps and screwdrivers which were not tethered. When the inspector advised management of this apparent discrepancy, immediate corrective actions were taken. In addition, the Westinghouse Lead Construction Engineer issued a memorandum August 23, 1984, advising Stone and Webster Superintendent of Construction that effective as of 1330 hours, same date, all tools in use in Zone II areas are tethered to prevent accidental dropping.

The lower radial core support pad in the reactor vessel was being machined, and holes were being drilled and tapped. The work was being controlled per work package T-DMW-001. The area is designated Zone IV cleanliness. Controls were in place to control steel chips from dropping into the vessel. The inspector witnessed the work in progress and performed audits of documentation at the work station.

The inspector reviewed activities in progress or completed for other items listed below:

- The roto-lock inserts for the upper and lower internals were torqued. Torque was exceeded for one insert. Nonconformance and Disposition Report 20017 was issued for disposition.
- The coil stacks, drive rod position indicators, stator, and dummy cans were installed on the reactor vessel head latch housing. The shroud and air baffles were temporarily installed, but dimensions could not be maintained. N&D's 20018 and 20019 were issued to correct the dimensions of the air baffles.
- The primary coolant pump internals were moved into the containment building for one of the pumps. The internals and pump casing were designated Zone II and controlled access was established. Minor rework of threaded holes was planned before inserting the internals.

The inspector found the above listed activities acceptable. Immediate corrective actions were taken by the licensee regarding the discrepancy of tethering tools and the inspector considers this acceptable.

No violations were identified.

7. Incorporating Nonconformances and Disposition (N&D) Reports in Design Specifications

The inspector reviewed the documents which describe the requirements for incorporating N&D and E&DCR dispositions into the key design specification. As interpreted by the inspector, document 2BVM-218 (N&D dispositions) and 2BVM-204 (E&DCR dispositions) require incorporating "Accept As Is" dispositions into the applicable design specifications. Minor deviations are excluded. From a review of N&D 15145, it appeared this was not occurring. This N&D was dispositioned "Accept As It" and noted in the "Incorporate In Specification Block" that incorporation was not required. The N&D accepted some hole tolerances outside the limits specified in the design document.

The inspector discussed this item with the "Head" of Stone and Webster Engineering Department. As a result of this discussion, on August 24, 1984, documents 2BVM-204 and 2BVM-218 were revised to clarify the methods used to incorporate these changes. The revised procedure allows a "one time only" change to specifications that represents an exception that does not constitute a change to be applied to other items. The method of incorporating this "one time only" change is by referencing the N&D or E&DCR number in the design specification. The inclusion of N&D's and/or E&DCR's which reference "Not to be incorporated" as is the case of the N&D described above, are therefore included in the specification by reference to the number.

The inspector reviewed both documents and held discussions with key engineering personnel on this issue. Based on the revised 2BVM-204 and 2BVM-218 documents, the inspector found this item acceptable.

8. Steam Generator Tube Rolling

An inspection by the Seabrook resident inspector of Westinghouse Steam Generators identified a Westinghouse Field Deficiency Report addressed deficiencies in the tube-to-tube sheet expansion of Model F steam generators. The FDR identified deficiencies involving tubes that had not been expanded through the full thickness of the tubesheet.

The inspector reviewed the Westinghouse work package (DMWM 10548) relative to inspection and rework of the Model 51 steam generators used at Beaver Valley, Unit 2. During the period between July 5, 1983 and August 11, 1983, Westinghouse performed visual inspection and mechanical inspection using a "Skip Roll Detection Tool" of each steam generator tube end (19,800 ends). The results of these inspections found 415 tube ends exhibited skip indications. Skips occur in the area between the initial tack roll operation (1/2 inch to 3/4 inch from the primary side) and the mechanical full depth roll. Sixty-six tubes were restricted at the tube-weld (rollover), and twenty-six tubes were affected with weld spatter. Westinghouse corrected all of the above described discrepancies.

The inspector reviewed the completed work package and found all areas reviewed acceptable.

9. Installation of Fire Protection Systems

The inspector reviewed the Final Safety Analysis Report (FSAR), Regulatory Guide 1.120 requirements, and design specifications 2BVS-173 and 174, to ascertain the extent and types of fire protection systems throughout numerous safety related areas.

Based on paragraph 3.1.2.3.2 Design Conformance, and Table 1.8-1 of the FSAR, the requirements of NUREG-0800 (USNRC 1981) Standard Review Plan Section 9.5.1 and its Branch Technical Position CMEB 9.5-1, the National Fire Protection Association, the American Nuclear Insurers, and other applicable codes and regulations are considered in the design, installation and testing of the system and components. Table 1.8-1 of the FSAR states; The design of the fire suppression systems does not consider the impacts from natural phenomena or man-made, site related events because the system is not considered to be safety related.

Specification 2BVS-174 is a Category II and III (non-safety) carbon dioxide fire protection system which covers safety related areas such as; Cable Spreading Area, Instrumentation Room, Motor Control Center (Control Building elev. 707'6"), Cable Tunnel, Cable Vault, Rod Control Area, Emergency Diesel Generator, and Relay Room.

The FSAR takes exception to Reg. Guide 1.120, Revision 1, and follows the rules of Branch Technical Position CMEB 9.5-1 with some exceptions. A total flooding carbon dioxide system is used in place of an automatic water deluge system for primary fire suppression in the Cable Spreading Room and for those cases where redundant safety class cable trays are not separated by 3-hour fire barriers.

Specification 2BVS-173 is a Category II and III (non-safety) fixed water spray deluge system. It provides fire protection in the containment building for safety related equipment such as; cable penetration areas and RHS pumps.

The inspector found the specification requirements are in accordance with the requirements and exceptions stated in Amendment 3 of the FSAR.

10. Exit Interview

A meeting was held with the licensee's representatives indicated in paragraph 1 on August 24, 1984, to discuss the inspection scope and findings.