

U. S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No. 50-412/84-14

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: August 24 - October 5, 1984

Inspectors: *J. E. Tripp*
for G. A. Walton, Senior Resident Inspector

10/19/84
date

J. E. Tripp
for E. J. Priddy, Resident Inspector

10/19/84
date

Approved by: *J. E. Tripp*
L. E. Tripp, Chief, Reactor Projects Section
3A

10/19/84
date

Inspection Summary:

Inspection on August 24 - October 5, 1984 (Report No. 50-412/84-14)

Areas Inspected: Routine, unannounced inspection by two resident inspectors (142 hours) of activities pertaining to previously identified unresolved items, 50.55(e) items, Quality Control reinspection program of supports, electrical cable, incorporation of CRN's, Engineering Confirmation Program, drawing control, seismic and environmental qualification reports, record review of pipe welds, and daily site tours.

Results: The reinspection program that the licensee is presently performing has identified that numerous piping and HVAC supports fail to meet the current drawings. The licensee has identified several reasons for these omissions, including QC inspector errors. NRC concerns regarding QC inspector performance, effectiveness of QC supervision, and construction quality of work presented for QC inspection will be discussed further in a meeting with the licensee scheduled for October 29, 1984 in the Region I Office.

No significant safety issues were identified in other areas inspected.

Region I Form 12
(Rev. February 1982)

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DETAILS

1. Persons Attending Exit Interview

Duquesne Light Company

L. Arch, Senior Project Engineer
J. Bajuszk, Director, Construction Engineering
R. Coupland, Director, Quality Control
C. Davis, Director, Quality Assurance
C. Ewing, Quality Assurance Manager
H. Good, Senior QC Weld Specialist
J. Hultz, Construction Liaison
D. Slifko, Construction Liaison Engineer
R. Wallauer, Compliance Engineer
J. Waslousky, Senior QA Engineer

Stone and Webster Engineering

A. McIntyre, Superintendent of Engineering
J. Novak, Superintendent of Construction
R. 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 presence of quality control inspectors and quality records were observed. All areas observed were found acceptable.

3. Licensee Action on Previous Inspection Findings

(Closed) 83-17-01 - Piping Branch Connections: The inspector questioned the contractor regarding the requirements for obtaining a minimum radius on branch connections and controls for assuring drilled through holes are deburred and steel chips are prevented from entering the inside of piping when Class 1 flow restrictions are installed. The licensee has taken the following corrective actions:

- Field Construction Procedure (FCP) 208, Paragraph 6.21.1.2 was revised to require that field drilled penetrations shall have adequate provisions taken to assure that steel chips from the drilling process are kept from inside the pipe or are removed after the operation is complete. Also, after drilling is completed, the inside of the pipe is required to be purged with a vacuum or magnetic probe to remove any deposited chips.

For drilling operations performed prior to the FCP revision, the contractor has stated in a letter "SPC Letter No. 84-130" that for the six holes, preventive measures were taken during the drilling operation to assure that steel chips were removed and the inside surfaces were rubbed with emery cloth.

In reference to the inside radius requirements, the licensee adopted Section NB-3686.1.F of ASME III 1980 Edition, Winter of 1980 Addenda, which states that the inside radius on branch connections is not required for piping 4 inches and smaller.

The inspector had no further questions in this area; this item is closed.

(Open) 84-07-01 Unresolved, System Turnover to Duquesne Light Startup Group

NRC Inspection Report 50-412/84-07 stated that the licensee intended to activate the Operations Quality Assurance Program (OQA) 90 days prior to hot functional testing. The licensee has clarified this area by indicating that their intent is that the Operations QA Program will be implemented 90 days prior to fuel loading for systems which have been turned over to the DLC Nuclear Division. The inspector verified that this is consistent with previous commitments by reviewing Paragraph 17.2.2, Amendment 5 of the FSAR. This item continues unresolved.

4. Engineering Confirmation Program

The inspector reviewed the efforts made by Stone & Webster Engineering Corporation (SWEC) and Duquesne Light Company (DLC) regarding the "Engineering Confirmation Program" as presented at the NRC Region I Office on October 21, 1983. The SWEC portion of the program was not inspected since this information is primarily in their Boston Office and in preliminary stages of development.

The inspection included a review of the following DLC efforts for the Engineering Confirmation Programs:

- a. Design Bases Endorsement Program
- b. Design Assessments
 - (1) Hydrogen Recombiner (Quadrex)
 - (2) Control Room Wall Review/Evaluation (Quadrex)
 - (3) Severe Accident Impact Analysis (Westinghouse)
 - (4) Environmental Qualification (NUS)
 - (5) BVPS-1 Design Interfaces (DLC)

- c. Engineering Scope and Participation
- d. Access Requirements for "As-Built" Information

The review and inspection of the DLC efforts of Items b, c, and d above were limited in scope and the inspector indicated that these areas would be the subject of future more detailed inspection coverage. The review, inspection, and observations associated with the Design Bases Endorsement Program were of an in-depth nature as discussed below.

A major element of the DLC portion of the Engineering Confirmation Program is the Design Bases Endorsement (DBE) Programs. The DBE program was conducted in four phases as follows:

- a. Phase I: Endorsement of Design Criteria Documents
- b. Phase II: Confirmation of the Implementation of Design Process and Control Documents
- c. Phase III: Review and Evaluation of Design Output Documents
- d. Phase IV: Validation of Key Attributes of Installed Design

The inspector found that the DLC effort was quite extensive with results that should benefit the project on a long-term basis. The DBE follow-on program is also conducted to track the lessons learned from the DBE program for input to the design/construct process.

The licensee's review of Stone & Webster's documents found several significant deficiencies regarding the lack of completion (to date) of a proper independent review of design calculations and some incorrect electrical calculations. This indicates a good review is being performed by the licensee, but it is a concern to the inspector in that these deficiencies existed with the Stone and Webster's documents. Specifically, the problems were encountered during the performance of Phase III of the DBE program by the Structural Engineering Department (SED) and the Electrical Engineering Department (EED). The specific problems encountered are discussed below.

The SED reviewed the calculations performed to determine the structural adequacy of thirteen (13) Residual Heat Removal System (RHR) supports and forty-three (43) Auxiliary Feedwater System (FWE) supports. The comment most often developed in the review of these supports was that there was no independent review and signature by Stone & Webster Engineering Corporation (SWEC) of these calculations.

This appears to be inconsistent with SWEC's Quality Assurance Procedure 5.3, Review and Verification of Calculations. Specifically, there were eight (8) of the thirteen (13) RHR support calculations and thirty-two (32) of the forty-three (43) FWE support calculations that did not have an independent review and signature. As these comments were identified by DLC personnel in

the SED group and presented to SWEC for resolution, SWEC's response to these comments was that independent review and signature of these calculations will be provided by June 1985 as part of the normal ASME III stress reconciliation program as described in 2BVM-156. The inspector advised the licensee that this item would be reviewed in future inspections by the NRC of the Follow-On Program now underway by the licensee and of the SWEC Confirmation/Update portion of the overall Engineering Confirmation Program.

A significant problem uncovered by the EED concerned the performance of Calculation E-20 by SWEC personnel. This calculation was performed by SWEC personnel (independent reviews and signatures were properly obtained) to determine the proper size of the motor feeder cable for the RHR and FWE pump motors. The original comment made by EED to SWEC was that the calculation was incorrect since the wrong temperature (1083°C used in lieu of 250°C) was used in the governing equation for determining cable size. This item is still in discussion between DLC and SWEC for resolution. Among other things SWEC responded initially to DLC by indicating that DLC had reviewed an outdated version (Rev. 1) of Calculation E-20. The current version (Rev. 2) of Calculation E-20, which unexplainedly was not in DLC's files, justified the correct sizing of the RHR and FWE pump motor cables. Furthermore, the motor feeder cable of one of the FWE pumps had already been pulled on the basis of the Rev. 2 calculations. However, this issue is not fully resolved from DLC's standpoint as evidenced by the fact that a major recommendation from the results of their DBE program is to review a selective sampling of additional electrical calculations (E-Series) to investigate the possibility of generic deficiencies.

In light of the above observations and concerns, the inspector stated to DLC that they should actively participate and investigate with SWEC to determine if the above problems are isolated cases. DLC indicated that such activity will be a part of the DBE Follow-On Program. The inspector found the licensee's program acceptable. The items of concern, discussed above, will be reviewed in a subsequent inspection (Open Item 84-14-03).

5. Re-inspection of HVAC Supports, Pipe Supports and Quality Control Inspector Error

a. Pipe Supports

In March, 1984, the licensee established a re-inspection program of pipe supports to meet the commitments made to the NRC on several NRC identified items. It included re-inspection of support shimming, or lack thereof (NRC Item 83-02-04), retorquing of hilti bolts when loosened after installation (NRC Item 83-05-06), and off-center support location (NRC Item 83-15-01). In addition, the licensee established several other re-inspections to satisfy engineering requirements and other findings identified by INPO and Stone & Webster auditors. The re-inspection included inspection of hilti locking devices, hilti exposed bolt length, weld to edge of embedment plate distances, hilti bolt to edge of concrete distance, hilti spacing relative to other hilti bolts and fillet weld

size. With the exception of fillet weld size, a 100% re-inspection program was performed. The NRC items identified above will be addressed by their respective NRC identifying number when they are reviewed for closing.

This inspection addresses fillet weld sizes and other concerns identified by the licensee as a result of the re-inspection of fillet welds. The re-inspection was started as a sample inspection on one weld per support. The re-inspection was made using the latest revision of each applicable drawing. Inspection of 1,191 welds on large bore pipe supports found that 7.6 percent of the welds did not meet the latest approved revision. On small bore pipe supports, of 1,773 welds inspected, 2.4 percent did not meet the latest approved revision of the drawing. The inspection identified that welds were missing, undersize, incorrectly located, and/or incorrect length. In addition, supports were found dismantled.

The licensee performed an evaluation of these apparent discrepancies. The below listed causes were identified:

- (1) Design changes were made and drawing revisions were issued after the original installation and inspection of the hardware were completed.
- (2) Misinterpreted or confusing engineering instructions and drawings existed.
- (3) The lack of sufficiently controlled rework program as related to inspection status with reference to missing, dismantled, or partially dismantled supports.
- (4) Quality Control inspector error.

Item (1). The licensee's evaluation found that the pipe support installation program is subject to continuous drawing revisions, even after QC has inspected and accepted the support. Virtually 100 percent of the supports reviewed were subject to at least one field revision, with many being revised numerous times. This is due in part to the fact that some of the drawings cover more than one support (racks). The Advance E&DCR program also requires a drawing revision for virtually every Advance E&DCR. The revision process creates problems for both Construction and Quality Control. In some cases, the construction rework was not yet accomplished to the later revision when QC applied the re-inspection program. In these cases, it is not clear that construction actually missed the rework required by a revision change or whether the work had just not yet been done. Regardless of which situation occurred, there is a discrepancy because QC inspection reports indicate acceptance of supports that were not constructed to the latest drawings. The licensee has implemented additional controls to correct this deficiency to assure rework and inspection are performed to the latest approved drawing. A form titled "Request for Inspection Plan" is issued by Construction to

QC when a revision to a drawing is made by Engineering. If no work is required by Construction to satisfy the revision, the form is marked "No Work Required" and sent to QC. When work is required, Construction will perform the work, then send the form to QC for re-inspection. QC will then issue new reports based on the new inspection results. In addition, QC will independently review each drawing revision to assure re-inspections are made on supports where rework was performed.

Item (2). The licensee has identified that some inspector errors occurred due to confusing and conflicting information on drawings and instructions. This deficiency was discussed in SALP Report 84-06 as an Engineering weakness based on previous NRC findings. Since that report, a Constructability Review Team was formed by Stone & Webster Engineering with the objective of reviewing pipe support drawings to determine if unclear and confusing information existed on them. As a result of the team's findings, changes were made to a majority of the pipe support drawings. All pipe rack support drawings were redrawn. This item is discussed in more detail in NRC Inspection Report 50-412/84-07, Paragraph 7, and NRC Unresolved Item 412/83-15-01.

Item (3). The lack of a sufficiently controlled rework program to identify inspection status with reference to missing, dismantled, or partially dismantled supports was reported to the NRC as a 50.55(e) item (84-00-06). The licensee's followup corrective actions on this item will be reported to the NRC per the 50.55(e) reporting requirements with subsequent inspector followup.

Item (4). The licensee's evaluation has revealed that numerous inspection errors occurred. Further analysis by the licensee has determined that although inspector errors were attributed to several inspectors, one inspector's inspections contained numerous mistakes clearly indicative of an unacceptable inspector error rate. The licensee has stated that the other inspectors' errors are isolated cases and have extenuating circumstances, such as drawing confusion, difficulty in making precise measurements on tube steel corners, and fillet welds which were only marginally undersized. The one inspector, identified as Inspector D, had accepted work which was apparently clearly unacceptable. A management decision was made by the licensee to re-inspect all of Inspector D's work. Inspector D worked onsite as qualified inspector from May 4, 1982 until May 30, 1983, when he resigned. During that period, he inspected 180 pipe supports. The re-inspection of the 180 supports found that 77 were unacceptable. Rework was performed on all 77 supports. On October 5, 1984, the findings were reported to the NRC as a "Potentially Reportable Item" in accordance with 50.55(e) requirements.

Summary - Pipe Supports

The licensee has presently established a 100 percent re-inspection program of welds on large bore pipe supports with the objective of determining if weld size and configuration meet the latest approved drawings.

The only exceptions are areas that are inaccessible for inspection and welded supports to hilti mounted baseplates. The licensee found that hilti mounted baseplate welds are acceptable. The apparent reason is that the baseplate is taken down from its location and welded on a flat surface which the welder can more easily weld. To date, approximately 600 large bore pipe supports have been re-inspected and approximately 20-25 percent require rework to comply with the drawing. The contractor is reworking the unacceptable conditions as they are identified. (An exception is the weld to edge of embedment plate distances which are evaluated by Engineering to determine disposition.) When rework is completed and final acceptance is made by QC to the latest approved drawing, Engineering will implement a "freeze" on the release of any additional drawing revisions. An exception is modification changes identified as a result of the "Stress Reconciliation Program." Those modifications will be accomplished under a separate program.

At present, for small bore pipe supports, the licensee has found a 2.4 percent deficiency rate on a sample size of 1,773 welds. The sample was based on one weld per support. The licensee has determined that the deficiencies are the result of either incorrect QC inspections or drawing revision changes being made after QC acceptance inspections were performed. The licensee is presently performing additional sample inspections to determine the extent and safety implications of the identified deficiencies. Based on this evaluation, the need for further re-inspections of small bore pipe supports will be evaluated by the licensee.

The licensee is evaluating the problems with inspector errors to determine the root causes and what corrective actions will be taken to reduce the amount of unacceptable errors.

b. Heating, Ventilation, and Air Conditioning Supports (HVAC)

A Duquesne Light Company Quality Assurance Department Audit, DC-2-84-20, conducted June 18-21, 1984, identified HVAC supports which did not meet drawing requirements with regard to size and/or length of fillet welds. Examples are: drawing specifies full length (5" long), actual weld only 2-1/2 inches long; drawing specifies 1/4 inch fillet weld, actual weld is 1/8 inch fillet; drawing specifies 1/8 inch fillet weld full length on four sides, actual weld is 1/8 inch fillet 1/2 inch long on four sides. The licensee performed an investigation of the above listed discrepancies by re-inspection of these welds and others to determine the causes of the apparent discrepancies. The re-inspections identified that some welds were incorrectly accepted due to drawing confusion or a misunderstanding of the drawing requirements. Some deficiencies were due to revisions to drawings which created confusion for the inspector such that he did not recognize a hardware change was made by the revision changes; therefore, he did not re-inspect the support. The majority of the mistakes were attributed to the inspector's failure to adequately

perform his assignments. The licensee identified that re-inspection of one HVAC inspector's work found 61 of 112 welds failed to comply with the drawing requirements.

When re-inspections were performed by the licensee in the presence of the inspector (Inspector A), he did not disagree that the welds failed to meet the drawing requirements, nor could he give an explanation of why he previously accepted them. The licensee suspended Inspector A's certification on August 20, 1984, and removed him from inspections. Inspector A commenced work on site as a qualified inspector on April 25, 1983.

The licensee initiated a 100 percent re-inspection of Inspector A's previously inspected work. The re-inspection of all supports inspected by Inspector A for weld size and configuration has been implemented using different contractor inspection personnel. Results of the re-inspection are as follows:

<u>Supports Accepted by Inspector A</u>	<u>112</u>
Supports found acceptable by re-inspection	33
Supports found unacceptable by re-inspection (ten were unacceptable for surface condition)	61
Supports currently inaccessible (the inaccessible supports will become accessible and be inspected at a later date)	18

The licensee has also identified another inspector (Inspector C) by sample inspections whose work is questionable. The licensee's re-inspections of 14 supports previously accepted by Inspector C found that four supports did not comply with the drawing. It has been determined that Inspector C had previously inspected and accepted a total of 117 supports. The licensee has also commenced a 100 percent re-inspection of his work. On October 5, 1984, the licensee temporarily suspended Inspector C's certification and he was removed from performing any further inspections. On that date, the above inspector errors were also reported to the NRC as a "Potential Reportable Item" in accordance with 50.55(e) requirements (same report as pipe support deficiencies).

All unacceptable inspection findings are identified on "Construction Deficiency Reports." Construction will rework the deficient welds.

c. Summary

The inspector reviewed the licensee's re-inspection program, including numerous discussions with Duquesne Light management personnel and reviews of numerous memorandums issued on the subject. It appears that adequate corrective actions are being taken to identify and correct the hardware

deficiencies on large bore pipe supports. Also, on small bore pipe supports, it appears that adequate management attention and analysis will be applied to identify and correct hardware deficiencies on these supports. For inspectors whose work was clearly identified as being deficient, the re-inspections should identify and correct these hardware deficiencies.

Based on the numerous licensee identified unacceptable conditions, as discussed above, and from NRC inspections which identified concerns of hardware quality as previously discussed in SALP reports and Region I Inspection Reports, NRC expressed concern about the apparent deficiencies in the licensee's Quality Assurance/Quality Control program. However, the inspector concluded that these deficiencies also appear to be partially attributable to problems with Stone & Webster Engineering documents and quality of construction as presented for inspection, both that of Stone & Webster Construction and Contractors.

The problems with Stone & Webster Engineering documents were previously identified from the numerous concerns identified by NRC inspections regarding confusing and conflicting information on drawings and procedures. However, based on the licensee's SALP response, Engineering Confirmation Program activities, NRC Inspection Report responses, NRC's routine inspection efforts, establishment of the Constructability Review Teams, and other corrective actions described in various responses to Region I, it appears that problems in this area are being adequately addressed and are in the process of correcting programmatic problems in the Engineering Department. Therefore, no additional followup is necessary for this item at this time. Further inspections to verify implementation of commitments in this area are already planned.

In the construction area, the inspector expressed concern about the rate of unacceptable construction rejects on pipe supports that the licensee's contractor is presenting to QC for inspection. The role of QC inspectors (verification through independent inspections that the contractor has properly fabricated and/or installed the item) was discussed with the licensee's QC Director. As discussed at that time, the contractor should assure himself that the item is properly fabricated before submitting it to QC for inspection. The inspector found, based on a random sample of 400 QC inspection reports of large and small bore pipe supports, that 32 percent of the supports failed the first QC inspection. This failure rate indicated to the inspector that the welding foreman is not assuring the product is properly fabricated before presenting it to QC, or there is confusion on the part of the welding foreman or the QC inspector regarding what constitutes an acceptable product, or the QC inspector is using different acceptance standards than the contractor uses to fabricate the product. The inspector agreed with the licensee QC Director's concern that when high unacceptable rates occur, at the QC stage of inspection, QC inspector error increases proportionate to the percentage of defective material that he is inspecting.

The inspector expressed concern about the root cause(s) of the apparent Quality Control Inspector errors which are occurring for both pipe supports and HVAC supports. In addition to performing re-inspections and necessary repairs, the licensee appears to be aggressively pursuing the issues to determine the root causes of the problems. This is important to prevent recurrence of like problems. This item is unresolved pending review of the licensee's further actions in this area (84-14-01). Further discussions of licensee findings and actions in this area are expected during a DLC-NRC management meeting presently scheduled on October 29, 1984 in the Region I Office.

6. FSAR Requirements for Identification of Cable Connected to Safety Related Buses and Used for Non-Class 1E Loads

Volume 10, Section 8.3-5 of the FSAR states, "Cables from safety related buses to non-Class 1E loads are color coded similar to Class 1E circuits, with the exception that their identification will carry "NS" for the first two characters in the service function identification field of the cable number. These cables are treated as if they belonged to Class 1E circuits, except they will be identified at the equipment ends with both the preprinted, colored cable identification tag and a blank beige-colored tag."

The same requirements as described above also appear in the licensee's 2BVS-931 Installation Specification, Field Construction Procedure 405, and Inspection Procedure 8.5.2.

The Site Quality Control Department has identified that this requirement was not included in the Stone & Webster design guideline documents 1BVM88 and 2BVM41. These documents control the issuance of the Pull and Termination Tickets which carry the required service function identification. For example, as a result of the omission from the BVM documents, the Standby Service Water Pump Mark 2SWE-P21A cable from the 4KVS2AE source was not identified with the "NS" number, nor was a blank beige-colored tag attached as specified in the FSAR. The Site Quality Control Department identified these discrepancies to Stone & Webster Engineering for disposition. Stone & Webster has proposed deleting these requirements from the FSAR. At present, the licensee is performing a review of this proposed change.

This item is unresolved pending either an FSAR change or incorporation of this requirement into the field installation. The inspector will review the licensee's disposition on this item (84-14-02).

7. Reporting of 50.55(e) Items

Nonconformance and Disposition (N&D) Reports number 4509, 4606, and 4606A identified that welds were found deficient on pipe supports that had been accepted by Quality Control. The N&D provides for evaluation of 10 CFR 50.55(e) items by requiring the engineer to check the appropriate block, either "Evaluation Required" or "Evaluation Not Required." In the case of the N&D's described above, the block was checked "Evaluation Not Required"

on one N&D and neither block was checked on the other two N&Ds. Therefore, no evaluation was performed to determine if the items should be reported in accordance with 10 CFR 50.55(e).

The inspector discussed this concern with licensee management and Stone & Webster Engineering personnel regarding their procedures for implementing an evaluation of reportability. Based on this discussion, Stone & Webster Engineering revised document 2BVM-218 to require that the 10 CFR 50.55(e) evaluation required block must be checked on all Category 1 N&D's which appear to involve breakdown in the QA/QC Program, a deficiency in final design as approved and released for construction, or a deficiency in construction, component or material which will require an extensive effort to repair, redesign or evaluate, or which could have a generic impact on other structures or components.

In addition, the S&W Superintendent of Engineering issued a memorandum, number 2BVM-3551 on October 5, 1984, to all site engineers which implemented, effective immediately upon receipt, the above requirements. Also, the licensee reported these potential deficiencies to the NRC Region I office.

Based on these changes, the inspector found the program acceptable.

8. Incorporation of Construction Revision Notices (CRN)

The inspector audited the licensee's contractor for compliance with Field Construction Procedure (FCP) 504, Change 7 for incorporation of CRN's onto the control drawing within the required 3 month time period after issue. In addition, the inspector audited the CRN's to assess whether the number of backlogged CRN's was being reduced. Stone & Webster committed to the inspector, identified in Inspection Report 84-03, that a concentrated effort would be made to reduce the 6000 outstanding CRN's. The inspector's review found that safety related CRN's were being incorporated within the 3 month time period. Also, the contractor has reduced the outstanding CRN's from 6347 as of March 1984 to 3156 as of September 30, 1984. The inspector found the areas reviewed acceptable.

9. Drawing Control

The inspector selected 66 drawings in the field and audited the drawings to assure the field revision agreed with the latest issued drawing. The drawings selected were in the Service Building and consisted of drawings from Sargent Electric Company and Stone & Webster Engineering. The inspector found four drawings in the field which did not meet the latest released revision. Further evaluation found that in all cases, the revision change release date was the same date (9/24/84) as the audit was performed. A recheck made the next day found the old revisions were replaced with the latest released revisions.

The inspector found this program acceptable.

10. Review of Seismic and Environmental Qualification Reports

The inspector audited the seismic and environmental qualification reports for four Category 1 heating, ventilation, and air conditioning (HVAC) fans and motors to ascertain compliance with IEEE 323-1971, Environmental Qualification, and IEEE 344-1971, Seismic Qualification. In addition, the inspector verified by direct observations and measurements that the installation connections were accomplished in the same fashion as the seismic tests were performed. The audit was performed on the below listed fans:

- 2HVI FN 271A and B, Specification 2BVS-150, Diesel General Building Supply Fans.
- 2HVZ FN 216A and B, Specification 2BVS-162, Battery Room Exhaust Fans.

The inspector found the fans were certified by the suppliers (Joy Industrial and Reliance) as having been built using the same construction techniques and materials as were used for those items subjected to qualification testing. The fans were also certified that they meet or exceed the seismic criteria. The inspector found the bolting installation of the installed fans was accomplished in accordance with the details stated in the seismic reports. The inspector found all areas reviewed acceptable. Followup on the certification bases to support that the same construction techniques and materials were used will be covered in a subsequent inspection (Open Item 84-14-04).

11. Record Review of Pipe Welds

The below listed weld history records were reviewed for technical adequacy to ascertain compliance with ASME, Section III requirements.

- Weld 2 SWS-114-F500, ISO 101902
- Weld 2 SWS-114-F501, ISO 101902
- Weld 2 SWS-113-F500, ISO 101901
- Weld 2 SWS-113-F501, ISO 101901
- Weld 2 CHS-421-F501, IOS 108329
- Weld 2 CHS-041-F529, ISO 108352
- Weld 2 CHS-042-F520, ISO 108353

The review included the following attributes:

- Compliance for visual and other nondestructive test.
- Weld data sheets were complete and adequately reviewed.

- Weld repair records were included, where applicable.
- Welding material was accountable and traceable.
- Welders were identified and properly qualified for the positions and techniques used.
- Quality control inspectors were identified on the applicable test reports and were properly qualified and certified.

The inspector found all areas reviewed acceptable.

12. Exit Interview

A meeting was held with the licensee's representatives, indicated in Paragraph 1, on October 5, 1984 to discuss the inspection scope and findings.